APPENDIX FOR
NORTH SOUP AND BLUE RETRO DENSITY MANAGEMENT STUDY
ENVIRONMENTAL ASSESSMENT
EA: OR125-08-01

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APPENDIX A.: INSTRUCTIONS, MEMORANDUMS, AND CORRESPONDENCE

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Oregon State Office
P.O. Box 2965 (1300 N.E. 44th Ave.)
Portland, Oregon 97208

In Reply Refer to:
5700 (931.6)

June 25, 1993

Instruction Memorandum No. OR—93—145
Expires 9/30/94

To: DMs: Coos Bay, Eugene, Lakeview, Medford, Roseburg, and Salem

From: State Director

Subject: Silviculture System Experiments - Co-op Unit Project

The Bureau of Land Management is implementing studies of silvicultural systems that will produce old-growth characteristics on selected land uses as quickly as possible. These plans are part of the adaptive management found in the Resource Management Plans. As part of the studies, each District will potentially provide one or more areas in which to carry out these experiments.

Initial installations are to serve as demonstrations and trials for BLM resource specialists and for our publics in order to learn and demonstrate our ability to implement this type of stand management, and to verify that they are an adequate means of attaining the desired objectives of ecosystem-based management.

Attached is a study plan for an experiment in density management of forest stands. This will be a cooperative effort coordinated jointly by the Oregon State Office and the Co-op Unit. Projects will be initiated on a province basis (Cascade, Coastal, and Klamath) with cross-District planning/ implementation teams. We are asking each District to select representatives for determining potential locations and for the coordination of these studies.

The first study area is projected for the Cascade Province, and we plan to coordinate with the U.S. Forest Service to sample stands across the province. Implementation of study projects is expected to occur in the fall of 1993. Similar studies are planned for "adaptive areas" in the Coastal and Klamath

Provinces later in FY 1994.

We realize there are many issues involved in the location of the study sites in the Cascade Province and hope to begin planning the process now, so that units can be located and implemented in early FY 1994.

The Salem, Eugene, Roseburg, and Medford Districts should each designate a wildlife biologist and a silviculturist to attend a meeting to discuss the Cascade Province project. The meeting is scheduled for July 21, 1993, at 9:00 a.m. in the Willamette Room of the Eugene District Office. Please give the names of your district's representatives to Larry Larsen (OR-931.6) at (503) 280-7080.

A research ecologist from the Co-op Unit will be available to help plan the integration of studies and to locate study sites.

/s/ Elaine Y. Zielinski

Elaine Y. Zielinski
Deputy State Director for
Lands and Renewable Resources

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Oregon State Office
P.O. Box 2965 (1300 N.E. 44th Ave.)
Portland, Oregon 97208

March 29, 1994

In Reply Refer to:
5600 (936)(931.6)

Information Bulletin No. OR-94- 317

To: District Managers: Coos Bay, Eugene, Lakeview, Medford, Roseburg, and Salem

From: State Director

Subject: Density Management Study - National Biological Survey/BLM Project

As of November 14, 1993, our Cooperative Research Unit based at Oregon State University in Corvallis was absorbed into the National Biological Survey (NBS). Most of the personnel who formerly worked for OR-936 now work for the NBS. This change will not affect the status of existing cooperative agreements, including the Density Management Study now in progress.

The Density Management Study was formerly known as the "Silvicultural Systems Experiment." This study provides us with the opportunity to test the use of alternative silvicultural systems to accelerate the development of old-growth characteristics in young forest stands. Procedures for monitoring the response of botanical, wildlife, and riparian resources to the various silvicultural treatments will be tested; thereby providing a basis for adaptive management. Similar studies have been started in other parts of the Pacific Northwest.

The study is being initiated in the Cascades Province because its forest management picture is less complex than that of either the Coast Range or Klamath Province. Site selection for the first blocks of treatment replications in even-aged, 50-year-old stands is nearly complete. Two 200-acre study blocks will be the primary focus for FY 1994 - one each in the Salem and Eugene Districts.

We will also begin the process of expanding the study to the rest of the westside Districts. NBS personnel will look along the Coos Bay/Roseburg District boundary for a suitable group of study sites. Both Districts will have a study block identified, and these two sites will be the initial focus for the study in the Coast Range Province. A list of site selection criteria for the Coast Range Province is attached.

OSO and NBS personnel would like to screen each District's timber sale plan for possible study sites. They will work with the District Silviculturist to get the necessary information. Potential study sites may be at a point in the timber sale planning process where it is not too late to select them for the study. This would not necessarily delay implementation of a given sale.

Study blocks will be replicated across the landscape in groups of three or more, providing as much overlap and replication among Districts or Resource Areas (RAs) as possible. The study design for the first group of Cascades Province installations is being developed, and the same design is projected for use in the Coast Range Province. The design will be modified as needed as the study is expanded to include older stands, other plant associations or habitat types, and as we move into other Land Use Allocations such as Late Successional Reserves or Adaptive Management Areas.

Both the study design and the timeline for implementation will need to be different for the Klamath Province, and Medford District is preparing a study proposal.

Each RA containing a project area selected for the study will need to identify a silviculture forester to work with NBS personnel as needed. These people do not need to be formally designated until that time.

Before these sales are harvested, permanent understory vegetation monitoring plots will be installed by NBS personnel. These plots will be remeasured by RA personnel in each of the first five years following treatment, and every five years thereafter. Our regular stand exam will be used to track the development of the overstory vegetation, and the RAs will do this in years 1 and 5 following treatment, and every five years thereafter. The planting of seedlings to create another canopy layer will be a standard practice, and this will also be the responsibility of the RAs. Each RA with a project area will require about 4 workmonths of work in years 1 and 5 following treatment, with 2 workmonths being needed in years 2-4.

NBS personnel will soon begin working with the appropriate people to identify potential study blocks along the Coos Bay/Roseburg boundary. At the same time, layout of the Salem and Eugene blocks is beginning; with marking of these two blocks planned for this summer. NBS personnel will assist in the actual marking of these sales.

The OSO will coordinate the rate of development of this study so that a positive momentum is maintained. NBS personnel intend to accommodate as many RAs with prospective density management sales-as time and logistics allow, but they can only handle a few project areas in this early phase of implementation. Limiting the number of project areas will help assure a credible and high-quality product.

Management recognizes that research projects such as this study represent an important opportunity to demonstrate to managers, resource specialists, and our various interested publics that we can implement ecosystem-based stand management objectives as described in our various draft District RMPs and the Forest Plan. Your continued cooperation is appreciated.

Please direct any questions/comments/feedback to Charley Thompson at 280-7076 in Portland or John Tappeiner at 750-7359 in Corvallis.

/s/ Terry Nichols
Acting Associate Director

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Oregon State Office
P.O. Box 2965
Portland, Oregon 97208

TAKE PRIDE IN AMERICA

In Reply Refer to:
5610 (OR-933) P

August 12, 2005

EMS TRANSMISSION 8/16/2005
Instruction Memorandum No. OR-2005-083
Expires: 9/30/2006

To: District Managers: Coos Bay, Eugene, Roseburg, Salem
From: State Director, Oregon/Washington
Subject: Density Management Studies

Purpose: This Instruction Memorandum provides direction for the next phase of the Density Management and Riparian Buffer Study (DMS).

Policy/Action: To begin out-year planning to implement the next phase of the DMS according to the revised DMS Study Plan. The DMS Site Coordinator for each site should work with the local field manager and employees responsible for the necessary contract work to ensure that this schedule can be met and to resolve difficulties. The DMS Study Coordinator should be kept informed and involved as necessary to help keep necessary actions on schedule.

Timeframe: The schedule for on-the-ground treatment implementation is as follows:

Site Name	District	Implementation Year	Site Coordinator
Bottomline	Eugene	2009	Peter O'Toole/Shami Premdas
OM Hubbard	Roseburg	2009	Craig Kintop
Keel Mountain	Salem	2009	Charley Thompson
Sand Creek	Salem	2009	Hugh Snook
Callahan Creek	Salem	2009	Hugh Snook
North Soup	Coos Bay	2010	Frank Price
Little Wolf	Roseburg	2010	Craig Kintop
Blue Retro	Coos Bay	2010	Frank Price
Green Peak	Salem	2011	Hugh Snook
Ten High	Eugene	2011	Peter O'Toole/Shami Premdas
Delph Creek	Salem	2011	Charley Thompson
Perkins Creek	Eugene	2011	Peter O'Toole/Shami Premdas

NOTE: Implementation year means the year that the activity happens on the ground. Every effort should be made to ensure the DMS units are treated in the one-year window assigned above.

Budget Impact: Funding to support contract development and implementation for the next round of treatments will come out of normal operating budgets, and achievements will contribute to normal accomplishment reporting. The Study Coordinator and other individuals in the State Office are evaluating the feasibility of funding post-treatment monitoring through contract receipts, either through stewardship contracting and/or use of the 5900 forest health funds. Additional funding of post-treatment monitoring may be needed and will be funded out of 6320, 6334, and/or 6310 subactivities, as has been the case for the last 10 years. Total funding needs for post-treatment monitoring will range from $100,000 to $300,000 annually depending on scheduling and partner funding contributions. Partner contributions have exceeded Bureau of Land Management (BLM) study funding to date.

Background: Initial direction to implement the DMS was provided through two State Office directives (Instruction Memorandum OR-93-145, Information Bulletin OR-94-317) over ten years ago. Since then, treatments implementing the study have been completed, over a thousand plots have been established, measurements for a wide variety of responses have been conducted, initial results have been reported, and a wide range of outreach and education activities have been conducted on DMS sites or with DMS information. Several manuscripts officially reporting five-year post-treatment results are scheduled for publication within the year. A strong partnership among Pacific Northwest Research Station, Oregon State University, US Geological Survey, and the BLM has supported these accomplishments.

An extensive effort was made over the past year to develop a revised DMS Study Plan (Cissel et al. in review) to address key information needs of the BLM. Proposal development steps included:

- DMS scientists and site coordinators developed initial ideas for the revised study plan and reviewed proposals in the field
- Revised study plan was reviewed and discussed with a wide range of field practitioners and managers at the DMS Workshop and Field Trips in June, 2004
- The DMS Study Coordinator reviewed the proposal with affected field managers
- Revised study plan proposal was distributed to westside field units for review
- Revised proposal was reviewed and approved by the interagency DMS Steering Committee (includes BLM district manager and branch chief)

The BLM State Office leadership and Pacific Northwest Research Station Leadership Team were briefed and concurred on study plans and direction.

Manual/Handbook Sections Affected: None

Coordination: Development of these instructions was coordinated with District Management, DMS Coordinators, and OR-930 Management and staff.

Contact: Contact the DMS Study Coordinator John Cissel, at (541) 683-6410 with questions, or for a copy of the revised study plan.

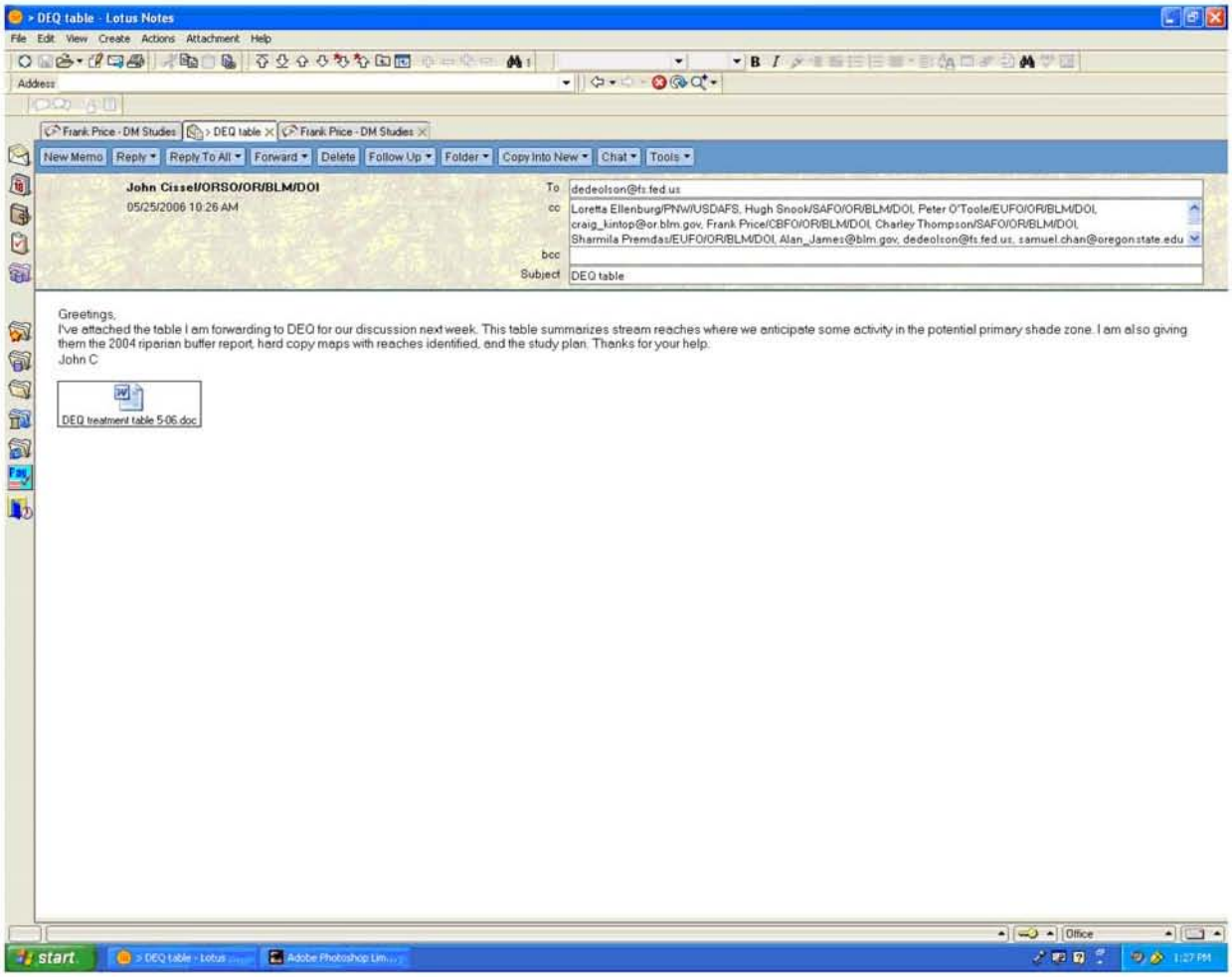
Districts with Unions are reminded to notify their unions of this Instruction Memorandum and satisfy any bargaining obligations before implementation. Your servicing Human Resources Office or Labor Relations Specialist can provide you assistance in this matter.

Signed by

Kathy Eaton
Acting Associate Director

Authenticated by

Mary O'Leary
Management Assistant



E-Mail & Attachment planned treatments within the potential primary shade zone 05/25/2006 page 1 of 3

E-mail message and attachment listing stream reaches where we anticipate some activity in the primary shade zone when implementing the second phase of the Density Management Study. The document "Olson 2004, attached" referred to below was not attached to the 05/25/2006 10:26 AM message from John Cissel.

John Cissel/ORSO/OR/BLM/DOI

05/25/2006 10:26 AM

To
dedeolson@fs.fed.us
cc
Loretta Ellenburg/PNW/USDAFS, Hugh Snook/SAFO/OR/BLM/DOI, Peter O'Toole/EUFO/OR/BLM/DOI, craig_kintop@or.blm.gov, Frank Price/CBFO/OR/BLM/DOI, Charley Thompson/SAFO/OR/BLM/DOI, Sharmila Premdas/EUFO/OR/BLM/DOI, Alan_James@blm.gov, dedeolson@fs.fed.us, samuel.chan@oregonstate.edu, Klaus.Puettmann@oregonstate.edu, moldenka@bcc.orst.edu, pdanderson@fs.fed.us, Robert A Progar/PNW/USDAFS, shanti.berryman@oregonstate.edu, sperakis@usgs.gov
bcc

Subject
DEQ table

Greetings,
I've attached the table I am forwarding to DEQ for our discussion next week. This table summarizes stream reaches where we anticipate some activity in the potential primary shade zone. I am also giving them the 2004 riparian buffer report, hard copy maps with reaches identified, and the study plan.
Thanks for your help.
John C

DEQ treatment table 5-06.doc

BLM Density Management and Riparian Buffer Study

Summary of planned treatments within the potential primary shade zone

May 25, 2006

The following table lists the approximate reach length and other characteristics of streams where BLM Density Management and Riparian Buffer Study (DMS) treatments are planned within the potential primary shade zone. These stream reaches occur within the Moderate Density and High Density treatments (see DMS Study Plan) on seven sites on BLM lands in western Oregon (see attached study site locator map). Three different riparian buffer/treatment combinations occur as follows:

1) Streamside retention, where thinning from 80 TPA to 35 TPA is planned upslope of an ~20 ft stream buffer
2) Thin-through variable-width buffer, where thinning from ~250 TPA to 65 TPA is planned within existing variable-width buffers (minimum 50 ft width, may be larger)
3) Thin-through two site-potential tree heights buffer, where thinning from ~250 TPA to 65 TPA is planned within existing two-tree buffers

Reach numbers are given on attached hard-copy maps and are the same as those listed in the DMS Riparian Buffer Study report to site coordinators (Olson 2004, attached). Reach length and fish presence were determined from field surveys, except for those reaches identified with a letter. Values were estimated for these reaches.

Site	Upslope Treatment	Buffer Treatment	Reach #	Reach Length (ft)	Fish Presence
Callahan Creek	Moderate	3	61	1122	y
	Moderate	1	64	1412	n
	Moderate	1	65	980	y
	Moderate	1	69	450	n
Delph Creek	Moderate	1	94	1780	n
	Moderate	1	a	1800	n
Green Peak	Moderate	1	144	1348	n
Keel Mountain	Moderate	1	58	1360	n
	Moderate	3	48	1034	y
	High	2	40	1278	y
	High	2	53	517	n
	High	2	54	436	n
	High	2	c	1200	n
	High	1	d	1300	?y
North Soup	Moderate	1	87	821	y
Perkins Creek	Moderate	1	100	2612	n
	Moderate	1	102	1266	n
Ten High	Moderate	1	125	997	n
	Moderate	1	127	971	n

5600/7240 (OR-932/933)

September 8, 2006

Stephanie Hallock, Director
Oregon Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, OR 97204

Dear Ms. Hallock:

Subject: Bureau of Land Management Density Management and Riparian Buffer Study Effectiveness Monitoring

The purpose of this letter is to recognize the contribution of the Bureau of Land Management's (BLM) Density Management Study towards increasing our understanding of the effects of an active management role in the attainment of Riparian Reserve restoration objectives, and to emphasize BLM's commitment to continue working with the State of Oregon Department of Environmental Quality (DEQ) regarding the assumptions and technical basis for Temperature Total Maximum Daily Load (TMDL) implementation strategies.

Since 2000, there have been a number of regulatory changes relating to water quality compliance and implementation of the Clean Water Act. The DEQ has been evaluating stream temperature and validating models being used to develop and implement TMDLs throughout Oregon. The BLM, DEQ, and the Forest Service have developed in partnership the Northwest Forest Plan Temperature TMDL Implementation Strategy (September 2005) which provides tools and a strategy for addressing waters listed specifically for temperature impairment. This DEQ conditionally approved strategy addresses the concepts of managing Riparian Reserves, as defined in the Northwest Forest Plan, for the long-term protection and restoration of water quality. While recognizing the benefit of passive restoration, the strategy also recognizes that active management of Riparian Reserves can contribute to attainment of restoration objectives. The DEQ's conditional approval facilitated testing a number of the assumptions upon which the strategy is based. The Rogue River-Siskiyou National Forest has been analyzing several assumptions of the "Shadow" model that DEQ has used to develop Temperature TMDLs and the model upon which the BLM and Forest Service strategy is based. The Density Management Study affords an additional opportunity to evaluate assumptions and provisions of the Temperature TMDL Implementation Strategy.

The first round of Density Management Study treatments was implemented on 12 BLM sites in western Oregon between 1997 and 2000, and a second round of treatments is planned for implementation beginning in 2009. Phase one of the study shed light on the effects of thinning adjacent to riparian buffers of varying width on vegetation and microclimate, and on aquatic habitat, vertebrates, and invertebrates. Phase two will provide another opportunity to analyze the interaction among vegetation, shade, and stream temperature in riparian buffers of varying widths encompassing both the primary and secondary shade zones. The riparian buffer component of the study will evaluate the effects of four alternative

buffer widths (e.g., one site-potential tree height buffer averaging 200 ft.; a variable width buffer averaging 75 ft.; a streamside buffer averaging 25 ft.; and a no buffer treatment) adjacent to young stands (50-90 years of age) thinned to varying stocking densities. Response variables being monitored include air temperature, soil and substrate temperature, stream temperature, relative humidity, overstory density (e.g., canopy cover, skylight/shade, and angular canopy density), basal area, and understory and midstory canopy cover.

Important elements of the study design are the range of riparian buffers being monitored (e.g., from one-tree height buffer [200 ft.] to no buffer [0 ft.]) and the diversity of treatments (e.g., thinning) within the primary and secondary shade zones of young stands. Phase one of the Density Management Study reduced tree density adjacent to riparian buffers to 80 trees per acre. Phase two will further reduce densities to 65 trees and 35 trees per acre, depending on the site and treatment, and includes a no-thin control treatment. These treatments provide a range in which to bracket treatment response, and provide important context for conducting sound statistical analysis and interpreting results.

Although the Density Management Study treatments will be applied as actions included in timber sales, the study is focused on the effects of management to develop late-successional habitat on aquatic and riparian ecosystems. Study results will be evaluated from the standpoint of adaptive management and the development of strategies for appropriate treatment of riparian areas given site-specific conditions of vegetation, microclimate, canopy cover, and shade among other parameters.

We understand that DEQ cannot "approve" or "authorize" the actions planned in the Density Management Study, but that DEQ is interested in remaining involved and providing feedback regarding this monitoring and adaptive management process. Thus, we will continue to invite DEQ's participation and review of results from the 2006 and future field seasons, and will solicit DEQ input regarding changes to the monitoring design. In addition, we will continue to work with DEQ to ensure that data produced by the study is used to further refine and improve methods for analyzing stream temperature and the impacts of forest treatment on parameters that affect stream temperature. To facilitate this collaboration, we are requesting that you respond with the name of a technical contact in your agency who can review Density Management Study monitoring results and coordinate with others in DEQ interested in the application of this information.

Please direct technical questions related to study design and implementation and questions concerning DEQ's continued involvement in the monitoring process to John Cissel, Science Coordinator—Westside (541-683-6410). Questions or concerns regarding the relationship of the study to the Temperature TMDL Implementation Strategy should be directed to Rosy Mazaika, State Water Program Lead (503-808-6076).

Sincerely,

James G. Kenna (for)

Elaine M. Brong
State Director

cc:
Rosy Mazaika (OR-932)
John Cissel (OR-933)

Regional Ecosystem Office

333 SW 1st P.O. Box 3623
Portland, Oregon 97208-3623
Website: www.reo.gov E-Mail: REOmail@or.blm.gov
Phone: 503-808-2165 FAX: 503-808-2163

Memorandum

Date: **May 12, 2003**

To: Regional Interagency Executive Committee (See Attached Distribution List)

From: Anne Badgley, Executive Director /s/Anne Badgley

Subject: Assessment and Review of Proposed Research under the Northwest Forest Plan

Purpose: The purpose of this memorandum is to clarify implementation of certain Northwest Forest Plan (NWFP) provisions regarding research assessments and reviews.

Background: In 2001, the Regional Ecosystem Office (REO) received questions from field offices asking whether REO review of new proposed research is required. The REO prepared findings to clarify two aspects of the research questions:

1. Reviews. When is REO review of research required?
2. Assessments. Who assesses new research proposals and what factors should be considered?

This memorandum is based on interagency discussions (which included participation by research agency representatives) and review of NWFP provisions. Key NWFP provisions are attached and referenced below.

Findings: Reviews. The NWFP Standards and Guidelines (S&Gs) distinguish between ongoing and proposed research (S&Gs, pp. C-4, 18, 19 & 38). Project summaries of ongoing research, i.e., current, funded, agency approved research, were to be submitted to REO for review within 180 days after the date the NWFP Record of Decision (ROD) was signed (April 13, 1994). New research, i.e., research proposed after the NWFP was signed, does not require REO, Research and Monitoring Group (RMG), or Regional Interagency Executive Committee (RIEC) review. However, agencies may request REO or RMG assistance in conducting science reviews of new proposed research, particularly where independent, regional-scale, or interagency analysis is indicated. Requests should be submitted through the agency's RIEC executive to the REO Executive Director.

Assessments. The S&Gs (pp. C-4, 18 & 38) require that research be assessed to determine if it is consistent with the objectives of the standards and guidelines. The appropriate land manager is responsible for assessing proposed research and has discretion regarding how to conduct the assessment and documentation process. For example, the assessment and documentation may be completed in conjunction with the NEPA process.

The ROD states that, where appropriate, some research activities may be exempted from the standards and guidelines (ROD, p.15). The S&Gs further provide for this by indicating that some

activities not otherwise consistent with the objectives of the standards and guidelines may be appropriate (S&Gs, pp. C-4, 18 & 38), particularly if the activities:

- Will test critical assumptions of these standards and guidelines;
- Will produce results important for habitat development; or
- If the activities represent continuation of long-term research.

The land manager is responsible for identifying any proposed research activities that are inconsistent with the objectives of the standards and guidelines, for assessing whether the activities are appropriate, and for ensuring that appropriate efforts have been made to locate non-conforming activities in land allocations where they will have the least effect upon the objectives of the standards and guidelines. The land manager may then exempt research activities from the standards and guidelines where appropriate. All research activities must meet the requirements of applicable federal laws (ROD, p.15), including the Endangered Species Act, NEPA, etc.

Related Considerations: The REO identified other factors that may be helpful to ensure scientific credibility of proposed research (a basic principle of the NWFP). These factors are not specified in the NWFP, however, land managers may consider them if appropriate during design and assessment of new research proposals, particularly proposals which include activities inconsistent with the objectives of the standards and guidelines. Optional factors that may be appropriate to consider include:

1. The extent to which the proposed research represents credible science. The following questions may be helpful in evaluating whether the proposed research represents credible science:

    - What hypotheses will be tested by the proposed research, and how are they linked to assumptions or uncertainties in the S&Gs?
    - Is the proposed study design adequate to test the stated hypotheses?
    - What are the temporal and spatial zones of inference for the proposed research?
    - Has the proposal been the subject of an independent science review? If so, what are the results?

2. The potential of the research to contribute to scientific knowledge of importance beyond the local area.

3. The potential to modify the research proposal to make it more consistent with the objectives of the standards and guidelines.

4. The extent to which the desired results could be obtained if the research was modified to conform to the standards and guidelines.

This memorandum is intended for use as the basis for responding to future inquiries regarding research assessments and reviews. All RIEC executives are encouraged to distribute this memorandum to appropriate individuals in their agency. If you have comments or need additional information, please contact me at 503-808-2165, or

your REO representative.

cc: REO/RMG reps
Ken Denton (FS)
John Cissel (BLM)

1819final.doc/kc

Attachment: NWFP Excerpts Related to Research Assessments and Reviews (2 pp.)

Distribution List for RIEC

Dave Allen, US Fish & Wildlife Service
Dave Wesley, US Fish & Wildlife Service (Alt)
Elaine M. Brong, Bureau of Land Management
Judy Nelson, Bureau of Land Management (Alt)
Jon Jarvis, National Park Service
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Kent Connaughton, Forest Service
Kathy Anderson, Forest Service (Alt)
Steve Thompson, U.S. Fish and Wildlife Service
John Engbring, U.S. Fish and Wildlife Service (Alt)
Phil Detrich, U.S. Fish and Wildlife Service (Alt)
Michael Pool, Bureau of Land Management
Paul Roush, Bureau of Land Management (Alt)

NWFP Excerpts Related to Research Assessments and Reviews

This enclosure provides excerpts from the Northwest Forest Plan Record of Decision (ROD) and Standards and Guidelines (S&Gs) which are referenced in the accompanying memorandum on research assessments and reviews.

ROD, p. 15:

"An important component of this decision is the facilitation of research activities to

gather information and test hypotheses in a range of environmental conditions. Although research activities are among the primary purposes of adaptive management areas and experimental forests, this decision does not intend to limit research activities to these land allocations. Where appropriate, some research activities may be exempted from the standards and guidelines of this decision. However, every effort should be made to locate non-conforming activities in land allocations where they will have the least adverse effect upon the objectives of the applicable standards and guidelines. All research activities must meet the requirements of applicable federal laws, including the Endangered Species Act."

S&Gs, p. C-4:

"A variety of wildlife and other research activities may be ongoing and proposed in all land allocations. These activities must be assessed to determine if they are consistent with the objectives of these standards and guidelines. Some activities (including those within experimental forests) not otherwise consistent with the objectives may be appropriate, particularly if the activities will test critical assumptions of these standards and guidelines, will produce results important for habitat development, or if the activities represent continuation of long-term research. Every effort should be made to locate non-conforming activities in land allocations where they will have the least adverse effect upon the objectives of these standards and guidelines.

Current, funded, agency-approved research that meets the above criteria, is assumed to continue if analysis ensures that a significant risk to Aquatic Conservation Strategy objectives does not exist. Research Stations and other Forest Service and BLM units will, within 180 days of the signing of the Record of Decision, submit a brief project summary to the Regional Ecosystem Office of ongoing research projects that are potentially inconsistent with other standards and guidelines in this document but are expected to continue under the above research exception. The Regional Ecosystem Office may choose to more formally review specific projects, and may recommend to the Regional Interagency Executive Committee modification, up to and including cancellation, of those projects that have an unacceptable risk [to] the objectives of these standards and guidelines."

S&Gs, pp. C-18,19:

"A variety of wildlife and other research activities may be ongoing and proposed in late-successional habitat. These activities must be assessed to determine if they are consistent with Late-Successional Reserve objectives. Some activities (including those within experimental forests) not otherwise consistent with the objectives may be appropriate, particularly if the activities will test critical assumptions of these standards and guidelines, will produce results important for habitat development, or if the activities represent continuation of long-term research. These activities should only be considered if there are no equivalent opportunities outside Late-Successional Reserves.

Attachment pg. 1 of 2

Current, funded, agency-approved research that meets the above criteria is assumed to continue if analysis ensures that a significant risk to Aquatic Conservation Strategy objectives does not exist. Research Stations and other Forest Service and BLM units will, within 180 days of the signing of the Record of Decision for these standards and guidelines, submit a brief project summary to the Regional Ecosystem Office of ongoing research projects that are potentially inconsistent with other standards and guidelines of this document, but are expected to continue under the above research exception. The Regional Ecosystem Office may choose to more formally review specific projects, and may recommend to the Regional Interagency Executive Committee modification, up to and including cancellation, of those projects having an unacceptable risk to Late-Successional Reserve objectives."

S&Gs, p. C-38:

"**RS-1.** A variety of research activities may be ongoing and proposed in Key Watersheds and Riparian Reserves. These activities must be analyzed to ensure that significant risk to the watershed values does not exist. If significant risk is present and cannot be mitigated, study sites must be relocated. Some activities not otherwise consistent with the objectives may be appropriate, particularly if the activities will test critical assumptions of these standards and guidelines; will produce results important for establishing or accelerating vegetation and structural characteristics for maintaining or restoring aquatic and riparian ecosystems; or the activities represent continuation of long-term research. These activities should be considered only if there are no equivalent opportunities outside of Key Watersheds and Riparian Reserves.

RS-2. Current, funded, agency-approved research, which meets the above criteria, is assumed to continue if analysis ensures that a significant risk to Aquatic Conservation Strategy objectives does not exist. Research Stations and other Forest Service and BLM units will, within 180 days of the signing of the Record of Decision adopting these standards and guidelines, submit a brief project summary to the Regional Ecosystem Office of ongoing research projects that are potentially inconsistent with other standards and guidelines but are expected to continue under the above research exception. The Regional Ecosystem Office may choose to more formally review specific projects, and may recommend to the Regional Interagency Executive Committee modification, up to and including cancellation, of those projects having an unacceptable risk to Key Watersheds and Riparian Reserves. Risk will be considered within the context of the Aquatic Conservation Strategy objectives."

S&Gs, pp. D-7, 8:

"Monitoring and research, with careful experimental design, will be conducted in Adaptive Management Areas. Research in forest ecology and management as well as social, biological, and earth sciences may be conducted. Each Adaptive Management Area will have an interdisciplinary technical advisory panel that will

provide advice to managers and the local communities involved with this effort. The technical advisory panels will provide advice and information on the appropriateness of the project.

Direction and review are provided by the Regional Interagency Executive Committee, through the Regional Ecosystem Office. This review will help assure that plans and projects developed for the various Adaptive Management Areas will be both scientifically and ecologically credible. It will assure that new, innovative approaches are used, that the laws and the goals of the plan are met, and that validation monitoring is incorporated."

S&Gs pp. E-17, 18:

"The Research and Monitoring Committee will review and evaluate ongoing research; develop a research plan to address critical natural resource issues; address biological, social, economic, and adaptive management research topics; and develop and review scientifically credible, cost efficient monitoring plans; and facilitate scientific review of proposed changes to the standards and guidelines."

Attachment pg. 2 of 2

FINAL DRAFT
DMS Next Entry Marking Guidelines

July 25, 2006

Intent

These marking guidelines are intended for use by the site coordinators. Site coordinators may need to edit this document for use by markers. These guidelines are intended to provide a clear vision of the desired outcome rather than an absolutely rigid set of rules. Specific methods of implementation will likely vary across sites (e.g., marking color or technique, definition of minor species, degree of existing down wood). Site coordinators are expected to be directly involved in the marking on a daily basis to provide guidance and to translate this vision into marked stands.

Goals

Maintain or increase the diversity of stand structural and compositional conditions through the thinning operation. Specific goals include to:

1. maintain the full range of diameter distribution
2. allow for a range of tree structures, including diverse crown sizes, and damaged or deformed trees
3. increase the proportion of minor species by focus the harvesting activities on the dominant species.

Hierarchy

To meet these goals the following general priorities are to be applied when making marking decisions:

4. Residual trees per acre and down wood target
5. Maintenance of minor species
6. Proportional across diameters to ensure representation of all size classes
7. Maintenance of unique trees - e.g., wolf trees, broken-top trees, forked trees, deep crowns
8. Residual tree spacing

Trees per acre targets

Trees per acre (TPA) targets are determined by adding the requirements from two sources:

1. Desired residual green tree density
   60 TPA - High-density treatment and high-density subtreatment within the variable-density treatment
   30 TPA - Moderate-density treatment and moderate-density subtreatment within the variable-density treatment
   20 TPA - Low-density subtreatment within the variable-density treatment

2. Future snag recruitment
   5 TPA to be left on all treatments

NOTE: Reserved hardwoods do not count towards the TPA targets

Down wood requirement

2 TPA of diameter larger than mean DBH should be marked for felling as part of the timber sale contract

NOTE: Existing Class I and II logs of diameter larger than mean DBH can be counted towards this requirement if there is sufficient material to warrant the effort. Clumps of existing Class I and II logs can contribute to down wood requirements for a larger area not to exceed five acres.

Minor species

- In general, all hardwoods are to be retained. However, dense hardwood patches may be marked for thinning to improve the vigor and longevity of the hardwoods.
- Coniferous species of very low occurrence on a site will be reserved. In addition, coniferous species of low occurrence may be identified for each site to be favored in the marking. The vegetation PI (Klaus Puettmann, OSU) will provide a list of species that occur at very low and low levels for each site prior to marking. Dense patches of minor conifer species may also be marked for thinning to improve their vigor and longevity.
- Leave extra growing space around retained minor species to improve their vigor and longevity.

Proportional marking

Rethinnings

- Marking should be proportional across diameters to foster development of a vertically-complex canopy structure and to ensure a rough representation of each diameter class. Concentrate on removing trees that are in the intermediate and co-dominant crown classes. Take dominants only as necessary to achieve the desired density or to release a desired minor species tree. This should result in a d/D approaching one.
- Reserve all trees less than 9 inches DBH

Initial thinnings

- Areas marked for thinning for the first time (i.e., in portions of designated uncut riparian buffers) should be marked with greater concern for tree stability to avoid the Puettmann effect. Mark 10 TPA for retention in the 9”-15” diameter class; otherwise, mark for a thin-from-below to ensure the largest, most stable trees are retained.

NOTE: The vegetation PI (Klaus Puettmann, OSU) will provide tables and graphs detailing the diameter distribution by species for each site prior to marking.

Unique trees

- Retain sufficient trees of unique structural characteristics (wolf trees, broken-top trees, forked trees, trees with deep crowns) to ensure their representation in the stand.
- Reserve large remnant trees from the previous stand.
- Retain snags where operationally feasible. If it is a large, high-value snag mark nearby trees for retention to protect the snag from logging operations.
- Western hemlock infected with dwarf mistletoe should be marked to cut where there is a choice of another species or a less infected tree.

Residual tree spacing
Spacing distances are provided below as a general reference and are not meant as a strict criterion for marking.

High density treatment
Current density: 120 TPA (19 ft spacing)
Desired density after thinning 65 TPA (26 ft spacing)
Moderate density treatment
Current density: 80 TPA (23 ft spacing)
Desired density after thinning 35 TPA (35 ft spacing)
Variable density treatment
High density subtreatment:
Current density: 120 TPA (19 ft spacing)
Desired density after thinning 65 TPA (26 ft spacing)
Moderate density subtreatment:
Current density: 80 TPA (23 ft spacing)
Desired density after thinning 35 TPA (35 ft spacing)
Low density subtreatment:
Current density: 40 TPA (33 ft spacing)
Desired density after thinning: 25 TPA (42 ft spacing)

Other guidelines
- Areas around patch cuts (gaps) should be marked using the same criteria as the rest of the stand, i.e., as if the gaps were not there.
- Reserve tree improvement parent trees and bearing trees; they are marked with orange paint.
- Reserve the plot center trees for the thinning plots (also know as the BLM plots)

APPENDIX C.: DIAMETER DISTRIBUTION BY TREATMENT SUPPLIED BY DR. KLAUS PUETTMANN OSU DEPARTMENT OF FOREST SCIENCE / PRINCIPAL INVESTIGATOR-VEGETATION RESPONSE

Diameter distribution by treatment for North Soup

The following pages contain the diameter distributions within each treatment. Summaries are for all live trees with DBH>7 inches and reported using 2-inch diameter classes. Trees with DBH>40 have been lumped into a single bin. Diameter distributions are reported separately by sampling protocol: BLM or OSU. Each section starts with a table displaying trees per acre by diameter class for all treatments. Subsequent pages contain plots of the diameter distribution and a table of relative stem density by species for each treatment. Treatment codes are listed in Table 1.

Table 1: Treatment codes used in tables and charts.

Treatment Code	Definition
CON	Control
MD80	Moderate density 80 tpa
HD120	High density 120 tpa
VD40	Variable density 40 tpa
VD80	Variable density 80 tpa
VD120	Variable density 120 tpa
DEMO20	Demonstration site 20 tpa
DEMO40	Demonstration site 40 tpa
DEMO80	Demonstration site 80 tpa
DEMORIP	Demonstration site for a riparian area
RIPCON	Riparian control, unthinned riparian buffer in treatment areas other than the control
RIP120	Riparian thinned to 120 tpa, outside of the trt area
RT	Rethin, only for rethinning study

Table 2: Trees per acre by diameter class and treatment in North Soup BLM plots.

DBH	CON	HD120	MD80	VD120	VD80	VD40	RIPCON
8	12.0	4.5	1.0	5.1	6.3	3.5	15.0
10	20.4	6.0	3.5	10.3	4.6	1.0	21.0
12	17.2	16.0	4.5	8.6	9.7	0.5	19.0
14	18.0	20.0	10.0	15.4	6.3	2.0	24.0
16	20.4	14.5	11.0	16.6	18.9	7.5	28.0
18	17.2	17.5	13.0	16.6	13.1	11.0	25.0
20	12.4	17.0	14.5	10.8	13.1	6.5	17.0
22	9.6	10.5	11.0	8.6	5.7	8.0	8.0
24	6.8	5.0	6.5	9.1	5.1	2.5	2.0
26	4.4	3.5	3.0	2.9	1.7	0.5	1.0
28	2.8	0.5	0.5	0.0	1.1	1.5	1.0
30	1.2	0.0	0.0	0.6	0.6	0.5	0.0
32	0.8	0.0	0.5	0.0	0.0	0.0	0.0
34	0.4	0.0	0.0	0.0	0.0	0.0	0.0
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	0.0	0.0	0.5	0.0	0.0	0.0	0.0
40+	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total	144.0	115.0	79.5	104.5	86.2	45.0	161.0

Figure 1: North Soup BLM CON plots. Total trees per acre = 144.

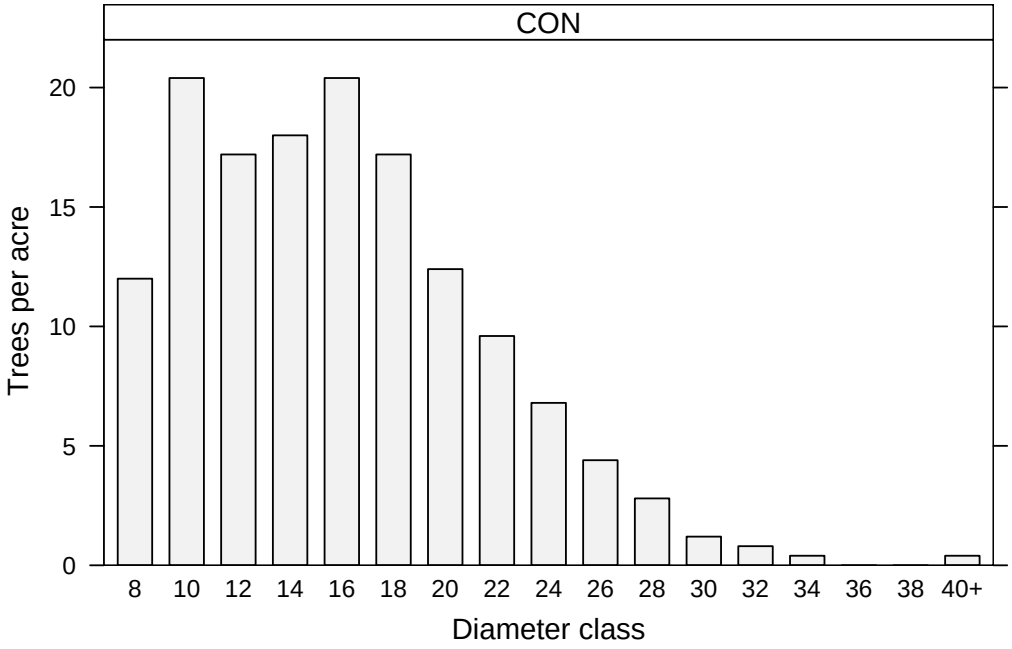

Table 3: Relative abundance of overstory trees in North Soup BLM CON plots.

Species	Percent
Douglas fir	60.1
western hemlock	31.7
red alder	6.2
bigleaf maple	2.0

Figure 2: North Soup BLM HD120 plots. Total trees per acre = 115.

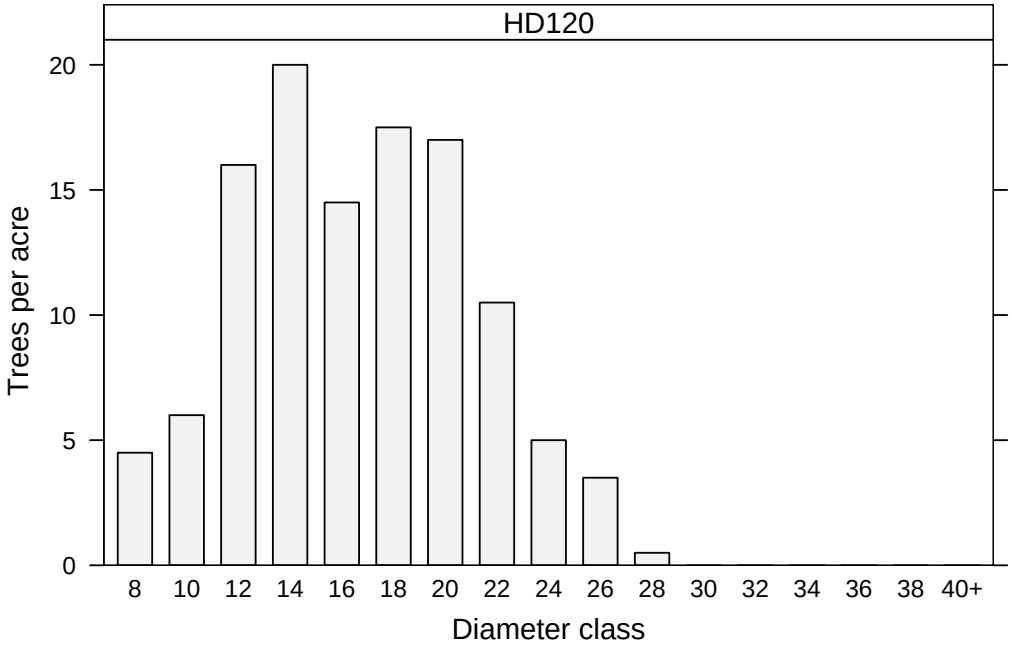

Table 4: Relative abundance of overstory trees in North Soup BLM HD120 plots.

Species	Percent
Douglas fir	82.1
western hemlock	17.4
western red cedar	0.5

Figure 3: North Soup BLM MD80 plots. Total trees per acre = 80.

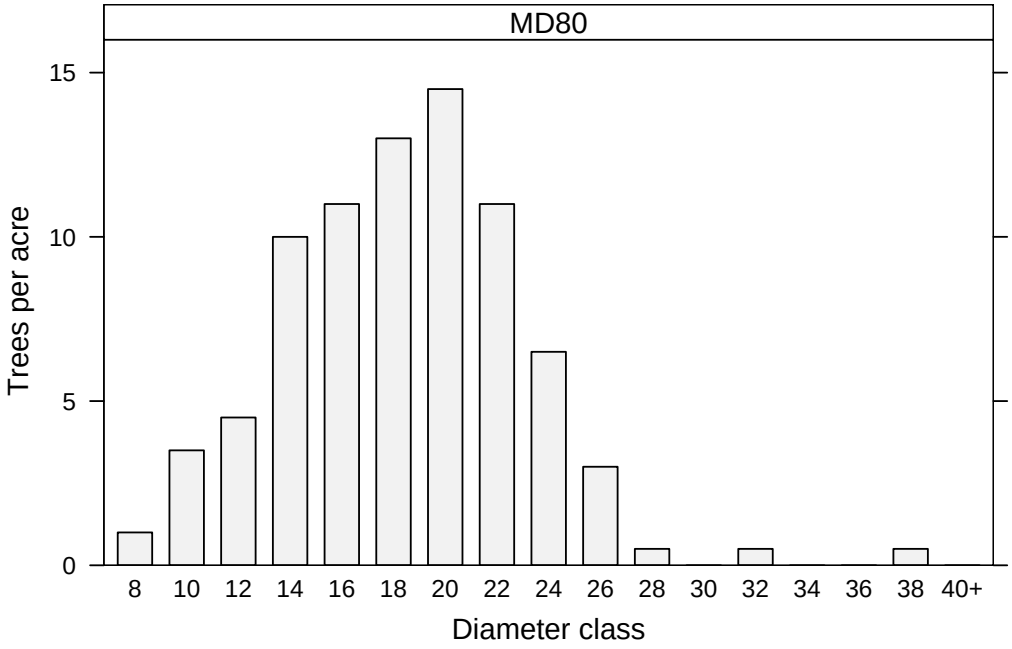

Table 5: Relative abundance of overstory trees in North Soup BLM MD80 plots.

Species	Percent
Douglas fir	83.9
western hemlock	12.9
bigleaf maple	2.6
grand fir	0.6

Figure 4: North Soup BLM VD120 plots. Total trees per acre = 105.

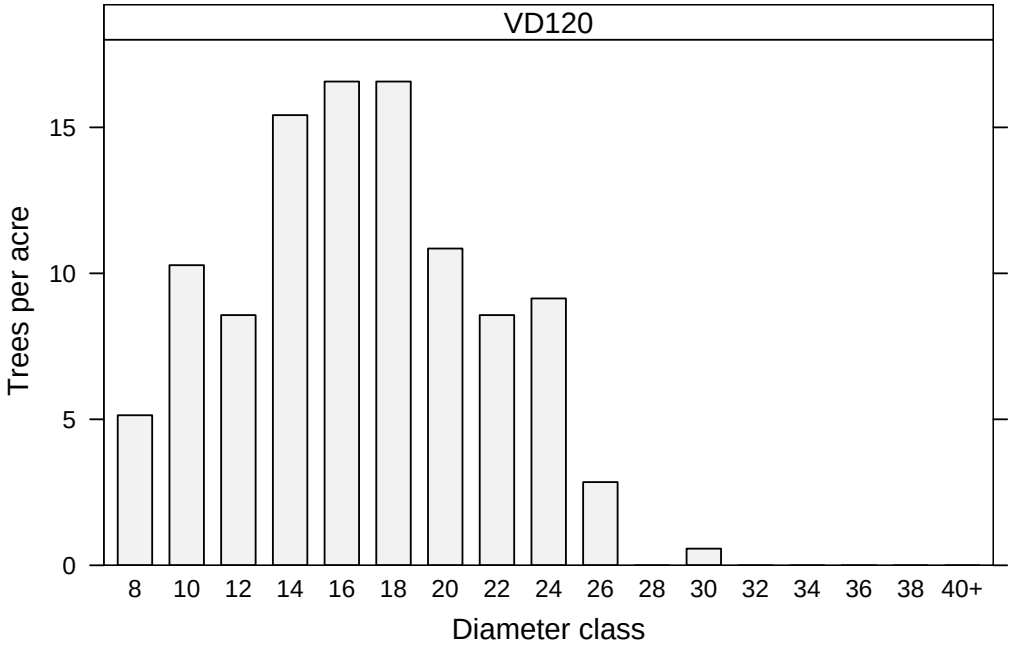

Table 6: Relative abundance of overstory trees in North Soup BLM VD120 plots.

Species	Percent
Douglas fir	87.1
western hemlock	7.7
red alder	2.9
bigleaf maple	2.3

Figure 5: North Soup BLM VD80 plots. Total trees per acre = 86.

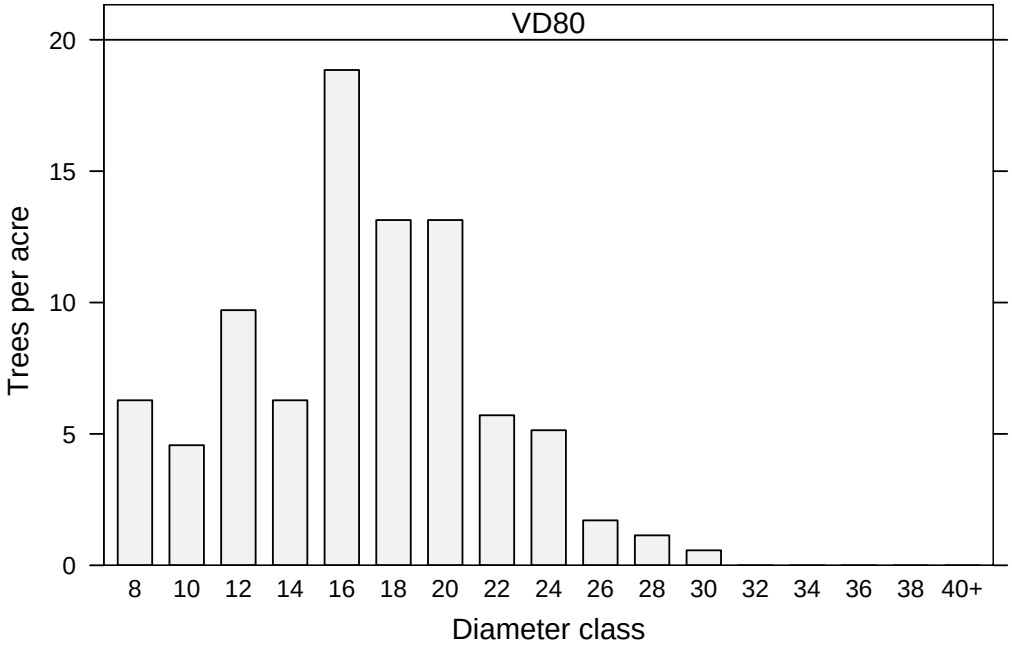

Table 7: Relative abundance of overstory trees in North Soup BLM VD80 plots.

Species	Percent
Douglas fir	87.5
western hemlock	5.7
bigleaf maple	5.0
red alder	1.9

Figure 6: North Soup BLM VD40 plots. Total trees per acre = 45.

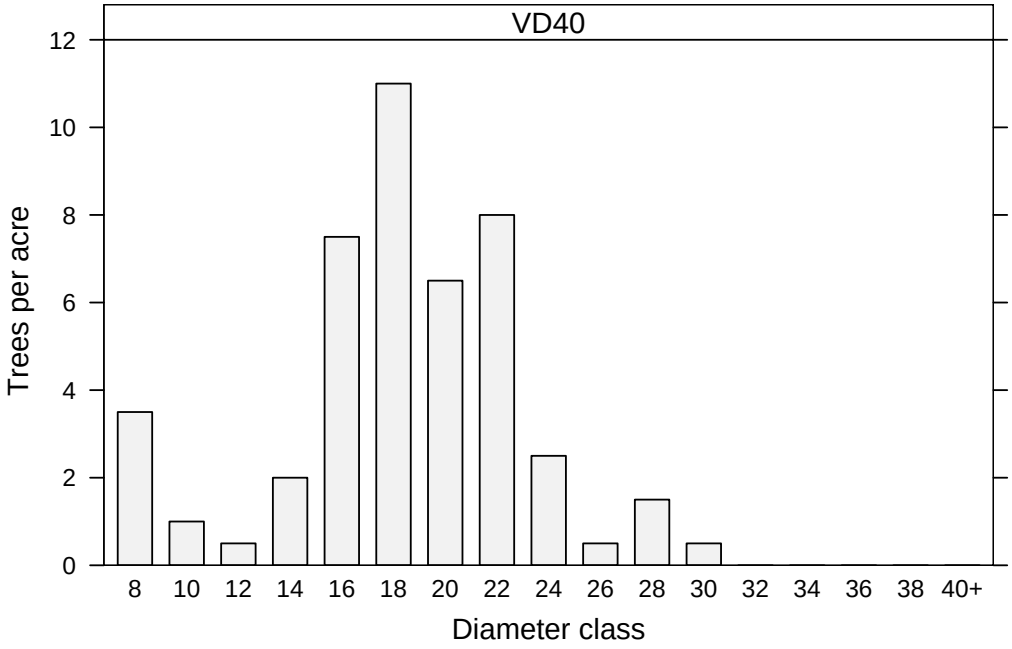

Table 8: Relative abundance of overstory trees in North Soup BLM VD40 plots.

Species	Percent
Douglas fir	88.1
bigleaf maple	7.9
western hemlock	3.9

Figure 7: North Soup BLM RIPCON plots. Total trees per acre = 161.

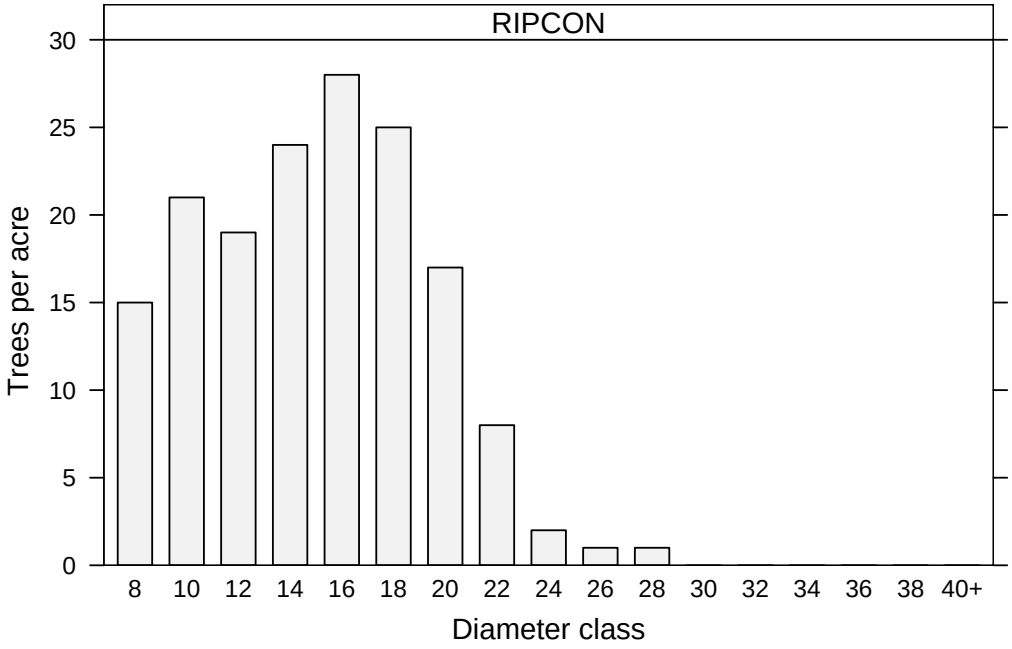

Table 9: Relative abundance of overstory trees in North Soup BLM RIPCON plots.

Species	Percent
Douglas fir	88.2
bigleaf maple	8.3
red alder	2.8
western hemlock	0.7

Table 10: Trees per acre by diameter class and treatment in North Soup OSU plots.

DBH	CON	HD120	MD80	VD120	VD80	VD40	VDGAP
8	12.8	9.5	13.1	12.7	6.5	4.0	8.0
10	18.0	8.8	11.2	10.9	8.5	2.0	0.0
12	17.1	11.2	10.3	13.4	3.5	0.0	2.0
14	16.6	14.8	10.7	14.5	8.0	2.0	6.0
16	20.6	13.3	11.6	9.8	6.5	8.0	0.0
18	14.8	13.9	12.2	14.2	9.0	18.0	2.0
20	12.3	10.8	8.9	10.2	7.0	10.0	2.0
22	8.0	8.4	7.4	7.6	4.5	8.0	0.0
24	6.8	5.3	3.8	4.7	3.0	2.0	0.0
26	4.8	2.9	1.9	1.1	1.0	0.0	0.0
28	1.7	2.1	1.1	0.4	0.0	0.0	0.0
30	1.1	0.2	0.6	0.7	0.0	0.0	0.0
32	1.4	0.4	0.0	0.0	0.0	0.0	0.0
34	0.6	0.0	0.0	0.0	0.0	0.0	0.0
36	0.6	0.2	0.0	0.0	0.0	0.0	0.0
38	0.6	0.6	0.0	0.0	0.0	0.0	0.0
40+	0.8	0.6	0.0	0.4	0.0	0.0	0.0
Total	138.8	103.0	92.9	100.7	57.5	54.0	20.0

Figure 8: North Soup OSU CON plots. Total trees per acre = 139.

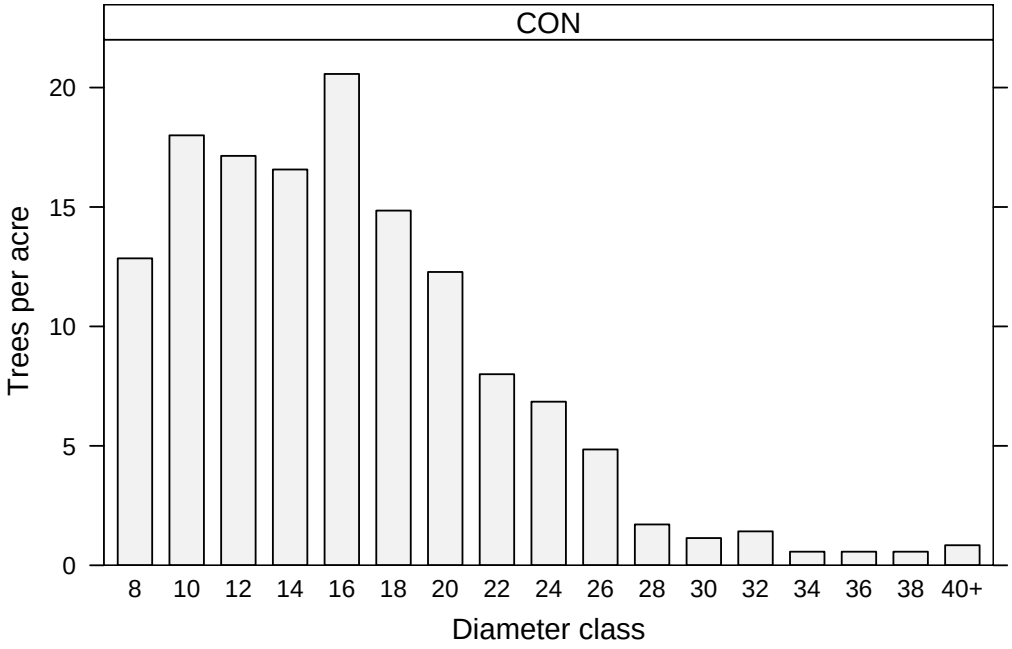

Table 11: Relative abundance of overstory trees in North Soup OSU CON plots.

Species	Percent
Douglas fir	61.2
western hemlock	23.6
red alder	8.3
bigleaf maple	6.3
giant chinquapin	0.3

Figure 9: North Soup OSU HD120 plots. Total trees per acre = 103.

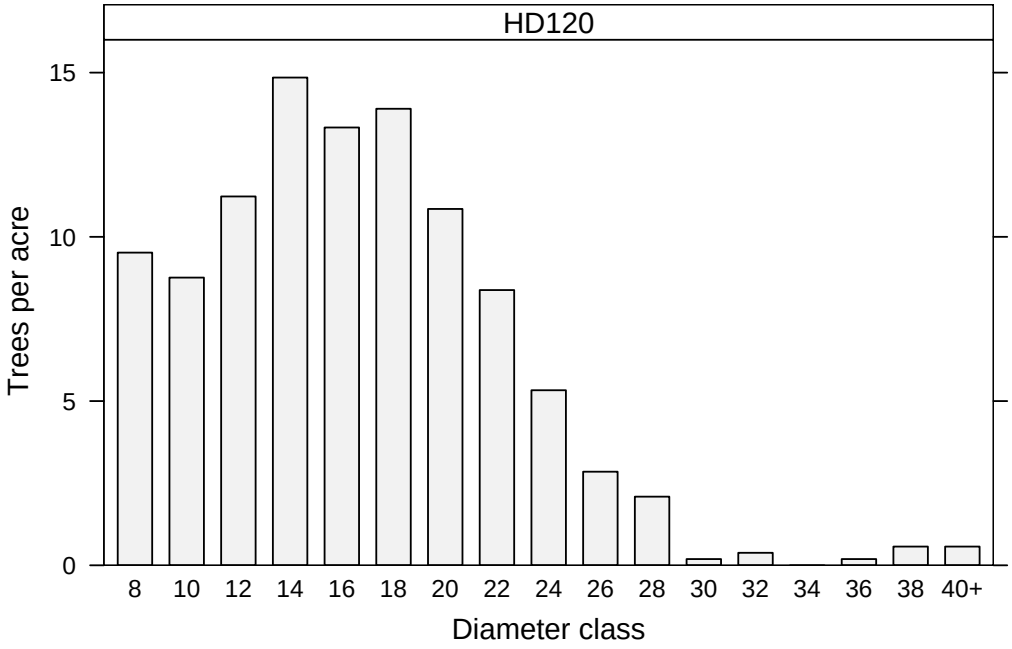

Table 12: Relative abundance of overstory trees in North Soup OSU HD120 plots.

Species	Percent
Douglas fir	69.6
western hemlock	20.8
red alder	5.0
bigleaf maple	3.5
bitter cherry	0.3
Pursh's buckthorn	0.3
western red cedar	0.3

Figure 10: North Soup OSU MD80 plots. Total trees per acre = 93.

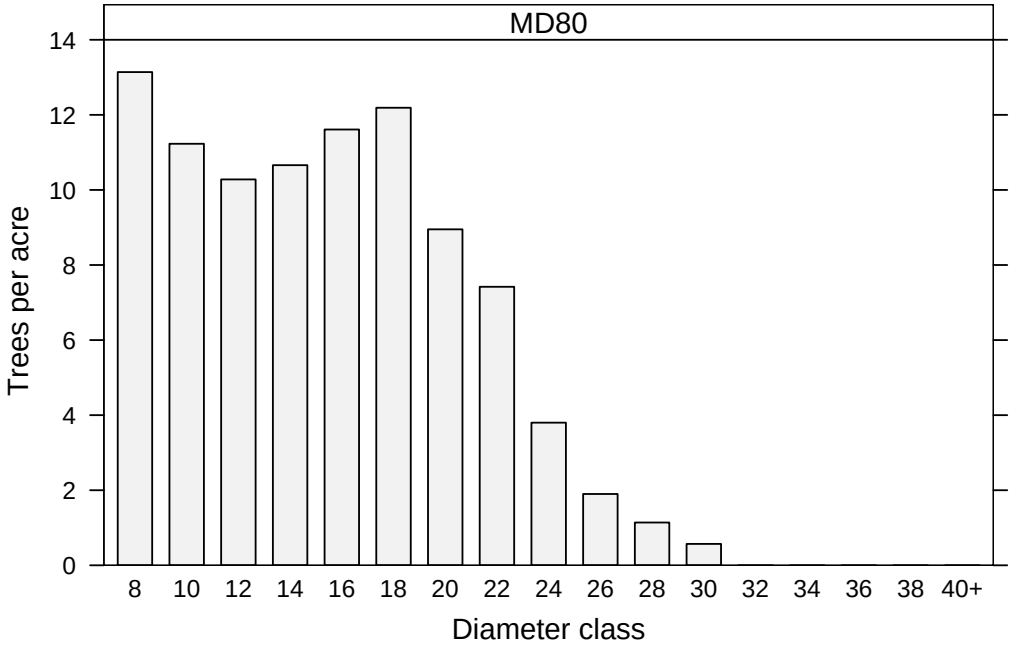

Table 13: Relative abundance of overstory trees in North Soup OSU MD80 plots.

Species	Percent
Douglas fir	73.5
red alder	8.8
western hemlock	7.6
bigleaf maple	4.3
western red cedar	0.6
bitter cherry	0.3
California laurel	0.2

Figure 11: North Soup OSU VD120 plots. Total trees per acre = 101.

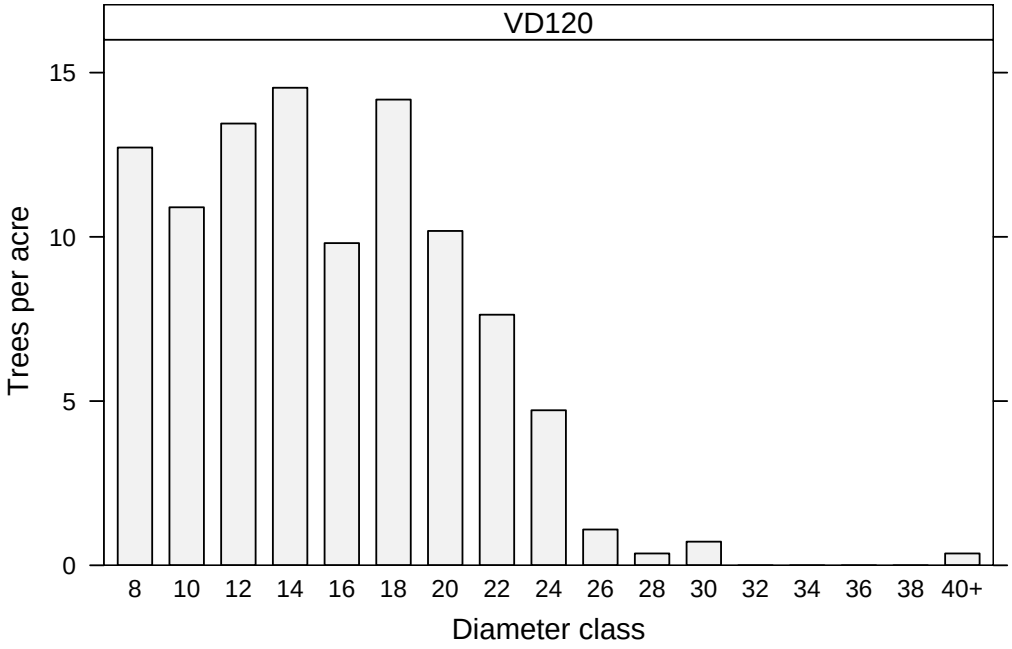

Table 14: Relative abundance of overstory trees in North Soup OSU VD120 plots.

Species	Percent
Douglas fir	80.4
bigleaf maple	11.5
western hemlock	4.8
red alder	2.3
California laurel	0.4
bitter cherry	0.2
giant chinquapin	0.2
Pacific dogwood	0.2

Figure 12: North Soup OSU VD80 plots. Total trees per acre = 58.

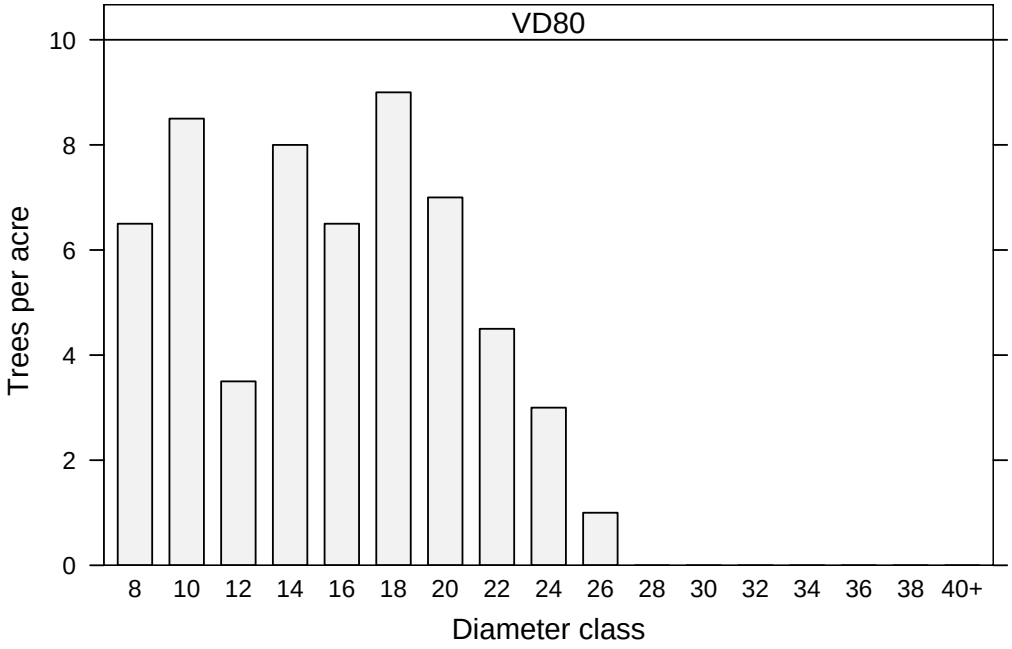

Table 15: Relative abundance of overstory trees in North Soup OSU VD80 plots.

Species	Percent
Douglas fir	62.5
bigleaf maple	6.0
giant chinquapin	3.8
red alder	1.1
California laurel	1.0
bitter cherry	0.5

Figure 13: North Soup OSU VD40 plots. Total trees per acre = 54.

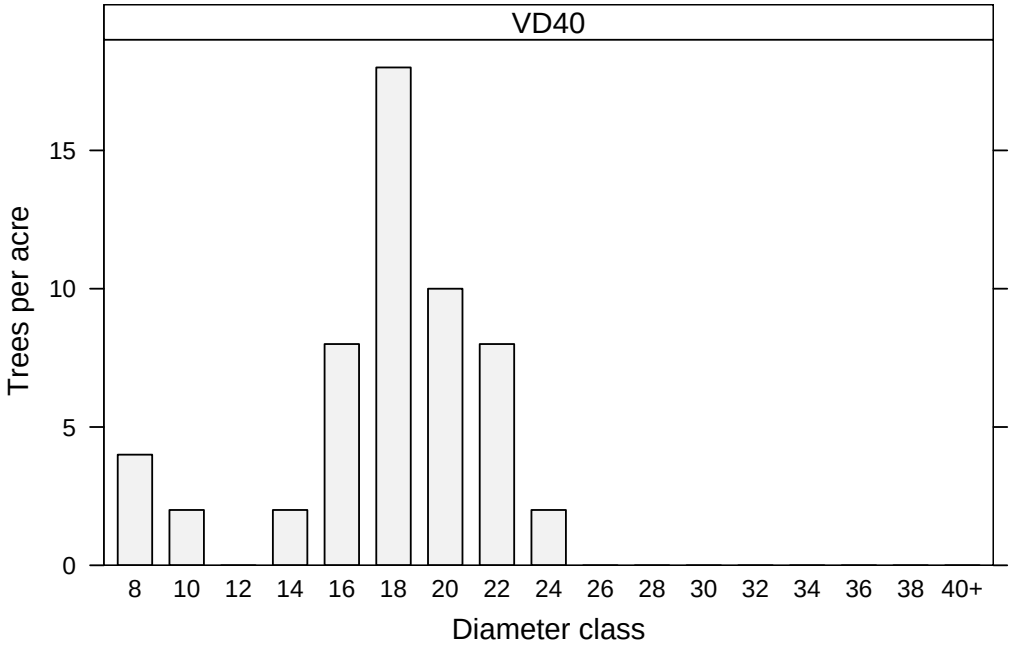

Table 16: Relative abundance of overstory trees in North Soup OSU VD40 plots.

Species	Percent
Douglas fir	91.2
western hemlock	8.8

Figure 14: North Soup OSU VDGAP plots. Total trees per acre = 20.

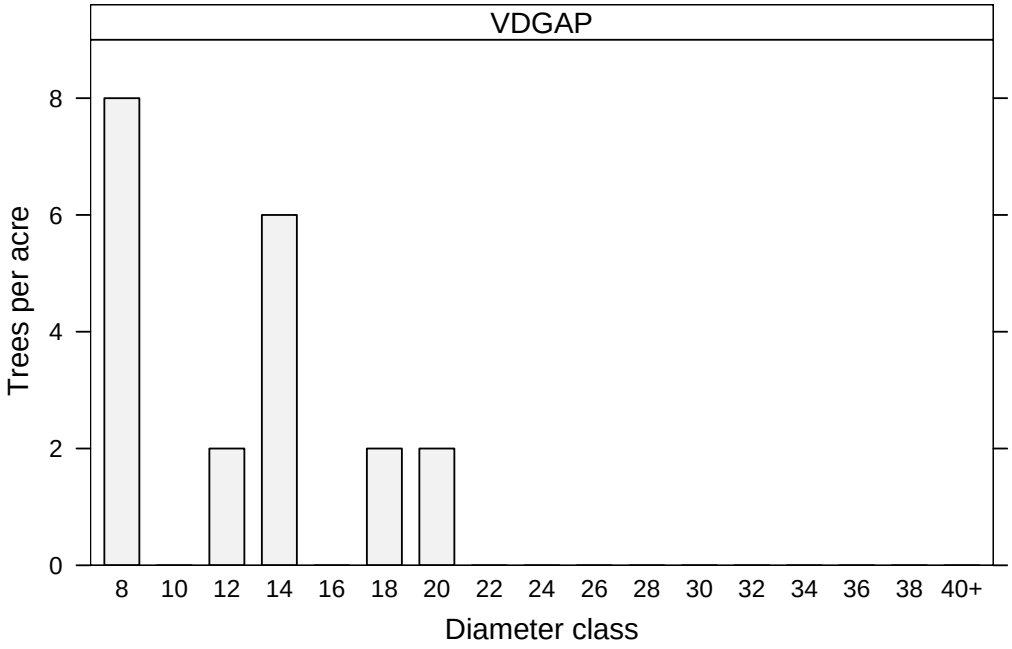

Table 17: Relative abundance of overstory trees in North Soup OSU VDGAP plots.

Species	Percent
Douglas fir	45.0
giant chinquapin	5.0

Diameter distribution by treatment for Blue Retro

The following pages contain the diameter distributions within each treatment. Summaries are for all live trees with DBH>7 inches and reported using 2-inch diameter classes. Trees with DBH>40 have been lumped into a single bin. Diameter distributions are reported separately by sampling protocol: BLM or OSU. Each section starts with a table displaying trees per acre by diameter class for all treatments. Subsequent pages contain plots of the diameter distribution and a table of relative stem density by species for each treatment. Treatment codes are listed in Table 1.

Table 1: Treatment codes used in tables and charts.

Treatment Code	Definition
CON	Control
MD80	Moderate density 80 tpa
HD120	High density 120 tpa
VD40	Variable density 40 tpa
VD80	Variable density 80 tpa
VD120	Variable density 120 tpa
DEMO20	Demonstration site 20 tpa
DEMO40	Demonstration site 40 tpa
DEMO80	Demonstration site 80 tpa
DEMORIP	Demonstration site for a riparian area
RIPCON	Riparian control, unthinned riparian buffer in treatment areas other than the control
RIP120	Riparian thinned to 120 tpa, outside of the trt area
RT	Rethin, only for rethinning study

Table 2: Trees per acre by diameter class and treatment in Blue Retro BLM plots.

DBH	CON	RT
8	4.7	10.3
10	8.7	11.3
12	11.3	3.0
14	14.0	3.0
16	16.7	3.0
18	11.3	3.0
20	12.0	5.0
22	11.3	8.0
24	10.7	7.3
26	7.3	6.0
28	4.7	6.3
30	4.0	3.0
32	1.3	1.7
34	1.3	1.0
36	0.0	0.0
38	0.0	0.3
40+	0.0	0.0
Total	119.3	72.3

Figure 1: Blue Retro BLM CON plots. Total trees per acre = 119.

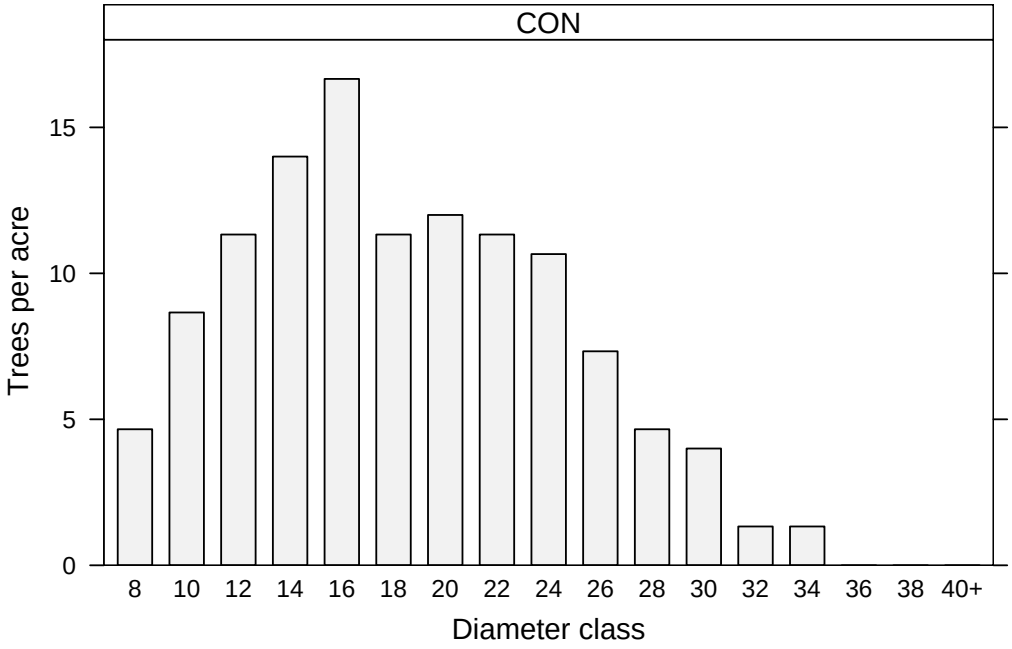

Table 3: Relative abundance of overstory trees in Blue Retro BLM CON plots.

Species	Percent
Douglas fir	91.6
western red cedar	4.3
western hemlock	3.5
red alder	0.6

Figure 2: Blue Retro BLM RT plots. Total trees per acre = 72.

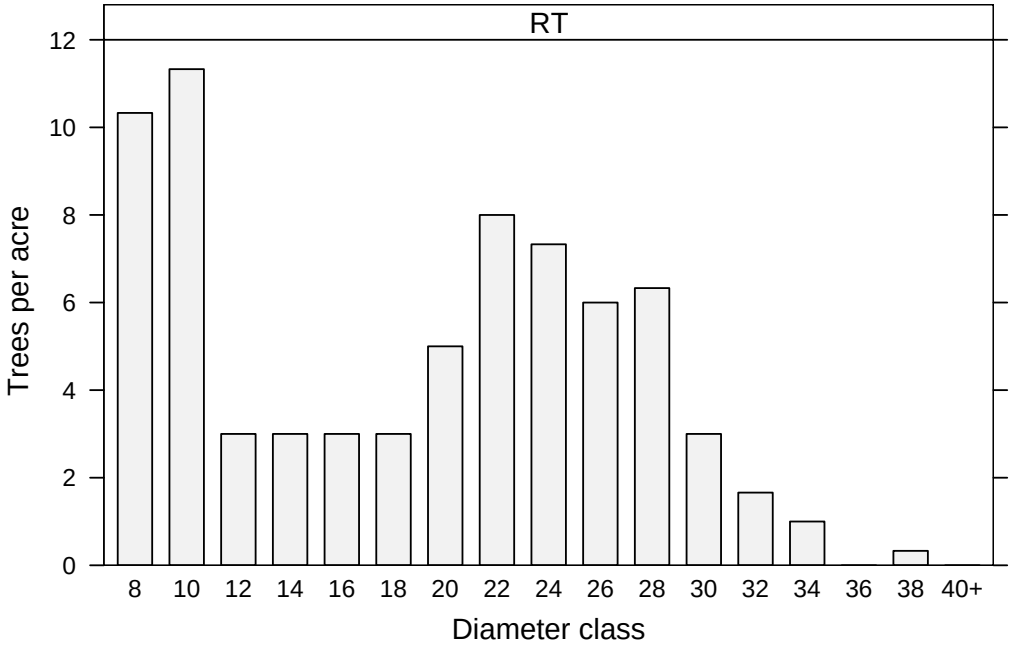

Table 4: Relative abundance of overstory trees in Blue Retro BLM RT plots.

Species	Percent
Douglas fir	59.9
western red cedar	21.2
western hemlock	18.9

APPENDIX D.: 1996 NORTH SOUP DENSITY MANAGEMENT STUDY DECISION DOCUMENTATION AND ENVIRONMENTAL ASSESSMENT (EA OR125-96-08)

DECISION DOCUMENTATION

NORTH SOUP DENSITY MANAGEMENT STUDY
EA No. OR 125-96-08

Background:
An Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the North Soup Density Management Study were prepared by the Umpqua Resource Area, Coos Bay District Office, using input from District resource staff and public comment. The proposal is to install a Density Management Study in approximately 227 acres of 45 year old timber dominated by Douglas-fir and western hemlock in the North Fork Soup Creek area of the Umpqua Resource Area in fiscal year 1996. The proposed study site is located in the Late Successional Reserve (LSR) and Riparian Reserve land use allocations of the Soup Creek subwatershed of the Mill Creek Analytical Watershed. The range of alternatives for the density management sale could remove approximately 1.75 million board feet (MMBF) of timber from the LSR and Riparian Reserve. A Watershed Analysis was completed for the subwatershed in January 1995.

In accordance with the Aquatic Conservation Strategy objectives and the Mill Creek Watershed Analysis recommendations, portions of the LSR's and the Riparian Reserves would have density management in order to provide for a future supply of larger, more durable coarse woody debris, promote wind firmness of the stand, and increase species diversity within the Riparian Reserves. Trees adjacent to the streams would not be harvested. Douglas-fir and western hemlock would be thinned in portions of the riparian reserves; most all other conifer and all hardwood species would be retained within the riparian reserves.

Management objectives are to:

- Establish a Coos Bay replication of the Density Management Study to represent a local District site in the coastal environment;
- To provide a basis for learning how to monitor new stand and landscape management systems and allow for an adaptive management approach;
- To provide the basis for studying a variety of ecosystems and management variables such as site productivity, root disease effects, wildlife response, and economic feasibility;
- Alter stand development to increase the growth and vigor of the remaining dominant, co-dominant, and multiple understory layers through density management to achieve old-growth characteristics as quickly as possible;
- Protect and enhance the long term health of the forest ecosystem; and
- Restore and maintain the ecological health of watersheds and their aquatic ecosystems on public lands.

Decision:
My decision is to implement Alternative 3 (proposed action) as described in EA OR 125-96-08.

This sale is located in T. 23 S., R. 09 W., Sections 16, Willamette Meridian. An estimated 1.75 MMBF of timber will be removed by density management. The Design Features such as road construction, logging method, the Density Management Study Plan and Layout design, described in the EA are hereby adopted.

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EA estimates are changed as follows:

	EA estimate	Field Verification
Study Area	approx. 220 acres	228 acres
Harvest Acreage	approx. 220 acres	145 acres
Harvest Volume	approx. 1.5 MMBF	1.75 MMBF

Other project design features will be implemented as described in the *Coos Bay District Resource Management Plan and its Record of Decision* (RMP) (BLM, May 1995) which conforms with the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (Northwest Forest Plan) and its Record of Decision (ROD) (Interagency, 1994).

This sale has been surveyed for sensitive, threatened or endangered botanical species. No populations of threatened or endangered botanical species, as defined by the Endangered Species Act of 1973, as amended, were found on the project area. The project is within a 1/4 mile of unsurveyed suitable Marbled Murrelet habitat. Consultation for this project will be done in the 1996-1997 Coos Bay District Programmatic Biological Assessment and is defined as a commercial thinning, Any mitigating measures required by the USFWS will be adopted and incorporated into the timber sale prior to award of the contract.

Rationale:

Alternative 3 (the proposed action), is the alternative that will allow us the best opportunity to implement the Density Management Study in a cost effective manner, minimize excessive soil compaction, and provide for better access in yarding the study area thereby lessening residual damage to the numerous reserve islands within the various stand densities. This decision also meets the *Mill Creek Watershed Analysis* recommendations to promote forest health.

The decision is consistent with the ROD for the Northwest Forest Plan and the *Coos Bay District Resource Management Plan/Final Environmental Impact Statement*.

_____
Daryl L. Albiston
Umpqua Area Manager

_____
Date

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North Soup Density Management Study
Environmental Assessment

Umpqua Resource Area
Coos Bay District
Bureau of Land Management

EA - OR - 125 - 96 - 08
Prepared this 17th day of July 1996 by

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CHAPTER I.: Purpose and Need for Action

The Bureau of Land Management (BLM), Umpqua Resource Area selected this proposed study site based on a request by the BLM Oregon State Office to install a Coos Bay District replication of John Tappeiner's Density Management Study. A data search was completed for areas that had a minimum of four 50-acre blocks of homogeneous conifer stands, were relatively contiguous, 30 to 70 year age class, and with sufficient stand densities to merit a commercial thinning. Initial efforts went towards identifying acres in the Matrix lands, but no stands qualified under the specific selection criteria. As a result, the North Soup area, located within a Late Successional Reserve (LSR), was selected. Trees selectively removed from the Study Area would be sold in a timber sale to accomplish the project.

Goals for the Resource Area

- Establish a Coos Bay replication of the Density Management Study to represent a local District site in the coastal environment.
- Protect and enhance the long-term health of the forest ecosystem.
- Restore and maintain the ecological health of watersheds and their aquatic ecosystems on public lands.

Objectives for the Study Area

- To provide density management for this stand to achieve old- growth characteristics such as large trees and multiple understory layers as quickly as possible.
- To provide a basis for learning how to monitor new stand and landscape management systems and allow for an adaptive management approach.
- To provide the basis for studying a variety of ecosystems and management variables such as site productivity, root disease effects, wildlife response, and economic feasibility.
- To determine the following:
  - Overstory tree response to density management.
  - The response of wildlife to different levels of stand density of conifers and hardwoods, green tree retention, and numbers of snags and down logs.
  - The response of shrubs and herbs (and lichens, bryophytes, and fungi if possible) to overstory density and pattern, and also their response to treatments controlling competition to conifer seedlings.
  - The effects of environment, microsites, and regeneration in upland and riparian areas.

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- Determine the feasibility of implementing these prescriptions on a local site.

The Mill Creek Watershed Analysis identifies management of younger stands in the LSR to accelerate development of late successional stand conditions. The Mill Creek Watershed Analysis is hereby incorporated by reference, and is part of the Mill Creek Analysis File.

This Environmental Assessment (EA) is tiered to the *Coos Bay District Resource Management Plan* and its *Record of Decision* (RNP, May 1995), and the *Record of Decision* (ROD) (Interagency, April 1994) for the *Final Supplemental Environmental Impact Statement of Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl.*

The Analysis File for this EA contains additional information such as scoping data, public input, vegetation maps, topographic maps, Interdisciplinary (ID) Team notes, Staff Input, LSR Assessment, and the Engineer's Summary used by the ID Team to analyze impacts and alternatives and is hereby incorporated by reference.

Proposal

The Umpqua Resource Area of the Coos Bay District BLM proposes to install the North Soup Density Management Study on approximately 220 acres in the North Fork Soup Creek drainage. The treatment areas will be divided into four similar size blocks. The study site will be monitored by scientists from the Pacific Northwest Experiment Station (PNW) in Corvallis, researchers from the National Biological Survey in Corvallis, and Coos Bay BLM District personnel.

The north boundary of the project is located on the south side of the North Fork of Soup Creek (see map No.1) and bounded to the south by the Homalac Seed Orchard. The legal description of the study is Section 16 of T. 23 S., R. 9 W., Willamette Meridian and is within the Soup Creek subwatershed of the Mill Creek Analytical Watershed.

Scoping

The scoping process afforded the opportunity for the public, and agency personnel, to identify their concerns relating to the proposed project, and define the issues and alternatives that are examined in detail in the EA. The general public was notified of the planned EA through publication of the District's semi-annual Planning Update and letters to interested individuals and organizations on the District's NEPA mailing list. Responses to these scoping efforts are contained in the Analysis File.

Identified Issues

Only these two issues, from the eight identified, were judged to be worthy of analysis:

- Soil compaction from ground based cutting and yarding systems.
- Road densities in the Mill Creek Watershed.

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Issues Identified but Eliminated from Further Analysis

- The scoping process identified six additional issues, which were eliminated from analysis. The rationale for their elimination is as follows:

- New road construction: Roads would be located through early successional habitat and would be designed to minimize adverse impacts. Depending on the alternative selected, the roads could be located on the ridge top along the south boundary of the study area and/or on the mid-slope bench. All road locations would use existing old road locations whenever possible. All mid-slope roads would be ripped and seeded following logging activities.

- Thinning in the riparian reserves adjacent to the North Fork Soup Creek and intersecting intermittent streams: The north unit boundary would be located 50 foot from the edge of North Fork Soup Creek. Reserve leave islands would be located along the lower portions of the intermittent streams 2A and 3A. (see map No. 1)

- Seed Tree Retention: All seed trees would be marked for retention for future cone collection, except those seed trees located within the road right-of-way of the proposed new road construction.

- Attainment of Aquatic Conservation Strategy Objectives:

- Aquatic Conservation Strategy objectives would be met under all of the alternatives listed in this assessment. While some wood would be removed within the riparian reserves, densities of residual trees would be adequate to provide future downed woody debris, maintain shading, and provide for hydrologic function. It is unlikely that the sediment regime or water quality would be affected. Variable break and inner gorge no- cut zones would protect the current downed wood and instream habitats within the stream channels.

- Retention of large Woody Debris: The study design requires leaving all existing large down logs and snags.

- Hardwood Retention - All red alder, big leaf maple, myrtlewood, cherry, and tanoak would be retained within the study area.

CHAPTER II.: Description of Alternatives, Including the Proposed Action

Process used to formulate Alternatives

The implementation of this Density Management Study requires adopting the basic framework outlined in the Tappeiner plan. The treatments outlined in this study are replicates of, and

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comparable to, similar study sites implemented on other BLM Districts and U.S. Forest Service lands.

Various alternatives were discussed in the development of this Environmental Assessment. Discussions focused on various yarding alternatives in order to remove selected trees from the units using best management practices that would minimize soil compaction, maintain physical integrity of the study area (i.e. reserve islands, no-cut zones, etc.), and provide for economic efficiency.

Alternative 1 - No Action

Under this alternative, the proposed project area would not receive the density management treatments and the stand would continue on its present growth trajectory following either a natural course or a future management induced change.

If the study area is left unmanaged, average tree size will be less due to increased competition for light, moisture, and nutrients. Crown size would be smaller and overall tree vigor would be lower. The crown competition factor will continue to increase to the point of imminent mortality in the smaller size classes. Crown closure will remain high with openings limited to root rot pockets, windthrow, and other disturbance factors. The relative density would increase.

Since the establishment of a study area is being requested by the BLM Oregon State Office and others, another site would be proposed for the location of this study area.

Alternative 2 - Density Management Study in North Fork Soup Creek using cable system, cut-to-length processor, and helicopter yarding

Harvest Systems

This alternative would entail a combination of a cable system, cut-to- length processor, and a helicopter to selectively remove trees from the treatment areas.

Cable System

Cable logging is proposed on approximately 68 acres for Area A and C (see map No. 2). A small running skyline yarder equipped with a clamping carriage capable of yarding laterally and transporting logs with one-end suspension would be used. Area A would require that 18 acres be yarded to the existing 23-09-16.0 road. Area C would require that 50 acres be yarded to the newly constructed ridge road.

The 23-09-16.0, 23-09-19.1, and the 23-09-15.3 roads would require 3.8 miles of road renovation. Approximately 1.0 miles of new road construction would be required along the ridge south of the unit boundary extending the 15.3 road (See map No. 2).

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Ground-based System

Under this alternative, a cut-to-length processor would be used on approximately 64 acres of mid-slope, flatter portions of Areas B & D, followed by helicopter yarding to landings along the 23-09-16.0 road. This is about 39% of the treatment area (see map No.2). The equipment would require a 10' wide path with 60' between paths. The cut-to-length processor would be used on slopes less than 30%. The activity would occur between July 1 and October 15 in order to minimize soil compaction and erosion.

A cut-to-length log processor would be used to fell, limb, and cut logs to length. The treetops and branches would be placed in front of the harvester to travel on as the trees are cut and decked. No ground-based forwarder would be used to transport logs. Use of a forwarder could exceed the 12% of the harvest area affected by compaction as outlined in the RMP.

Helicopter Yarding

A helicopter would be used to remove trees cut by chainsaw on 31 acres of Area E in the steep sections and 64 acres on Area B & D where the cut-to-length processor would be felling trees (see map No. 2). Logs would be flown to landings located along the 23-09- 16.0 road. This allows for minimizing new road construction and does not subject the area to increased compaction experienced with some processor/forwarder combination systems. Several helicopter landings would need to be constructed.

Alternative 3 - Proposed Action - Density Management Study in North Fork Soup Creek Using Cable system only

Harvest System

The action described under this alternative would entail yarding all the treatment areas by a cable system.

Cable System

Cable logging is proposed on approximately 163 acres for the entire treatment area. Area G would require that 50 acres be yarded to the newly constructed 23-09-15.3 ridge road (see map No. 3). Area F would require that 37 acres be yarded from the existing 23-09- 16.0 road, and 76 acres of Area H would be yarded to the new mid- slope roads 16.6 and 16.7.

The 23-09-16.0, 23-09-19.1, 23-09-15.3, and 23-09-16.3 roads would require 3.9 miles of road renovation. Approximately 1.0 mile of new road construction would be required along the ridge south of the unit boundary on the 23-09-15.3 road and 1.0 mile of new construction would be required to access the mid-slope bench on the 23-09-16.6 and 23-09-16.7 roads (see map No. 3). These roads would be constructed in order to cable yard the steeper sections in the north portions of the units (see map No. 3).

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Alternative 4 - Density Management Study in North Fork Soup Creek using cable system and helicopter

Harvest System

The proposed action described under this alternative would entail yarding treatment areas with a cable system and a helicopter.

Cable System

Cable logging is proposed on Area I with the 37 acres yarded to the existing 23-09-16.0 road (see map No. 4). No new roads would be constructed under this alternative.

Helicopter Yarding

Helicopter yarding would take place under this alternative for Area J for a total of 126 acres. Logs would potentially be flown to two landings located along the 23-09-16.0 road (see map No. 4).

Cost/Benefit of Alternatives

	Alt. No. 1 No Action	Alt. No. 2	Alt. No. 3	Alt. No. 4
Est. revenue	0	$450,000	$450,000	$450,000
Cost of Ops.	0	$425,700	$304,820	$681,300
Cut-to-length processor acres	0	64 Ac.	0 Ac.	0 Ac.
Cable system yarded acres	0	68 Ac.	163 Ac.	37 Ac.
Helicopter yarded acres	0	95 Ac.	0 Ac.	126 Ac.
Potential Soil Compaction		3.7 Ac.	7.3 Ac.	2.0 Ac.
Miles of New Road	0	1.0 Mile	2.0 Miles	0 Miles

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Design Features Common to Action Alternatives 2, 3, and 4

Design features and management requirements include timber sale design, contract stipulations, and prescribed activities to be accomplished by the BLM or timber sale purchaser. The objectives of these measures and requirements are to maintain or enhance the quality and productivity of the resources in the project area.

Density Management Study Design and Layout

The study design, layout, and implementation would remain the same throughout the three action alternatives.

Approximately 220 acres of 45-year-old Douglas-fir and western hemlock would be included in this density management study. Approximately 163 acres would be thinned to leave varying levels ranging from 40 to 120 dominant and co-dominant trees per acre, removing primarily suppressed, intermediate, and some co-dominant Douglas-fir and western hemlock trees. The remaining dominant and co-dominant trees would be allowed to grow and develop into a late successional forest.

The project is expected to remove approximately 1.5 million board feet (MMBF) from the treated acres. The amount removed from each acre would vary from 0 to 40 thousand board feet (MMBF) with an average of approximately 10 MBF per acre.

Under all of the action alternatives, Units 1, 2, and 3 would be thinned using various combinations of cable, and/or cut-to-length processor, and/or helicopter yarding; to implement a Density Management Study; provide a basis for learning how to monitor stands managed under the Northwest Forest Plan; and increase and accelerate residual tree growth in the riparian reserves and LSR's to approach conditions similar to that of a late successional stand.

Selection of treatments by PNW staff: The researchers provided input on the placement of no-cut zones on streams 1A, 2A, 2B, and 3A (see map No. 5). They also selected sites for two patch cuts positioned in the moderate density treatment and two of the 40 tpa thinning areas. (See map No. 1)

Location of patch cuts: These would be positioned to benefit wildlife and assure successful regeneration of desirable tree seedlings. Patch cuts would be placed away from stream channels.

Location of reserve patches (leave islands): These would be located to help increase horizontal structural diversity, provide suitable microclimates for organisms, represent unique characteristics of the existing stand, and to protect the integrity of the leave patch from yarding as much as possible. Yarding corridors would be allowed through the patch if necessary.

Reserved hardwoods and understory conifer trees less than 5 inches dbh would not be removed within the various thinning densities resulting in some intermediate and suppressed trees remaining in the stand. The resulting dominant tree spacing is expected to range from 19 to 33 feet. The study area would be divided into four separate units, see attached map No. 1, receiving the following treatment:

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Unit 1 Moderate Density- (55 acres)
- 60% to 65% of the stand would be thinned to leave 80 tpa
- 10% of the stand would have well dispersed circular patch cuts ranging from ¼ to 1.0 acre in size. They would include:
    3 – ¼ acre patch cuts
    3 – ½ acre patch cuts
    3 – 1 acre patch cuts

Unit 2 High Density- (55 acres)
- 70% to 75% of the stand would be thinned to leave 120 tpa

Unit 3 Variable Density- (55 acres)
- 10% of the stand would be thinned to leave 40 tpa
- 20% to 25% of the stand would be thinned to leave 80 tpa
- 20% to 25% of the stand would be thinned to leave 120 tpa.
- 10% of the stand would have well dispersed circular patch cuts ranging from ¼ to 1.0 acre in size. They would include:
    3 – ¼ acre patch cuts
    3 – ½ acre patch cuts
    3 – 1 acre patch cuts

Note: There would be 20 to 30% of the treatment units left untreated, with the riparian reserve acres contributing to this component. Units 1, 2, and 3 would all have the following reserve areas (leave islands) as a minimum:
    3 - ¼ acre areas
    3 - ½ acre areas
    3 - 1 acre areas

Unit 4 Control- (55 acres)
No treatment on entire unit.

(A copy of the Density Management Study Plan by John Tappeiner is in the Analysis File)

Riparian Reserves
Areas within the Riparian Reserves (RR) that are outside the no-cut zones would be subject to the various thinning densities of that treatment area.

The unit boundary would be located a minimum 50 foot slope distance away from the edge of North Fork Soup Creek. Additional no-cut zones (reserve leave islands) would be placed where the stream gradient of the tributary streams meets the floodplain of North Fork Soup Creek.

Along the tributaries, a minimum 15-foot slope distance no-cut zone from each side of the inner gorge would be maintained to protect bank stability.

Stream lA: A no-cut zone of 1 site tree (200’) would be left on either side of stream as designed by PNW researchers (see map No. 5)

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Stream 2A: The RR would be a “thin through” for the length of the stream; however, there will be no cutting of trees where the crown intersects the plane of the stream channel (see map No. 5)

Stream 2B: A no-cut variable break zone of no less than 50 foot slope distance would be left on either side of stream throughout its entire length (see map No. 5).

All hardwoods would be retained within the RR.

There would be no yarding within the no-cut zones. One-end suspension of logs would occur within the RR in cable yard areas and full suspension in aerial yarded areas.

Protect marshy areas by leaving a minimum of one row of conifers around the perimeter of the area.

Directional felling of trees away from streams and no-cut areas within RR would be required. Logs would be yarded away from streams.

Snag and Down Log Management

Retain existing snags where safety allows.

All existing down logs and snags from trees originating from the previous stand would be retained.

Retain all understory conifers less than 5.0 inches in diameter except in small patch cuts.

Retain limby/wolf trees from all canopy levels.

Designate 3 to 5 trees/acre for potential snags after thinning at some point in the future.

Larger trees on the margins of root disease centers would be selected to thin around for future coarse woody debris recruitment.

Road Construction

New road construction would be:

- constructed on gentle ridgetops with gentle side slopes to minimize sidecast.
- constructed on stable mid-slope benches and ridge tops using existing old road locations whenever feasible.
- permitted only during dry weather conditions.
- designed and constructed using minimum road widths.
- dirt spur systems.

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- water barred and blocked to traffic.

After logging operations are complete, all new temporary dirt spur roads would be closed . All roads would be ripped followed by seeding where soil substrate permitted.

Compacted soil areas would not exceed 12% of the total treated land area as recommended in Best Management Practices. This would include new roads.

Down logs would be moved and maintained outside of the right-of- way.

Harvest Operations

Prohibit felling and yarding operations between March 1 and June 30 to reduce residual stand damage during high sap flow.

A maximum log length of 40' is required to protect residual stands and minimize the size of landings.

Trees would be felled in a pattern designed to minimize the number of yarding corridors and reduce damage to the residual stand.

Utilize one-end suspension of logs during in-haul with the cable system.

Maintain a minimum of 150' between skyline corridors at the tail holds with a 15' maximum corridor width.

Yarding roads would be placed to avoid streams.

Post Harvest

Seed new road construction after closure and before rainy season to control erosion with approved District seed mix.

Fuel concentrations located along newly constructed and existing roads would be piled using a hydraulic excavator. Piles would be covered and winter burned.

Under the study plan, all of the patch cuts and portions of all of the thinning treatments, would receive some underplanting with a mixture of conifer planting stock.

Stocking maintenance would be performed on 50% of each planted area to reduce competition from shrubs and possibly natural conifer regeneration.

Effectiveness of Design Features

Best Management Practices are designed to meet or exceed the Water Quality Standards for the State of Oregon. The design features meet the standards in the RMP.

Monitoring

Density Management Studies should provide a basis for monitoring and adaptive management. This study should provide a basis for learning how to monitor new stand and landscape

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management systems and eventually proceed with adaptive management. Monitoring should provide the basis for studying a variety of stand features and management variables, such as site productivity, root disease effects, wildlife response, and economic feasibility. Monitoring plots would be established and reestablished following harvest. Monitoring would continue as part of the study for several decades.

Preharvest Monitoring

Pre-harvest stand exams would be completed before layout of the study area.

Stream habitat would be inventoried by PNW before treatment.

Permanent monitoring plots for overstory trees, natural understory and tree regeneration, major shrubs, and herbs would be installed.

Permanent monitoring plots for common herbaceous and shrub species would be installed.

Permanent monitoring plots for rare or less common species would be installed.

Pre-harvest monitoring for environment, microsites, and regeneration in upland and riparian areas would occur.

Implementation Monitoring

Implementation monitoring will determine whether the Standards and Guidelines are being met.

Compliance with contract stipulations associated with the timber sale would be performed by the timber sale contract administrator and the road construction inspector. If adverse environmental impacts occur, the problem would be addressed by logging and resource specialists in the Resource Area.

Problems may be rectified by contract changes, additional mitigation measures and/or cessation of logging.

During logging, the proposed units would be periodically reviewed on-the-ground by resource area specialists.

Effectiveness Monitoring

Post-harvest monitoring verifies if the desired results (changes from baseline data gathered pre-harvest) were achieved. After harvest, all permanent monitoring plots would be reestablished, then post-harvest monitoring could occur in the following manners:

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Amphibian monitoring would be conducted for instream and riparian species under various stocking levels and buffer widths.

Overstory tree response to density management would be monitored.

Monitor the response of wildlife to different levels of stand densities of conifers and hardwoods, riparian buffer widths, green tree retention, and the numbers of snags and down logs.

Monitor and compare results from the response of shrubs and herbs (and lichens, bryophytes, and fungi if possible) to overstory density and pattern, and to treatments controlling competition to conifer seedlings.

Monitor the effects of environment, microsites, and regeneration in upland and riparian areas.

Analyze monitoring results of stream habitat under differing density levels and riparian no-cut zones.

CHAPTER III.: Affected Environment

The project area is within the Mill Creek Watershed along the North Fork of Soup Creek, which is a tributary to Loon Lake. The watershed is 85,932 acres in size, 29% of which (24,835 acres) is managed by BLM in a checkerboard pattern. The Soup Creek drainage is 5,252 acres in size with approximately 85% managed by the BLM.

History

Logging has been the main disturbance factor within the watershed since the mid 1900's. Many of the current second growth stands in the Soup Creek area are 40 to 50 years old. The proposed area was logged and naturally seeded from the surrounding residual stand around 1950.

Currently 21% (18,148 acres) of the entire Mill Creek Watershed (85,932 acres) is designated as LSR. BLM manages a total of 24,835 acres in the Watershed of which 73% (18,148 acres) is considered to be LSR. A more complete history of this watershed can be found in the Mill Creek Watershed Analysis.

Landscape

The proposed project is located in Section 16, which consists of timber stands primarily within a 45-year age class. Neighboring sections are predominantly BLM ownership which comprise a rather large contiguous block of Federal forested lands with stands ranging in ages from 40 to 80 year old with some scattered older stands from 100 to 200 years old. Private ownerships are located to the south and west of the study area and are primarily farmland with some active forest management taking place above the flatter agricultural land.

Physical and Geographic Characteristics

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The proposed project is located 15 miles east of Reedsport, Oregon, and is on the south side of the North Fork of Soup Creek in the south half of Section 16 of T. 23 S., R. 9 W., Will. Mer.

The 23-09-16.0 road currently accesses the west side of the unit and an abandoned road parallels the North Fork of Soup Creek and the north boundary. The abandoned road has been closed, had its culverts removed, and is starting to grow over with alder due to a lack of use.

The proposed study area has a variety of topographic features. The majority of the ridges run mostly north and south and are interrupted by a sizeable mid-slope bench. Many of the 1st and 2nd order streams start from the mid-slope benches and have formed predominant, incised draws that are tributaries to the North Fork of Soup Creek. Above the mid- slope bench there are a series of minor ridges and draws running north and south with slopes averaging 60%. The minor ridges originate on the main ridge on which the proposed new road construction will be located. This main ridge runs west to east and intersects a landing at the end of the 23-09-15.3 road on the southeast corner of the project area.

Soils

Soils in the density management study area are primarily Preacher (57), and Bohannon (63) with some Jason (64), and small inclusions of Rock outcrop (R). These map units are designated 57/W, Preacher soils on 10 to 35% slopes, 57-63/WX, Preacher - Bohannon soils on 10 to 35 and 35 to 60% slopes, and Preacher - Bohannon - Jason (57-63-64/XY). Rock outcrop occurs as an inclusion primarily in the 57-63-64/XY map unit.

Preacher soils are deep (>40”), well drained, fine-loamy soils that occur on gentle (10-35%) to steep slopes (60%+). Preacher soils are highly productive, typically with a site index of II for Douglas fir. Bohannon soils are moderately deep (20-40”), well drained, loamy and gravelly soils that occur on moderate to very steep slopes (35 to 60 and 60 to 80%). Site index of Bohannon soils is typically III. Jason (64) soils are shallow, (10-20”) , well drained gravelly barns that occur on extremely steep slopes and knife edge ridge tops. Site Index is typically IV. Rock outcrops (R) occur as small inclusions on extremely steep slopes and sharp ridgetops.

All of these soils are formed in the Tyee/Flournoy geologic formation. This formation has rhythmically bedded micaceous sandstones and siltstones. The sandstones can be hard, massive, erosion resistant, and ridge forming, as is the case here, on the main ridge.

Hydrology

The project area is typical of the Coast Range in both climatic and hydrologic features. The climate is characterized by moderate temperatures, wet winters, and cool, dry summers.

The temperatures rarely drop below freezing during the winter months and reach a high of 90F in the summer. Precipitation, in the form of rain, is the major factor influencing the hydrologic characteristics and controlling the hydrologic cycle. The varied topography of high relief has a strong effect on the precipitation pattern, causing very large differences within small areas. The study area normally receives approximately 80 inches annually. The intensity of precipitation is as variable as the amount but storms of extreme intensity are rare.

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Virtually all precipitation comes in the form of rain from general storms associated with extratropical cyclones originating over the Pacific. Occasionally Arctic air meets an onshore flow, producing snow but snow lasting more than a few days and accumulating to a significant depth is extremely rare. Approximately 80% of the precipitation occurs between October and March with the months of June, July and August receiving only 4% of the annual total. The precipitation produces an average annual yield of 50 inches.

The distribution of the precipitation and runoff/stream flow is directly related and is evident as the high flows are observed during the winter months and low flows predominant in the summer. This direct relationship indicates the systems are dominated by direct or storm runoff as opposed to base flow. The limited base flow results in systems that are "flashy" or very responsive to precipitation events and have little ability to maintain flows during dry periods. The "flashiness" or high hydraulic response of the systems can be contributed to many related factors including: climate, topography, precipitation pattern and intensity, geology, vegetative ground cover and past management activities. However, the most dominate factors are soil properties and the lack of ground water storage due to the well-drained soils.

Channel Morphology

The study area is primarily drained from the south to the north by four perennial tributaries to the North Fork of Soup Creek. These drainages are somewhat atypical because the headwall areas are relatively flat and benchy as opposed to steep and dissected. In general, the headwalls tend to consist of low, seepy areas with some ponding but relatively undefined channels.

As the gradient increases downstream of the benchy area all of these tributaries become step/pool type channels due to the high gradient (energy), low sinuosity, high entrenchment, low width/depth ratio and lack of floodplain development. These tributaries have a great deal of stream energy that must be dissipated through the resistance to flow provided by streamside vegetation, channel roughness and large woody debris. If this energy is not dissipated, especially during high flow events, serious channel bed degradation and bank erosion will occur and the potential for recovery is extremely low once down cutting begins.

Vegetation, Including T&E Species

The current stand is approximately 45 years old. The stand is predominantly Douglas-fir with a fairly high component of western hemlock (Douglas fir = 165 tpa, avg. diameter breast height (dbh) = 13"; western Hemlock = 61 tpa, avg. dbh= 10.6"). Other conifer species present in the stand that did not appear within the stand exam are grand fir, western red cedar, and Pacific yew.

There is a mixture of hardwoods within the stand; the most prevalent is red alder, which is found in many of the riparian areas including streams and small ponds, and near recent disturbed sites. Wild cherry, bigleaf maple, and myrtlewood are also scattered throughout the stand.

Stand exam data reveals the following information: Average age = 45 years, trees per acre (>=7.0" dbh) = 230, average dbh = 12.6", basal area = 200, relative density = 56. (Stand exam data is in the Analysis File)

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The understory is primarily swordfern. Vine maple often occurs in canopy gaps created by *Phellinus weirii* disease pockets and adjacent to small ponds created at the toe of some of the steeper slopes. Evergreen huckleberry, rhododendron, salal, and Oregon grape can also be found on ridge caps and slopes with a more westerly aspect. Riparian understory vegetation is composed of salmonberry and elderberry.

The area has many unique habitats, including alder stands with a slough sedge (*Carex obnupta*) dominated understory near several small marshes and a seep dominated by golden saxifrage (*Chrysosplenium glechomaefolium*).

No botanical species listed on the Threatened or Endangered lists are known to occur on the project area.

Structure

The project area has a very small amount of residual old-growth scattered throughout the unit, with the majority located on the southeast ridge and southwest edge. The younger stand is the result of a fire that occurred before 1951 followed by natural seeding. Most of the older trees are fire scarred and many of the stumps are burned also indicating some fire activity after logging. Portions of the current stand have achieved closed canopy and exhibit very little or no forest floor vegetation while areas with openings in the canopy have multiple layers of vegetation.

Wildlife, Including T&E Species

This phase of forested condition is rather “in-between” for wildlife; and the wildlife that occur in this habitat are generalists compared to a more open or more closed canopy situation. Wildlife species that inhabit this area are identified in the District RMP and Watershed Analysis and are typical for the Umpqua Resource Area.

Because the habitat varies from larger trees to a more closed canopy, and due to topographic differences, wet areas and areas which have ground and shrub diversity, one would expect to find a broad diversity of birds on the study area. Any of these bird species could use the area at one time or another, either for feeding, resting, or nesting.

No wildlife species listed on the Threatened or Endangered lists are known to occur on the project area.

Aquatic Resources, fish species including T&E Species

In general, the first and second order draws are intermittent in nature (they do not flow year round) while the North Fork Soup Creek mainstem, a third order draw, is perennial. Streams within the proposed project area are highly confined by hillslopes, are steep in gradient and contain small floodplains only at their confluences with the mainstem. Substrates within them range from sand to cobble (12” average diameter). There is also a large component of wood.

Habitat types are dominated by steps and riffles with small pocket pools. These characteristics offer quality habitats for a variety of amphibian and invertebrate species. The riparian vegetation

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is either dominated by a conifer overstory with sword fern understory or a red alder dominated overstory with salmonberry understory, depending on the location.

Adjacent to the north boundary of the study area is a large pond (approximately acre) created by a road fill and improved by beaver activity. The pond provides a large still-water habitat, which is somewhat uncommon in the area. Also uncommon are small marshy areas that occur in the central portions of the project area where the topography flattens out (see topographic map). These flats are dominated by thick semi-aquatic vegetation (rushes, grasses) and are typically surrounded by red alder or salmonberry patches. They provide unique habitats for amphibians and aquatic insects in a watershed that is dominated by steep slopes and a highly dissected drainage pattern.

There are a large number of aquatic organisms that occur in and adjacent to the proposed study area. Fish species include the resident cutthroat trout and potentially four sculpin species (Coast Range, prickly, riffle, and reticulate). There are no anadromous fish in this drainage and no fish within the treatment units. Both the stream and pond systems provide habitat for the invertebrates that fish, amphibians, and other terrestrial species utilize as a food source.

No Threatened or Endangered or Proposed aquatic species are known to occur within the study area.

CHAPTER IV.: Environmental Consequences

This chapter summarizes the analysis of potential impacts of the alternatives.

Alternative 1 - No Action

Soil Compaction - (Issue No. 1)

Soils will not be directly affected by the No Action Alternative. Some soil erosion, naturally occurring slides, etc. would be expected to continue.

Road Densities in the Mill Creek Watershed - (Issue No. 2)

There would be no increase road densities for the Soup Creek drainage under the No Action Alternative. The current road density is 3.4 miles of road per square mile. Over time, some side roads, which do not receive maintenance, would be naturally reclaimed, and would contribute to a very slow decline in road densities in both the Soup Creek drainage and the Mill Creek Watershed as a whole.

Impacts to Other Resources on Site

Wildlife, Including T&E Species

As this stand progresses towards an older age class, the species who occupy it will become more specialized and dependent on these closed canopy conditions to the exclusion of species who do not survive in this type of habitat.

Cultural Resources

No direct, indirect, or cumulative effects are anticipated from the No Action Alternative.

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Aquatic
No direct impacts to the current aquatic habitat or environment would occur. Over time, the stand would thin itself naturally allowing dead trees to eventually fall into the riparian and aquatic systems and thereby provide long-term woody debris to the stream system. This wood would benefit amphibians and aquatic invertebrates.

There would be no direct impacts to the riparian zone since no management activities would occur.

Solid and Hazardous Waste
No effects are anticipated from the No Action Alternative.

Noxious Weeds
Continued spread of weeds established on site.

Alternative 2 - Density Management Study in North Fork Soup Creek (combination cable, cut-to-length processor, helicopter yarding)

Soil Compaction - (Issue No. 1)
Cable yarding systems capable of one-end log suspension should keep soil compaction, displacement, and general disturbance to a practical minimum. The ground-based processor would be traveling on cut limbs to minimize soil compaction. The portion proposed for helicopter logging should have almost no soil disturbance associated with chainsaw felling and yarding operations.

New road construction and landings along the ridge would be subject to soil compaction. Approximately 3.7 acres would be affected under this alternative. This would amount to 2% of the area affected by compaction.

Wide no-cut zones near draws should keep sediment out of drainages. No measurable soil erosion or sedimentation would be expected to occur if the plans were implemented as proposed.

The main opportunity for soil/site impacts would come from road construction and renovation activities and is limited in scale. The existing road that accesses the lower and middle parts of the study area would be upgraded for hauling and some minor short-term surface erosion and subsequent sedimentation could be expected as a result of these activities especially during the first heavy rains of the first winter following construction activities.

Impacts to soils are not expected to be significant in the project area, but they will add to cumulative effects in the general area (The Soil Scientist's report is in the Analysis File).

Construction for helicopter landing sites would be located in previously compacted areas used for landings in the past.

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Road Densities in the Mill Creek Watershed - (Issue No. 2)

Road densities would temporarily increase with the new road construction proposed. Approximately 1.0 mile of dirt road would be constructed under this alternative. This alternative would yield 1.0 mile less road than Alternative 3.

Soup Creek drainage road density levels would temporarily rise from 3.4 to 3.5 miles per square mile, a 3% change in density level. The Mill Creek Watershed road density levels would temporarily rise from 4.55 to 4.56, a 0.2% increase in density level. After the sale is complete, a road closure would return the road density level to the same as the No Action Alternative.

Impacts to Other Resources on Site

Soil -Water-Erosion

Road construction will entail conventional practices and the location is favorable. Most of this new road would actually be on the ridgetop, and surface soil erosion is expected to be minimal. In a couple of places, the road is just below the ridgetop and would be on 60-70% slopes for a couple of stations. This is not expected to create slope instability problems as excavated materials would be end-hauled to a stable site. An end-haul site approximately 1500' from the end of the road has been identified. Approximately 10,000 cubic yards is proposed to be placed here. Landslide potential for this road location is considered to be slight. Helicopter yarding and use of the processor will lessen the amount of road building needed to access timber on the mid- slope bench area (The Soil Scientist's report is in the Analysis File).

Wildlife, Including T&E Species

There will be increased (above ambient) , short duration noise from the use of the helicopter. While this is one of the worst impacts (since helicopter noise can usually be clearly heard by animals for miles) it will only occur while yarding the steeper areas of the units. The use of the processor as well as the yarding and loading equipment could have a negative impact on ground dependant organisms. These organisms include, but are not limited to: insects, burrowing mammals, amphibians, reptiles, and shrub/thicket nesting birds. They may be displaced, or they and their young may be destroyed.

This alternative, using cable, with helicopter yarding only on the steep areas, and using the processor on relatively flat ground, will minimize damage and noise impacts to the area.

Impacts to wildlife from any new road construction would be mitigated by the closure and seeding to reduce erosion and provide for short-term forage for wildlife.

Economic Feasibility

Recently two U.S. Forest Service commercial thinning sales on the Siuslaw National Forest went "No Bid." These timber sales were similar to this proposed study site with regards to age class, approximate volume, density levels, and helicopter yarding. With the current depressed log market, helicopter thinnings have been unable to operate economically. The Myrtlewood Resource Area currently has a helicopter thinning that has had to stop operations until the log market improves. There is the potential for this proposed sale to go unsold if helicopter yarding is proposed.

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Study Implementation

This alternative would allow for the treatment units to be yarded without causing excessive damage to the reserve island patches scattered throughout the study area.

Alternative 3 - Proposed Action - Density Management Study in North Fork Soup Creek (Cable yarding only)

Soil Compaction - (Issue No. 1)

The area would have the same 1.0 mile of new ridge road construction as Alternative 2 on the 23-09-15.3 road and 3.86 miles of renovation along the existing 23-09-16.0, 23-09-19.1, 2309-16.3, and 23-09-15.3 roads.

Additional new road construction would be required on the mid-slope bench and extend out on two ridges to access desirable landing locations for the steeper sections of the north end of the units amounting to 1.0 miles more new road, a total of 2.0 miles. Approximately 7.3 acres of road construction and additional landings would be subject to soil compaction. This would amount to 5% of the treatment area affected by compaction.

Many of these same areas have received compaction from ground based yarding from previous logging activities. Efforts would be made to use these existing skid trails when possible for new road layout and construction. Soil compaction, displacement, and general disturbance should be able to be kept to a practical minimum. No compaction is expected within the marshy areas or within the stream channels.

Road Densities in the Mill Creek Watershed - (Issue No. 2)

With the ridge road construction of 1.0 miles and 1.0 miles of mid- slope road on the bench, the total would be 2.0 miles.

Soup Creek drainage road density levels would temporarily rise from 3.4 miles per square mile to 3.65 miles per square mile, a 7% change in density level. The Mill Creek Watershed road density levels would temporarily rise from 4.55 to 4.56, a 0.2% increase in density level.

After the sale is complete, a road closure would return the road density level to the same as the No Action and Proposed Action Alternatives.

Impacts to Other Resources on Site

Soil -Water-Erosion

The new road construction proposed on the mid-slope benches is well located on deep well-drained soils, and construction should present no particular problems. In fact, much of this one mile of new construction would be located on old skid roads that were used in the original harvest of this area.

About 3.5 acres of land would be taken out of production to construct the road on the benches, and for the first winter or two, there is the possibility that a small amount of soil could erode and reach perennial drainages as sediment. However, soil erosion is expected to be slight as grades are gentle, and slope of the benches is gentle to moderate

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at most so cut banks will be low. Also, erosion controlling grasses should establish quickly and thickly on these deep, fine soils. This should provide good protection for erosion and sedimentation. Comments made with regards to the ridge road in Alternative 2 also apply to this alternative.

Wildlife, Including T&E Species
The cable logging would generate high and relatively constant noise and disrupt animals on site the same as described in Alternative 2, but it would be less noisy for animals away 200from the site as described with helicopter use in the Proposed Action.

The most significant negative effect of Alternative 3 is the new road and spur construction. Additional road construction to access the lower part of the unit will displace or kill some ground dependant organisms, in addition to the normal use of the logging equipment.

Impacts to wildlife from any new road construction would be mitigated by the closure and seeding to reduce erosion and provide for short-term forage for wildlife.

Economic Feasibility
Due to the lower cost associated with cable logging, this alternative would be more likely to result in selling this thinning.

Study Implementation
This study has numerous reserve patch (leave islands) and varying widths of no-cut zones adjacent to many of the streams. For the purposes of this study, it is desirable to protect these leave areas as much as possible through the entire logging process. With a cable yarding system, there could be some damage to the residual leave areas due to their placement throughout the stand. Extra time may need to be spent rigging intermediate supports and selection of yarding roads to minimize damage.

Alternative 4 - Density Management Study in North Fork Soup Creek (Cable system and helicopter yarding)

Soil Compaction - (Issue No. 1)

Soil compaction associated with the cable logging would be isolated to small areas of the yarding roads. Since the processor would not be used under this alternative, there would be a slight decrease in the amount of compaction that would be experienced with the processor under Alternative 2. Larger or additional helicopter landings may be necessary in order to handle the extra volume yarded, thus marginally increasing the potential compaction area on helicopter landings.

Road Densities in the Mill Creek Watershed - (Issue No. 2)

Road density, after the project is completed, would be the same as the Proposed Action; however, the density level would not increase in the short-term since no new construction would be needed.

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Impacts to Other Resources on Site

Wildlife, Including T&E Species

This alternative does well in regard to reducing damage to surrounding trees and reducing soil compaction. Hence, fewer organisms which live on these sites, will be killed or displaced. These organisms include, but are not limited to: insects, burrowing mammals, amphibians, reptiles, and shrub/thicket nesting birds.

There will be an increased (above ambient) noise level for a short duration from the use of the helicopter. This is one of the worst impacts since helicopter noise can usually be clearly heard by birds and animals for miles.

Overall, Alternative 4, involving cable and helicopter yarding only, will minimize damage and noise to the area; however, the helicopter noise would continue for a longer period since more acres would be yarded by helicopter (compared to Alternative 2).

Economic Feasibility

As in Alternative 2, logging costs associated with helicopter yarding on this proposed study site could potentially force this sale to go unsold.

Study Implementation

This alternative would be the one most likely to do the least damage to the residual reserve islands and riparian no-cut zones. The residual stand could be subject to some crown damage, especially in the lower density level treatments from helicopter rotor wash. There is generally more damage to crowns of western hemlock with helicopter yarding.

Impacts Common to Alternatives 2, 3, and 4

Wildlife, Including T&E Species

Probably most, if not all, territorial animals, (elk, deer, bear, mountain lion, bobcat, etc.) and birds which reside in the study area could be displaced during the thinning operation, either to the fringes of the project or entirely out of the area. We assume that most of these individuals, or others like them, will come back directly afterwards and reclaim or re-colonize the area. Any forestry operation involving noise, removal of habitat (trees), destruction of other habitat (woody debris, shrubs, etc.) could produce a negative impact on many species of wildlife. In particular the “specialist” species that have small home ranges, low mobility, and are sensitive to microclimate changes, will be impacted the greatest over the short and possibly long-term.

Conversely, creating more edge effect and differing habitat types will also encourage colonizing wildlife species and those species, which prefer more open spaces. Species shifts in both density and diversity are often subtle over time and it is unclear whether a net loss or gain of species will occur. Certainly, the project design, with its variable cuts and other adaptive management strategies should encourage richer habitat opportunities which equate to greater species numbers and composition.

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The general area has been surveyed for marbled murrelets and Northern Spotted Owl and found to be free of any nests or suitable habitat that will conflict with this study.

Botany, Including T&E Species

Impacts to late-successional species from any of the action alternatives should be minimal. Some short-term impacts are expected as the result of logging activity, but these should be ameliorated within a few years. The marshy areas will be buffered and some of the alder/carex dominated areas are included in the reserve leave islands decreasing the possibility of negative effects to these special habitat areas.

Cultural Resources

Any cultural object or site found within the proposed project area during pre-harvest monitoring, logging, post-harvest monitoring, reforestation activities, or any subsequent management activity would be grounds for immediate suspension of activities until the District Archaeologist examined and cleared the area for reentry. Examination of the sites and literature searches have not indicated any sites of importance.

Aquatic

Logging activities would yield the addition of small woody debris into the channel by falling limbs. Negative affects might be the slight increase in microclimate factors (such as light, temperature, and relative humidity) due to the thinning and the presence of yarding corridors. Microclimate changes may negatively impact amphibian species within the area, however the extent is not known. The loss of woody debris in the riparian area and instream would occur over the long-term due to the removal of trees within 200’ of the stream.

There are three marshy areas located in the study area. A buffer consisting of the first row of conifer trees will afford approximately 20’ of protection from harvest activities with additional reserve islands placed adjacent to each of these. Impacts to aquatic organisms, riparian vegetation and bank stability should be minimal to non-existent based on the small size of these marshes. Minor changes in microclimate may occur.

The majority of the riparian areas have a large component of hardwoods directly adjacent to the stream. None of the hardwoods would be cut under this study plan, thus offering continued thermal protection to the stream. The low-density harvest areas of 40 TPA will occur along the upper portions of this stream. No harvest zones of at least 15’ will be placed in order to buffer the stream against thermal changes. Impacts to microclimate will occur in these areas but should not affect the stream.

Once again, there will be some loss of potential riparian and instream wood over the long term due to thinning within the Riparian Reserve.

Solid and Hazardous Waste

The near proximity of North Fork Soup Creek and the wetlands to the road is a medium risk factor, depending upon the type of vehicle activity to be associated with this project.

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Petroleum product management is a concern, given the slopes, vegetation and surface waters. Any contracts should require a Spill Prevention and Countermeasure Control Plan (SPCC), a State of Oregon DEQ requirement.

No effects are anticipated from any of the Action Alternatives, unless a release of hazardous materials occurs as a result of operations. Depending upon the substance, amount, and environmental conditions in the area affected by a release, the impacts could range from minimal to lasting and significant.

The proposed road closure would diminish the future potential for illegal dumping of solid and hazardous waste along roadsides and on landings. (The Hazardous Materials Report is located in the Analysis File)

Noxious Weeds

Would continue to experience slow spread of weeds already established on site. No introduction of new species are expected.

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Critical Elements Evaluation of Each Alternative

The following matrix lists the critical elements of the human environment that are required to be addressed by Executive Order and whether they are affected by the alternatives.

Critical Elements	No Action Alternative	Alt. No. 2	Alt. No. 3	Alt. No. 4
Air Quality	no	no	no	no
Area of Critical Environmental Concern	no	no	no	no
Cultural Resources	no	no	no	no
Farmlands	no	no	no	no
Floodplains	no	no	no	no
Native American Religious Concerns	no	no	no	no
T & E Species	no	no	no	no
Wastes solids or hazardous	no	no	no	no
Water Quality	no	no	no	no
Wetlands/ Riparian Zones	no	Some thinning is scheduled for designated RR	Same as Alt. No. 2	Same as Alt. No. 2
Wild and Scenic Rivers	no	no	no	no
Wilderness	no	no	no	no
Noxious Weeds	Continued slow spread of weeds established on site	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative

Cumulative Impacts

The Bureau of Land Management manages approximately 85% of the Soup Creek compartment within the Mill Creek Watershed. There are 40.08 stream miles within the compartment. There are 28.04 road miles within the Soup Creek compartment. Through the Transportation Management Objectives, roads within the Mill Creek Watershed have been identified for future closures. This will result in 9.7 miles of road closures in the Soup Creek drainage alone.

Numerous old logging roads and skid trails are in the area. Utilizing these for current or future timber sales would prevent further soil compaction in the compartment when compared to new road construction.

The remaining 420 acres within Section 16 are potentially suitable for future density management under the District RMP.

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Irreversible and Irretrievable Commitment of Resources

None identified.

CHAPTER V.: List of Agencies and Individuals Contacted

The general public was notified of the planned EA through the publication of Coos Bay District's semi-annual Planning Update. One adjacent landowner was contacted of the project and he had no input.

The proposed project is being reviewed by the U.S. Fish and Wildlife Service through the consultation process provided under section 7(A) (4) of the Endangered Species Act of 1973.

The project was reviewed by the Regional Ecosystem Office (REO)and has been granted a Research Exception for this project.

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APPENDIX

APPENDIX A - GENERAL LOCATION MAPS

Location Map 1

Location Map 2

APPENDIX B - ACTION ALTERNATIVE MAPS

Map 1: Treatments

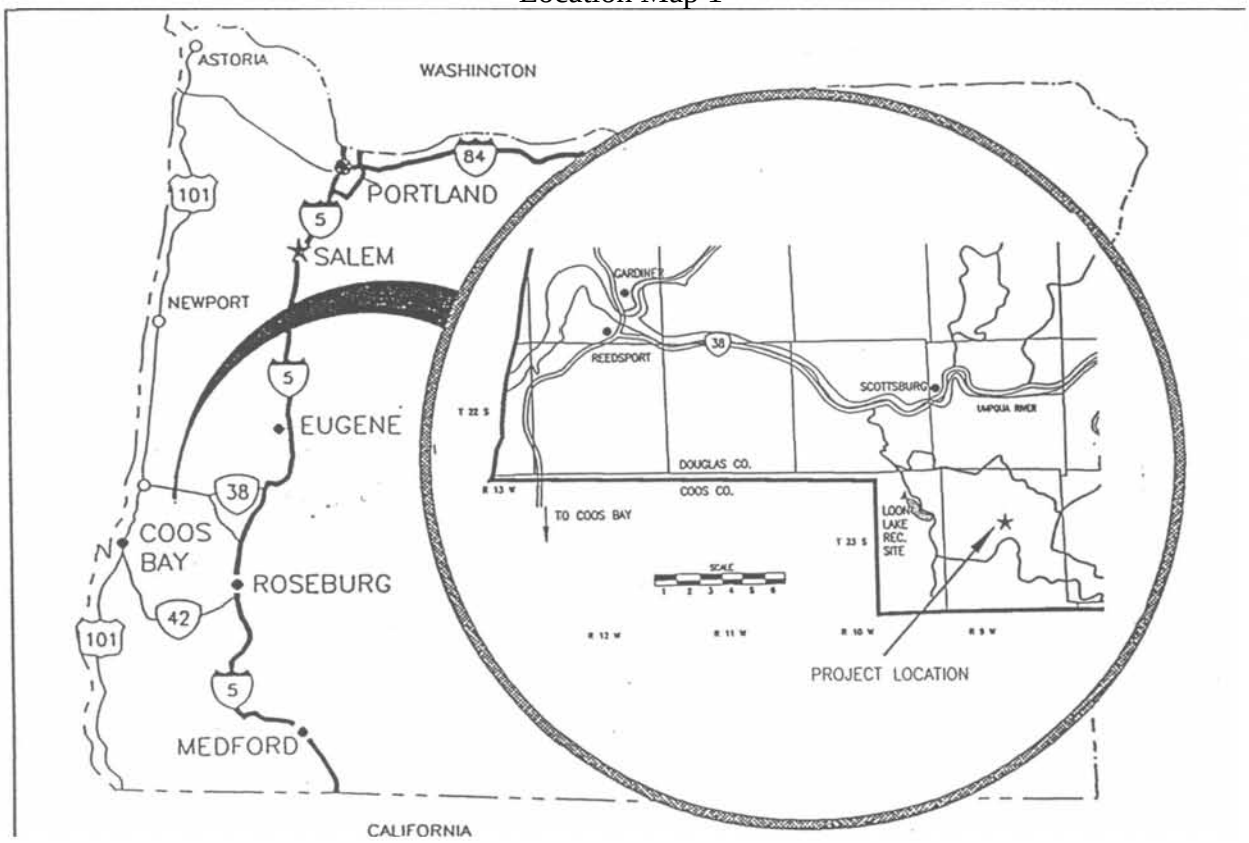
Map 2: Location of each harvest method under Alternative 2

Map 3: Location of each harvest method under Alternative 3

Map 4: Location of each harvest method under Alternative 4

Map 5: Stream Numbering

Location Map 1



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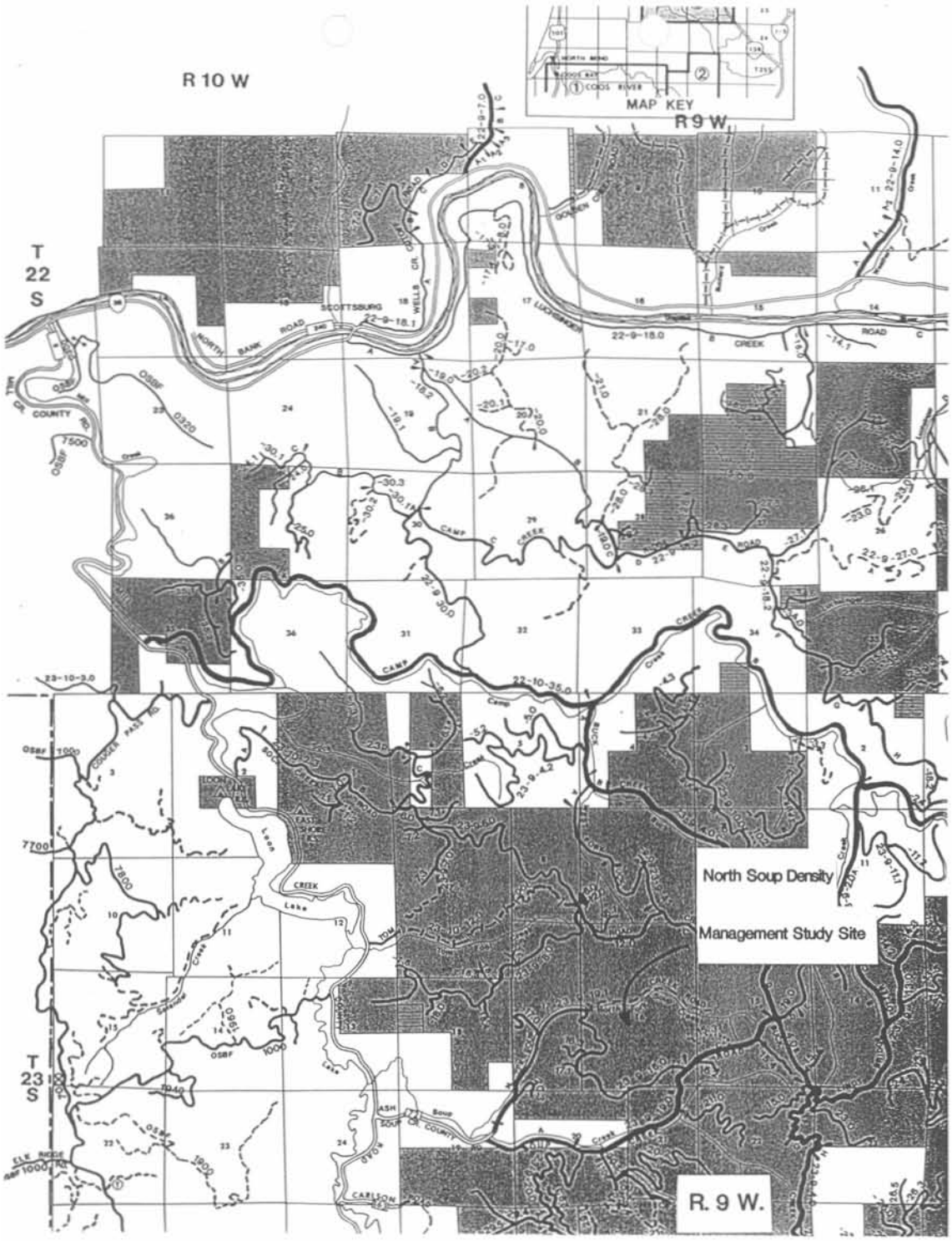

Location Map 2

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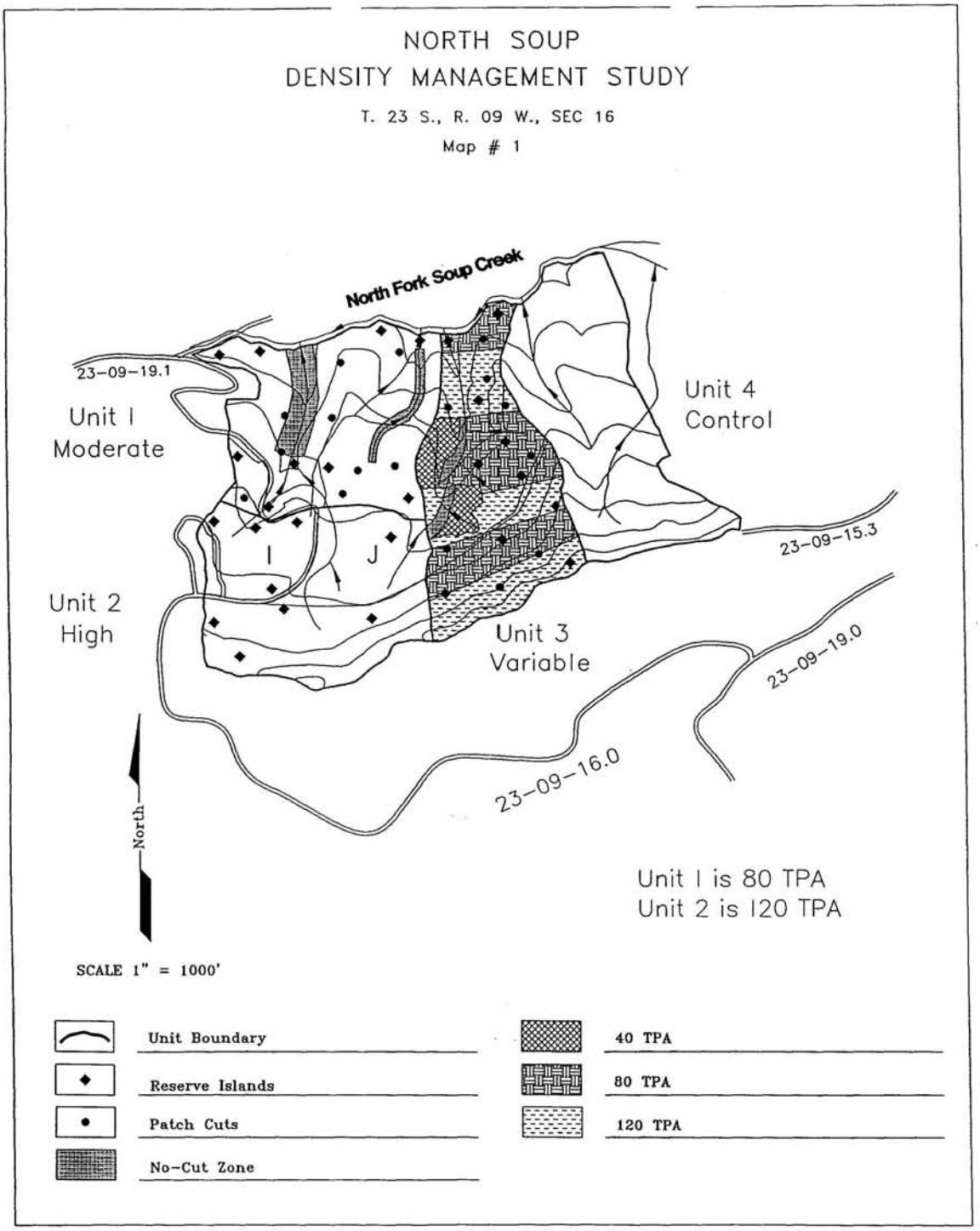

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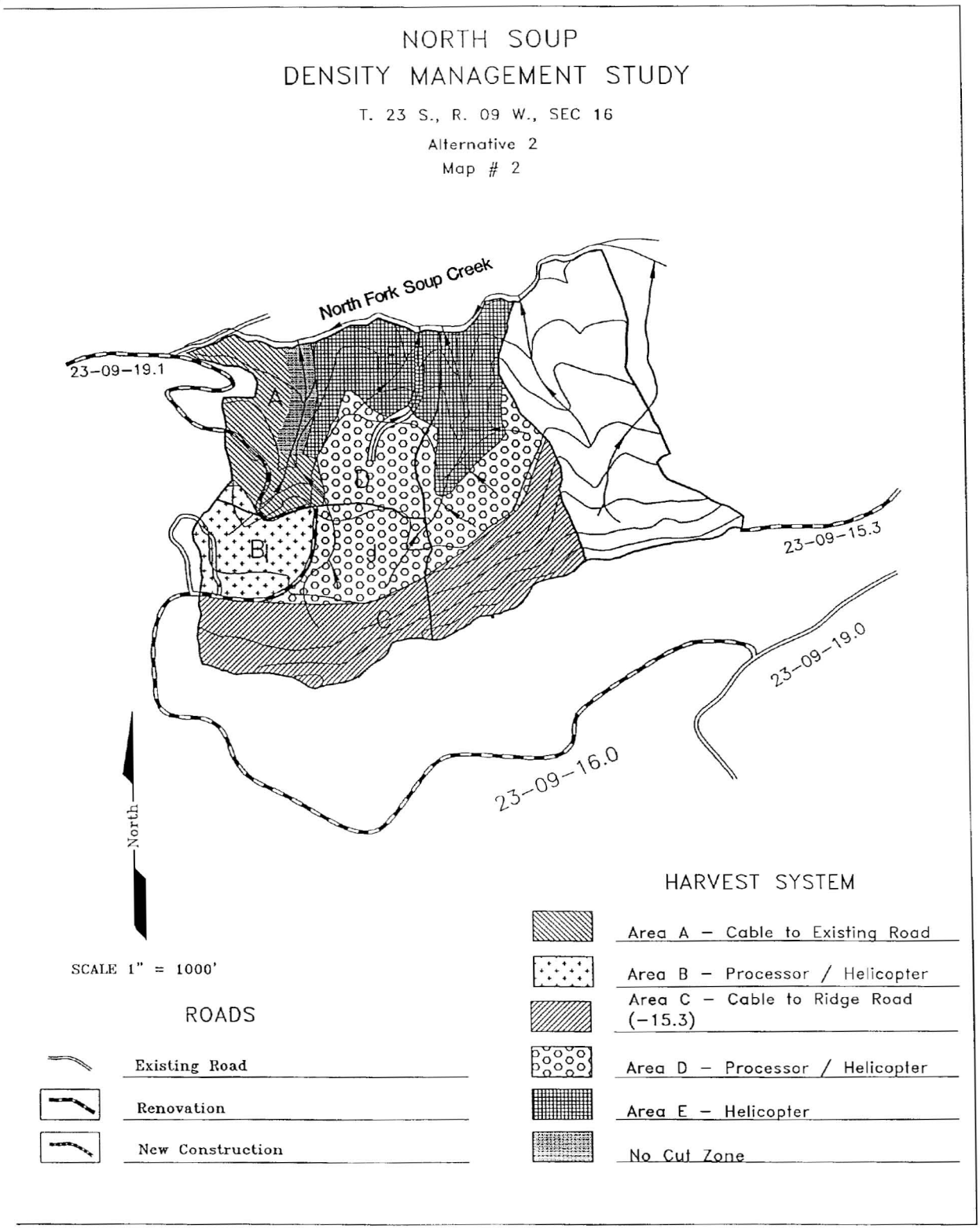

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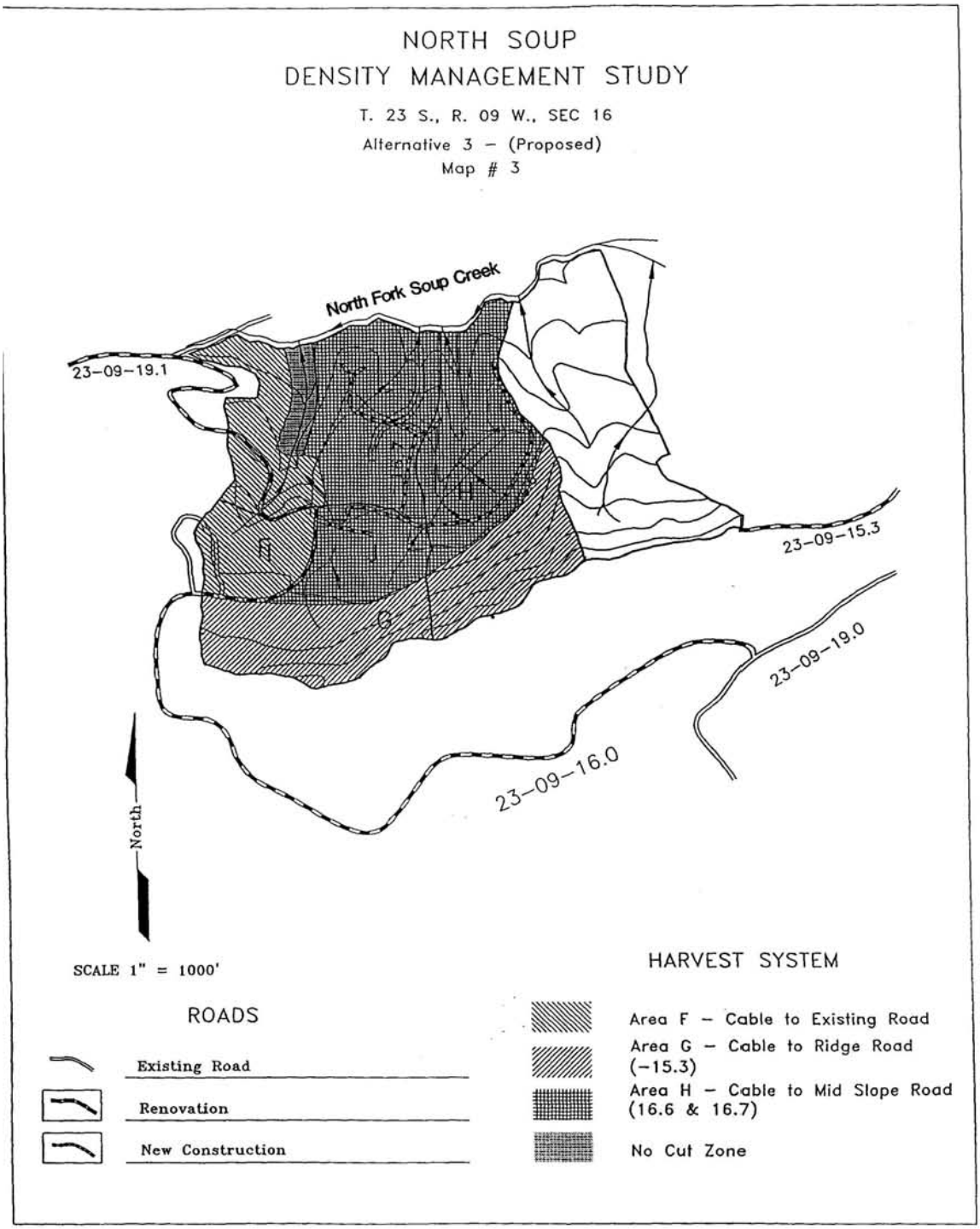

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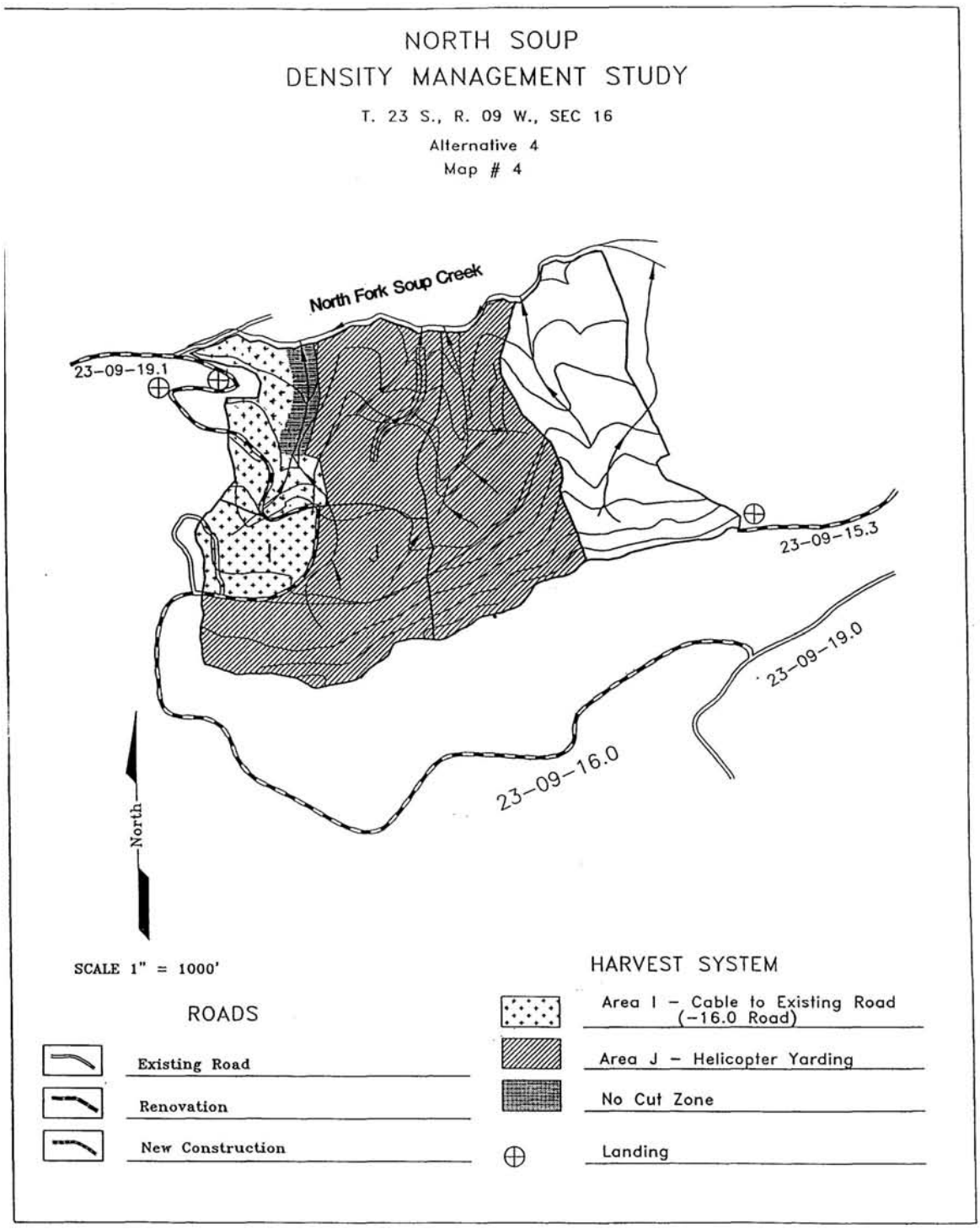
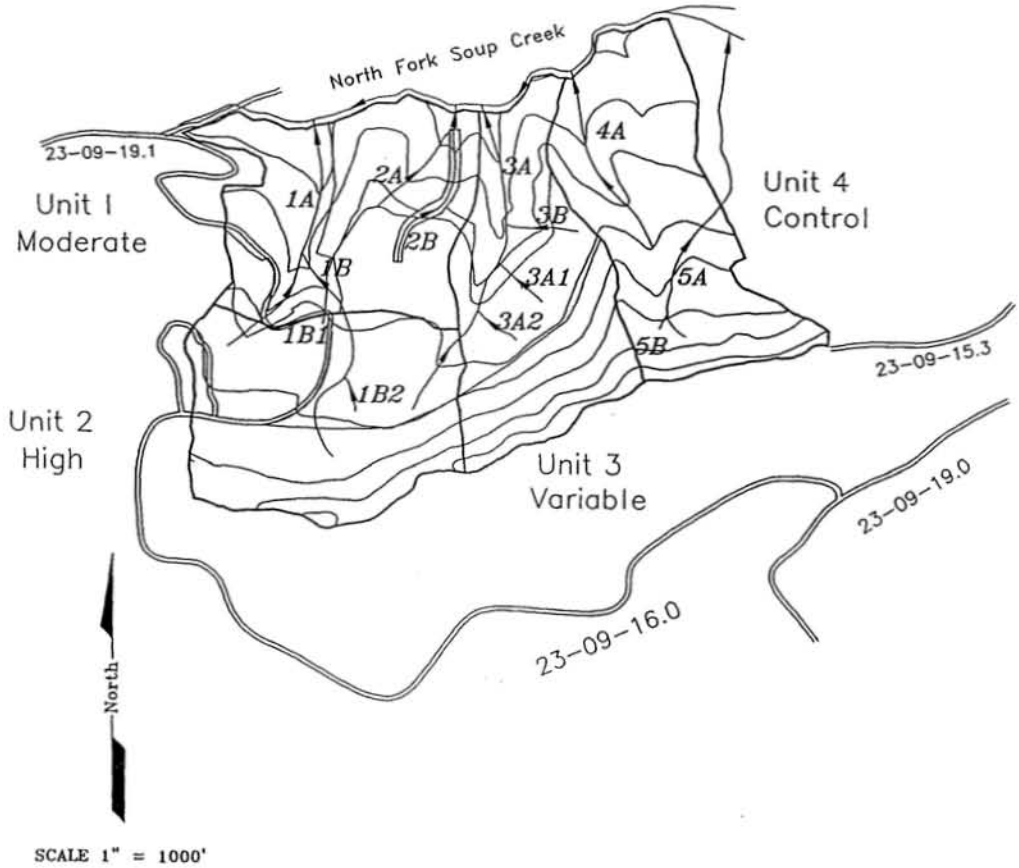


This file was created by scanning the printed document. Identified miss-scans have been corrected, however, some errors may still remain.

NORTH SOUP
DENSITY MANAGEMENT STUDY

T. 23 S., R. 09 W., SEC 16

Map # 5



STREAM NUMBERING

This file was created by scanning the printed document. Identified miss-scans have been corrected, however, some errors may still remain.

APPENDIX E.: 1997 BLUE RETRO COMMERCIAL THINNING DECISION DOCUMENTATION AND ENVIRONMENTAL ASSESSMENT (EA OR125-97-19)

EA OR125-97-19

FINDING OF NO SIGNIFICANT IMPACT (FONSI)
for
BLUE RETRO TIMBER SALE: EA OR125-97-19

An Interdisciplinary (ID) Team for the Umpqua Resource Area, Coos Bay District, Bureau of Land Management has analyzed a No Action Alternative and a Proposed Action to commercially rethin approximately 45 acres of Federal forest land and to provide safe helicopter access to the Steinnon Creek waterhole for fire suppression activities on the south half of Blue Ridge. The proposed rethin and waterhole improvement project is located in Fairview subwatershed, T 26 S., R 12 W., Section 25, 26, 35, and 36, Willamette Meridian. A watershed analysis was prepared September, 1996 for Fairview subwatershed. The proposal is a research request by the Biological Resources Division of the United States Geological Survey, formerly the National Biological Survey, to commercially rethin a young stand of timber and its riparian reserves from the General Forest Management Area (GFMA). Also, the ID team proposes to cut down danger trees and snags in the riparian reserves adjacent to Steinnon Creek waterhole to provide safe helicopter access into and out of the waterhole for fire suppression activities. In compliance with the Standards and Guidelines of the Record of Decision (ROD) for the Northwest Forest Plan, there would be no entry into Late Successional Reserves. Snags, except adjacent to Steinnon Creek waterhole and Steinnon Creek, and down logs would be retained for biodiversity to meet or exceed the requirements in the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (Northwest Forest Plan). The proposal would also provide jobs and supply society with wood products.

This EA is tiered to the *Coos Bay District Resource Management Plan/EIS* and its *Record of Decision* (RMP) (BLM, May 1995) and conforms with the Northwest Forest Plan and its *Record of Decision* (Interagency, 1994)
The No Action Alternative and the Proposed Action, with its design features, are described in the attached EA entitled Blue Retro Commercial Thinning (EA OR125-97-19).

Consultation by the U.S. Fish and Wildlife Service was not required for this project. There are no Bald Eagle, Northern Spotted Owl, Marbled Murrelet sites or suitable habitat located within the prescribed distances from the project that would require consultation by the U.S. Fish and Wildlife Service.

The analysis of the potential effects of the Proposed Action was based on research, professional judgement, and experience of the Interdisciplinary Team. There are no known negative effects on (1) Threatened or Endangered Species, (2) Floodplains or Wetlands/Riparian zones, (3) Wilderness Values, (4) Areas of Critical Environmental Concern, (5) Cultural Resources, (6) Prime or Unique Farmland, (7) Wild and Scenic Rivers, (8) Air Quality, (9) Native American Religious Concerns, (10) Hazardous or Solid Waste, (11) Water Quality or (12) Spread of Noxious Weeds.

The Proposed Action is in compliance with the Standards and Guidelines of the ROD, recommendations of the Fairview subwatershed analysis and does not retard or prevent the attainment of the Aquatic Conservation Strategy.

DETERMINATION

On the basis of the information contained in the Environmental Assessment, and all other information available to me,
it is my determination that neither alternative analyzed constitutes a major Federal action affecting the quality of the human environment. Therefore, an Environmental Impact Statement is unnecessary and will not be prepared.

_____ _____

Daryl L. Albiston Date
Umpqua Resource Area Manager

proposed
DECISION DOCUMENTATION

BLUE RETRO

EA No. OR125-97-19

Background:

An Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Blue Retro commercial thinning timber sale were prepared by the Umpqua Resource Area, Coos Bay District Office, using input from District resource staff. The proposal is to commercially rethin approximately 45 acres of timber from the General Forest Management Area (GFMA), and to open safe helicopter access to Steinnon
Creek waterhole, by removing danger trees and snags adjacent to the waterhole and Steinnon Creek for fire suppression activities on Blue Ridge. Details of the timber sale plan and EA are available for public review at the Coos Bay District Office.

Management objectives are to:
1) Implement a retrospective density management study by the Biological Resources Division of the U.S.G.S. to rethin a previously thinned area in order to conduct research on understory response to a density management (thinning) prescription; 2) Help offer economic opportunities for year-round, highwage,
high-skill jobs by producing a predictable and sustainable level of timber harvest; 3) Protect and maintain the biodiversity and long-term health of the forest ecosystem through compliance with the Standards and Guidelines of the Record of Decision (ROD); 4) Provide safe helicopter access into and out
of Steinnon Creek Waterhole; 5) Comply with the objectives of the Aquatic Conservation Strategy of the ROD.

In accordance with the *Forest Management Regulations* at CFR 5003.2, the decision for this timber sale will
not become effective or be opened to formal protest until the *Notice of Sale* is published "in a newspaper of
general circulation in the area where the lands affected by the decision are located." For this project, the *Notice of Sale* will be published in *The World* newspaper and constitutes the decision document for purposes of protests and appeals, 43 CFR Subpart 5003 - Administrative Remedies. Protests of the decision to offer timber for sale described here must be filed within 15 days after the first publication of the
newspaper notice.

Decision:

My decision is to implement the Proposed Action of EA OR125-97-19 analyzing the environmental effects of the Blue Retro Commercial Thinning timber sale.

The Blue Retro Commercial Thinning is located in T. 26 S., R. 12 W., Sections 25, 26, 35, and 36, Willamette Meridian. An estimated 45 acres of Federal timberland would be commercially rethinned for research purposes and Steinnon Creek waterhole would be opened for safe helicopter access. The Design
Features and Management Requirements described in the EA are hereby adopted.

The design features and management requirements will be implemented as described in the *Coos Bay District Resource Management Plan/EIS* and its *Record of Decision (RMP)* (BLM, May 1995) which is in conformance with the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl* and its *Record of Decision* (Interagency, 1994).
This sale has been surveyed for sensitive, threatened or endangered wildlife and botanical species. No threatened or endangered species as defined by the Endangered Species Act of 1973, as amended, were
found on the project area.

Rationale:

The proposed action meets the intent of the *Record of Decision* for the RMP by providing a balance of forest products and biodiversity for future health of the forest and contributes valuable information that may
help promote old forest characteristics in young stands. A watershed analysis, Fairview subwatershed, was completed as required by the (ROD) when entering the Riparian Reserves. The project meets the objectives of the Aquatic Conservation Strategy as listed on pages S-6 and S-7 of the RMP.
Consultation by the U.S. Fish and Wildlife Service was not required for this project. There are no Bald Eagle, Northern Spotted Owl, Marbled Murrelet sites or suitable habitat located within the prescribed distances from the project that would require consultation by the U.S. Fish and Wildlife Service.

_____ _____

Daryl L. Albiston Date
Umpqua Resource Area Manager

BLUE RETRO COMMERCIAL THINNING
ENVIRONMENTAL ASSESSMENT
EA OR125-97-19

Umpqua Resource Area
Coos Bay District
Bureau of Land Management

Prepared this _____ day of _____, 1997, by

Interdisciplinary Core Team

David Hardin	Umpqua RA Forester, Team Leader
Paul Fontaine	Umpqua RA Silviculture Forester
Scott Poore	Umpqua RA Fuels Management Specialist
Pat Olmstead	Umpqua RA Fisheries Biologist and T&E Species
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Chapter 1 - Purpose and Need for Action

The Bureau of Land Management (BLM), Coos Bay District at the request of the Biological Resources Division (BRD) of the United States Geological Survey (USGS), formerly the National Biological Survey, proposes a retrospective density management study by commercially rethinning approximately 45 acres within a 60 acre study area of 45-50 years old timber. The stand was originally commercially thinned in 1983. The study area is located on Blue Ridge in the Umpqua Resource Area T. 26 S., R. 12 W., Sections 25, 26, 35, and 36 Willamette Meridian in the Fairview subwatershed. The project is in the General Forest Management Area (GFMA) land allocation (designated as "Matrix" lands in the Northwest Forest Plan). GFMA lands are forest lands managed on a 70-110 year regeneration harvest cycle with retention of biological legacies for forest health. The Umpqua Resource Area Fuels Management Specialist has also indicated a need for safe helicopter access into and out of Steinnon Creek Waterhole for fire suppression. The Seinnon Creek Waterhole is located near the study area in Section 35. The proposed action should attain the following management objectives:

- Implement a retrospective density management study requested by the Biological Resources Division of the USGS by rethinning a previously thinned area in order to conduct research on understory response to a density management (thinning) prescription that could help young stands attain old growth characteristics faster by promoting a second layer of conifers and hardwoods, shrub and herb understory, fuller crowns, larger branches, and furrowed bark on overstory trees.

- Help provide economic opportunities for year round, high-wage, high-skill jobs by producing a predictable and sustainable level of timber harvest by helping to meet the Coos Bay District's harvest commitment from the GFMA for FY97.

- Protect, maintain, or enhance the biodiversity and long term health of the forest ecosystem through compliance with the Standards and Guidelines contained in the Record of Decision (ROD) for the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (Interagency, 1994) (Northwest Forest Plan), and also the Record of Decision for the *Coos Bay District Resource Management Plan* (BLM, May 1995).

- Provide safe helicopter access into and out of Seinnon Creek Waterhole.

- Comply with the objectives of the Aquatic Conservation Strategy of the ROD.

This Environmental Assessment (EA) is tiered to the *Coos Bay District Resource Management Plan* and a *Final Environmental Impact Statement* and its *Record of Decision* (RMP) (BLM, May 1995) and conforms with the Northwest Forest Plan and its ROD. An Analysis File, containing additional information such as Interdisciplinary (ID) Team notes and resource staff input used by the ID Team to analyze impacts and alternatives, is hereby incorporated by reference.

Proposal

The Umpqua Resource Area of the Coos Bay District proposes to implement the Blue Retro Density Management Study on approximately 60 acres of Federal forest land, and to open safe helicopter access to Steinnon Creek Waterhole, by removing danger trees and snags in the riparian reserves, for fire suppression of the Blue Ridge area of the Fairview subwatershed, in accordance with the Standards and Guidelines of the ROD. The proposed study area and waterhole are not located in a tier 1 or 2 key watershed. The study area will be divided into two treatment areas with one control area of 15 acres and one study area of 45 acres. The study area would be rethinned to retain an average of 45 Douglas-fir trees per acre. In accordance with the Fairview subwatershed analysis and the research request from the BRD, the riparian reserves would be commercially rethinned to provide future durable woody material which can be recruited as in-stream structure and help promote old-forest characteristics. A cable logging system would be used from existing rock surfaced roads to harvest the excess trees. All snags, except those deemed a safety hazard, coarse woody debris, and minor tree species would be retained. The study areas will be monitored by scientists from the

Pacific Northwest Experiment Station (PNW) in Corvallis, Oregon, researchers from the Biological Resources Division of the USGS, and Coos Bay District personnel.

A Watershed Analysis was completed for Fairview subwatershed in September 1996. Watershed Analysis is a systematic procedure to characterize the aquatic, riparian and terrestrial features within a watershed and is required on the GFMA land base if there is any modification of the Standards and Guidelines for GFMA lands. The research proposal of the Biological Resource Division conforms with the recommendations of the Fairview Subwatershed. The Fairview Subwatershed Analysis is hereby incorporated by reference.

Additional information such as vegetation maps, topographic maps, and Timber Production Capability Classification maps are contained in the Blue Retro timber sale plans folder, hereby incorporated by reference.

Scoping

The scoping process afforded the opportunity for the public and agency personnel to identify their concerns relating to the proposed project, and define the issues that are analyzed in the EA. The general public was notified of the planned EA through publication of the District's semi-annual planning update and letters to interested individuals and organizations on the District's NEPA mailing list. There was no response to this invitation to become involved. Scoping information can be found in the EA analysis file, hereby incorporated by reference.

Identified Issues

The Interdisciplinary Team reviewed the proposal for potential issues and determined that there were no significant issues for analysis in the EA. Therefore, no alternatives to the proposed action were recommended by the ID Team.

Potential issues identified, but eliminated from further analysis:

1. Reduction of organic materials because of treetops and limbs being removed from the unit: To insure the retention of organic materials on-site a contract provision will be used to require logs to be no longer than 40 feet in length when yarded to the landing. This will require bucking of unmerchantable tops and limbs, thereby leaving organic material on site.

2. There is potential for noxious weeds to become established: To mitigate this issue a provision would be included in the contract requiring logging and road construction equipment to be washed prior to moving into the area.

3. Due to the proximity of the project area to a rural population center there is concern for the public safety while they are pursuing recreational interests on the back roads in the project area: This has not been a problem on past timber sales. The purchaser normally posts a watchman for equipment security and fire protection and is required by law to post signs when falling trees along a road. A provision will be included in the contract requiring the purchaser to display warning signs while operating in the project area.

4. Impacts on wildlife due to logging: With retention of snags, downed woody material and various hardwoods, forest diversity will be maintained.

5. Potential for soil compaction: Although the compaction hazard for Blachly soil is severe, there should be very minimal soil compaction resulting from this project. This project will utilize cable logging systems and there will be no new roads or skid roads constructed for this project, which will significantly reduce compaction potential.

6. Potential for damage to the creek bank and junction of two creeks: To insure minimal damage, the purchaser will be required to maintain one-end log suspension over the creek, and be restricted to 1 or 2 yarding corridors across the creek, and yard away from the creek junction.

7. Theft of excess down woody material in the riparian reserve of Steinnon Creek and the waterhole: Due to the proximity of Blue Ridge to a population center some of the trees cut in the Riparian Reserves, within 50 to 75 feet of the gravel road, would have a high probability of being stolen if left on site. If funding for future riparian/stream enhancement is available at time of the sale, excess logs in danger of being stolen would be transported to a safe location and stockpiled for future riparian/stream enhancement projects. If funding is not available at the time of the sale the excess logs would be included with the Blue Retro timber sale.

Chapter 2 - Alternatives Including the Proposed Action

Alternative 1 - No Action

Under this alternative the density management study would not take place at this time, but may take place in the future. Another site may be selected for the study.

Alternative 2 - Proposed Action

Under this alternative the commercial thinning density management study would consist of an approximately 60 acre unit located on Blue Ridge(See maps in Appendix 1). The unit would be broken into two treatment areas with one control area 15 acres in size, and one 45 acre study area. The control area would be used to monitor the amount and type of change in the study area. The study area would be rethinned down to approximately forty-five (45) remaining Douglas-fir trees per acre with an acceptable range of approximately thirty (30) to sixty (60) remaining Douglas-fir trees per acre.

Also under this action all minor tree species and Douglas-fir trees 10" diameter at breast height (DBH) and less would be reserved from cutting to promote the growth of the understory canopy. All non fish bearing perennial and intermittent riparian reserves will have a one tree width streamside buffer as requested by the Biological Resources Division's project design and the RMP. Cable logging systems would be used from existing rock surfaced roads to harvest excess trees.

To provide safe helicopter access into Steinnon Creek Waterhole for fire suppression activities, all standing green trees and snags designated by the Fuels Management Specialist to be in the flight path would be cut. Cut trees not sold or used for riparian projects and snags would be used as coarse woody debris. The resulting slash would be hand piled, covered, and burned during the following winter. The wooden walkway, used to open and close the culvert, would be repaired and additional rock would be added to the parking space to make a stable area for fire trucks to fill their tanks with water. Fuels Management Specialist's report and maps are in the analysis file**.**

Design Features and Management Requirements

The following design features and management requirements would apply to Alternative 2 (the proposed action):

- Existing roads will be maintained during the life of the sale to minimize the disruption of the hydrologic flow.

- One-end log suspension shall be maintained where possible within the unit and when yarding logs through the Riparian Reserve. Thinning corridors will be aligned perpendicular to the stream and not exceed 15 feet in width. Thinning corridors will be required to be 100 feet horizontal distance from the junction of the second order streams that lay within the boundary of the unit.

- All existing classes of Coarse Woody Debris (CWD) will be retained on the unit in accordance with the Standards and Guidelines of the ROD.

- A half round culvert will be attached to the outflow side of the Steinnon Creek waterhole to assist cutthroat trout leaving the waterhole to reach deep water down stream.

- With the exception of those that are deemed to be possible safety hazards during logging and those located adjacent to Steinnon Creek waterhole, existing snags would be retained across the treatment areas. Any snags felled or knocked over would remain on site as CWD.

- All residual material piled on landings and along existing roads or down material (except reserved Coarse Woody Debris) which could be reached from existing roads would be available for disposal as special forest products (firewood, fenceposts, poles, etc.).

- All standing woody material 1/2" to 3" in diameter located within 20 feet of the ditchline of the -35.4 road shall be slashed and chipped with a portable chipper and blown back into the project area.

- All logs yarded to the landings will be limited to forty (40) feet in length.

- To reduce damage to bark on reserved trees and impacts to animals rearing young at this time, cutting and yarding will not be permitted from March 1 through June 30.

- The proposed unit has been surveyed and the locations identified of all perennial non fish-bearing streams, intermittent streams and seeps. There are no fish-bearing streams located within the project area. All non fishbearing and intermittent streams would have one tree width stream side buffers as requested by the Biological Resources Division's project design and the RMP. Seeps and unstable areas would also be buffered according to the Standards and Guidelines.

- In addition to research monitoring, other monitoring would be accomplished in the form of logging inspections, snag and down log surveys, and noxious weed monitoring.

- All Douglas-fir trees 10 inches and less in diameter at breast height (DBH) and all minor tree species will be reserved.
- To help prevent the spread of noxious weeds all logging equipment, trucks and road construction equipment that enter the project site from outside our local area shall be washed.

- The purchaser shall display warning signs when conducting logging operations within the project area.

- A standard special provision would be included in the contract to protect T&E species found on the site after the contract is awarded.

The following table illustrates how the alternatives relate to the objectives:

Objective Matrix

Objective	No Action Alternative	Proposed Action Alternative
To implement the retrospective density management study by the Biological Resources Division to rethin a previously thinned area in order to conduct research on understory response to a density management (thinning) prescription	No	Yes
Help provide economic opportunities for year round, high-wage, high-skill jobs by producing a predictable and sustainable level of timber harvest by helping to meet the Coos Bay District's harvest commitment from the GFMA for FY97	No	Yes
Protect and maintain the biodiversity and long term-health of the forest ecosystem through compliance with the Standards & Guidelines	Yes	Yes
Provide safe helicopter access into and out of Steinnon Creek Waterhole for fire suppression activities on Blue Ridge	No	Yes
Comply with the objectives of the Aquatic Conservation Strategy of the ROD	Yes	Yes

Alternatives Considered but Eliminated from Further Analysis

None identified

Chapter 3 - Affected Environment

Physical and Geographic Characteristics

The project area is located on Blue Ridge in the Umpqua Resource area T. 26 S., R. 12 W., Sections 25, 26, 35, and 36, Willamette Meridian, approximately eleven miles Southeast of Coos Bay, Oregon in the Fairview subwatershed. The elevation of the treatment area ranges from 1400 to 1600 feet. The topography is gentle, with slopes ranging from 10 to 35 percent. An all weather road currently accesses the study area. See maps in Appendix 1

Soils

The dominant soil for the study area is the Blachly association. This association occurs on gently sloping to steep ridgetops, sideslopes, and slump benches. The Blachly soils are very deep, 3½ to 10 feet, red, clayey, and well drained. These soils occur at elevations of 1200 to 3000 feet with slope gradients ranging from 5-50 percent. Permeability is moderately slow and is associated with an annual precipitation of 60-120 inches. The compaction hazard for the Blachly association is severe. Soil productivity is high for Douglas-fir trees. The Timber Production Capability Classification for the study area is RLR (reforestation problems due to light - 100% of the area) and RAR (reforestation problems due to animals - 30% of the area). (Soil Inventory of the Coos Bay district, Townsend, et. al., 1977). The Soil Scientist's report is in the analysis file.

Vegetation, Including T & E Species

Timber: The primary overstory consists of 45-50 year old Douglas-fir trees with minor amounts of Western Hemlock and Western Red Cedar scattered through the stand. The study area has an approximate stocking level of 169 trees per acre with an average diameter at breast height (DBH) of 16.4" (stand exam data is in the analysis file). The average gross volume for this stand is approximately 47,700 board feet per acre. The stand received a very light commercial thinning in 1983.

The approximate stand composition of trees 10" dbh and larger based on data from the July, 1993 stand exam is:

Douglas-fir	90%
Western red cedar	4%
Western hemlock	6%

Understory brush: Rhododendron, Oregon grape, Vine maple, Salal and Sword fern are the major brush species found on the forest floor of this stand. There are also numerous fungal mats in the stand as evidenced by the high production of various types of mushrooms.

T & E Plants;
There are documented locations of a special status plant in the Blue Ridge area. Cusick's checkermallow (*Sidalcea cusickii*) inhabits grassy openings and rock outcrops. Its status as a tracking species indicates that it does not require management consideration. There is no habitat for this species in the unit. There are no other special status plants known to be in the area. There are no known locations of any survey and manage strategy 1&2 species in or near the project. The Botanist report is in the analysis file.

Aquatic Resources and Fisheries, Including T&E Species

Hydrology
The unit is located on top of the ridge between Steinnon Creek to the west and Woodward Creek to the east. The northern third of the unit is a flat knoll that does not have any clearly defined channels. The middle third of the unit is drained to the east by two 2nd order perennial channels. Each of these channels fork just above the east boundary of the unit. The southern third of the unit is relatively flat and does not have any clearly defined channels. The Hydrologist report is in the analysis file.

Aquatic/Fisheries Resources
The Blue Retro timber sale is contained within the Fairview Subwatershed and is located within the Woodward Creek Drainage. The streams located within the Blue Retro timber sale boundary consist of headwater streams of a third order tributary to Woodward Creek. The closest known fish population to the unit boundary is in Woodward Creek, approximately one mile below the sale unit boundary. No fish were found in streams within the sale unit during field inspection. This unit is situated on Blue Ridge on an east facing bench. The perennial streams within the sale unit boundary have a low average gradient. This stream gradient gets steeper in the third order stream as it leaves the unit and drops off Blue Ridge toward Woodward Creek. These streams generally have low sinuosity and encompass small wetland habitats on flat wide areas or at confluences. These wide wetland habitats along the stream channel contain multiple seeps and are mostly small (approx. 25'X25') in area. Reaches with multiple channels result from spring seep areas. Streambanks are well vegetated, although there are a few areas of downcutting and lateral streambank scour. Stream bottom substrate consists mainly of small sand and silt particles with large amounts of small organic material (leaves, twigs and branches). Reaches of clay streambed and streambanks are scattered along the streams. Cobble size basalt dominates the streambed at the confluence of the secondod, 6" to 30" in diameter is distributed on and over the third order tributary.

As the gradient increases below the confluence of the second order streams, woody debris in the stream becomes more important and forms step/pool habitat. This woody debris contributes structure and maintains the integrity

of the streambanks and streambed. This third order reach is approximately double the size of the second orders and currently averages three to four feet wide and about five inches deep.

Water quality appears to be good. Water temperature was 48 degrees on February 5th, and low flow summer time water temperature is likely maintained below 60 degrees because of the dense canopy cover. An observation of aquatic macro-invertebrates indicate a wide range of functional feeding groups present with good abundance. With little gravel substrate in the streams, macro-invertebrates utilize the abundant organic matter and the rooted emergent vegetation in the wetland areas.

The riparian vegetation within the sale unit boundaries has not been previously surveyed. Observations of riparian zone vegetation in the sale unit shows that most of the overstory shade on the streams and wetland areas is provided by a canopy of dense conifer (Douglas-fir, western red cedar, and western hemlock) with a mix of large red alder. A shrub layer consists of vine maple, salmonberry, and huckleberry while the understory vegetation consists of dense swordfern, sedges, mosses, and skunk cabbage. Dense streamside understory vegetation and conifer/hardwood overstory provides these streams with nearly 100% shade. This cover allows a moderating micro-climate to exist around the seeps, springs, and streams, and shades them from direct sunlight during the summer months.

Threatened and Endangered Aquatic Species
No threatened or endangered fish species have been found in streams within the sale unit. Coho and winter steelhead have been found in Woodward Creek approximately one mile downstream from this sale unit and in Steinnon Creek below the waterfall approximately one quarter mile below the fire pond. Both fish species hing by the National Marine Fisheries Service is pending.

Steinnon Creek Waterhole
This pond is constructed on the upper reach of Steinnon Creek. This area of Steinnon Creek is a perennial fish bearing stream with full Riparian Reserve protection. Aquatic surveys from 1980 indicate that there were no fish present in Steinnon Creek above a water fall approximately one quarter mile below the helipond. Subsequent surveys found cutthroat trout in the stream above and below the pond, as well as in the pond. It is not known whether the earlier surveys overlooked these fish or if they were subsequently transported to this reach of stream and the pond by the public. This pond is 0.90 acres in size and is approximately 25 years old.

Wildlife, Including T&E Species

General Wildlife
The site is classified as a *temperate coniferous forest*, based on plant species present. These forests are the common lower elevation type in the Coast Range. Based on the tree diameter and canopy closure, the stand is considered a *closed sapling-pole-sawtimber* stand. There are also several “wet areas” with flowing or standing water during the wet season with corresponding plant species. These areas are small but important refugia for the species which depend on them. The stand is very homogeneous in it’s features; this is one of the reasons it was chosen for the study. A list of potential wildlife which could use the area for either resting, breeding, or foraging purposes is contained in the analysis file.

T&E Species: A Threatened and Endangered species review of the area shows that there are no Bald Eagle, Northern Spotted Owl (NSO) or Marbled Murrelet (MM) sites near the project site. The closest MM sites are 2.5 miles to the north and 2.1 miles to the east. No Suitable Habitat is within .25 mile of the project. Cliffs, associated with Peregrine Falcon nesting, are limited in the area.

Although the Blue Retro timber is only 47 years old, it is large for its age due to high quality soil. It is considered dispersal habitat for both MM and NSO. Other areas around the proposed thinning unit, if not already cut, are expected to be cut since they are in private ownership.

The Blue Retro study area is in matrix lands and is not part of any Critical Habitat Unit. Based on this information, and a phone call to the U.S. Fish and Wildlife Service (12/96), consultation is not required for this

project. The Wildlife Biologist report is in the analysis file.

Chapter 4 - Environmental Consequences

This chapter describes the scientific and analytical basis for the comparisons of the alternatives, and the probable consequences as they relate to the alternatives.

The environmental consequences for both alternatives are outlined in the following table which lists the Critical Elements required to be addressed by the National Environmental Policy Act (NEPA) and whether they are affected by the alternatives.

Critical Element Evaluation of Each Alternative

Critical Element	No Action	Proposed Action
Air Quality	No	No
Area of Critical Environmental Concerns	No	No
Cultural Resources [1]	No	No
Farm Lands (prime or unique)	No	No
Floodplain	No	No
Native American Religious Concerns [1]	No	No
Noxious Weeds [1]	No	No
Threatened or Endangered Species (wildlife)[1]	No	No
Threatened or Endangered Species (botanical) [1]	No	No
Threatened or Endangered Species (fish)[1]	No	No
Wastes; Solid or Hazardous [1]	No	No
Water Quality; Drinking/Ground	No	No
Wetlands/Riparian Reserves	No	Yes
Wild and Scenic Rivers	No	No
Wilderness	No	No

[1] On-site evaluations have been conducted and documented in the Analysis File by the District Archaeologist, the Resource Area Botanist, the Resource area Wildlife Biologist, the Resource area Fisheries Biologist, the District Hazardous Materials Coordinator, and the Resource Area Noxious Weed Coordinator.

Alternative 1 - No Action

The proposed study area would not be treated at this time, and a safe helicopter flight path into and out of Steinnon Creek Water hole would not be provided for fire suppression activities; therefore, the environment described in Chapter 3 would not be altered.

Alternative 2 - Proposed Action

Soils

Due to the gentle topography of the study area very little erosion or sedimentation of streams is anticipated following cutting and yarding operations. The excess trees in the study area will be yarded from existing rock roads and will contribute very minor amounts of erosion or sedimentation to streams within the study area. With no new road construction and the utilization of cable yarding systems on existing rock roads only very minor amounts of soil compaction should occur in the yarding corridors.

Vegetation, Including T&E species

In the short term the proposed project would change the structure of the vegetation within the study area, but no loss of species is anticipated. The removal of standing timber would allow more heat and light to reach the forest floor and stimulate the growth of the brush and herb layer. The humus layer on the forest floor would be somewhat disturbed from the felling and yarding operations. Rethinning may help promote old forest characteristics by further reducing overstory density while creating an irregular distribution of overstory trees. It could also promote the continued development of the following characteristics: a second layer of conifer or hardwoods, a shrub and herb understory, fuller crowns, larger branches and furrowed bark on overstory trees. Thinning the stand will increase the vulnerability to infestations by exotics, which may thrive in the resulting disturbed soils and brighter light conditions. However, the canopy will eventually close, shading out weedy species. The potential invasion of weeds may be negated by well-established native brush species and small Western Hemlock trees which may out compete exotic vegetation.

Aquatic Resources and Fisheries, Including T&E Species

Hydrology
There are some indications that due to the edge effect (the remaining vegetation will utilize the water that is made available due to the removal of vegetation) there would be little if any change in the annual yield (the amount of water running off the basin in a year). Although it is difficult to detect outside the scope of natural variability until 20-30% of the basin is in a clear cut condition, the peak flows and low flows are probably also affected.

Aquatic/Fisheries Resources

Direct Impacts

Cable yarding through streams and riparian areas could cause some streambank damage and resulting water quality impairment. This is especially true if it occurs on streambanks and streambeds composed of clays or if the wetland habitats are disturbed by yarding. The suspension of one end of yarded logs through riparian areas and over streams will minimize streambank disturbance. Streams are moderately downcut, so in effect, there will likely be full suspension over the stream channels.

Steinnon Creek Waterhole
The proposed cutting pattern on the west and east sides of the pond will reduce some shading to the surface waters of the lower one half of the pond. This pond currently has mid-day exposure to the sun, however the maximum surface temperature is not known at this time. Outflow from the pond is from the surface by way of 3 culverts and a screw gate. This outflow water may slightly increase the surface water temperature of Steinnon
Creek for a short distance, at least until mixing with cooler water. What impacts the removal of additional trees will have on surface water temperatures in the pond and in Steinnon Creek is unknown, but expected to have minimal impact.
Water temperature monitoring will be done before and after timber removal.
The cutting of trees in the Riparian Reserve of Steinnon Creek below the road will slightly reduce stream shading over approximately a 125 foot section of stream. This reduction in shade will be short term since existing smaller trees will quickly grow and fill canopy openings. There will be no direct impacts to the fishery or other aquatic biota from this action. Cut trees that are left on site will contribute shade and large wood to the stream channel and the riparian zone. Aquatic Conservation Strategy objectives will be met under this action because an adequate numberon site for habitat and nutrient cycling purposes in the riparian and aquatic habitats.

Indirect Impacts
None are identified at this time.

Wildlife, Including T&E Species

Short-term Effects
Logging during wildlife breeding and rearing of young will always cause displacement and destruction of animals; especially young, who can not move quickly and consequently get buried, crushed, or injured. Excluding cutting and yarding activity between March 1 and June 30 should minimize impacts to wildlife that breed and rear their young during the spring and early summer. A certain amount of animals will still be displaced as a result of the logging during the winter, however, numbers are not expected to be as high. Species, especially susceptible include hibernating or resting bats, which may be underneath bark. They are unable to escape, and subsequently die when the tree comes down. Other tree dwelling species such as squirrels, raccoons and porcupine have the same fate if they are in the "wrong" tree.

Underground and ground dwelling mammals such as salamanders, boomers, voles, shrews, moles, chipmunks, rabbits, mice and woodrats usually hunker down when activity and noise is going on around them. They rarely leave their nests - or hiding spots, therefore, they too commonly die when trees fall on them. Above ground species die directly, while underground species are crushed or suffocate to death as their tunnel or hole systems collapse on them.
Overall, logging has the most negative effect on smaller, less mobile species. In addition to effects on site specific animals, logging operations produce noise which all animals, in the vicinity, hear. Technically, one could argue that these operations may disrupt foraging behaviors, thereby reducing fitness (and breeding potential) in animals within hearing range. However, no definitive studies come to mind to verify this assumption in northwest forests.

No known Threatened and Endangered Species should be affected in the short-term.

Long-term Effects
The result of this thinning should be a large sawtimber categorized stand. Crown cover may be less than 100 percent and average trees exceed 21 inches d.b.h. There already is downed woody material (and that will be increased after the thinning), but not enough yet to classify the stand officially as old-growth.
Wildlife species endemic to and favoring older aged stands should benefit. These species include Marbled Murrelet and Northern Spotted Owl. The animals displaced during the logging will be replaced by others of their species - dispersing youngsters looking for new habitat and territories. Other species may move in to the area to fill the older-growth nitch now created. Almost all the species found in the closed sapling-pole sawtimber stand would also use a large sawtimber stand to one extent or another.

Cumulative Effects

Alternative 1 - No Action

If the no action alternative is selected, the study may be proposed for other locations on BLM-administered lands in order to meet the objectives of the RMP and the Northwest Forest Plan. There would not be any impact to this specific site. The cumulative effects cannot be analyzed for an alternative location for the study.

Alternative 2 - Proposed Action

The study area is located in the Woodward Creek drainage in the Fairview subwatershed which is part of the North Fork Coquille Analytical Watershed. The Fairview subwatershed drains approximately 19,267 acres. The BLM manages 6,726 acres or approximately 35% of the subwatershed. This project would affect approximately 0.3% of the area drained by the Fairview subwatershed. This project does not affect any late successional forest in the Fairview subwatershed. Road density for the section will remain the same since there will not be any new road construction for this project.

There are approximately 183 miles of stream in the Fairview subwatershed of which 64.3 are managed by the Federal Government This study will affect 0.39 miles of streams and their associated riparian reserves or 0.2% of the streams contained in the Fairview subwatershed.

Steinnon Creek Waterhole serves as the only viable source for helicopter bucket use on the entire south end of Blue Ridge during fire suppression activities. Nearly all of upper Steinnon Creek is in Federal ownership. Land use allocation is Matrix. The proposed action, as well as any future timber harvest on Federal lands within this drainage will have adequate Riparian Reserve widths to protect aquatic and riparian vegetation values and meet the Aquatic Conservation Strategy objectives.

From a wildlife standpoint, the hoped for "end result" of this project is to advance the stand toward an older age. Some animals will die in the process. Other animals will move in to take their place. This cycle is much preferred over a scenario when the habitat is removed and there is nothing to move back into (ie., clearcuts which only provide habitat for edge species, new or invading species and generalists). Conversely, the habitat provided in this project is considered scarce and beneficial to most of the historical wildlife inhabitants of the Coast Range temperate coniferous forest. Therefore, the cumulative effect is overall positive for wildlife.

Anticipated impacts from future Federal timber sales in the Fairview subwatershed through fiscal year 2001 should be minimal as shown below:

Subwatershed	Total Harvest Ac.	Regeneration Harvest Ac.	Commercial Thinning Ac.
Fairview	630	0	630

Through fiscal year 2001 the total Federal timberlands affected in the Fairview subwatershed would be approximately 3.3%.

The commercial thinnings shown above are anticipated to produce positive impacts in the short and long term with improvements in tree growth, stand diversity, understory plant diversity and wildlife habitat. In addition the Blue Retro Commercial thinning should provide valuable information on thinning prescriptions that could help young stands attain old growth characteristics faster by promoting a second layer of conifers and hardwoods, shrub and herb understory, fuller crowns, larger branches, and furrowed bark on overstory trees.

Irreversible and Irretrievable Commitment of Resources

None identified in any of the alternatives

Chapter 5 - List of Agencies and Individuals Contacted

The general public was notified of the planned EA through the publication of Coos Bay Districts semi-annual *Planning Update.* Those requesting notification by scoping notices were contacted with no response.

Consultation was not required by the U.S. Fish and Wildlife Service because there were not any threatened or endangered species located within two miles of the project site.

The following District personnel were contacted for input:

Brian Thauland	Forest Engineer, Umpqua RA
Estella Morgan	Botanist, Umpqua RA
Craig Garland	Soil Scientist, Umpqua RA
Stephan Samuels	District Cultural Specialist
Mark Storzer	Hydrologist, Umpqua RA
Tim Votaw	District Hazardous Materials Coordinator
Scott Knowles	Noxious Weed Coordinator, Umpqua RA
Terry Evans	Plans Forester, Umpqua RA
Paul Rodriguez	Forestry Technician, Umpqua RA

The following public agencies and interested parties were notified with scoping letters:

Association of O&C Counties
David S. Barrows, Exec. Dir.

Cape Arago Audubon Society

Coast Range Association
Lisa A. Brown

Defenders of Wildlife

Kalmiopsis Audubon Society

Oregon Natural Resources Council
D. Heiken, SW Field Representative

The Pacific Rivers Council

Wilderness Watch

Sierra Club
Many Rivers Group

Swanson Superior Forest Products

APPENDIX F.: GEOLOGY

1.0 INTRODUCTION

The North Soup and Blue Retro Density Management Study project is to rethin two Density Management Study Sites in the Coos Bay District, as part of a long-term research project, initiated in 1994. Thinning is to occur between September 2010 and March 2012. It is the second thinning entry on the North Soup Site and the third thinning entry on the Blue Retro Site. The project will be completed by logging with a cable system and utilizing existing roads. Approximately 11.1 miles of road would be renovated and approximately one mile of road improved. No new roads would be constructed. Roads not needed for study management would be decommissioned. The North Soup DM Study area contains approximately 233 acres of mixed management and control forest land. The Blue Retro DM Study area contains approximately 63 acres of mixed management and control forest land. Total EA acreage is approximately 296 acres.

The study plan covering these areas is the BLM Density Management and Riparian Buffer Study: Establishment Report and Study Plan, issued by the U.S. Department of the Interior and U.S. Geological Service in 2006.

The purpose of this report is to detail the existing geology and soils conditions and to make interpretation of impact to these conditions by completion of the proposed timber operations.

During the completion of this study, the following resources have been reviewed:

- Historic Aerial Photography from 1960 to present.
- Soil Surveys of Douglas County and Coos County, Oregon.
- North Soup density Management Study Environmental Assessment EA OR125-96-08, dated 1996.
- Blue Retro Commercial Thinning Environmental Assessment EA OR125-97-19, dated 1997
- Numerous Professional Publications.
- Review of geologic map of the project areas.
- Review of maps and information gathered in the project files.
- Site visit to the project sites, with emphasis on road renovations, recreational trail crossings, and stream connections/interfaces.

2.0 EXISTING CONDITIONS

Table 1 provides descriptions of the mapped geology, geologic structure and soil types of each of unit. The geology is based on Niem and Niem (1990). Soil interpretations are based on Johnson et al (2003).

Table 1. Geology and Soils of Projects.

Unit	Geology	Structure	Soil-Percent Slope
North Soup	Elkton Fm.	Strike W-NW, 5º-9º N	Absaquil-Blachly-McDuff Complex, 3%-30%
			Digger-Bohannon-Umpcoos Complex, 60%-90%
			McDuff-Absaquil-Blachly Complex, 30%-60%
			Preacher-Bohannon-Blachly Complex, 30%-70%
Blue Retro	Roseburg Volcanics	No mapped strike or dip	Blachly Silt Loam, 0%-30%
			Preacher-Bohannon Loams, 60%-90%

2.1 Geologic Description and Interpretations

Based on a review of the literature, the following provides a brief description of the units and their associated hazards. Field visits conducted during this study revealed geologic exposures that confirmed the mapping.

Tee-Elkton Formation consists of siltstone with thin to thick sandstone lenses and rhythmically interbedded thin graded sandstone and siltstone. It may interfinger with the upper part of the Tyee Formation (Niem and Niem, 1990). Associated hazards include erosion and mass movement. Mass movement includes all forms of movement, ranging from creep to slumps to debris torrents (Beaulieu, 1975). The silt portions of the unit are more susceptible to slumping and rotational failures.

The North Soup Creek project is located in the Elkton Formation. Thicker soils and steep slope angles can facilitate slump or rotational failures. Siltstone and mudstone layers can facilitate block slides of overlying stratigraphy. However, the project area is located on gentle to level slopes. Likewise, stratigraphy dip angles are gentle (maximum of 9º mapped in the area), reducing potential for block slides. This potential is increased with the increase of the stratigraphy dip angles. Therefore, the potential for management activities to initiate catastrophic or chronic mass movement is minimal to non-existent.

Tev-Roseburg Volcanics consist of pillow basalts, breccias, and massive subarial flows, interbedded with minor conglomerate and basaltic sandstone (Niem and Niem, 1990). Associated hazards include flash flooding and mass movement (Beaulieu, 1975). Thinner soils and steep angles can facilitate debris flows and debris torrents.

The Blue Retro project is located in the Roseburg Volcanics Formation. Volcanics can create impervious surfaces, with thin soils at steep angles. This increases the probability of debris flows. However, the project area is located on gentle to level slopes. Therefore, the potential for management activities to initiate debris flows is minimal to non-existent.

While the management operations would have little impact on the geology, the geology can have impacts on operations. Care must be exercised in road construction to minimize intersections with stratigraphy dip angles inclined with the slope (BLM, 1995). Such intersections would provide for slide potential. However, no new road construction is anticipated with this project. Therefore, slide initiation by management activities is unlikely.

No faults were identified within the project boundaries.

2.2 Soils Description and Interpretations

Based on a review of the literature (Johnson et al, 2003; Haagen, 1989), the following provides a brief description of the units and their associated hazards.

2E-Absaquil-Blachly-McDuff complex is located on the 3 percent to 30 percent slope of broad mountain ridge tops, forming in residuum and colluvium from sandstone and siltstone. The soil ranges in elevations from 300 to 2,500 feet above sea level.

The Absaquil soil is a silt loam forming on broad ridge tops and side slopes. It is deep and well-drained. Depth to bedrock is 40 to 60 inches.

The Blachly soil is a very deep, well drained soil forming on ridges and side slopes, derived from sandstone and siltstone Depth to bedrock is 60 inches or greater

The McDuff soil is a silty clay loam forming on ridges and side slopes. It is a moderately deep, well-drained soil. Depth to bedrock is 20 to 40 inches.

The Complex is susceptible to erosion and compaction, has a moderately slow permeability and low soil strength. Management concerns are also related to the steepness of slope. While wheeled and tracked equipment can be used, cable yarding and low-pressure ground equipment is preferred. It is recommended that to reduce compaction, skid trails be laid out in advance and timber harvest be restricted to times when the soils are least susceptible to compaction. It is further suggested that seeding and waterbars be applied; care be used in road drainage design to reduce erosion; and that roads, landings, and skid trails can be ripped after use to improve plant growth. Trees on McDuff soil commonly are subject to windthrow during periods when the soil is excessively wet and winds are strong.

58G-Digger-Bohannon-Umpcoos is located on 60 percent to 90 percent slopes of side slopes and headwalls, forming from colluvium derived from sandstone. The complex ranges between 200 feet and 3,000 feet above sea level.

The Digger soil is a very gravelly loam forming on side slopes and ridges. It is a moderately deep, well drained. Bedrock can be found between 20 to 40 inches depth.

The Bohannon soil is a gravelly loam forming on the convex midslopes and lower slopes. It is moderately deep and well drained. Bedrock can be found at a 31-inch depth.

The Umpcoos soil is a very gravelly sandy loam forming on the convex side slopes adjacent to areas of rock outcrops. It is shallow and well drained. Bedrock can be found at a 16-inch depth.

The Complex is susceptible to erosion and potential for slope failure (based on steepness). The Bohannon soil is susceptible to compaction. Cable yarding is preferred. It is recommended that, to reduce compaction, timber harvest be restricted to times when the soils are least susceptible to compaction.

It is further suggested that seeding and waterbars be applied (The Digger and Umpcoos soils may not respond well to seeding due the exposure of bedrock); care be used in road drainage design to reduce erosion; roads, landings, and skid trails can be ripped after use to improve plant growth; end haul waste material to reduce damage to vegetation and potential for sedimentation; avoid headwall areas in road construction; and, due to slope failure, complete onsite investigations before disturbing soils.

147F-McDuff-Abasquil-Blachly complex is located on 30 percent to 60 percent slopes of convex and concave slopes and ridges, forming from residuum and colluvium derived from sandstone and siltstone. The complex ranges between 300 feet and 2,500 feet above sea level.

The McDuff, Absaquil, and Blachly soils are described above.

The Complex is susceptible to erosion and compaction, has a moderately slow permeability and low soil strength. Management concerns are also related to the steepness of slope. While wheeled and tracked equipment can be used, cable yarding and low-pressure ground equipment is preferred. It is recommended that to reduce compaction, skid trails be laid out in advance and timber harvest be restricted to times when the soils are least susceptible to compaction. It is further suggested that seeding and waterbars be applied; care be used in road drainage design to reduce erosion; and that roads, landings, and skid trails can be ripped after use to improve plant growth. Trees on McDuff soil commonly are subject to windthrow during periods when the soil is excessively wet and winds are strong.

198F-Preacher-Bohannon-Blachly complex is located on 30 percent to 70 percent slopes of concave and convex side slopes and ridges, forming from residuum and colluvium from sandstone and siltstone. The complex ranges between 200 feet and 3,000 feet above sea level.

The Preacher soil is a deep and well-drained loam forming on the concave side slopes. It is very deep and well drained. Bedrock can be found at depths greater than 60 inches.

The Bohannon and Blachly soils are described above.

The Complex is susceptible to erosion and compaction. Management concerns are also related to the steepness of slope. The Bohannon soils have a hazard of windthrow during periods when the soil is excessively wet and the winds are strong. The Blachly soils have a hazard of moderately slow permeability and low soil strength. While wheeled and tracked equipment can be used, cable yarding and low-pressure ground equipment is preferred. It is recommended that to reduce compaction, skid trails be laid out in advance and timber harvest be restricted to times when the soils are least susceptible to compaction.

It is further suggested that seeding and waterbars be applied; care be used in road drainage design to reduce erosion; and that roads, landings, and skid trails can be ripped after use to improve plant growth.

4D-Blachly Silt Loam is located on zero percent to 30 percent slopes of broad ridgetops and benches of mountains, forming from colluvium from sedimentary rock or basalt. The soil ranges from 250 feet and 2,500 feet above sea level.

The Blachly soil is described above.

The soil is susceptible to surface layer compaction and erosion. Use of wheeled and track equipment when the soil is moist will result in rutting and compaction. Use of low-pressure ground equipment is preferred in ground-based harvest. It is suggested that seeding, mulching, and waterbars be applied; care be used in road drainage design to reduce erosion. Unsurfaced roads and skid trails may become impassable during rainy periods. Logging roads require suitable surfacing for year-round use.

46F-Preacher-Bohannon Loams are located on 60 percent to 90 percent slopes of narrow ridgetops and side slopes of mountains, forming from colluvium and residuum of arkosic sandstones and siltstones. The loams range between 500 feet and 3,800 feet above seal level.

The Preacher and Bohannon soils are described above.

The loam is susceptible to surface layer compaction and hazard of erosion. Management concerns are also related to the steepness of slope. Highlead or other cable logging systems are most suitable. It is suggested that seeding, mulching, and waterbars be applied and care be used in road drainage design to reduce erosion. Unsurfaced roads and skid trails may become impassable during rainy periods. Logging roads require suitable surfacing for year-round use.

2.3 Existing Compaction

Historical aerial photographs were reviewed for each of the projects to determine the amount of pre-existing compaction existing due to historic harvest operations. The Coos Bay District Record of Decision and Resource Management Plan (RODRMP) (BLM, 1995) specifies that for Ground-Based Yarding Systems,

> *"...a. If tractors or rubber-tired skidders are used for log skidding, skid trails will be designated with the objective of having less than 12 percent of a harvest area affected by compaction. Existing skid roads will be used to the extent practical..."*

However, ground-based operations are not proposed for either project and no new roads will be constructed. Therefore, there is no anticipated increase of compaction associated with this project.

Existing compaction for the Blue Retro project included both historic roads and current recreation trails. Existing compaction for the North Soup Creek project included only historic roads. Historic road width was assigned an average 16 feet, based on previous project research. Current trail width was assigned an average of three feet. Complete compaction analysis of the two projects is presented in Table 2

Table 2. Project Soil Compaction Analysis

Project	Blue Retro	North Soup
Road Inches from Aerial Photos	3	6
Trail Inches from GIS Maps	6	0
Feet of Road (Inches X 1000'/1")	3,000	6,000
Feet of Trail (Inches X 1000'/1.25"	4,800	0
Road Area (Road length X 16')	48,000ft2	96,000ft2
Trail Area (Trail length X 3')	14,400ft2	0
Total Acreage of compaction/acreage of Project	1.4/63	2.2/233
Total Percent Compaction	2.2%	1%

Based on the analysis of the historic and existing compaction, as well as review of the harvest systems, total compaction for these projects will not exceed the 12 percent threshold defined in the RODRMP.

There are no anticipated ground-based harvest operations. Therefore, soil moisture for compaction is not a restrictive element.

3.0 FIELD REVIEW

Field reviews of the project sites were conducted in January 2008. Field observations of soil and geology verified that identified in the literature review. It appears that the trail system in the Blue Retro project follow the historic road/skidder trail systems. Therefore, the actual compaction of the Blue Retro project may be less than the calculated 2.2%. Wetland areas were identified in the North Soup Creek project. Yarding through these areas should be full suspension or limited to when these soils are dry to ensure no damage to the hydric soils.

The existing recreational trail systems of the Blue Retro project cross potential yarding corridors. Single-end suspension yarding will cause the drag end of the log to intersect with these trails. This could compromise the trails. Such interception could also create erosion connections between the mineral soil trails and any exposed mineral soil in the downslope yarding corridor. The potential for a continuous connection of mineral soil could exist until vegetation grows in the corridors. Therefore, it is recommended that at the end of harvest operations, the trails be re-established, with connection to yarding corridors disrupted, and any exposed mineral soils of the yarding corridors adjacent to the recreational trails be seeded and mulched. It is further recommended that slash be piled in the yarding corridors at these intersections, or other barriers, to discourage the use of off-road use outside of the existing recreational trails.

The field recommendations are based on BMP's, not requirements of the RODRMP.

4.0 RECOMMENDATIONS

Based on literary research, colleague advice, and field observations, the following recommendations are made.

1. Existing roads are utilized, as defined in the project descriptions.

2. Soil recommendations cited in the Douglas County and Coos County Soil Surveys (Johnson *et al*, 2003; Haagen, 1989) include:
   a. Cable yarding and low-pressure ground equipment is preferred.
   b. Seeding and waterbars be applied
   c. Care be used in road drainage design to reduce erosion

3. Decommissioned roads should be designed according to Best Management Plans as outlined in the RMP, including removal of culverts and placement of waterbars.

4. Utilize one-end suspension and full suspension over yarding corridor stream crossings

5. Restore any damage to existing recreational trails to reduce the risk of connected erosion systems.

6. In the Blue Retro project, seed and mulch exposed yarding corridor mineral soils adjacent to the corridor/trail intersection.

7. Place slash on any mineral soil exposed from log yarding that is adjacent to yarding corridor/recreational trail intersections.

8. Protect any identified wetlands, according to RMP regulations, from soil disturbance.

5.0 SCOPING RESPONSE

Two comments were received during the Scoping process for this Environmental Assessment. The comments were received from Chandra LeGue of Oregon Wild and Francis Eatherington, of Umpqua Watersheds, Inc. Issues described in the comments directly related to soils and geology includes:

ONRC geology and soil relevant comments, e-mail dated February 13, 2008:

> *"…The projects would jointly thin 294 acres of previously thinned lands in riparian reserves, LSR, and matrix allocations. We understand that the projects are part of a scientific study. While we support this type of research that can lead to a better understanding of how forest management can potentially impact or benefit old-growth species. We do not believe this is an excuse to rubber-stamp the proposal. The EA needs to take a serious look at the impacts of road management and timber haul, yarding, and removing canopy trees (especially in riparian reserves) on water quality, soils, vegetation, recreation, and wildlife in the project areas. In particular, since these projects are being rethinned, cumulative impacts must be thoroughly analyzed…"*

Umpqua Watersheds, Inc. geology and soil relevant comments, e-mail dated February 22, 2008:

> *"…Blue Retro*
>
> *We submitted EA comments on phase-one of this project on May 16, 1997. Please consider those comments as scoping for this second EA. In 1997 we were concerned about impacts to creek banks from logging and yarding through creeks…"*
>
> *"…Roads and soils*

The scoping notice says that roads not needed would be decommissioned. Good. However, the EA should define decommission, and the definition should include subsoiling and reforesting.

OHV use should be documented in the EA if it exists in the project areas. OHV use could expand if the forests next to roads are thinned, opening up areas available for cross-country use. If this is a possibility, the EA should describe how the OHV use will be mitigated…"

No new roads are proposed for the project. Existing roads will be upgraded. Therefore, there will be no impacts beyond those present. Current impacts will be reduced by renovation of existing roads.

Wetlands and stream banks are to be protected by yarding restrictions listed in the recommendations.

Historic compaction was analyzed through field investigation and historic aerial photography interpretation. As described above, the total amount of compaction is 2.2% for the Blue Retro project and 1% for the North Soup Creek project. The Coos Bay ROD allows for 12 percent surface compaction. Activities within these projects will not result in additional compaction. Therefore, as compaction is below the 12 percent threshold for ground based operations (and there are no ground based operations proposed), decompaction of existing road beds is not warranted.

OHV operations outside of established trails will be discouraged by the restoration of the trail system and establishment of slash or other barriers within the yarding corridors, as detailed in the recommendations.

6.0 REFERENCES

BLM (Bureau of Land Management, Department of the Interior), 1995, Coos Bay District Record of Decision and Resource Management Plan and associated Environmental Impact Statement, Volumes I, II, and III.

Beaulieu, J. D. and Hughes, P. W., 1975, Environmental Geology of Western Coos and Douglas Counties, Oregon: Oregon Department of Geology and Mineral Industries Bulletin 87, 148 p.

Cissel, J.H., Anderson, P.D., Olson, D., Puettmann, K., Berryman, S., Chan, S., Thompson, C., 2006, BLM Density Management and Riparian Buffer Study: Establishment Report and Study Plan: US Geological Survey Scientific Investigations Report 2006-5087, 144p.

Haagen, J. T., 1989, Soil Survey of Coos County: United States Department of Agriculture Soil Conservation Service (Currently the Natural Resource Conservation Service), 269 p., Appendices

Johnson, D. R., Haagen, J. T., Terrell A. C., 2003, Soil Survey of Douglas county Area, Oregon: United States Department of Agriculture Natural Resource Conservation Service), 575 p

Niem, A.R. and Niem, W.A, 1990, Geology and Oil, Gas, and Coal Resources, Southern Tyee Basin, southern Coast Range, Oregon: Oregon Department of Geology and Mineral Industries Open-File Report O-89-3, 44 p.

APPENDIX G.: BOTANY

PRE-FIELD REVIEW

There are no Threatened or Endangered species known or suspected to occur in the project areas. Several sensitive vascular and nonvascular plant species are suspected to occur in the project area. This is due to the presence of potential habitat and the location of the propose project areas. Appendix Table 1 and Appendix Table 2 identifies Special Status Species that are suspected to have habitat within the proposed project area.

Surveys are conducted if sensitive vascular and nonvascular species are known or suspected to occur in a proposed project area, provided the plant species are practical to survey. Practical surveys substantially reduce the risk of unintentional loss of undiscovered sites. They also help to minimize ground disturbance activities potentially injurious in meeting species persistence objectives (USDI and USDA 2007). Surveys are not conducted for species that are considered impractical to survey for (USDI and USDA 2007). The project area has openings along the roads that contain marginal potential habitat for California globe mallow (*Iliamna latibracteata)*, a sensitive species (Oregon Natural Heritage Information Center [ORNHIC] 2007). California globe mallow occurs in two general areas near the towns of Powers and Remote. There is also minimal potential habitat for giant folded leaf (*Diplophyllum plicatum*), Sensitive status liverwort (ORNHIC 2007), and for *Bryoria subcana*, a sensitive status lichen (ORNHIC 2007). Populations of these species are located near the density management project areas. Potential habitat is determined by aerial photographic interpretation and review of information on each species habitat requirements. Habitat for fungi is marginally present for most of the project areas. The special status fungi species are considered impractical to survey. However, incidental finds can occur during the nonvascular surveys.

Recommended Surveys for Special Status Species Surveys on the Analysis Area

1. Survey for special status vascular plants on all units. There are eight Bureau Sensitive vascular plant species that are practical to survey for and that are suspected of occurring in the project area.
2. Survey for special status lichen and bryophyte surveys on all units. There are 26 Bureau Sensitive lichens and bryophytes that are practical to survey for and that are suspected of occurring in the project area.
3. Do not conduct fungi surveys on any of the units. Fourteen fungi species are suspected of occurring in the project area. However, these species are not considered practical to survey for (USDA and USDI 2000).

Survey Methods.

Field surveys for Special Status plant species (vascular plants, lichens & bryophytes) will be completed according to approved survey protocols. These typically involve using the intuitive controlled method where the likelihood habitats are surveyed more intensively than other areas within the project (Whiteaker *et al.*, 1998, USDI 1998, USDA 1997, USDA and USDI 1999 & 2007) Survey routes, dates of survey, and any suspected sites will be flagged in the field and recorded on data sheets and topographic maps.

Mitigation Methods

Management recommendations would be followed to protect microclimate and maintain local persistence of any Threatened or Endangered or Special Status plant species found in proposed project area (Castellano and O'Dell 1997, Brian *et al.* 2002, USDI and USDA 2007).

Bureau Sensitive Plant Species Known or Suspected to Occur in the North Soup and Blue Retro Density Management EA Areas

Surveys are recommended for some Bureau Sensitive species that are known or suspected to occur in a proposed unit. If a Bureau Sensitive species is known or suspected to occur in the project area but the management activity is not likely to impact the species, then surveys are not recommended. In addition, surveys are not recommended for species considered impractical to survey for (USDA and USDI 2000). Surveys are considered practical "if characteristics of the species (such as size, regular fruiting) and identifying features result in being able to reliably locate the species, if the species is present, within one to two field seasons and with a reasonable level of effort" (USDA and USDI 2000, Vol. 1 p. 479). Characteristics determining practicality of surveys include: "individual species must be of sufficient size to be detectable; the species must be readily distinguishable in the field or with no more than a simple laboratory or office examination for verification of identification; the species is recognizable, annually or predictably producing identifying structures; and the surveys must not pose a health or safety risk" (USDA and USDI 2000, Vol. 1 p. 479).

References cited are listed in the EA

Appendix Table 1: Vascular Plant Special Status Species Suspected to Have Suitable Habitat in Project Areas

*Scientific and Common Name	Documented (D) or Suspected (S)	Status/ practicality of surveys	Habitat	Likelihood of Occurring in the Project Area	Management Activity Likely to Impact Species if Found in Project Area	Survey Recommended (if habitat present, mgmt. activity likely to impact species)
Adiantum jordanii (California maidenhair fern)	S	Bureau Sensitive (surveys practical)	Perennial herb, moist shaded seeps, hillsides, or moist woods and forests, <1,200 m.	Moderate. Known from Bear Creek Rec. site T30S-R09W-9.	Yes.	Yes.
Carex gynodynama (wonderwoman sedge)	S	Bureau Sensitive (surveys practical)	Perennial, moist meadows and open forests, <600 m, Smith Pond off of Signal Tree road at T30S, R9W, Sec 3.	Low. The habitat this species prefers is scarce in the proposed project area.	Yes.	Yes.
Cimicifuga elata var. *elata* (tall bugbane)	S	Bureau Sensitive (surveys practical)	Perennial forb or herb, coniferous forest, north of Umpqua River, and east side of district, flowers June to early August.	Low. Present in the western hemlock forest association on Eugene and Roseburg BLM lands directly adjacent to Coos Bay BLM land.	Yes.	Yes.
Eucephalus vialis (=Aster vialis) Wayside Aster	S	Bureau Sensitive (surveys practical)	Dry, open oak or coniferous woods with Douglas-fir, golden chinquapin and Oregon white oak, edges between forest and meadow, 200 to 500 m in Lane, Douglas, and Linn Counties.	Low. It prefers areas with more light- openings in the forest along roadside, etc.	Yes.	Yes.
Iliamna latibracteata (California globe mallow)	S	Bureau Sensitive (surveys practical)	Perennial forb or herb, moist ground and stream banks, blooms June and July, Big Sandy Tie road at T28S, R10W, Sec 31; a site at T31S, R12W, Sec 17 was extirpated during culvert replacement in 1999.	Low. The only known site of this species on district is along the Big Creek mainline. It prefers areas with more light- openings in the forest, recent burns, roadsides, etc.	Yes.	Yes.
Pellaea andromedifolia (Coffee fern)	S	Bureau Sensitive (surveys practical)	Perennial forb or herb, fern, rocky outcrops up to 5900 ft, Cherry Creek Ridge at T27S, R10W, Sec 25, and Irwin Rocks.	Low. The habitat this species prefers is scarce in the proposed project area.	Yes.	Yes.
Polystichum californicum (California sword-fern)	S	Bureau Sensitive (surveys practical)	Perennial fern, woods, stream banks, shaded rocky outcrops, Pistol River T38S, R14W, Sec 22 and Indian Creek Road at T29S, R12W, Sec 24.	Low. The habitat this species prefers is scarce in the proposed project area.	Yes.	Yes.
Scirpus pendulus (drooping bulrush)	S	Bureau Sensitive (surveys practical)	Marshes, wet meadows, and ditches, 800 to 1,000 m, KM Ecoregion.	Low. The habitat this species prefers is scarce in the proposed project area.	Yes.	Yes.

*****Pre-disturbance surveys are recommended for bolded species.

Appendix Table 2: Non-Vascular Plant Special Status Species Suspected to Have Suitable Habitat in Project Areas

*Scientific Name	Plant Group	Documented (D) or Suspected (S)	Status/ practicality of surveys	Habitat	Likelihood of Occurring on the Project Area	Management Activity Likely to Impact Species if Found in Project Area	Survey Recommended (if habitat present, mgmt. activity likely to impact species)
Arcangeliella camphorata	fungi	S	Bureau Sensitive (surveys impractical)	Associated with pines, especially Douglas-fir and western hemlock, 200 to 950 m, March through November; known from Oregon (Benton, Coos, Curry, and Polk Counties), Washington (Clallam, Grays Harbor, and Jefferson Counties), British Columbia, and Mexico (State of Queretaro, under oaks); CR & KM Ecoregions and Washington.	Low-Moderate. Several sites have been found on district.	Yes.	No.
Boletus pulcherrimus	fungi	S	Bureau Sensitive (surveys impractical)	West side Cascades in Lane County, sporocarps usually solitary in association with mixed conifer (grand fir, Douglas-fir) and hardwoods (tanoak) in coastal forests.	Low. Recent site from Blacklock Point area of coastal Curry Co.	Yes.	No.
Bryoria subcana	lichen	S	Bureau Sensitive (surveys practical)	Coastal forest and high precipitation summit. Several Coos Bay BLM sites have been located; Species seem to prefer ridgelines.	Moderate. Several BLM sites located in 60yr. old+ Douglas-fir stands.	Yes.	Yes.
Calicium adspersum	lichen	S	Bureau Sensitive (surveys practical)	Growing on bark on boles of old growth conifer trees.	Low. There are very few legacy trees left on the project area.	Yes.	Yes.
Codriophorus depressus (Racomitrium depressum)	Moss	S	Bureau Sensitive	Forming mats on rocks in perennial or intermittent streams, and in the spray zone of waterfalls, between 400 and 11,000 feet elevation. Habitats are subject to scour at high water. Bednarek-Ochrya and Ochyra (2006) stress its occurrence in intermittent streams and other seasonally wet habitats that dry out by midsummer.	Low Habitat is scarce on project area	Yes.	No.
Cortinarius barlowensis	fungi	S	Bureau Sensitive (surveys impractical)	Coastal to montane mixed coniferous forests up to 4,000 feet elevation with western hemlock, Pacific Silver fir, Sitka spruce, and Douglas-fir. Known from Takenitch Lake in Douglas Co.	Low Habitat is scarce on project area	Yes.	No.
Cudonia monticola	fungi	S	Bureau Sensitive (surveys impractical)	Grows on spruce needles and coniferous debris, several district sites in the Burnt Ridge area, fruits in late summer and autumn.	Low Habitat is scarce on project area	Yes.	No.
Dermatocarpon mieophyllizum (=D. luridum)	lichen	S	Bureau Sensitive (surveys practical)	Occurs between 1,000-4,400 feet on rock and boulders in seepy terraces, slopes, and riparian edges with red alder, Douglas-fir and maple spp., and on granite rocks along stream edges hemlock and red cedar in riparian areas.	Low. Habitat is scarce on project area	Yes.	Yes.
Diplophyllum plicatum	liverwort	S	Bureau Sensitive (surveys practical)	Tree boles of western hemlock and red cedar in riparian areas.	Low. Several sites on district mainly in late-successional and old-growth stands.	Yes.	Yes.
Gomphus kauffmanii	fungi	S	Bureau Sensitive (surveys impractical)	Site located in Lut Hedden ridge area. Douglas-fir/hemlock/Grand fir zone in 50 year old stand with older remnant trees. Also known from South Slough.	Low-Moderate. One location in the Middle Umpqua River watershed has been found on district.	Yes.	No.
Heterodermia leucomela	lichen	S	Bureau Sensitive (surveys practical)	Wetter maritime, coastal western hemlock zone within highly oceanic northern temperate zone and appears to be restricted to twigs of Sitka spruce in sheltered, humid, foreshore situations.	Low. Habitat is scarce within project sites	Yes.	Yes.
Hypogymnia duplicata	lichen	S	Bureau Sensitive (surveys practical)	Mid-elevation moist western hemlock stands, old-growth Douglas-fir, mature western hemlock/Douglas-fir forest, moist Pacific silver fir or noble fir forests, Sitka spruce, riparian forest and later-successional forest along ridge-tops in Oregon Coast Range, also occurs on red alder in sedge-sphagnum bogs in Oregon Coast Range, elevation ranges from 1,100 to 5,450 feet.	Low. Habitat is scarce within project sites	Yes.	Yes.
Hypotrachyna revoluta	lichen	S	Bureau Sensitive (surveys practical)	Usually on bark and rarely on rock, Coast Range and immediate coast in OR, at Cape Arago, also from Rocky and Appalachian Mountains, east coast of Canada, Great Lakes area, and southwest border of US with Mexico.	Low. Habitat is scarce within project sites	Yes.	Yes.

*Scientific Name	Plant Group	Documented (D) or Suspected (S)	Status/ practicality of surveys	Habitat	Likelihood of Occurring on the Project Area	Management Activity Likely to Impact Species if Found in Project Area	Survey Recommended (if habitat present, mgmt. activity likely to impact species)
Leptogium cyanescans	lichen	S	Bureau Sensitive (surveys practical)	Tree bark of deciduous trees, but also occurs on juniper and western red cedar, decaying logs, and mossy rocks in cool, moist microsites, widely scattered. Location in CR Ecoregion in Lane & Lincoln counties ONLY.	Low. Habitat is scarce within project sites.	Yes.	Yes.
Leucogaster citrinus	fungi	S	Bureau Sensitive (surveys impractical)	Sub-surface soil. Roots of white fir, sub-alpine fir, shore pine, western white pine, Douglas-fir, and western hemlock,	Low. Has been found as far south as Douglas Co.	Yes.	No
Lobaria linita	lichen	S	Bureau Sensitive (surveys practical)	Mature to old growth forests, oak forests with rock outcrops, late-mature tan-oak and madrone forests, 1,800 to 6,700 ft; CR & WC Ecoregions	Low. Has been found as far south as Douglas Co.	Yes.	Yes.
Metzgeria violacea	liverwort	DU	Bureau Sensitive (surveys practical)	Hyper-maritime, on tree trunks, usually shaded, near coast; growing in dense mats or mixed among other bryophytes.	Low. Has been found at Spruce Reach Island and Catching Slough and inland on the Siuslaw NF	Yes.	Yes.
Niebla cephalota	lichen	S	Bureau Sensitive (surveys practical)	Coastal habitats but may extend up to 15 miles inland where influenced by the coastal fog belt, occurs on exposed trees, shrubs, and less often on rocks, rock or bark; known from northern CA, Oregon coast (North Spit), and part of WA coast' CR Ecoregion.	Low. Habitat is scarce within project sites.	Yes.	Yes.
Phaeocollybia californica	fungi	S	Bureau Sensitive (surveys impractical)	Mature and old-growth, Douglas-fir forests, associated with the roots of oak, Pacific silver fir, Sitka spruce, Douglas-fir, and western hemlock, three known sites on district.	Low. Of the three known sites on district, one was in a thinning unit.	Yes.	No.
Phaeocollybia dissiliens	fungi	S	Bureau Sensitive (surveys impractical)	Mature and old-growth Douglas-fir forests, associated with the roots of Pacific silver fir, Sitka spruce, Douglas-fir, and western hemlock	Low. Known sites on district include sites found in thinning units.	Yes.	No.
Phaeocollybia olivacea	fungi	S	Bureau Sensitive (surveys impractical)	In mixed woods and under conifers in southern OR and N. Cal. Form ectomycorrhizal associations with Douglas-fir, western hemlock, and Sitka spruce. Scattered to densely gregarious. 20+ sites known from Coos Bay BLM lands. Fruits from mid-November through mid-December.	Medium. Known sites on district include sites found in thinning units.	Yes.	No.
Phaeocollybia oregonensis	fungi	S	Bureau Sensitive (surveys impractical)	Associated with the roots of Pacific silver fir, Douglas-fir, and western hemlock; one site on district in a >200 year old Douglas-fir forest.	Low.	Yes.	No.
Phaeocollybia pseudofestiva	fungi	S	Bureau Sensitive (surveys impractical)	Mature and old-growth Douglas-fir forests, scattered to dense clumps under mature, mixed conifers and hardwoods, several sites on district, fruits October through December. 10+ sites on Coos Bay BLM lands.	Medium. Known sites on district include at least one site found in a thinning unit.	Yes.	No.
Phaeocollybia scatesiae	fungi	S	Bureau Sensitive (surveys impractical)	Mature and old-growth Douglas-fir forests, associated with the roots of spruce, Sitka spruce, and *Vaccinium* species, 0 to 1,250 m;	Medium. Known sites on district include at least one site found in a thinning unit	Yes.	No.
Phaeocollybia sipei	fungi	S	Bureau Sensitive (surveys impractical)	40 year old plantations to >400 year old-growth forests, associated with the roots of Pacific silver fir, Douglas-fir, and western hemlock; many sites on district, fruits in October and November. 25+ sites on Coos Bay BLM lands.	Medium. Known sites on district include several sites found in thinning units.	Yes.	No.
Phaeocollybia spadicea	fungi	S	Bureau Sensitive (surveys impractical)	40 year old plantations to >200 year old old-growth Douglas-fir forests and in mature Sitka spruce stands in coastal lowlands regions; solitary to scattered to closely gregarious. 35+ sites on Coos Bay BLM lands.	Medium. Known sites on district include several sites found in thinning units.	Yes.	No.
Porella bolanderi	Liverwort	S	Bureau Sensitive (surveys practical)	On outcrops and boulders (limestone, silica, serpentine, or sandstone), soil, and epiphytic on oaks, myrtlewood, bigleaf maple, Douglas-fir, Shasta red fir, redwood, and ponderosa pine; commonly at 100-750 m but known from 0 to 2,000 m; KM & WV Ecoregion	Low.	Yes.	Yes.

*Scientific Name	Plant Group	Documented (D) or Suspected (S)	Status/ practicality of surveys	Habitat	Likelihood of Occurring on the Project Area	Management Activity Likely to Impact Species if Found in Project Area	Survey Recommended (if habitat present, mgmt. activity likely to impact species)
Ramaria largentii	fungi	S	Bureau Sensitive (surveys impractical)	Associated with spruce, western white pine, Douglas-fir, and western hemlock,	Low	Yes.	No.
Rhizopogon exiguus	fungi	S	Bureau Sensitive (surveys impractical)	Mainly grows close to coast. Known site near Mapleton, on the Siuslaw NF. Hypogenous fungi in coniferous forest, CR & KM Ecoregion.	Low. Habitat is present and it occurs in coniferous forest near Mapleton on the Siuslaw NF.	Yes.	No.
Schistostega pennata	moss	S	Bureau Sensitive (surveys impractical)	Mineral soil in shaded pockets of overturned tree roots, often with shallow pools of standing water at the base of the root wad: attached to rock or mineral soil around the entrance to caves, old cellars, and animal burrows: CR & WC Ecoregions.	Low.	Yes.	No.
Sowerbyella rhenana	fungi	S	Bureau Sensitive (surveys impractical)	Groups in duff of moist, undisturbed mature conifer forests, one collection from a tan oak stand in Curry County; CR & WC Ecoregions. Fruits October through December. One site on Coos Bay BLM lands.	Low. Known on Coos Bay BLM lands from a tan oak stand in Curry Co.	Yes.	No.
Tayloria serrata	moss	S	Bureau Sensitive (surveys practical)	Grows on humus and animal dung; KM, WV, & WC Ecoregions.	Low.	Yes.	Yes.
Tetraphis geniculata	moss	S	Bureau Sensitive (surveys practical)	Found on down logs in late-successional conifer forests in W. OR and WA.	Low. Few pockets of remnant legacy trees on proposed thinning units & some large down wood throughout the project area.	Yes.	Yes.
Tetraplodon mnioides	moss	S	Bureau Sensitive (surveys practical)	In the Pacific Northwest, forming stiff, densely-packed sods on old carnivore dung, or soil and rotten wood enriched by dung, on roadsides, trails, in dry to moist coniferous forest of various age classes	Low. *Tetraplodon mnioides* has a fairly broad ecological tolerance	Yes.	Yes.

*Pre-disturbance surveys are recommended for bolded species.

Appendix Table 3: Survey Times when Bureau Sensitive Species Are Identifiable

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Adiantum jordanii						■	■	■	■			
Bryoria subcana	■	■	■	■	■					■	■	■
Calicium adspersum	■	■	■	■	■					■	■	■
Carex gynodynama						■	■	■	■			
Cimicifuga elata var. elata						■	■	■	■			
Diplophyllum plicatum	■	■	■	■	■					■	■	■
Eucephalus vialis						■	■	■	■			
Iliamna latibracteata						■	■	■	■			
Lobaria linata	■	■	■	■	■					■	■	■
Metzgeria violacea	■	■	■	■	■					■	■	■
Pellaea andromedifolia						■	■	■	■			
Polystichum californicum						■	■	■	■			
Porella bolanderi	■	■	■	■	■					■	■	■
Schistostega pennata						■	■	■	■			
Scirpus pendulus						■	■	■	■			
Sidalcea malviflora ssp. patula						■	■	■	■			
Tayloria serrata	■	■	■	■	■					■	■	■
Tetraphis geniculata	■	■	■	■	■					■	■	■
Tetraphis geniculata	■	■	■	■	■					■	■	■