1736A
LSR 267

July 13, 2004

Dear Reader:

Enclosed are two Records of Decision (ROD) for the Upper Siuslaw Late-Successional Reserve Restoration Plan. One ROD addresses watershed restoration actions and the other ROD addresses upland thinning actions. In both RODs, I adopt the actions of Alternative D.

I am issuing two separate RODs for the plan for several reasons. First, these two classes of actions will require different implementation processes; second, these two classes of actions will require different mitigation measures; third, these two classes of actions will require different Endangered Species Act consultation with National Oceanic and Atmospheric Administration (NOAA) Fisheries.

The Final Environmental Impact Statement (FEIS) on which these RODs are based was published on April 9, 2004. We did not receive any comments following publication of the final EIS.

A notice of this forest management decision will be published in the Eugene Register-Guard on July 14, 2004.

Questions concerning the RODs may be directed to Rick Colvin, LSR Restoration Team leader, at the address above, by telephone at 541-683-6659 or 1-888-442-3061, or by e-mail at or090mb@or.blm.gov Attn: Rick Colvin. I appreciate your interest in the management of these public lands.

Sincerely,

Steven A. Calish
Field Manager
Siuslaw Resource Area

2 Attachments:
1 - ROD Watershed Restoration Actions (12 pp)
2 - ROD Upland Thinning Actions (11 pp)

U.S. Department of the Interior
Bureau of Land Management

Eugene District Office
P.O. Box 10226
Eugene, Oregon 97440-2226

July 2004

Record of Decision
For

Upper Siuslaw
Late-Successional Reserve Restoration Plan:

Watershed Restoration Actions

Lane and Douglas Counties, Oregon

Lead Agency:	Bureau of Land Management, U.S. Department of the Interior
Cooperating Agency:	Fish and Wildlife Service, U.S. Department of the Interior

/s/ *Steven Calish* date: July 13, 2004
Steven Calish, Field Manager, Siuslaw Resource Area
Eugene District, Bureau of Land Management

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Appendix A – Detailed Description of Watershed Restoration Actions

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all appendices are available on request or online:
http://www.edo.or.blm.gov/planning/lsr/index.htm

Summary

This Record of Decision (ROD) adopts a 10-year management approach for watershed restoration actions in approximately 25,000 acres of Late-Successional Reserve in the Coast Range Mountains west of Eugene, Oregon. This ROD, and an associated ROD for upland thinning actions, are both based on the Upper Siuslaw Late-Successional Reserve Restoration Plan Environmental Impact Statement (EIS). The purpose of the restoration plan as a whole is to protect and enhance late-successional and old-growth forest ecosystems; foster the development of late-successional forest structure and composition in plantations and young forests; and reconnect streams and reconnect stream channels to their riparian areas and upslope areas. My decision is to select the watershed restoration actions in Alternative D as described in the EIS. Alternative D was identified by the Bureau of Land Management and the U.S. Fish and Wildlife Service as the preferred alternative in the EIS. I select Alternative D because it will accomplish the purpose of the action and will best respond to the issues identified in the EIS.

Background

The Bureau of Land Management (BLM), Eugene District, with the U.S. Fish and Wildlife Service as a cooperating agency, prepared an EIS for the Upper Siuslaw Late-Successional Reserve (LSR) Restoration Plan. This LSR Restoration Plan will provide a 10-year management approach for approximately 25,000 acres of BLM-managed lands within LSR 267 in the upper portion of the Siuslaw River watershed in the Coast Range Mountains west of Eugene, Oregon. The purpose of the action is to protect and enhance late-successional and old-growth forest ecosystems; foster the development of late-successional forest structure and composition in plantations and young forests; and reconnect streams and reconnect stream channels to their riparian areas and upslope areas.

The area of the LSR Restoration Plan extends from just west of the Lorane Valley to Oxbow Creek (EIS, pp. 22, 24, maps 7, 10). The northern boundary is defined by the ridge between the Siuslaw and Wolf Creek watersheds. The southern boundary is defined by the boundary between the Eugene and Roseburg Districts, which approximates the ridge between the Siuslaw and Umpqua River basins (although a very small portion of the planning area extends into the Umpqua River basin). The small portion within the Umpqua River basin is within a Tier 1 Key Watershed. The planning area includes critical habitat for northern spotted owls and marbled murrelets.

The Siuslaw River, which runs through the planning area, has been identified by the Oregon Department of Environmental Quality (ODEQ) as a “Water Quality Limited Stream” for temperature and dissolved oxygen on its 2002 303(d) list (ODEQ 2003). BLM is a Designated Management Agency with responsibility for maintaining the quality of waters on the 303(d) list that flow across the lands it manages. Attached to this ROD is a Water Quality Restoration Plan (WQRP) for the portion of the planning area in the Siuslaw Watershed.

The LSR Restoration Plan will be implemented under two RODs: this ROD for watershed restoration actions (riparian and aquatic habitat enhancement, culvert replacement, and road decommissioning), and another ROD for upland thinning, including timber sales. Implementation of both RODs will be necessary to achieve all of the objectives described for the LSR Restoration Plan. These two classes of actions were best analyzed together in one EIS to facilitate the cumulative effects analysis. I have split the decision because these two classes of actions will have different implementation processes, some different mitigation measures, and different consultation with NOAA Fisheries.

Decision

In this ROD, I adopt the watershed restoration actions of Alternative D of the EIS, with all the objectives, actions, guidelines, and mitigation measures described for Alternative D in Appendix A of the EIS. No changes are made here to those objectives, actions, guidelines, and mitigation measures beyond the minor changes described in the final EIS errata sheet. I also adopt the additional mitigation measures and monitoring requirements described below. These additional mitigation measures do not alter the overall analysis of environmental effects in the EIS, but they do give greater specificity to the mitigation measures described for Alternative D in the EIS. The objectives, actions, guidelines, and mitigation measures for the watershed restoration actions of the Selected Alternative, together with the minor changes and additional mitigation measures, are presented in Appendix A of this ROD.

Alternatives

The EIS analyzed six alternatives in detail: the No Action alternative and five action alternatives. In addition, the EIS considered other alternatives that were not analyzed in detail (EIS, pp. 45-47). The following section provides a description of the overall management approach of each alternative and summarizes the actions. These summaries include the actions that we would implement during the 10-year span of the restoration plan, as well as reasonably foreseeable future actions under each management approach. We made this forecast beyond the 10-year span of the plan only for the purpose of cumulative impact analysis in the EIS. These summaries include actions that are addressed in the *ROD for the Upper Siuslaw LSR Restoration Plan: Upland Thinning Actions*. Detailed descriptions of the objectives, actions, guidelines, and mitigation measures of each alternative are presented in Appendix A of the EIS.

The EIS identified Alternative D as the preferred alternative of the BLM and the U.S. Fish and Wildlife Service (EIS, p. 43).

Alternative A – No Action

This alternative would take no management actions to protect and enhance late-successional and old-growth forest ecosystems; to foster the development of late-successional forest structure and composition in plantations and young forests; or to reconnect streams and reconnect stream channels to their riparian zones and upslope areas. Only those management actions specifically required by the RMP or by law or policy would occur.

Alternative B – Plantation and road management with no timber harvest

This alternative is designed to accomplish restoration without timber removal. It would thin Douglas-fir plantations, but not unmanaged stands. Because no cut trees would be removed, the risk of fire and insect infestation would constrain thinning prescriptions, except in very young stands. Stands >50 years old would not be thinned. Riparian areas (<100' from streams) which are conifer-dominated would be treated the same as upland stands. No trees would be specifically felled or pulled into streams, and no in-stream structures would be constructed. All roads would be decommissioned where legally possible. No new roads would be constructed.

Alternative C – Continue current management approach

This alternative is designed to accomplish restoration using current silvicultural techniques and stream restoration strategies. Thinning would be concentrated in stands 41-80 years old and would have targets for moderate stand densities and relatively even tree spacing. Riparian areas (<100' from streams) which are conifer-dominated would be treated the same as upland stands, but would not be thinned within 50' of streams. In-stream structures would be constructed, and some structures would be cabled for

stability in larger streams. Trees would be felled into smaller streams adjacent to thinning projects. Non-shared roads capable of delivering sediment to streams, damaged roads not needed for future access, and roads that dead-end in late-successional stands would be decommissioned. New roads would be constructed as needed to access areas selected for thinning.

Alternative D - T&E species recovery (preferred alternative)

This alternative is designed to take advantage of restoration opportunities that would have the least short-term adverse effects with the most long-term benefits to habitat for northern spotted owls, marbled murrelets, and coho salmon. Thinning would be concentrated in younger stands and would have targets for a wide range of stand densities and high variability of tree spacing. Stands >60 years old would not be thinned. Riparian areas (<100' from streams) which are conifer-dominated would be thinned from below without any timber removal. In-stream structures would be constructed, and some structures would be cabled for stability in larger streams. Trees would be felled into all streams adjacent to stands ≤80 years old. Non-shared roads capable of delivering sediment to streams, damaged roads, and roads within or adjacent to late-successional forest, would be decommissioned. New road construction would be limited to temporary spur roads.

Alternative E – Reduce stand densities as quickly as possible

This alternative is designed to reduce stand densities as quickly as possible. Thinning would occur in all age classes ≤80 years old and would have targets for very low stand densities and high variability of tree spacing. Riparian areas (<100' from streams) which are conifer-dominated would be treated the same as upland stands. Trees would be felled or pulled into all streams adjacent to stands ≤80 years old. No structures would be constructed, and woody debris would not be cabled for stability. Non-shared roads capable of delivering sediment to streams, damaged roads, and roads within or adjacent to late-successional forest, would be decommissioned. New roads would be constructed as needed to access areas selected for thinning.

Alternative F – Multi-entry and multi-trajectory thinning

This alternative is designed to accomplish restoration using multiple thinning of stands to establish five different stand trajectories. Thinning would occur in all age classes ≤80 years old. Thinning entries would be designed to maintain moderate to high canopy closure, and would have targets for a range of stand densities. Riparian areas (<100' from streams) which are conifer-dominated would be treated the same as upland stands. In-stream structures would be constructed on larger streams, and some would be cabled for stability. Non-shared roads capable of delivering sediment to streams, damaged roads not needed for future access, and roads that dead-end in late-successional stands would be decommissioned. New roads would be constructed as needed to access areas selected for thinning.

Environmentally Preferable Alternative

The Council on Environmental Quality (CEQ) regulations that implement the National Environmental Policy Act (NEPA) require that the ROD specify "the alternative or alternatives which were considered to be environmentally preferable." (40 CFR 1505.2(b)). CEQ's "Forty Questions" document (46 Federal Register, 18026, March 23, 1981) explains, "The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources. The Council recognizes that the identification of the environmentally preferable alternative may involve difficult judgments, particularly when one environmental value must be balanced against another."

The alternatives in this EIS each present a different balance of environmental values. The intended balance of the restoration plan is reflected in the three-part purpose of the action: to protect and enhance late-successional and old-growth forest ecosystems; foster the development of late-successional forest structure and composition in plantations and young forests; and reconnect streams and reconnect stream channels to their riparian areas and upslope areas. Alternative D provides the best balance between short-term adverse effects (e.g., temporary disturbance and degradation of existing habitat conditions) and long-term benefits (e.g., speeding the development of late-successional forest structure). Therefore, Alternative D is the environmentally preferable alternative.

Rationale for Selection

I adopt the watershed restoration actions of Alternative D, because they will accomplish the purpose of the action and will best respond to the issues identified in the EIS.

The action alternatives would be similarly effective at achieving the first purpose of the action: protecting and enhancing late-successional and old-growth forest ecosystems. Each of the action alternatives would reduce the risk of catastrophic fire in riparian areas, compared to the No Action alternative, and thus would reduce risks to existing late-successional forests which support intact aquatic refugia (EIS, pp. 124). None of the alternatives would be likely to result in widespread or catastrophic insect damage to existing late-successional and old-growth forests (EIS, p. 171).

The action alternatives vary widely in how well they would achieve the second purpose of the action: fostering the development of late-successional forest structure and composition in plantations and young forests. Alternatives D (the Selected Alternative) and E would be considerably more effective than the other alternatives at speeding the development of late-successional forest structure in riparian areas. However, there is some trade-off between the long-term development of late-successional structure and the short-term maintenance of northern spotted owl dispersal habitat. Alternative E, which would be the most effective at speeding the development of late-successional structure, would provide the least dispersal habitat in the short-term, and even temporarily reduce it from the current amount. Alternatives A, C, and F, which would maximize the development of dispersal habitat, would be largely ineffective at speeding the development of late-successional structure. Alternative D (the Selected Alternative) will effectively speed the development of late-successional structure in riparian areas and will maintain or increase the amount of dispersal habitat across the landscape (EIS, pp. 171-175). Alternative D (the Selected Alternative) will restore riparian plant communities by speeding the development of late-successional forest structural characteristics and restoring coarse woody debris quantities in riparian stands (EIS, pp. 135-136, 241). Riparian areas in the primary shade zone on all stream reaches will be left largely unthinned and will provide habitat for riparian-dependant species that need undisturbed forest conditions.

In most respects, the action alternatives would be similarly effective at achieving the third purpose of the action: reconnecting streams and reconnecting stream channels to their riparian zones and upslope areas. All of the action alternatives would increase aquatic and riparian connectivity by removing or replacing fish-barrier culverts and decommissioning existing roads (EIS, pp. 121, 124, 136). However, the alternatives would vary widely in how much stable stream structure would be created: Alternative D (the Selected Alternative) will be the most effective of all alternatives (EIS, pp. 176-177).

Watershed restoration actions in Alternative D (the Selected Alternative) will have minimal adverse effects on streams and riparian areas. Road decommissioning, culvert replacement, and creation of stream structure will create minor, temporary pulses of sediment, but will reduce sedimentation in the long-term (EIS, pp. 76-77, 176-177). Creation of coarse woody debris is

unlikely to result in low dissolved oxygen levels in streams. Large quantities of fine organic material could be introduced into small streams, which could affect dissolved oxygen levels. However, the streams in which restoration actions will occur typically exhibit cool water temperatures, low biochemical oxygen demand, and rapid aeration rates (EIS, p. 29). Alternative D (the Selected Alternative) will avoid creating large concentrations of fallen trees with intact needles or leaves in stream reaches with poor oxygen reaeration (EIS, pp. 236, 238, 240, 244). Contamination of streams with hazardous materials is very unlikely under all of the alternatives: no herbicides, pesticides, or fertilizer will be used as part of the restoration plan. Use of petroleum products will be associated with the riparian thinning and other restoration actions, but reasonable precautions in the transport and use of equipment (including refueling) would result in a very low risk of contamination.

Alternative D (the Selected Alternative) will help reduce sedimentation and restore water quality, including stream temperature. The primary shade zone (the area that shades the stream from approximately 10 am to 2 pm) will be left largely unthinned to maintain stream shading (see Mitigation below). Maintaining the primary shade zone unthinned will ensure that the thinning will not alter streambank integrity. Increasing stream structure will provide stream shading, trap sediments, and will improve water quality by creating deeper pools and replenishing groundwater reservoirs that are vital for water storage, water purification, and temperature regulation (EIS, pp. 90, 135). Decommissioning of all non-shared, BLM-controlled roads that are capable of delivering fine sediment to streams will reduce sedimentation to streams (EIS, pp. 136, 176). Thinning of riparian stands will speed the development of large trees capable of creating key pieces of large woody debris in streams (EIS, pp. 135-136), which will further restore in-stream structure.

Alternative D (the Selected Alternative) will have little effect on overall water flow patterns, but the increase in stream structure will slow water velocities, create deeper pools, and replenish groundwater reservoirs. This increase in stream structure will contribute to a restoration of patterns of floodplain inundation and water table elevation, reconnecting stream channels to their riparian areas.

Implementation

The EIS analyzed the actions in the Selected Alternative in detail sufficient to allow us to implement many of the actions without additional NEPA analysis. We will implement each action (or group of related actions) under the LSR Restoration Plan with its own decision document, prior to which we will conduct a "Documentation of Land Use Plan Conformance and NEPA Adequacy" (DNA) to determine whether additional NEPA analysis is necessary. Where site-specific conditions differ, or circumstances change, from those described in the EIS, or if a DNA is inappropriate for other reasons, we may need to conduct additional NEPA analysis prior to reaching a decision to implement an action. However, such instances are expected to be the exception.

Watershed restoration actions will be described in an annual program of work for the restoration plan. A DNA and decision document will typically be prepared for the annual program of work. Some projects, such as those that require additional NEPA analysis, might be addressed separately from this annual program of work, but such instances are expected to be the exception. Accomplishment of these projects will be reported through the Eugene District Annual Program Summary and occasional LSR Restoration Plan monitoring reports.

Clearances and surveys prior to implementation

Wildlife and botanical clearances will be conducted prior to implementation of restoration actions, in accordance with the *Eugene District Resource Management Plan* (RMP) (USDI Bureau of Land Management, June 1995), as amended by the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation*

Measures Standards and Guidelines (USDA Forest Service and USDI Bureau of Land Management, January 2001) and the *Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (USDA Forest Service and USDI Bureau of Land Management, March 2004). Special status species sites discovered as a result of clearances or pre-disturbance surveys will be managed consistent with the Special Status Species policy. Identified special habitats will be managed consistent with the direction the RMP (pp. 39-41).

Prior to implementation of restoration actions, site-specific field examination may be needed to identify streams, other water features, and unstable areas. In the Selected Alternative, riparian zones (<100' from streams) are identified for specific management prescriptions: the boundary of riparian zones will be measured as 100' slope distance from all streams, including intermittent streams, as described in the RMP (pp. 23-24). Field examination may also be needed to evaluate the suitability of soils for restoration activities.

Adaptive Management

Over the course of implementing this 10-year LSR Restoration Plan, changes may be made to project implementation through an adaptive management process based on monitoring results or changes in environmental conditions. Adaptive management is a continuing process of monitoring, evaluating, and adjusting implementation actions to ensure continued achievement of the goals of the restoration plan.

The LSR Restoration Plan describes the goals, objectives, actions, guidelines, and mitigation measures for the Selected Alternative (see Appendix A). Adaptive management over the 10-year implementation period is likely to lead to changes in some actions. Some changes will likely arise from detailed field examinations: for example, the proportion of stands that are found suitable for a specific thinning prescription may differ from the approximate proportions described in the Selected Alternative. Other changes will likely arise from monitoring of impacts: for example, field inspection of bark beetle infestation of coarse woody debris may lead to modification of the limits on coarse woody debris diameter. Such changes would be intended to improve our ability to meet the objectives described in the Selected Alternative, and to ensure that our actions remain consistent with the effects analysis in the EIS. Therefore, such changes would be unlikely to require supplementation of the EIS or amendment of this ROD.

Changes to the objectives in the Selected Alternative are less likely than changes to actions. If objectives need adjustment, it will probably not be apparent until near the end of the 10-year implementation period; for example, if objectives for thinning in a particular age class cannot be met. If an objective needs to be changed, we will evaluate the change to determine if it requires supplementation of the EIS and amendment of this ROD.

Attached to this ROD is a Water Quality Restoration Plan (WQRP) (see Appendix B). ODEQ reviewed this WQRP and provided no recommendations for additional measures, concluding that the WQRP contains all of the necessary implementation plan components. Changes may be made to the WQRP in the future, especially when Total Maximum Daily Loads (TMDLs) for the Siuslaw River are completed, which is currently scheduled for 2008 (http://www.deq.state.or.us/wq/303dlist/TMDLTargetsMap.htm). The WQRP may also be supplemented by site-specific information and measures for specific projects. Future changes or additions to the WQRP will be reflected in decision documents for actions or groups of actions as applicable. BLM will evaluate any future changes to the WQRP to determine if they would substantially alter the effects analysis in the EIS or change the nature of the decision in this ROD such that supplementation of the EIS and/or amendment of the ROD would be required. However, the WQRP is neither a NEPA document nor a decision document, and changes to the WQRP will not automatically trigger additional NEPA analysis and decision-making.

New technology or new research could alter the actions we take or our understanding of the effects of our restoration actions. We will evaluate new technology and applicable research as they arise. However, we do not anticipate that changes in technology or new research over the 10-year implementation period would be substantial enough to require supplementation of the EIS or amendment of this ROD.

Adaptive management in response to a change in environmental conditions is unpredictable, but potentially substantial. For example, a severe windstorm may cause extensive windthrow across the landscape, changing the acres in need of thinning. A flood may alter stream structure, changing the need for in-stream woody debris for structure. We will evaluate such unpredictable events to determine if they substantially alter the analysis in the EIS or change whether the actions and objectives described in the Selected Alternative will be sufficient to meet the goals of the restoration plan.

Mitigation

Threatened and Endangered Species

To avoid disturbance to nesting northern spotted owls or marbled murrelets, we will apply seasonal restrictions as provided in the Biological Opinion from the U.S. Fish and Wildlife Service. Other mitigation measures to avoid or reduce adverse effects on listed species are incorporated into the description of the LSR Restoration Plan (see Appendix A).

Water Quality

Attached to this ROD is a Water Quality Restoration Plan (WQRP), which addresses BLM's role as a Designated Management Agency with responsibility for maintaining the quality of waters on the 303(d) list (see Appendix B). All of the mitigation and monitoring measures related to watershed restoration actions that are described in the WQRP are also presented in this ROD.

Stream Shading

The Selected Alternative contains the mitigation measure: "Maintain sufficient stream shading so as to avoid contributing to increased water temperature." Specifically, stream shading would be maintained by managing riparian stands in three zones (see Figure 1):

(1) The primary shade zone (see Table 1) would be maintained unthinned (no more than 1-2 trees per acre would be felled for large woody debris in streams, which would not alter stream shading). Primary shade zones would not be established on intermittent streams or on the north side of east-west oriented streams.

(2) Outside of the primary shade zone but <100' from streams, stands would be thinned, but trees would not be harvested. Thinning would not result in more than a 50% reduction in canopy closure.

(3) Upland thinning prescriptions that may include timber harvest would be applied ≥100' from streams. Trees that would be removed from outside this riparian zone make no contribution to stream shading, except on the steepest slopes and in the oldest stands that would be thinned (the average tree height is less than 100' for all age classes that will be harvested, except for the 51-60-year-old stands, for which the average tree height ranges from 109' to 126').

Figure 1. Riparian Management Zones

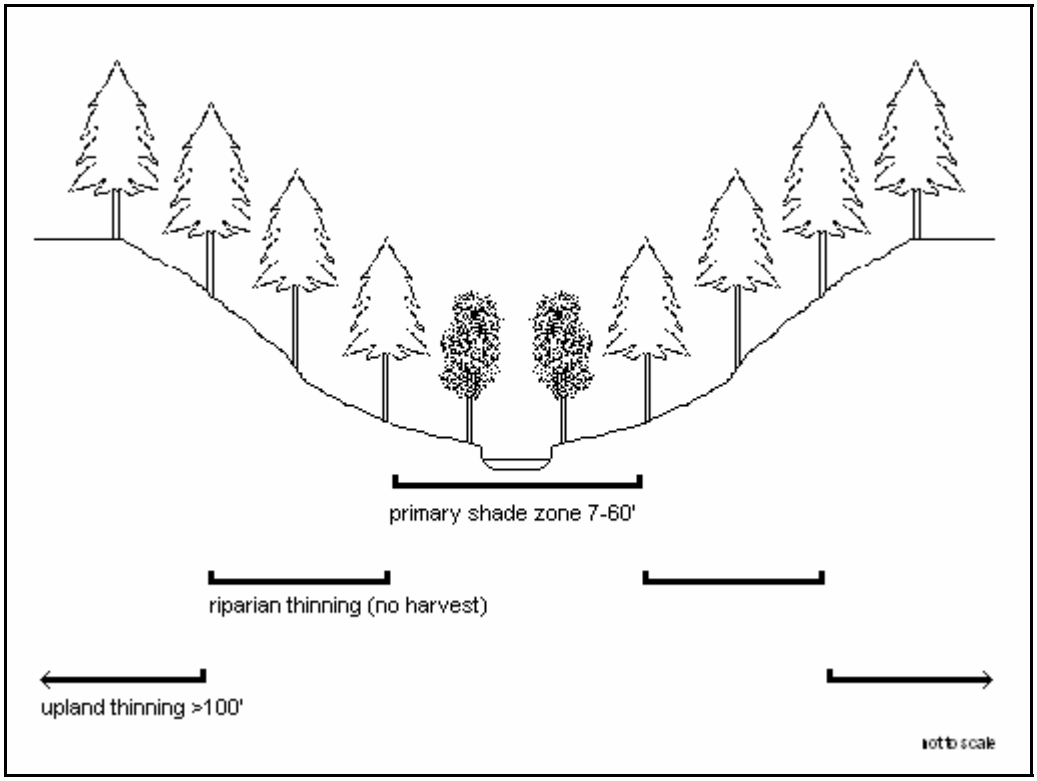

Table 1. Primary Shade Zone in Planning Area

Stand age (years)	Distance (feet from stream)		
	<30% slope	30-60% slope	>60% slope
≤10	7	8	10
11-30	20	25	30
31-50	30	40	50
>50	40	50	60

Monitoring

This ROD includes the following monitoring plan which will evaluate whether the projects implemented are within the scope of the LSR Restoration Plan, whether impacts are within the scope of the EIS, and whether the projects are achieving the anticipated results.

Implementation Monitoring

As directed by the RMP, a sample of all projects implemented on the Eugene District is visited annually to verify that actions are implemented in a manner consistent with the RMP standards and guidelines (RMP, pp. 116-117). Projects implemented under the LSR Restoration Plan will be evaluated as part of this annual implementation monitoring. Monitoring results will be reported as a component of the Eugene District Annual Program Summary.

Additional specific monitoring reports will also chart progress towards meeting the LSR Restoration Plan objectives, which are described in the attached Appendix A. These objectives are designed to be measured and have time frames for achievement. For example, the monitoring report will tally how many acres in a particular age class have been thinned to a particular prescription and compare that to the acres expected to be treated during the 10-year implementation period. Implementation of the restoration plan will not be evenly-paced for most objectives, and the anticipated 10-year accomplishments cannot be partitioned into annual targets. Therefore, these LSR Restoration Plan monitoring reports will be occasional, rather than annual, over the 10-year implementation period.

Effectiveness Monitoring

BLM will conduct effectiveness monitoring related to riparian shading and water temperature as described in the WQRP. A sample of riparian stand treatments will be measured to evaluate changes in shade. The measurements will be conducted before and immediately after treatment to assess the effect of treatment on short-term canopy shade. Measurements will be repeated at a decadal interval, as staffing and funding allow, to assess shade development as a component of developing late-successional stand characteristics.

In the past five years, BLM has been collecting water temperature data in the planning area. There are three monitoring sites established on the Siuslaw River, and seven on key tributaries: Bear Creek, Haight Creek, Pheasant Creek, Doe Hollow Creek, Bottle Creek, Doe Creek, and Russell Creek. Temperature monitoring will continue at these sites annually during the 10-year implementation period and, at a minimum, twice per decade thereafter, as staffing and funding allow.

Findings

Conformance

The Selected Alternative is in conformance with the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl* (Northwest Forest Plan) (USDA Forest Service and USDI Bureau of Land Management, April 1994), and the RMP, as amended by the *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (USDA Forest Service and USDI Bureau of Land Management, January 2001), the *Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (USDA Forest Service and USDI Bureau of Land Management, March 2004), and the *Record of Decision to Clarify Provisions Relating to the Aquatic Conservation Strategy* (USDA Forest Service and USDI Bureau of Land Management, March 2004).

Aquatic Conservation Strategy

The Aquatic Conservation Strategy seeks to restore watershed conditions over broad landscapes, and restoration will likely take decades, possibly more than a century (USDA and USDI, April 1994, p. B-9; USDA and USDI 2004b, pp. 8-9, 12-13). The Selected Alternative is designed to contribute to maintaining or restoring watershed conditions, and responds to the analysis and recommendations in the Siuslaw Watershed Analysis and the LSR assessment (USDI BLM 1996; USDA and USDI 1997; EIS, pp. 25-26). The EIS and the documents incorporated therein, including the watershed analysis and LSR assessment, describe existing watershed conditions (EIS, pp. 51-57). The EIS describes the effects of the Selected Alternative on watershed conditions (EIS, pp. 121-137).

Endangered Species Act

BLM has completed formal consultation under the Endangered Species Act with the U.S. Fish and Wildlife Service on the effect of the Selected Alternative on northern bald eagle, northern spotted owl, and marbled murrelet. In their Biological Opinion, the U.S. Fish and Wildlife Service

concluded that habitat modification under the Selected Alternative may affect, but would not be likely to adversely affect northern bald eagle, northern spotted owl and marbled murrelet (see Appendix C). The U.S. Fish and Wildlife Service concluded that disturbance under the Selected Alternative may affect, but would not be likely to adversely affect northern bald eagle and northern spotted owl, and would be likely to adversely affect marbled murrelet (see Table 2).

Table 2. Effects on Listed Species.

	Habitat Modification	**Disturbance**
Northern bald eagle	Not likely to adversely affect	Not likely to adversely affect
Northern spotted owl	Not likely to adversely affect	Not likely to adversely affect
Marbled murrelet	Not likely to adversely affect	Likely to adversely affect

In addition, the U.S. Fish and Wildlife Service concluded the Selected Alternative may affect, but would not be likely to adversely affect critical habitat for the northern spotted owl and critical habitat for the marbled murrelet. The entire planning area is designated as critical habitat for the northern spotted owl within critical habitat units OR-52 and OR-53 (USDI Fish and Wildlife Service 1992; EIS, p. 54; Map 9). Most stands in the planning area west of the western boundary of Township 20 South, Range 5 West are designated as critical habitat for the marbled murrelet within critical habitat unit OR-04i (USDI Fish and Wildlife Service 1996).

BLM has consulted under the Endangered Species Act with NOAA Fisheries on the effect of watershed restoration actions that may affect coho salmon as part of the consultation for *U.S. Forest Service and BLM Programmatic Activities in Northwestern Oregon* (February 25, 2003). These watershed restoration actions include riparian and aquatic habitat enhancement (including pre-commercial thinning and coarse woody debris creation), culvert replacement, and road decommissioning.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act requires Federal agencies to consult with the Secretary of Commerce regarding any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH) under the Act. Watershed restoration actions, including riparian and aquatic habitat enhancement, culvert replacement, and road decommissioning, may adversely affect EFH, primarily because of short-term sediment production (EIS, pp. 136, 176-177). BLM has consulted with NOAA Fisheries on the effect of these actions on EFH as part of the consultation for *U.S. Forest Service and BLM Programmatic Activities in Northwestern Oregon* (February 25, 2003).

Public Involvement

BLM began informal scoping in 2000, including distributing information to initiate issue identification and to open public dialogue regarding the restoration plan. During 2001, we solicited public participation through a series of public meetings, presentations, and field trips. We issued newsletters about LSR restoration and this restoration plan, announcing field trips or public meetings, addressing questions from the public, and describing preliminary issues and alternatives. During this informal scoping, we received six letters or e-mails in which the authors expressed concerns or made suggestions related to LSR restoration.

BLM published a Notice of Intent to prepare an EIS in the Federal Register on October 9, 2002, beginning the formal scoping period. The Notice of Intent requested comments on the scope of the analysis for this proposed plan. In response to the Notice of Intent, we received one letter

from the Oregon Natural Resources Council (ONRC). Their comments were not specific to the EIS and did not substantively add to previous comments received from ONRC during informal scoping.

The public comment period for the draft EIS began on August 15, 2003 and closed on October 15, 2003. The draft EIS was mailed to agencies, organizations, and individuals listed in the EIS (p. 184), and was made available on the internet. We also made presentations of the draft EIS to various groups during the comment period. We received 11 comment letters during the comment period and one letter after the comment period. None of the comments suggested development of additional alternatives or pointed out flaws or deficiencies in analysis. As a result, we made only minor changes in the draft EIS in response to comments, consisting of technical, editorial, or non-substantive factual corrections. Therefore, we prepared only an abbreviated final EIS, containing copies of comments received on the draft EIS, responses to those comments, and an errata section, consistent with 40 CFR 1503.4 and the BLM NEPA Handbook H-1790-1, p. V-21.

The abbreviated final EIS was published on April 9, 2004. The final EIS was mailed to agencies, organizations, and individuals that received the draft EIS, and was made available on the internet. We did not receive any comments following publication of the final EIS.

We notified the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians, and the Confederated Tribes of the Grand Ronde of this project during the scoping process, requesting information regarding tribal issues or concerns relative to the project. We also sent the tribes copies of the draft and final EIS. We received no responses.

Administrative Review Opportunities

This forest management decision may be protested under 43 CFR 5003 – Administrative Remedies. In accordance with 43 CFR 5003.2, the decision for this project will not be subject to protest until the notice of forest management decision is first published in the Eugene Register-Guard on July 14, 2004. Protests of the decision must be filed with this office within 15 days after first publication of the notice of decision. As interpreted by BLM, the regulations do not authorize acceptance of protests in any form other than a signed, paper document that is delivered to the physical address of the BLM office. Therefore, e-mail or facsimile protests will not be accepted. If no protest is received by the close of business (4:15 pm) on July 29, 2004, this decision will become final. If a timely protest is received, this decision will be reconsidered in light of the protest and other pertinent information available in accordance with 43 CFR 5003.3.

Future decisions on specific watershed restoration actions or groups of actions conducted under this restoration plan will have additional protest opportunities. The decision to implement watershed restoration actions will be subject to protest under 43 CFR 5003 when the notice of decision is first published in the Eugene Register-Guard. These future protest opportunities for specific watershed restoration actions or groups of actions will be limited to issues that could not have been raised in a protest of the broader forest management decision made in this ROD.

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Appendix A – Detailed Description of Watershed Restoration Actions

GOAL 1: *Protect and enhance late-successional and old-growth forest ecosystems.*

OBJECTIVE: On decommissioned and BLM-controlled roads, control noxious weeds within 10 years sufficient to ensure they do not penetrate into late-successional stands.

ACTION: Inventory roads within or adjacent to late-successional stands for the presence of noxious weeds.

ACTION: Remove noxious weeds from BLM-controlled roads, including roads to be decommissioned.

ACTION: Plant trees or other native species in the decommissioned roads to prevent noxious weeds from becoming established in areas where weed seed is likely to spread into the decommissioned roads.

GUIDELINES:

- Use methods to remove weeds such as steam treatment, mowing, pulling, cutting and grubbing depending on the weed species.

MITIGATION MEASURES:

- Do not conduct weed removal treatments with power tools or machinery during the critical northern spotted owl nesting season (March 1 – July 7).

OBJECTIVE: Decommission all non-shared, BLM-controlled roads within or adjacent to late-successional stands within 10 years.

ACTION: Decommission the roads shown in Appendix E of the EIS.

GUIDELINES:

- In determining the timing for decommissioning, consider whether the road would provide access for other management actions.
- Road segments shown for decommissioning in Appendix E of the EIS are approximate and may be modified slightly to improve the effectiveness of decommissioning or facilitate other restoration actions.

ACTION: Decommission unnumbered roads and non-designated trails as needed to protect and enhance late-successional forests.

ACTION: On roads to be decommissioned, break up areas of soil compaction of the road surface (by subsoiling or other such methods) as needed to allow tree establishment and growth.

GUIDELINES:

- Where subsoiling or other such methods will not be sufficient to allow tree

establishment and growth, recontour the road area to create better tree growing conditions.

- Coordinate thinning and coarse woody debris creation in adjacent stands to fall some trees across decommissioned roads to cover soil and block access.

ACTION: Plant trees or other native species on the decommissioned road surface when needed to ensure tree establishment.

ACTION: Block decommissioned roads as needed to restrict vehicular traffic.

GOAL 2: *Foster the development of late-successional forest structure and composition in plantations and young forests within LSR 267.*

OBJECTIVE: Reduce tree density and increase variability of tree spacing in 90% (100% of stands; 90% of acres) of the 1-20 year age class that has not been pre-commercially thinned, so that tree densities range from 75-150 TPA within 10 years.

ACTION: Thin approximately 1/3 of stands aged 11 to 20 years to a stand average of 75-100 Douglas-fir trees per acre.

ACTION: Thin approximately 1/3 of stands aged 11 to 20 years to a stand average of 100-120 Douglas-fir trees per acre.

ACTION: Thin approximately 1/3 of stands aged 11 to 20 years to a stand average of 120-150 Douglas-fir trees per acre.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Select the largest, healthiest trees for retention, regardless of spacing.
- Leave most or all cut trees in the stand. Some removal may be needed to mitigate fire risk in limited locations, such as near roads.
- Generally apply the lower density prescriptions to the older stands within the age class.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10' - 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.

OBJECTIVE: Reduce tree density and increase variability of tree spacing in 90% (100% of stands; 90% of acres) of the 1-20 year age class that has been pre-commercially thinned, so that tree densities range from 40-60 TPA within 10 years.

ACTION: Thin stands in riparian zone (i.e., <100' from streams) to a treated stand average of 60-110 Douglas-fir trees per acre.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Thin from below: select the largest, most vigorous trees for retention within approximately even spacing to maximize individual tree growth.
- Generally leave all cut trees in the stand. Some removal may be needed to mitigate fire risk in limited locations, such as near roads.
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.
- Generally apply thinning more than 8 years after pre-commercial thinning.

MITIGATION MEASURES:

- Do not cut trees on immediate streambank that are contributing to streambank stability.
- Do not thin within the primary shade zone (except for approximately 1-2 trees per acre which may be felled for large woody debris in streams).
- Limit the cutting of trees >12" dbh to lessen the risk of Douglas-fir bark beetle infestation. (Some trees >12" dbh will be specifically selected for snag and/or coarse woody debris creation).
- Lessen fire risk from thinning by not creating high fuel loads near roads. Appropriate mitigations include measures such as removing cut trees from the stand; pulling-back cut trees from road edge; hand-piling and burning cut trees; or leaving part of the stand unthinned. Do not conduct burning during the nesting period for northern spotted owls or marbled murrelets.

OBJECTIVE: **Reduce tree density and increase variability of tree spacing in 75% (100% of stands; 75% of acres) of the 21-30-year age class, so that tree densities range from 40-110 TPA within 10 years.**

ACTION: Among stands aged 21 to 30 years, thin 75% of acres of Douglas-fir stands in riparian zone (i.e., <100' from streams) to a treated stand average of 60-110 Douglas-fir trees per acre.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Thin from below: select the largest, most vigorous trees for retention within approximately even spacing to maximize individual tree growth.
- Generally leave all cut trees in the stand. Some removal may be needed to mitigate fire risk in limited locations, such as near roads.
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.

MITIGATION MEASURES:

- Do not cut trees on immediate streambank that are contributing to streambank stability.
- Limit falling of trees directly into streams to approximately 160 trees per stream mile (though this average quantity would likely be very unevenly distributed along any particular stream reach).
- Avoid creating large concentration of fallen trees with intact needles or leaves in stream reaches with poor oxygen reaeration (e.g., high water temperatures, low stream gradient, very slow moving water) during seasons of low stream flow (summer and early fall).
- Maintain sufficient stream shading so as to avoid contributing to increased water temperature. Do not thin within the primary shade zone (except for approximately 1-2 trees per acre which may be felled for large woody debris in streams).
- Limit the cutting of trees >12" dbh to lessen the risk of Douglas-fir bark beetle infestation. (Some trees >12" dbh will be specifically selected for snag and/or coarse

woody debris creation).

- Lessen fire risk from thinning by not creating high fuel loads near roads. Appropriate mitigations include measures such as removing cut trees from the stand; pulling-back cut trees from road edge; hand-piling and burning cut trees; or leaving part of the stand unthinned. Do not conduct burning during the nesting period for northern spotted owls or marbled murrelets.

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10'- 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.

OBJECTIVE: Reduce tree density and increase variability of tree spacing in 50% (100% of stands; 50% of acres) of the 31-50-year age class, so that tree densities range from 40-110 TPA within 10 years.

ACTION: Among stands aged 31 to 50 years, thin 50% of acres of Douglas-fir stands in riparian zone (i.e., <100' from streams) to a treated stand average of 60-110 Douglas-fir trees per acre.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Thin from below: select the largest, most vigorous trees for retention within approximately even spacing to maximize individual tree growth.
- Generally leave all cut trees in the stand. Some removal may be needed to mitigate fire risk in limited locations, such as near roads.
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.

MITIGATION MEASURES:

- Do not cut trees on immediate streambank that are contributing to streambank stability.
- Limit falling of trees directly into streams to approximately 160 trees per stream mile (though this average quantity would likely be very unevenly distributed along any particular stream reach).
- Avoid creating large concentration of fallen trees with intact needles or leaves in stream reaches with poor oxygen reaeration (e.g., high water temperatures, low stream gradient, very slow moving water) during seasons of low stream flow (summer and early fall).
- Generally limit the cutting of trees >12" dbh to lessen the risk of Douglas-fir bark beetle infestation. (Some trees >12" dbh will be specifically selected for snag and/or coarse woody debris creation). Where some cutting of trees >12" dbh would be needed to achieve target stand densities, lessen the risk of Douglas-fir bark beetle infestation by falling trees in the summer, removing some cut trees, or leaving part of the stand unthinned.
- Maintain sufficient stream shading so as to avoid contributing to increased water temperature. Do not thin within the primary shade zone (except for approximately 1-2 trees per acre which may be felled for large woody debris in streams).
- Lessen fire risk from thinning by not creating high fuel loads near roads. Appropriate mitigations include measures such as removing cut trees from the stand; pulling-back cut trees from road edge; hand-piling and burning cut trees; or leaving part of the stand unthinned. Do not conduct burning during the nesting period for northern spotted owls or marbled murrelets.
- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10'- 25') of stands to restrict spread of noxious

weeds. Some tree cutting will be necessary to provide operational access.

OBJECTIVE: Reduce tree density and increase variability of tree spacing in 25% (50% of stands; 50% of acres) of the 51-60-year age class, so that tree densities range from 40-110 TPA within 10 years.

ACTION: Among stands aged 51 to 60 years, thin 25% of Douglas-fir stands in riparian zone (i.e., <100' from streams) to a treated stand average of 60-110 Douglas-fir trees per acre.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Thin from below: select the largest, most vigorous trees for retention within approximately even spacing to maximize individual tree growth. (In addition to the thinning prescription, fall or pull trees if available to provide stable in-stream structure (generally 0.6 TPA ≥24"dbh)).
- Leave all cut trees in the stand.
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.

MITIGATION MEASURES:

- Do not cut trees on immediate streambank that are contributing to streambank stability.
- Limit falling of trees directly into streams to approximately 160 trees per stream mile (though this average quantity would likely be very unevenly distributed along any particular stream reach).
- Avoid creating large concentration of fallen trees with intact needles or leaves in stream reaches with poor oxygen reaeration (e.g., high water temperatures, low stream gradient, very slow moving water) during seasons of low stream flow (summer and early fall).
- Maintain sufficient stream shading so as to avoid contributing to increased water temperature. Do not thin within the primary shade zone (except for approximately 1-2 trees per acre which may be felled for large woody debris in streams).
- Generally limit the cutting of trees >12" dbh to lessen the risk of Douglas-fir bark beetle infestation. (Some trees >12" dbh will be specifically selected for snag and/or coarse woody debris creation). Where some cutting of trees >12" dbh would be needed to achieve target stand densities, lessen the risk of Douglas-fir bark beetle infestation by falling trees in the summer, removing some cut trees, or leaving part of the stand unthinned.
- Lessen fire risk from thinning by not creating high fuel loads near roads. Appropriate mitigations include measures such as removing cut trees from the stand; pulling-back cut trees from road edge; hand-piling and burning cut trees; or leaving part of the stand unthinned. Do not conduct burning during the nesting period for northern spotted owls or marbled murrelets.
- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10'- 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.
- Evaluate stands ≥51 years old with older remnant trees for potential marbled murrelet habitat. Survey potential habitat or leave untreated.
- Do not thin within current owl home ranges that currently have less than 40% suitable habitat.

OBJECTIVE: In stands treated under the above objectives, develop densities of shade-

tolerant conifers to ensure that by age 81, they contain densities similar to those found in mature natural stands (26-90 TPA >2" dbh).

ACTION: Within stands that are thinned to below 110 TPA at ages 21-30 and lack sufficient shade-tolerant conifer trees or seedlings to meet the objective, plant seedlings of shade-tolerant conifers (western hemlock, western red-cedar, grand fir, incense-cedar and/or Pacific yew) at densities of 26-200 trees per acre.

ACTION: Within stands that are thinned to below 80 TPA at ages 31-60 and lack sufficient shade-tolerant conifer trees or seedlings to meet the objective, plant seedlings of shade-tolerant conifers (western hemlock, western red-cedar, grand fir, incense-cedar and/or Pacific yew) at densities of 26-200 trees per acre.

GUIDELINES:

- Give preference in planting to areas with the greatest likelihood of seedling establishment and growth, considering factors such as post-thinning overstory density and shrub competition.
- Planting may be concentrated in distribution in response to site-specific conditions and need not be evenly distributed across the stand. Planting densities should generally be met at the scale of 20 acres (e.g., 520-4,000 trees/20 acres).

GOAL 3: *Reconnect streams and reconnect stream channels to their riparian zones and upslope areas within LSR 267.*

OBJECTIVE: Decommission or improve all roads capable of delivering sediment to streams, as identified in watershed analysis within 10 years.

ACTION: Decommission the roads shown in Appendix E.

GUIDELINES:

- Decommissioning may include any of the following measures:
  - discontinuing road maintenance;
  - tilling the road surface with dozer and subsoiler implement or a track mounted excavator;
  - removing gravel or pulling of gravel into the ditch line;
  - scarifying roads for creation of planting areas;
  - removing side cast soils from fill slopes with a high potential for triggering landslides;
  - filling and contouring of cut slope ditch lines to the adjacent hill slope;
  - removing culverts;
  - stabilizing stream crossings (e.g., recountering stream channels, placement of mulch or mats and seeding for erosion control, placement of rock and logs);
  - installing water bars, cross sloping or drainage dips to ensure adequate drainage into vegetated areas and away from streams or unstable road fills;
  - blocking the road using barricades, gating, or earth berm barriers;
  - placing slash, boulders, and/or woody debris on the road surface to deflect runoff, discourage OHV use, and promote vegetative growth;
  - seeding or planting for erosion control.
- Along roads being decommissioned, generally remove culverts and recontour stream channel to achieve streambank stability.

ACTION: On roads to be decommissioned, break up areas of soil compaction of the road surface (by subsoiling or other such methods) as needed to allow tree establishment and growth.

GUIDELINES:

- Where subsoiling or other such methods will not be sufficient to allow tree establishment and growth, recontour the road area to create better tree growing conditions.
- Coordinate thinning and coarse woody debris creation in adjacent stands to fall some trees across decommissioned roads to cover soil and block access.

ACTION: Plant trees or other native species on decommissioned road surface when needed to ensure tree establishment.

ACTION: Block decommissioned road as needed to restrict vehicular traffic.

OBJECTIVE: On roads that will not be decommissioned, reduce the risk to the aquatic ecosystem attributable to the road network within 10 years.

ACTION: Eliminate all barriers to movements of anadromous fish attributable to BLM-controlled roads.

GUIDELINES:

- Barriers may be eliminated by removal, replacement, or modification of culverts, and/or installation of downstream structures to raise upstream water levels within culverts or upstream structure to stabilize accumulated deposition.

ACTION: Develop and implement Memoranda of Understanding with adjacent road- and land-owners to eliminate barriers to movements of anadromous fish attributable to non-BLM roads or lands.

ACTION: Remove or replace culverts that have a high risk of failure.

GUIDELINES:

- Along roads that will not be decommissioned, replace existing culverts that are failed, undersized, or constitute passage barriers. An existing culvert may be replaced with another culvert, a half-arch or a bridge.
- For culverts creating a passage barrier, where removal or replacement are not feasible, access to the culvert may be created or improved by downstream log or boulder structure designed to elevate the stream channel and create pools to facilitate movement into the culvert. Downstream structures may also be used in conjunction with culvert replacement to improve passage.

OBJECTIVE: Increase stream structure to >160 pieces/stream mile of woody debris (>6"diameter, 10' long) on all 1st and 2nd order streams adjacent to stands ≤80 years old, and >30 structures/stream mile along 3.8 miles of 3rd, 4th, or 5th-order streams within 10 years.

ACTION: Construct woody debris structures with at least 3 key pieces/structure in 3rd, 4th, or 5th-order streams.

GUIDELINES:

- Key pieces should generally be greater than 50' long and ≥24" diameter.
- Cable or otherwise stabilize structures as needed in streams that are devoid of existing stable structure that has the potential to accumulate future woody debris recruitment.
- Consider yarding logs into the stream from nearby thinning operations. Do not use helicopters for yarding logs into streams.
- Wood imported from off-site (e.g., purchased logs or any other logs not from adjacent or nearby stands) should generally be used in structures on 4th and 5th-order streams.

ACTION: In riparian stands ≤80 years old that are not thinned under the thinning objective below, fall or pull over trees into the stream to increase levels to >160 pieces/stream mile of woody debris (>6"diameter, 10' long).

GUIDELINES:

- On streams with no existing woody debris, cut 160 trees >6" dbh/stream mile (approximately 25 trees/acre). If available, fall or pull trees to provide stable in-stream structure (generally 0.6 TPA ≥24"dbh).
- In conifer-dominated stands, generally select Douglas-fir for falling or pulling. In hardwood-dominated stands, generally select red alder and bigleaf maple for falling or cutting
- In conifer-dominated stands, generally do not fall or pull more than one tree/acre from the largest 10% of diameter classes in the stand.
- In hardwood-dominated stands, some conifers may be felled or pulled, but generally do not fall or pull more than half of the conifer trees (at the scale of one acre).

MITIGATION MEASURES:

- Do not fall or pull conifers ≥32" dbh.
- Do not cut trees on immediate streambank that are contributing to streambank stability.
- Maintain sufficient stream shading so as to avoid contributing to increased water temperature. Do not thin within the primary shade zone (except for approximately 1-2 trees per acre which may be felled for large woody debris in streams).

OBJECTIVE: In 55% of riparian (<100' from stream) Douglas-fir stands 21-60 years old, attain conifer densities of ³13 TPA ³24" dbh by age 80.

ACTION: Among stands aged 21 to 30 years, thin 75% of acres of Douglas-fir stands in riparian zone (i.e., <100' from streams) to a treated stand average of 60-110 Douglas-fir trees per acre.

ACTION: Among stands aged 31 to 50 years, thin 50% of acres of Douglas-fir stands in riparian zone (i.e., <100' from streams) to a treated stand average of 60-110 Douglas-fir trees per acre.

ACTION: Among stands aged 51 to 60 years, thin 25% of Douglas-fir stands in riparian zone (i.e., <100' from streams) to a treated stand average of 60-110 Douglas-fir trees per acre.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Thin from below: select the largest, most vigorous trees for retention within approximately even spacing to maximize individual tree growth.
- Generally leave all cut trees in the stand. Some removal may be needed to mitigate risk in limited locations, such as near roads.

MITIGATION MEASURES:

- Do not cut trees on immediate streambank that are contributing to streambank stability.
- Limit falling of trees directly into streams to approximately 160 trees per stream mile (though this average quantity would likely be very unevenly distributed along any particular stream reach).
- Avoid creating large concentration of fallen trees with intact needles or leaves in stream reaches with poor oxygen reaeration (e.g., high water temperatures, low stream gradient, very slow moving water) during seasons of low stream flow (summer and early fall).
- Maintain sufficient stream shading so as to avoid contributing to increased water temperature.
- Generally limit the cutting of trees >12" dbh to lessen the risk of Douglas-fir bark beetle infestation. (Some trees >12" dbh will be specifically selected for snag and/or coarse woody debris creation). Where some cutting of trees >12" dbh would be needed to achieve target stand densities, lessen the risk of Douglas-fir bark beetle infestation by falling trees in the summer, removing some cut trees, or leaving part of the stand unthinned.
- Lessen fire risk from thinning by not creating high fuel loads near roads. Appropriate mitigations include measures such as removing cut trees from the stand; pulling-back cut trees from road edge; hand-piling and burning cut trees; or leaving part of the stand unthinned. Do not conduct burning during the nesting period for northern spotted owls or marbled murrelets.

OBJECTIVE: **In 50% of riparian (<100' from stream) hardwood-dominated stands, attain conifer densities of ³13 TPA ³24"dbh by age 101-131 (or approximately 80 years after treatment).**

ACTION: Cut hardwoods and shrubs to provide growing space for conifers in hardwood-dominated stands in riparian zone (i.e., <100' from streams).

GUIDELINES:

- Cut or girdle competing hardwoods and shrubs to release existing conifer saplings or to create planting sites for conifers
- Select for cutting primarily red alder and tall shrubs, such as salmonberry, that compete aggressively with conifer saplings.
- Some trees may be girdled instead of cut to create snags.

MITIGATION MEASURES:

- Do not cut trees on immediate streambank that are contributing to streambank stability.
- Limit falling of trees directly into streams to approximately 160 trees per stream mile (though this average quantity would likely be very unevenly distributed along any particular stream reach).
- Avoid creating large concentration of fallen trees with intact needles or leaves in stream reaches with poor oxygen reaeration (e.g., high water temperatures, low stream gradient, very slow moving water) during seasons of low stream flow (summer and early fall).
- Maintain sufficient stream shading so as to avoid contributing to increased water temperature. Do not thin within the primary shade zone (except for approximately 1-2 trees per acre which may be felled for large woody debris in streams).

ACTION: Plant conifer seedlings and/or saplings in hardwood-dominated stands that were

treated under the previous action and lack sufficient conifers to meet objective densities.

GUIDELINES:

- Species planted will be primarily western red-cedar and Douglas-fir, but may also include western hemlock and grand fir, depending on specific site conditions.
- Give preference in planting to areas with the greatest likelihood of conifer establishment and growth, considering factors such as soil conditions, overstory density and shrub competition.
- Planting may be concentrated in distribution in response to site-specific conditions and need not be evenly distributed across the stand.
- Tube western red-cedar seedlings to reduce browsing.
- Control competing shrub vegetation by placing mats or mulch around the trees or by cutting competing shrubs at planting and during subsequent years as needed to establish trees.

I. Condition Assessment and Problem Description

Geographic Region of Interest

The area of this Water Quality Restoration Plan (WQRP) is that of the Bureau of Land Management (BLM) Upper Siuslaw Late-Successional Reserve (LSR) Restoration Plan (hereafter referred to as the LSR Restoration Plan), which addresses restoration within the Upper Siuslaw portion of LSR 267. BLM, in cooperation with the U.S. Fish and Wildlife Service, has prepared an environmental impact statement (EIS) that analyzed impacts of the LSR Restoration Plan (USDI BLM 2004). The entire LSR 267 includes 175,280 acres of federal land managed by the BLM Eugene, Roseburg, and Coos Bay Districts and the Siuslaw National Forest (see Map 7 – note that maps attached to this WQRP are numbered consistent with the larger map set in the EIS). The Eugene District manages approximately 83,000 acres (47%) of LSR 267. Of this total acreage, 24,400 acres are within the Upper Siuslaw sub-unit (14% of LSR 267), which will be addressed by this WQRP (hereafter referred to as the planning area). The Upper Siuslaw sub-unit of LSR 267 extends from the eastern edge of LSR 267, just west of the Lorane Valley. The Upper Siuslaw sub-unit extends west to Oxbow Creek (see Map 10). The northern boundary is defined by the ridge between the Siuslaw and Wolf Creek watersheds. The southern boundary is defined by the boundary between the Eugene and Roseburg Districts, which approximates the ridge between the Siuslaw and Umpqua River basins (although a very small portion of the Upper Siuslaw sub-unit of LSR 267 extends into the Umpqua River basin). Much of the planning area is privately owned (see Table 1).

Table 1. Land ownership in the LSR Restoration Planning Area.

Land Owner	Acres	Percent (%) Ownership
BLM LSR	24,400	42.5
BLM Matrix	3,600	6.3
Other public (State, County)	400	0.7
Private	29,000	50.5

Beneficial Uses

The beneficial uses that have been identified in this watershed are identified in Table 2.

Table 2. Beneficial Uses in the Siuslaw Watershed.

Beneficial Use	Occurring
Public Domestic Water Supply	
Private Domestic Water Supply	X
Industrial Water Supply	
Irrigation	X
Livestock	X

Anadromous Fish Rearing	X
Salmonoid Fish Passage	X
Resident Fish & Aquatic Life	X
Wildlife & Hunting	X
Fishing	X
Boating	
Water Contact Recreation	X
Aesthetic Quality	X
Hydro Power	
Commercial Navigation	

Current Conditions

Upper Siuslaw Watershed water quality limited stream segments and parameters identified on the 2002 Oregon 303(d) List are show in Table 3.

Table 3. Water Quality Limited Streams in the Planning Area.

Waterbody	River Mile	Parameter	Season	List Date
Siuslaw River	5.7 to 105.9	Dissolved Oxygen	September 15 - May 31	2002
Siuslaw River	5.7 to 105.9	Dissolved Oxygen	June 1 - September 14	2002
Siuslaw River	20 to 105.9	Temperature	Summer	2002

The Siuslaw Watershed Analysis details terrestrial and aquatic ecosystem conditions and processes within the Siuslaw River fifth-field watershed (USDI BLM 1996). The Siuslaw Watershed Analysis includes a stream-by-stream analysis of current fish habitat conditions (USDI BLM 1996, pp. II-38 – II-47). Additional description of current stream conditions is presented in the Upper Siuslaw Aquatic Habitat Restoration Plan (Environmental Assessment OR090-98-17).

Climatic patterns in the region are dominated by cyclonic winter storms depositing over 40 inches of rain per year. In an average year, 80% of the precipitation falls as rain during the November - February period.

The Siuslaw headwater streams are at elevations of 1000 feet or less. The Siuslaw River has a low gradient along its entire course. The elevation change from the union of the North and South Forks of the Siuslaw near Lorane to the outlet into the ocean over 110 river miles away is less than 500 feet. Unlike the typical river pattern where the gradient decreases as the river increases in size and flow, the Siuslaw has no major changes in gradient along its entire length. Within the WQRP area, the Siuslaw River floodplain is narrow, with variable confinement bordered by steep slopes. Tributaries are generally steep and confined, with little valley development.

Most of the Siuslaw basin is dominated by sedimentary oceanic deposits of siltstone and sandstone. The sedimentary materials have very limited permeability and little capability to store or transport water. Most of the water movement in the sedimentary materials is at the seams. Most of the groundwater storage occurs in the shallow soils and in the valley bottom alluvium. Because of the limited water storage capacity, the stream flows are closely tied to precipitation patterns (see Table 4). Steams show considerable seasonal and long-term variation in flows. Peak flows are often more than 100 times greater than low flow discharges.

Table 4. Monthly Statistics Based on Mean Daily Discharge.[1]

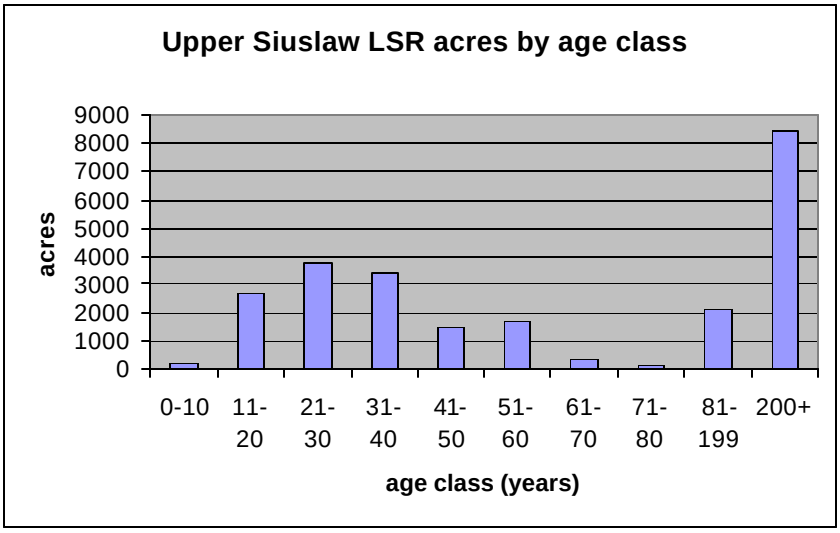
Month	Minimum	Maximum	Average	% Annual Runoff
Oct	19	249	92	1.80
Nov	57	1596	514	9.70
Dec	53	1998	1073	20.90
Jan	61	2061	1020	19.80
Feb	179	1853	961	17.00
Mar	263	1392	720	14.00
Apr	140	908	433	8.10
May	110	429	212	4.10
Jun	65	253	116	2.20
Jul	26	128	55	1.10
Aug	16	66	32	0.60
Sep	18	73	40	0.70

[1] Adapted from USGS, 1990.

Past timber harvest and road systems led to major changes in aquatic habitat in the basin, including the loss of large woody material from stream channels and the removal of large trees from riparian areas. Riparian areas have been further fragmented by the extensive road network, which parallels all major streams and is a chronic source of sedimentation. The loss of large woody material from stream channels has resulted in stream downcutting: the Siuslaw River and most of the major tributaries are 2 - 10 feet below their historic levels. The Siuslaw River along many reaches has downcut to bedrock, causing increased channelization and secondary confinement of the flow, increasing peak flow velocities, and reducing habitat diversity. Channel incision also has contributed to a decrease in the water storage capacity of the basin, loss of pool and off-channel fish rearing habitat, decreased connection to riparian areas, and an increase in summer water temperatures. Tributaries show some of the same patterns of channel downcutting. For many tributaries, the lowering of the Siuslaw channel created an elevation discontinuity, leading to rapid downcutting of the tributary stream channel.

Current vegetation conditions are presented in Map 8. More than half of forest stands in the WQRP area are >80 years old (see Figure 1 and Map 8). Almost all stands in the planning area <60 years of age have been regenerated following timber harvest, and most have been either seeded or planted, and then pre-commercially thinned.

Figure 1. Forest Age Classes in the Planning Area.



Recent Aquatic Restoration

Aquatic enhancement efforts in support of the watershed analysis recommendations are ongoing. In 1998 and 1999, BLM placed hundreds of tons of boulders in a control location within the Siuslaw River channel to simulate six "cascades." The objectives of this type of structural installation included building up the confined, bedrock dominated river channel and creating the potential for groundwater recharging (replenishing groundwater reservoirs), connecting the river and the adjacent flood plain, and increasing the structural complexity of the Siuslaw River and tributaries. Additional objectives included creating deep pools for fish cover, improving the availability of spawning, rearing and refuge habitat, and increasing the water retention capacity in the upper basin during the low flow summer months. Increased aeration as water flows through the project areas is an emergent benefit on the project areas.

In 2000 and 2001, BLM focused aquatic restoration efforts on removing migration barriers to make additional habitat available to aquatic species in the following Siuslaw River tributaries: Oxbow Creek and tributaries; Frying Pan Creek and a tributary; Bear Creek; Haight Creek; Dogwood Creek; and Buck Creek. Six barrier culverts were removed and replaced with passage friendly culverts, one barrier culvert was completely removed, and a stream enhancement project in Frying Pan Creek placed logs and boulders as key structural habitat features. These projects opened approximately 8.5 miles of usable stream habitat to aquatic species.

Five major tributaries of the Siuslaw River within the planning area currently have adequate woody debris to provide stable in-stream structures on 3rd to 5th-order streams: Oxbow Creek, Doe Hollow, Dogwood Creek, Russel Creek, and Fawn Creek (see Map 10). Based on stream habitat surveys, BLM fish biologists have determined that 25 of the 45 miles of 3rd to 5th-order streams in the planning area are a high priority for aquatic restoration efforts. Of these priority streams, approximately 12 miles currently have adequate woody debris. Of the remaining 13 miles that lack sufficient woody debris, only 3.8 miles are accessible by heavy equipment to perform in stream restoration work (see Map 10).

Existing Sources of Water Pollution

Changes in stream channels have influenced water quality, with an overall increase in water temperatures and associated drop in dissolved oxygen saturation levels. This is due to loss of

shading, exposure of bedrock with increased insolation, and loss of deep pools with their cooler groundwater interactions. Water temperatures may have also increased in some streams as a result of channel widening from increased sediment loading. When the amount of sediment entering a reach exceeds the transport capacity of a stream, the sediment is deposited. This can lead to the channel becoming wider and shallower. Channel widening increases in the stream surface area exposed to solar radiation.

Elevation of stream temperatures in forested watershed can increase following logging and road buildings (Brown and Krygier 1970; Brown 1980). Research has shown that shade-producing vegetation is an effective way to prevent elevated water temperatures and that riparian vegetation up to 100 feet from a stream may be effective in reducing solar radiation (Brazier and Brown 1972; Betschta et al. 1987). Tributaries in the planning area are well shaded, steep confined intermittent and perennial channels. The Suislaw River, due to its width and low gradient, is very susceptible to increased temperatures due to solar radiation. Canopy shade is not as significant a factor, with respect to stream temperature, in wide streams as in tributaries due to the increased width (Lewis et al. 2000).

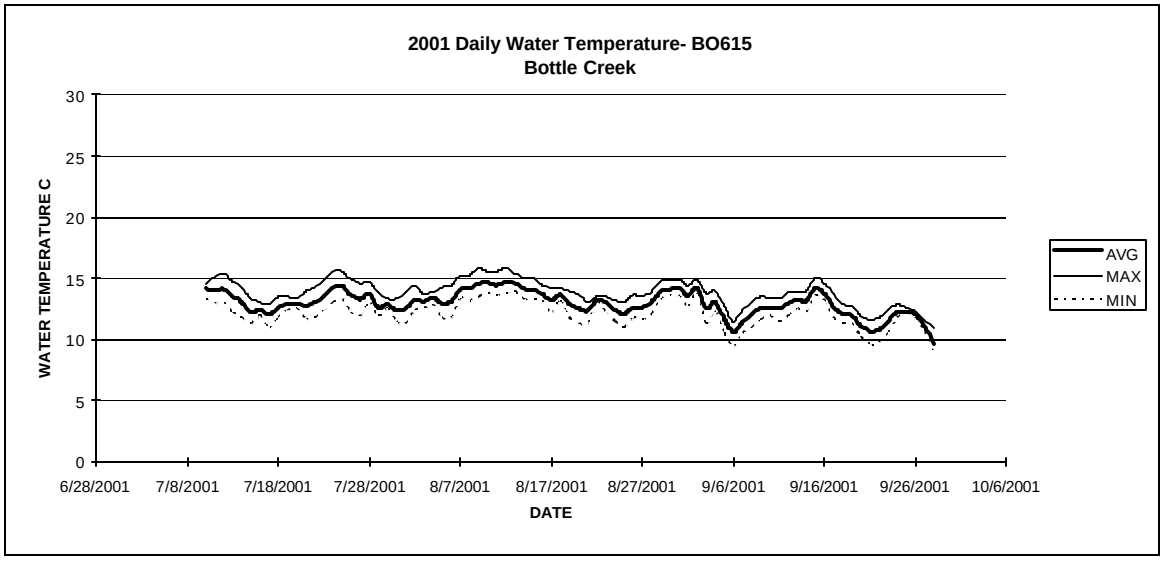
The 303(d) listing identified stream temperature as a water quality problem in the Siuslaw River in the planning area (see Table 3). Along many tributaries, growth of riparian vegetation has increased shading sufficiently to re-establish more normal temperature regimes. Table 5 depicts the highest 7-day moving average of the daily maximum temperature recorded during the 2002 monitoring period. Note that the tributaries are several degrees cooler than the mainstem Siuslaw River sites.

Table 5. 2002 Average Maximum Water Temperature for Siuslaw River and Tributaries.

Monitoring Site	Highest 7-Day Average Maximum Daily Temperature (°C)
SI562	19.8
SI520	22.8
SI463	22.3
Bear Cr.	15.3
Doe Cr.	17.1
Doe Hollow Cr.	16.0
Haight Cr.	17.2

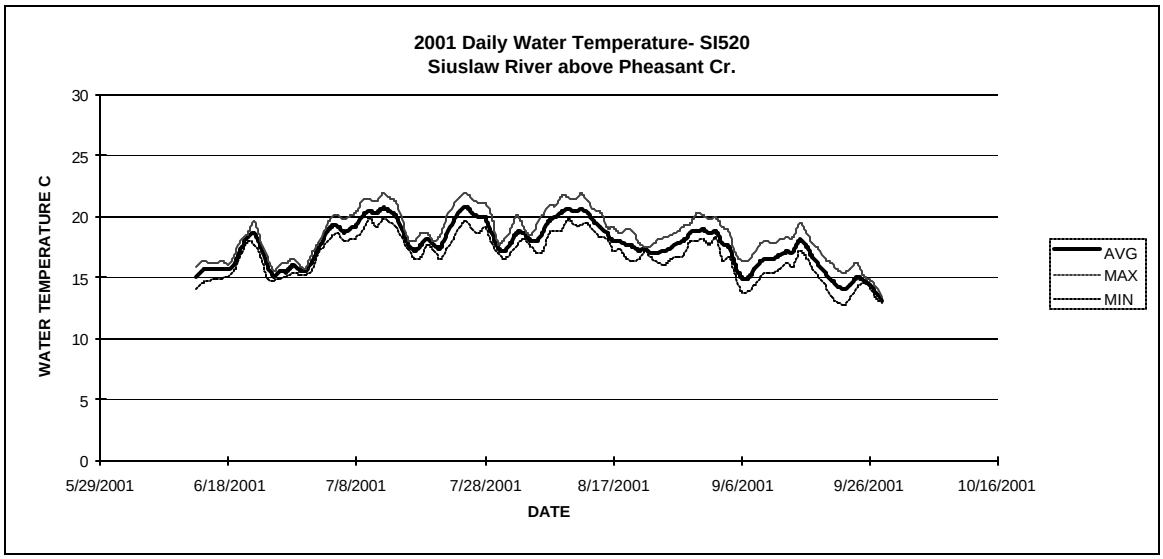
The Bottle Creek temperature graph is an example of a small stream temperature profile within the planning area (see Figure 2). Bottle Creek is typical of small streams within the planning area. The monitoring site received over 93% shade between March and September.

Figure 2. Bottle Creek Water Temperature.



However, in the Siuslaw River, the reduced groundwater interchange, dramatic increases in insolation due to exposed bedrock in shallow water, and the loss of streamside shade continues to produce high water temperatures. The Siuslaw River above Pheasant Creek is an example of a mainstem Siuslaw River temperature profile within the planning area (see Figure 3). This site received between 70% and 80% shade between March and September

Figure 3. Siuslaw River Water Temperature.



The primary source of fine sediment delivery to the stream system is chronic delivery from existing road surface erosion. Episodic delivery from landslides resulting from culvert failures during storm events may infrequently provide large deliveries of sediment to streams. Temporary pulses of sediment from culvert replacement or removal, in-stream aquatic habitat restoration

projects, road decommissioning, and new road construction provide minor quantities of sediment delivery.

The Siuslaw Watershed Analysis estimated that road related sedimentation represents only an approximately 5% increase over natural background levels (USDI BLM 1996, pp. II-7, II-8). The 2002 road inventory identifies approximately 65 miles of road on BLM-managed lands in the WQRP area that are capable of delivering fine sediments to streams. Furthermore, approximately 10% of these road segments are not experiencing any traffic and are "passively" decommissioning, but still erode sediment from the road prism. The road inventory also identifies approximately 73 culverts on BLM-controlled road segments that are currently at high risk for failure because of undersized culverts and plugged culverts. The ratings used to determine high risk included the risk to fish streams and high numbers of at risk culverts along a road segment.

The 303(d) listing also identified year–round dissolved oxygen as a water quality problem for the Siuslaw River within the planning area (see Table 3). The stream segment between River Mile 20 and 105.9 was listed based on data collected near River Mile 20. Confirming data within the planning area is not available. Low dissolved oxygen is influenced by multiple factors, including stream temperature, low flows, shallow stream gradients, fresh organic matter inputs, and high respiration rates (MacDonald 1991). Some nutrients and organic chemicals may enter the water from fertilizing, livestock use, and spraying, especially in agricultural areas. The predominant agricultural areas that could influence dissolved oxygen at River Mile 20 include the upper Lake Creek, upper Wildcat Creek, and the Lorane area of the Siuslaw River headwaters. The Lorane area is located upstream of the planning area, while Lake Creek and Wildcat Creek are tributaries downstream of the planning area. Timber harvest on adjacent private lands will be unlikely to affect dissolved oxygen levels by contributing substantial organic material to streams: state rules direct private landowners to treat slash to minimize slash entry into streams (Oregon Administrative Rules 629-615-0000). However, timber harvest on adjacent private lands will continue to contribute to increased stream temperatures by reducing stream shading.

II. Goals and Objectives

The ACS was developed to prevent further degradation and restore the ecological health of watersheds over broad landscapes across USFS and BLM-administered lands within the range of the northern spotted owl. The ACS contains nine objectives that guide maintenance and restoration of watershed processes and water quality:

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

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

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

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

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.

Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

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.

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

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

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

In addition to the ACS objectives, the goals of the LSR Restoration Plan are to protect and enhance late-successional and old-growth forest ecosystems; foster the development of late-successional forest structure and composition in plantations and young forests; and reconnect streams and reconnect stream channel to their riparian areas and upslope areas.

The LSR Restoration Plan is consistent with the Aquatic Conservation Strategy and will maintain or restore Aquatic Conservation Strategy objectives.

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

The LSR Restoration Plan will restore the complexity of landscape scale features by speeding the development of late-successional forest structural characteristics (EIS, pp. 125-132, 135-136). The LSR Restoration Plan will thin approximately 8,400 acres during the 10-year span of the LSR Restoration Plan, of which 6,000 acres will develop late-successional forest structural characteristics within 100 years. Approximately 5,400 acres of the 13,800 acres of stands currently =80 years old will receive no treatment and will continue on their existing developmental pathway.

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

The LSR Restoration Plan will restore spatial and temporal connectivity within and between watersheds. The LSR Restoration Plan will open 7.0 miles of new coho salmon habitat by removing or replacing fish-barrier culverts, and will decommission 45 miles of existing road, increasing aquatic and riparian connectivity (EIS, pp. 121, 136). The LSR Restoration Plan will reduce the risk of catastrophic fire across the landscape and thus will reduce risks to existing late-successional forest which provide intact refugia (EIS, pp. 124). Thinning will speed the development of late-successional forest structural characteristics and therefore will contribute to the restoration of a network of late-

successional forests in Riparian Reserves. New road construction will not affect aquatic and riparian connectivity because new road construction will be limited to temporary spur roads, which will be outside of Riparian Reserves and have no stream crossings.

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

The LSR Restoration Plan will maintain and restore the physical integrity of the aquatic system. The unthinned areas along streams will ensure that the thinning will not alter streambank integrity. Decommissioning of all non-shared, BLM-controlled roads that are capable of delivering fine sediment to streams will reduce sedimentation to streams (EIS, pp. 136, 176). Coarse woody debris creation will create in-stream structure that will reduce stream velocities, create deeper pools, and trap sediments (EIS, p. 135). Thinning of riparian stands will speed the development of large trees capable of creating key pieces of large woody debris in streams (EIS, pp. 135-136), which will further restore in-stream structure.

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

The LSR Restoration Plan will maintain or restore water quality, including stream temperature. Unthinned riparian areas will be established in the primary shade zone (the area that shades the stream from approximately 10 am to 2 pm) on all stream reaches to maintain stream shading (see "Additional Best Management Practices and Margin of Safety"). Increasing in-stream structure will provide stream shading and will improve water quality by creating deeper pools and replenishing groundwater reservoirs that are vital for water storage, water purification, and temperature regulation (EIS, p. 90).

The LSR Restoration Plan will reduce sedimentation and thereby reduce stream turbidity (see ACS Objective 5).

Contamination of streams with hazardous materials or fertilizers is very unlikely: no herbicides, pesticides, or fertilizer will be used as part of the LSR Restoration Plan. Use of petroleum products will be associated with the timber harvest and restoration actions, but reasonable precautions in the transport and use of equipment (including refueling) indicate a very low risk of contamination.

Creation of coarse woody debris is unlikely to result in low dissolved oxygen levels in streams. Large quantities of fine organic material could be introduced into small streams, which could affect dissolved oxygen levels. However, the streams in which restoration actions will occur typically exhibit cool water temperatures, low biochemical oxygen demand (BOD), and rapid aeration rates. Forest streams, especially 1st and 2nd-order streams, are typically at or close to saturation of dissolved oxygen. Although input of large quantities of fine organic material has the potential to increase biochemical oxygen demand (BOD) during low stream flow and high water temperatures, most forest streams have enough turbulence to maintain a high amount of dissolved oxygen in the water column, even during low flows. Many first-order streams, and some second-order streams, are intermittent channels and would not be expected to contribute to summer/fall BOD.

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

The LSR Restoration Plan will reduce sedimentation and contribute to restoration of water quality. Decommissioning of all non-shared, BLM-controlled roads that are capable of delivering fine sediment to streams will reduce sedimentation to streams (EIS, pp. 136, 176). Coarse woody debris creation will create in-stream structure that will reduce stream velocities and trap sediments (EIS, p. 135). Road decommissioning, culvert replacement, and creation of in-stream structure will create minor, temporary pulses of sediment, but will reduce sedimentation in the long-term (EIS, pp. 76-77, 176-177).

New road construction will be limited to temporary spur roads, which will be located outside of Riparian Reserve and will be built and decommissioned in the dry season of the same year. Therefore, new road construction and subsequent decommissioning will not result in any sedimentation to streams (EIS, p. 77).

Yarding of timber will not result in any sedimentation to streams, because slopes are generally gentle and stable in the project area; no harvest will occur on unstable slopes; and no harvest will occur within 100' of all streams (EIS, p. 76).

Haul of timber will result in no more than negligible sedimentation to streams, because haul operations will be restricted to dry season conditions, except for specific, identified haul routes that have limited sediment delivery potential (see "Additional Best Management Practices and Margin of Safety"). These specific haul routes have substantial paved portions, and the unpaved portions have very few stream crossings (EIS, p. 76).

Objective 6 - *Maintain and restore instream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing (i.e., movement of woody debris through the aquatic system). The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected*.

The LSR Restoration Plan will maintain the flow regime. The planning area is of low elevation, and the watershed lacks any substantial areas in the transient snow zone in which rain-on-snow events are more likely (EIS, p. 29). Thinning could conceivably contribute to an increase in summer low flows and overall water yield, because of reduction in evapotranspiration and interception due to the removal of some of the trees. However, any effect would be minimal and immeasurable, because part of the canopy will be retained in thinned stands, and unthinned buffers will be maintained along streams. Some soil compaction could occur from yarding, but application of best management practices (BMPs) will mitigate compaction. New road construction will be limited to temporary spur roads outside of Riparian Reserves and will not be hydrologically connected to the stream network and therefore will have no potential to route water to the stream network.

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

The LSR Restoration Plan will maintain or restore floodplain inundation and water table elevation. The LSR Restoration Plan will have little effect on overall flow patterns, but the increase in in-stream structure will slow stream velocities, create deeper pools, and

replenish groundwater reservoirs. This increase in in-stream structure will contribute to a restoration of patterns of floodplain inundation and water table elevation.

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

The LSR Restoration Plan will restore riparian plant communities by speeding the development of late-successional forest structural characteristics and restoring coarse woody debris quantities in riparian stands (EIS, pp. 135-136, 241). Thinning and other restoration actions in riparian stands will shift uniform Douglas-fir stands to structurally and compositionally diverse stands more similar to natural stands (EIS, pp. 125-132). Riparian areas in the primary shade zone on all stream reaches will be left unthinned to maintain stream shading and ensure streambank stability.

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

The LSR Restoration Plan will restore habitat for riparian dependant species by speeding the development of late-successional forest structural characteristics and restoring coarse woody debris quantities in riparian stands (EIS, pp. 135-136, 241). Unthinned riparian areas in the primary shade zone will provide habitat for riparian dependant species that need undisturbed forest conditions.

III. Management Actions to Achieve Objectives

Planned Activities and Best Management Practices.

The Northwest Forest Plan (NWFP) describes only general guidance for managing riparian reserves (USDA Forest Service and USDI BLM, 1994). The BLM and USFS manage riparian reserves for a number of objectives, among them to enhance biodiversity, to enhance ecosystem function for fish, wildlife, and plants, and to reduce hazardous fuel loads; to remove vegetation that excludes natives, to enhance development of late-successional forest characteristics, and to increase large wood recruitment

Riparian reserves, key watersheds, watershed analysis, and watershed restoration components of the ACS are designed to operate together to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems. In addition to the ACS, the NWFP describes land allocations and specific standards and guidelines (S&Gs) for managing these land allocations. These S&Gs effectively serve as BMPs to prevent or reduce water pollution further contributing to goals of Clean Water Act compliance.

Since the listing of impaired waters within the planning area, the BLM has continued to engage in stream temperature monitoring, instream fish improvement projects, and collected FLIR data for use in future planning.

The LSR Restoration Plan is designed to take advantage of restoration opportunities that would have the least short-term adverse effects with the most long-term benefits to habitat for northern spotted owls, marbled murrelets, and coho salmon. Thinning would be concentrated in younger stands and would have targets for a wide range of stand densities and high variability of tree spacing. Some cut trees would be removed from thinned stands to reduce the risk of fire and

insect infestation. All stand thinning requiring timber removal would be completed within the next 10 years, and subsequent treatments, such as tree planting and snag and coarse woody debris creation, would not require road access.

Very young stands (=20 years old) would be thinned to variable spacing at low densities without any timber removal.

Young and mid-seral stands (21-60 years old) would be thinned to variable spacing at a wide range of densities with some timber removal. Shade-tolerant conifers would be planted at the time of thinning. Both very young and young stands would undergo subsequent coarse woody debris and snag creation every 10-20 years. Stands older than 60 years old would not be thinned.

Riparian areas (<100' from streams) which are conifer-dominated would be thinned without any timber removal. Thinned stands would undergo subsequent coarse woody debris and snag creation every 10-20 years. Shade-tolerant conifers would be planted at the time of subsequent coarse woody debris and snag creation. Approximately half of the riparian areas which are hardwood-dominated would be thinned, and conifers would be planted at the time of thinning.

In-stream structures would be constructed, and some structures would be cabled for stability in larger streams. Trees would be felled into all streams adjacent to stands =80 years old. All high-risk and fish-barrier culverts would be removed or replaced.

Non-shared roads capable of delivering sediment to streams, damaged roads, and roads within or adjacent to late-successional forest, would be decommissioned. Approximately 45 miles of existing road would be decommissioned. New road construction would be limited to temporary spur roads each less than 200 feet, resulting in a total of 3.6 miles of temporary new road construction over 10 years.

The EIS describes in detail the specific objectives, actions, guidelines, and mitigation measures of the LSR Restoration Plan (Upper Siuslaw LSR Restoration Plan EIS, Appendix A, pp. 233-245).

Additional Best Management Practices and Margin of Safety

The NWFP describes S&Gs that serve as BMPs to prevent or reduce water pollution in order to meet the goals of the CWA. The Resource Management Plans (RMPs) for the BLM include provisions to ensure attainment of ACS objectives. Often, these plans contain BMPs that are important for preventing and controlling to the "maximum extent practicable" non-point source pollution and achieve Oregon water quality standards. BMPs are developed on a site-specific basis and are presented for public comment during the NEPA process. One element of BMP implementation includes effectiveness monitoring and modification of BMPs when water quality goals are not being achieved.

If the BLM, and Oregon Department of Environmental Quality (ODEQ) agree that existing BMPs will result or are resulting in non-achievement of TMDL load allocations, the BLM will create additional watershed specific BMPs. If the BLM or ODEQ do not agree that BMPs will achieve the forestry load allocation in an applicable TMDL, these BMPs will, nonetheless, serve as interim BMPs. However, the BLM in consultation with ODEQ will design and implement a mutually agreeable monitoring program to gain information sufficient to determine whether or not existing BMPs will achieve the forestry load allocation. This monitoring program shall be a component of the implementation plan. If such monitoring demonstrates that existing BMPs will not achieve the forestry load allocation, then the USFS and BLM will create additional watershed specific BMPs to implement the load allocations and assure attainment of water quality standards.

In addition to the guidelines and mitigation measures presented in the EIS, the following BMPs would be implemented as part of the LSR Restoration Plan. These BMPs generally give greater detail to guidelines presented in the EIS. BMPs are intended to provide margin of safety with respect attainment of water quality critieria.

Stream Shading: The LSR Restoration Plan as described in the EIS contains the mitigation measure: "Maintain sufficient stream shading so as to avoid contributing to increased water temperature." Specifically, stream shading will be maintained by managing riparian stands in three zones (see Figure 4):

(1) The primary shade zone (see Table 6) will be maintained unthinned (approximately 1-2 trees per acre would be felled for large woody debris in streams, which will not alter stream shading). Primary shade zones will not be established on intermittent streams or on the north side of east-west oriented streams.

(2) Outside of the primary shade zone but <100' from streams, stands will be thinned, but trees will not be harvested. Thinning will not result in more than a 50% reduction in canopy closure.

(3) Upland thinning prescriptions that may include timber harvest will be applied =100' from streams. Trees that will be removed from outside this riparian zone are not contributing to stream shading, because the secondary shade zone extends to less than the distance of the average tree height for all but the steepest slopes (the average tree height is less than 100' for all age classes that will be harvested except for the 51-60-year-old stands, for which the average tree height ranges from 109' to 126').

Figure 4. Riparian Management Zones

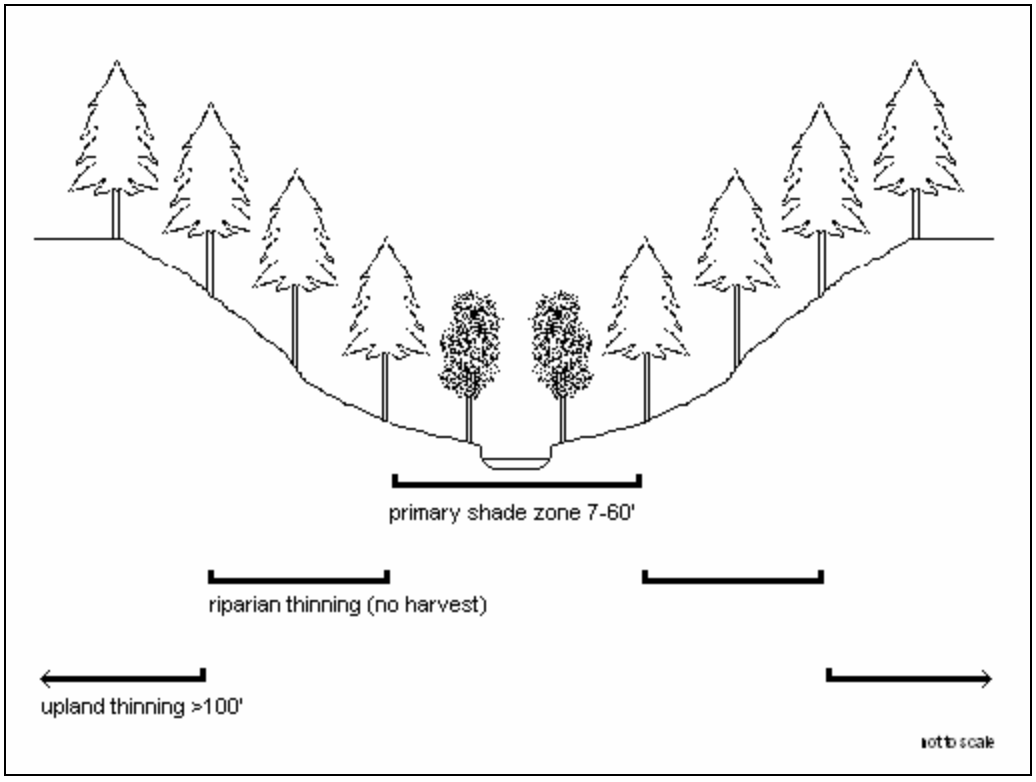


Table 6. Primary Shade Zones in the Planning Area.

Stand age (years)	Distance (feet from stream)		
	<30% slope	30-60% slope	>60% slope
=10	7	8	10
11-30	20	25	30
31-50	30	40	50
>50	40	50	60

Haul: Except for haul routes identified in Table 7, log haul operations will be restricted to dry season conditions: June 1 to September 15th. If weather conditions are favorable, the contractor may request a waiver from the authorized government representative to operate outside of these dates. If the Government grants permission to haul outside of these dates and conditions change, log haul will be stopped until dry conditions occur again.

The haul routes identified in Table 7 would not be seasonally restricted and may include log haul during wet conditions. Haul on these routes would result in no more than negligible amounts of sediment reaching streams, because many of these routes include substantial paved portions. None of the unpaved (gravel) portions cross fish-bearing streams, are adjacent (<25') to fish-bearing streams, or would otherwise have any potential for direct sediment delivery to fish-bearing streams. The unpaved portions of all haul routes identified in Table 7 include a total of two stream crossings. Fill slopes at each stream crossing are well-vegetated.

IV. Timeline For Implementation

The NWFP was implemented with the signing of the Record of Decision on April 13, 1994. Inherent in the implementation is the passive restoration of riparian areas that ensues as a result of the riparian reserve buffers/allocation. Implementation of active restoration areas beyond the inherent passive riparian restoration occurs with watershed analysis and site-specific projects.

The target date for completion of TMDLs for 303(d) listed waters in the Siuslaw Basin is 2008 (http://www.deq.state.or.us/wq/303dlist/TMDLTargetsMap.htm).

All actions identified in the LSR Restoration Plan will be implemented in the next 10 years. The LSR Restoration Plan also identifies reasonably foreseeable actions that may be implemented beyond 10 years, but these actions would require additional analysis under the National Environmental Policy Act. The timing for implementation of those activities beyond the 10-year LSR Restoration Plan will be dependent on funding and staffing levels.

Thinning in young riparian forests will speed the development of large trees capable of providing stable key pieces of woody debris. In 100 years, 92% of the currently young riparian stands (currently <80 years old) will have developed a sufficient supply of very large trees (=32" dbh) to provide an adequate supply of stable key pieces of woody debris (EIS, pp. 66-69, 75-76, 135-136). Without thinning, only 74% of the currently young riparian stands would develop a sufficient supply of very large trees in 100 years (EIS, pp. 85-87).

Thinning in young riparian forests will also speed the overall development of late-successional forest structure and composition. In 100 years, 26% of the currently young riparian stands will have developed late-successional structure. Without thinning, none of the currently young riparian stands would develop late-successional structure in 100 years (EIS, p. 90). As riparian stands move along the trajectory to late-successional structure, aquatic systems structure and processes will respond with increases in structure (increased woody debris), shifts in nutrient cycling patterns which could effect BOD, improved riparian connectivity, and improved cooler

subsurface contributions to channels. Instream conditions will recover as large conifers begin to enter the stream channels through felling, blowdown, or debris flows.

Shade recovery on tributaries is not a significant issue because a high level of shading currently exists. As a result of management actions, shade composition will shift from even-aged young stands to stands with late-successional structure. Maintenance of the primary shade zone along streams will be essential to the maintenance and improvement of stream shade over time.

V. Identification of Responsible Parties

The BLM has signed a Memoradum of Agreement (MOA) with ODEQ that provides a framework for effective cooperation on programs and projects that pursue the shared goal of attainment of state water quality standards. The MOA identifies responsible parties for the development and implementation of the MOA statewide.

This plan was produced as a joint activity by the ODEQ and the BLM. As a Designated Management Agency with responsibility for maintaining the quality of waters on the 303(d) list that flow across the lands it manages, BLM will implement the actions identified in the plan The Field Manager for the Siuslaw Resource Area of the Eugene District is the responsible official for implementation of this plan. Private landowners are not required to follow the specific provisions contained in this plan.

BLM contact: Steven Calish, Field Manager, Siuslaw Resource Area, Eugene District.

VI. Reasonable Assurance

Implementation and monitoring of the ACS provides reasonable assurance that watersheds under the direction of the NWFP will move towards attainment of water quality standards and beneficial use support. Implementation and adaptation of the MOAs also provide reasonable assurances that water quality protection and restoration on lands administered by the BLM will progress in an effective, non-duplicative manner on priority waters.

In response to environmental concerns and litigation related to timber harvest and other operations on federal lands, the United States Forest Service and the BLM commissioned the Forest Ecosystem Management Assessment Team (FEMAT) to formulate and assess the consequences of management options. The assessment emphasizes producing management alternatives that comply with existing laws and maintaining the highest contribution of economic and social well being. The “backbone” of ecosystem management is recognized as constructing a network of late-successional forests and an interim and long-term scheme that protects aquatic and associated riparian habitats adequate to provide for threatened species and at risk species. Biological objectives of the NWFP include assuring adequate habitat on federal lands to aid the “recovery” of late-successional forest habitat-associated species listed as threatened under the Endangered Species Act and preventing species from being listed under the Endangered Species Act.

All management activities on BLM-managed lands in the WQRP area must follow standards and guidelines listed in the Eugene District Resource Management Plan (RMP), which is supported by and consistent with the NWFP. In addition, BLM has proposed and analyzed the LSR Restoration Plan to implement direction in the Eugene District RMP. The LSR Restoration Plan contains additional guidelines and mitigation measures that add specificity and detail to the Eugene District RMP standards and guidelines. The Annual Program Summary highlights the Eugene District’s RMP accomplishments, implementation, and monitoring. If monitoring indicates that sufficient progress toward the goals contained in this plan are not being met, the goals and activities will be revisited and changes made as necessary to assure contributions to the attainment of water quality standards.

VII. Monitoring and Evaluation

Monitoring to meet water quality objectives will provide the necessary information to evaluate the range of natural conditions, distribution of water quality parameters, and definition of dominant watershed processes. Monitoring will be necessary to identify sources of point and non-point source pollution, to identify causal factors for water quality and watershed condition, to understand the magnitude of effect of management actions, and to document the effects of restoration actions.

Monitoring will be used to ensure that decisions and priorities conveyed by BLM plans are being implemented, to document progress toward attainment of state water quality standards, to identify whether resource management objectives are being attained, and to document whether mitigating measures and other management direction are effective.

The NWFP provides the framework to accommodate a nested analysis, based on scale (region, province, sub-basin, watershed, and site) of monitoring information in order to assess the overall effects of management activities. The NWFP monitoring framework requires implementation, effectiveness, and validation monitoring to meet objectives and evaluate the efficacy of management practices. At a minimum, monitoring should:

- Detect changes in ecological systems from both individual and cumulative management actions and natural events
- Provide a basis for natural resource policy decisions
- Provide standardized data
- Compile information systematically
- Link overall information management strategies for consistent implementation
- Ensure prompt analysis and application of data in the adaptive management process
- Distribute results in a timely manner

The NWFP requires that if results of monitoring indicate management is not achieving ACS objectives, among them water quality, plan amendments may be required to redirect management toward attainment of state water quality standards.

ODEQ will evaluate progress of actions to attain water quality standards after TMDLs are developed and implemented. If, for any particular TMDL, ODEQ determines that implementation is not proceeding or if implementation measures are in place, but water quality standards are not or will not be attained, or the load allocations or wasteload allocations for the TMDL are not or will not be attained, then ODEQ will assess the situation and work with the BLM to take appropriate action. Such action may include additional implementation measures, modifications to the TMDL, and/or placing the water body on the 303(d) list when the list is next submitted to EPA.

Implementation Monitoring

As directed by the NWFP, a sample of all projects must be visited annually to verify that actions were implemented in a manner consistent with the S&Gs. Projects implemented under the LSR Restoration Plan will be evaluated as part of this implementation monitoring.

Effectiveness Monitoring

Shade: A sample of riparian stand treatments will be measured to evaluate changes in shade. Measurement of crown closure will be made in a manner that can be repeated within the stream-adjacent stand within one tree height of the stream bank at bankfull width. The measurements will occur within the stand and not be influenced by the opening over the actual stream channel. The measurement will be conducted before and immediately after treatment to assess the effect of treatment on short-term canopy shade. Measurements will be repeated at a decadal interval, dependent on funding and staffing levels, to assess shade development as a component of developing late-successional stand characteristics.

Stream Temperature: BLM will continue monitoring stream temperatures within the planning area. The Eugene District has been collecting temperature data and additional site characterization information at over 30 sites in the Siuslaw Basin in the past 5 years. Within the planning area, there are currently 3 monitoring sites established on the Siuslaw River, and 7 on key tributaries: Bear Creek, Haight Creek, Pheasant Creek, Doe Hollow Creek, Bottle Creek, Doe Creek, and Russell Creek (see Map 10). Temperature monitoring will occur at these sites annually during the 10-year implementation period and, at a minimum, twice per decade thereafter, dependent on funding and staffing levels. Additional sites may be added based on specific-site needs and data collection opportunities.

Stream temperatures will generally be measured from June 15 – September 30 to insure that critical high temperature periods are covered. Measurements will be made with sensors programmed to record hourly samples. Qualified personnel will review raw data and erroneous data due to unit malfunction or other factors will be deleted. The resulting file will be stored in the agency computer system and be made available to the ODEQ and other interested parties.

Dissolved Oxygen: In accordance with the *Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters, Version 2.0*, the first step in the decision framework is to validate the listing. Siuslaw River segments in the planning area are listed for dissolved oxygen (DO) based on data collected at a site which is over 50 miles downstream of the planning area and is influenced by a combination of agricultural, forestry, and rural uses. Monitoring techniques will use a combination of probes, field and laboratory DO analysis techniques. The results of the data will help BLM adjust management sensitivity regarding organic inputs and other aspect of management practices that could potentially affect DO levels.

The second and third steps of the decision framework are to determine if DO is related to BLM management and if sufficiently stringent measures are in place, respectively. If monitoring indicates that DO is a concern within the planning area, BLM will evaluate if the impairment is contributed to by BLM management actions. If BLM management actions are determined to contribute to DO impairment, BMPs in the LSR Restoration plan will be re-evaluated to determine if they are stringent enough to promote DO improvement. Subsequent monitoring will occur to assess if BMP changes are adequate.

Reporting

Implementation and effectiveness monitoring will be reported as a component of the Annual Program Summary.

VIII. Public Involvement

The Federal Land Policy and Management Act (FLPMA) and the NEPA require public participation for any activities proposed for federal lands. In addition, the BLM will assist ODEQ in public involvement activities as required as part of TMDL development.

In addition to the public involvement for the development of the NWFP and the Eugene District RMP, BLM conducted extensive public involvement for the development of the LSR Restoration Plan.

BLM began informal scoping for the LSR Restoration plan in 2000, including distributing information to initiate issue identification and to open public dialogue regarding the LSR Restoration Plan. During 2001, BLM solicited public participation through a series of public meetings and field trips. BLM issued newsletters about LSR restoration and this LSR Restoration Plan announcing field trips or public meetings, addressing questions from the public, and describing preliminary issues and alternatives.

BLM published a Notice of Intent to prepare an EIS in the Federal Register on October 9, 2002, beginning the formal scoping period. The Notice of Intent requested comments on the scope of the analysis for the proposed LSR Restoration Plan.

The public comment period for the draft EIS began on August 15, 2003 and closed on October 15, 2003. BLM mailed the draft EIS to agencies, organizations, and individuals listed in the EIS (p. 184), and made the draft EIS available on the internet. BLM also made presentations of the draft EIS to interested groups during the comment period.

The final EIS was published on April 9, 2004.

BLM notified the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians, and the Confederated Tribes of the Grand Ronde of this project during the scoping process, requesting information regarding tribal issues or concerns relative to the project. BLM also sent the tribes copies of the EIS. BLM received no responses.

The Record of Decision for the LSR Restoration Plan, to which this WQRP will be attached, will be advertised in the Eugene Register-Guard, and the Record of Decision will then be subject to protest. Specific actions under the LSR Restoration Plan will have additional opportunities for administrative review, as described in the Record of Decision.

IX. Maintenance of Effort over Time

The management actions described in the LSR Restoration Plan are designed to address factors that influence the development of late-successional forest characteristics and reconnecting aquatic and riparian ecosystems. The maintenance and improvement of water quality is expected to be a benefit of the management actions. Restoring riparian processes and water quality will require sustained effort of multiple decades. The management recommendations will provide guidance for long-term restoration of impaired and 303(d)-contributing streams within the planning area. The BLM will implement these measures through both passive and active restoration projects. Short-term emphasis will be placed on establishing a trajectory for the development of late-successional characteristics in younger, even-aged stands without impairing water quality.

The LSR Restoration Plan is a 10-year plan. However, some additional minor actions will likely follow the 10-year plan, and implementation benefits and monitoring will extend decades beyond active stand management.

X. Funding

Annual costs for implementation of the entire LSR Restoration Plan will average approximately $240,000 in contract costs and $640,000 in BLM staff costs (in 2002 dollars). Annual revenue generated from implementation will average approximately $1,160,000, which will exceed costs, indicating the feasibility of implementing the overall restoration plan (EIS, pp. 78-79, 137). Actual annual costs and revenues will likely vary from these averages over the 10-year implementation period.

Funding for project implementation and monitoring will be derived from a number of sources. Implementation of proposed action discussed in this document will be contingent upon securing adequate funding.

Funds for project implementation will originate from Congressional appropriations, specific budget requests, grants, cost share projects, or other sources. Potential sources of funding include the Oregon Watershed Enhancement Board, and the BLM Clean Water and Watershed Restoration Funds. It is expected that LSR Restoration projects will be funded primarily from appropriated

funds and special budget requests. Much of the planning for the LSR Restoration Plan has been funded by the BLM Forest Ecosystem Health and Recovery Fund, from which BLM anticipates continued funding for implementation of the LSR Restoration Plan.

XI. References

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

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Reply To: 8330.03913(04)
File Name: LSR 267 BO.doc
TS Number: 04-2586

Memorandum

To: Eugene District Manager, Bureau of Land Management, Eugene, Oregon

From: State Supervisor/Deputy State Supervisor, Oregon Fish & Wildlife Office, Portland, Oregon

Subject: Formal and informal consultation on the proposed Upper Siuslaw Late-successional reserve restoration plan in Lane and Douglas Counties, OR which may disturb bald eagles, northern spotted owls, and marbled murrelets [FWS *reference*: 1-7-04-F-0374].

This memorandum responds to your request for formal and informal consultation with the U.S. Fish and Wildlife Service (Service) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*), as amended (Act). At issue in this consultation are the effects that the proposed Upper Siuslaw Late-successional reserve restoration plan may have on the bald eagle (*Haliaeetus leucocephalus*), the northern spotted owl (*Strix occidentalis caurina*) (spotted owl), the marbled murrelet (*Brachyramphus marmoratus*) (murrelet) and on the spotted owl and murrelet critical habitat in fiscal year 2004 through 2014.

This opinion is based upon information provided in the following documents: Biological assessment of the Upper Siuslaw Late-successional reserve restoration plan (BA); documents and other sources of information listed in the "Literature Cited" section below; and informal consultation between our staffs. A complete administrative record of this consultation is on file at the Oregon Fish and Wildlife Office.

Consultation History

On April 13, 2004 the Level 1 team reviewed and approved a draft of the BA, with some minor clarifications. The clarifications were addressed by BLM and a final draft was review by the Service. On May 3, 2004 the Service received the request for consultation and a BA from the BLM dated April 29, 2004. Formal and informal consultation was officially initiated by this office on March 3, 2004, upon receipt of the request for consultation and the BA.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed actions are described in the BA cited above and are incorporated by reference. The purpose of the proposed actions are to manage the Upper Siuslaw River sub-unit of Late-successional Reserve (LSR) 267 to benefit the long term development of habitats for spotted owls, murrelets and coho salmon (*Oncorhynchus kisutch*) while minimizing short term impacts to these species. Actions which would occur within ten years are being consulted on in this assessment; actions under the restoration plan which would occur after ten years, some snag and downed wood creation, are described here for information but are not undergoing consultation at this time.

The proposed action also implements the Northwest Forest Plan directives to enhance late-successional forest conditions in LSRs and achieve Aquatic Conservation Strategy objectives by 1) protecting and enhancing late-successional and old-growth forest ecosystems, 2) fostering the development of late-successional forest structure and composition in plantations and young forests, and 3) reconnecting streams and reconnecting stream channels to their riparian zones and upslope areas.

Action Area

The action area is the Upper Siuslaw River sub-unit of LSR 267 and adjacent lands within a 0.25 mile. The action area is defined by 50 CFR 402 to mean "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action." The action area, the 24,400-acre Upper Siuslaw River sub-unit of LSR 267, extends from the eastern edge of LSR 267, just west of the Lorane Valley. The Upper Siuslaw sub-unit extends west to Oxbow Creek. The northern boundary is defined by the ridge between the Siuslaw and Wolf Creek watersheds. The southern boundary is defined by the boundary between the Eugene and Roseburg Districts, which approximates the ridge between the Siuslaw and Umpqua River basins (although a very small portion of the Upper Siuslaw sub-unit of LSR 267 extends into the Umpqua River basin). Although only the BLM-managed LSR within the above boundaries would be treated under this proposal, the action area encompasses all federal and nonfederal lands (57,000 acres) potentially affected by the proposed action, including through disturbances. Since the action area includes suitable eagle habitat, the action area includes all lands within 0.5 mile line-of-sight of the plan area boundary within a mile of the Siuslaw River.

Density Management Treatments

Thinning treatments would be limited to younger stands (10 – 60 years old) and would have targets for a wide range of stand densities and high variability of tree spacing (Table 1) to effectively foster the development of late-successional forest structure and maintain future management options. All stand thinning prescriptions requiring timber removal would be completed within the next 10 years.

Very young stands (= 20 years old) would be thinned to variable spacing at low densities without any timber removal because the amount of wood left would not pose a fire or insect infestation risk.

Young and mid-seral stands (21-60 years old) would be thinned to variable spacing at a wide range of densities with some timber removal and would include both proportional thinning (selection of trees across all diameter classes) and thinning from below. Enough cut trees would be left to provide 551 cubic feet per acre of coarse woody debris, however, some cut trees would be removed from thinned stands to reduce the risk of fire and insect infestation. Shade-tolerant conifers would be planted at the time of thinning.

Within the action area, the overall quantity of dispersal habitat (stands 40 to 60 years old) would not decrease from the current amount, 3,728 acres (Figure 1 and Table 2). As young stands become dispersal habitat, thereby increasing the overall amount, other stands that are currently dispersal habitat would be thinned to below 40 percent canopy closure and therefore not be dispersal habitat for several years. Proposed thinning treatments in dispersal habitat would degrade 1,350 acres (36 percent) and remove 662 acres (17 percent) of the dispersal habitat. Meanwhile, younger stands would have grown and developed dispersal habitat characteristics so that the overall amount of dispersal habitat in the action area would increase each year. Currently, there are also 10,600 acres of suitable habitat through which owls could disperse.

Stream Enhancement Treatments

Stands that are currently 61-80 years old and greater/more than 100 feet from streams would not be thinned or have coarse woody debris and snag creation. Riparian stands (<100' from streams) currently 61-80 years old would not be thinned, but some would have individual trees felled for in-stream woody debris and structures. In-stream structures would be constructed primarily of wood but might be stabilized by large rocks and cabling. Trees would be felled into all streams adjacent to stands = 80 years old at an average rate of 12 to 24 trees per stream mile (approximately 1-2 trees/acre > 18" diameter at breast height (dbh) over 200 stream miles). In general, there would not be a need to yard but if there were, helicopters would not be used.

Full criteria for in-stream tree selection includes no suitable nesting trees or trees greater than 32 inches dbh will be removed and selected single trees or small groups of trees (2-4 trees) will be: [1] along the periphery of permanent openings (*e.g.*, rights-of-way, powerlines, *etc.*), or along the periphery of non-permanent openings (*e.g.*, along plantation edges, along recent clearcuts less than 40 years old); [2] single trees may only be removed from the first two lines of trees and will be dispersed along these edges but may not be adjacent to one another; [3] single trees or small groups of trees (2-4 trees) must be spaced at least one site potential tree height apart and at least one site potential tree height from any trees with potential nesting structure for any listed species (for streamside operations, spacing requirements apply to each bank independently).

In 55 percent of the riparian areas (<100 feet from streams but outside of the primary shade zone) which are conifer-dominated between 10–60 years old, stands would be thinned from below without any timber removal. Thinned stands would undergo subsequent coarse woody debris and snag creation every 10-20 years. Shade-tolerant conifers would be planted at the time of subsequent coarse woody debris and snag creation. Approximately half of the riparian areas which are hardwood-dominated would be thinned, and conifers would be planted at the time of thinning to produce a future supple of large, downed wood to the streams.

Table 1. Proposed thinning prescriptions

Age (years)	Total acres	Thinning prescription	Acres treated	Guidelines and mitigation measures	Anticipated snag and CWD creation
1-20	1,971	40-60 tpa (proportional)	443	Timber removal in some stands (most likely in stands 15-20 years old; >8 years since pre-commercial thinning).	In stands with timber removal, create 551 ft^3/acre cwd and 551 ft^3/acre snags at time of thinning. Kill 10 tpa/decade until age 80 for cwd and snags.
		75-100 tpa (from below)	443	No timber removal	Leave all cut trees.
		100-120 tpa (from below)	443		
		120-150 tpa (from below)	443		
		total	*1,772*		
21-50	9,621	40-60 (proportional)	1,149	- Do not select trees >20" dbh for cutting. - In existing dispersal habitat within current owl home ranges, retain =40% canopy closure.	Create 551 ft^3/acre cwd and 551 ft^3/acre snags at time of thinning. Kill 10 tpa/decade until age 80 for cwd and snags.
		60-80 tpa (proportional)	1,149		
		80-110 tpa (proportional)	1,149		
		60-110 tpa (from below)	653		
		Riparian 60-110 tpa (from below)	1,372	No timber removal	Leave all cut trees.
		total	*5,472*		
51-60	1,688	40-60 (proportional)	151	- Do not thin in suitable habitat. - Do not thin within current owl home ranges that currently have less than 40% suitable habitat. - Do not select trees >20" dbh for cutting. - In existing dispersal habitat within current owl home ranges, retain =40% canopy closure.	Create 551 ft^3/acre cwd and 551 ft^3/acre snags at time of thinning. Kill 10 trees per acre/decade until age 80 for cwd and snags.
		60-80 tpa (proportional)	151		
		Riparian 60-110 tpa (from below)	121	No timber removal	Leave all cut trees.
		total	*423*		
61-80	547	No thinning	--	--	--
		Riparian CWD creation	69	Do not fall or pull conifers =32" dbh. Follow standards for Individual Tree Removal for Stream Enhancement from the B. O. for Hab. Mod. in the North Coast Province 2003/2004.	Fall 1-2 tpa =18" dbh near stream; <25 smaller trees per acre total in riparian zone (<100' from stream).

Figure 1. The development into dispersal habitat of stands currently under 80 years old and the amount that will be available through time for both the proposed action and no action.

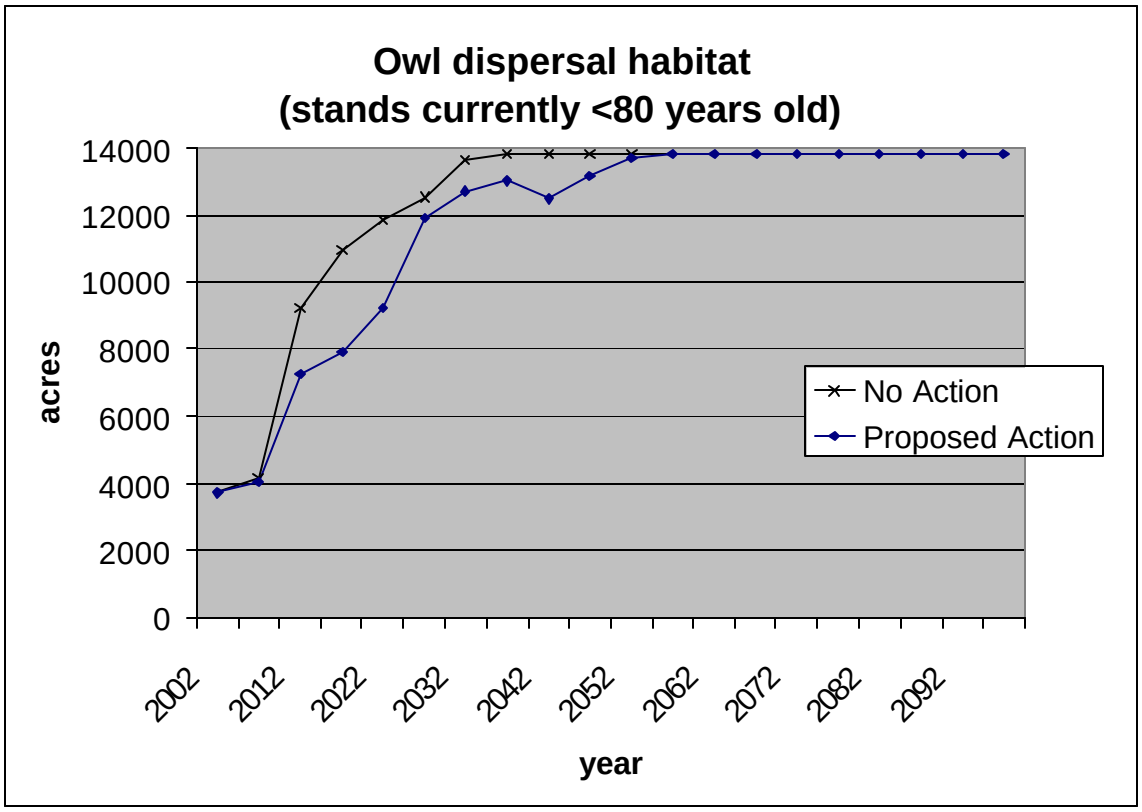

Table 2. Dispersal Acres

	year		
	2002	2007	2012
Total dispersal acres (stands currently <80 years old)	3,728	4,012	7,299
Dispersal acres removed by thinning	--	- 613	-49
Dispersal acres added by growth	--	+897	+3,336

Stream shading would be maintained by managing riparian stands in three zones (Figure 2):

(1) The primary shade zone (Table 3) would be maintained unthinned (except for approximately 1-2 trees per acre which would be felled for large woody debris in streams). The primary shade zone is the area that shades the stream at midday. Note that primary shade zones would not be established on intermittent streams or on the north side of east-west oriented streams.
(2) Outside of the primary shade zone but <100' from streams, 55 percent of stands would be thinned, but trees would not be harvested. Thinning would not result in more than a 50 percent reduction in canopy closure.
(3) Upland thinning prescriptions that may include timber harvest would be applied =100' from streams (Table 1).

Figure 2. Riparian Management Zones

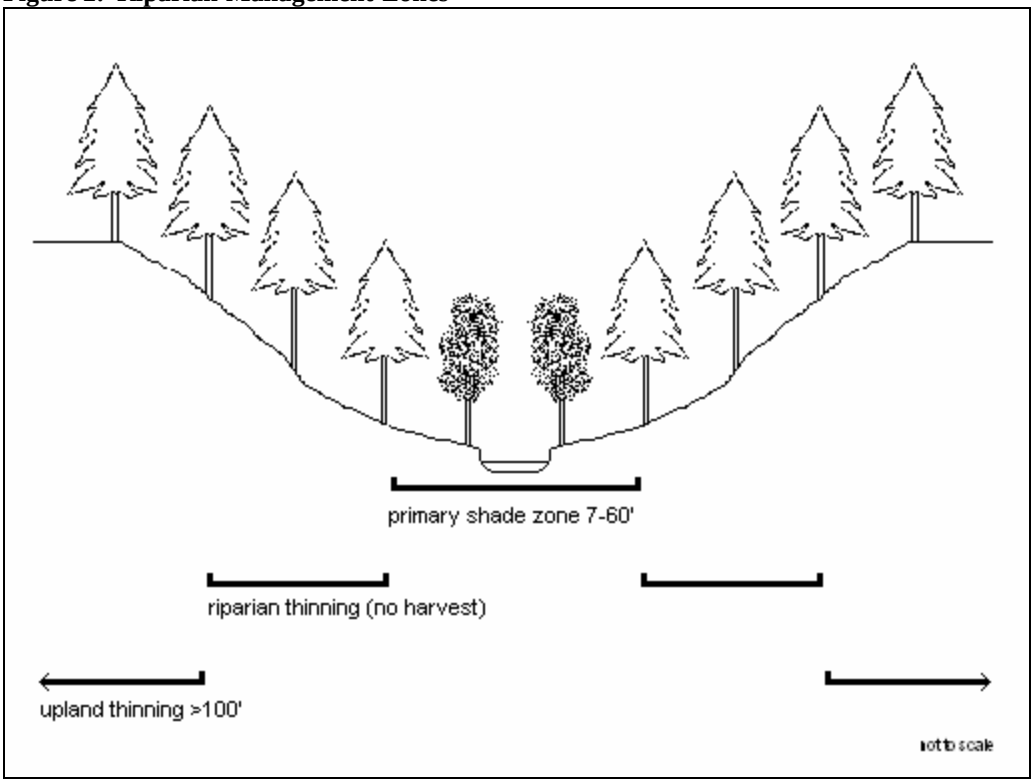

Table 3. Primary Shade Zone in Project Area

Stand age (years)	Distance (feet from stream)		
	<30% slope	30-60% slope	>60% slope
=10	7	8	10
11-30	20	25	30
31-50	30	40	50
>50	40	50	60

Road Decommissioning and Road Construction

Non-shared roads capable of delivering sediment to streams, damaged roads, and roads within or adjacent to late-successional forest (45 miles), would be decommissioned. All high-risk and fish-barrier culverts would be removed or replaced. New road construction (3.6 miles) would be limited to temporary spur roads each generally less than 200 feet. All spur roads would be within the treatment units. No blasting is included in the proposed action. No subsequent treatments, such as tree planting and snag and coarse woody debris creation, would require building or renovating roads.

Snag and Downed Wood Creation

During the initial treatment of stands aged 21-60 years old, enough cut trees would be left to provide 551 cubic feet per acre of coarse woody debris. In thinned stands in which snag needs are not being met, snags would be created to meet stand average snag levels of at least 551

cu.ft./acre. Snags may be created by a variety of methods, including girdling, topping, and/or fungal inoculation. No snag creation by blasting is included in this biological assessment.

Both very young and young stands would undergo subsequent coarse woody debris and snag creation every 10-20 years after the thinning treatment until each stand is 80 years old. This would continue to improve habitat conditions for spotted owl prey species and thereby improve foraging habitat quality. For example, stands currently 50 years old would have only one subsequent entry to produce additional coarse woody debris. Stands that are currently 20 years old could have 3 - 6 subsequent entries to produce coarse woody debris.

Under planting of Shade-tolerant Conifers

In stands that have been thinned (aged 21-60 years old), including upland and riparian reserve stands, and that have few shade-tolerant conifers, western hemlock, western red-cedar, grand fir, incense-cedar and/or Pacific yew would be planted at a rate of 26-200 trees per acre. Conifers would also be planted in some hardwood-dominated riparian stands. Planting would occur during the winter and only hand tools would be used.

Noxious Weed Control

Noxious weeds would be removed from BLM-controlled roads including from roads to be decommissioned. Trees or other native species would be planted in the decommissioned roads to prevent noxious weeds from becoming established in areas where weed seed is likely to spread into the decommissioned roads. Methods to remove weeds include mowing, pulling, cutting and grubbing depending on the weed species. Methods using mechanized tools would follow distance and timing restrictions to prevent adverse effects to listed species. No burning or pesticides would be used.

The following standards to protect listed species are part of the proposed action:

Density Management Treatments

Harvest activities outside of unsurveyed suitable or potential marbled murrelet habitat but within 100 yards of said habitat would be minimized to the extent feasible during the breeding period and would not begin until 2 hours after sunrise and would end 2 hours before sunset (up to 1,100 acres could be affected). Hauling within 100 yards of unsurveyed suitable or potential marbled murrelet habitat would be minimized to the extent feasible during the breeding period and would not begin until 2 hours after sunrise and would end 2 hours before sunset. In some cases (approximately 30 miles) hauling could occur within 100 yards of habitat because the existing roads are adjacent to or run through suitable habitat and would not be able to be used in the winter.

Activities that could cause disturbance within 65 yards of suitable spotted owl habitat would not occur during the critical breeding period unless that habitat had been surveyed to protocol and determined to be unoccupied or the owls are not nesting. Thinning treatments of stands > 50 years old would be avoided within a spotted owl's home range (within 1.5 miles of the spotted owl activity center) where there is currently less than 40 percent suitable habitat within the owls' home range.

No trees 32" dbh or larger would be cut. Trees between 20" and 31" dbh would not be selected for cutting and would only be cut for safety or operational reasons.

Although burning is described in Appendix A of the BA, associated with density management treatments, no burning will occur during the murrelet or spotted owl season when within 0.25 mile of unsurveyed or occupied habitat.

Stream Enhancement Treatments

Besides the restrictions to tree selection in the description of Stream enhancement treatments, the largest, most vigorous trees would be retained and the majority of the cut trees would be left in the stand as downed wood. Helicopters would not be used on the projects.

Activities that could cause disturbances would occur beyond 100 yards of unsurveyed suitable or potential marbled murrelet habitat during the marbled murrelet critical nesting period or during the late nesting period and would not begin until 2 hours after sunrise and would end 2 hours before sunset.

Activities that could cause disturbance within 65 yards of suitable spotted owl habitat would not occur during the critical breeding period unless that habitat had been surveyed to protocol and determined to be unoccupied or the owls are not nesting.

Road Decommissioning and Road Construction

Road construction activities adjacent to and within 100 yards of unsurveyed suitable or potential marbled murrelet habitat would occur within the murrelet critical breeding season, but would be minimized to the extent feasible during the breeding period and would not begin until 2 hours after sunrise and would end 2 hours before sunset (up to 1,100 acres could be affected).

Road decommissioning activities that could cause disturbances would occur beyond 100 yards during the critical nesting period or during the late nesting period and would not begin until 2 hours after sunrise and would end 2 hours before sunset.

Activities that could cause disturbance within 65 yards of suitable spotted owl habitat would not occur during the critical breeding period unless that habitat had been surveyed to protocol and determined to be unoccupied or the owls are not nesting.

Snag and Downed Wood Creation

Snags and downed wood creation would occur at the time of the density management treatments and stream enhancement treatments. The same standards described above under density management treatments and stream enhancement treatments would be followed except that some trees 20" or greater (but less than 32") would be selected. Subsequent snag and downed wood creation that would occur in future decades will be consulted upon in future biological assessments.

Under planting of Shade-tolerant Conifers

This activity would occur during the winter and hand tools would be used.

Noxious Weed Control

Weed removal activities that could cause disturbances would occur beyond 100 yards of unsurveyed suitable or potential marbled murrelet habitat during the marbled murrelet critical nesting period or during the late nesting period and would not begin until 2 hours after sunrise and would end 2 hours before sunset.

Activities that could cause disturbance within 65 yards of suitable spotted owl habitat would not occur during the critical breeding period unless that habitat had been surveyed to protocol and determined to be unoccupied or the owls are not nesting.

STATUS OF THE SPECIES

Marbled Murrelet

Background

An account of the taxonomy, ecology, and reproductive characteristics of the marbled murrelet (murrelet) is found in the 1988 Status Review (Marshall 1988), the final rule designating the species as threatened (USDI 1992b), the final rule designating critical habitat for the species (USDI 1996), the Service's Biological Opinion for Alternative 9 (USDI 1994) of the FSEIS on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Spotted Owl (USDA and USDI 1994a), the Recovery Plan for the Threatened Marbled Murrelet (USDI 1997), and the 2004 Evaluation Report prepared by EDAW, Inc. for the murrelet 5-year review (McShane et al 2004).

Introduction

The Marbled Murrelet Recovery Plan (USDI 1997) for the murrelet refers to the NWFP as the backbone of the recovery effort for the murrelet. However, it strategically builds off the NWFP and considers non-federal lands and their role in recovery. The NWFP contributes to the recovery and conservation of the murrelet by providing large blocks of protected habitat in LSR land allocations within murrelet conservation zones along the Washington, Oregon, and California coasts. Furthermore, murrelet habitat is protected on Federal land under the NWFP. No new timber sales will be planned in forested stands known to be occupied by murrelets regardless of whether these stands occur in LSRs, AMAs, or Matrix areas (USDA and USDI 1994b). Protocol surveys are required in suitable habitat to determine occupancy prior to actions that result in habitat loss. In addition, the system of LSRs will not only protect habitat currently suitable to murrelets, but also develop future habitat in larger blocks.

Recovery Threats

The recovery plan identified the primary threats to the species (not in order of importance): 1) predation; 2) loss of nesting habitat; 3) by-catch in gill-nets, and; 4) oil pollution, both chronic

and from major spills. Predation and the amount and distribution of nesting habitat are considered to be the most important determinants for species recovery.

Nest Tree Characteristics

Lank et al. 2003 state that murrelets "occur during the breeding season in near-shore waters along the north Pacific coastline from Bristol Bay in Alaska to central California", using single platform trees generally within 20 miles and older forest stands generally within 50 miles of the coast for nesting. Unlike most auks, murrelets nest solitarily on mossy platforms of large branches in old-forest trees (Lank et al. 2003). Suitable habitat for murrelets may include contiguous forested areas with conditions that contain potential nesting structure. These forests are generally characterized by large trees greater than 18 inches dbh, multistoried canopies with moderate closure, sufficient limb size and substrate (e.g. moss, duff) to support nest cups, flight accessibility, and protective cover from ambient conditions and potential avian predators (Manley 1999, Burger 2002, and Nelson and Wilson 2002). Over 95 percent of measured nest limbs were =15 cm diameter, with limb diameter ranges from 7-74 cm diameter (Burger 2002).

Nelson and Wilson (2002) found that all 37 nest cups identified were in trees containing at least seven platforms. All trees were climbed, however, and ground-based estimates of platforms per tree in the study were not analyzed. Lank et al. (2003) emphasize the hypothesis that murrelets do not select tree species for nesting, but select individual trees containing suitable nest platforms. Nest cups have been found in deciduous trees, albeit rarely. Nest trees may be scattered or clumped throughout a forest stand.

Adjacent forest can contribute to the conservation of the murrelet by reducing potential for wind throw during storms, and by providing area buffers (USDI 1996, Burger 2001, Meyer et al. 2002, Raphael et al. 2002, and Zharikov et al. submitted). Trees surrounding and within the vicinity of the potential nest tree(s) may provide protection to the nest platform and potentially reduce gradations in microclimate (Chen et al. 1993).

Nest Stand Characteristics

Nest stands are typically composed of low elevation conifer species. In California, nest sites have been located in stands containing old-growth redwood and Douglas-fir, while nests in Oregon and Washington have been located in stands dominated by Douglas-fir, western hemlock, and Sitka spruce. Murrelets appear to select forest stands greater than 50 ha (Burger 2002), but are found nesting in stands as small as one acre (Nelson and Wilson 2002). In surveys of mature or younger second-growth forests in California, murrelets were only found in these forests when there was nearby old-growth stands or where residual older trees remained (USDI 1992, and Singer et al. 1995).

At the stand level, vertical complexity was correlated with nest sites (Meekins and Hamer 1998, Manley 1999, Waterhouse et al. 2002, and Nelson and Wilson 2002), and flight accessibility has been postulated as a necessary component for suitable habitat (Burger 2002). Some studies have shown higher murrelet activity near stands of old-forest blocks over fragmented or unsuitable forest areas (Paton et al. 1992, Rodway et al. 1993, Burger 1997, Deschesne and Smith 1997, and Rodway and Regehr 2002), but this correlation may be confounded by ocean conditions, distance inland, elevation, survey bias, and disproportionate available habitat. Nelson and Wilson (2002)

found that potential nest platforms per acre were a strong correlate for nest stand selection by murrelets in Oregon.

Landscape Characteristics

Studies to determine the characteristics of murrelet nesting habitat at a landscape scale have been conducted using a variety of methods, including predictive models, radio telemetry, audio-visual surveys, and radar. McShane et al. (2004:pg. 4-103) report, "At the landscape level, areas with evidence of occupancy tended to have higher proportions of large, old-growth forest, larger stands and greater habitat complexity, but distance to the ocean (up to about 37 miles [60 km]) did not seem important." Elevation had a negative association in some studies with murrelet habitat occupancy (Burger 2002). Hamer and Nelson (1995) sampled 45 nest trees in British Columbia, Washington, Oregon, and California and found the mean elevation to be 1,089 feet (332 m).

Multiple radar studies (e.g., Burger 2001, Cullen 2002, Raphael et al. 2002, Steventon and Holmes 2002) in British Columbia and Washington have shown radar counts of murrelets to be positively associated with total watershed area, increasing amounts of late-seral forests, and with increasing age and height class of associated forests. The radar counts of murrelets are also negatively associated with increasing forest edge and areas of logged and immature forests (McShane et al. 2004). There are also several studies concluding murrelets do not pack into higher densities within remaining habitat when nesting habitat is removed (Burger 2001, Manley et al. 2001, Cullen 2002).

Although there is a relationship between proximity of human-modified habitat and an increased abundance of avian predators, there is not always proven casualty between increased numbers of avian predators and increased predation on murrelet nests. For example, Luginbuhl et al. (2001:pg. 565) report, in a study using simulated murrelet nests, that "Corvid numbers were poorly correlated with the rate of predation within each forested plot". Luginbuhl et al. (2001:pg. 569), conclude, "that using measurements of corvid abundance to assess nest predation risk is not possible at the typical scale of homogenous plots (0.5-1.0 km^2 in our study). Rather this approach should be considered useful only at a broader, landscape scale on the order of 5-50 km^2 (based on the scale of our fragmentation and human-use measures)".

Artificial murrelet nest depredation rates were found to be highest in western conifer forests where stand edges were close to human development (De Santo and Willson 2001 and Luginbuhl et al. 2001), and Bradley (2002) found increased corvid densities within 3 miles of an urban interface, probably due to supplemental feeding opportunities from anthropogenic activities. Golightly et al. (2002) found extremely low reproductive success for murrelets nesting in large old-growth blocks of redwoods in the California Redwoods National and State Parks. Artificially high corvid densities from adjacent urbanization and park campgrounds are suspected to be a direct cause of the high nesting failure rates for murrelets in the redwoods parks.

If the surrounding landscape has been permanently modified to change the predators' numbers or densities through, for example, agriculture, urbanization, or recreation, and the predators impact the murrelet, it is our professional judgment that the reproductive success of the murrelet may also be reduced. Because corvids account for the majority of depredations on murrelet nests and

corvid density can increase with human development, corvid predation on murrelet habitat is a primary impact consideration.

Demography and Vital Rates

The present population estimate for the murrelet in Oregon is 9,500 (± 3,000) and approximately 23,700 (± 5,200) within the conterminous United States (Huff et al. 2003, Strong 2003a and Strong 2003b). Spiech and Wahl (1995) concluded murrelet populations in Puget Sound are lower now than they were at the beginning of this century, and total estimates for Washington are still about 9,800 murrelets (Huff et al. 2003). Ralph and Miller (1995) estimated the California population to be approximately 6,500 birds, and this estimate remains at the high end of the statistical confidence interval with roughly 4,000 birds being the low end (Huff et al.2003, Strong 2003a and 2003b, McShane et al. 2004).

Beissinger (1995) constructed a demographic model of the murrelet and concluded that the population may be declining at rates of 4-6 percent per year, but this estimate is hampered by the possibility that the age-ratio data used in the model are reflective of a relatively temporary decline due to unusual ocean conditions (Ralph et al. 1995). Boulanger et al. (1996) found change in adult survivorship is the single most important factor when projecting demographic trends for murrelets. Similarly, Strong and Carten (2000) suggest there may have been a 50 percent decline from 1992 to 1996 in the Oregon population, which appears to have stabilized since (Strong 2003a and 2003b). Ralph et al. (1995) summarized some of the reasons for variability in population estimates among researchers, including differences in methodology, assumptions, spatial coverage, and survey and model errors. Lank *et al.* (2003) state, "Regardless of the approaches taken to estimate [(sic) vital rate] parameter values, the output from the Leslie matrix models representing survivorship and fecundity values for all populations in Washington, Oregon and California (Beissinger and Nur 1997) suggest negative population growth rates." Present at-sea surveys for effectiveness monitoring have a 95 percent chance of detecting annual population changes of ±20 percent or greater.

Available Nesting Habitat

The precise number of acres of suitable habitat in WA, OR and CA is not well known. However, based on agency estimates and the Services' internal section 7 files, the best estimates of suitable habitat for the murrelet on Federal lands is estimated at 2,223,048 acres of which 154,838 acres (7 percent) are classified as remnant habitat within the listed range of this species. Approximately 93 percent of the suitable habitat occurs on Federal lands. Occupied murrelet habitat is protected on Federal land under the NWFP in several ways. All occupied murrelet habitat outside of mapped LSRs becomes an unmapped LSR, regardless of the original designated land allocation. In addition, all "contiguous existing and recruitment habitat for marbled murrelets...within a 0.5-mile radius" is protected (USDA and USDI 1994ab; C-10). Timber harvest within LSRs is designed to benefit the development of late-successional conditions, which should improve future conditions of murrelet nesting habitat. Designated LSRs not only protect habitat currently suitable to murrelets (whether occupied or not), but will also develop future suitable habitat in large blocks.

Murrelet Critical Habitat

Designation of critical habitat serves to identify lands which may be necessary for the conservation and recovery of listed species. On May 24, 1996, the Service published the final rule designating critical habitat for the murrelet in the *Federal Register* (USDI 1996). The final rule became effective June 24, 1996.

The Service's primary objective in designating critical habitat was to identify existing terrestrial murrelet habitat that supported nesting, roosting, and other normal behaviors and require special management considerations. The Service designated critical habitat to protect murrelets and their habitat in a well-distributed manner throughout the three states. Critical habitat is primarily based on the LSRs identified in the NWFP (approximately 3 million of the 3.9 million acre boundary designation). The LSR system identifies large, contiguous blocks of late-successional forest that are to be managed for the conservation and development of the older forest features required by the murrelet, and as such, serve as an ideal basis for murrelet critical habitat. Where LSRs were not sufficient to provide habitat considered critical for the survival and recovery of the murrelet, other lands were identified, including state, county, and private lands.

The boundary of critical habitat for the murrelet encompasses approximately 3.9 million acres across Washington, Oregon and California. When designating critical habitat the Service focused on areas essential for successful murrelet nesting. Within the boundaries of designated critical habitat, only those areas that contain one or more primary constituent elements are critical habitat. Areas without any primary constituent elements are excluded by definition. The primary constituent elements are: (1) individual trees with potential nesting platforms and (2) forested lands of at least one half site potential tree height regardless of contiguity within 0.8 kilometers (0.5 miles) of individual trees with potential nesting platforms, and that are used or potentially used by murrelets for nesting or roosting. The site-potential tree height is the average maximum height for trees given the local growing conditions, and is based on species-specific site index tables.

ENVIRONMENTAL BASELINE

The Environmental Baseline is defined as Athe past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process [50CFR 402.02].@

LSR 267 lies within the North Coast Planning Province. Within this province, LSR 267 occurs mainly within the Siuslaw River Basin with a very small portion in the Umpqua River Basin. LSR 267 includes 175,280 acres of federal land managed by the BLM Eugene, Roseburg, and Coos Bay districts and the Siuslaw National Forest.

The Eugene District manages approximately 83,000 acres (47 percent) of LSR 267. Of this total acreage, 24,400 acres are within the Upper Siuslaw River sub-unit (14 percent of LSR 267) which is addressed by the proposed action. The Eugene District plans to develop restoration plans for the other sub-units of LSR 267: Middle Siuslaw River, Wolf Creek and Wildcat Creek.

Status of the Species in the Action Area

The following status information was compiled by BLM and the Service.

Murrelet

The action area is located about 34-45 miles from the Pacific coast, which is near the 50-mile limit of expected murrelet distribution in Oregon. The action area contains about 10,600 acres of murrelet habitat and about 2,235 acres of potential habitat, all of which are located on Federal lands.

Most stands in action area have not been surveyed to protocol. BLM has conducted murrelet surveys in stands proposed for thinning treatments that had potential habitat within the stand or that were adjacent to suitable habitat. Six percent of the suitable murrelet habitat and two percent of the potential murrelet habitat have been surveyed within the action area. Murrelets have been observed at three locations in the action area:

Over a stand in Section 7, Township 20 South, Range 5 West;

In Section 17, Township 20 South, Range 7 West;

And under the canopy in a stand in Section 1, Township 20 South, Range 7 West.

This last observation was an incidental sighting (*i.e.*, not part of a survey effort), but qualified as an occupied site ("birds flying below, through, into, or out of the forest canopy within or adjacent to a site of potential habitat"). Further surveys in all of these areas resulted in no additional observations.

The action area contains about 17,830 acres of land that is within critical habitat unit (CHU) OR-04-i.

Recovery Zone 3

Over the last four years the murrelet population estimate in this zone has not varied substantially (Huff 2003, Strong 2003a and Strong 2003b). More years of data are needed to establish a trend, but a supportable hypothesis is that as habitat is protected and no longer lost, the murrelet may stabilize at a new lower level supported by the remaining habitat. Ocean conditions play a role in the success of murrelets, and therefore additional years of population and productivity monitoring will be needed to separate marine and habitat effects on murrelets (Huff 2003).

Since the murrelet was listed in 1992, the Service is aware of 2,645[1] acres of murrelet habitat that have been removed in Recovery Zone 3 (McShane et al. 2004). This estimate is based only on agency estimates from Federal lands. The amount of habitat lost from non-federal lands is not known. However, internal section 7 files show an additional 3,026 acres on private land and

[1] This number may be inflated, due to all of BLM, Roseburg and Coos Bay districts consultations being included in Recovery Zone 3 for this calculation due to the BLM, Roseburg and Coos Bay districts occurrence in both Recovery Zone 3 and 4.

1,259 acres on tribal land were removed, 1992 through May 17, 2004 (USDI 2004). Most of the tribal habitat removed was known to be unoccupied by murrelets, 52 percent, while most of the private lands were unsurveyed, 72 percent.

EFFECTS OF THE ACTION

Projects addressed in this consultation will adversely affect murrelets due to disturbance during the critical nesting period from density management treatments in stands = 60 years old and associated road construction, snag and down wood creation, which will occur within the units' boundaries. Although the potential effects of disturbance on the survival and recovery of murrelets are considered to be of much less importance than the loss of habitat, such effects can still lead to a likelihood of injury under certain circumstances.

Murrelet

Habitat

Trees will only be harvested from habitat under the activity type of stream enhancement treatments. The stream enhancement treatments would remove individual trees from possibly suitable (no stands over 80 years old but some stands that are 60 -79 years old could have 18"dbh average) or potential habitat and place them in stream channels or floodplains for stream enhancement. Although canopy cover may be altered, no suitable nest trees or trees greater than 32 inches dbh will be removed.

Full criteria for in-stream tree selection under stream enhancement treatments include no suitable nesting trees or trees greater than 32 inches dbh will be removed and selected. single trees or small groups of trees (2-4 trees) will be: [1] along the periphery of permanent openings (*e.g.*, rights-of-way, powerlines), or along the periphery of non-permanent openings (*e.g.*, along plantation edges, along recent clearcuts less than 40 years old); [2] single trees or small groups of trees (2-4 trees) may only be removed from the first two lines of trees and will be dispersed along these edges but may not be adjacent to one another; [3] single trees or small groups of trees (2-4 trees) must be spaced at least one site potential tree height apart and at least one tree from any trees with potential nesting structure for any listed species (for streamside operations, spacing requirements apply to each bank independently).

The selection criteria for in-stream trees, described above, will provide additional protection to any potential nest trees in the treatment area (#3), as well as minimize the potential effects to interior forest conditions (#1 and 2). Therefore, the removal of 140 individual trees across the watershed for use in stream enhancement *may affect, but is not likely to adversely affect* murrelets.

Thinning of young units next to habitat may have a small affect to habitat by removing trees that may be buffering potential nesting trees or by creating an edge which would increase the risk of wind throw during storms and affect the stability of microclimate along the exposed border (Chen et al. 1992), but these affects are expected to be minimal due to the treatments being thinning prescriptions and 40 to 110 trees per acre will be left behind (Table 1). Although road construction, and snag and down wood creation activities will also be removing trees, these activities will only occur within the young treatment units. Therefore, the activity types of

density management treatments, road construction, and snag and downed wood creation *may affect, but are not likely to adversely affect* murrelet habitat.

Additionally, the density management treatments and road decommissioning (45 miles) should have a beneficial effect to future murrelet populations by producing future nest trees/stands.

Disturbance

Noise, visual disturbance, and/or smoke may disturb adult or juvenile murrelets and could cause them to flush from their nest site, could cause a juvenile to prematurely fledge or could interrupt feeding attempts by the adult. While the effects of these disturbances are not clear, any of these impacts could result in the reduced fitness or even death of an individual bird due to missed feedings, or reduced protection of the young if adults are disturbed.

The potential for effects may occur out to a 0.25 mile zone although it is likely that the most severe impacts of noise disturbance that may disrupt reproductive activities occur within a narrower zone. As noise attenuates over distance, the likelihood that it remains at a level sufficient to cause injury is reduced. The exact distance where noise disrupts breeding is difficult to predict and can be influenced by a multitude of factors. Site specific information (e.g. topographic features, project length or frequency of disturbance to an area) could be used to further evaluate potential effects from disturbance which may result in some effects being reduced.

There is little data regarding the impacts of noise on murrelets and other listed species. However, the Service has recently analyzed the available data on spotted owls, murrelets and other species (USDI 2003a), and has consulted species experts who have worked extensively with murrelets to determine the extent to which above-ambient noises may affect murrelets. The results of this analysis indicate that murrelets may flush from their nest or roost or may abort a feeding attempt of their young when the following activities occur up to the specific distances (Table 4). These distances are somewhat different than the distances for spotted owls due to the available scientific data. In addition, a visual harassment distance of a minimum of one hundred yards is included and is based on a separate analysis by the Service to quantify both visual and auditory harassment to murrelets (USDI 2003b). These data represent a comprehensive assessment of harassment distances based on the best available science. These assessments are incorporated into this Opinion as current guidance for harassment distances for various activities as it relates to adverse effects to the murrelets from harassment due to disturbance. The Service is continuing to use 0.25 mile for smoke disturbance, due to no new information being available to better estimate effects distances for smoke. If the Services' understanding of these distances change, adjustments to these distances may be recommended in the future.

Above-ambient noises farther than these Table 4 distances from murrelets are expected to have either insignificant effects or no effect to murrelets. The types of reactions that murrelets could have to noise that the Service considers having a insignificant impact include flapping of wings, the turning of a head towards the noise, attempting to hide, assuming a defensive stance, or other reactions that do not significantly disrupt breeding, feeding, or sheltering (USDI 2003a).

Table 4. Harassment distances from various activities for marbled murrelets.

Type of Activity	Distance at which murrelets may flush or abort a feeding attempt
an impact pile driver, a jackhammer, or a rock drill	100 yards
a helicopter or a single-engine airplane	120 yards
chainsaws (hazard trees, precommercial and commercial thinning)	100 yards
heavy equipment	100 yards
Burning *	440 yards (0.25 mile)

* Although the category of Burning was not part of the Services recent analysis of disturbance, it is added here to complete the types of activities that are covered under this BO.

Timing of Disturbance

The risk to murrelets from disturbance is tied to the timing of the activity and is highest when adults have eggs in a nest or are feeding and protecting chicks in the nest. During these periods the disruption of adults and their young could result in death or injury to the young as a result of predation. The leading known causes of mortality in juvenile murrelets are starvation and predation (Burger 2002, Lank at al. 2003, and Nelson and Wilson 2002).

The timing of nesting and chick-rearing varies geographically, although murrelets generally start laying their eggs around the beginning of April. In Oregon, August 5th is the date by which data indicate that most juveniles have likely fledged and returned to the ocean (Hamer and Nelson 1995).

Activities that may result in above ambient noise levels include the use of mechanized tree harvest equipment, road hauling, aircraft/helicopters, heavy equipment, hydraulic hammers, road construction and maintenance equipment. In some instances, noise levels produced by these activities can remain above ambient levels out to 0.25 mile and may affect murrelets. If potentially disturbing activities are implemented within the prescribed distances (Table 4) of occupied or unsurveyed murrelet habitat during the murrelet critical nesting season (April 1 – Aug 5), those activities *may affect, and are likely to adversely affect* murrelets by causing adults to flush from their nest site, nest abandonment, premature fledging, interruption of feeding attempts, or increased predation due to less protection when the adult flushes. If disturbance activities are implemented beyond the prescribed distances (Table 4), but within 0.25 mile of occupied or unsurveyed murrelet habitat, during the murrelet critical nesting season (April 1 – August 5) they *may affect, but are not likely to adversely affect* murrelets.

After August 5, it is presumed that most chicks have fledged or adult murrelets still tending the nest are heavily invested in chick-rearing, thus reducing the likelihood of nest abandonment or significant alteration of breeding success. Additionally, if disturbance is avoided during the crepuscular periods when murrelets are making the majority of there feeding trips, activities occurring in the late breeding period (August 6 - September 15) *may affect, but are not likely to adversely affect* murrelets if within 0.25 mile of occupied habitat, or unsurveyed suitable or potential habitat. Implementation of proposed projects outside the breeding period (that is,

activities occurring between October 1, and March 30, or more than 0.25 mile from suitable or potential habitat, would have *no effect* on murrelets.

The Service anticipates *adverse effects* due to disturbance of 1,100 acres of unsurveyed or occupied murrelet habitat within distances in Table 4 of some of the Density Management treatments in stands = 60 years old, and associated road construction, snag and down wood creation within these stands, during the murrelet critical nesting seasons (April 1 – August 5) of each year. Other activities will have unoccupied habitat within the distances of Table 4, be located beyond the distances in Table 4 from habitat, or activities will occur outside of the non-critical breeding season, with 2 hour daily timing restrictions of disturbance activities after sunrise and before sunset, or outside the entire breeding season (October 1 – March 30). Affects for all activities are summarized in Table 5.

Although the Service has previously thought hauling of timber on open roads may affect, and is likely to adversely affect murrelet, new data from Golightly et al. (2002) have shown no correlation between road proximity and nest success. This study included two years of data and 20 nests initiated by radio marked murrelets. Hamer and Nelson (1998) described one murrelet nest that successfully fledged next to a road. Hamer and Nelson (1998) concluded these murrelets showed a high degree of tolerance to trucks and automobiles and that human presence appeared to have the greatest impacts on nesting murrelets. Singer et al. (1995) report observing no visible response by murrelets to vehicles transiting on a "well-traveled park road" located within 230 feet (70 m) of nests monitored in Big Basin State Park from 1992 to 1994. Nelson, too, documented no response to vehicular noise from birds associated with nests in this same location in 1989. Chinnici also noted little response by murrelets to vehicles driving on a "lightly used" logging road located 230 feet (70) m from a nest in Humboldt County, California observed over 11 days in 1992. Chinnici noted that the chick once opened its eyes and became alert at the approach of a vehicle but otherwise did not respond to vehicular noise (Long and Ralph 1998). Nelson reported observing no response from chicks or adult murrelets to vehicular noise (Long and Ralph 1998). Therefore, the Service anticipates hauling of timber, associated with the density management treatments, *may affect, but is not likely to adversely affect* murrelets.

Critical Habitat

Critical habitat is present within the action area. Trees from suitable habitat within critical habitat will be harvested for stream enhancement treatments. As stated, the selection criteria will provide protection to any potential nest trees in the treatment area, as well as minimize the potential effects to interior forest conditions. Therefore, the removal of 140 individual trees across the watershed for use in stream enhancement *may affect, but is not likely to adversely affect* critical habitat.

Thinning of young units within and next to critical habitat may have a small affect to critical habitat by removing trees that may be buffering potential nesting trees or by creating an edge which would increase the risk of wind throw during storms and affect the stability of microclimate along the exposed border, but these affects are expected to be minimal due to the treatments being thinning prescriptions and 40 to 110 trees per acre will be left behind (Table 1). Although road construction, and snag and down wood creation activities will also be removing trees these activities will only occur within the young treatment units. Therefore, the activity types of density management treatments, road construction, and snag and downed wood creation *may affect, but are not likely to adversely affect* critical habitat.

Table 5. Affect of disturbance to occupied or unsurveyed suitable murrelet habitat

Marble Murrelet Breeding season	**Critical nesting season April 1-August 5**			Late breeding season August 6 – September 15	
Disturbance to:	**Habitat within 100 yards**	Habitat from 100 yards to within 0.25 mile	No habitat within 0.25 mile	Habitat within 0.25 mile	No habitat within 0.25 mile
Density Management Treatments	**May affect, and is likely to adversely affect (MA,LAA)** some stands = 60 years old will be treated during this time period	May affect, but not likely to adversely affect (MA,NLAA)	No effect	MA,NLAA due to a 2 hour daily timing restriction after sunrise and before sunset on heavy equipment and chain saw use	No effect
Road decommissioning	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA due to a 2 hour daily timing restriction after sunrise and before sunset on heavy equipment and chain saw use	No effect
Road construction	**MA,LAA** all road construction is associated and within density management thinning treatment units	MA,NLAA	No effect	MA,NLAA due to a 2 hour daily timing restriction after sunrise and before sunset on heavy equipment and chain saw use	No effect
Stream Enhancement treatments	None planned during this time period	None planned during this time period	None planned during this time period	MA,NLAA due to a 2 hour daily timing restriction after sunrise and before sunset on heavy equipment and chain saw use	No effect
Snag and downed wood creation	**MA,LAA** associated with density management thinning treatments	MA,NLAA	No effect	MA,NLAA due to a 2 hour daily timing restriction after sunrise and before sunset on heavy equipment and chain saw use	No effect
Under planting of shade-tolerant conifers	None planned during this time period	None planned during this time period	None planned during this time period	None planned during this time period	None planned during this time period
Noxious weed control	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA due to a 2 hour daily timing restriction after sunrise and before sunset on heavy equipment and chain saw use	No effect

Additionally, the density management treatments and road decommissioning (45 miles) should have a beneficial effect to future murrelet critical habitat by producing future nest trees/stands.

Recovery Zone 3
Although, 1,100 acres of occupied or unsurveyed habitat will be disturbed with the proposed project, the effects will be spread out over ten years.

Analyzing just the suitable habitat within the North Coast Province[2] on Federal land (423,433 acres), the harassment of 1,100 acres is less than 0.3 percent of suitable habitat or about 0.03 percent a year. Additionally approximately 1,030,399 acres have been designated as critical habitat units for murrelets. Although not all of the lands within the CHUs are functioning as suitable habitat, the quantity of habitat is expected to increase over time as young forest stands mature and develop nesting structure for murrelets. The harassment of 1,100 acres over ten years would be a smaller proportion of the total if habitat estimates were available for the entire Recovery Zone 3. Therefore, at the scale of the Recovery Zone 3, our best professional judgment is that the habitat harassed from the proposed action will not likely be a causative factor in destabilizing the Recovery Zone 3 murrelet subpopulation.

This project does not remove any suitable stands and is designed to promote late-successional conditions by thinning young stands.

CUMULATIVE EFFECTS

Cumulative effects are those effects of future state or private actions, not involving Federal actions, that reasonably are certain to occur within the action area of a Federal action subject to consultation (50 CFR 402.02). Cumulative effects analysis of foreseeable state and private actions provide greater insight to understanding the current environmental factors and likely trends that might affect a species.

No suitable habitat for murrelets is known to occur on non-federal lands within the action area. Private lands within the action area are expected to continue to be used for commercial timber production. Habitat for the murrelets is not expected to develop due to the short rotation ages used in commercial timber harvest. As a result, private lands within the action area probably will not contribute to the recovery of the murrelet.

CONCLUSION

After reviewing the current status of the murrelet, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the proposed programmatic actions are *not likely to jeopardize the continued existence* of the murrelet because the overall risk will not preclude recovery and per year risk is low. In addition, these proposed actions are *not likely to destroy or adversely modify* murrelet critical habitat.

[2] The North coast is a subset of Recovery Zone 3. Numbers for the entire Recovery Zone 3 not available.

CONCURRENCE

Murrelets

The Service concurs with activities resulting in *not likely to adversely affect* determinations for murrelets. In the preceding BO, the anticipated impacts to murrelets from the proposed activities were detailed in the Effects of the Action section. Although the above BO constitutes formal consultation on activities determined likely to adversely affect listed species, analyses therein also address those circumstances under which activities were considered not likely to adversely affect murrelets. Those analyses are incorporated by reference into this informal consultation.

Spotted Owls

Spotted owls do occur within the action area, but the BLM has designed the proposed action to avoid adverse affects. Additionally, all spotted owl habitat within the action area is designated critical habitat.

Dispersal habitat will be treated through density management treatments and snag and downed wood creation, which should promote suitable spotted owl habitat by reducing the time required for the stands to develop late successional habitat conditions. Only 3.6 miles of temporary spur roads will be created within the density management treatment units. Treatments will degrade 1,350 acres and remove 662 acres (642 acres form critical habitat unit OR-53 and 20 acres from OR-52) of dispersal habitat, but the overall amount of dispersal in the action area is expected to increase over the 10 year plan, do to harvest limitations and in growth of younger stands. Additionally, no thinning of stands > 50 years old will occur within an active owl home range that currently has less than 40 percent suitable habitat.

Stream enhancement treatments will be in older stands, 60 -79 years old, which have an average of 18" dbh. Therefore, these stands may be functioning as suitable habitat, but project design criteria will limit the selection of trees to non-nest trees with spacing requirements that minimize the impact to the stand.

Disturbances will not occur within the distances listed in Table 6 during the critical breeding season so as to avoid adverse affects to spotted owls. Table 7 summarizes the disturbance restrictions and affects determinations by activity type and time period.

Therefore, due to the project design criteria that restrict impacts to spotted owl habitat/critical habitat and disturbance activities, during the spotted owl critical nesting season, the Service concurs with activities resulting in a *may affect, but not likely to adversely affect* determinations for spotted owls and spotted owl critical habitat.

Table 6. Harassment distances from various activities for spotted owls.

Type of Activity	**Distance at which spotted owl may flush or abort a feeding attempt**
an impact pile driver, a jackhammer, or a rock drill	60 yards
a helicopter or a single-engine airplane	120 yards
chainsaws (hazard trees, precommercial and commercial thinning)	65 yards
heavy equipment	35 yards
Burning	440 yards (0.25 mile)

Table 7. Affect of disturbance to suitable spotted owl habitat

Spotted Owl Breeding Season	**Critical nesting season March 1 – July 7**			Non critical nesting season July 8 – September 30	
Disturbance to:	**Un-surveyed or occupied habitat within 65 yards**	Un-surveyed or occupied habitat from 65 yards to within 0.25 mile, or occupied habitat within 65 yards is determined to have a non-nesting pair of spotted owls	Un-occupied habitat or no habitat within 0.25 mile	Un-surveyed or occupied habitat within 0.25 mile	Un-occupied habitat or no habitat within 0.25 mile
Density Management Treatments	Heavy equipment, and chain saw use prohibited	May affect, but not likely to adversely affect (MA,NLAA)	No effect	MA,NLAA	No effect
Road decommissioning	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA	No effect
Road construction	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA	No effect
Stream Enhancement treatments	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA	No effect
Snag and downed wood creation	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA	No effect
Under planting of shade-tolerant conifers	None planned during this time period	None planned during this time period	None planned during this time period	None planned during this time period	None planned during this time period
Noxious weed control	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA	No effect

Bald Eagles

No bald eagle habitat will be removed and no bald eagles are currently using the action area. Bald eagle habitat is present and if a bald eagle nest is discovered, activities within 0.25 mile or 0.5 mile line of site will be scheduled outside of the bald eagle nesting period of January 1 – August 31. Therefore, the Service concurs with activities resulting in a *may affect, but not likely to adversely affect* determinations for bald eagles.

This concludes informal consultation for activities resulting in *not likely to adversely affect* determinations in the Upper Siuslaw late-successional reserve restoration plan.

INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of the Act, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement. The measures described below are non-discretionary. Failure to comply with these measures may cause the protective coverage of section 7(o)(2) to lapse.

AMOUNT OF TAKE

Marbled Murrelet

The Service anticipates harassment of 1,100 acres of habitat within 100 yards of density management treatment units and associated temporary road construction, snag and down wood creation within the units during the period of April 1 to September 15. Disturbance is expected from people using chainsaws and heavy equipment.

EFFECT OF THE TAKE

Murrelet

The Service anticipates that disturbance impacts will vary depending on the type of noise, the duration of the disturbance, the proximity of the disturbance to occupied habitat, and the sensitivity of individual murrelets to disturbance. A noise-induced movement may expose an adult or juvenile murrelet to elevated levels of predation, and a visual disturbance may cause a delayed or aborted feeding attempt to young which may reduce the young's fitness level. The effect of the harassment take may also cause nest abandonment, adults flushing from the nest, and possible loss of the egg due to predation.

REASONABLE AND PRUDENT MEASURES

The Service believes that the following reasonable and prudent measures (RPM) are necessary and appropriate to minimize the impacts of incidental take of the murrelet.

1) Provide project monitoring and reporting to accurately assess the amount of take and projects implemented.
2) To reduce concerns about human activities attracting predators, provide project guidance requiring the collection and proper disposal of human-generated garbage.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the BLM must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1) Implementation and monitoring forms need to be completed and submitted with a cover letter from the District Manager verifying the amount of affect that has occurred. These forms are to be submitted yearly. An implementation and monitoring form is attached to the end of this BO. An electronic copy is available upon request.
2) Specific guidance needs to be provided to every contractor operating near murrelet suitable habitat that all garbage must be collected and properly disposed of each day. Such garbage may include, for example, food scraps, soda cans, or candy wrappers.

The Service analyzed the impact of the above reasonable and prudent measures on the proposed action and believes that these measures comply with the minor change requirement as defined by 50 CFR 402.14(I)(2).

If a dead, injured, or sick endangered or threatened species specimen is located, initial notification must be made to the nearest Service Law Enforcement Office, located at 9025 SW Hillman Court, Suite 3134, Wilsonville, OR 97070; phone: 503-682-6131. Care should be taken in handling sick or injured specimens to ensure effective treatment or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

Notice: The Service will not refer the incidental take of any migratory bird for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-712), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

The incidental take statement contained in the biological opinion does not constitute an exemption for non-listed migratory birds and bald or golden eagles from the prohibitions of take under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (U.S.C. 668-668d), respectively. Proposed Federal actions, including those by applicants, should (through appropriate means) avoid, reduce,

or otherwise minimize such take which is subject to prosecution under these statutes.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service believes the following conservation recommendations would reduce the impact of the proposed action on listed species within the action area:

1) Disturbance activities within 100 yards of occupied or unsurveyed murrelet habitat between April 1 and August 5 should be scheduled as late in the murrelet nesting season (April 1 – September 15) as is operationally feasible.

REINITIATION NOTICE-CLOSING STATEMENT

This concludes formal consultation and informal conferencing on the actions outlined in your BA and during the informal consultation process. Reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the proposed action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the proposed action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. If consultation is reinitiated for any of the above reasons, the BLM shall not make any irreversible or irretrievable commitment of resources which has the effect of foreclosing the formulation of reasonable and prudent alternatives.

If you have any questions regarding this Opinion or would like technical assistance in implementing the provisions of this Opinion, please contact Lee Folliard or Bridgette Tuerler at (503) 231-6179.

cc:
Alison Center, BLM, Eugene, OR
Service, Regional Office, Portland, OR (electronic)
Spotted owl workgroup (electronic)
Spotted owl binder, OFWO, Portland, OR
Marbled murrelet binder, OFWO, Portland, OR

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PROJECT IMPLEMENTATION AND MONITORING FORM **updated 10/25/02**

Tracking effects to T&E species, including removal and thinning below 40% crown cover of spotted owl dispersal habitat within the province of:_____

Yearly report due by November 3, FY:_____

_____	_____	_____	
Administration Unit	Compiler	BO/FWS Reference Number	
_____	_____	_____	_____
Ranger District/Resource Area	Agency Contact	FWS Contact	FY Sold

General Project Information: [ ] habitat modification project (with any associated disturbance) or [ ] disturbance-only project

Project name (optional):_____

Activity Type/Unit of Measure (see definitions in BO)*		**Amount Treated** (by land use allocation – non–duplicative)						**HUC # (s)** for 5th field watersheds (and comments)
		Total	LSR	AMA	Matrix	Others	RR	
Density management treatments	Acres							

* add other activity types and units of measure based on how the activity is categorized in the applicable BO

If a NEPA decision, what was it's date, name, and/or number? This question is not mandatory.

Did the project comply with the applicable BO?
If no, attach a detailed explanation.

NORTHERN SPOTTED OWLS

Effect of activity to spotted owls. Please give acres for each land allocation/CHU combination separately. For example each land allocation could be paired with no CHU or several overlying CHUs and each of these combinations receives a separate line on this table. Degraded, removed and disturbed acres do not overlap each other.

Land allocation (include # if LSR or AMA)	Overlying CHU # (please indicate when no overlying CHU)	Effects associated with take						Effects not associated with take			
		Suitable habitat removed (acres)	Suitable habitat downgraded (acres)	Suitable habitat degraded (acres)	# of activity centers associated with suitable habitat loss	Suitable habitat disturbed/take (acres)	# of activity centers associated with disturbance take	Suitable habitat removed (acres)	Suitable habitat downgraded (acres)	Suitable habitat degraded (acres)	Dispersal habitat removed/thinned below 40% crown cover (acres)
Totals:											

Definitions:
Removed – cause habitat to no longer function as suitable or dispersal spotted owl habitat
Downgraded – cause suitable habitat to no longer function as suitable, but it is functioning as dispersal spotted owl habitat
Degraded – cause a negative effect to suitable habitat, but it still is functioning as suitable spotted owl habitat

MARBLED MURRELETS

Effects of activity to murrelets. Please give acres for each land allocation/CHU combination separately. For example each land allocation could be paired with no CHU or several overlying CHUs and each of these combinations receives a separate line on this table. Degraded, removed and disturbed acres do not overlap each other.

Land allocation (include # if LSR or AMA)	Overlying CHU # (please indicate when no overlying CHU)	Effects associated with take			Effects not associated with take		Other questions		
		Suitable habitat removed (acres/trees)	Suitable habitat degraded (acres/trees)	Suitable habitat disturbed/take (acres/trees)	Suitable habitat removed (acres/trees)	Suitable habitat degraded (acres/trees)	Zone (1, 2, or both)	Was this area surveyed?	Was presence or occupancy detected?
Total:									

Definitions:
Zone 1 – 0 to 35 miles from the coast
Zone 2 – 35 to 50 miles from the coast

BALD EAGLES

Please complete the bottom row of this table.

Habitat effects		Disturbance effects	Management plan information if available
Name or identification number of individuals or pairs taken due to habitat removal	Number of known or suspected nest/roost/perch trees removed	Name or identification number of pairs taken due to habitat disturbance	ID number of management area where bald eagles were affected

Other_____

To date, fields for species other than murrelets, spotted owls, and bald eagles have not yet been fully defined. If your project may affect other listed or sensitive species, please contact your U.S. Fish and Wildlife Service provincial representative to discuss additional information prior to form completion.

U.S. Department of the Interior
Bureau of Land Management

Eugene District Office
P.O. Box 10226
Eugene, Oregon 97440-2226

July 2004

Record of Decision
For

Upper Siuslaw
Late-Successional Reserve Restoration Plan:

Upland Thinning Actions

Lane and Douglas Counties, Oregon

Lead Agency: Bureau of Land Management,
U.S. Department of the Interior

Cooperating Agency: Fish and Wildlife Service,
U.S. Department of the Interior

/s/ *Steven Calish* date: July 13, 2004
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all appendices are available on request or online:
http://www.edo.or.blm.gov/planning/lsr/index.htm

Summary

This Record of Decision (ROD) adopts a 10-year management approach for upland thinning actions, including timber sales, in approximately 25,000 acres of Late-Successional Reserve in the Coast Range Mountains west of Eugene, Oregon. This ROD, and an associated ROD for watershed restoration actions, are both based on the Upper Siuslaw Late-Successional Reserve Restoration Plan Environmental Impact Statement (EIS). The purpose of the restoration plan as a whole is to protect and enhance late-successional and old-growth forest ecosystems; foster the development of late-successional forest structure and composition in plantations and young forests; and reconnect streams and reconnect stream channels to their riparian areas and upslope areas. My decision is to select the upland thinning actions in Alternative D as described in the EIS. Alternative D was identified by the Bureau of Land Management and the U.S. Fish and Wildlife Service as the preferred alternative in the EIS. I select Alternative D because it will accomplish the purpose of the action and will best respond to the issues identified in the EIS.

Background

The Bureau of Land Management (BLM), Eugene District, with the U.S. Fish and Wildlife Service as a cooperating agency, prepared an EIS for the Upper Siuslaw Late-Successional Reserve (LSR) Restoration Plan. This LSR Restoration Plan will provide a 10-year management approach for approximately 25,000 acres of BLM-managed lands within LSR 267 in the upper portion of the Siuslaw River watershed in the Coast Range Mountains west of Eugene, Oregon. The purpose of the action is to protect and enhance late-successional and old-growth forest ecosystems; foster the development of late-successional forest structure and composition in plantations and young forests; and reconnect streams and reconnect stream channels to their riparian areas and upslope areas.

The area of the LSR Restoration Plan extends from just west of the Lorane Valley to Oxbow Creek (EIS, pp. 22, 24, maps 7, 10). The northern boundary is defined by the ridge between the Siuslaw and Wolf Creek watersheds. The southern boundary is defined by the boundary between the Eugene and Roseburg Districts, which approximates the ridge between the Siuslaw and Umpqua River basins (although a very small portion of the planning area extends into the Umpqua River basin). The small portion within the Umpqua River basin is within a Tier 1 Key Watershed. The planning area includes critical habitat for northern spotted owls and marbled murrelets.

The Siuslaw River, which runs through the planning area, has been identified by the Oregon Department of Environmental Quality (ODEQ) as a “Water Quality Limited Stream” for temperature and dissolved oxygen on its 2002 303(d) list (ODEQ 2003). BLM is a Designated Management Agency with responsibility for maintaining the quality of waters on the 303(d) list that flow across the lands it manages. Attached to this ROD is a Water Quality Restoration Plan (WQRP) for the portion of the planning area in the Siuslaw Watershed.

The LSR Restoration Plan will be implemented under two RODs: this ROD for upland thinning, including timber sales and another ROD for watershed restoration actions (riparian and aquatic habitat enhancement, culvert replacement, and road decommissioning). Implementation of both RODs will be necessary to achieve all of the objectives described for the LSR Restoration Plan. These two classes of actions were best analyzed together in one EIS to facilitate the cumulative effects analysis. I have split the decision because these two classes of actions will have different implementation processes, some different mitigation measures, and different consultation with NOAA Fisheries.

Decision

In this ROD, I adopt the upland thinning actions of Alternative D of the EIS, with all the objectives, actions, guidelines, and mitigation measures described for Alternative D in Appendix A of the EIS. No changes are made here to those objectives, actions, guidelines, and mitigation measures beyond the minor changes described in the final EIS errata sheet. I also adopt the additional mitigation measures and monitoring requirements described below. These additional mitigation measures do not alter the overall analysis of environmental effects in the EIS, but they do give greater specificity to the mitigation measures described for Alternative D in the EIS. The objectives, actions, guidelines, and mitigation measures for the upland thinning actions of the Selected Alternative, together with the minor changes and additional mitigation measures, are presented in Appendix A of this ROD.

Alternatives

The EIS analyzed six alternatives in detail: the No Action alternative and five action alternatives. In addition, the EIS considered other alternatives that were not analyzed in detail (EIS, pp. 45-47). The following section provides a description of the overall management approach of each alternative and summarizes the actions. These summaries include the actions that we would implement during the 10-year span of the restoration plan, as well as reasonably foreseeable future actions under each management approach. We made this forecast beyond the 10-year span of the plan only for the purpose of cumulative impact analysis in the EIS. These summaries include actions that are addressed in the *ROD for the Upper Siuslaw LSR Restoration Plan: Watershed Restoration Actions*. Detailed descriptions of the objectives, actions, guidelines, and mitigation measures of each alternative are presented in Appendix A of the EIS.

The EIS identified Alternative D as the preferred alternative of the BLM and the U.S. Fish and Wildlife Service (EIS, p. 43).

Alternative A – No Action

This alternative would take no management actions to protect and enhance late-successional and old-growth forest ecosystems; to foster the development of late-successional forest structure and composition in plantations and young forests; or to reconnect streams and reconnect stream channels to their riparian zones and upslope areas. Only those management actions specifically required by the RMP or by law or policy would occur.

Alternative B – Plantation and road management with no timber harvest

This alternative is designed to accomplish restoration without timber removal. It would thin Douglas-fir plantations, but not unmanaged stands. Because no cut trees would be removed, the risk of fire and insect infestation would constrain thinning prescriptions, except in very young stands. Stands >50 years old would not be thinned. Riparian areas (<100' from streams) which are conifer-dominated would be treated the same as upland stands. No trees would be specifically felled or pulled into streams, and no in-stream structures would be constructed. All roads would be decommissioned where legally possible. No new roads would be constructed.

Alternative C – Continue current management approach

This alternative is designed to accomplish restoration using current silvicultural techniques and stream restoration strategies. Thinning would be concentrated in stands 41-80 years old and would have targets for moderate stand densities and relatively even tree spacing. Riparian areas (<100' from streams) which are conifer-dominated would be treated the same as upland stands, but would not be thinned within 50' of streams. In-stream structures would be constructed, and some structures would be cabled for

stability in larger streams. Trees would be felled into smaller streams adjacent to thinning projects. Non-shared roads capable of delivering sediment to streams, damaged roads not needed for future access, and roads that dead-end in late-successional stands would be decommissioned. New roads would be constructed as needed to access areas selected for thinning.

Alternative D - T&E species recovery (preferred alternative)

This alternative is designed to take advantage of restoration opportunities that would have the least short-term adverse effects with the most long-term benefits to habitat for northern spotted owls, marbled murrelets, and coho salmon. Thinning would be concentrated in younger stands and would have targets for a wide range of stand densities and high variability of tree spacing. Stands >60 years old would not be thinned. Riparian areas (<100' from streams) which are conifer-dominated would be thinned from below without any timber removal. In-stream structures would be constructed, and some structures would be cabled for stability in larger streams. Trees would be felled into all streams adjacent to stands ≤80 years old. Non-shared roads capable of delivering sediment to streams, damaged roads, and roads within or adjacent to late-successional forest, would be decommissioned. New road construction would be limited to temporary spur roads.

Alternative E – Reduce stand densities as quickly as possible

This alternative is designed to reduce stand densities as quickly as possible. Thinning would occur in all age classes ≤80 years old and would have targets for very low stand densities and high variability of tree spacing. Riparian areas (<100' from streams) which are conifer-dominated would be treated the same as upland stands. Trees would be felled or pulled into all streams adjacent to stands ≤80 years old. No structures would be constructed, and woody debris would not be cabled for stability. Non-shared roads capable of delivering sediment to streams, damaged roads, and roads within or adjacent to late-successional forest, would be decommissioned. New roads would be constructed as needed to access areas selected for thinning.

Alternative F – Multi-entry and multi-trajectory thinning

This alternative is designed to accomplish restoration using multiple thinning of stands to establish five different stand trajectories. Thinning would occur in all age classes ≤80 years old. Thinning entries would be designed to maintain moderate to high canopy closure, and would have targets for a range of stand densities. Riparian areas (<100' from streams) which are conifer-dominated would be treated the same as upland stands. In-stream structures would be constructed on larger streams, and some would be cabled for stability. Non-shared roads capable of delivering sediment to streams, damaged roads not needed for future access, and roads that dead-end in late-successional stands would be decommissioned. New roads would be constructed as needed to access areas selected for thinning.

Environmentally Preferable Alternative

The Council on Environmental Quality (CEQ) regulations that implement the National Environmental Policy Act (NEPA) require that the ROD specify "the alternative or alternatives which were considered to be environmentally preferable." (40 CFR 1505.2(b)). CEQ's "Forty Questions" document (46 Federal Register, 18026, March 23, 1981) explains, "The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources. The Council recognizes that the identification of the environmentally preferable alternative may involve difficult judgments, particularly when one environmental value must be balanced against another."

The alternatives in this EIS each present a different balance of environmental values. The intended balance of the restoration plan is reflected in the three-part purpose of the action: to protect and enhance late-successional and old-growth forest ecosystems; foster the development of late-successional forest structure and composition in plantations and young forests; and reconnect streams and reconnect stream channels to their riparian areas and upslope areas. Alternative D provides the best balance between short-term adverse effects (e.g., temporary disturbance and degradation of existing habitat conditions) and long-term benefits (e.g., speeding the development of late-successional forest structure). Therefore, Alternative D is the environmentally preferable alternative.

Rationale for Selection

I adopt the upland thinning actions of Alternative D, because they will accomplish the purpose of the action and will best respond to the issues identified in the EIS. Overall, Alternative D (the Selected Alternative) will thin upland stands to a wide range of stand densities, which will maintain future management options (EIS, pp. 125-132). Alternative D (the Selected Alternative) is expected to generate revenue greater than the costs for both upland thinning and watershed restoration actions, indicating the feasibility of implementing the overall restoration program (EIS, p. 137).

The action alternatives would be similarly effective at achieving the first purpose of the action: protecting and enhancing late-successional and old-growth forest ecosystems. Each of the action alternatives would reduce the risk of catastrophic fire in upland areas, compared to the No Action alternative. None of the alternatives would be likely to result in widespread or catastrophic insect damage to existing late-successional and old-growth forests (EIS, p. 171).

The action alternatives vary widely in how well they would achieve the second purpose of the action: fostering the development of late-successional forest structure and composition in plantations and young forests. Alternatives D (the Selected Alternative) and E would be considerably more effective than the other alternatives at speeding the development of late-successional forest structure in upland areas. However, there is some trade-off between the long-term development of late-successional structure and the short-term maintenance of northern spotted owl dispersal habitat. Alternative E, which would be the most effective at speeding the development of late-successional structure, would provide the least dispersal habitat in the short-term, and even temporarily reduce it from the current amount. Alternatives A, C, and F, which would maximize the development of dispersal habitat, would be largely ineffective at speeding the development of late-successional structure. Alternative D (the Selected Alternative) will effectively speed the development of late-successional structure in upland areas and will maintain or increase the amount of dispersal habitat across the landscape (EIS, pp. 171-175). Alternative D will restore the complexity of landscape-scale features by speeding the development of late-successional forest structural characteristics (EIS, pp. 125-132, 135-136). Alternative D will thin approximately 8,400 acres during the 10-year span of the restoration plan, of which 6,000 acres will develop late-successional forest structural characteristics within 100 years. Approximately 5,400 acres of the 13,800 acres of stands currently ≤80 years old will receive no treatment and will continue on their existing developmental pathway.

The upland thinning actions in all alternatives do not vary substantially in how they would contribute to the third purpose of the action: reconnecting streams and reconnecting stream channels to their riparian zones and upslope areas. The *ROD for the Upper Siuslaw LSR Restoration Plan: Watershed Restoration Actions* addresses actions that would have a greater effect on achievement of this third part of the purpose of the action. Upland thinning actions in Alternative D (the Selected Alternative) will have minimal adverse effects on streams and riparian areas, as discussed below.

New road construction in Alternative D (the Selected Alternative) will be limited to temporary spur roads which will be located outside of Riparian Reserves and will be built and decommissioned in the dry season of the same year. Therefore, new road construction and subsequent decommissioning will not be hydrologically connected to the stream network; will not result in any sedimentation to streams, and will not affect aquatic and riparian connectivity (EIS, p. 77). Yarding of timber will not result in sedimentation to streams, because slopes are generally gentle and stable in the project area; no harvest will occur on unstable slopes; and no harvest will occur within 100' of all streams (EIS, p. 76). Haul of timber will result in no more than negligible sedimentation to streams, because haul operations will be restricted to dry season conditions, except for specific, identified haul routes that have limited sediment delivery potential (see Mitigation below). These specific haul routes have substantial paved portions, and the unpaved portions have very few stream crossings (EIS, p. 76). Contamination of streams with hazardous materials is very unlikely under all of the alternatives: no herbicides, pesticides, or fertilizer will be used as part of the restoration plan. Use of petroleum products will be associated with the thinning actions, but reasonable precautions in the transport and use of equipment (including refueling) would result in a very low risk of contamination.

Thinning in Alternative D (the Selected Alternative) will have little effect on overall water flow patterns. The planning area is low elevation, and the watershed lacks any substantial areas in the transient snow zone in which rain-on-snow events are more likely (EIS, p. 29). Thinning could conceivably contribute to an increase in summer low flows and overall water yield, because of reduction in evapotranspiration and interception due to the removal of some of the trees. However, any effect would be minimal and immeasurable, because part of the canopy will be retained in thinned stands, and unthinned buffers will be maintained along streams.

Implementation

The EIS analyzed the actions in the Selected Alternative in detail sufficient to allow us to implement many of the actions without additional NEPA analysis. We will implement each action (or group of related actions) under the LSR Restoration Plan with its own decision document, prior to which we will conduct a "Documentation of Land Use Plan Conformance and NEPA Adequacy" (DNA) to determine whether additional NEPA analysis is necessary. Where site-specific conditions differ, or circumstances change, from those described in the EIS, or if a DNA is inappropriate for other reasons, we may need to conduct additional NEPA analysis prior to reaching a decision to implement an action. However, such instances are expected to be the exception.

Timber sales will be implemented over the next 10 years with individual timber sale decision documents. For each timber sale, a DNA will be prepared to determine whether additional NEPA analysis is necessary, and a sale-specific decision document will be prepared (see "Administrative Review Opportunities" below). The public will generally receive notice of pending decisions through the District Quarterly Planning Update preceding the planned sale. Specific harvest unit locations will be described at that time. Timber sale decision documents will include descriptions of sale-specific design features, including sale boundaries, specific thinning prescriptions, yarding methods, temporary spur construction, road renovation, road decommissioning, and applicable Best Management Practices.

Upland thinning actions that do not include timber harvest may be implemented with individual forest management decisions, or as part of a decision on an annual program of work together with other restoration actions. In either case, a DNA will be prepared to determine whether additional NEPA analysis is necessary prior to a decision.

Accomplishment of these projects will be reported through the Eugene District Annual Program Summary and occasional LSR Restoration Plan monitoring reports.

Clearances and surveys prior to implementation

Wildlife and botanical clearances will be conducted prior to implementation of restoration actions, in accordance with the *Eugene District Resource Management Plan* (RMP) (USDI Bureau of Land Management, June 1995), as amended by the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (USDA Forest Service and USDI Bureau of Land Management, January 2001) and the *Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (USDA Forest Service and USDI Bureau of Land Management, March 2004). Special status species sites discovered as a result of clearances or pre-disturbance surveys will be managed consistent with the Special Status Species policy. Identified special habitats will be managed consistent with the direction the RMP (pp. 39-41).

Prior to implementation of restoration actions, site-specific field examination may be needed to identify streams, other water features, and unstable areas. In the Selected Alternative, riparian zones (<100' from streams) are identified for specific management prescriptions: the boundary of riparian zones will be measured as 100' slope distance from all streams, including intermittent streams, as described in the RMP (pp. 23-24). Field examination may also be needed to evaluate the suitability of soils for restoration activities.

Adaptive Management

Over the course of implementing this 10-year LSR Restoration Plan, changes may be made to project implementation through an adaptive management process based on monitoring results or changes in environmental conditions. Adaptive management is a continuing process of monitoring, evaluating, and adjusting implementation actions to ensure continued achievement of the goals of the restoration plan.

The LSR Restoration Plan describes the goals, objectives, actions, guidelines, and mitigation measures for the Selected Alternative (see Appendix A). Adaptive management over the 10-year implementation period is likely to lead to changes in some actions. Some changes will likely arise from detailed field examinations: for example, the proportion of stands that are found suitable for a specific thinning prescription may differ from the approximate proportions described in the Selected Alternative. Other changes will likely arise from monitoring of impacts: for example, field inspection of bark beetle infestation of coarse woody debris may lead to modification of the limits on coarse woody debris diameter. Such changes would be intended to improve our ability to meet the objectives described in the Selected Alternative, and to ensure that our actions remain consistent with the effects analysis in the EIS. Therefore, such changes would be unlikely to require supplementation of the EIS or amendment of this ROD.

Changes to the objectives in the Selected Alternative are less likely than changes to actions. If objectives need adjustment, it will probably not be apparent until near the end of the 10-year implementation period; for example, if objectives for thinning in a particular age class cannot be met. If an objective needs to be changed, we will evaluate the change to determine if it requires supplementation of the EIS and amendment of this ROD.

Attached to this ROD is a Water Quality Restoration Plan (WQRP) (see Appendix B). ODEQ reviewed this WQRP and provided no recommendations for additional measures, concluding that the WQRP contains all of the necessary implementation plan components. Changes may be made to the WQRP in the future, especially when Total Maximum Daily Loads (TMDLs) for the Siuslaw River are completed, which is currently scheduled for 2008 (http://www.deq.state.or.us/wq/303dlist/TMDLTargetsMap.htm). The WQRP may also be supplemented by site-specific information and measures for specific projects. Future changes or additions to the WQRP will be reflected in decision documents for actions or groups of actions as applicable. BLM will evaluate any future changes to the WQRP to determine if they would

substantially alter the effects analysis in the EIS or change the nature of the decision in this ROD such that supplementation of the EIS and/or amendment of the ROD would be required. However, the WQRP is neither a NEPA document nor a decision document, and changes to the WQRP will not automatically trigger additional NEPA analysis and decision-making.

New technology or new research could alter the actions we take or our understanding of the effects of our restoration actions. We will evaluate new technology and applicable research as they arise. However, we do not anticipate that changes in technology or new research over the 10-year implementation period would be substantial enough to require supplementation of the EIS or amendment of this ROD.

Adaptive management in response to a change in environmental conditions is unpredictable, but potentially substantial. For example, a severe windstorm may cause extensive windthrow across the landscape, changing the acres in need of thinning. A flood may alter stream structure, changing the need for in-stream woody debris for structure. We will evaluate such unpredictable events to determine if they substantially alter the analysis in the EIS or change whether the actions and objectives described in the Selected Alternative will be sufficient to meet the goals of the restoration plan.

Mitigation

Threatened and Endangered Species

To avoid disturbance to nesting northern spotted owls or marbled murrelets, we will apply seasonal restrictions as provided in the Biological Opinion from the U.S. Fish and Wildlife Service. Other mitigation measures to avoid or reduce adverse effects on listed species are incorporated into the description of the LSR Restoration Plan (see Appendix A).

Water Quality

Attached to this ROD is a Water Quality Restoration Plan (WQRP), which addresses BLM's role as a Designated Management Agency with responsibility for maintaining the quality of waters on the 303(d) list (see Appendix B). All of the mitigation and monitoring measures related to upland thinning actions that are described in the WQRP are also presented in this ROD.

Log Haul

Except for haul routes identified in Appendix D, log haul operations will be restricted to dry season conditions (generally June 1 to September 15) to reduce the potential for sediment delivery to streams. The haul routes identified in Appendix D would not be seasonally restricted and may include log haul during wet conditions. Haul on these routes would result in no more than negligible amounts of sediment reaching streams, because these roads have little or no potential to deliver sediment to streams. Many of these routes include substantial paved portions. The unpaved portions of all haul routes identified in Appendix D include a total of two stream crossings. Fill slopes at each of these stream crossing are well-vegetated. None of the unpaved portions of these haul routes cross fish-bearing streams, are adjacent to (<25') fish-bearing streams, or would otherwise have any potential for direct sediment delivery to fish-bearing streams.

Monitoring

This ROD includes the following monitoring plan which will evaluate whether the projects implemented are within the scope of the LSR Restoration Plan, whether impacts are within the scope of the EIS, and whether the projects are achieving the anticipated results. Effectiveness monitoring related to riparian shading and water temperature is described in the *ROD for the Upper Siuslaw LSR Restoration Plan - Watershed Restoration Actions.*

Implementation Monitoring

As directed by the RMP, a sample of all projects implemented on the Eugene District is visited annually to verify that actions are implemented in a manner consistent with the RMP standards and guidelines (RMP, pp. 116-117). Projects implemented under the LSR Restoration Plan will be evaluated as part of this annual implementation monitoring. Monitoring results will be reported as a component of the Eugene District Annual Program Summary.

Additional specific monitoring reports will also chart progress towards meeting the LSR Restoration Plan objectives, which are described in the attached Appendix A. These objectives are designed to be measured and have time frames for achievement. For example, the monitoring report will tally how many acres in a particular age class have been thinned to a particular prescription and compare that to the acres expected to be treated during the 10-year implementation period. Implementation of the restoration plan will not be evenly-paced for most objectives, and the anticipated 10-year accomplishments cannot be partitioned into annual targets. Therefore, these LSR Restoration Plan monitoring reports will be occasional, rather than annual, over the 10-year implementation period.

Findings

Conformance

The Selected Alternative is in conformance with the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl* (Northwest Forest Plan) (USDA Forest Service and USDI Bureau of Land Management, April 1994), and the RMP, as amended by the *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (USDA Forest Service and USDI Bureau of Land Management, January 2001), the *Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (USDA Forest Service and USDI Bureau of Land Management, March 2004), and the *Record of Decision to Clarify Provisions Relating to the Aquatic Conservation Strategy* (USDA Forest Service and USDI Bureau of Land Management, March 2004).

Aquatic Conservation Strategy

The Aquatic Conservation Strategy seeks to restore watershed conditions over broad landscapes, and restoration will likely take decades, possibly more than a century (USDA and USDI, April 1994, p. B-9; USDA and USDI 2004b, pp. 8-9, 12-13). The Selected Alternative is designed to contribute to maintaining or restoring watershed conditions, and responds to the analysis and recommendations in the Siuslaw Watershed Analysis and the LSR assessment (USDI BLM 1996; USDA and USDI 1997; EIS, pp. 25-26). The EIS and the documents incorporated therein, including the watershed analysis and LSR assessment, describe existing watershed conditions (EIS, pp. 51-57). The EIS describes the effects of the Selected Alternative on watershed conditions (EIS, pp. 121-137).

Endangered Species Act

BLM has completed formal consultation under the Endangered Species Act with the U.S. Fish and Wildlife Service on the effect of the Selected Alternative on northern bald eagle, northern spotted owl, and marbled murrelet. In their Biological Opinion, the U.S. Fish and Wildlife Service concluded that habitat modification under the Selected Alternative may affect, but would not be likely to adversely affect northern bald eagle, northern spotted owl and marbled murrelet (see Appendix C). The U.S. Fish and Wildlife Service concluded that disturbance under the Selected Alternative may affect, but would not be likely to adversely affect northern bald eagle and northern spotted owl, and would be likely to adversely affect marbled murrelet (see Table 2).

Table 2. Effects on Listed Species.

	Habitat Modification	Disturbance
Northern bald eagle	Not likely to adversely affect	Not likely to adversely affect
Northern spotted owl	Not likely to adversely affect	Not likely to adversely affect
Marbled murrelet	Not likely to adversely affect	Likely to adversely affect

In addition, the U.S. Fish and Wildlife Service concluded the Selected Alternative may affect, but would not be likely to adversely affect critical habitat for the northern spotted owl and critical habitat for the marbled murrelet. The entire planning area is designated as critical habitat for the northern spotted owl within critical habitat units OR-52 and OR-53 (USDI Fish and Wildlife Service 1992; EIS, p. 54; Map 9). Most stands in the planning area west of the western boundary of Township 20 South, Range 5 West are designated as critical habitat for the marbled murrelet within critical habitat unit OR-04i (USDI Fish and Wildlife Service 1996).

BLM will consult or conference with NOAA Fisheries on upland thinning actions that may affect coho salmon on a project-by-project basis as appropriate. Most or all upland thinning actions are expected to have no effect on coho salmon, and thus not require consultation. The site-specific design features of individual upland thinning actions, which cannot be fully anticipated at this time, will determine whether any of these actions may affect coho salmon. Prior to decisions on upland thinning actions, BLM will either determine and document that the action would have no effect on coho salmon or will complete project-specific consultation with NOAA Fisheries. Any project-specific consultation with NOAA Fisheries under the Endangered Species Act would also address any adverse effects to Essential Fish Habitat under the Magnuson-Stevens Fishery Conservation and Management Act.

Public Involvement

BLM began informal scoping in 2000, including distributing information to initiate issue identification and to open public dialogue regarding the restoration plan. During 2001, we solicited public participation through a series of public meetings, presentations, and field trips. We issued newsletters about LSR restoration and this restoration plan, announcing field trips or public meetings, addressing questions from the public, and describing preliminary issues and alternatives. During this informal scoping, we received six letters or e-mails in which the authors expressed concerns or made suggestions related to LSR restoration.

BLM published a Notice of Intent to prepare an EIS in the Federal Register on October 9, 2002, beginning the formal scoping period. The Notice of Intent requested comments on the scope of the analysis for this proposed plan. In response to the Notice of Intent, we received one letter from the Oregon Natural Resources Council (ONRC). Their comments were not specific to the EIS and did not substantively add to previous comments received from ONRC during informal scoping.

The public comment period for the draft EIS began on August 15, 2003 and closed on October 15, 2003. The draft EIS was mailed to agencies, organizations, and individuals listed in the EIS (p. 184), and was made available on the internet. We also made presentations of the draft EIS to various groups during the comment period. We received 11 comment letters during the comment period and one letter after the comment period. None of the comments suggested development of additional alternatives or pointed out flaws or deficiencies in analysis. As a result, we made only minor changes in the draft EIS in response to comments, consisting of technical, editorial, or non-substantive factual corrections. Therefore, we prepared only an abbreviated final EIS,

containing copies of comments received on the draft EIS, responses to those comments, and an errata section, consistent with 40 CFR 1503.4 and the BLM NEPA Handbook H-1790-1, p. V-21.

The abbreviated final EIS was published on April 9, 2004. The final EIS was mailed to agencies, organizations, and individuals that received the draft EIS, and was made available on the internet. We did not receive any comments following publication of the final EIS.

We notified the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians, and the Confederated Tribes of the Grand Ronde of this project during the scoping process, requesting information regarding tribal issues or concerns relative to the project. We also sent the tribes copies of the draft and final EIS. We received no responses.

Administrative Review Opportunities

This forest management decision may be protested under 43 CFR 5003 – Administrative Remedies. In accordance with 43 CFR 5003.2, the decision for this project will not be subject to protest until the notice of forest management decision is first published in the Eugene Register-Guard on July 14, 2004. Protests of the decision must be filed with this office within 15 days after first publication of the notice of decision. As interpreted by BLM, the regulations do not authorize acceptance of protests in any form other than a signed, paper document that is delivered to the physical address of the BLM office. Therefore, e-mail or facsimile protests will not be accepted. If no protest is received by the close of business (4:15 pm) on July 29, 2004, this decision will become final. If a timely protest is received, this decision will be reconsidered in light of the protest and other pertinent information available in accordance with 43 CFR 5003.3.

Future decisions on specific actions conducted under this restoration plan will have additional protest opportunities. The decision to implement individual timber sales will be subject to protest under 43 CFR 5003 when the notice of sale is first published in the Eugene Register-Guard. The published notice of sale will constitute the decision document for the purpose of protest of a timber sale (43 CFR 5003.2b). The decision to implement restoration actions other than timber sales will be subject to protest under 43 CFR 5003 when the notice of decision is first published in the Eugene Register-Guard. These future protest opportunities for timber sales and other specific actions will be limited to issues that could not have been raised in a protest of the broader forest management decision made in this ROD.

References

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Appendix A – Detailed Description of Upland Thinning Actions

[Objectives and actions to achieve Goals 1 and 3 of the LSR Restoration Plan are addressed in Appendix A of the ROD for the Upper Siuslaw LSR Restoration Plan - Watershed Restoration Actions].

GOAL 2: *Foster the development of late-successional forest structure and composition in plantations and young forests within LSR 267.*

OBJECTIVE: **Reduce tree density and increase variability of tree spacing in 90% (100% of stands; 90% of acres) of the 1-20 year age class that has not been pre-commercially thinned, so that tree densities range from 75-150 TPA within 10 years.**

ACTION: Thin approximately 1/3 of stands aged 11 to 20 years to a stand average of 75-100 Douglas-fir trees per acre.

ACTION: Thin approximately 1/3 of stands aged 11 to 20 years to a stand average of 100-120 Douglas-fir trees per acre.

ACTION: Thin approximately 1/3 of stands aged 11 to 20 years to a stand average of 120-150 Douglas-fir trees per acre.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Select the largest, healthiest trees for retention, regardless of spacing.
- Leave most or all cut trees in the stand.
- Generally apply the lower density prescriptions to the older stands within the age class.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10' - 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.

OBJECTIVE: **Reduce tree density and increase variability of tree spacing in 90% (100% of stands; 90% of acres) of the 1-20 year age class that has been pre-commercially thinned, so that tree densities range from 40-60 TPA within 10 years.**

ACTION: Thin stands in uplands (i.e., >100' from streams) to a treated stand average of 40-60 Douglas-fir trees per acre, with variable spacing.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Select trees for retention based on random or highly variable spacing. Use thinning prescriptions that cut trees <20" dbh approximately in proportion to their abundance amongst diameter classes, or preferentially cut trees in the most abundant diameter classes in the stand.

- Do not select trees >20" dbh for cutting. Leave in the stand any trees >20" dbh felled for safety or operational reasons.
- Leave in the stand any cut trees >16" dbh.
- Remove cut trees <16" dbh as necessary to reduce risk of fire or insect infestation. Some removal will generally be necessary in stands that have been pre-commercially thinned more than 8 years ago.
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.
- Generally apply thinning more than 8 years after pre-commercial thinning.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10'- 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.

OBJECTIVE: **Reduce tree density and increase variability of tree spacing in 75% (100% of stands; 75% of acres) of the 21-30-year age class, so that tree densities range from 40-110 TPA within 10 years.**

ACTION: Among stands aged 21 to 30 years that were pre-commercially thinned, thin approximately 1/3 of stands in uplands (i.e., >100' from streams) to a treated stand average of 40-60 Douglas-fir trees per acre, with variable spacing.

ACTION: Among stands aged 21 to 30 years that were pre-commercially thinned, thin approximately 1/3 of stands in uplands (i.e., >100' from streams) to a treated stand average of 60-80 Douglas-fir trees per acre, with variable spacing.

ACTION: Among stands aged 21 to 30 years that were pre-commercially thinned, thin approximately 1/3 of stands in uplands (i.e., >100' from streams) to a treated stand average of 80-110 Douglas-fir trees per acre, with variable spacing.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Select trees for retention based on random or highly variable spacing. Use thinning prescriptions that cut trees <20" dbh approximately in proportion to their abundance amongst diameter classes, or preferentially cut trees in the most abundant diameter classes in the stand.
- Do not select trees >20" dbh for cutting. Leave in the stand any trees >20" dbh felled for safety or operational reasons.
- Leave in the stand any cut trees >16" dbh.
- Remove cut trees <16" dbh as necessary to reduce risk of fire or insect infestation. Some removal will generally be necessary in stands that have been pre-commercially thinned more than 8 years ago.
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10'- 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.

ACTION: Among stands aged 21 to 30 years that were not pre-commercially thinned, thin

75% of uplands (i.e., >100' from streams) to a treated stand average of 60-110 Douglas-fir trees per acre.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Thin from below: select the largest, most vigorous trees for retention without regard for tree spacing. A diameter-limit prescription of 10" dbh (i.e., all Douglas-fir <10" dbh would be cut) might be typical.
- Leave in the stand any cut trees >16" dbh, such as those felled for safety or operational reasons (trees >12" dbh will rarely be selected for cutting).
- Remove cut trees <16" dbh as necessary to reduce risk of fire or insect infestation.
- Densities may be left higher than 110 trees per acre in areas if needed to maintain stand stability.
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10'- 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.

OBJECTIVE: **Reduce tree density and increase variability of tree spacing in 50% (100% of stands; 50% of acres) of the 31-50-year age class, so that tree densities range from 40-110 TPA within 10 years.**

ACTION: Among stands aged 31 to 50 years, thin approximately 1/4 of stands in uplands (i.e., >100' from streams) to a treated stand average of 40-60 Douglas-fir trees per acre, with variable spacing.

ACTION: Among stands aged 31 to 50 years, thin approximately 1/4 of stands in uplands (i.e., >100' from streams) to a treated stand average of 60-80 Douglas-fir trees per acre, with variable spacing.

ACTION: Among stands aged 31 to 50 years, thin approximately 1/4 of stands in uplands (i.e., >100' from streams) to a treated stand average of 80-110 Douglas-fir trees per acre, with variable spacing.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Select trees for retention based on random or highly variable spacing. Use thinning prescriptions that cut trees <20" dbh approximately in proportion to their abundance amongst diameter classes, or preferentially cut trees in the most abundant diameter classes in the stand.
- Do not select trees >20" dbh for cutting in the thinning prescription (some trees >20" dbh will be cut to meet coarse woody debris objectives). Do not harvest any trees >20" dbh felled for safety or operational reasons (though trees may be moved to provide coarse woody debris to other stands or streams).
- Remove cut trees <20" dbh as necessary to reduce risk of fire or insect infestation. Some removal will generally be necessary.
- Retain existing snags and coarse woody debris, except for safety and operational reasons.
- Retain in the stand any snags felled for safety or operational reasons.
- Target stand densities should be reached after completion of coarse woody debris and

snag creation done under objectives below.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10'- 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.
- In existing dispersal habitat within current owl home ranges, use thinning prescriptions that would retain at least 40 percent canopy closure.

ACTION: Among stands aged 31 to 50 years, thin approximately 1/4 of stands in uplands (i.e., >100' from streams) to a treated stand average of 60-110 Douglas-fir trees per acre without regard to spacing.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Thin from below: select the largest, most vigorous trees for retention without regard for tree spacing.
- Do not select trees >20" dbh for cutting in the thinning prescription (some trees >20" dbh will be cut to meet coarse woody debris objectives). Do not harvest any trees >20" dbh felled for safety or operational reasons (though trees may be moved to provide coarse woody debris to other stands or streams).
- Leave in the stand any cut trees >16" dbh (trees >12" dbh will rarely be selected for cutting).
- Remove cut trees <16" dbh as necessary to reduce risk of fire or insect infestation.
- This prescription will generally be applied to stands in which the smaller diameter trees are not expected to respond to increased growing space (e.g., high-density stands that were not pre-commercially thinned).
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10'- 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.

OBJECTIVE: **Reduce tree density and increase variability of tree spacing in 25% (50% of stands; 50% of acres) of the 51-60-year age class, so that tree densities range from 40-110 TPA within 10 years.**

ACTION: Among stands aged 51 to 60 years, thin approximately ½ of stands in uplands (i.e., >100' from streams) to a treated stand average of 40-60 Douglas-fir trees per acre, with variable spacing.

ACTION: Among stands aged 51 to 60 years, thin approximately ½ of stands in uplands (i.e., >100' from streams) to a treated stand average of 60-80 Douglas-fir trees per acre, with variable spacing.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Select trees for retention based on a combination of thinning from below (i.e., cutting smaller diameter trees) and proportional thinning amongst the larger diameter trees (cutting trees in approximate proportion to their abundance). This prescription will be

expected to (1) cut most trees that are not expected to respond to increased growing space and (2) cut in a random or highly variable pattern some of those trees that are expected to respond to increased growing space (e.g., trees with larger diameter, lower height:diameter ratio, greater percentage of live crown, etc.).

- Do not select trees >20" dbh for cutting in the thinning prescription (some trees >20" dbh will be cut to meet coarse woody debris objectives). Do not harvest any trees >20" dbh felled for safety or operational reasons (though trees may be moved to provide coarse woody debris to other stands or streams).
- Remove cut trees <20" dbh as necessary to reduce risk of fire or insect infestation. Some removal will generally be necessary.
- Retain existing snags and coarse woody debris, except for safety or operational reasons.
- Retain in the stand any snags felled for safety or operational reasons.
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.
- Generally avoid thinning in stands that have large residual trees, large snags, and a wide range of tree heights, because such stands may provide roosting and foraging habitat for northern spotted owls. Thinning should generally be done only in stands that exhibit a homogeneous stand structure.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10'- 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.
- Evaluate stands ≥51 years old with older remnant trees for potential marbled murrelet habitat. Survey potential habitat or leave untreated.
- In existing dispersal habitat within current owl home ranges, use thinning prescriptions that would retain at least 40 percent canopy closure.
- Do not thin within current owl home ranges that currently have less than 40% suitable habitat.

ACTION: Renovate and improve existing roads and construct new spur roads as needed to access areas selected for thinning.

GUIDELINES:

- Minimize length of new spur road construction. New spur roads will generally be less than 200' in length.
- Minimize cut and fill in spur road construction. Approximate pre-construction land contour in decommissioning.

MITIGATION MEASURES:

- Do not construct new permanent spur roads.
- Do not construct new spur roads within Riparian Reserves, and do not construct new stream crossings.
- In constructing new spur roads, do not cut conifers ≥32" dbh.
- Limit temporary spur road use to a single logging season and decommission spur roads at the end of the logging season (i.e., before the beginning of winter rains).
- Do not construct any new spur roads in stands >80 years old.
- Subsoil temporary roads upon completion of project as needed to reduce soil compaction.
- Block decommissioned roads to restrict vehicular access.

OBJECTIVE: **In stands treated under the above objectives, develop densities of shade-tolerant conifers to ensure that by age 81, they contain densities similar to those found in mature natural stands (26-90 TPA >2" dbh).**

ACTION: Within stands that are thinned to below 110 TPA at ages 21-30 and lack sufficient shade-tolerant conifer trees or seedlings to meet the objective, plant seedlings of shade-tolerant conifers (western hemlock, western red-cedar, grand fir, incense-cedar and/or Pacific yew) at densities of 26-200 trees per acre.

ACTION: Within stands that are thinned to below 80 TPA at ages 31-60 and lack sufficient shade-tolerant conifer trees or seedlings to meet the objective, plant seedlings of shade-tolerant conifers (western hemlock, western red-cedar, grand fir, incense-cedar and/or Pacific yew) at densities of 26-200 trees per acre.

GUIDELINES:

- Give preference in planting to areas with the greatest likelihood of seedling establishment and growth, considering factors such as post-thinning overstory density and shrub competition.
- Planting may be concentrated in distribution in response to site-specific conditions and need not be evenly distributed across the stand. Planting densities should generally be met at the scale of 20 acres (e.g., 520-4,000 trees/20 acres).

OBJECTIVE: **In stands treated under the above objectives, develop quantities of snags and coarse woody debris to ensure that by age 81, they contain amounts consistent with Alternative #2 in the LSR Assessment (1102-3794 cu. ft./acre).**

ACTION: In thinned stands in which some cut trees are removed and coarse woody debris needs are not being met, leave sufficient felled trees as coarse woody debris to meet stand average coarse woody debris levels of at least 551 cu.ft./acre.

GUIDELINES:

- Coarse woody debris levels should be met at the approximate time of thinning operations.
- Coarse woody debris may be concentrated in distribution and need not be evenly distributed across the stand. Coarse woody debris levels should generally be met at the scale of 20 acres (e.g., 11,020 cu.ft./20 acres). Individual coarse woody debris patches (i.e., areas in which all Douglas-fir trees are cut) should generally be limited to less than 1/4 acre in size.
- At least half of the volume of coarse woody debris target (i.e., 276 cu.ft./acre) should be from trees of diameters greater than the pre-treatment stand average diameter.

ACTION: In thinned stands in which some cut trees are removed and snag needs are not being met, create sufficient snags to meet stand average snag levels of at least 551 cu.ft./acre. Snags may be created by a variety of methods, including girdling, topping, and/or fungal inoculation.

GUIDELINES:

- Snag creation may be done at the time of thinning or delayed to allow time to assess natural tree mortality levels following thinning. Regardless, snag levels should be met within 5 years of the thinning operations, or within 10 years for stands thinned at ages

21-30 years.

- Snags may be concentrated in distribution and need not be evenly distributed across the stand. Snag levels should generally be met at the scale of 20 acres (e.g., 11,020 cu.ft./20 acres). Individual snag patches (i.e., areas in which all Douglas-fir trees are killed) should generally be limited to less than 1/4 acre in size.
- At least half of the trees left for snags should have diameters greater than the pre-treatment stand average diameter.

I. Condition Assessment and Problem Description

Geographic Region of Interest

The area of this Water Quality Restoration Plan (WQRP) is that of the Bureau of Land Management (BLM) Upper Siuslaw Late-Successional Reserve (LSR) Restoration Plan (hereafter referred to as the LSR Restoration Plan), which addresses restoration within the Upper Siuslaw portion of LSR 267. BLM, in cooperation with the U.S. Fish and Wildlife Service, has prepared an environmental impact statement (EIS) that analyzed impacts of the LSR Restoration Plan (USDI BLM 2004). The entire LSR 267 includes 175,280 acres of federal land managed by the BLM Eugene, Roseburg, and Coos Bay Districts and the Siuslaw National Forest (see Map 7 – note that maps attached to this WQRP are numbered consistent with the larger map set in the EIS). The Eugene District manages approximately 83,000 acres (47%) of LSR 267. Of this total acreage, 24,400 acres are within the Upper Siuslaw sub-unit (14% of LSR 267), which will be addressed by this WQRP (hereafter referred to as the planning area). The Upper Siuslaw sub-unit of LSR 267 extends from the eastern edge of LSR 267, just west of the Lorane Valley. The Upper Siuslaw sub-unit extends west to Oxbow Creek (see Map 10). The northern boundary is defined by the ridge between the Siuslaw and Wolf Creek watersheds. The southern boundary is defined by the boundary between the Eugene and Roseburg Districts, which approximates the ridge between the Siuslaw and Umpqua River basins (although a very small portion of the Upper Siuslaw sub-unit of LSR 267 extends into the Umpqua River basin). Much of the planning area is privately owned (see Table 1).

Table 1. Land ownership in the LSR Restoration Planning Area.

Land Owner	Acres	Percent (%) Ownership
BLM LSR	24,400	42.5
BLM Matrix	3,600	6.3
Other public (State, County)	400	0.7
Private	29,000	50.5

Beneficial Uses

The beneficial uses that have been identified in this watershed are identified in Table 2.

Table 2. Beneficial Uses in the Siuslaw Watershed.

Beneficial Use	Occurring
Public Domestic Water Supply	
Private Domestic Water Supply	X
Industrial Water Supply	
Irrigation	X
Livestock	X

Anadromous Fish Rearing	X
Salmonoid Fish Passage	X
Resident Fish & Aquatic Life	X
Wildlife & Hunting	X
Fishing	X
Boating	
Water Contact Recreation	X
Aesthetic Quality	X
Hydro Power	
Commercial Navigation	

Current Conditions

Upper Siuslaw Watershed water quality limited stream segments and parameters identified on the 2002 Oregon 303(d) List are show in Table 3.

Table 3. Water Quality Limited Streams in the Planning Area.

Waterbody	River Mile	Parameter	Season	List Date
Siuslaw River	5.7 to 105.9	Dissolved Oxygen	September 15 - May 31	2002
Siuslaw River	5.7 to 105.9	Dissolved Oxygen	June 1 - September 14	2002
Siuslaw River	20 to 105.9	Temperature	Summer	2002

The Siuslaw Watershed Analysis details terrestrial and aquatic ecosystem conditions and processes within the Siuslaw River fifth-field watershed (USDI BLM 1996). The Siuslaw Watershed Analysis includes a stream-by-stream analysis of current fish habitat conditions (USDI BLM 1996, pp. II-38 – II-47). Additional description of current stream conditions is presented in the Upper Siuslaw Aquatic Habitat Restoration Plan (Environmental Assessment OR090-98-17).

Climatic patterns in the region are dominated by cyclonic winter storms depositing over 40 inches of rain per year. In an average year, 80% of the precipitation falls as rain during the November - February period.

The Siuslaw headwater streams are at elevations of 1000 feet or less. The Siuslaw River has a low gradient along its entire course. The elevation change from the union of the North and South Forks of the Siuslaw near Lorane to the outlet into the ocean over 110 river miles away is less than 500 feet. Unlike the typical river pattern where the gradient decreases as the river increases in size and flow, the Siuslaw has no major changes in gradient along its entire length. Within the WQRP area, the Siuslaw River floodplain is narrow, with variable confinement bordered by steep slopes. Tributaries are generally steep and confined, with little valley development.

Most of the Siuslaw basin is dominated by sedimentary oceanic deposits of siltstone and sandstone. The sedimentary materials have very limited permeability and little capability to store or transport water. Most of the water movement in the sedimentary materials is at the seams. Most of the groundwater storage occurs in the shallow soils and in the valley bottom alluvium. Because of the limited water storage capacity, the stream flows are closely tied to precipitation patterns (see Table 4). Steams show considerable seasonal and long-term variation in flows. Peak flows are often more than 100 times greater than low flow discharges.

Table 4. Monthly Statistics Based on Mean Daily Discharge.[1]

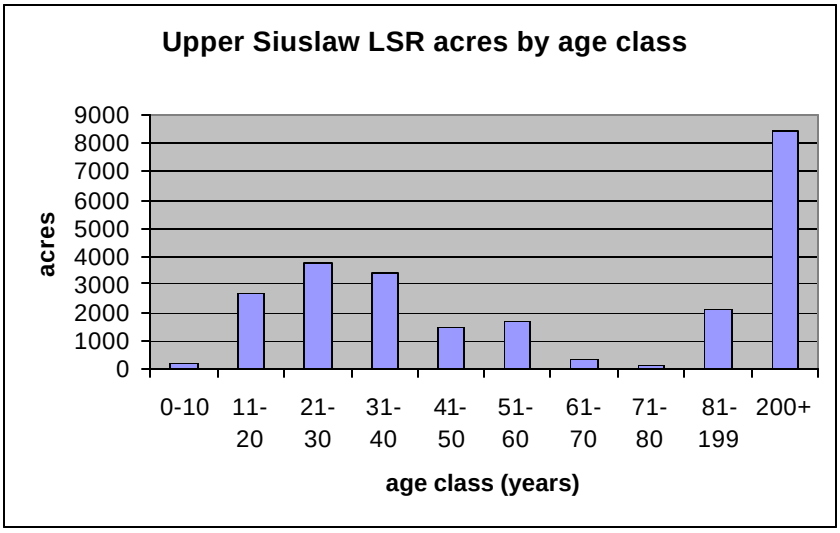
Month	Minimum	Maximum	Average	% Annual Runoff
Oct	19	249	92	1.80
Nov	57	1596	514	9.70
Dec	53	1998	1073	20.90
Jan	61	2061	1020	19.80
Feb	179	1853	961	17.00
Mar	263	1392	720	14.00
Apr	140	908	433	8.10
May	110	429	212	4.10
Jun	65	253	116	2.20
Jul	26	128	55	1.10
Aug	16	66	32	0.60
Sep	18	73	40	0.70

[1] Adapted from USGS, 1990.

Past timber harvest and road systems led to major changes in aquatic habitat in the basin, including the loss of large woody material from stream channels and the removal of large trees from riparian areas. Riparian areas have been further fragmented by the extensive road network, which parallels all major streams and is a chronic source of sedimentation. The loss of large woody material from stream channels has resulted in stream downcutting: the Siuslaw River and most of the major tributaries are 2 - 10 feet below their historic levels. The Siuslaw River along many reaches has downcut to bedrock, causing increased channelization and secondary confinement of the flow, increasing peak flow velocities, and reducing habitat diversity. Channel incision also has contributed to a decrease in the water storage capacity of the basin, loss of pool and off-channel fish rearing habitat, decreased connection to riparian areas, and an increase in summer water temperatures. Tributaries show some of the same patterns of channel downcutting. For many tributaries, the lowering of the Siuslaw channel created an elevation discontinuity, leading to rapid downcutting of the tributary stream channel.

Current vegetation conditions are presented in Map 8. More than half of forest stands in the WQRP area are >80 years old (see Figure 1 and Map 8). Almost all stands in the planning area <60 years of age have been regenerated following timber harvest, and most have been either seeded or planted, and then pre-commercially thinned.

Figure 1. Forest Age Classes in the Planning Area.



Recent Aquatic Restoration

Aquatic enhancement efforts in support of the watershed analysis recommendations are ongoing. In 1998 and 1999, BLM placed hundreds of tons of boulders in a control location within the Siuslaw River channel to simulate six "cascades." The objectives of this type of structural installation included building up the confined, bedrock dominated river channel and creating the potential for groundwater recharging (replenishing groundwater reservoirs), connecting the river and the adjacent flood plain, and increasing the structural complexity of the Siuslaw River and tributaries. Additional objectives included creating deep pools for fish cover, improving the availability of spawning, rearing and refuge habitat, and increasing the water retention capacity in the upper basin during the low flow summer months. Increased aeration as water flows through the project areas is an emergent benefit on the project areas.

In 2000 and 2001, BLM focused aquatic restoration efforts on removing migration barriers to make additional habitat available to aquatic species in the following Siuslaw River tributaries: Oxbow Creek and tributaries; Frying Pan Creek and a tributary; Bear Creek; Haight Creek; Dogwood Creek; and Buck Creek. Six barrier culverts were removed and replaced with passage friendly culverts, one barrier culvert was completely removed, and a stream enhancement project in Frying Pan Creek placed logs and boulders as key structural habitat features. These projects opened approximately 8.5 miles of usable stream habitat to aquatic species.

Five major tributaries of the Siuslaw River within the planning area currently have adequate woody debris to provide stable in-stream structures on 3rd to 5th-order streams: Oxbow Creek, Doe Hollow, Dogwood Creek, Russel Creek, and Fawn Creek (see Map 10). Based on stream habitat surveys, BLM fish biologists have determined that 25 of the 45 miles of 3rd to 5th-order streams in the planning area are a high priority for aquatic restoration efforts. Of these priority streams, approximately 12 miles currently have adequate woody debris. Of the remaining 13 miles that lack sufficient woody debris, only 3.8 miles are accessible by heavy equipment to perform in stream restoration work (see Map 10).

Existing Sources of Water Pollution

Changes in stream channels have influenced water quality, with an overall increase in water temperatures and associated drop in dissolved oxygen saturation levels. This is due to loss of

shading, exposure of bedrock with increased insolation, and loss of deep pools with their cooler groundwater interactions. Water temperatures may have also increased in some streams as a result of channel widening from increased sediment loading. When the amount of sediment entering a reach exceeds the transport capacity of a stream, the sediment is deposited. This can lead to the channel becoming wider and shallower. Channel widening increases in the stream surface area exposed to solar radiation.

Elevation of stream temperatures in forested watershed can increase following logging and road buildings (Brown and Krygier 1970; Brown 1980). Research has shown that shade-producing vegetation is an effective way to prevent elevated water temperatures and that riparian vegetation up to 100 feet from a stream may be effective in reducing solar radiation (Brazier and Brown 1972; Betschta et al. 1987). Tributaries in the planning area are well shaded, steep confined intermittent and perennial channels. The Suislaw River, due to its width and low gradient, is very susceptible to increased temperatures due to solar radiation. Canopy shade is not as significant a factor, with respect to stream temperature, in wide streams as in tributaries due to the increased width (Lewis et al. 2000).

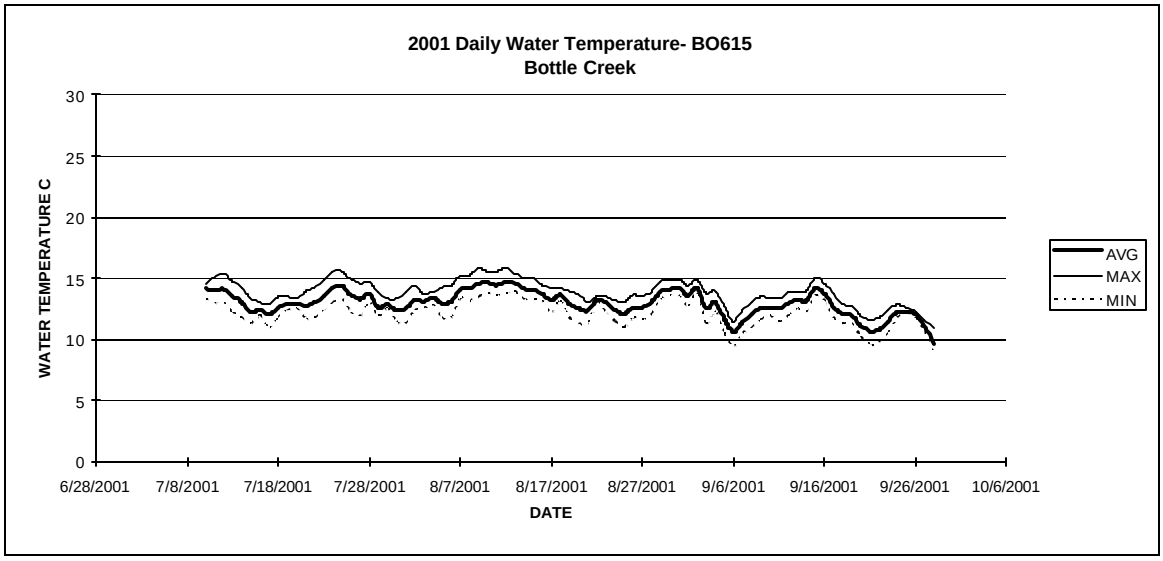
The 303(d) listing identified stream temperature as a water quality problem in the Siuslaw River in the planning area (see Table 3). Along many tributaries, growth of riparian vegetation has increased shading sufficiently to re-establish more normal temperature regimes. Table 5 depicts the highest 7-day moving average of the daily maximum temperature recorded during the 2002 monitoring period. Note that the tributaries are several degrees cooler than the mainstem Siuslaw River sites.

Table 5. 2002 Average Maximum Water Temperature for Siuslaw River and Tributaries.

Monitoring Site	Highest 7-Day Average Maximum Daily Temperature (°C)
SI562	19.8
SI520	22.8
SI463	22.3
Bear Cr.	15.3
Doe Cr.	17.1
Doe Hollow Cr.	16.0
Haight Cr.	17.2

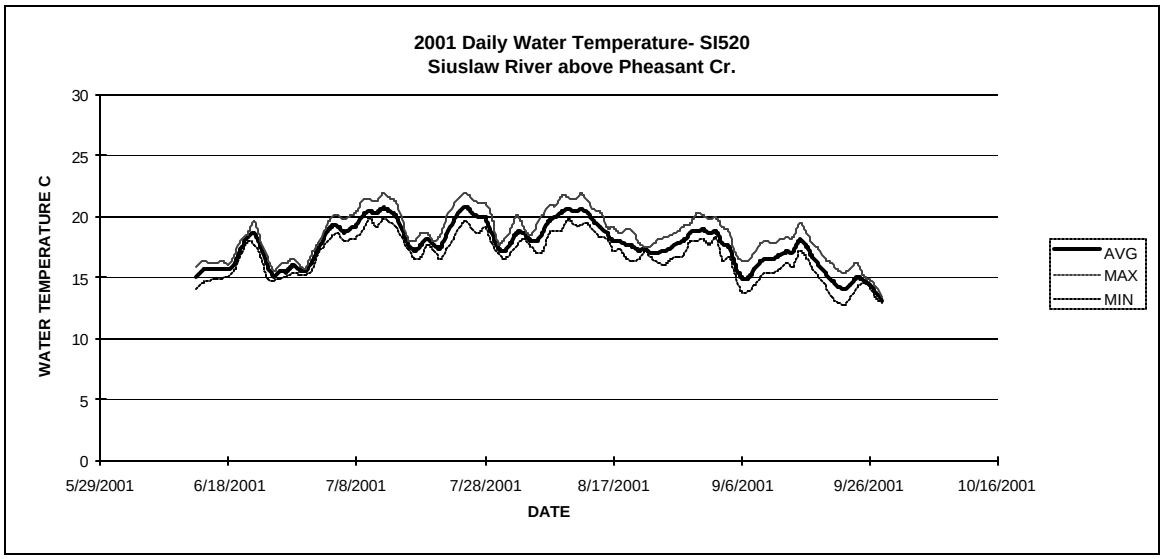
The Bottle Creek temperature graph is an example of a small stream temperature profile within the planning area (see Figure 2). Bottle Creek is typical of small streams within the planning area. The monitoring site received over 93% shade between March and September.

Figure 2. Bottle Creek Water Temperature.



However, in the Siuslaw River, the reduced groundwater interchange, dramatic increases in insolation due to exposed bedrock in shallow water, and the loss of streamside shade continues to produce high water temperatures. The Siuslaw River above Pheasant Creek is an example of a mainstem Siuslaw River temperature profile within the planning area (see Figure 3). This site received between 70% and 80% shade between March and September

Figure 3. Siuslaw River Water Temperature.



The primary source of fine sediment delivery to the stream system is chronic delivery from existing road surface erosion. Episodic delivery from landslides resulting from culvert failures during storm events may infrequently provide large deliveries of sediment to streams. Temporary pulses of sediment from culvert replacement or removal, in-stream aquatic habitat restoration

projects, road decommissioning, and new road construction provide minor quantities of sediment delivery.

The Siuslaw Watershed Analysis estimated that road related sedimentation represents only an approximately 5% increase over natural background levels (USDI BLM 1996, pp. II-7, II-8). The 2002 road inventory identifies approximately 65 miles of road on BLM-managed lands in the WQRP area that are capable of delivering fine sediments to streams. Furthermore, approximately 10% of these road segments are not experiencing any traffic and are "passively" decommissioning, but still erode sediment from the road prism. The road inventory also identifies approximately 73 culverts on BLM-controlled road segments that are currently at high risk for failure because of undersized culverts and plugged culverts. The ratings used to determine high risk included the risk to fish streams and high numbers of at risk culverts along a road segment.

The 303(d) listing also identified year–round dissolved oxygen as a water quality problem for the Siuslaw River within the planning area (see Table 3). The stream segment between River Mile 20 and 105.9 was listed based on data collected near River Mile 20. Confirming data within the planning area is not available. Low dissolved oxygen is influenced by multiple factors, including stream temperature, low flows, shallow stream gradients, fresh organic matter inputs, and high respiration rates (MacDonald 1991). Some nutrients and organic chemicals may enter the water from fertilizing, livestock use, and spraying, especially in agricultural areas. The predominant agricultural areas that could influence dissolved oxygen at River Mile 20 include the upper Lake Creek, upper Wildcat Creek, and the Lorane area of the Siuslaw River headwaters. The Lorane area is located upstream of the planning area, while Lake Creek and Wildcat Creek are tributaries downstream of the planning area. Timber harvest on adjacent private lands will be unlikely to affect dissolved oxygen levels by contributing substantial organic material to streams: state rules direct private landowners to treat slash to minimize slash entry into streams (Oregon Administrative Rules 629-615-0000). However, timber harvest on adjacent private lands will continue to contribute to increased stream temperatures by reducing stream shading.

II. Goals and Objectives

The ACS was developed to prevent further degradation and restore the ecological health of watersheds over broad landscapes across USFS and BLM-administered lands within the range of the northern spotted owl. The ACS contains nine objectives that guide maintenance and restoration of watershed processes and water quality:

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

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

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

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

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.

Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

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.

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

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

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

In addition to the ACS objectives, the goals of the LSR Restoration Plan are to protect and enhance late-successional and old-growth forest ecosystems; foster the development of late-successional forest structure and composition in plantations and young forests; and reconnect streams and reconnect stream channel to their riparian areas and upslope areas.

The LSR Restoration Plan is consistent with the Aquatic Conservation Strategy and will maintain or restore Aquatic Conservation Strategy objectives.

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

The LSR Restoration Plan will restore the complexity of landscape scale features by speeding the development of late-successional forest structural characteristics (EIS, pp. 125-132, 135-136). The LSR Restoration Plan will thin approximately 8,400 acres during the 10-year span of the LSR Restoration Plan, of which 6,000 acres will develop late-successional forest structural characteristics within 100 years. Approximately 5,400 acres of the 13,800 acres of stands currently =80 years old will receive no treatment and will continue on their existing developmental pathway.

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

The LSR Restoration Plan will restore spatial and temporal connectivity within and between watersheds. The LSR Restoration Plan will open 7.0 miles of new coho salmon habitat by removing or replacing fish-barrier culverts, and will decommission 45 miles of existing road, increasing aquatic and riparian connectivity (EIS, pp. 121, 136). The LSR Restoration Plan will reduce the risk of catastrophic fire across the landscape and thus will reduce risks to existing late-successional forest which provide intact refugia (EIS, pp. 124). Thinning will speed the development of late-successional forest structural characteristics and therefore will contribute to the restoration of a network of late-

successional forests in Riparian Reserves. New road construction will not affect aquatic and riparian connectivity because new road construction will be limited to temporary spur roads, which will be outside of Riparian Reserves and have no stream crossings.

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

The LSR Restoration Plan will maintain and restore the physical integrity of the aquatic system. The unthinned areas along streams will ensure that the thinning will not alter streambank integrity. Decommissioning of all non-shared, BLM-controlled roads that are capable of delivering fine sediment to streams will reduce sedimentation to streams (EIS, pp. 136, 176). Coarse woody debris creation will create in-stream structure that will reduce stream velocities, create deeper pools, and trap sediments (EIS, p. 135). Thinning of riparian stands will speed the development of large trees capable of creating key pieces of large woody debris in streams (EIS, pp. 135-136), which will further restore in-stream structure.

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

The LSR Restoration Plan will maintain or restore water quality, including stream temperature. Unthinned riparian areas will be established in the primary shade zone (the area that shades the stream from approximately 10 am to 2 pm) on all stream reaches to maintain stream shading (see "Additional Best Management Practices and Margin of Safety"). Increasing in-stream structure will provide stream shading and will improve water quality by creating deeper pools and replenishing groundwater reservoirs that are vital for water storage, water purification, and temperature regulation (EIS, p. 90).

The LSR Restoration Plan will reduce sedimentation and thereby reduce stream turbidity (see ACS Objective 5).

Contamination of streams with hazardous materials or fertilizers is very unlikely: no herbicides, pesticides, or fertilizer will be used as part of the LSR Restoration Plan. Use of petroleum products will be associated with the timber harvest and restoration actions, but reasonable precautions in the transport and use of equipment (including refueling) indicate a very low risk of contamination.

Creation of coarse woody debris is unlikely to result in low dissolved oxygen levels in streams. Large quantities of fine organic material could be introduced into small streams, which could affect dissolved oxygen levels. However, the streams in which restoration actions will occur typically exhibit cool water temperatures, low biochemical oxygen demand (BOD), and rapid aeration rates. Forest streams, especially 1st and 2nd-order streams, are typically at or close to saturation of dissolved oxygen. Although input of large quantities of fine organic material has the potential to increase biochemical oxygen demand (BOD) during low stream flow and high water temperatures, most forest streams have enough turbulence to maintain a high amount of dissolved oxygen in the water column, even during low flows. Many first-order streams, and some second-order streams, are intermittent channels and would not be expected to contribute to summer/fall BOD.

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

The LSR Restoration Plan will reduce sedimentation and contribute to restoration of water quality. Decommissioning of all non-shared, BLM-controlled roads that are capable of delivering fine sediment to streams will reduce sedimentation to streams (EIS, pp. 136, 176). Coarse woody debris creation will create in-stream structure that will reduce stream velocities and trap sediments (EIS, p. 135). Road decommissioning, culvert replacement, and creation of in-stream structure will create minor, temporary pulses of sediment, but will reduce sedimentation in the long-term (EIS, pp. 76-77, 176-177).

New road construction will be limited to temporary spur roads, which will be located outside of Riparian Reserve and will be built and decommissioned in the dry season of the same year. Therefore, new road construction and subsequent decommissioning will not result in any sedimentation to streams (EIS, p. 77).

Yarding of timber will not result in any sedimentation to streams, because slopes are generally gentle and stable in the project area; no harvest will occur on unstable slopes; and no harvest will occur within 100' of all streams (EIS, p. 76).

Haul of timber will result in no more than negligible sedimentation to streams, because haul operations will be restricted to dry season conditions, except for specific, identified haul routes that have limited sediment delivery potential (see "Additional Best Management Practices and Margin of Safety"). These specific haul routes have substantial paved portions, and the unpaved portions have very few stream crossings (EIS, p. 76).

Objective 6 - *Maintain and restore instream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing (i.e., movement of woody debris through the aquatic system). The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected*.

The LSR Restoration Plan will maintain the flow regime. The planning area is of low elevation, and the watershed lacks any substantial areas in the transient snow zone in which rain-on-snow events are more likely (EIS, p. 29). Thinning could conceivably contribute to an increase in summer low flows and overall water yield, because of reduction in evapotranspiration and interception due to the removal of some of the trees. However, any effect would be minimal and immeasurable, because part of the canopy will be retained in thinned stands, and unthinned buffers will be maintained along streams. Some soil compaction could occur from yarding, but application of best management practices (BMPs) will mitigate compaction. New road construction will be limited to temporary spur roads outside of Riparian Reserves and will not be hydrologically connected to the stream network and therefore will have no potential to route water to the stream network.

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

The LSR Restoration Plan will maintain or restore floodplain inundation and water table elevation. The LSR Restoration Plan will have little effect on overall flow patterns, but the increase in in-stream structure will slow stream velocities, create deeper pools, and

replenish groundwater reservoirs. This increase in in-stream structure will contribute to a restoration of patterns of floodplain inundation and water table elevation.

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

The LSR Restoration Plan will restore riparian plant communities by speeding the development of late-successional forest structural characteristics and restoring coarse woody debris quantities in riparian stands (EIS, pp. 135-136, 241). Thinning and other restoration actions in riparian stands will shift uniform Douglas-fir stands to structurally and compositionally diverse stands more similar to natural stands (EIS, pp. 125-132). Riparian areas in the primary shade zone on all stream reaches will be left unthinned to maintain stream shading and ensure streambank stability.

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

The LSR Restoration Plan will restore habitat for riparian dependant species by speeding the development of late-successional forest structural characteristics and restoring coarse woody debris quantities in riparian stands (EIS, pp. 135-136, 241). Unthinned riparian areas in the primary shade zone will provide habitat for riparian dependant species that need undisturbed forest conditions.

III. Management Actions to Achieve Objectives

Planned Activities and Best Management Practices.

The Northwest Forest Plan (NWFP) describes only general guidance for managing riparian reserves (USDA Forest Service and USDI BLM, 1994). The BLM and USFS manage riparian reserves for a number of objectives, among them to enhance biodiversity, to enhance ecosystem function for fish, wildlife, and plants, and to reduce hazardous fuel loads; to remove vegetation that excludes natives, to enhance development of late-successional forest characteristics, and to increase large wood recruitment

Riparian reserves, key watersheds, watershed analysis, and watershed restoration components of the ACS are designed to operate together to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems. In addition to the ACS, the NWFP describes land allocations and specific standards and guidelines (S&Gs) for managing these land allocations. These S&Gs effectively serve as BMPs to prevent or reduce water pollution further contributing to goals of Clean Water Act compliance.

Since the listing of impaired waters within the planning area, the BLM has continued to engage in stream temperature monitoring, instream fish improvement projects, and collected FLIR data for use in future planning.

The LSR Restoration Plan is designed to take advantage of restoration opportunities that would have the least short-term adverse effects with the most long-term benefits to habitat for northern spotted owls, marbled murrelets, and coho salmon. Thinning would be concentrated in younger stands and would have targets for a wide range of stand densities and high variability of tree spacing. Some cut trees would be removed from thinned stands to reduce the risk of fire and

insect infestation. All stand thinning requiring timber removal would be completed within the next 10 years, and subsequent treatments, such as tree planting and snag and coarse woody debris creation, would not require road access.

Very young stands (=20 years old) would be thinned to variable spacing at low densities without any timber removal.

Young and mid-seral stands (21-60 years old) would be thinned to variable spacing at a wide range of densities with some timber removal. Shade-tolerant conifers would be planted at the time of thinning. Both very young and young stands would undergo subsequent coarse woody debris and snag creation every 10-20 years. Stands older than 60 years old would not be thinned.

Riparian areas (<100' from streams) which are conifer-dominated would be thinned without any timber removal. Thinned stands would undergo subsequent coarse woody debris and snag creation every 10-20 years. Shade-tolerant conifers would be planted at the time of subsequent coarse woody debris and snag creation. Approximately half of the riparian areas which are hardwood-dominated would be thinned, and conifers would be planted at the time of thinning.

In-stream structures would be constructed, and some structures would be cabled for stability in larger streams. Trees would be felled into all streams adjacent to stands =80 years old. All high-risk and fish-barrier culverts would be removed or replaced.

Non-shared roads capable of delivering sediment to streams, damaged roads, and roads within or adjacent to late-successional forest, would be decommissioned. Approximately 45 miles of existing road would be decommissioned. New road construction would be limited to temporary spur roads each less than 200 feet, resulting in a total of 3.6 miles of temporary new road construction over 10 years.

The EIS describes in detail the specific objectives, actions, guidelines, and mitigation measures of the LSR Restoration Plan (Upper Siuslaw LSR Restoration Plan EIS, Appendix A, pp. 233-245).

Additional Best Management Practices and Margin of Safety

The NWFP describes S&Gs that serve as BMPs to prevent or reduce water pollution in order to meet the goals of the CWA. The Resource Management Plans (RMPs) for the BLM include provisions to ensure attainment of ACS objectives. Often, these plans contain BMPs that are important for preventing and controlling to the "maximum extent practicable" non-point source pollution and achieve Oregon water quality standards. BMPs are developed on a site-specific basis and are presented for public comment during the NEPA process. One element of BMP implementation includes effectiveness monitoring and modification of BMPs when water quality goals are not being achieved.

If the BLM, and Oregon Department of Environmental Quality (ODEQ) agree that existing BMPs will result or are resulting in non-achievement of TMDL load allocations, the BLM will create additional watershed specific BMPs. If the BLM or ODEQ do not agree that BMPs will achieve the forestry load allocation in an applicable TMDL, these BMPs will, nonetheless, serve as interim BMPs. However, the BLM in consultation with ODEQ will design and implement a mutually agreeable monitoring program to gain information sufficient to determine whether or not existing BMPs will achieve the forestry load allocation. This monitoring program shall be a component of the implementation plan. If such monitoring demonstrates that existing BMPs will not achieve the forestry load allocation, then the USFS and BLM will create additional watershed specific BMPs to implement the load allocations and assure attainment of water quality standards.

In addition to the guidelines and mitigation measures presented in the EIS, the following BMPs would be implemented as part of the LSR Restoration Plan. These BMPs generally give greater detail to guidelines presented in the EIS. BMPs are intended to provide margin of safety with respect attainment of water quality critieria.

Stream Shading: The LSR Restoration Plan as described in the EIS contains the mitigation measure: "Maintain sufficient stream shading so as to avoid contributing to increased water temperature." Specifically, stream shading will be maintained by managing riparian stands in three zones (see Figure 4):

(1) The primary shade zone (see Table 6) will be maintained unthinned (approximately 1-2 trees per acre would be felled for large woody debris in streams, which will not alter stream shading). Primary shade zones will not be established on intermittent streams or on the north side of east-west oriented streams.

(2) Outside of the primary shade zone but <100' from streams, stands will be thinned, but trees will not be harvested. Thinning will not result in more than a 50% reduction in canopy closure.

(3) Upland thinning prescriptions that may include timber harvest will be applied =100' from streams. Trees that will be removed from outside this riparian zone are not contributing to stream shading, because the secondary shade zone extends to less than the distance of the average tree height for all but the steepest slopes (the average tree height is less than 100' for all age classes that will be harvested except for the 51-60-year-old stands, for which the average tree height ranges from 109' to 126').

Figure 4. Riparian Management Zones

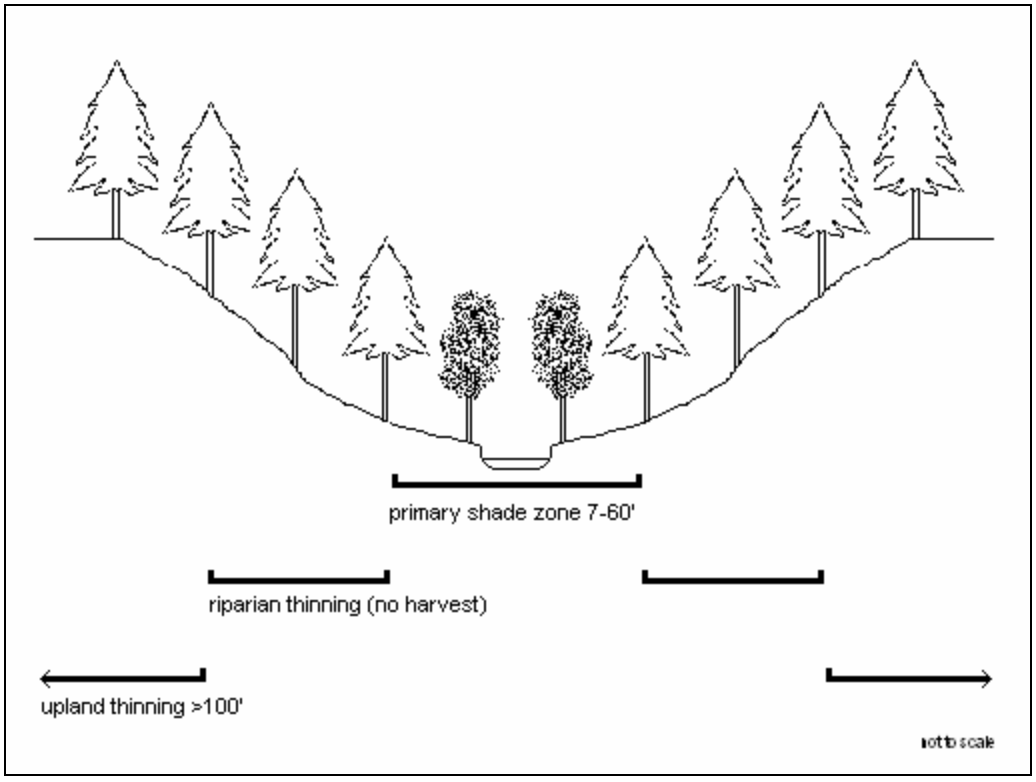


Table 6. Primary Shade Zones in the Planning Area.

Stand age (years)	Distance (feet from stream)		
	<30% slope	30-60% slope	>60% slope
=10	7	8	10
11-30	20	25	30
31-50	30	40	50
>50	40	50	60

Haul: Except for haul routes identified in Table 7, log haul operations will be restricted to dry season conditions: June 1 to September 15th. If weather conditions are favorable, the contractor may request a waiver from the authorized government representative to operate outside of these dates. If the Government grants permission to haul outside of these dates and conditions change, log haul will be stopped until dry conditions occur again.

The haul routes identified in Table 7 would not be seasonally restricted and may include log haul during wet conditions. Haul on these routes would result in no more than negligible amounts of sediment reaching streams, because many of these routes include substantial paved portions. None of the unpaved (gravel) portions cross fish-bearing streams, are adjacent (<25') to fish-bearing streams, or would otherwise have any potential for direct sediment delivery to fish-bearing streams. The unpaved portions of all haul routes identified in Table 7 include a total of two stream crossings. Fill slopes at each stream crossing are well-vegetated.

IV. Timeline For Implementation

The NWFP was implemented with the signing of the Record of Decision on April 13, 1994. Inherent in the implementation is the passive restoration of riparian areas that ensues as a result of the riparian reserve buffers/allocation. Implementation of active restoration areas beyond the inherent passive riparian restoration occurs with watershed analysis and site-specific projects.

The target date for completion of TMDLs for 303(d) listed waters in the Siuslaw Basin is 2008 (http://www.deq.state.or.us/wq/303dlist/TMDLTargetsMap.htm).

All actions identified in the LSR Restoration Plan will be implemented in the next 10 years. The LSR Restoration Plan also identifies reasonably foreseeable actions that may be implemented beyond 10 years, but these actions would require additional analysis under the National Environmental Policy Act. The timing for implementation of those activities beyond the 10-year LSR Restoration Plan will be dependent on funding and staffing levels.

Thinning in young riparian forests will speed the development of large trees capable of providing stable key pieces of woody debris. In 100 years, 92% of the currently young riparian stands (currently <80 years old) will have developed a sufficient supply of very large trees (=32" dbh) to provide an adequate supply of stable key pieces of woody debris (EIS, pp. 66-69, 75-76, 135-136). Without thinning, only 74% of the currently young riparian stands would develop a sufficient supply of very large trees in 100 years (EIS, pp. 85-87).

Thinning in young riparian forests will also speed the overall development of late-successional forest structure and composition. In 100 years, 26% of the currently young riparian stands will have developed late-successional structure. Without thinning, none of the currently young riparian stands would develop late-successional structure in 100 years (EIS, p. 90). As riparian stands move along the trajectory to late-successional structure, aquatic systems structure and processes will respond with increases in structure (increased woody debris), shifts in nutrient cycling patterns which could effect BOD, improved riparian connectivity, and improved cooler

subsurface contributions to channels. Instream conditions will recover as large conifers begin to enter the stream channels through felling, blowdown, or debris flows.

Shade recovery on tributaries is not a significant issue because a high level of shading currently exists. As a result of management actions, shade composition will shift from even-aged young stands to stands with late-successional structure. Maintenance of the primary shade zone along streams will be essential to the maintenance and improvement of stream shade over time.

V. Identification of Responsible Parties

The BLM has signed a Memoradum of Agreement (MOA) with ODEQ that provides a framework for effective cooperation on programs and projects that pursue the shared goal of attainment of state water quality standards. The MOA identifies responsible parties for the development and implementation of the MOA statewide.

This plan was produced as a joint activity by the ODEQ and the BLM. As a Designated Management Agency with responsibility for maintaining the quality of waters on the 303(d) list that flow across the lands it manages, BLM will implement the actions identified in the plan The Field Manager for the Siuslaw Resource Area of the Eugene District is the responsible official for implementation of this plan. Private landowners are not required to follow the specific provisions contained in this plan.

BLM contact: Steven Calish, Field Manager, Siuslaw Resource Area, Eugene District.

VI. Reasonable Assurance

Implementation and monitoring of the ACS provides reasonable assurance that watersheds under the direction of the NWFP will move towards attainment of water quality standards and beneficial use support. Implementation and adaptation of the MOAs also provide reasonable assurances that water quality protection and restoration on lands administered by the BLM will progress in an effective, non-duplicative manner on priority waters.

In response to environmental concerns and litigation related to timber harvest and other operations on federal lands, the United States Forest Service and the BLM commissioned the Forest Ecosystem Management Assessment Team (FEMAT) to formulate and assess the consequences of management options. The assessment emphasizes producing management alternatives that comply with existing laws and maintaining the highest contribution of economic and social well being. The “backbone” of ecosystem management is recognized as constructing a network of late-successional forests and an interim and long-term scheme that protects aquatic and associated riparian habitats adequate to provide for threatened species and at risk species. Biological objectives of the NWFP include assuring adequate habitat on federal lands to aid the “recovery” of late-successional forest habitat-associated species listed as threatened under the Endangered Species Act and preventing species from being listed under the Endangered Species Act.

All management activities on BLM-managed lands in the WQRP area must follow standards and guidelines listed in the Eugene District Resource Management Plan (RMP), which is supported by and consistent with the NWFP. In addition, BLM has proposed and analyzed the LSR Restoration Plan to implement direction in the Eugene District RMP. The LSR Restoration Plan contains additional guidelines and mitigation measures that add specificity and detail to the Eugene District RMP standards and guidelines. The Annual Program Summary highlights the Eugene District’s RMP accomplishments, implementation, and monitoring. If monitoring indicates that sufficient progress toward the goals contained in this plan are not being met, the goals and activities will be revisited and changes made as necessary to assure contributions to the attainment of water quality standards.

VII. Monitoring and Evaluation

Monitoring to meet water quality objectives will provide the necessary information to evaluate the range of natural conditions, distribution of water quality parameters, and definition of dominant watershed processes. Monitoring will be necessary to identify sources of point and non-point source pollution, to identify causal factors for water quality and watershed condition, to understand the magnitude of effect of management actions, and to document the effects of restoration actions.

Monitoring will be used to ensure that decisions and priorities conveyed by BLM plans are being implemented, to document progress toward attainment of state water quality standards, to identify whether resource management objectives are being attained, and to document whether mitigating measures and other management direction are effective.

The NWFP provides the framework to accommodate a nested analysis, based on scale (region, province, sub-basin, watershed, and site) of monitoring information in order to assess the overall effects of management activities. The NWFP monitoring framework requires implementation, effectiveness, and validation monitoring to meet objectives and evaluate the efficacy of management practices. At a minimum, monitoring should:

- Detect changes in ecological systems from both individual and cumulative management actions and natural events
- Provide a basis for natural resource policy decisions
- Provide standardized data
- Compile information systematically
- Link overall information management strategies for consistent implementation
- Ensure prompt analysis and application of data in the adaptive management process
- Distribute results in a timely manner

The NWFP requires that if results of monitoring indicate management is not achieving ACS objectives, among them water quality, plan amendments may be required to redirect management toward attainment of state water quality standards.

ODEQ will evaluate progress of actions to attain water quality standards after TMDLs are developed and implemented. If, for any particular TMDL, ODEQ determines that implementation is not proceeding or if implementation measures are in place, but water quality standards are not or will not be attained, or the load allocations or wasteload allocations for the TMDL are not or will not be attained, then ODEQ will assess the situation and work with the BLM to take appropriate action. Such action may include additional implementation measures, modifications to the TMDL, and/or placing the water body on the 303(d) list when the list is next submitted to EPA.

Implementation Monitoring

As directed by the NWFP, a sample of all projects must be visited annually to verify that actions were implemented in a manner consistent with the S&Gs. Projects implemented under the LSR Restoration Plan will be evaluated as part of this implementation monitoring.

Effectiveness Monitoring

Shade: A sample of riparian stand treatments will be measured to evaluate changes in shade. Measurement of crown closure will be made in a manner that can be repeated within the stream-adjacent stand within one tree height of the stream bank at bankfull width. The measurements will occur within the stand and not be influenced by the opening over the actual stream channel. The measurement will be conducted before and immediately after treatment to assess the effect of treatment on short-term canopy shade. Measurements will be repeated at a decadal interval, dependent on funding and staffing levels, to assess shade development as a component of developing late-successional stand characteristics.

Stream Temperature: BLM will continue monitoring stream temperatures within the planning area. The Eugene District has been collecting temperature data and additional site characterization information at over 30 sites in the Siuslaw Basin in the past 5 years. Within the planning area, there are currently 3 monitoring sites established on the Siuslaw River, and 7 on key tributaries: Bear Creek, Haight Creek, Pheasant Creek, Doe Hollow Creek, Bottle Creek, Doe Creek, and Russell Creek (see Map 10). Temperature monitoring will occur at these sites annually during the 10-year implementation period and, at a minimum, twice per decade thereafter, dependent on funding and staffing levels. Additional sites may be added based on specific-site needs and data collection opportunities.

Stream temperatures will generally be measured from June 15 – September 30 to insure that critical high temperature periods are covered. Measurements will be made with sensors programmed to record hourly samples. Qualified personnel will review raw data and erroneous data due to unit malfunction or other factors will be deleted. The resulting file will be stored in the agency computer system and be made available to the ODEQ and other interested parties.

Dissolved Oxygen: In accordance with the *Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters, Version 2.0*, the first step in the decision framework is to validate the listing. Siuslaw River segments in the planning area are listed for dissolved oxygen (DO) based on data collected at a site which is over 50 miles downstream of the planning area and is influenced by a combination of agricultural, forestry, and rural uses. Monitoring techniques will use a combination of probes, field and laboratory DO analysis techniques. The results of the data will help BLM adjust management sensitivity regarding organic inputs and other aspect of management practices that could potentially affect DO levels.

The second and third steps of the decision framework are to determine if DO is related to BLM management and if sufficiently stringent measures are in place, respectively. If monitoring indicates that DO is a concern within the planning area, BLM will evaluate if the impairment is contributed to by BLM management actions. If BLM management actions are determined to contribute to DO impairment, BMPs in the LSR Restoration plan will be re-evaluated to determine if they are stringent enough to promote DO improvement. Subsequent monitoring will occur to assess if BMP changes are adequate.

Reporting

Implementation and effectiveness monitoring will be reported as a component of the Annual Program Summary.

VIII. Public Involvement

The Federal Land Policy and Management Act (FLPMA) and the NEPA require public participation for any activities proposed for federal lands. In addition, the BLM will assist ODEQ in public involvement activities as required as part of TMDL development.

In addition to the public involvement for the development of the NWFP and the Eugene District RMP, BLM conducted extensive public involvement for the development of the LSR Restoration Plan.

BLM began informal scoping for the LSR Restoration plan in 2000, including distributing information to initiate issue identification and to open public dialogue regarding the LSR Restoration Plan. During 2001, BLM solicited public participation through a series of public meetings and field trips. BLM issued newsletters about LSR restoration and this LSR Restoration Plan announcing field trips or public meetings, addressing questions from the public, and describing preliminary issues and alternatives.

BLM published a Notice of Intent to prepare an EIS in the Federal Register on October 9, 2002, beginning the formal scoping period. The Notice of Intent requested comments on the scope of the analysis for the proposed LSR Restoration Plan.

The public comment period for the draft EIS began on August 15, 2003 and closed on October 15, 2003. BLM mailed the draft EIS to agencies, organizations, and individuals listed in the EIS (p. 184), and made the draft EIS available on the internet. BLM also made presentations of the draft EIS to interested groups during the comment period.

The final EIS was published on April 9, 2004.

BLM notified the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians, and the Confederated Tribes of the Grand Ronde of this project during the scoping process, requesting information regarding tribal issues or concerns relative to the project. BLM also sent the tribes copies of the EIS. BLM received no responses.

The Record of Decision for the LSR Restoration Plan, to which this WQRP will be attached, will be advertised in the Eugene Register-Guard, and the Record of Decision will then be subject to protest. Specific actions under the LSR Restoration Plan will have additional opportunities for administrative review, as described in the Record of Decision.

IX. Maintenance of Effort over Time

The management actions described in the LSR Restoration Plan are designed to address factors that influence the development of late-successional forest characteristics and reconnecting aquatic and riparian ecosystems. The maintenance and improvement of water quality is expected to be a benefit of the management actions. Restoring riparian processes and water quality will require sustained effort of multiple decades. The management recommendations will provide guidance for long-term restoration of impaired and 303(d)-contributing streams within the planning area. The BLM will implement these measures through both passive and active restoration projects. Short-term emphasis will be placed on establishing a trajectory for the development of late-successional characteristics in younger, even-aged stands without impairing water quality.

The LSR Restoration Plan is a 10-year plan. However, some additional minor actions will likely follow the 10-year plan, and implementation benefits and monitoring will extend decades beyond active stand management.

X. Funding

Annual costs for implementation of the entire LSR Restoration Plan will average approximately $240,000 in contract costs and $640,000 in BLM staff costs (in 2002 dollars). Annual revenue generated from implementation will average approximately $1,160,000, which will exceed costs, indicating the feasibility of implementing the overall restoration plan (EIS, pp. 78-79, 137). Actual annual costs and revenues will likely vary from these averages over the 10-year implementation period.

Funding for project implementation and monitoring will be derived from a number of sources. Implementation of proposed action discussed in this document will be contingent upon securing adequate funding.

Funds for project implementation will originate from Congressional appropriations, specific budget requests, grants, cost share projects, or other sources. Potential sources of funding include the Oregon Watershed Enhancement Board, and the BLM Clean Water and Watershed Restoration Funds. It is expected that LSR Restoration projects will be funded primarily from appropriated

funds and special budget requests. Much of the planning for the LSR Restoration Plan has been funded by the BLM Forest Ecosystem Health and Recovery Fund, from which BLM anticipates continued funding for implementation of the LSR Restoration Plan.

XI. References

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

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Reply To: 8330.03913(04)
File Name: LSR 267 BO.doc
TS Number: 04-2586

Memorandum

To: Eugene District Manager, Bureau of Land Management, Eugene, Oregon

From: State Supervisor/Deputy State Supervisor, Oregon Fish & Wildlife Office, Portland, Oregon

Subject: Formal and informal consultation on the proposed Upper Siuslaw Late-successional reserve restoration plan in Lane and Douglas Counties, OR which may disturb bald eagles, northern spotted owls, and marbled murrelets [FWS *reference*: 1-7-04-F-0374].

This memorandum responds to your request for formal and informal consultation with the U.S. Fish and Wildlife Service (Service) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*), as amended (Act). At issue in this consultation are the effects that the proposed Upper Siuslaw Late-successional reserve restoration plan may have on the bald eagle (*Haliaeetus leucocephalus*), the northern spotted owl (*Strix occidentalis caurina*) (spotted owl), the marbled murrelet (*Brachyramphus marmoratus*) (murrelet) and on the spotted owl and murrelet critical habitat in fiscal year 2004 through 2014.

This opinion is based upon information provided in the following documents: Biological assessment of the Upper Siuslaw Late-successional reserve restoration plan (BA); documents and other sources of information listed in the "Literature Cited" section below; and informal consultation between our staffs. A complete administrative record of this consultation is on file at the Oregon Fish and Wildlife Office.

Consultation History

On April 13, 2004 the Level 1 team reviewed and approved a draft of the BA, with some minor clarifications. The clarifications were addressed by BLM and a final draft was review by the Service. On May 3, 2004 the Service received the request for consultation and a BA from the BLM dated April 29, 2004. Formal and informal consultation was officially initiated by this office on March 3, 2004, upon receipt of the request for consultation and the BA.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed actions are described in the BA cited above and are incorporated by reference. The purpose of the proposed actions are to manage the Upper Siuslaw River sub-unit of Late-successional Reserve (LSR) 267 to benefit the long term development of habitats for spotted owls, murrelets and coho salmon (*Oncorhynchus kisutch*) while minimizing short term impacts to these species. Actions which would occur within ten years are being consulted on in this assessment; actions under the restoration plan which would occur after ten years, some snag and downed wood creation, are described here for information but are not undergoing consultation at this time.

The proposed action also implements the Northwest Forest Plan directives to enhance late-successional forest conditions in LSRs and achieve Aquatic Conservation Strategy objectives by 1) protecting and enhancing late-successional and old-growth forest ecosystems, 2) fostering the development of late-successional forest structure and composition in plantations and young forests, and 3) reconnecting streams and reconnecting stream channels to their riparian zones and upslope areas.

Action Area

The action area is the Upper Siuslaw River sub-unit of LSR 267 and adjacent lands within a 0.25 mile. The action area is defined by 50 CFR 402 to mean "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action." The action area, the 24,400-acre Upper Siuslaw River sub-unit of LSR 267, extends from the eastern edge of LSR 267, just west of the Lorane Valley. The Upper Siuslaw sub-unit extends west to Oxbow Creek. The northern boundary is defined by the ridge between the Siuslaw and Wolf Creek watersheds. The southern boundary is defined by the boundary between the Eugene and Roseburg Districts, which approximates the ridge between the Siuslaw and Umpqua River basins (although a very small portion of the Upper Siuslaw sub-unit of LSR 267 extends into the Umpqua River basin). Although only the BLM-managed LSR within the above boundaries would be treated under this proposal, the action area encompasses all federal and nonfederal lands (57,000 acres) potentially affected by the proposed action, including through disturbances. Since the action area includes suitable eagle habitat, the action area includes all lands within 0.5 mile line-of-sight of the plan area boundary within a mile of the Siuslaw River.

Density Management Treatments

Thinning treatments would be limited to younger stands (10 – 60 years old) and would have targets for a wide range of stand densities and high variability of tree spacing (Table 1) to effectively foster the development of late-successional forest structure and maintain future management options. All stand thinning prescriptions requiring timber removal would be completed within the next 10 years.

Very young stands (= 20 years old) would be thinned to variable spacing at low densities without any timber removal because the amount of wood left would not pose a fire or insect infestation risk.

Young and mid-seral stands (21-60 years old) would be thinned to variable spacing at a wide range of densities with some timber removal and would include both proportional thinning (selection of trees across all diameter classes) and thinning from below. Enough cut trees would be left to provide 551 cubic feet per acre of coarse woody debris, however, some cut trees would be removed from thinned stands to reduce the risk of fire and insect infestation. Shade-tolerant conifers would be planted at the time of thinning.

Within the action area, the overall quantity of dispersal habitat (stands 40 to 60 years old) would not decrease from the current amount, 3,728 acres (Figure 1 and Table 2). As young stands become dispersal habitat, thereby increasing the overall amount, other stands that are currently dispersal habitat would be thinned to below 40 percent canopy closure and therefore not be dispersal habitat for several years. Proposed thinning treatments in dispersal habitat would degrade 1,350 acres (36 percent) and remove 662 acres (17 percent) of the dispersal habitat. Meanwhile, younger stands would have grown and developed dispersal habitat characteristics so that the overall amount of dispersal habitat in the action area would increase each year. Currently, there are also 10,600 acres of suitable habitat through which owls could disperse.

Stream Enhancement Treatments

Stands that are currently 61-80 years old and greater/more than 100 feet from streams would not be thinned or have coarse woody debris and snag creation. Riparian stands (<100' from streams) currently 61-80 years old would not be thinned, but some would have individual trees felled for in-stream woody debris and structures. In-stream structures would be constructed primarily of wood but might be stabilized by large rocks and cabling. Trees would be felled into all streams adjacent to stands = 80 years old at an average rate of 12 to 24 trees per stream mile (approximately 1-2 trees/acre > 18" diameter at breast height (dbh) over 200 stream miles). In general, there would not be a need to yard but if there were, helicopters would not be used.

Full criteria for in-stream tree selection includes no suitable nesting trees or trees greater than 32 inches dbh will be removed and selected single trees or small groups of trees (2-4 trees) will be: [1] along the periphery of permanent openings (*e.g.*, rights-of-way, powerlines, *etc.*), or along the periphery of non-permanent openings (*e.g.*, along plantation edges, along recent clearcuts less than 40 years old); [2] single trees may only be removed from the first two lines of trees and will be dispersed along these edges but may not be adjacent to one another; [3] single trees or small groups of trees (2-4 trees) must be spaced at least one site potential tree height apart and at least one site potential tree height from any trees with potential nesting structure for any listed species (for streamside operations, spacing requirements apply to each bank independently).

In 55 percent of the riparian areas (<100 feet from streams but outside of the primary shade zone) which are conifer-dominated between 10–60 years old, stands would be thinned from below without any timber removal. Thinned stands would undergo subsequent coarse woody debris and snag creation every 10-20 years. Shade-tolerant conifers would be planted at the time of subsequent coarse woody debris and snag creation. Approximately half of the riparian areas which are hardwood-dominated would be thinned, and conifers would be planted at the time of thinning to produce a future supple of large, downed wood to the streams.

Table 1. Proposed thinning prescriptions

Age (years)	Total acres	Thinning prescription	Acres treated	Guidelines and mitigation measures	Anticipated snag and CWD creation
1-20	1,971	40-60 tpa (proportional)	443	Timber removal in some stands (most likely in stands 15-20 years old; >8 years since pre-commercial thinning).	In stands with timber removal, create 551 ft^3/acre cwd and 551 ft^3/acre snags at time of thinning. Kill 10 tpa/decade until age 80 for cwd and snags.
		75-100 tpa (from below)	443	No timber removal	Leave all cut trees.
		100-120 tpa (from below)	443		
		120-150 tpa (from below)	443		
		total	*1,772*		
21-50	9,621	40-60 (proportional)	1,149	- Do not select trees >20" dbh for cutting. - In existing dispersal habitat within current owl home ranges, retain =40% canopy closure.	Create 551 ft^3/acre cwd and 551 ft^3/acre snags at time of thinning. Kill 10 tpa/decade until age 80 for cwd and snags.
		60-80 tpa (proportional)	1,149		
		80-110 tpa (proportional)	1,149		
		60-110 tpa (from below)	653		
		Riparian 60-110 tpa (from below)	1,372	No timber removal	Leave all cut trees.
		total	*5,472*		
51-60	1,688	40-60 (proportional)	151	- Do not thin in suitable habitat. - Do not thin within current owl home ranges that currently have less than 40% suitable habitat. - Do not select trees >20" dbh for cutting. - In existing dispersal habitat within current owl home ranges, retain =40% canopy closure.	Create 551 ft^3/acre cwd and 551 ft^3/acre snags at time of thinning. Kill 10 trees per acre/decade until age 80 for cwd and snags.
		60-80 tpa (proportional)	151		
		Riparian 60-110 tpa (from below)	121	No timber removal	Leave all cut trees.
		total	*423*		
61-80	547	No thinning	--	--	--
		Riparian CWD creation	69	Do not fall or pull conifers =32" dbh. Follow standards for Individual Tree Removal for Stream Enhancement from the B. O. for Hab. Mod. in the North Coast Province 2003/2004.	Fall 1-2 tpa =18" dbh near stream; <25 smaller trees per acre total in riparian zone (<100' from stream).

Figure 1. The development into dispersal habitat of stands currently under 80 years old and the amount that will be available through time for both the proposed action and no action.

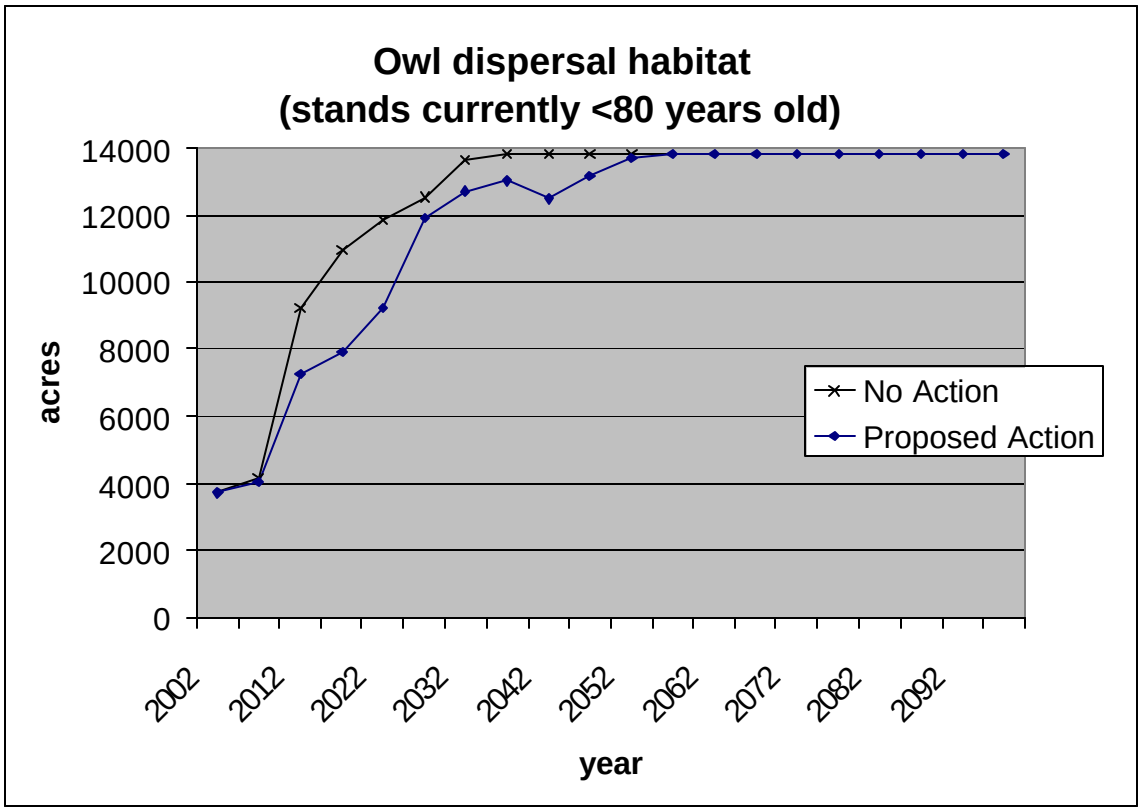

Table 2. Dispersal Acres

	year		
	2002	2007	2012
Total dispersal acres (stands currently <80 years old)	3,728	4,012	7,299
Dispersal acres removed by thinning	--	- 613	-49
Dispersal acres added by growth	--	+897	+3,336

Stream shading would be maintained by managing riparian stands in three zones (Figure 2):

(1) The primary shade zone (Table 3) would be maintained unthinned (except for approximately 1-2 trees per acre which would be felled for large woody debris in streams). The primary shade zone is the area that shades the stream at midday. Note that primary shade zones would not be established on intermittent streams or on the north side of east-west oriented streams.
(2) Outside of the primary shade zone but <100' from streams, 55 percent of stands would be thinned, but trees would not be harvested. Thinning would not result in more than a 50 percent reduction in canopy closure.
(3) Upland thinning prescriptions that may include timber harvest would be applied =100' from streams (Table 1).

Figure 2. Riparian Management Zones

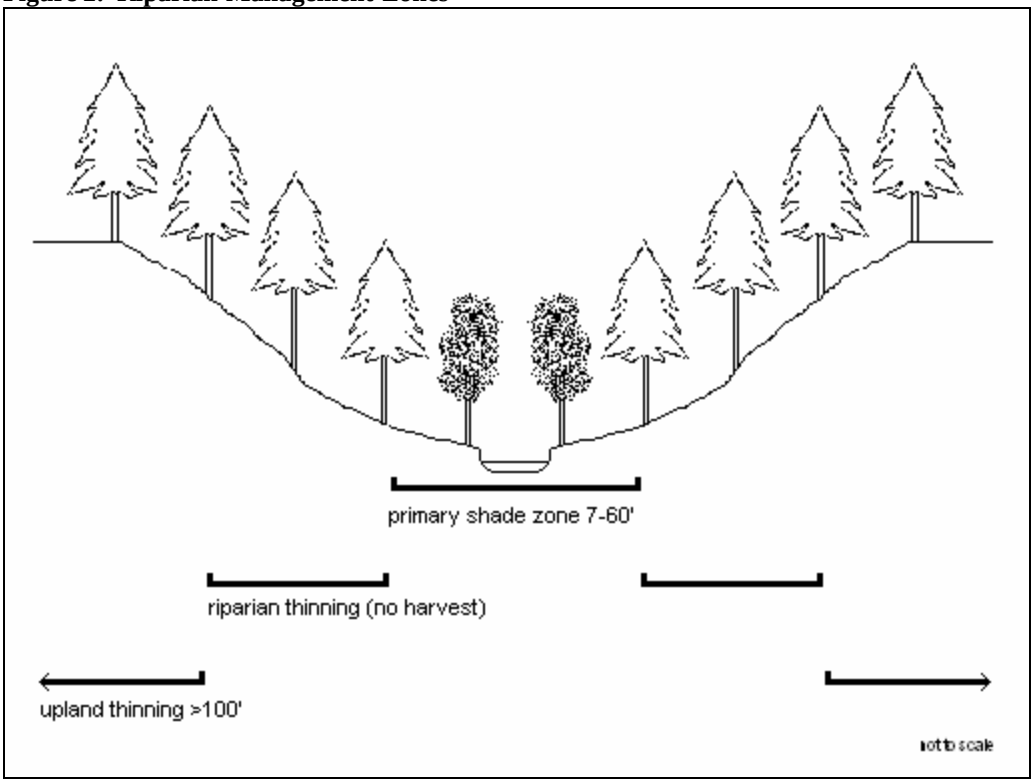

Table 3. Primary Shade Zone in Project Area

Stand age (years)	Distance (feet from stream)		
	<30% slope	30-60% slope	>60% slope
=10	7	8	10
11-30	20	25	30
31-50	30	40	50
>50	40	50	60

Road Decommissioning and Road Construction

Non-shared roads capable of delivering sediment to streams, damaged roads, and roads within or adjacent to late-successional forest (45 miles), would be decommissioned. All high-risk and fish-barrier culverts would be removed or replaced. New road construction (3.6 miles) would be limited to temporary spur roads each generally less than 200 feet. All spur roads would be within the treatment units. No blasting is included in the proposed action. No subsequent treatments, such as tree planting and snag and coarse woody debris creation, would require building or renovating roads.

Snag and Downed Wood Creation

During the initial treatment of stands aged 21-60 years old, enough cut trees would be left to provide 551 cubic feet per acre of coarse woody debris. In thinned stands in which snag needs are not being met, snags would be created to meet stand average snag levels of at least 551

cu.ft./acre. Snags may be created by a variety of methods, including girdling, topping, and/or fungal inoculation. No snag creation by blasting is included in this biological assessment.

Both very young and young stands would undergo subsequent coarse woody debris and snag creation every 10-20 years after the thinning treatment until each stand is 80 years old. This would continue to improve habitat conditions for spotted owl prey species and thereby improve foraging habitat quality. For example, stands currently 50 years old would have only one subsequent entry to produce additional coarse woody debris. Stands that are currently 20 years old could have 3 - 6 subsequent entries to produce coarse woody debris.

Under planting of Shade-tolerant Conifers

In stands that have been thinned (aged 21-60 years old), including upland and riparian reserve stands, and that have few shade-tolerant conifers, western hemlock, western red-cedar, grand fir, incense-cedar and/or Pacific yew would be planted at a rate of 26-200 trees per acre. Conifers would also be planted in some hardwood-dominated riparian stands. Planting would occur during the winter and only hand tools would be used.

Noxious Weed Control

Noxious weeds would be removed from BLM-controlled roads including from roads to be decommissioned. Trees or other native species would be planted in the decommissioned roads to prevent noxious weeds from becoming established in areas where weed seed is likely to spread into the decommissioned roads. Methods to remove weeds include mowing, pulling, cutting and grubbing depending on the weed species. Methods using mechanized tools would follow distance and timing restrictions to prevent adverse effects to listed species. No burning or pesticides would be used.

The following standards to protect listed species are part of the proposed action:

Density Management Treatments

Harvest activities outside of unsurveyed suitable or potential marbled murrelet habitat but within 100 yards of said habitat would be minimized to the extent feasible during the breeding period and would not begin until 2 hours after sunrise and would end 2 hours before sunset (up to 1,100 acres could be affected). Hauling within 100 yards of unsurveyed suitable or potential marbled murrelet habitat would be minimized to the extent feasible during the breeding period and would not begin until 2 hours after sunrise and would end 2 hours before sunset. In some cases (approximately 30 miles) hauling could occur within 100 yards of habitat because the existing roads are adjacent to or run through suitable habitat and would not be able to be used in the winter.

Activities that could cause disturbance within 65 yards of suitable spotted owl habitat would not occur during the critical breeding period unless that habitat had been surveyed to protocol and determined to be unoccupied or the owls are not nesting. Thinning treatments of stands > 50 years old would be avoided within a spotted owl's home range (within 1.5 miles of the spotted owl activity center) where there is currently less than 40 percent suitable habitat within the owls' home range.

No trees 32" dbh or larger would be cut. Trees between 20" and 31" dbh would not be selected for cutting and would only be cut for safety or operational reasons.

Although burning is described in Appendix A of the BA, associated with density management treatments, no burning will occur during the murrelet or spotted owl season when within 0.25 mile of unsurveyed or occupied habitat.

Stream Enhancement Treatments

Besides the restrictions to tree selection in the description of Stream enhancement treatments, the largest, most vigorous trees would be retained and the majority of the cut trees would be left in the stand as downed wood. Helicopters would not be used on the projects.

Activities that could cause disturbances would occur beyond 100 yards of unsurveyed suitable or potential marbled murrelet habitat during the marbled murrelet critical nesting period or during the late nesting period and would not begin until 2 hours after sunrise and would end 2 hours before sunset.

Activities that could cause disturbance within 65 yards of suitable spotted owl habitat would not occur during the critical breeding period unless that habitat had been surveyed to protocol and determined to be unoccupied or the owls are not nesting.

Road Decommissioning and Road Construction

Road construction activities adjacent to and within 100 yards of unsurveyed suitable or potential marbled murrelet habitat would occur within the murrelet critical breeding season, but would be minimized to the extent feasible during the breeding period and would not begin until 2 hours after sunrise and would end 2 hours before sunset (up to 1,100 acres could be affected).

Road decommissioning activities that could cause disturbances would occur beyond 100 yards during the critical nesting period or during the late nesting period and would not begin until 2 hours after sunrise and would end 2 hours before sunset.

Activities that could cause disturbance within 65 yards of suitable spotted owl habitat would not occur during the critical breeding period unless that habitat had been surveyed to protocol and determined to be unoccupied or the owls are not nesting.

Snag and Downed Wood Creation

Snags and downed wood creation would occur at the time of the density management treatments and stream enhancement treatments. The same standards described above under density management treatments and stream enhancement treatments would be followed except that some trees 20" or greater (but less than 32") would be selected. Subsequent snag and downed wood creation that would occur in future decades will be consulted upon in future biological assessments.

Under planting of Shade-tolerant Conifers

This activity would occur during the winter and hand tools would be used.

Noxious Weed Control

Weed removal activities that could cause disturbances would occur beyond 100 yards of unsurveyed suitable or potential marbled murrelet habitat during the marbled murrelet critical nesting period or during the late nesting period and would not begin until 2 hours after sunrise and would end 2 hours before sunset.

Activities that could cause disturbance within 65 yards of suitable spotted owl habitat would not occur during the critical breeding period unless that habitat had been surveyed to protocol and determined to be unoccupied or the owls are not nesting.

STATUS OF THE SPECIES

Marbled Murrelet

Background

An account of the taxonomy, ecology, and reproductive characteristics of the marbled murrelet (murrelet) is found in the 1988 Status Review (Marshall 1988), the final rule designating the species as threatened (USDI 1992b), the final rule designating critical habitat for the species (USDI 1996), the Service's Biological Opinion for Alternative 9 (USDI 1994) of the FSEIS on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Spotted Owl (USDA and USDI 1994a), the Recovery Plan for the Threatened Marbled Murrelet (USDI 1997), and the 2004 Evaluation Report prepared by EDAW, Inc. for the murrelet 5-year review (McShane et al 2004).

Introduction

The Marbled Murrelet Recovery Plan (USDI 1997) for the murrelet refers to the NWFP as the backbone of the recovery effort for the murrelet. However, it strategically builds off the NWFP and considers non-federal lands and their role in recovery. The NWFP contributes to the recovery and conservation of the murrelet by providing large blocks of protected habitat in LSR land allocations within murrelet conservation zones along the Washington, Oregon, and California coasts. Furthermore, murrelet habitat is protected on Federal land under the NWFP. No new timber sales will be planned in forested stands known to be occupied by murrelets regardless of whether these stands occur in LSRs, AMAs, or Matrix areas (USDA and USDI 1994b). Protocol surveys are required in suitable habitat to determine occupancy prior to actions that result in habitat loss. In addition, the system of LSRs will not only protect habitat currently suitable to murrelets, but also develop future habitat in larger blocks.

Recovery Threats

The recovery plan identified the primary threats to the species (not in order of importance): 1) predation; 2) loss of nesting habitat; 3) by-catch in gill-nets, and; 4) oil pollution, both chronic

and from major spills. Predation and the amount and distribution of nesting habitat are considered to be the most important determinants for species recovery.

Nest Tree Characteristics

Lank et al. 2003 state that murrelets "occur during the breeding season in near-shore waters along the north Pacific coastline from Bristol Bay in Alaska to central California", using single platform trees generally within 20 miles and older forest stands generally within 50 miles of the coast for nesting. Unlike most auks, murrelets nest solitarily on mossy platforms of large branches in old-forest trees (Lank et al. 2003). Suitable habitat for murrelets may include contiguous forested areas with conditions that contain potential nesting structure. These forests are generally characterized by large trees greater than 18 inches dbh, multistoried canopies with moderate closure, sufficient limb size and substrate (e.g. moss, duff) to support nest cups, flight accessibility, and protective cover from ambient conditions and potential avian predators (Manley 1999, Burger 2002, and Nelson and Wilson 2002). Over 95 percent of measured nest limbs were =15 cm diameter, with limb diameter ranges from 7-74 cm diameter (Burger 2002).

Nelson and Wilson (2002) found that all 37 nest cups identified were in trees containing at least seven platforms. All trees were climbed, however, and ground-based estimates of platforms per tree in the study were not analyzed. Lank et al. (2003) emphasize the hypothesis that murrelets do not select tree species for nesting, but select individual trees containing suitable nest platforms. Nest cups have been found in deciduous trees, albeit rarely. Nest trees may be scattered or clumped throughout a forest stand.

Adjacent forest can contribute to the conservation of the murrelet by reducing potential for wind throw during storms, and by providing area buffers (USDI 1996, Burger 2001, Meyer et al. 2002, Raphael et al. 2002, and Zharikov et al. submitted). Trees surrounding and within the vicinity of the potential nest tree(s) may provide protection to the nest platform and potentially reduce gradations in microclimate (Chen et al. 1993).

Nest Stand Characteristics

Nest stands are typically composed of low elevation conifer species. In California, nest sites have been located in stands containing old-growth redwood and Douglas-fir, while nests in Oregon and Washington have been located in stands dominated by Douglas-fir, western hemlock, and Sitka spruce. Murrelets appear to select forest stands greater than 50 ha (Burger 2002), but are found nesting in stands as small as one acre (Nelson and Wilson 2002). In surveys of mature or younger second-growth forests in California, murrelets were only found in these forests when there was nearby old-growth stands or where residual older trees remained (USDI 1992, and Singer et al. 1995).

At the stand level, vertical complexity was correlated with nest sites (Meekins and Hamer 1998, Manley 1999, Waterhouse et al. 2002, and Nelson and Wilson 2002), and flight accessibility has been postulated as a necessary component for suitable habitat (Burger 2002). Some studies have shown higher murrelet activity near stands of old-forest blocks over fragmented or unsuitable forest areas (Paton et al. 1992, Rodway et al. 1993, Burger 1997, Deschesne and Smith 1997, and Rodway and Regehr 2002), but this correlation may be confounded by ocean conditions, distance inland, elevation, survey bias, and disproportionate available habitat. Nelson and Wilson (2002)

found that potential nest platforms per acre were a strong correlate for nest stand selection by murrelets in Oregon.

Landscape Characteristics

Studies to determine the characteristics of murrelet nesting habitat at a landscape scale have been conducted using a variety of methods, including predictive models, radio telemetry, audio-visual surveys, and radar. McShane et al. (2004:pg. 4-103) report, "At the landscape level, areas with evidence of occupancy tended to have higher proportions of large, old-growth forest, larger stands and greater habitat complexity, but distance to the ocean (up to about 37 miles [60 km]) did not seem important." Elevation had a negative association in some studies with murrelet habitat occupancy (Burger 2002). Hamer and Nelson (1995) sampled 45 nest trees in British Columbia, Washington, Oregon, and California and found the mean elevation to be 1,089 feet (332 m).

Multiple radar studies (e.g., Burger 2001, Cullen 2002, Raphael et al. 2002, Steventon and Holmes 2002) in British Columbia and Washington have shown radar counts of murrelets to be positively associated with total watershed area, increasing amounts of late-seral forests, and with increasing age and height class of associated forests. The radar counts of murrelets are also negatively associated with increasing forest edge and areas of logged and immature forests (McShane et al. 2004). There are also several studies concluding murrelets do not pack into higher densities within remaining habitat when nesting habitat is removed (Burger 2001, Manley et al. 2001, Cullen 2002).

Although there is a relationship between proximity of human-modified habitat and an increased abundance of avian predators, there is not always proven casualty between increased numbers of avian predators and increased predation on murrelet nests. For example, Luginbuhl et al. (2001:pg. 565) report, in a study using simulated murrelet nests, that "Corvid numbers were poorly correlated with the rate of predation within each forested plot". Luginbuhl et al. (2001:pg. 569), conclude, "that using measurements of corvid abundance to assess nest predation risk is not possible at the typical scale of homogenous plots (0.5-1.0 km^2 in our study). Rather this approach should be considered useful only at a broader, landscape scale on the order of 5-50 km^2 (based on the scale of our fragmentation and human-use measures)".

Artificial murrelet nest depredation rates were found to be highest in western conifer forests where stand edges were close to human development (De Santo and Willson 2001 and Luginbuhl et al. 2001), and Bradley (2002) found increased corvid densities within 3 miles of an urban interface, probably due to supplemental feeding opportunities from anthropogenic activities. Golightly et al. (2002) found extremely low reproductive success for murrelets nesting in large old-growth blocks of redwoods in the California Redwoods National and State Parks. Artificially high corvid densities from adjacent urbanization and park campgrounds are suspected to be a direct cause of the high nesting failure rates for murrelets in the redwoods parks.

If the surrounding landscape has been permanently modified to change the predators' numbers or densities through, for example, agriculture, urbanization, or recreation, and the predators impact the murrelet, it is our professional judgment that the reproductive success of the murrelet may also be reduced. Because corvids account for the majority of depredations on murrelet nests and

corvid density can increase with human development, corvid predation on murrelet habitat is a primary impact consideration.

Demography and Vital Rates

The present population estimate for the murrelet in Oregon is 9,500 (± 3,000) and approximately 23,700 (± 5,200) within the conterminous United States (Huff et al. 2003, Strong 2003a and Strong 2003b). Spiech and Wahl (1995) concluded murrelet populations in Puget Sound are lower now than they were at the beginning of this century, and total estimates for Washington are still about 9,800 murrelets (Huff et al. 2003). Ralph and Miller (1995) estimated the California population to be approximately 6,500 birds, and this estimate remains at the high end of the statistical confidence interval with roughly 4,000 birds being the low end (Huff et al.2003, Strong 2003a and 2003b, McShane et al. 2004).

Beissinger (1995) constructed a demographic model of the murrelet and concluded that the population may be declining at rates of 4-6 percent per year, but this estimate is hampered by the possibility that the age-ratio data used in the model are reflective of a relatively temporary decline due to unusual ocean conditions (Ralph et al. 1995). Boulanger et al. (1996) found change in adult survivorship is the single most important factor when projecting demographic trends for murrelets. Similarly, Strong and Carten (2000) suggest there may have been a 50 percent decline from 1992 to 1996 in the Oregon population, which appears to have stabilized since (Strong 2003a and 2003b). Ralph et al. (1995) summarized some of the reasons for variability in population estimates among researchers, including differences in methodology, assumptions, spatial coverage, and survey and model errors. Lank *et al.* (2003) state, "Regardless of the approaches taken to estimate [(sic) vital rate] parameter values, the output from the Leslie matrix models representing survivorship and fecundity values for all populations in Washington, Oregon and California (Beissinger and Nur 1997) suggest negative population growth rates." Present at-sea surveys for effectiveness monitoring have a 95 percent chance of detecting annual population changes of ±20 percent or greater.

Available Nesting Habitat

The precise number of acres of suitable habitat in WA, OR and CA is not well known. However, based on agency estimates and the Services' internal section 7 files, the best estimates of suitable habitat for the murrelet on Federal lands is estimated at 2,223,048 acres of which 154,838 acres (7 percent) are classified as remnant habitat within the listed range of this species. Approximately 93 percent of the suitable habitat occurs on Federal lands. Occupied murrelet habitat is protected on Federal land under the NWFP in several ways. All occupied murrelet habitat outside of mapped LSRs becomes an unmapped LSR, regardless of the original designated land allocation. In addition, all "contiguous existing and recruitment habitat for marbled murrelets...within a 0.5-mile radius" is protected (USDA and USDI 1994ab; C-10). Timber harvest within LSRs is designed to benefit the development of late-successional conditions, which should improve future conditions of murrelet nesting habitat. Designated LSRs not only protect habitat currently suitable to murrelets (whether occupied or not), but will also develop future suitable habitat in large blocks.

Murrelet Critical Habitat

Designation of critical habitat serves to identify lands which may be necessary for the conservation and recovery of listed species. On May 24, 1996, the Service published the final rule designating critical habitat for the murrelet in the *Federal Register* (USDI 1996). The final rule became effective June 24, 1996.

The Service's primary objective in designating critical habitat was to identify existing terrestrial murrelet habitat that supported nesting, roosting, and other normal behaviors and require special management considerations. The Service designated critical habitat to protect murrelets and their habitat in a well-distributed manner throughout the three states. Critical habitat is primarily based on the LSRs identified in the NWFP (approximately 3 million of the 3.9 million acre boundary designation). The LSR system identifies large, contiguous blocks of late-successional forest that are to be managed for the conservation and development of the older forest features required by the murrelet, and as such, serve as an ideal basis for murrelet critical habitat. Where LSRs were not sufficient to provide habitat considered critical for the survival and recovery of the murrelet, other lands were identified, including state, county, and private lands.

The boundary of critical habitat for the murrelet encompasses approximately 3.9 million acres across Washington, Oregon and California. When designating critical habitat the Service focused on areas essential for successful murrelet nesting. Within the boundaries of designated critical habitat, only those areas that contain one or more primary constituent elements are critical habitat. Areas without any primary constituent elements are excluded by definition. The primary constituent elements are: (1) individual trees with potential nesting platforms and (2) forested lands of at least one half site potential tree height regardless of contiguity within 0.8 kilometers (0.5 miles) of individual trees with potential nesting platforms, and that are used or potentially used by murrelets for nesting or roosting. The site-potential tree height is the average maximum height for trees given the local growing conditions, and is based on species-specific site index tables.

ENVIRONMENTAL BASELINE

The Environmental Baseline is defined as Athe past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process [50CFR 402.02].@

LSR 267 lies within the North Coast Planning Province. Within this province, LSR 267 occurs mainly within the Siuslaw River Basin with a very small portion in the Umpqua River Basin. LSR 267 includes 175,280 acres of federal land managed by the BLM Eugene, Roseburg, and Coos Bay districts and the Siuslaw National Forest.

The Eugene District manages approximately 83,000 acres (47 percent) of LSR 267. Of this total acreage, 24,400 acres are within the Upper Siuslaw River sub-unit (14 percent of LSR 267) which is addressed by the proposed action. The Eugene District plans to develop restoration plans for the other sub-units of LSR 267: Middle Siuslaw River, Wolf Creek and Wildcat Creek.

Status of the Species in the Action Area

The following status information was compiled by BLM and the Service.

Murrelet

The action area is located about 34-45 miles from the Pacific coast, which is near the 50-mile limit of expected murrelet distribution in Oregon. The action area contains about 10,600 acres of murrelet habitat and about 2,235 acres of potential habitat, all of which are located on Federal lands.

Most stands in action area have not been surveyed to protocol. BLM has conducted murrelet surveys in stands proposed for thinning treatments that had potential habitat within the stand or that were adjacent to suitable habitat. Six percent of the suitable murrelet habitat and two percent of the potential murrelet habitat have been surveyed within the action area. Murrelets have been observed at three locations in the action area:

Over a stand in Section 7, Township 20 South, Range 5 West;

In Section 17, Township 20 South, Range 7 West;

And under the canopy in a stand in Section 1, Township 20 South, Range 7 West.

This last observation was an incidental sighting (*i.e.*, not part of a survey effort), but qualified as an occupied site ("birds flying below, through, into, or out of the forest canopy within or adjacent to a site of potential habitat"). Further surveys in all of these areas resulted in no additional observations.

The action area contains about 17,830 acres of land that is within critical habitat unit (CHU) OR-04-i.

Recovery Zone 3

Over the last four years the murrelet population estimate in this zone has not varied substantially (Huff 2003, Strong 2003a and Strong 2003b). More years of data are needed to establish a trend, but a supportable hypothesis is that as habitat is protected and no longer lost, the murrelet may stabilize at a new lower level supported by the remaining habitat. Ocean conditions play a role in the success of murrelets, and therefore additional years of population and productivity monitoring will be needed to separate marine and habitat effects on murrelets (Huff 2003).

Since the murrelet was listed in 1992, the Service is aware of 2,645[1] acres of murrelet habitat that have been removed in Recovery Zone 3 (McShane et al. 2004). This estimate is based only on agency estimates from Federal lands. The amount of habitat lost from non-federal lands is not known. However, internal section 7 files show an additional 3,026 acres on private land and

[1] This number may be inflated, due to all of BLM, Roseburg and Coos Bay districts consultations being included in Recovery Zone 3 for this calculation due to the BLM, Roseburg and Coos Bay districts occurrence in both Recovery Zone 3 and 4.

1,259 acres on tribal land were removed, 1992 through May 17, 2004 (USDI 2004). Most of the tribal habitat removed was known to be unoccupied by murrelets, 52 percent, while most of the private lands were unsurveyed, 72 percent.

EFFECTS OF THE ACTION

Projects addressed in this consultation will adversely affect murrelets due to disturbance during the critical nesting period from density management treatments in stands = 60 years old and associated road construction, snag and down wood creation, which will occur within the units' boundaries. Although the potential effects of disturbance on the survival and recovery of murrelets are considered to be of much less importance than the loss of habitat, such effects can still lead to a likelihood of injury under certain circumstances.

Murrelet

Habitat

Trees will only be harvested from habitat under the activity type of stream enhancement treatments. The stream enhancement treatments would remove individual trees from possibly suitable (no stands over 80 years old but some stands that are 60 -79 years old could have 18"dbh average) or potential habitat and place them in stream channels or floodplains for stream enhancement. Although canopy cover may be altered, no suitable nest trees or trees greater than 32 inches dbh will be removed.

Full criteria for in-stream tree selection under stream enhancement treatments include no suitable nesting trees or trees greater than 32 inches dbh will be removed and selected. single trees or small groups of trees (2-4 trees) will be: [1] along the periphery of permanent openings (*e.g.*, rights-of-way, powerlines), or along the periphery of non-permanent openings (*e.g.*, along plantation edges, along recent clearcuts less than 40 years old); [2] single trees or small groups of trees (2-4 trees) may only be removed from the first two lines of trees and will be dispersed along these edges but may not be adjacent to one another; [3] single trees or small groups of trees (2-4 trees) must be spaced at least one site potential tree height apart and at least one tree from any trees with potential nesting structure for any listed species (for streamside operations, spacing requirements apply to each bank independently).

The selection criteria for in-stream trees, described above, will provide additional protection to any potential nest trees in the treatment area (#3), as well as minimize the potential effects to interior forest conditions (#1 and 2). Therefore, the removal of 140 individual trees across the watershed for use in stream enhancement *may affect, but is not likely to adversely affect* murrelets.

Thinning of young units next to habitat may have a small affect to habitat by removing trees that may be buffering potential nesting trees or by creating an edge which would increase the risk of wind throw during storms and affect the stability of microclimate along the exposed border (Chen et al. 1992), but these affects are expected to be minimal due to the treatments being thinning prescriptions and 40 to 110 trees per acre will be left behind (Table 1). Although road construction, and snag and down wood creation activities will also be removing trees, these activities will only occur within the young treatment units. Therefore, the activity types of

density management treatments, road construction, and snag and downed wood creation *may affect, but are not likely to adversely affect* murrelet habitat.

Additionally, the density management treatments and road decommissioning (45 miles) should have a beneficial effect to future murrelet populations by producing future nest trees/stands.

Disturbance

Noise, visual disturbance, and/or smoke may disturb adult or juvenile murrelets and could cause them to flush from their nest site, could cause a juvenile to prematurely fledge or could interrupt feeding attempts by the adult. While the effects of these disturbances are not clear, any of these impacts could result in the reduced fitness or even death of an individual bird due to missed feedings, or reduced protection of the young if adults are disturbed.

The potential for effects may occur out to a 0.25 mile zone although it is likely that the most severe impacts of noise disturbance that may disrupt reproductive activities occur within a narrower zone. As noise attenuates over distance, the likelihood that it remains at a level sufficient to cause injury is reduced. The exact distance where noise disrupts breeding is difficult to predict and can be influenced by a multitude of factors. Site specific information (e.g. topographic features, project length or frequency of disturbance to an area) could be used to further evaluate potential effects from disturbance which may result in some effects being reduced.

There is little data regarding the impacts of noise on murrelets and other listed species. However, the Service has recently analyzed the available data on spotted owls, murrelets and other species (USDI 2003a), and has consulted species experts who have worked extensively with murrelets to determine the extent to which above-ambient noises may affect murrelets. The results of this analysis indicate that murrelets may flush from their nest or roost or may abort a feeding attempt of their young when the following activities occur up to the specific distances (Table 4). These distances are somewhat different than the distances for spotted owls due to the available scientific data. In addition, a visual harassment distance of a minimum of one hundred yards is included and is based on a separate analysis by the Service to quantify both visual and auditory harassment to murrelets (USDI 2003b). These data represent a comprehensive assessment of harassment distances based on the best available science. These assessments are incorporated into this Opinion as current guidance for harassment distances for various activities as it relates to adverse effects to the murrelets from harassment due to disturbance. The Service is continuing to use 0.25 mile for smoke disturbance, due to no new information being available to better estimate effects distances for smoke. If the Services' understanding of these distances change, adjustments to these distances may be recommended in the future.

Above-ambient noises farther than these Table 4 distances from murrelets are expected to have either insignificant effects or no effect to murrelets. The types of reactions that murrelets could have to noise that the Service considers having a insignificant impact include flapping of wings, the turning of a head towards the noise, attempting to hide, assuming a defensive stance, or other reactions that do not significantly disrupt breeding, feeding, or sheltering (USDI 2003a).

Table 4. Harassment distances from various activities for marbled murrelets.

Type of Activity	Distance at which murrelets may flush or abort a feeding attempt
an impact pile driver, a jackhammer, or a rock drill	100 yards
a helicopter or a single-engine airplane	120 yards
chainsaws (hazard trees, precommercial and commercial thinning)	100 yards
heavy equipment	100 yards
Burning *	440 yards (0.25 mile)

* Although the category of Burning was not part of the Services recent analysis of disturbance, it is added here to complete the types of activities that are covered under this BO.

Timing of Disturbance

The risk to murrelets from disturbance is tied to the timing of the activity and is highest when adults have eggs in a nest or are feeding and protecting chicks in the nest. During these periods the disruption of adults and their young could result in death or injury to the young as a result of predation. The leading known causes of mortality in juvenile murrelets are starvation and predation (Burger 2002, Lank at al. 2003, and Nelson and Wilson 2002).

The timing of nesting and chick-rearing varies geographically, although murrelets generally start laying their eggs around the beginning of April. In Oregon, August 5th is the date by which data indicate that most juveniles have likely fledged and returned to the ocean (Hamer and Nelson 1995).

Activities that may result in above ambient noise levels include the use of mechanized tree harvest equipment, road hauling, aircraft/helicopters, heavy equipment, hydraulic hammers, road construction and maintenance equipment. In some instances, noise levels produced by these activities can remain above ambient levels out to 0.25 mile and may affect murrelets. If potentially disturbing activities are implemented within the prescribed distances (Table 4) of occupied or unsurveyed murrelet habitat during the murrelet critical nesting season (April 1 – Aug 5), those activities *may affect, and are likely to adversely affect* murrelets by causing adults to flush from their nest site, nest abandonment, premature fledging, interruption of feeding attempts, or increased predation due to less protection when the adult flushes. If disturbance activities are implemented beyond the prescribed distances (Table 4), but within 0.25 mile of occupied or unsurveyed murrelet habitat, during the murrelet critical nesting season (April 1 – August 5) they *may affect, but are not likely to adversely affect* murrelets.

After August 5, it is presumed that most chicks have fledged or adult murrelets still tending the nest are heavily invested in chick-rearing, thus reducing the likelihood of nest abandonment or significant alteration of breeding success. Additionally, if disturbance is avoided during the crepuscular periods when murrelets are making the majority of there feeding trips, activities occurring in the late breeding period (August 6 - September 15) *may affect, but are not likely to adversely affect* murrelets if within 0.25 mile of occupied habitat, or unsurveyed suitable or potential habitat. Implementation of proposed projects outside the breeding period (that is,

activities occurring between October 1, and March 30, or more than 0.25 mile from suitable or potential habitat, would have *no effect* on murrelets.

The Service anticipates *adverse effects* due to disturbance of 1,100 acres of unsurveyed or occupied murrelet habitat within distances in Table 4 of some of the Density Management treatments in stands = 60 years old, and associated road construction, snag and down wood creation within these stands, during the murrelet critical nesting seasons (April 1 – August 5) of each year. Other activities will have unoccupied habitat within the distances of Table 4, be located beyond the distances in Table 4 from habitat, or activities will occur outside of the non-critical breeding season, with 2 hour daily timing restrictions of disturbance activities after sunrise and before sunset, or outside the entire breeding season (October 1 – March 30). Affects for all activities are summarized in Table 5.

Although the Service has previously thought hauling of timber on open roads may affect, and is likely to adversely affect murrelet, new data from Golightly et al. (2002) have shown no correlation between road proximity and nest success. This study included two years of data and 20 nests initiated by radio marked murrelets. Hamer and Nelson (1998) described one murrelet nest that successfully fledged next to a road. Hamer and Nelson (1998) concluded these murrelets showed a high degree of tolerance to trucks and automobiles and that human presence appeared to have the greatest impacts on nesting murrelets. Singer et al. (1995) report observing no visible response by murrelets to vehicles transiting on a "well-traveled park road" located within 230 feet (70 m) of nests monitored in Big Basin State Park from 1992 to 1994. Nelson, too, documented no response to vehicular noise from birds associated with nests in this same location in 1989. Chinnici also noted little response by murrelets to vehicles driving on a "lightly used" logging road located 230 feet (70) m from a nest in Humboldt County, California observed over 11 days in 1992. Chinnici noted that the chick once opened its eyes and became alert at the approach of a vehicle but otherwise did not respond to vehicular noise (Long and Ralph 1998). Nelson reported observing no response from chicks or adult murrelets to vehicular noise (Long and Ralph 1998). Therefore, the Service anticipates hauling of timber, associated with the density management treatments, *may affect, but is not likely to adversely affect* murrelets.

Critical Habitat

Critical habitat is present within the action area. Trees from suitable habitat within critical habitat will be harvested for stream enhancement treatments. As stated, the selection criteria will provide protection to any potential nest trees in the treatment area, as well as minimize the potential effects to interior forest conditions. Therefore, the removal of 140 individual trees across the watershed for use in stream enhancement *may affect, but is not likely to adversely affect* critical habitat.

Thinning of young units within and next to critical habitat may have a small affect to critical habitat by removing trees that may be buffering potential nesting trees or by creating an edge which would increase the risk of wind throw during storms and affect the stability of microclimate along the exposed border, but these affects are expected to be minimal due to the treatments being thinning prescriptions and 40 to 110 trees per acre will be left behind (Table 1). Although road construction, and snag and down wood creation activities will also be removing trees these activities will only occur within the young treatment units. Therefore, the activity types of density management treatments, road construction, and snag and downed wood creation *may affect, but are not likely to adversely affect* critical habitat.

Table 5. Affect of disturbance to occupied or unsurveyed suitable murrelet habitat

Marble Murrelet Breeding season	**Critical nesting season April 1-August 5**			Late breeding season August 6 – September 15	
Disturbance to:	**Habitat within 100 yards**	Habitat from 100 yards to within 0.25 mile	No habitat within 0.25 mile	Habitat within 0.25 mile	No habitat within 0.25 mile
Density Management Treatments	**May affect, and is likely to adversely affect (MA,LAA)** some stands = 60 years old will be treated during this time period	May affect, but not likely to adversely affect (MA,NLAA)	No effect	MA,NLAA due to a 2 hour daily timing restriction after sunrise and before sunset on heavy equipment and chain saw use	No effect
Road decommissioning	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA due to a 2 hour daily timing restriction after sunrise and before sunset on heavy equipment and chain saw use	No effect
Road construction	**MA,LAA** all road construction is associated and within density management thinning treatment units	MA,NLAA	No effect	MA,NLAA due to a 2 hour daily timing restriction after sunrise and before sunset on heavy equipment and chain saw use	No effect
Stream Enhancement treatments	None planned during this time period	None planned during this time period	None planned during this time period	MA,NLAA due to a 2 hour daily timing restriction after sunrise and before sunset on heavy equipment and chain saw use	No effect
Snag and downed wood creation	**MA,LAA** associated with density management thinning treatments	MA,NLAA	No effect	MA,NLAA due to a 2 hour daily timing restriction after sunrise and before sunset on heavy equipment and chain saw use	No effect
Under planting of shade-tolerant conifers	None planned during this time period	None planned during this time period	None planned during this time period	None planned during this time period	None planned during this time period
Noxious weed control	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA due to a 2 hour daily timing restriction after sunrise and before sunset on heavy equipment and chain saw use	No effect

Additionally, the density management treatments and road decommissioning (45 miles) should have a beneficial effect to future murrelet critical habitat by producing future nest trees/stands.

Recovery Zone 3
Although, 1,100 acres of occupied or unsurveyed habitat will be disturbed with the proposed project, the effects will be spread out over ten years.

Analyzing just the suitable habitat within the North Coast Province[2] on Federal land (423,433 acres), the harassment of 1,100 acres is less than 0.3 percent of suitable habitat or about 0.03 percent a year. Additionally approximately 1,030,399 acres have been designated as critical habitat units for murrelets. Although not all of the lands within the CHUs are functioning as suitable habitat, the quantity of habitat is expected to increase over time as young forest stands mature and develop nesting structure for murrelets. The harassment of 1,100 acres over ten years would be a smaller proportion of the total if habitat estimates were available for the entire Recovery Zone 3. Therefore, at the scale of the Recovery Zone 3, our best professional judgment is that the habitat harassed from the proposed action will not likely be a causative factor in destabilizing the Recovery Zone 3 murrelet subpopulation.

This project does not remove any suitable stands and is designed to promote late-successional conditions by thinning young stands.

CUMULATIVE EFFECTS

Cumulative effects are those effects of future state or private actions, not involving Federal actions, that reasonably are certain to occur within the action area of a Federal action subject to consultation (50 CFR 402.02). Cumulative effects analysis of foreseeable state and private actions provide greater insight to understanding the current environmental factors and likely trends that might affect a species.

No suitable habitat for murrelets is known to occur on non-federal lands within the action area. Private lands within the action area are expected to continue to be used for commercial timber production. Habitat for the murrelets is not expected to develop due to the short rotation ages used in commercial timber harvest. As a result, private lands within the action area probably will not contribute to the recovery of the murrelet.

CONCLUSION

After reviewing the current status of the murrelet, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the proposed programmatic actions are *not likely to jeopardize the continued existence* of the murrelet because the overall risk will not preclude recovery and per year risk is low. In addition, these proposed actions are *not likely to destroy or adversely modify* murrelet critical habitat.

[2] The North coast is a subset of Recovery Zone 3. Numbers for the entire Recovery Zone 3 not available.

CONCURRENCE

Murrelets

The Service concurs with activities resulting in *not likely to adversely affect* determinations for murrelets. In the preceding BO, the anticipated impacts to murrelets from the proposed activities were detailed in the Effects of the Action section. Although the above BO constitutes formal consultation on activities determined likely to adversely affect listed species, analyses therein also address those circumstances under which activities were considered not likely to adversely affect murrelets. Those analyses are incorporated by reference into this informal consultation.

Spotted Owls

Spotted owls do occur within the action area, but the BLM has designed the proposed action to avoid adverse affects. Additionally, all spotted owl habitat within the action area is designated critical habitat.

Dispersal habitat will be treated through density management treatments and snag and downed wood creation, which should promote suitable spotted owl habitat by reducing the time required for the stands to develop late successional habitat conditions. Only 3.6 miles of temporary spur roads will be created within the density management treatment units. Treatments will degrade 1,350 acres and remove 662 acres (642 acres form critical habitat unit OR-53 and 20 acres from OR-52) of dispersal habitat, but the overall amount of dispersal in the action area is expected to increase over the 10 year plan, do to harvest limitations and in growth of younger stands. Additionally, no thinning of stands > 50 years old will occur within an active owl home range that currently has less than 40 percent suitable habitat.

Stream enhancement treatments will be in older stands, 60 -79 years old, which have an average of 18" dbh. Therefore, these stands may be functioning as suitable habitat, but project design criteria will limit the selection of trees to non-nest trees with spacing requirements that minimize the impact to the stand.

Disturbances will not occur within the distances listed in Table 6 during the critical breeding season so as to avoid adverse affects to spotted owls. Table 7 summarizes the disturbance restrictions and affects determinations by activity type and time period.

Therefore, due to the project design criteria that restrict impacts to spotted owl habitat/critical habitat and disturbance activities, during the spotted owl critical nesting season, the Service concurs with activities resulting in a *may affect, but not likely to adversely affect* determinations for spotted owls and spotted owl critical habitat.

Table 6. Harassment distances from various activities for spotted owls.

Type of Activity	**Distance at which spotted owl may flush or abort a feeding attempt**
an impact pile driver, a jackhammer, or a rock drill	60 yards
a helicopter or a single-engine airplane	120 yards
chainsaws (hazard trees, precommercial and commercial thinning)	65 yards
heavy equipment	35 yards
Burning	440 yards (0.25 mile)

Table 7. Affect of disturbance to suitable spotted owl habitat

Spotted Owl Breeding Season	**Critical nesting season March 1 – July 7**			Non critical nesting season July 8 – September 30	
Disturbance to:	**Un-surveyed or occupied habitat within 65 yards**	Un-surveyed or occupied habitat from 65 yards to within 0.25 mile, or occupied habitat within 65 yards is determined to have a non-nesting pair of spotted owls	Un-occupied habitat or no habitat within 0.25 mile	Un-surveyed or occupied habitat within 0.25 mile	Un-occupied habitat or no habitat within 0.25 mile
Density Management Treatments	Heavy equipment, and chain saw use prohibited	May affect, but not likely to adversely affect (MA,NLAA)	No effect	MA,NLAA	No effect
Road decommissioning	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA	No effect
Road construction	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA	No effect
Stream Enhancement treatments	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA	No effect
Snag and downed wood creation	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA	No effect
Under planting of shade-tolerant conifers	None planned during this time period	None planned during this time period	None planned during this time period	None planned during this time period	None planned during this time period
Noxious weed control	Heavy equipment and chain saw use prohibited	MA,NLAA	No effect	MA,NLAA	No effect

Bald Eagles

No bald eagle habitat will be removed and no bald eagles are currently using the action area. Bald eagle habitat is present and if a bald eagle nest is discovered, activities within 0.25 mile or 0.5 mile line of site will be scheduled outside of the bald eagle nesting period of January 1 – August 31. Therefore, the Service concurs with activities resulting in a *may affect, but not likely to adversely affect* determinations for bald eagles.

This concludes informal consultation for activities resulting in *not likely to adversely affect* determinations in the Upper Siuslaw late-successional reserve restoration plan.

INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of the Act, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement. The measures described below are non-discretionary. Failure to comply with these measures may cause the protective coverage of section 7(o)(2) to lapse.

AMOUNT OF TAKE

Marbled Murrelet

The Service anticipates harassment of 1,100 acres of habitat within 100 yards of density management treatment units and associated temporary road construction, snag and down wood creation within the units during the period of April 1 to September 15. Disturbance is expected from people using chainsaws and heavy equipment.

EFFECT OF THE TAKE

Murrelet

The Service anticipates that disturbance impacts will vary depending on the type of noise, the duration of the disturbance, the proximity of the disturbance to occupied habitat, and the sensitivity of individual murrelets to disturbance. A noise-induced movement may expose an adult or juvenile murrelet to elevated levels of predation, and a visual disturbance may cause a delayed or aborted feeding attempt to young which may reduce the young's fitness level. The effect of the harassment take may also cause nest abandonment, adults flushing from the nest, and possible loss of the egg due to predation.

REASONABLE AND PRUDENT MEASURES

The Service believes that the following reasonable and prudent measures (RPM) are necessary and appropriate to minimize the impacts of incidental take of the murrelet.

1) Provide project monitoring and reporting to accurately assess the amount of take and projects implemented.
2) To reduce concerns about human activities attracting predators, provide project guidance requiring the collection and proper disposal of human-generated garbage.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the BLM must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1) Implementation and monitoring forms need to be completed and submitted with a cover letter from the District Manager verifying the amount of affect that has occurred. These forms are to be submitted yearly. An implementation and monitoring form is attached to the end of this BO. An electronic copy is available upon request.
2) Specific guidance needs to be provided to every contractor operating near murrelet suitable habitat that all garbage must be collected and properly disposed of each day. Such garbage may include, for example, food scraps, soda cans, or candy wrappers.

The Service analyzed the impact of the above reasonable and prudent measures on the proposed action and believes that these measures comply with the minor change requirement as defined by 50 CFR 402.14(I)(2).

If a dead, injured, or sick endangered or threatened species specimen is located, initial notification must be made to the nearest Service Law Enforcement Office, located at 9025 SW Hillman Court, Suite 3134, Wilsonville, OR 97070; phone: 503-682-6131. Care should be taken in handling sick or injured specimens to ensure effective treatment or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

Notice: The Service will not refer the incidental take of any migratory bird for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-712), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

The incidental take statement contained in the biological opinion does not constitute an exemption for non-listed migratory birds and bald or golden eagles from the prohibitions of take under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (U.S.C. 668-668d), respectively. Proposed Federal actions, including those by applicants, should (through appropriate means) avoid, reduce,

or otherwise minimize such take which is subject to prosecution under these statutes.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service believes the following conservation recommendations would reduce the impact of the proposed action on listed species within the action area:

1) Disturbance activities within 100 yards of occupied or unsurveyed murrelet habitat between April 1 and August 5 should be scheduled as late in the murrelet nesting season (April 1 – September 15) as is operationally feasible.

REINITIATION NOTICE-CLOSING STATEMENT

This concludes formal consultation and informal conferencing on the actions outlined in your BA and during the informal consultation process. Reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the proposed action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the proposed action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. If consultation is reinitiated for any of the above reasons, the BLM shall not make any irreversible or irretrievable commitment of resources which has the effect of foreclosing the formulation of reasonable and prudent alternatives.

If you have any questions regarding this Opinion or would like technical assistance in implementing the provisions of this Opinion, please contact Lee Folliard or Bridgette Tuerler at (503) 231-6179.

cc:
Alison Center, BLM, Eugene, OR
Service, Regional Office, Portland, OR (electronic)
Spotted owl workgroup (electronic)
Spotted owl binder, OFWO, Portland, OR
Marbled murrelet binder, OFWO, Portland, OR

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PROJECT IMPLEMENTATION AND MONITORING FORM **updated 10/25/02**

Tracking effects to T&E species, including removal and thinning below 40% crown cover of spotted owl dispersal habitat within the province of:_____

Yearly report due by November 3, FY:_____

_____	_____	_____	
Administration Unit	Compiler	BO/FWS Reference Number	
_____	_____	_____	_____
Ranger District/Resource Area	Agency Contact	FWS Contact	FY Sold

General Project Information: [ ] habitat modification project (with any associated disturbance) or [ ] disturbance-only project

Project name (optional):_____

Activity Type/Unit of Measure (see definitions in BO)*		**Amount Treated** (by land use allocation – non–duplicative)						**HUC # (s)** for 5th field watersheds (and comments)
		Total	LSR	AMA	Matrix	Others	RR	
Density management treatments	Acres							

* add other activity types and units of measure based on how the activity is categorized in the applicable BO

If a NEPA decision, what was it's date, name, and/or number? This question is not mandatory.

Did the project comply with the applicable BO?
If no, attach a detailed explanation.

NORTHERN SPOTTED OWLS

Effect of activity to spotted owls. Please give acres for each land allocation/CHU combination separately. For example each land allocation could be paired with no CHU or several overlying CHUs and each of these combinations receives a separate line on this table. Degraded, removed and disturbed acres do not overlap each other.

Land allocation (include # if LSR or AMA)	Overlying CHU # (please indicate when no overlying CHU)	Effects associated with take						Effects not associated with take			
		Suitable habitat removed (acres)	Suitable habitat downgraded (acres)	Suitable habitat degraded (acres)	# of activity centers associated with suitable habitat loss	Suitable habitat disturbed/take (acres)	# of activity centers associated with disturbance take	Suitable habitat removed (acres)	Suitable habitat downgraded (acres)	Suitable habitat degraded (acres)	Dispersal habitat removed/thinned below 40% crown cover (acres)
Totals:											

Definitions:
Removed – cause habitat to no longer function as suitable or dispersal spotted owl habitat
Downgraded – cause suitable habitat to no longer function as suitable, but it is functioning as dispersal spotted owl habitat
Degraded – cause a negative effect to suitable habitat, but it still is functioning as suitable spotted owl habitat

MARBLED MURRELETS

Effects of activity to murrelets. Please give acres for each land allocation/CHU combination separately. For example each land allocation could be paired with no CHU or several overlying CHUs and each of these combinations receives a separate line on this table. Degraded, removed and disturbed acres do not overlap each other.

Land allocation (include # if LSR or AMA)	Overlying CHU # (please indicate when no overlying CHU)	Effects associated with take			Effects not associated with take		Other questions		
		Suitable habitat removed (acres/trees)	Suitable habitat degraded (acres/trees)	Suitable habitat disturbed/take (acres/trees)	Suitable habitat removed (acres/trees)	Suitable habitat degraded (acres/trees)	Zone (1, 2, or both)	Was this area surveyed?	Was presence or occupancy detected?
Total:									

Definitions:
Zone 1 – 0 to 35 miles from the coast
Zone 2 – 35 to 50 miles from the coast

BALD EAGLES

Please complete the bottom row of this table.

Habitat effects		Disturbance effects	Management plan information if available
Name or identification number of individuals or pairs taken due to habitat removal	Number of known or suspected nest/roost/perch trees removed	Name or identification number of pairs taken due to habitat disturbance	ID number of management area where bald eagles were affected

Other_____

To date, fields for species other than murrelets, spotted owls, and bald eagles have not yet been fully defined. If your project may affect other listed or sensitive species, please contact your U.S. Fish and Wildlife Service provincial representative to discuss additional information prior to form completion.

Routes Suitable for All-Season Timber Haul.

Haul Route	**Main Route** (Road #)	Surface	Delivery	**Tributaries** (Road #)	Surface	Delivery
A	20-5-14.1	Paved (from Siuslaw Access Rd. until T21S-R5W-5)/Gravel	One stream crossing on gravel portion: 265' of direct delivery to non-fish-bearing stream.	20-5-31.1 20-5-33 20-5-34.1 20-5-34.2	Gravel Gravel Gravel Gravel	No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery.
B	19-5-22.2 19-5-18	Gravel Gravel	No stream crossings. No delivery within Siuslaw Watershed.	19-5-22.2 20-5-5.1 19-5-29 19-5-31.1 19-5-31.3	Gravel Gravel Gravel Gravel Gravel	No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery.
C	20-6-12.1	Gravel	No stream crossings. No delivery.	None	--	--
D	20-6-10	Paved	--	20-6-20 20-6-20.1 20-6-20.3 20-6-19 20-6-19.1 20-6-19.3 20-6-29 20-6-29.1 20-6-29.2	Gravel Gravel Gravel Gravel Gravel Gravel Gravel Gravel Gravel	No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery.
E	20-6-4	Gravel	No stream crossings. No delivery.	20-6-3	Gravel	No stream crossings. No delivery.
F	19-6-33	Gravel	No stream crossings. No delivery.	19-6-33.2 19-6-33.3 19-6-33.4	Gravel Gravel Gravel	No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery.
G	19-6-17	Gravel	One stream crossing: 745' of direct delivery to non-fish-bearing stream, subsurface flow for 75'.	19-6-15.1 19-6-23 19-6-23.3 19-6-23.4 19-6-23.5 19-6-23.1 19-6-24 19-6-35 (north of Rd 19-6-35.5)	Gravel Gravel Gravel Gravel Gravel Gravel Gravel Gravel	No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. 475' of direct delivery to stream below road, 1,000' of indirect delivery. No stream crossings. 634' of indirect delivery. No stream crossings. No delivery.

				19-6-35.8 19-6-35.9 19-6-10 (west of Rd 19-5-15.1) 19-6-20 19-6-21 19-6-21.1 19-6-29.3 19-6-20.1 19-6-29.5 19-6-29.6	Gravel Gravel Gravel Gravel Gravel Gravel Gravel Gravel Gravel Gravel	No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. <u>420' of indirect delivery</u> No stream crossings. No delivery. No stream crossings. No delivery.
H	19-6-18.7	Gravel	No stream crossings. No delivery.	none	--	--
I	19-6-18.8	Gravel	No stream crossings. No delivery.	none	--	--
J	19-6-29.2	Gravel	One stream crossing: bridge with paved approaches. No delivery.	19-6-36.4 19-6-34.8 19-6-36.3	Gravel Gravel Gravel	No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery.
K	19-6-18	Gravel	No stream crossings. No delivery.	none	--	--
L	19-7-25	Paved	--	19-7-26 19-7-23.1 19-7-23.2 19-7-23.4	Gravel Gravel Gravel Gravel	No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery.
M	19-7-25.1, 19-7-25, 19-7-3	Paved	--	20-7-10 20-7-15.1 20-7-11 20-7-14 20-7-14.1 19-7-35 (north to north boundary of T20S-R7W-11)	Gravel Gravel Gravel Gravel Gravel Gravel	No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery. No stream crossings. No delivery.
N	19-7-25.1, 17-7-25	Paved	--	20-7-8.5 20-7-4.2	Gravel Gravel	No stream crossings. No delivery. No stream crossings. No delivery.
O	19-7-25.1, 20-7-8	Paved	--	20-7-7 20-7-4.1	Gravel Gravel	No stream crossings. No delivery. No stream crossings. No delivery.