United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Salem District Office
1717 Fabry Road S.E.
Salem, Oregon 97306

IN REPLY REFER TO: 1790 (085)

FEB 1 1 2003

Beck Road Oregon White Oak Restoration Demonstration Project
ENVIRONMENTAL ASSESSMENT NO. OR080-02-12

Dear Reviewer:

The Bureau of Land Management, Marys Peak Resource Area, invites you to review the Beck Road Oregon White Oak Restoration Demonstration Project Environmental Assessment (EA) and Finding of No Significant Impact (FONSI). This document describes the issues and analyzes the probable impacts from the proposed project. The EA and FONSI are available for review at the Salem District office and on the internet at Salem BLM's website, http://www.or.blm/salem (under Planning).

The proposed project is located in Polk County at T.6 S., R.6 W, Section 35, about 16 miles west of Salem, near Highway 22. Located in the North Coast Adaptive Management Area, a key objective of the project is to practice adaptive management by designing treatments as an experiment, and demonstrating the tested techniques. The 28 acre project would test methods for restoration of Oregon white oak by removal of conifer trees that are currently overtopping oaks, by regenerating oak trees, and reducing tree density. Prescribed fire and noxious weed treatments will be used to maintain native understory vegetation. The objectives of the project are to restore abundance and health of oaks on the site and to restore an open woodland stand structure. Commercially valuable conifer trees would be removed using a ground-based mechanized harvesting system.

We are interested in hearing from you and ask that you provide us with your comments by March 13, 2003. Please respond by then so a final decision can be made on the action. Comments specific to the alternatives and assessment of potential environmental effects would be the most helpful.

If you have questions about the environmental assessment, please call Hugh Snook at (503) 315-5964. Please send your written comments to Field Manager, Marys Peak Resource Area, Salem District Bureau of Land Management, 1717 Fabry Road S.E. Salem, Oregon, 97306.

Sincerely,

Cindy Enstrom

Cindy Enstrom
Field Manager
Marys Peak Resource Area

***Note:** Comments, including names and addresses of respondents, will be available for public review at the same time as the EA from 7:30 a.m. to 4:00 p.m, Monday through Friday, except holidays. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for review in their entirety.

United States Department of the Interior
Bureau of Land Management
Salem District Office, Marys Peak Resource Area

ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT FOR BECK ROAD OREGON WHITE OAK RESTORATION DEMONSTRATION PROJECT

EA NUMBER : OR-080-02-12
PREPARED BY: Hugh Snook, Team Lead
AREA ENVIRONMENTAL COORDINATOR: Carolyn Sands

SUMMARY: This document is an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for a proposed Fiscal Year 2003/2004 Oregon white oak (*Quercus garryanna*) restoration project. The objectives of the project are to restore abundance and health of oaks on the site, to practice adaptive management by designing treatments as an experiment, and to use the area as a demonstration site for tested techniques. The project area is located in T.6 S., R.6 W, Section 35, Polk County, about 16 miles west of Salem, near Highway 22.

Three alternatives are presented.
Alternative 1 is the "No Action" alternative. All of the proposed treatments would be deferred.

Alternative 2, the proposed action. Conifer trees would be cleared around oak trees sufficiently to fully release them, both oak and conifer would be widely thinned, conifer would be cut in small patches to allow planting of oak, noxious weeds would be controlled by a variety of methods, fuel would be reduced by piling and burning, and prescribed fire would be used periodically. The effects on oak under 3 levels of conifer removal would be studied, and monitoring would occur. About 750' of temporary road would be built, and approximately 450 thousand board feet (450 MBF) of Douglas-fir, grand fir, and maple would be removed using a ground-based mechanical harvesting system.

Alternative 3. Conifer trees would be cleared around oak trees to release them for a few decades, both oak and conifer would be thinned, the conifer not as widely as in Alternative 2, noxious weeds would be controlled by a variety of methods, and fuel would be reduced by piling and burning. The effects on oak under 3 levels of conifer removal would be studied, and monitoring would occur. About 750' of temporary road would be built, and approximately 350 thousand board feet (350 MBF) of Douglas-fir, grand fir, and maple would be removed using a ground-based mechanical harvesting system.

For further information contact:

Hugh Snook, Ecologist
Salem District BLM
1717 Fabry Rd. SE
Salem, Oregon 97306
Phone# 503-315-5964

Comments regarding this Environment Assessment and the Finding of No Significant Impact should be received by the BLM, Marys Peak Resource Area by **March 13, 2003.**

FINDING OF NO SIGNIFICANT IMPACT

Introduction

The Bureau of Land Management (BLM), Marys Peak Resource Area has analyzed the potential effects of a project to release and regenerate Oregon white oak, reduce density of conifers, treat invasive weed species, and prescribed burn in upper Salt Creek (T.6 S., R.6 W, Section 35, Willamette Meridian) of the Yamhill River Watershed, Polk County, Oregon. The action described in this environmental assessment (EA) is intended to restore oak savanna and oak-conifer woodland as it appears to have existed over 100 years ago in the project area, and is designed as a learning and demonstration opportunity within the North Coast Adaptive Management Area. The action would meet the needs for forest habitat as identified in the *Salem District Record of Decision and Resource Management Plan* (*RMP*, May 1995; see pp. 1 and 2). The EA is attached to and incorporated by reference in this FONSI determination.

This FONSI and the EA are being made available for public review prior to making a decision on the action. The public notice of availability for review will be published in the Dallas, Oregon *Polk County Itemizer-Observer* and through notification of interested individuals, organizations, and state and federal agencies. They will also be available for review on the internet at this address: http://www.or.blm/salem (under Planning).

Finding of No Significant Impact Determination

Based on the analysis of information in the attached EA, my determination is that a new environmental impact statement or supplement to the existing *FEIS* is unnecessary and will not be prepared. The proposed action would not result in significant environmental impacts affecting the quality of the human environment greater than those addressed in the existing *FEIS*.

Finding Rationale

Under the alternatives analyzed, significant impacts on the quality of the human environment would not occur based on the following criteria:

1. The alternatives are in conformance with the following documents that provide the legal framework for management of BLM lands in the Marys Peak Resource Area:

- *Record of Decision and Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (January 2001) and the *Final Supplemental Environmental Impact Statement For Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (*S&M FSEIS*, November 2000).

- *Salem District Record of Decision and Resource Management Plan* (*RMP*, May 1995).

- *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement* (*FEIS*, September 1994).

- *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (April 1994) and 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* (SEIS, February 1994).

2. The action would be consistent with the Aquatic Conservation Strategy Objectives (See Appendix 1, Aquatic Conservation Strategy Objectives Review Summary).

3. The proposed action and alternatives are in conformance with the *RMP*, which describes the general management objectives, land use allocations, and management actions/ direction for BLM-administered lands in the Marys Peak Resource Area

4. The alternatives are consistent with other federal agency and State of Oregon land use plans and with the Polk County land use plan and zoning ordinances. Any permits associated with the implementation of this project would be obtained and requirements would be met.

5. There are no flood plains, or prime or unique farmlands within the sale area.

6. No known cultural resources or paleontological resources occur in the project area. A pre-harvest survey has been completed using intuitive meander survey, in November 2002, according to *Protocol For Managing Cultural Resources on Lands Administered by the BLM in Oregon, Appendix D* dated August 5, 1998.

7. The proposed project would not affect suitable habitat for the northern spotted owl or marbled murrelet, and is a "no affect" determination for both of these listed species. Suitable habitat for bald eagle, red tree vole, and Oregon Megomphix snail would not be affected. The Biological Evaluation (October 2002) for this project is found in the Beck Road analysis file. All applicable mitigation measures from the Biological Evaluation have been incorporated into the project design features for this proposed action.

8. This 28-acre project area is very flat. A stream flowing through the extreme northwest corner is buffered with a 210 foot no-cut buffer. Due to the shallow slopes, distance to streams, and a seasonal restriction of ground-based yarding, this project will have no affect on local stream habitat and the aquatic environment. Listed fish (Upper Willamette River Steelhead and Chinook) are downstream at least 14 miles. Listed fish within the Willamette Valley will not be affected by the proposed action. The Fish Biologist's report is in the Beck Road analysis file.

9. The proposed action is outside the coastal zone as defined by the Oregon Coastal Management Program. However, this proposal is consistent with the objectives of the program, and the state planning goals which form the foundation for compliance with the requirements of the Coastal Zone Act. Management actions/direction found in the RMP were determined to be consistent with the Oregon Coastal Management Program.

10. No hazardous materials or solid waste would be created in the sale area.

11. The sale area does not qualify for potential wilderness nor has it been nominated for an Area of Critical Environmental Concern.

12. Project design features would assure that potential impacts to water quality would be in compliance with the State of Oregon In-stream Water Quality Standards and thus the Clean Water Act.

13. The smoke generated from prescribed burning would be within the standards set by the Oregon Smoke Management Plan, which considers national air pollution standards and complies with the Clean Air Act.

14. In accordance with the RMP (see pp. 21-22), the amount of late successional forest (i.e., 80 years and older) on federal lands was determined for the Salt Creek/South Yamhill River Watershed. Federal land makes up only 87 acres of the 63,143 acre analysis area, and no 80+ forest age classes occur on those federal lands. No stands that are currently late-successional forest would be affected by this action. The "15% Analysis" report, March 15, 1999, is in the Beck Road analysis file.

15. The actions are local in nature; potential adverse impacts would be short-term. Impacts were determined based on research, observation, professional training, and experiences by the inter-disciplinary team of natural resource specialists. Determining such environmental effects reduces the uncertainties to a level that does not involve highly unknown or unique risks. The design features identified in the EA would assure that no significant site-specific nor cumulative impacts would occur to the human environment other than those already addressed in the S&M FSEIS, FEIS and SEIS.

16. The purpose of the project and the proposed implementation methods are not likely to be highly controversial. Issues found in the scoping process were local, specific and not controversial; general support was encountered for the project. Similar recent projects within the region have not created high levels of controversy.

17. A decision regarding this project does not establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration. While future management on this sites and similar sites may be influenced by the results or knowledge gained by this decision, future management actions will undergo separate analyses that include a full range of alternatives.

Cindy Enstrom
Marys Peak Field Manager

2/7/2003
Date

Comments regarding this environmental assessment should be received by the Bureau of Land Management, Marys Peak Resource Area, by March 13, 2003.

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ENVIRONMENTAL ASSESSMENT

INTRODUCTION

Context

Historical accounts and survey records from the General Land Office (1850-1854) describe vegetation conditions in the Cascade/Coast Range foothills dominated by Oregon white oak (*Quercus garryana*) savanna (defined as less than 30% tree cover) and mixed Douglas-fir (*Pseudotsuga menziesii*)/Oregon white oak forests. The Coast Range foothills west of Salem still contain remnants of this habitat, but it is much diminished from the past. Human action, such as fire suppression, urban and agricultural conversion, and past timber management activities, has contributed to the decline of oak woodlands and open Douglas-fir and oak mixed stands throughout its range. In fact, a report published by the USGS National Biological Survey estimates that 99.5% of the Willamette Valley and foothills oak savanna and native grasslands have been lost (Noss, et al. 1995).

Government and conservation organizations have recognized the importance of this diminished ecosystem. The Oregon Natural Heritage Program has identified these ecosystems as a "high priority", and rated them at the highest level of threat of loss (globally and statewide category 1) (ONHP Advisory Council, 1996). The Oregon Biodiversity Project, an analysis conducted by Defenders of Wildlife (1998), identifies oak savanna and woodlands as a conservation priority in the State. The Nature Conservancy, in a report funded by the Environmental Protection Agency wrote: "For upland communities, greatest losses [of rare plants and animals] have occurred in savanna and dry prairie. The greatest number of rare upland plants and animals occur in these habitats." (Titus, 1996). In turn, the disappearance of these habitats has contributed to declines in native flora and fauna (Chiller et al. 2000, pp. 29-34, 41-45). Approximately 140-200 species of wildlife and 90 species of plants are associated with oak savannas and woodlands (Brown, 1985 and Oregon Department of Fish and Wildlife, 1994).

A very small percentage of present or former oak savanna and woodland occurs on Federal lands, approximately 96% of it is in private ownership. On the 128,000 acre Marys Peak Resource area on the Salem District BLM, approximately 600 acres, or .5% of the land base contains Oregon white oak. An assessment of oak resources in the Eugene District BLM found few oak forests or woodlands and noted that Douglas-fir is dominating stands that had been oak-conifer woodlands or savannas (Chiller et al. 2000, pp. 37-38).

Much of the decrease of Oregon white oak habitat is due to interruption of historic disturbance processes, particularly fire, that favored oak over later-successional species such as Douglas-fir. Typical of many Oregon white oak savannas and woodlands, the Beck Road project area has become dominated over time by Douglas-fir, and the remaining oak trees are in serious decline.

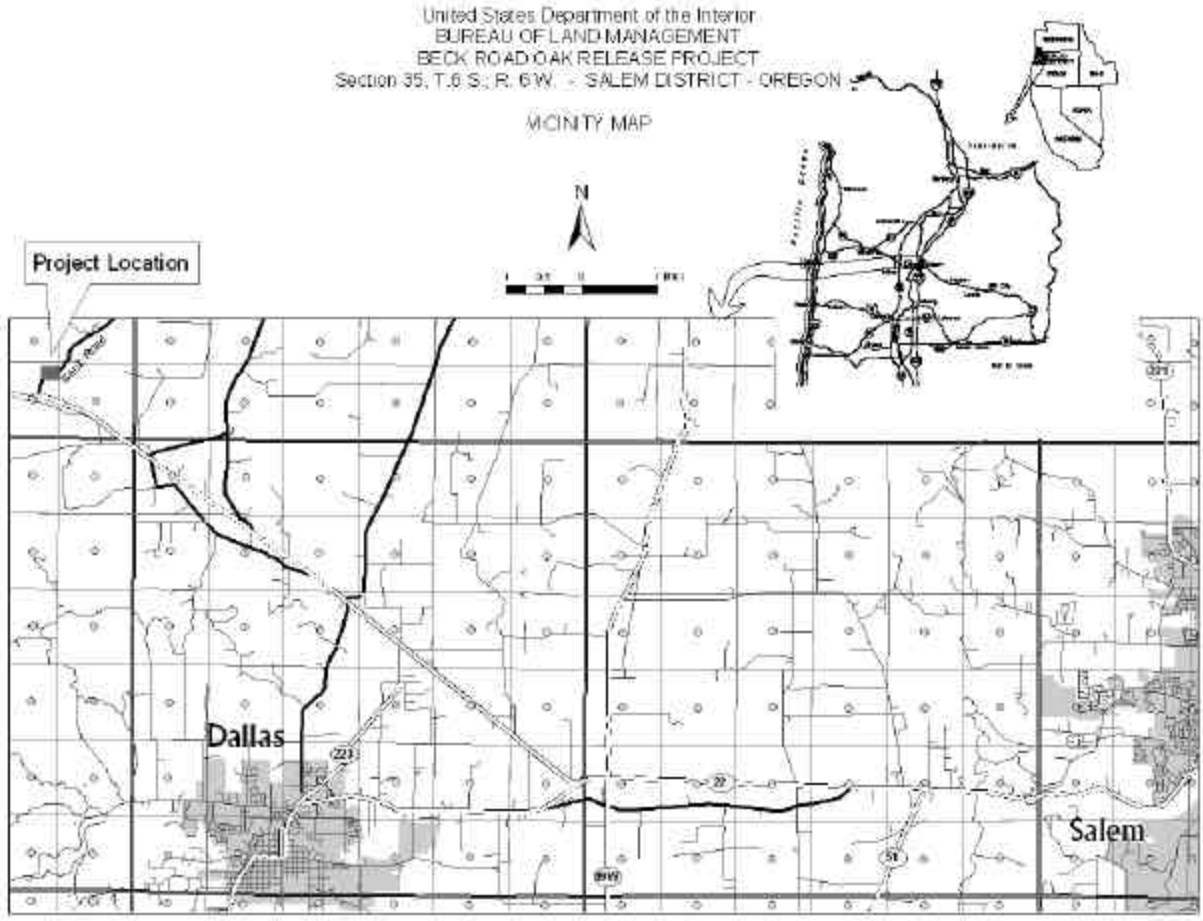


Figure 1. *Vicinity map of the Beck Road Oak Restoration Project Area, west of Salem, Oregon.*

Project Area

This action proposes a restoration demonstration project in an approximately 28 acre project area located in Section 35, Township 6 South, Range 6 West, Willamette Meridian, Polk County, Oregon, in the Marys Peak Resource Area of the Salem District of the Bureau of Land Management (BLM). The land use allocation is Adaptive Management Area.

Oaks established as early as 1780 remain on the site, but are generally suppressed and have poor crowns. Currently, the stand is dominated by dense Douglas-fir. The oaks generally have poor crowns due to crowding, and many have died.

Oak and conifer stand structure and equestrian trail in the project area.

I. PURPOSE AND NEED FOR THE ACTION

A. The Purpose

The purpose of the action is to restore oak savanna and oak-conifer woodland as it appears to have existed over 100 years ago in the project area – conditions that were historically typical of the Willamette Valley foothill ecosystem under a regime of frequent, low-intensity fire; to design treatments as an experiment to learn about efficacy and effects of the treatments, and to provide a site to demonstrate the implementation and results of such restoration techniques.

Specific Objectives are to:

- Improve the vigor, crown ratio, and crown shape of oak trees
- Increase the abundance and distribution of oak in the stand
- Reduce the density of Douglas-fir to re-create stand structure more similar to 'woodland'
- Test effectiveness of various levels of competition removal to release oak
- Test effectiveness of oak regeneration methods
- Collaborate with researchers, local government, and the public to design, conduct and learn from the action
- Make available commercially viable timber resulting from the project
- Maintain native species vegetation and early seral vegetation conditions through control of invasive species and the use of prescribed fire

B. The Need

The need for the action is to restore and maintain special habitats as directed by the *Salem District Record of Decision and Resource Management Plan* (RMP, P. 26), and to identify and implement adaptive management actions in the North Coast Adaptive Management Area (NCAMA), and to carry out cooperative projects with county governments under title II of Public Law 106-393 (the Secure Rural Schools and Community Self-Determination Act of 2000).

An inventory of Oregon white oak habitat on Marys Peak Resource Area identifies the project area as one of the highest priorities for restoration, in part due to the urgency of releasing overtopped oaks before they are lost.

The Marys Peak Resource Area has identified a need to more aggressively pursue opportunities to conduct adaptive management in the North Cascades Adaptive Management Area, and this site appears to be very suitable. Conditions found in the project area are very conducive to studying oak ecosystem dynamics, findings are applicable to similar sites, and the location is excellent for demonstration purposes.

In 2002, a proposal for ecosystem restoration on this site was selected by the Salem District Resource Advisory Committee for funding through Title II of Public Law 106-393 for the County of Polk. Federal land managers are committed to implementing projects selected through Title II, subject to NEPA and other requirements.

C. Management Objectives

1) *Salem District Record of Decision and Resource Management Plan* (RMP) directs that wildlife habitat be managed to maintain and enhance biological diversity and ecosystem health (RMP, p.24).

2) The RMP directs that special habitats, (such as oak savanna), be identified and relevant values determined for protection or management. It also directs that management practices, including fire, be used to obtain desired vegetation conditions in special habitats (RMP, p.26).

3) The RMP directs that state listed special status species (five are associated with oak habitat) and their habitat be managed for conservation, and to "study, maintain or restore community structure, species composition, and ecological processes of special status plant and animal habitat." (RMP p. 28).

4) The project area is within the North Coast Adaptive Management Area, established in the *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* (known as the Northwest Forest Plan, USDA, USDI, 1994) for the specific purpose of "restoration and maintenance of late-successional forest, conservation of fisheries habitat and biological diversity. The objective of the land use allocation is to establish areas within each physiographic province of the Northwest Forest Plan area where new approaches to public forest land management are to be developed and tested using principles of adaptive management. Adaptive management consists of three basic steps:

- conscious experimentation in the design of activities
- careful monitoring of effects
- adjustment of practices, based on what was learned (USDA, USDI, 1997).

The specific Adaptive Management Area objective targeted in the proposed action is to test a new approach to restoring special habitat that may help to maintain biological diversity.

Other Management Direction

The project area is included by definition in the RMP as a rural interface area (areas of private land zoned for 1-40 acre lots with homes adjacent to BLM-administered lands). Specific design features, mitigation, and monitoring are prescribed for these areas to reduce impacts to health, life, property and quality of life (RMP p. 39, J-14).

The project area lies within the Salt Creek subwatershed of the Yamhill River. This small and isolated tract was not included in any federal watershed analysis effort. It is adjacent to the Mill Creek/ Rickreall Creek/ Rowell Creek/ Luckiamute River Watershed,

for which a watershed analysis was prepared in 1998. The project area does not include any Riparian Reserves. An intermittent stream and the associated Riparian Reserve (one site potential tree, or 210 feet slope distance, in conformance with the RMP, p. 10) in the extreme northwest corner of the parcel of Federal land is excluded from the project area.

D. Tiering and Conformance with Land Use Plan

This (EA) is tiered to the *Salem District Record of Decision and Resource Management Plan* (RMP, May 1995) and the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement* (FEIS, September 1994). The FEIS analyzed broad scope issues and impacts within the President's direction to meet the need for forest habitat and forest products (p. 1). The RMP provides a comprehensive ecosystem management strategy for BLM-managed lands in the Salem District in strict conformance with the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (ROD, April 1994). All alternatives presented within this EA describe various forest management and road construction activities that are in compliance with the RMP and ROD. However, because the project area has been identified as a special habitat, management direction that pertains to development of late-successional and old-growth conifer forest habitat is not applicable, such as standards for coarse woody debris and snags (RMP pp. 20 and 21). (Rationale appears in Chapter 2, Alternatives).

The Proposed Action and alternatives are in conformance with the *Record of Decision and Standards and Guidelines for Amendment to the Survey & Manage Protection Buffer, and other Mitigation Measures Standards and Guidelines* (S&M ROD, January 2001) and the *Final Supplemental Environmental Impact Statement For Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Standards and Guidelines* (S&M FSEIS, November 2000), as amended by Table 1-1 (in Beck Road analysis file) in IM no. OR-2002-064, June 14, 2002.

This EA is also tiered to the *Western Oregon Program-management of Competing Vegetation Final Environmental Impact Statement*, VMFEIS (February 1989) and the Western Oregon Program-Management of Competing Vegetation Record of Decision (August 1992). The VMFEIS analyzed broad scope issues and impacts for an integrated vegetation management strategy consisting of various treatments and the decision document identifies treatments and provides processes to meet vegetation management objectives (p. 3) and resource management goals (p.33).

This EA is also tiered to the *Northwest Area Noxious Weed Control Program Final EIS* (USDI, 1985) and the associated Record of Decision (USDI, April 7,1986), and the *Supplement to the Northwest Area Noxious Weed Control Program* (USDI, March 1987) and its associated Record of Decision (May 5, 1987). This EA analyzes vegetation management treatments such as prevention and control of noxious weeds, site preparation, and reforestation in the proposed project area.

The EA is a site-specific analysis of the proposed action and alternatives prepared under general management guidance provided in the RMP. Additional site-specific information

is available in the project analysis file. This file and the above referenced documents are available for review at the Salem District Office.

E. Scoping

Efforts to involve the public in planning for the proposed action were as follows:

- The general area was allocated Adaptive Management Area in the *RMP* and the *ROD*. These documents were widely circulated in the state of Oregon and elsewhere, and public review and comment were requested at each step of the planning process.

- A public meeting regarding the project was announced by mail and newspapers in mid-June, 2002. Adjacent landowners were contacted by phone to obtain addresses and to announce the meeting. The meeting was held July 10, 2002 at the Buell grange. Six people attended.

- A description of the proposal was included in the Salem Bureau of Land Management *Project Update* and mailed in July, 2002 to more than 1200 individuals and organizations on the mailing list.

- A legal notice announcing availability of the EA for public review and comment will be submitted to the *Polk County Itemizer-Observer*.

- Copies of the EA are being mailed to individuals, interest groups and agencies who responded to initial public input.

- The EA and FONSI are available for review on the internet at Salem BLM's website, http://www.or.blm/salem (under Planning).

- The Oregon State University Polk County Extension Forester visited the site on June 26, 2002, with interdisciplinary team members. The purpose of the visit was to assess opportunities for demonstration of practices relevant to private landowners and include those in the project design.

- Use of Beck Road, maintained by Polk County, was coordinated with Polk County Government, August 2002. A road use permit will be issued.

- Researchers at Oregon State University involved with native species restoration were consulted in June, 2002, and kept informed throughout the planning process.

- Constance Harrington, a researcher from the USDA Forest Service PNW Experiment Station at Olympia Washington visited the site on June 26, 2002. She is conducting research on release response of Oregon white oak at Ft. Lewis military reservation. The purpose of the visit was to learn from her work, and examine opportunities for including her experimental design in this project design.

- Natural resource managers at Benton County Parks and Recreation, Oregon Army-National Guard, and the U.S. Fish and Wildlife Service, who have developed similar restoration projects, were consulted with in June, 2002.

- Distribution of information and issue scoping was disseminated to a large group of landowners, state and local government, academia, and conservation organizations on "Oregon Oaks Group" listserver, through e-mail.

- A letter was mailed to interested parties on July 22, 2002 outlining the proposed action and requesting initial public input.

The following concerns surfaced from internal and external scoping. None of them developed into significant issues that drove development of alternatives to address them.

How will actions affect Oregon white oak abundance and condition and Douglas-fir density?
Elements of this issue include Oregon white oak condition (crown size and shape, growth, and vigor), distribution on the parcel, competition between oak and Douglas-fir, and competition among oak.

How would restoration activities affect native species and the spread of unwanted vegetation?
Noxious weeds, alien and invasive species, including Scot's broom, St. Johns wort and Himalayan blackberry, are present in the project area and could be increased by restoration treatments, especially those that involve soil disturbance. Elements of the issue include changes in distribution and density of noxious weeds and native species, and the effects of treatments to manage them.

How much fuel would be created by restoration activities, and how would fuel treatment methods and the reintroduction of fire affect air quality, soil, and vegetation?
The amount and distribution of fuels created by tree removal would vary by alternative.

How would restoration activities in the rural interface area affect adjacent landowners and the recreational and aesthetic qualities of the site?
One of the adjacent landowners operates a boarding stable. The project area contains a bridle path used by the stable's clients. Adjacent landowners in general take a high interest in the condition and management of the site. One landowner has indicated a concern for maintaining fences during logging operations on the site.

How would construction of temporary roads and ground-based yarding and decking of commercial timber affect soil and vegetation on the site?

Does retention and management of this parcel meet BLM land tenure adjustment objectives?
This parcel is identified in the RMP in Zone 3 land tenure class, with direction to "Retain lands with special resource values, …dispose of others" (RMP p. 53). Because of the identified special resource values of the site, the BLM will retain and manage this parcel.

Oak snags, such as this one, can be found in the project area resulting from oaks becoming overtopped and dying. Stand conditions have become quite dense.

II. ALTERNATIVES, INCLUDING THE PROPOSED ACTION

A. Introduction

This section describes alternatives identified by the interdisciplinary (ID) team that helped develop the proposed project. The scoping process did not reveal significant issues that drove development of alternatives. Design features in both alternatives address concerns that were found. An alternative to the proposed action was developed to consider a greater range of potential approaches, consistent with the goals of adaptive management.

Forest management treatments incorporated in the action alternatives conform with standard practices and design features intended to reduce the environmental effects. They comply with Best Management Practices (*RMP*, Appendix C) and the Standards and Guidelines specified in Appendix A of the *ROD.*

B. Alternatives

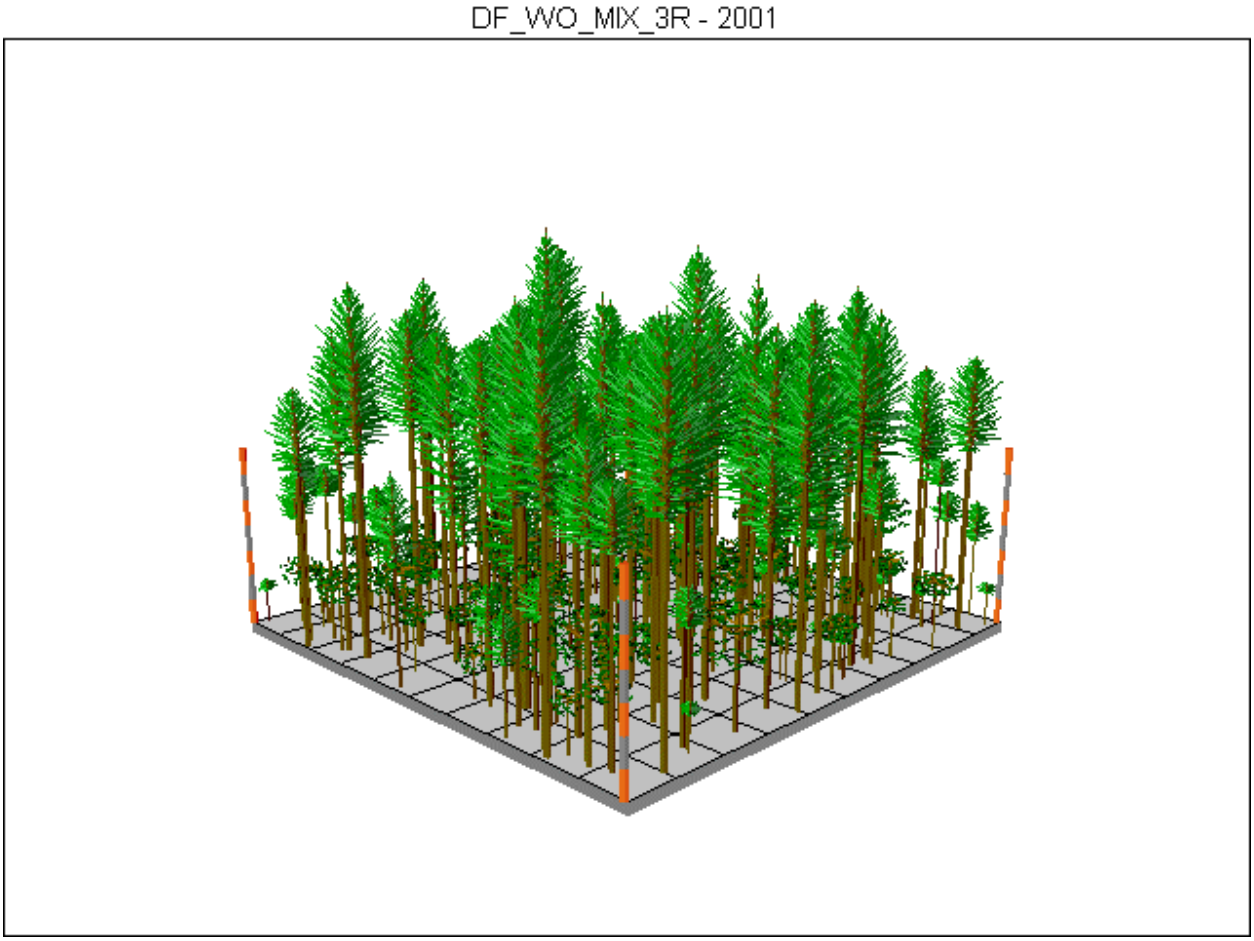
Table 1. Major Features of the Proposed Action and Alternatives

	Silviculture	Fuels	Noxious Weeds
Alternative 1 No Action	No action; continued succession to Douglas-fir and decrease in oak	no fuel created	no action
Alternative 2 (Proposed Action) Full Release Oak Restoration	Remove conifers from around oak, approx. distance of 30' radius around oak <7.9"; 60' around oak ≥8". Thin conifer areas to 40 trees/acre cutting trees < 20" diameter. Plant oak in three 1+ acre created openings. Cut vegetation on planting spots, protect seedlings with mulch mats and tubes. Remove most of the stand of 40 yr old fir trees to plant oak. Harvest commercial trees with a mechanical harvester/forwarder, using two landings located on either side of Beck Road, and a temporary road to access each (total 750 feet). Install 4 monitoring plots that measure oak and vegetation response to each of 3 treatments: full oak release, partial oak release, and control (12 total, 1/5 ac. ea.).	Hand pile and burn. Repeated prescribed burning at 3-5 year intervals, beginning within 1-5 years.	-Prior to conifer removal, hand cutting or pulling of Scot's broom, Himalayan blackberry, and St. Johns wort. -Sow red fescue and native species seed in disturbed areas. -Control by hand pulling, mowing, vinegar or heated foam application, goat browse or a combination.
Alternative 3 Partial Release Oak Restoration	Remove conifers from around oak, approx. distance of 15' radius around oak <7.9"; 30' around oak ≥8", but retain fir > 28". Thin conifer areas to 60 trees/acre cutting trees <18" diameter. Leave 25% more DF along trail. No oak planting. Thin stand of 40 year old fir trees to 30' spacing. Same logging system and temporary roads and landings as Alt. 2. Same monitoring plots as Alt. 2.	Hand pile and burn only.	same as Alternative 2

1. Alternative 1- No Action

This alternative would take no action at this time; all of the proposed treatments would be deferred.

Simulation of the stand appearance under Alternative 1 – No Action, using Stand Visualization System, based on stand data from the project area.



2. Alternative 2 (Proposed Action) - Full Release Oak Restoration

This alternative is designed to restore open oak woodland structure (30% or more tree cover) in areas of existing oak, reduce conifer density, and create three 1 acre openings to establish additional oak. It is expected that no further conifer removal would be necessary within 50 years to maintain Oregon white oak abundance and vigor, but additional entries (such as prescribed burning or weed control) could be needed to further meet restoration objectives.

The project map below shows the proposed (predominant, but variable) treatment types, and the temporary roads and landings needed to remove commercial trees. Three one-acre openings would be located within conifer areas.

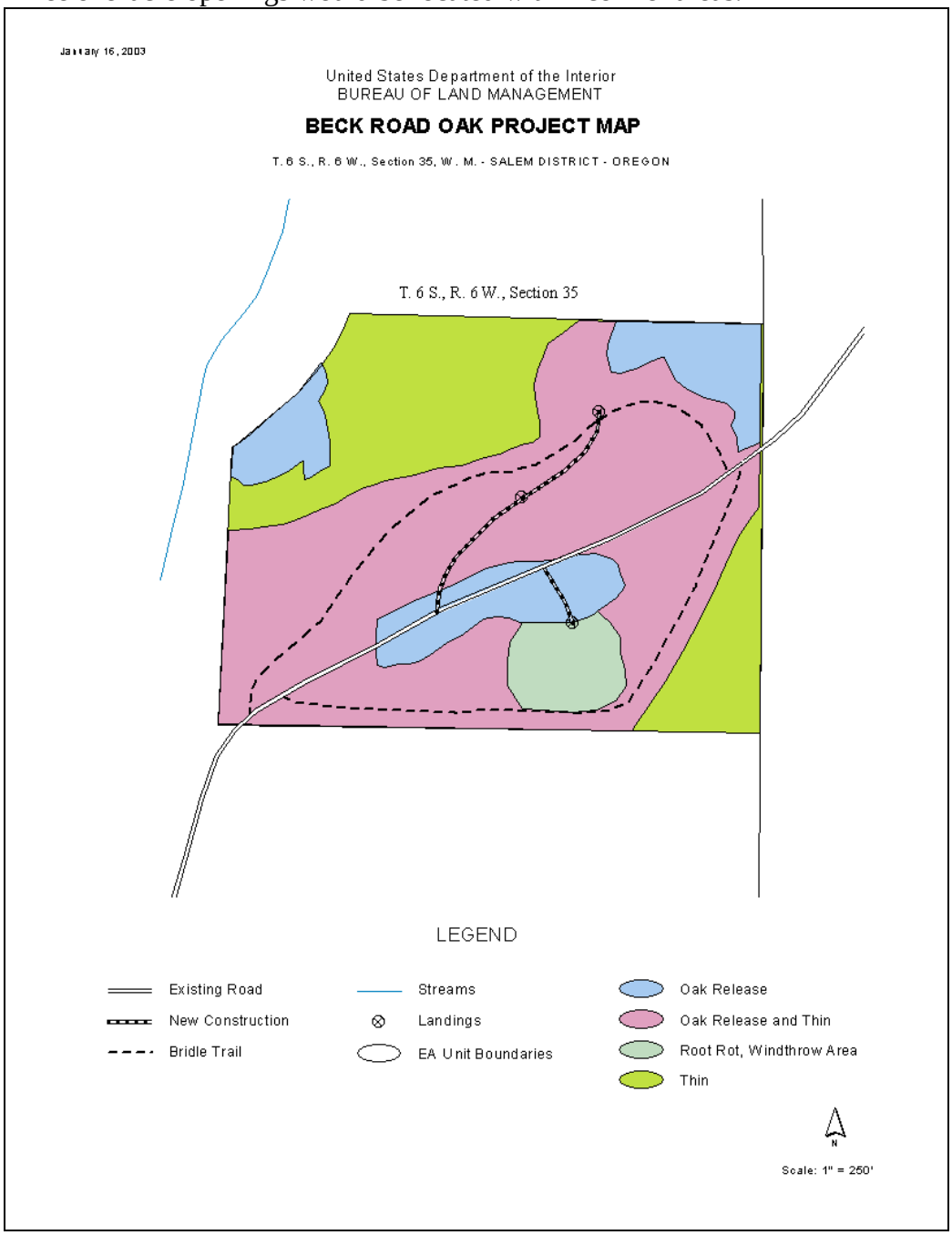


Figure 2. *Beck Road Alternative 2 and 3 Map* (See also Figure 4, stand type map)

Alternative 2 (Proposed Action) - Full Release Oak Restoration, continued

a. Silviculture

The silvicultural prescription includes:

- release of Oregon white oak,
- thinning of overstocked oak trees,
- thinning of conifers and bigleaf maple, and
- creation of openings for establishment of additional oak trees.

Trees immediately adjacent to improvements, fences, driveways or that appear to greatly contribute to visual quality or wildlife habitat may be left on a case-by-case basis, in both oak release and conifer thinning areas. Trees down to 1 inch diameter may be cut. Merchantable trees that are cut would be sold.

Silviculture – Oregon white oak release:

Douglas-fir, grand fir and bigleaf maple would be removed within 30 feet from around Oregon white oak 7.9 inches diameter at breast height (dbh) or less, and would be removed within 60 feet from around oak 8 inches dbh and greater. Trees that would be difficult to fell without injuring oak trees will be girdled and/or topped. Trees near the bridle trail and road would not be girdled.

Silviculture - Thinning of overstocked Oregon white oak

Oak regenerated in portions of the project area (totaling approximately 10 acres) at high density approximately 60 years ago. In the absence of frequent ground fire, thought to have provided a mechanism for thinning such stands in the past, the trees have remained at high densities. As a result, their crowns are small and they exhibit slow growth. Thinning is proposed to create open stand structure and wide crowns desired for wildlife habitat. Oak would be thinned, leaving the best-crowned trees at spacing equal to or greater than to their height.

Silviculture – Conifer & maple thinning:

Conifers that are not near any oak trees would be thinned to a variable density by removing trees between 1 inch and 20 inches dbh in size (leaving approximately 40 trees per acre). Bigleaf maple will be left at 1 tree per acre. Madrone and cascara trees will be retained. Thinning conifer using a diameter cut limit will create variable spacing, due to inherent variability in tree diameters.

Silviculture – Creation of openings/establishment of Oregon white oak trees:

Three openings would be created, one located in the extreme southeast corner and two in the northwest area of the parcel, 120-150 feet radius (1.0 - 1.25 acre). In the southeast corner, where dense 40-year-old Douglas-fir occur on an area of approximately 2 acres, trees would be retained at 30 foot spacing along the south and east property lines and outside the oak regeneration opening to be created there, selecting largest trees with highest crown ratios for retention.

Douglas-fir, grand fir, bigleaf maple and cherry trees less than merchantable size (1 foot in height to approximately 7 inches dbh) would be felled. Oak planting spots would be designated at 30 foot spacing within the three 1-acre created

Alternative 2 (Proposed Action) - Full Release Oak Restoration, continued

openings and within two to five sites (.25 to 1.0 acre in size) under varying density of remaining conifer. Brush would be cut within 16 foot radius of the planting area, and ground vegetation cleared within 24 inches of the planting spots. Oregon white oak seedlings would be planted in each spot. Competing vegetation would be reduced by placing 6 foot by 6 foot polyester blend mulch mats around the seedling and anchoring with small metal staples or pieces of wood. Tubes made from netting or translucent plastic, 3'-5' in height, anchored by a bamboo stake would be placed to protect the seedlings from browse. The tubes would remain in place for several years and removed when they have been outgrown.

Approximately twenty Oregon white oak less than 8 inches dbh would be felled to test efficacy of stump sprouting to regenerate oak. Trees would be selected from a range of conditions and sites to examine variables that may affect sprouting viability. Sprouts would be protected by tubes for several years, and would require periodic maintenance.

b. Demonstration Area/Monitoring Study Plan

Under the Salem District RMP, a representative sample of each project type is selected for monitoring project implementation for conformance with the RMP. This proposed project may or may not be selected for such monitoring.

Implementation monitoring, detailed in the silvicultural prescription, will take place to ensure that the project is implemented as designed.

To learn from the action, the project will include an experimental design modeled after the oak release study conducted at Fort Lewis, by the Olympia Forestry Sciences Lab (Harrington and Kern, 2002). Twelve long-term plots, about 1/5 acre in size, have been established to monitor the following response variables:

- Oak release (growth, crown width, epicormic branching, acorn production) in response to full conifer release, half conifer release, oak thinning, and control.
- Understory vegetation (species distribution, abundance, and height) in response to full release, half release, and control
- Photo points to monitor vegetation changes over time

Additional plots will be established as needed to measure the following variables:

- Stump sprout viability in response to source tree age and condition
- Planted oak seedling growth and survival in response to opening size and distance from conifer shade
- Noxious weed response to treatments

A complete monitoring and study plan will be prepared prior to implementation. The monitoring is primarily effectiveness and validation monitoring that will be used to evaluate additional treatments in the project area, and to develop future restoration projects. The area will serve to demonstrate practices applicable to

Alternative 2 (Proposed Action) - Full Release Oak Restoration, continued

public and private ownership with similar conditions and objectives.

An interpretive sign would be erected at the west entrance into the parcel on Beck Road to describe treatment methods and objectives. Walking tours would likely be conducted on the site to demonstrate the project design and results.

c. Yarding and Decking Trees

Merchantable trees (greater than or equal to 7 inches dbh) removed under the silvicultural prescription (and potentially future windthrow) would be yarded, decked and sold. If possible, non-commercial trees (less than 7 inches dbh, including conifer and hardwood) would be yarded to the landing and decked to reduce fuel levels. Non-commercial trees would be offered for firewood or post/pole use. A concentration of windthrown trees in the southeast will be yarded to facilitate weed control and oak re-establishment. A single-grip mechanical harvester-forwarder would be used to limb and buck logs, and carry them to the landing. The harvester may mechanically fell some trees, others would be felled by hand. Forwarder trails would be spaced an average of 60-70 feet apart and would be no more than 15foot in width. A shovel yarder could be used in combination with the forwarder or in place of it, to facilitate yarding where resource protection can be maintained at levels similar to the forwarder. The equipment will operate on top of logging slash where possible to decrease soil impacts.

Two landings would be constructed. One would be located approximately 200 feet southeast of Beck Road, and the other approximately 600 feet northwest, requiring construction of temporary roads to access them. The new road construction would be native surfaced and be removed after logging is completed. Following harvest, the new construction would be subsoiled, water bars constructed if needed, and bare surfaces seeded with grass.

It is likely that some conifer trees will blow down following harvest activities. Under this alternative, concentrations of windthrown trees totaling less than 20% of the residual stand, may be salvaged without further NEPA analysis under the following conditions: 1) The project Wildlife Biologist determines them to be in excess of needs for coarse woody debris, 2) The project leader determines the action would not compromise restoration objectives, and 3) Logging equipment would be limited to JD 450/ D4 or smaller or a hydraulic shovel, limited to four passes per skid trail, and subject to all project design features contained herein.

d. Fuel Treatment/Fire re-introduction:

Landings and all concentrations of slash along roads and in the unit would be piled with a hydraulic loader or by hand. Piles would be located away from reserve trees and snags. Piles would be topped with plastic and burned in the Fall after significant rain. In addition to the initial burning of fuel concentrations, subsequent broadcast burning would be done periodically to maintain the dead fuel loading at appropriate levels for an open woodland ecosystem.

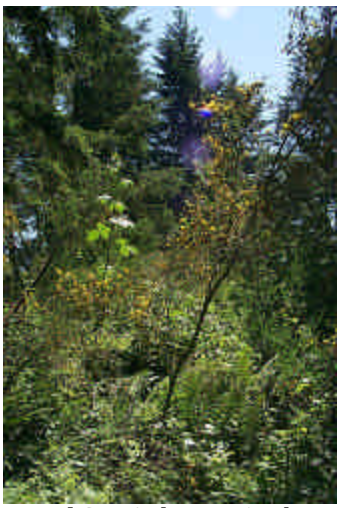
Alternative 2 (Proposed Action) - Full Release Oak Restoration, continued

Periodic broadcast burning would promote establishment of native grasses and forbs while controlling the density and reestablishment of shrubs and trees on the site. The first broadcast burn would be conducted 1 to 5 years following initial treatment. Fire would be of low intensity (less than 4 flame length). Hand firelines, existing fuel breaks, applications of water and/or detergent foam, and roads plumbed with fire hoses would be used in order to confine fire to the project area and to exclude certain areas (such as planted oak areas) from fire. Burning would be conducted under an approved burn plan that includes measures for prevention and control of fire spread onto adjacent private lands.

Firewood present on the landings after completion of the logging contract may be made available to the public to allow cutting and removal.

e. Noxious Weeds:

Native shrubs, forbs and grasses currently dominate the understory in the project area. However, Himalayan blackberry, Scot's broom, and St. Johns Wort, listed as noxious weeds by the Oregon Department of Agriculture occur on the site. Evergreen blackberry (*Rubus laciniatus*) occurs on the eastern perimeter and is likely to increase in the project area. Characteristics and treatment are the same as Himalayan blackberry. Documentation of the Vegetation Management Process prescribed in the *Western Oregon Program-Management of Competing Vegetation Record of Decision* (August 1992) is in Appendix C of the Silvicultural prescription in the analysis file of this document. The Appendix establishes thresholds for each of the weed species, and prescribes 3 sequential strategies if the weeds exceed threshold (Table 2). Treatments may be implemented multiple times, possibly up to ten years. The greatest risk of noxious weed spread would occur in the year or two following Douglas-fir removal, but treatment needs may persist for much longer. Both native and exotic species will present some competition to planted Oregon white oak.



Himalayan berry and Scot's broom in the project area.

Alternative 2 (Proposed Action) - Full Release Oak Restoration, continued

Table 2. Thresholds for unwanted or competing vegetation:

Species	Current extent/coverage	Threshold extent/coverage	Notes
Himalayan black-berry and evergreen blackberry	1 location, approx. 3 ac., approx. 40% coverage+ isolated occurrences	1 location, increased perimeter or coverage or additional occurrences	Native blackberry, *Rubus ursinus,* widespread
Scot's Broom	2 locations: 3 ac., 20% cov., .25 ac, 40% cov. + isolated occurrences	1 location of 3 acres, 20% coverage	Along eastern perimeter and windthrow area
St. John's Wort	2% coverage throughout	2% coverage throughout	
Infestations of New Species	Not yet detected	State Category A - One plant State Category B – One plant to 2% coverage, species dependant	Detection surveys for 3 years following treatment
All shrubs, grasses and forbs	High	50% cover, > 2' tall, within 24" of planted white oak seedlings	Only within planting areas, <5 yrs after planting

Noxious weed prevention strategy:

1) Required washing of all equipment used in harvest and related activities, 2) Seeding with Oregon certified (blue tagged) red fescue (*festuca rubra*) at a rate equal to 40 lbs./acre on areas of exposed soil within all new road construction and on ground-based yarding roads and landing locations and slash pile burn sites, 3) Prior to conifer removal, hand pulling of Scot's broom and St. John's wort.

Noxious weed early treatment strategy:

1) Handpulling new plants, 2) Himalayan blackberry plants would be removed by hand grubbing and cutting or by mowing (with equipment attached to tractor or tracked vehicle) or browsing (using goats contained in moveable, temporary enclosures), and 3) to prepare the site and prevent vegetation competition for planted Oregon white oak, brush would be cut within 16' radius of the planting area, and ground vegetation cleared within 24 inches of the planting spots, and 6 foot by 6 foot polyester blend mulch mats would be installed as a method to prevent further competition.

Noxious weed maintenance or correction strategy:

1) Additional hand grubbing, mowing, or browsing treatments of Himalayan blackberry, 2) Application of non-toxic vinegar (20-30% acidity, as described by USDA Sustainable Agricultural System Laboratory, 2002) applied by hand sprayer to plants and soil at base, eventually killing established plants by temporarily lowering soil PH. (repeated applications may require an application of lime and seeding of native species), 3) Application of heated water-based foam, 4) Additional analysis and if indicated, a NEPA decision to spot apply herbicide by hand sprayer to re-sprouted Himalayan blackberry.

g. Project Design Features, Alternative 2 (proposed Action)

Project design features are specific elements of the project proposal designed to mitigate potential impacts to natural resources and are described below. All acres and other numerical units are approximate.

Wildlife and Botany

- Management of Survey and Manage Species found as a result of inventories would be accomplished in accordance with the *Record of Decision and Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (*Survey & Manage ROD*, January 2001) and the *Final Supplemental Environmental Impact Statement For Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (*Survey &Manage FSEIS*, November 2000) and 2002 Annual species review table 1-1, (June 2002).

- Management of all survey and manage known sites located within the proposed project area would be accomplished in accordance with management direction listed on pages 8 through 14 of the standards and guidelines S&M ROD, January 2001. All of the known sites would be withdrawn from any timber harvesting activity and would be included in reserves.

- Harvest operations and associated activities would be conducted in conformance with the applicable Biological Evaluation (# OR080 – 02-12) concerning listed wildlife species. Pertinent Terms and Conditions for this BO include:

  Notify the Resource Area Biologist if any federally listed wildlife species are found occupying stands proposed for treatment.

  Seasonal restrictions for operations might be necessary if a listed species is found occupying forest stands within 0.25 miles of the proposed unit (current survey efforts have found no listed species in this area).

- Within proposed unit boundaries CWD would be managed by retaining a portion of the existing down logs and all snags except where they pose a safety risk or affect access and operability. Where wind-thrown trees occur, in excess of CWD needs, many of them will be removed to allow planting of oak and control of noxious weeds.

  RMP direction for CWD levels was developed for management of the coniferous forest ecosystem and does not apply, ecologically, to restoration of an open oak woodland structure maintained by periodic prescribed fire. While special habitats and associated management is addressed in the RMP, the variety of conditions found in the "special habitats" preclude specific management direction for CWD and snag levels. Because oak woodland forms such a small part of the land base, the cumulative effect of managing lower levels of CWD in them is not significant. Oak woodlands surveyed on the Eugene District BLM were found to have low levels of snags (Chiller, et al, 2000), and under the

frequent fire regime that historically occurred in oak woodlands (Agee, 1993), CWD would have been uncommon.

- Similarly, snag levels prescribed in the RMP for coniferous forest (40% population potential of cavity nesters) do not apply to the project area. The ecological function of snags for cavity nesters is expected to largely be met by cavities in living and dead oak trees. Snags will be created at a rate of approximately 1 per acre, as a result of Douglas-fir being girdled or topped that cannot be felled without damaging oak trees. These trees will remain on site as snag habitat and as a continuing source of down wood.

Commercial Removal of Trees

- Yarding with ground-based equipment would be allowed on slopes less than 35 percent.
- Non-merchantable trees between 1-7 inches dbh, not designated for retention, would be felled to prepare for oak regeneration or to perform oak thinning.
- Slash and logging debris would be maintained on skid roads during and after yarding to reduce soil disturbance and compaction. Logging equipment would be required to operate on top of slash as much as practical even during dry conditions and to utilize existing skid roads wherever practical.
- Yarding would only be allowed during periods of low soil moisture, generally between July 15 and October 15. Yarding would be discontinued during this period if necessary to avoid excessive soil and water resource impacts. Operations may occur outside of these restricted times if the following conditions are met: 1) Machines are kept on areas with heavy slash accumulations in order to distribute the weight and decrease soil disturbance (placement of additional slash on forwarder trails may be necessary), 2), the operation is frequently monitored (at least every other day) to check soil compaction conditions, and 3) operations are suspended at the first indication of significant soil compaction, and 4) the area is narrow enough to be harvested with 1-2 passes of the loaded forwarder.
- Most of the harvest operations will be seasonally restricted to the period of June 16 to October 31, during which time felling, yarding, and hauling will be allowed, but may be suspended to avoid bark-slippage or soil impacts during periods of high sap flow or high moisture. Hand felling, but not mechanized felling, yarding, or hauling will be allowed during the period of October 31 to March 14 and conditional between March 15 to June 15 unless resource impacts were determined to be minimal.
- Timber should be left standing as close to the time of yarding as possible, to facilitate drying of soils through transpiration to hasten the onset of dry soil conditions for yarding.
- Yarding corridors would be at least 60 feet apart and would be less than 15 feet wide.
- Logs would generally be transported free of the ground. The equipment would be either rubber tired or track mounted and have rear tires or tracks greater than 18 inches in width.

- Required washing of equipment used off roads in harvest and related activities, prior to arrival and departure from the site, for purposes of noxious weed prevention.

Road and Landing Construction, Road Management

- All landings would be constructed to as small a size as possible that allows operability.

- Initial grading of existing roads to make them passable and landing construction involving cut and fill work, would be restricted to periods of dry weather, primarily between May 1 and October 31 of a given calendar year. This will limit surface runoff and accelerated erosion. Road construction would be shut down if necessary during this period to avoid excessive soil and water resource impacts.

- Approximately 750 feet of temporary road would be constructed (180 feet to a landing on southeast side of Beck Road, and 570 feet to a landing on the northwest side).

- Timber hauling would be permitted only during periods of dry weather and low soil moisture, generally between May 1 and October 31, to coincide with the timber yarding restrictions.

- All hauling would be suspended at any time of the year if necessary to avoid excessive soil and water resource impacts. Under section 14 and 25 of the contract, if conditions detrimental to water quality occur at any time of the year, hauling should be immediately postponed until conditions improve and/or the road surface is repaired or improved to reduce suspended sediment production and transport. When timber hauling occurs during wet weather the contract administrator will monitor daily the potential impacts to water quality. Mitigating measures may include: restricting log hauling, increase the amount of maintenance road grading, installing silt fences or bark bags, applying additional road surface rock.

- Improvements to existing roads would occur prior to hauling and would be ongoing as needed during hauling. They could include any of the following:

    - Sediment traps will be added to ditches above culverts where necessary.

    - No refueling will be allowed within 200 feet of any standing or running water. (RMP, BMP C-8, C-6).

    - Temporary roads would be fully or partially decommissioned after use. This could include blocking access, piling slash, grass seeding exposed surfaces, and water-barring. To ameliorate compaction, facilitate restoration of native vegetation, and to prevent subsequent road use by the public, the road surface will be tilled or subsoiled with a winged ripper or similar mechanized equipment. Soil conditions will be evaluated after harvest to determine needs and the extent and type of equipment will be prescribed accordingly. Subsoiling will not occur under the dripline of residual trees.

Fuels/Air Quality/Special Forest Products

- Debris cleared during road construction would be scattered along the length of the rights-of-way. Large accumulations and piles of debris would be avoided. No debris would be piled against trees or snags.

- Yarding of unmerchantable material greater than 3 inches diameter, large end, and 8 feet long will be allowed under the contract as a substitute measure for debris piling, throughout the project area.

- Landings and all concentrations of slash greater than 1 inch diameter, large end, and concentrations greater than 8 feet diameter and 2 feet in depth of slash ½-1inch diameter, large end, would be piled with a hydraulic loader or by hand. If a hydraulic loader is used for piling it should be operated on top of the slash as much as is practical to minimize soil compaction and disturbance. Care should also be taken to minimize disturbance of the soil and minimize creation of bare mineral soil areas that would favor invasion by noxious plants. Piles should be kept as far from reserve trees and snags as possible. Piles to be burned should be covered (at least 75 percent of the top surface) with 6 mil plastic in the late summer before the onset of fall rains.

- Prescribed burning will be conducted in accordance with site specific prescribed burn plans that conform to current standards, direction, and regulations. Burning would be conducted under "good mixing" weather conditions in compliance with State Smoke Management instructions.

- If firewood or post/pole material is present on the landings or roadside after completion of the logging contract, permits may be made available to the public. Prescribed burning would be delayed if necessary to accommodate firewood cutting.

Soils/Noxious Weeds

- Areas of exposed soil within all new road construction and on ground-based yarding roads and landing locations and slash pile burn sites would be seeded with Oregon certified (blue tagged) red fescue (*festuca rubra*) at a rate equal to 40 pounds per acre. Additional seeding of native species may occur at this time or following noxious weed treatments or prescribed burning.

- Project design features for managing competing vegetation are listed in Appendix C of the Beck Road Oak Release Silvicultural Prescription.

Cultural Resources

A cultural resources inventory has been completed. Due to its location, historic and Native American use of the project area is likely to have occurred. However, no sites were found that would require protection. The cultural resources report is in the Beck Road analysis file.

Rural Interface Area

- Improvements such as fences and mailboxes would be protected during all operations, or immediately repaired if damaged.

- Dust abatement measures would be considered on Beck Road (gravel surface) during log hauling operations and provisions made in the timber sale contract.

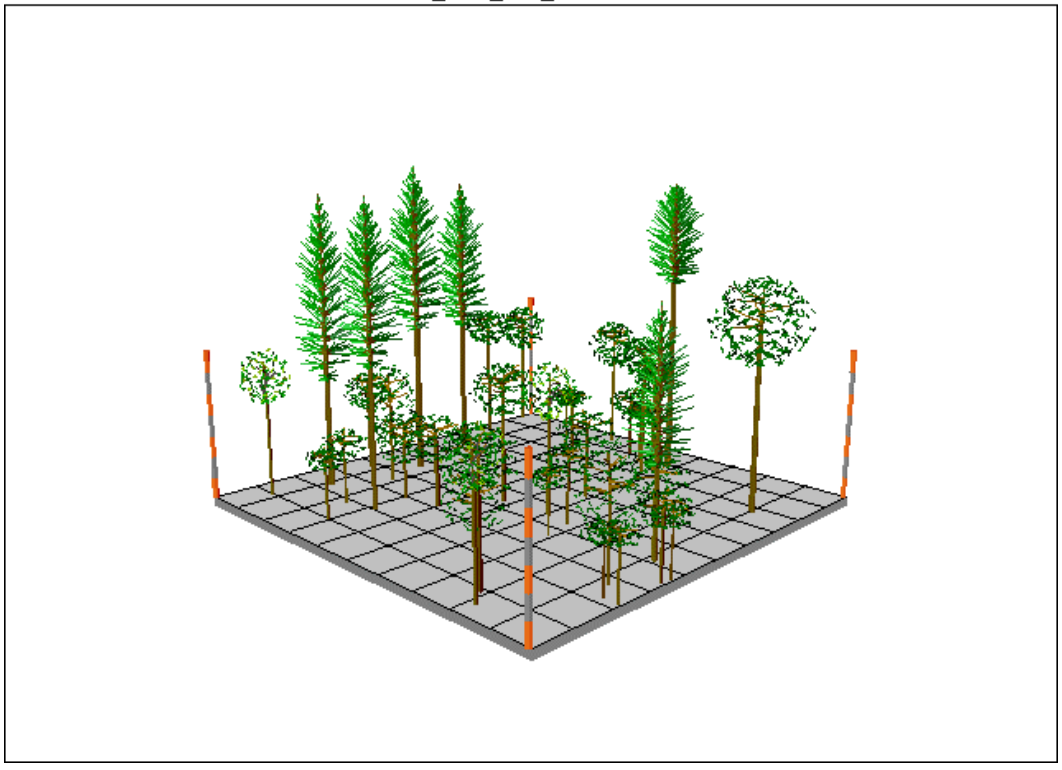
- Prescribed burning would be conducted in compliance with an approved burn plan, and would be planned and executed to minimize, to the greatest practical extent, risks to private property and resources. Smoke dispersal would be a key element of planning and execution.

- Adjacent landowners will be notified in advance of commencement of logging operations and prescribed burning.

- Standard traffic control, signage, and other public safety measures will be used when logging and prescribed burning operations could affect users of Beck Road. The equestrian trail will be closed during logging operations, and restored for use the season logging concludes.

- If determined necessary by Resource Area recreation specialist after operations are complete, remove or cover marking paint on leave trees, to reduce visibility from Beck Road and/or the equestrian trail.

Simulation of stand appearance under alternative 2, immediately after treatment, using Stand Visualization System, based on Forest Vegetation Simulator (FVS) modeling from Beck Road stand data.



3. Alternative 3 - Partial Release Oak Restoration

This alternative is designed to reduce Douglas-fir density and partially restore oak woodland structure in areas of existing oak, by allowing persistence of oak on the site. It is not designed to increase the distribution of oak on the parcel, prevent additional conifer establishment, or restore woodland stand structure to conifer areas. It is expected that further silvicultural entries would be necessary within 20-25 years to maintain Oregon white oak abundance and vigor. This Alternative meets or partially meets most elements of the purpose and need, while decreasing short-term site impacts.

Except as listed below, the treatments and design features would be the same as those described in Alternative 2.

a. Silviculture

The silvicultural prescription has several component parts: release of Oregon white oak, thinning of overstocked oak trees, and thinning of conifers. Trees immediately adjacent to improvements, fences, driveways or that appear to greatly contribute to visual quality or wildlife habitat may be left on a case-by-case basis, in both oak release and conifer thinning areas. Trees down to 1" diameter may be cut. Merchantable trees that are cut would be sold.

Silviculture –Oregon white oak Release:

Douglas-fir, grand fir and bigleaf maple would be removed within 15 feet from around Oregon white oak 7.9 inches dbh or less, and would be removed within 30 feet from around oak 8 inches dbh and greater. Douglas-fir greater than 28 inches dbh would be retained, but at no closer than 60 foot spacing.

Silviculture- Thinning of overstocked Oregon white oak

Oregon white oak thinning would be the same as Alternative 2.

Silviculture- Conifer & maple thinning

In areas without oak, conifers and bigleaf maple would be thinned or girdled to a variable density by removing trees between 7 inches and 18 inches dbh (leaving approximately 60 trees per acre). Additional trees would be left along the trail to maintain visual quality and experience of closed forest.

In the southeast corner, where dense 40-year-old Douglas-fir occur on an area of approximately 3 acres, trees would be thinned to 30 foot spacing selecting to leave the largest trees with highest crown ratios.

Silviculture - Creation of openings/establishment of Oregon white oak:

No openings would be created to plant oak. Douglas-fir, grand fir, bigleaf maple and cherry trees less than merchantable size (1 foot in height to approximately 7 inches dbh) would be felled to remove competition for natural regeneration of oak. No oak trees would be planted.

Approximately twenty Oregon white oak less than 8 inches dbh would be felled to test efficacy of stump sprouting to regenerate oak. Trees would be selected from a range of conditions and sites to examine variables that may affect sprouting viability. Sprouts would be protected by tubes for several years.

b. Demonstration Area/Monitoring Study Plan
Provisions would be the same as in Alternative 2. Full oak release, as in Alternative 2, would be implemented in four of the twelve oak release study plots.

c. Yarding and Decking Merchantable Trees
Provisions would be the same as in Alternative 2.

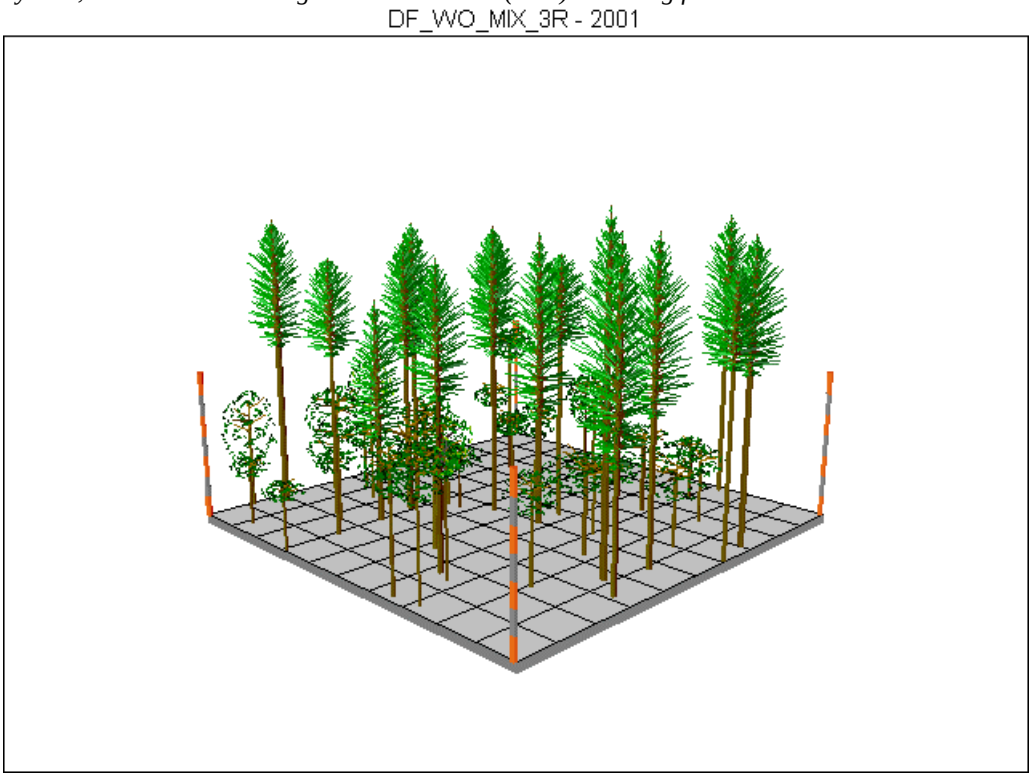
d. Soil Amelioration
Provisions would be the same as in Alternative 2.

e. Fuel Treatment/Fire re-introduction:
Fuel disposal provisions would be the same as in Alternative 2, except that future prescribed burning of the ground fuels in the parcel would not occur.

f. Noxious Weeds
Provisions would be the same as in Alternative 2.

g. Project Design Features:
Project design features would be the same as in Alternative 2, with the exception of those applying to prescribed burning, not included in Alternative 3.

Simulation of stand appearance under alternative 3 immediately after treatment, using Stand Visualization System, based on Forest Vegetation Simulator (FVS) modeling from Beck Road stand data.



C. Alternatives Considered, but Not Analyzed in Detail

1. Management for Douglas-fir. The site could reasonably be managed for continued growth and stocking of Douglas-fir to produce timber and potentially for closed conifer habitat. This alternative was considered, but not analyzed in detail for the following reasons:

1) This alternative would not meet the purpose and need. Once identified as a special habitat, management for Douglas-fir would not meet the RMP direction to manage for the unique values of the area.

2) The design and the environmental analysis of Alternative 3, partial release of oak, would be similar to management for Douglas-fir. It is not necessary to analyze the effects separately in order to consider the full range of alternatives.

3) Douglas-fir will remain over much of the project area under Alternative 2, full release of oak, but at much lower density.

2. Use of herbicides for vegetation control. This alternative was considered, because the well-documented difficulty in reducing infestations of Himalyan blackberry (*Rubus discolor*) using non-chemical means. It was not analyzed in detail because non-chemical methods can first be tested in this action and if not successful, herbicide use would be considered in a later analysis and decision in future phases of this proposed restoration. This document will establish thresholds for unwanted vegetation, and analyze non-herbicide prevention and control measures that may be used to keep vegetation below threshold.

III. DESCRIPTION OF THE AFFECTED ENVIRONMENT

A. Introduction

This section describes the environmental features affected by the proposed action or the alternatives. Resource values are not described in this section if there are no anticipated site-specific impacts, site-specific impacts are considered negligible, or the cumulative impacts described in the RMP/FEIS are considered adequate.

B. General Setting

The project area is located in the North Coast Province in the Salt Creek Watershed, north of the town of Dallas. The BLM administers very little land in the watershed. The closest large tracts of federally-managed lands are BLM lands in the Mill Creek watershed over two miles to the southwest, and the Baskett Slough National Wildlife refuge, seven miles to the southeast. Oregon white oak habitat occurs in both these areas, and there are large tracts of it on private lands to the north and east of the project area. Much of the Salt Creek watershed is in agricultural use. However, young Douglas-fir stands are found in its upper reaches. Stands of both oak and Douglas-fir are fragmented by roads, non-forest lands, and recently harvested areas.

Immediately adjacent to the project area are a Christmas tree field, pastures, and small tracts of mixed oak and Douglas-fir. Homes are close by on three sides, and a boarding stable operates just west of the project area.

C. Specific Resource Descriptions

1. Geology and Soils

The project area is located in the headwaters of a small un-named tributary to Salt Creek, which is a tributary of the South Yamhill River. Elevation in the project area ranges from about 500' to 600'. The area occupies a low ridge top with 1-10% south slopes in the south, and 10-30 % northwest slopes in the north.

The predominant soil series mapped by the Natural Resource Conservation Service on and around this site is Bellpine silty clay loam with minor inclusions of Wilakenzie and Suver silty clay loams and Hazelair and Dupee clay loams.

Bellpine, Wilakenzie, Suver and Dupee soils are all moderately deep, well-drained, gently to moderately sloping soils that developed from colluvial materials derived from sedimentary rock. They are found in upland or foothill locations. The surface soils are reddish-brown silty clay loams or clay loams, about 8-13 inches thick. The subsoils are dark reddish-brown and yellowish-red clay or silty clay, about 20-25 inches thick. Fractured bedrock is at a depth of 20-40 inches.

Hazelair soils are moderately deep, moderately well-drained to somewhat poorly drained soils that formed in colluvium weathered from sandstone. They are found at the bases of foothill slopes and drainage side slopes. Slopes range from 3 to 30 percent. Typically, the surface soil is a dark grayish brown silt loam and silty clay

loam about 10 inches thick. The sub-soil is a very dark grayish brown mottled silty clay loam about 7 inches thick. Below the subsoil is grayish brown and light olive brown, mottled clay about 21 inches thick. Weathered sedimentary rock is at a depth of about 38 inches. A seasonal water table at 12 to 20 inches may exist in winter and spring.

Permeability for all of these soils is slow. Erosion risk is low on the flatter sites and increases with increasing slope. Maintaining vegetation and or debris on soils is needed to reduce erosion risk on soils over 10% slope. The high water table in the Hazelair soil can be a limiting factor for establishing and growing Douglas fir timber. Effective rooting depth is 24 to 30 inches for Hazelair soil and 20 to 40 inches for the other soils on the site.

Soils on this proposed project area are stable with moderately high productively (site index 140 to 150 site class III). Vegetation re-establishes fairly rapidly following disturbance. Some soil compaction exists on the site resulting from previous use (logging, horseback riding).

There are two management concerns with these soils: the potential for compaction and the potential for surface erosion.

Due to the high percentage of clay and silt size particles in these soils, they easily compact when moist or wet and subjected to pressure from heavy equipment, dragging logs, etc. Once compacted, fine textured soils are very slow to recover. Compaction of the soil can reduce site productivity by limiting or restricting root growth in the compacted soil as well as limiting movement of O_2 , CO_2 and H_2O into, out of and within the soil. Depending on the extent and degree of compaction, some reduction of site productivity can be expected. In addition to reduced site productivity, on compacted sloping sites, a reduced water infiltration rate can result in higher rates of surface water accumulation and run off. On bare soil the hazard of erosion can be high. Minimizing compaction of soils in the project area and maintaining vegetation and litter on the soil surface should be a high priority, especially on the steeper areas. Any harvester or truck roads compacted and made bare from the logging operation will pose the greatest risk for water runoff and soil erosion. Mitigation measures following yarding can minimize this potential problem. The primary soils concern for this project is the potential reduction of site productivity due to compaction. Secondary concerns are surface erosion and introduction of noxious plants on areas where soils are bare.

2. Vegetation

a. Stand History

Oregon white oak can grow on a wide range of sites, from wet to dry. On all but the driest sites, or those that are frequently burned, it is not the climax vegetation, but is usually succeeded by conifers, especially Douglas-fir. It is shade intolerant itself, yet the shade it produces is not sufficiently dense to prevent regeneration and growth of shade intolerant conifers. In the past, the species was maintained on the landscape under the early seral conditions created by frequent fire.

The earliest vegetation information comes from General Land Office mapping in 1851. Those maps indicate that vegetation in the project area was of two types: one described as thinly-timbered Douglas-fir and white oak woodland, and the other as white oak savanna. The portion of the 1851 map in the vicinity of the project area is shown in Figure 3, below.

Data collected in 2001 indicate that the oldest oaks on the site established from 1780 to 1880, forming an open savanna of large open-grown trees. It is likely that the area was maintained in an open condition by grazing and possibly by occasional burning until about 1900. Additional oaks have established in the last fifty years, but are generally suppressed and have poor crowns due to higher stand density.

It is likely that on the warmer south slope of the project area, more frequent burning favored open savanna habitat rather than woodland habitat. This is evidenced in the scarcity of large stumps, by the remnant large open-grown oak, and the lesser degree of Douglas-fir colonization. On the cooler slopes of the project area, less frequent burning would have allowed more colonization by conifers, creating the Douglas-fir and white oak woodland described in the 1851 survey.

The Douglas-fir found in the more moist northern portion of the project area in low numbers, as described in the General Land Office survey, were likely harvested about 1900. The oldest Douglas-fir now on the site originated in 1910. Scattered stumps indicate a second harvest occurred perhaps 60 years ago. The majority of the Douglas-fir now present are about 60 years old and may have come in after that harvest. The stand is now dominated by dense Douglas-fir approximately 100 feet tall, overtopping remnant oak averaging 46 feet tall. The oaks generally have poor crowns due to crowding, and many have died.

Due to low-permeability subsoils, conifer trees on areas of the project area are subject to windthrow. In 1995, a large wind event resulted in windthrow of Douglas-fir trees on about three acres in the southeast portion of the project area, leaving just a few Douglas-fir, Oregon white oak and bigleaf maple. In December 2002, about 20-30 additional Douglas-fir trees blew down throughout the project area.

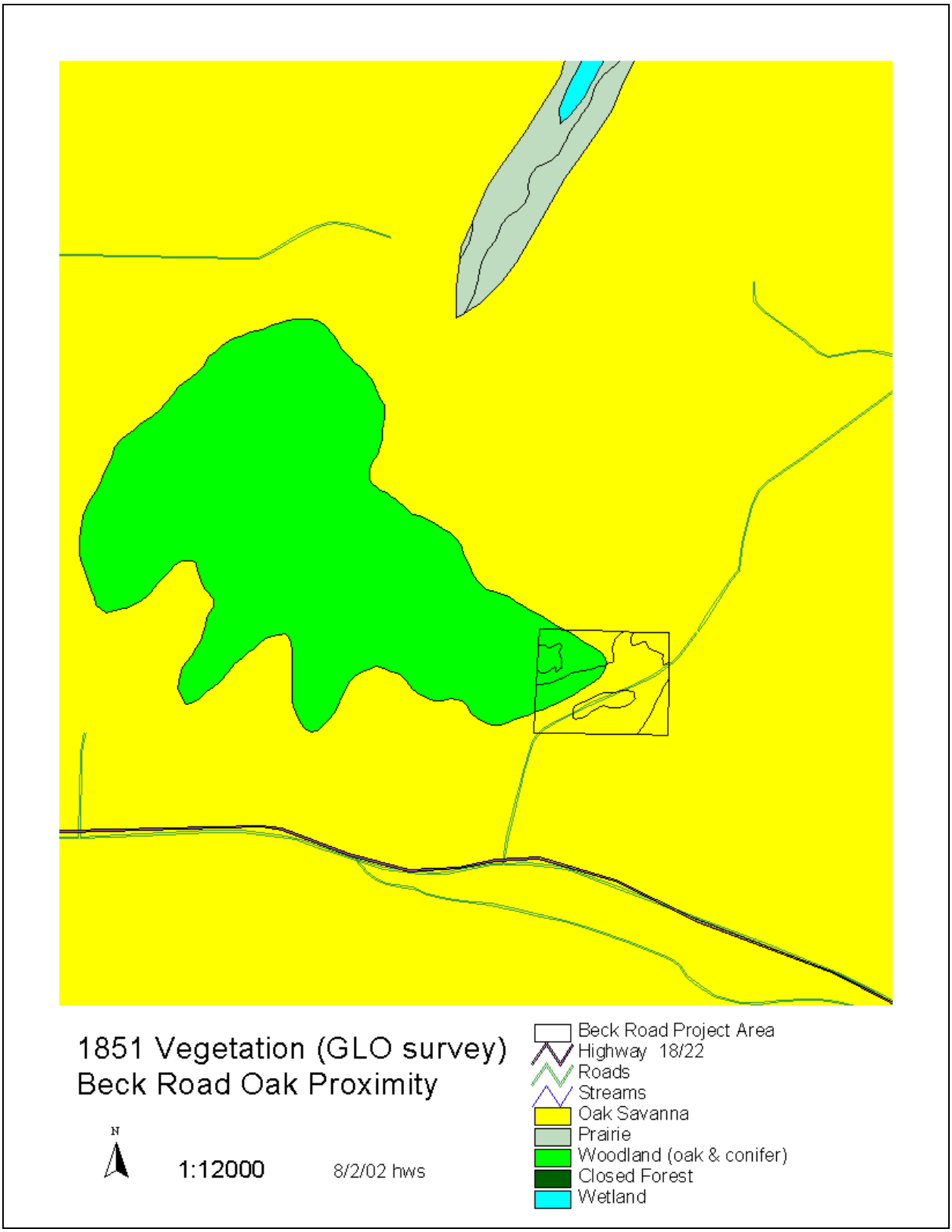


Figure 3. *General Land Office Vegetation Survey in Beck Oak Vicinity*

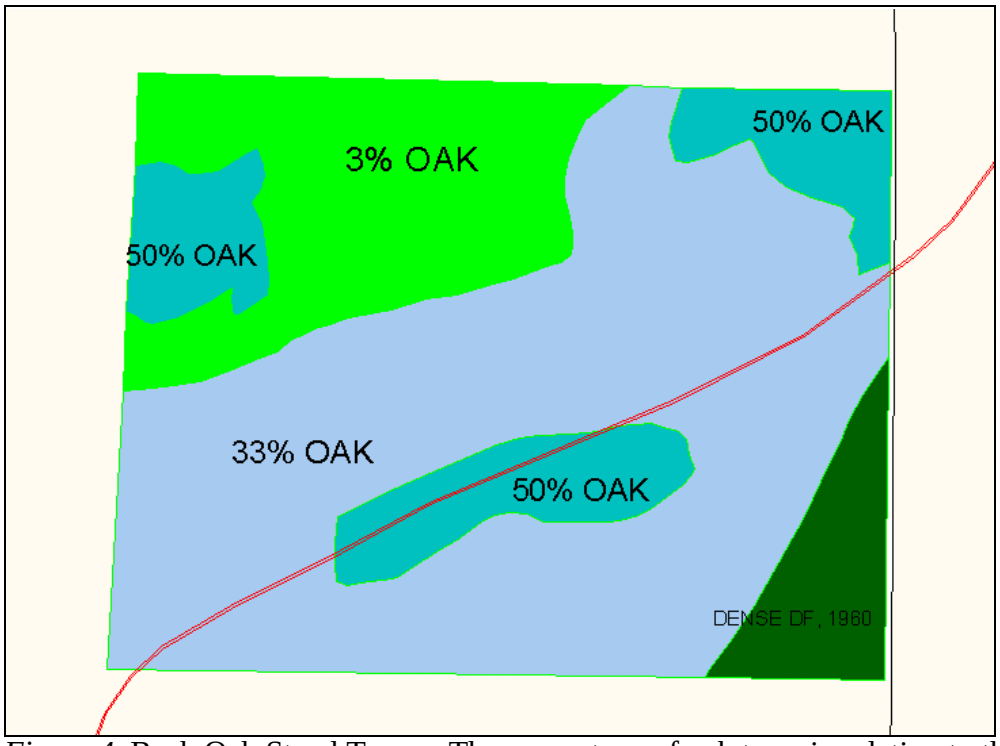


Figure 4. Beck Oak Stand Types. The percentage of oak trees in relation to the the total trees per acre is shown. The balance of the trees are primarily Douglas-fir.

b. Stand Structure

The project area is in the grand fir/poison oak plant association (USDA, 2001), with inclusions of the Douglas-fir/poison oak plant association. These associations occur on dry sites at low elevation near the edges of the Willamette Valley. Tree species composition varies on the project area. Four stand types occur in a mosaic, shown in the map above (figure 4) and summarized in the following table.

Table 3. Beck Oak Stand Types *(2001data)*

Species Composition	**Acres**	**Species**		**Trees/Ac**	**Avg. DBH (in.)**	**Avg. Height (ft.)**
1 (33% Oak)	(12 acres)	Or. White Oak		119	16.1	87
		Douglas-Fir		59	11.2	52
2 (50% Oak)	(6 acres)	Or. White Oak		44	12.9	57
		Douglas Fir		46	20.9	108
		Bigleaf Maple		15	11.2	63
3 (3% Oak)	(8 acres)	Or. White Oak		2.4	22.4	70
		Douglas Fir		79	20.4	105
4 (Young fir)	(2 acres)	Douglas-fir		140	10.0	50

Oak and conifer stand structure near the south edge of the project area.

Though the majority of the stand is composed of Douglas-fir and Oregon white oak, bigleaf maple (*Acer macrophyllum*), Pacific madrone (*Arbutus menziesii*), and grand fir (*Abies grandis*) are found in small numbers. Stand density is high throughout the project area, evidenced by a high level of inter-tree competition, self-pruning, and diminishing crown ratios and growth. Because of this tree regeneration is very lightly scattered. A few saplings of Douglas-fir, grand fir, oak and maple can be found in small openings, the area of windthrow, and along Beck Road.

The Douglas-fir on the site range from saplings to 36" in dbh. However, the majority of them are in the ranges of 8-10" dbh and 16-22" dbh, averaging 17.3" dbh overall. The Oregon white oak range in size from 6" dbh to 34" dbh. Small trees are most common, with decreasing abundance in the larger size classes. Average diameter overall is 11.6 inches dbh.

c. Understory Vegetation

An introduced cherry species (*Prunus avium*), and cascara (*Rhamnus purshiana*) form a tall shrub understory in areas. There is a thriving shrub layer throughout much of the parcel, consisting of poison-oak (*Toxicodendron diversiloba*), hazel (*Corylus cornuta*), oceanspray (*Holodiscus discolor*), snowberry (*Symphoricarpus albus*), baldhip (wild) rose (*Rosa gymnocarpa*), trailing blackberry (*Rubus ursinus*), saskatoon (*Amelanchier alnifolia*), Indian-plum (*Oemleria cerasiformis*), and whipplevine (*Whipplea modesta*). The most common ferns, forbs, and grasses found in the project area are swordfern (*Polystichum munitum*), bracken fern (*Pteridium aquilinum*), Western starflower (*Trientalis latifolia*), sweetscented bedstraw (*Galium triflorum*), pathfinder (*Adenocaulon bicolor*), enchanter's nightshade (*Circaea alpina*) mountain sweet-cicely (*Osmorhiza chilensis*) and Columbia brome (*Bromus vulgaris*). It is likely that the absence of fire and the shadier conditions now found on

the site have favored the establishment of a greater shrub layer and of shade-tolerant species than existed under pre-settlement conditions. Earlier conditions probably favored a greater proportion of grasses, and did not favor some of the more mesic shrubs and forbs found there today.

The noxious weed Himalayan blackberry (*Rubus discolor*) has grown to occupy much of the three acre windthrow area, forming large mounds of canes. Isolated plants occur within the south half of the project area. Scot's broom *(Cytisus scoparius)*, and St. John's wort *(Hypericum perforatum*) are found in the project area at low density, with an exception of a narrow strip along the east edge of the project area occupied by Scot's broom. It appears that these species may be just starting to colonize the open areas. Adjacent to the project area are infestations of the above species and others. Spread vectors include traffic on Beck Road, horses on the bridle trail, wind, birds, and vegetative spread.

Surveys of the project area for survey and manage vascular plant, lichen, and bryophyte species were completed in summer of 2002, in accordance with established survey protocols. There are no "known sites" of any special status vascular plant, lichen or bryophyte species within the project area nor were any found during subsequent surveys. There are no "known sites" of any special attention species within the project area, nor were any found during subsequent surveys. Pre-disturbance surveys are required only for one species of fungi, *Bridgeoporus nobilissimus*. A pre-field review determined that suitable habitat for *Bridgeoporus nobilissimus* does not exist within the project area, so no fungi surveys were completed.

3. Fuels and Air Quality

There is a light accumulation of dead woody material on the ground in the project area with an occasional log which considerably increases the otherwise low tons per acre of fuel on this site. A concentration of large logs resulting from windthrown Douglas-fir occurs in the southeast portion of the area. Small snags are scattered through the conifer stand. Large snags (over 20" dia.) are few in number. Based on visual estimates, using GTR-PNW-105, the est. total dead fuel loading for the Douglas fir stand (3% oak) is in the 10-20 tons per acre range (series 2-DFHD-3 and 3-DFHD-3). Fuel loading for the 33% and 50% oak stands is in the 5-10 tons per acre range (series 4-DFHD-4 and 2-HD-2), for the dense younger Douglas fir stand (SE corner) dead fuel loading is in the10 tons per acre range (series 4-PP and Assoc-3). Fuel model for these sites would be model 8 - closed timber litter.

The live fuels with the greatest impact on the potential fuel bed in the project area are forbs and grasses. These fuels tend to stay green until late summer when they become dormant and add to the fine dead fuel loading. Shrubs are not available fuel until late season drying occurs. The entire fuel complex, if it were sufficiently dry to burn, is 2-6' in depth. In general, the amount and depth of fuels has increased beyond what would have existed under a historical fire regime of low-intensity, frequent fire.

The arrangement of fuels is scattered dead fuels and continuous live fuels. Ladder fuels exist primarily in the areas of young oak, where tall shrubs and low crowns

create some fuel continuity. In much of the stand, crowns are high off the ground, and ladder fuels are minimal.

The project area is on the west edge of the Willamette Valley Designated Area identified in the Oregon State Implementation Plan for air quality. The Willamette Valley is prone to air inversions of varying duration up to several weeks in length. Inversions can occur at any time of the year but are most common in the summer and winter months. The nearest community is Dallas, approximately 6 miles southeast of the project area. Low-density rural housing surrounds the area, and four homes are nearby or adjacent to the property lines. Current air quality impacts to this area include smoke from wood stove use in the fall, winter and spring, and forest burning in the form of piles in the fall. Some field burning takes place in July and August but is limited to less than 5 days during these months. Miscellaneous sources of air quality impacts include vehicle traffic on Highway 22.

4. Wildlife

This small stand is considered to be in the historic range of oak savanna and oak woodlands associated with the Willamette Valley and its foothills and should not be managed as conifer forest habitat associated with the Northwest Forest Plan. Conifer habitat issues like snag and coarse woody debris management are not a concern in these oak ecosystems since the processes which control the composition, structure, and function of the ecosystems are completely different.

No threatened or endangered species are known to be present in the project area. The project area does not provide suitable nesting habitat for northern spotted owls. There are no spotted owl activity centers, Late Successional Reserves or designated Critical Habitat within 3.0 miles of the project area. The project area does not provide suitable habitat for federally listed threatened or endangered species and is not within northern spotted owl or marbled murrelet critical habitat.

The existing oak/conifer stand is not suitable habitat for the red tree vole or the Oregon Megomphix snail. There are no known sites of Survey and Manage animals in the project area, and no pre-disturbance surveys for Survey and Manage animals are required for the proposed project.

5. Hydrology

The proposed project lies in the Salt Creek/South Yamhill River 5th field watershed (HUC# 1709000805). There are no intermittent or perennial streams within the project area. The project area does not include any Riparian Reserves. An intermittent stream and the associated Riparian Reserve in the extreme northwest corner of the parcel of Federal land is excluded from the project area. The Riparian Reserve boundary is one site potential tree distance of 210 feet (RMP, p. 10) from the stream channel for the length it occurs on Federal land. The nearest perennial streams to the proposed project include Frazier Creek, approximately 250 meters (820 feet) to the south, and an un-named tributary approximately 200 meters (660 feet) to the north. Both tributaries flow into West Fork Salt Creek, which drains directly into Salt Creek.

The project area receives an average of 55" of precipitation annually and has an average 2yr/24h precipitation event of 3.75".

Most of the vegetation in the watershed is classified as "urban agricultural" with only approximately 12% classified as "forest vegetation". Remaining areas are classified as: water, non-forest vegetation, barren, recent clear-cut, built up urban, and "other" (USDI 1997).

The ***Oregon Department of Environmental Quality's (DEQ) 1998 List of Water Quality Limited Streams*** is a compilation of streams that do not meet the state's water quality standards. Tributaries near the project area and West Fork Salt Creek are not listed for water quality concerns. However, Salt Creek is listed as not meeting water quality standards from the river mouth to its headwaters for temperature and chlorophyll A during the summer, water contact recreation standards (bacteria) for fall-winter-spring, and dissolved oxygen for May-Oct.

The ODEQ's 1988 ***Oregon Statewide Assessment of Nonpoint Sources of Water*** Pollution does not list any proximity tributaries for water quality concerns, but does list the lower reaches of Salt Creek for "severe water quality problems by observation." This assessment did not have supporting data, but is likely reflecting the same concerns described by the DEQ 303d list.

The Oregon Department of Water Resources website was queried for water rights in the project area. There is one water right listed for Frazier Creek, a withdrawal permit for the purpose of irrigation. Additional water rights and beneficial uses within the West Fork Salt Creek sub-watershed include points of use (POU) and points of diversion (POD) for: domestic use, lawns & gardens, livestock watering, wildlife, fish, irrigation, fire protection, and water storage. In addition, five municipal water rights were identified in the watershed.

6. Rural Interface, Recreation and Visual Quality

The project area lies within a rural interface area (RMP p. 39). Homes are close by on three sides, and a boarding stable operates just west of the project area. Immediately adjacent to the project area are a Christmas tree field, pastures, and small tracts of mixed oak and Douglas-fir. Maintained fences exist near or on the property line between Federal land and two of the adjacent owners.

The area receives some recreation use, primarily from horse boarders at the stable who ride on an undeveloped trail that circles the parcel. BLM personnel working in the project area have encountered riders 1-2 times per week, primarily in the summer months. Other recreation use such as hiking and bird watching may occur from nearby residents. The area is not known to receive recreation use from the general public.

The area was classified under the Salem District RMP into visual resource management class IV, and allows major modifications of existing character of landscapes (RMP p. 36). The southern edge of the area is visible to motorists on State Highway 22, a major travel route from the Salem area to the Oregon Coast. The

greatest visibility is to adjacent private landowners and to travelers on Beck Road, a Polk County road that passes through the parcel accessing several dozen rural residences. Currently, visual character is dominated by closed conifer forest (with the exception of the area of windthrown trees). Oak trees form a partial canopy over Beck Road, and oak boles and crowns form a visual contrast to conifer trees within the stand. Stand density limits sight distance to a couple hundred feet over most of the project area. Users of the trail are generally screened from Beck Road and adjacent homes. Shrubs, ferns, forbs and grasses form a complex and varied understory that contribute to screening, visual complexity and scenic quality.

IV. ENVIRONMENTAL CONSEQUENCES

This section describes the environmental consequences that would result from implementing this action or the alternatives.

Table 4. Summary of Effects of the Proposed Action and Alternatives

	White Oak condition/ Conifer Density	Native Vegetation & Noxious Weeds	Fuels & Burning	Rural Interface	Timber Removal effects
Alternative 1 (No Action)	Oak decline will continue. Oak will be lost from most of the area within 15 years. Tree growth will slow, crowns will diminish, and density mortality may occur.	- tree canopy cover would eventually suppress most weeds	- moderate increases in fine fuels; live fuels may diminish slightly over time. Avg fuels 10 tons/ac. No smoke emissions	No effects.	No effects.
Alternative 2 Oak Release-Full	Oak would grow without competition for over 50 years. Conifer density would not return to current levels for >50 years.	- open conditions would stimulate weed growth - skid trails might disperse weed seeds - pulling weeds would control spread	- fine fuels increased by 5-15 tons/ac, then reduced to 2 tons/ac after piling and periodic burning. Smoke emissions: pile burning, periodic maint. burns.	Short-term impacts: Dust, noise, traffic, smoke from harvest and Rx fire. Changes in visual appearance.	Short-term effects on vegetation and soils. Soil compaction may need amelioration. Possible damage to remaining trees.
Alternative 3 Oak Release-Partial	Oak would grow without competition for about 25 years. Conifer density would return to current levels within 40 years.	Similar to Alternative 2, except not as much open habitat	- fine fuels increased by 5-15 tons/ac then reduced to 4 tons/ac following piling. Smoke emissions: pile burning only.	Similar to Alternative 2, but visual appearance more similar to present.	Similar to Alternative 2

A. Unaffected Resources

The following resources are either not present or would not be affected by any of the alternatives: threatened or endangered species, fish, surface and groundwater quality, Areas of Critical Environmental Concern, prime or unique farmlands, floodplains, Native American religious concerns, solid or hazardous wastes, Wild and Scenic Rivers, cultural resources, Wilderness, minority populations, and low income populations. (See Appendix 1, Environmental Elements Review Summary).

B. Direct, Indirect, and Cumulative Effects

The Proposed Action and alternatives would have environmental effects. However, none of the alternatives would have effects beyond those described in the RMP EIS and 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, February 1994 (Northwest Forest Plan FSEIS) (USDA Forest Service and USDI Bureau of Land Management, February 1994). This analysis incorporates by reference the analysis of cumulative effects in the RMP EIS (Chapter 4) and the Northwest Forest Plan FSEIS (Chapter 3 & 4, pp. 4-10). Those documents analyze most cumulative effects of silvicultural treatments, timber harvest, fuels treatments, and other related management activities. The following section supplements those analyses, providing site-specific information and analysis particular to the alternatives considered here.

1. Geology and Soils

a. Alternative 1 - No Action

The area would be left to grow as is – there would be no additional impacts to the soil resource.

b. Alternative 2 - Full Release Oak Restoration

Roads - soil impacts:

Constructing 1000 feet of new temporary road will result in displacement of top soil and compaction of subsoil on approximately 0.3 acre of forested land, (about 1.0% of the total project area). Upon completion of the project, newly constructed roads would be closed by blocking access and ripped in areas where tree roots would not be damaged. Water barring and grass seeding would be done, where needed, to reduce soil erosion and the spread of noxious plants.

Logging - soil impacts:

The unit would be logged with a harvester / forwarder system. The area impacted by surface disturbance and soil compaction is estimated to be: landing construction ~0.5 acre, from harvester / forwarder yarding roads ~2.5 acre. Total percent of ground base yarding area affected: ~11% (~3 acre). Very little or no top soil loss should occur, except at landings where some soil displacement would occur. Compaction is expected to be light to moderate except at landings where compaction would be moderate to deep.

Site Productivity:

The affect on overall (total project area) site productivity from 2.5 acres of light to moderate compaction from harvester / forwarder logging is less than 0.1% reduction in yield (10% growth reduction on 9% of the area). The affect on overall site productivity from 0.8 acres of moderate to heavy compaction from temporary road and landing construction is ~ 0.1% reduction in yield (30% growth reduction on 2.9% of the area). Total estimated reduction in yield for this 28 acre proposed site would be ~ 0.2%.

In order to avoid damage to existing tree roots, harvester-forwarder roads will not be subsoiled to mitigate compaction. Ripping will only occur on portions of the temporary

truck haul roads that are outside of the drip line of reserved trees. Other mitigation will be in the form of minimizing soil disturbance and compaction by yarding on top of slash as much as possible and doing ground based yarding during periods of low soil moisture with a minimum of yarding roads. See project design features, in Chapter 2, for additional mitigation measures.

c. Alternative 3 - Partial Release Oak Restoration

Same as Alternative 2 except that the amount of timber removed and slash created would be approximately 50% less.

View along Beck Road in the project area

2. Vegetation

The following table summarizes stand characteristics under current conditions and the three Alternatives considered. In particular, note average tree diameter after implementation of the alternatives, and it's future growth.

Table 3. Comparison of Tree Growth and Density, 20 and 40 years in the future[1]

Year/Treatment	Species	Trees per Acre	Average Diameter	Basal Area (BA)[2]	Relative Density	Comments
Year 2001						
2001/none	Oak	93	7.9	40	13	No Treatment
2001/none	DF	149	11.76	165	44	
2001/none	Total	245	**10.3**	205	57	
2001/Alt2	Oak	30	12.3	28	8	Full oak release
2001/Alt2	DF	30	23.4	90	18	
2001/Alt2	Total	62	**15.2**	120	26	
2001/Alt3	Oak	30	12.3	28	8	Partial oak release
2001/Alt3	DF	60	20.7	140	31	
2001/Alt3	Total	92	**17.5**	170	39	
Year 2021						
2021/none	Oak	82	11.2	65	19	No Treatment
2021/none	DF	137	14.5	217	53	
2021/none	Total	222	**13.2**	283	72	
2021/Alt2	Oak	28	16.5	46	11	Full oak release
2021/Alt2	DF	29	27.9	125	24	
2021/Alt2	Total	59	**19.8**	174	36	
2021/Alt3	Oak	28	15.8	42	10	Partial oak release
2021/Alt3	DF	57	24.1	186	38	
2021/Alt3	Total	87	**21.1**	230	48	
Year 2041						
2041/none	Oak	72	14.1	88	23	No Treatment
2041/none	DF	122	16.9	256	58	
2041/none	Total	197	**15.9**	347	82	
2041/Alt2	Oak	26	22.3	74	15	Full oak release
2041/Alt2	DF	28	32.0	160	28	
2041/Alt2	Total	54	**26.0**	234	43	
2041/Alt3	Oak	26	19.0	56	13	Partial oak release
2041/Alt3	DF	53	27.4	226	43	
2041/Alt3	Total	61	**23.0**	393	52	

Totals include Bigleaf maple, a minor stand component.

Douglas-fir and grand fir are combined. Current stand values differ from stand exam due to mathematical calculations within the growth model.

1. In order to compare results of the proposed treatments versus no treatment, the stands were modeled using Organon, SMC, version 1.0, a growth and yield model developed by OSU, and West Cascades Variant of FVS. Numbers generated by growth and yield models can be used as a relative comparison of treatments in a given stand, but are not necessarily accurate predictions of future growth. Future stand measurements are dependent on disturbance patterns and other stochastic events which can never be accurately predicted.
2. Basal Area as measured in square feet is defined as total cross sectional area of the trees in a stand.
3. RD (relative density) is a ratio: the density of trees per acre, relative to the maximum density possible, from biological research. 35 is the point where growth slows from competition. 60 is the point where competition begins to cause mortality.

a. Alternative 1 - No Action

Oak condition and abundance

Oak are not tolerant of shade, and generally die quickly when overtopped by Douglas-fir. Some particularly well-established trees may live for 20 years after being overtopped (McCulloch, 1940). Many of the trees at Beck road have been overtopped for at least 15 years. Oak snags and downed logs indicate that oaks have been dying on the site for at least the past 20 years.

Without disturbance, most of the oak found at Beck Road will be lost within the next 15 years. Growth modeling shows relative stand density increases within the next ten years to an approximate point where mortality is induced by crowding. Since oak trees are the least tolerant of overtopping, occupy the lower canopy, and are already in decline, they would be the first trees lost due to increasing density. Density mortality occurs when a stand reaches a relative density of 60. Growth modeling in Table 3 shows relative density, currently at 57, increasing to 72 by the year 2021.

However, those small areas that contain groves of younger oak may persist another few decades. Shade tolerance is greater in younger trees than in older trees (Harlow and Harrar, 1941) and the rate of Douglas-fir encroachment has been lower. Due to current and increasing density, the already narrow oak crowns will further diminish in size, and diameter growth will be very slow.

Conifer Density and Growth

Conifer density will continue to increase, causing self-pruning of lower crowns, reducing tree growth, and resulting in density mortality within the next decade. Conifer growth form and stand structure will remain similar to other closed canopy conifer forest, rather than resembling open-grown woodland structure. Tall, spindly growth form may occur in dense areas, resulting in unstable trees. Growth modeling projects average conifer diameter growth of about 5" in 40 years. Windthrow and other natural mortality factors would be the primary disturbance.

Native Species and Unwanted Vegetation

Native species composition would remain similar. As tree density increases, species such as oceanspray, snowberry, California hazel, saskatoon, and grasses would diminish due to increasing shade. Species such as thimbleberry, sword fern, enchanter's nightshade, and pathfinder would similarly increase.

Noxious weeds would continue to occupy portions of the area. The opening created by windthrown trees in 1995 would see increased coverage of Himalayan blackberry and Scot's broom as those populations continue to grow and spread.

b. Alternative 2 - Full Release Oak Restoration

Oak condition and abundance

Under this alternative, selected oak would be free of competition from conifers and excess oak trees, except in 8 small (approx ¼ acre) study plots (partial release and control treatments). Assuming that prescribed burning will limit establishment of more conifer trees, oak will remain free of competition for well over 50 years. At that time, trees will be approaching their maximum size, and competition will increase very slowly. Growing space will be sufficient to allow full crown development. If oak trees respond fully to the growing space, they will have wide, full crowns. These open-form oak with spreading branches provide better wildlife habitat, and tend to provide more cavities than closed-form oak. It is possible that past growing conditions have irreversibly changed the tree's growth form, and crown response may be modest. In experiments on ecologically similar white oak (*Quercus alba*), in the southeast U.S., growth response of trees released from overtopping varied, but response was greatest in trees of greatest vigor prior to release (McGee, 1981; Schlesinger, 1978). Younger trees are more likely to have greater response in growth rate and crown form.

Oak would be thinned where they occur in high density, resulting in about 30 oak trees per acre remaining (about 40 foot spacing, varying with height of oak). The remaining trees will be the largest and most vigorous with the widest crowns. Very favorable and rapid individual tree growth response to thinning has been measured in young (30 year old) stands of ecologically similar white oak (*Quercus alba*) in the Eastern U.S. (Dale, 1968). However, the groups of overstocked oak at Beck Road are older, averaging about 60 years, and have been suppressed by competition for at least 20 years. Thinning is expected to result in modest increases in growth rates, to favor development of open, spreading crowns, and create open stand structure similar to pre-settlement conditions.

Establishment of oak in areas of conifer removal and in test sites under thinned conifer canopy will increase the distribution and abundance of oak on the parcel. Approximately 11 acres of the project area contain less than 5% oak (species composition of trees per acre). If oak establishment were successful, about 5 acres of those 11 acres would be converted to oak. Such restoration of oak to an area where ecological succession has excluded it would have value for demonstration and learning, though it is very limited in extent.

Conifer Density and Growth

Under this alternative, conifer would be removed adjacent to oak trees and thinned where they are distant from oak. Stand structure in the areas dominated by conifer would be much more open. After thinning, spacing would vary considerably, but would average about 35 feet. Small clumps of trees would remain unthinned, and many gaps would be created, up to an acre in size (240 feet across). Open growing conditions would favor wide, deep crowns. Growth modeling in Table 3 shows relative density, currently at 57, decreasing to 26 after release, then increasing to 36 by the year 2021, and 43 by 2041, well below the mortality threshold. It would take about 20 years of growth before density will increase to the point that, on average, trees experience competition. After 40 years, density and competition will still be much less than they are at the present time. Average conifer diameter growth is predicted to be about 9 " in 40 years.

Even under this alternative, conifer would remain somewhat denser than that described in the 1851 General Land Office Surveys as "woodland" stands widespread across the Willamette Valley margins. Additional entries in future years may be necessary to achieve this, and to further establish oak on the parcel.

Due to soil conditions on the site, conifer trees are subject to poor rooting and blowing down in high winds. Harvesting will likely exacerbate this process, as remaining trees will be more exposed to winds.

Subsoiling, prescribed to reduce soil compaction on skid roads, has the potential to cause damage to the residual tree root systems adjacent to them. If more than one-third of the tree's root system is injured as a result of subsoiling, the trees will likely experience severe stress and be highly susceptible to attack and killing by opportunistic insects (primarily Douglas-fir beetle) and diseases (primarily armillaria). When more than one-half or more of the tree's root system has been severely impacted, tree mortality is likely. The total amount of tree mortality as a result of subsoiling is expected to be about one tree per acre. Therefore, if subsoiling or ripping is considered in any treatment area, additional total snags are expected, adding to the overall coarse woody material objectives.

Native Species and Unwanted Vegetation

Under this alternative, the most change to understory vegetation could occur. Native species composition would shift to species favoring open, sunny conditions and frequent, low-intensity fire. Species such as oceanspray, snowberry, California hazel, saskatoon, and grasses would probably increase. Species such as thimbleberry, sword fern, enchanter's nightshade, and pathfinder would similarly decrease. The diversity of native species is likely to be increased because a greater range of growing conditions will be created, and more native species can be established by seeding disturbed areas.

Increased light availability and ground disturbance created by ground-based timber removal would favor the establishment and spread of Himalayan blackberry, Scot's broom, and St John's wort. The existing plants have produced a seed bank which would eventually be spread from traffic (ground-based yarding equipment, foot traffic, or animals), from birds, and/or from wind. There would also be considerable foot traffic associated with the restoration actions, monitoring visits, and demonstration tours. Without treatment, it is likely that infestations of these species would spread to the entire parcel within a few years, and within a decade comprise 25% or more of the understory. It is likely that other species of noxious weeds could become established as well. Treatment actions and prescribed burning included in this alternative are expected to hold infestations at or below current levels.

Treatments prescribed to control noxious weeds will have some effects on native, non-target species. Mowing and grazing are non-selective methods that would reduce the biomass of all species, short-term. Long-term, grasses and forbs may be favored over shrubs, and native species favored over target noxious weeds. Vinegar or hot foam application would kill some native species plants adjacent to target noxious

weed plants, but after soil amelioration, the native species would regain the site. Hand-pulling and grubbing would have minimal effects on non-target species.

Prescribed burning would likely decrease biomass of native shrubs such as oceanspray, snowberry, California hazel, and saskatoon, because they are all readily top-killed by fire. However, their abundance and distribution would probably be unchanged, because they readily re-sprout from root crowns. Non-native forbs, particularly St. John's wort, have been found both to decrease after prescribed burning (Clark and Wilson, 2001) and increase in some cases (Agee, 1993). Prescribed burning would top-kill Himalayan blackberry, but it readily re-sprouts from root crowns. Burning kills Scot's broom, but may stimulate seed germination. Burning could help reduce both species if followed by sowing fast-growing native grasses, and by hand pulling or grubbing sprouts.

c. Alternative 3 - Partial Release Oak Restoration

Oak condition and abundance

Under this alternative, oak trees will be released from competition, but competition will resume much sooner than in Alternative 2, full release. Removal of additional conifer would be necessary in the future to maintain open growing conditions. Selected oak would be free of competition from conifers and excess oak trees, except in 4 small (approx ¼ acre) study plots (control). Growth modeling in Table 3 shows relative density, currently at 57, dropping to 39 after release, increasing to 48 by the year 2021, and to 52 by 2041, approaching the mortality threshold of 60. Oak will remain free of competition for about 30 years. Then, as trees continue to grow, competition will begin to constrain growth and crown development. Some measures would be necessary to periodically remove conifer regeneration, otherwise it would further increase competition. Growing space will be sufficient to allow crowns to spread much more widely than current conditions allow, but crown width will be limited by adjacent conifer trees. If oak trees respond fully to the growing space, they will have wider crowns, potentially half as wide as tree height.

The effects of thinning groups of dense oak trees would be similar to Alternative 2.

Abundance and distribution of oak would be similar to current conditions, since no openings would be created, nor would additional oak trees be established. Areas dominated by conifer would remain to the current extent.

Conifer Density and Growth

Under this alternative, conifer would be removed adjacent to oak trees and thinned where there are no oak, but they would not be thinned as much as in Alternative 2. Stand structure in the areas dominated by conifer would be more open than current conditions. After thinning, spacing would vary considerably, but would average about 27 feet. Small clumps of trees would remain unthinned, and small gaps would be created. On average, trees would experience a slight level of competition and would approach current density again in 30 years. Additional entries in future years

may be necessary to maintain tree growth. Average conifer diameter growth is predicted to be about 7 ” in 40 years.

Under this alternative, conifer would remain much denser than that described in the 1851 General Land Office Surveys as “woodland”.

Windthrow of conifer trees may be accelerated by harvest under Alternative 3. However, it would likely by less than under Alternative 2, due to higher remaining conifer density

Native Species and Unwanted Vegetation

Under this alternative, change to understory vegetation could occur to a lesser degree than Alternative 2. Species composition would shift to species favoring open, sunny conditions, in the short-term. Species such as oceanspray, snowberry, California hazel, saskatoon, and grasses would probably increase. Species such as thimbleberry, sword fern, enchanter’s nightshade, and pathfinder would similarly decrease. The diversity of native species is likely to be increased because a greater range of growing conditions will be created, and more native species can be established by seeding disturbed areas. In the long-term, as shade again increases and vegetation develops in the absence of disturbance, species composition would become more similar to current conditions.

Light availability and ground disturbance resulting from conifer removal would be less than in Alternative 2, but would still favor the establishment and spread of Himalayan blackberry, Scot’s broom, and St John’s wort. Though conditions would be less conducive to noxious weed establishment than in Alternative 2, the effects on noxious weeds and the effects of noxious weed control treatments would be similar.

Prescribed burning would not occur, beyond treatment of slash created by conifer removal. Effects on native species and on noxious weeds from burning would not occur.

3. Fuels and Air Quality

a. Alternative 1 - No Action

The area would be left to grow as is. No additional fuel would be created. There would be no impacts to air quality.

b. Alternative 2 - Full Release Oak Restoration

Fuel loading and fire risk will be temporarily increased at this site as a result of the proposed action. The increase in overall slash within the units, created by the proposed thinning will result in a higher risk of fire on the thinned sites following logging. The dead fuel loading is expected to be increased by 5 to 15 tons per acre with a discontinuous arrangement. Total dead fuel loadings will range from approximately 15 to 35 tons per acre. The fuel model will shift from model 8 to model 10 / 11. Overall, the risk of fire following this action will be low to moderate. This is due to the moderate topography and the existence of a partial tree canopy

shading the fuels. The risk for a fire start will be highest along the road right-of-ways while the roads are in use and be greatest during the period when attached needles dry out the first season following cutting. Following burning of the piles, the dead fuel loading will be < 4 tons / acre of fuels under 9 inches diameter. Some large material will be left on site for down wood requirements but the total will be less than the usual 240 lineal feet / ac. requirement for forested sites since the purpose of this project area is to move toward an open woodland condition. Following burning the fire risk would be less than for the formerly untreated stand.

With introduction of periodic broadcast burning it is expected that the fuel model will shift to a model 2, grass with scattered timber overstory. The fine fuel loading (less than ¼ inch diameter) at the time of burning would be about 2 tons per acre and the ¼" - 3" fuels would vary between .5 and 2 tons per acre. At least 70% of this fuel along with .5 - 1 ton of live foliage would be consumed with a broadcast burn. Large down woody material would also be reduced during a broadcast burn. Some pre-treatment and or rapid mop-up may be used to reduce the loss of this material if so desired by wildlife issues. Otherwise it is expected that after repeated periodic broadcast burning, large wood on the site would only occur periodically when a tree falls over and once down a log may only remain on site for 5-25 years.

Effects on air quality will be minimal and short lived. Piles would be burned in compliance with smoke management regulations after Fall rains have begun. Good atmospheric mixing conditions exist at this time and will help to dilute and disperse smoke. Any residual smoke should be of short duration and occur during a period of the year when there is less outdoor activity, and an increasing likelihood of rain storms that will scour the air shed and extinguish residual fire. For broadcast burning affects should be similarly short lived. Very light fuel loadings will result in short fire residence time and rapid extinguishment. Residual smoke would occur from stumps and down logs. With repeated burning the fuel loading of large fuels will diminish and reduce the amount of residual smoke from smoldering material. Mop up of smoldering material will be done if smoke posses a concern with local residents.

c. Alternative 3 - Partial Release Oak Restoration

Effects would be the same as those described for Alternative 2, with the following differences: 1) half as much slash would be created, thus less risk of fire would occur and less smoke would be produced from burning piles, 2) periodic broadcast burning would not occur under this alternative, and therefore the dead fuel loading would remain at < 4 tons / acre of fuels under 9 inches diameter approximately 4 tons per acre, the fuel model would not shift to a model 2, and emissions from periodic burning would not occur.

4. Wildlife

a. Alternative 1 - No Action

If no action is taken to release the oak, the Douglas-fir will continue to overtop the oak and eventually convert the site to a closed-canopy conifer stand. There is no shortage of closed-canopy conifer habitat in western Oregon.

The Salt Creek watershed would lose another patch of historic oak woodland/savanna habitat decreasing both its floral and faunal biodiversity.

The No Action Alternative will have long-term negative impacts on those wildlife species which nest and/or forage in oak savanna/woodland habitat. The impacts are not significant because the stand is too small and too isolated from other significant oak habitat and federal lands.

b. Alternative 2 - Full Release Oak Restoration

This alternative would allow the existing oak to develop a larger more complex structure over time. These large-diameter open-grown oak produce more acorns for regeneration and wildlife consumption than smaller suppressed oak can produce. They also provide more opportunities for cavity habitat than smaller oak trees can. Therefore, this alternative would create more nesting and foraging habitat for those species which rely on larger-diameter, more open-grown oak.

In addition to releasing the existing oak on the site this alternative would also reduce the density of Douglas-fir over the entire stand; release the largest firs, which are not in direct competition with oak trees, to create a more complex crown structure; and create some openings in the fir canopy so that oak seedlings may become established in the understory.

The proposed action is a no affect for the following species associated with mature conifer habitat; northern spotted owl, marbled murrelet, bald eagle, red tree vole, and Oregon Megomphix snail.

Both action alternatives would have long-term positive impacts on those wildlife species which nest and/or forage in oak savanna/woodland habitat. The impacts may never become significant because the stand is too small and too isolated from other significant oak habitat and federal lands.

c. Alternative 3 - Partial Release Oak Restoration

It would take longer for the desired oak habitat to develop and would require additional treatment much sooner than Alternative 2. No openings in the fir canopy would be created to plant oak seedlings.

5. Hydrology

a. Alternative 1 - No Action

This alternative would result in no change to the affected environment as described above.

b. Alternative 2 - Full Release Oak Restoration

Streamflow and Channel Conditions
Measurable effects to stream flow and channel conditions as a result of this thinning project are unlikely. This action is unlikely to alter the current condition of the aquatic system either by affecting its physical integrity, water quality, sediment regime, or in-stream flows.

No streams occur within the proposed project area. An intermittent stream and the associated Riparian Reserve in the extreme northwest corner of the parcel of Federal land is excluded from the project area. Therefore no direct impacts to channel conditions nor water quality are likely. Alterations in the capture, infiltration, and routing (both surface and subsurface) of precipitation as a consequence of the mechanical removal of trees and reductions in stand density, has been documented on watersheds in the Pacific Northwest and other parts of the world. However, because the actions reviewed under this proposal will affect less than 5% of the forest cover in the Salt Creek/South Yamhill watershed, detectable direct or indirect effects to streamflow as a result of this action are unlikely (Bosch, et. al. 1982).

Water Quality
This action is unlikely to measurably alter the current condition of the aquatic system by affecting water quality including temperature and sediment regime.

Trees will be felled and ground-based yarded to two landings and hauled along two minimally excavated temporary roads to an existing county road. Some short-term minor disturbance of road surfaces could potentially result in increases in stream turbidity if material from the road were later transported into nearby tributaries. In addition, yarding corridors, if sufficiently compacted, may route surface water and sediment into streams. However, several factors limit the potential for sediment delivery during or following this project: 1) there are no perennial streams within 200 meters of the project area and no action is proposed within designated riparian corridors, 2) even if compacted, high levels of residual slash on yarding corridors would reduce runoff by deflecting and redistributing overland flow laterally to areas where it will infiltrate into the soil, 3) following operations, areas of exposed soil within all new road construction and on ground-based yarding roads and landing locations would be seeded with Oregon certified (blue tagged) red fescue (*festuca rubra*) at a rate equal to 40 pounds per acre, 4) gentle gradients in this project area provide little opportunity for surface water to flow, 5) the small size of trees being yarded would limit surface disturbance to minimal levels, and 6) yarding would occur during periods of low soil moisture with little or no rainfall.

Tree removal is not proposed on steep, unstable slopes where the potential for mass wasting to nearby stream reaches is high. Therefore, increases in sediment delivery to streams due to mass wasting are unlikely to result from this action.

Because no action is proposed within riparian zones, there will be little to no risk of increased stream temperatures due to increasing exposure to direct solar radiation from this action.

Post treatment site preparations may include under-burning, cutting, grubbing, mowing, and grazing by goats. None of these actions are likely to effect water quality for reasons listed above. Pile burning may produce small patches of soil with altered surface properties that restrict infiltration. These surfaces will be surrounded by large areas that will easily absorb any runoff or sediment that reach them. In addition, piles will be burned outside of riparian reserves and away from surface water.

Cumulative Effects to Streamflow
In almost all cases, removal of more than 20% of the vegetative cover over an entire watershed will result in increases in mean annual water yield. Removal of less than 20% of vegetative cover has resulted in negligible changes where it was not possible to detect any effect (i.e. the error in measurements was greater than the change) (Bosch 1982). Typically increases in stream flow occur during periods of low soil moisture and are attributed to reductions in evapotranspiration by nearby vegetation.

In addition, alterations in the timing and/or quantity of peak flow events as a result of forest harvest and road construction have been studied for several decades. Jones and Grant (1996) hypothesized that clear-cutting leads to increases in stormflow volume while road construction and wood removal from channels results in earlier, higher peak flows. Alterations in peak flow timing and quantity are of particular concern in watersheds with potential for snow accumulation and quick melt-off during rain-on-snow events (ROS), such as occurred during the 1996 flood. However, because the proposed project effects less than 5% of the forest cover in the project watershed, its cumulative effects on stream flow cannot be directly measured within a reasonable degree of accuracy.

This action is unlikely to alter the current condition of the aquatic system either by affecting its physical integrity, water quality, sediment regime, or in-stream flows. This proposal is unlikely to impede and/or prevent attainment of the stream flow and basin hydrology, channel function, or water quality objectives of the Aquatic Conservation Strategy (ACS), (see Appendix 1 and 2).

c. Alternative 3 - Partial Release Oak Restoration

Under this alternative direct and indirect effects to water quality, hydrologic function and stream channel condition would be nearly identical to those of Alternative 2 (Full Oak Release Restoration). Because the effects of the proposed alternative are not likely to be measurable, there is no realistic way to quantitatively evaluate the differences in the alternative silvicultural prescriptions. In addition, the cumulative effects to the watershed would not be significantly different under this alternative.

6. Rural Interface, Recreation and Visual Quality

a. Alternative 1 - No Action

This alternative would result in no change to the affected environment as described above.

b. Alternative 2 - Full Release Oak Restoration

Rural Interface

Under this alternative conifer harvest and removal, weed treatments, and prescribed burning could affect adjacent landowners. Conifer harvest will generate noise and dust for a period of about two months. There will be brief periods where tree falling and log truck traffic create short delays for users of Beck Road. Tree falling may result in unintended fence damage that would need to be repaired rapidly by the timber sale purchaser. Weed treatments may generate some noise and dust from mechanical treatment (mowing). Use of goats to control weeds may create minor noise and smells for houses adjacent to the south boundary of the project. There is a slight risk of animal escapement onto adjacent lands. Smoke from prescribed burning could drift to adjacent homes for brief periods. The closest homes are to the south, where prevailing winds would be unlikely to push the smoke. Homes to the west and north are more distant, and much less likely to receive undiluted smoke. There are no homes within a half-mile to the east. There is a slight risk of fire escapement to adjacent properties. Local residents will be notified prior to commencement of harvest activities or prescribed burning. Fuel types to the south and east (field and pasture) present minimal risk. To the west is a 6-8 year old conifer plantation, the primary fire carrier is grass and shrubs. To the north is closed conifer forest with understory shrubs and forbs. Slopes and prevailing winds reduce the risk of spread to the north and west. Hand fire lines would be adequate to contain fire given the expected fuel type and burning conditions. Additional measures, such as engines and hose lays will be in place to further reduce risk.

Recreation

Use of the undeveloped trail would be suspended during conifer removal and fuel treatment. After they are complete, the tread of the trail will be cleared and the trail restored for use.

A temporary road will intersect with the trail for a distance of about 30 feet. After use the road will be subsoiled, and the trail will be obliterated for that length. Within a season of use, it is expected that use of the trail will restore a tread similar to the current trail.

Visual Quality

The primary change in visual quality will be from a visual character of closed forest, to a mixture of openings, small groves, and a more savanna-like appearance. Motorists on Highway 22 may notice fewer conifer trees crowning the hill ¼ mile to the north, but changes would not be obvious. Trail users will encounter a wider variety of scenery and visual character. They will not experience the screening that currently exists, and would be visible to motorists on Beck Road and possibly from residences to the south.

Understory vegetation will change in response to increased light and prescribed burning. Over the long-term, grasses and forbs may dominate the understory appearance, rather than shrubs. If control efforts are not successful, an increase in coverage of invasive species, especially Himalayan blackberry, would degrade visual quality. Noxious weed treatments, mulch mats and tree tubes on seedlings, and paint remaining on trees would detract from the natural appearance of the area for a period of up to five years.

After conifer removal, oak trees will be much more visible. Past suppression and, potentially, logging damage may cause many of the oak to look unhealthy. As their crowns recover, visual appearance will improve. The restoration of the landscape to an appearance more similar to oak savanna may have an aesthetic appeal to many people, as oak savanna is itself considered a highly scenic landscape associated with the Willamette Valley. The overall appearance of the broader landscape will change little.

c. Alternative 3 - Partial Release Oak Restoration

Rural Interface

Effects would be similar to those described for Alternative 2, with the exception of smoke and escaped fire risk from prescribed burning. Under Alternative 3, piled fuels would be burned following harvest, but no subsequent broadcast burning would occur at intervals. Therefore, exposure to smoke and the risk of escaped fire onto adjacent land would only occur once, and to a very limited extent, in the winter following harvest.

Recreation

Effects would be similar to those described for Alternative 2.

Visual Quality

Under this alternative, a mixture of small gaps, groves, and a wider canopy of conifer would replace the visual character of closed forest. The appearance would not differ significantly from Alternative 2 when viewed from Highway 22, but it would differ considerably when viewed from Beck Road or the undeveloped trail. An appearance of conifer forest would still remain, but with more widely spaced trees and occasional canopy gaps. Some measure of screening would exist for trail users, due to a higher density of trees remaining along the trail.

Understory vegetation and its appearance would be quite similar to current conditions. Under this alternative, the overall appearance would not resemble oak savanna, but an oak/conifer woodland.

V. CONSULTATION AND COORDINATION

A. List of Preparers

NAME	TITLE	DATE/INITIAL
Hugh Snook	Team Lead, Ecologist	2/3/03 HWS
Andy Frazier	Logging System Specialist	2/3/03 ahk
Gary Licata	Wildlife Biologist	2/3/03 gal
Tom Tomczyk	Soil Scientist/Fuels Specialist	2/3/03 TST
Diane Morris	Silviculturist (Consultation only)	2/3/2003 DM
Ron Exeter	Botanist (Consultation only)	Feb 3, 2003 RE
Tom Vanderhoof	Cultural Specialist	2/3/03 TMV
Steve Liebhardt	Fisheries Biologist	2/3/03 SL
Ashley La Forge	Hydrologist	2/3/03 A-L.
Steve Cyrus	Civil Engineering technician	2/3/03 S.B.C.
Carolyn Sands	NEPA Coordinator	2/3/03 CAS

B. Consultation

Consultation with the Fish and Wildlife Service or NOAA Fisheries (Formerly National Marine Fisheries Service) is not required pursuant to the Endangered Species Act, because the proposed action and alternatives would have no effect on any listed species. A cultural resources survey using intuitive meander survey method was conducted in November, 2001. The State Historic Preservation Office (SHPO) has been notified of this proposal and has determined, in accordance with 36 CFR 800.5(b), that the proposed undertaking would have no effect on cultural resources. The Confederated Tribes of the Grande Rhonde Indians were notified of this project during the scoping process, requesting information regarding tribal issues or concerns relative to the project. A response was received supporting the proposal, and several discussions occurred between the project leader and the Cultural Protection Specialist for the Tribes, regarding the project, cultural

resources and the survey. The Cultural Protection Specialist was notified prior to the cultural resources survey, to invite participation or observation.

C. **Public Participation**

On July 22, 2002, BLM sent a letter requesting comments on the scope of the proposed project to 11 groups, 3 businesses, 17 state or local government agencies, 2 Native American Tribes, and 17 individuals. BLM received 2 written responses, one phone call, and one e-mail. One comment was received in person from an adjacent landowner on the project site. On July 10, a public meeting was held at the Buell Grange Hall, near Dallas, to hear comments on the proposal.

The comments received are summarized with Bureau of Land Management responses:

Comment: The project area is too small to be efficient, per acre cost will be high.

Response: A small project area was selected intentionally. This is the first such restoration project in the Salem District and can provide important lessons regardless of its size. While the small project area does limit its value for research on the effectiveness of different restoration techniques, it will still allow for demonstration of the implementation of different techniques. Based on the results of this first proposed project, BLM will evaluate whether a larger project would be appropriate in the future.

Comment: A livestock fence exists between my property and the BLM parcel. Any damage to the fence should be repaired quickly. My cattle could get out.

Response: Adjacent landowners will be notified prior to commencement of tree falling and yarding. Under provisions of the timber sale contract, the purchaser will be required to repair any damage to fences in a timely manner.

Comment: The area is too small to call a true oak savanna.

Response: The objective of the project is to restore the species composition and structure of oak savanna/woodland on this small parcel. Other examples of this habitat exist within the surrounding landscape, and restoration on this parcel may complement wildlife use between this and nearby habitat, but certainly this is only a fragment of what was once widespread ecosystem.

Comment: Why thin the conifer, when it should be removed altogether? All conifer less than 160 years old (since settlement) should be removed. Or, if originally present, retain them at similar numbers and distribution.

Response: In the 1851 General Land Office survey, part of the project area was typed as 'woodland', so it appears that conifer were originally present, though they have been removed from the site since the survey occurred. Therefore, it seems appropriate to retain some level of conifer trees on the site. The proposed action is primarily based on releasing the oak that currently exist on the site, and to a limited extent, removing conifer

to re-establish more oak. Removing nearly all the conifer to re-establish oak over the entire parcel in one step would carry greater impacts to the site than the proposed action. After implementing and evaluating the proposed action, the option exists to perform additional entries, using what has been learned, to guide further restoration.

Comment: Prescribed burning should be included to maintain savanna conditions and to favor native plants.

Response: Prescribed burning is included in the proposed action for that purpose.

Comment: The existence of an equestrian trail on the site should not affect restoration. A private enterprise should not be allowed a specific limited use.

Response: Under the provisions of the timber sale contract to remove conifer from the site, the purchaser would be required to clear the trail of logging debris and restore it for use. However, restoration objectives were not compromised in the design of the proposed action because of the trail. In Alternative 3, partial release of oak, additional conifer would be left adjacent to the trail because less conifer thinning would occur.

Comment: Douglas-fir overtakes this habitat, and maintaining it as oak savanna is a long-term commitment and may not be very cost effective. Converting from conifer to oak seems futile - a one-acre savanna doesn't amount to anything. Do not go too far beyond what you can practically carry out and maintain. Conservatism is necessary with this parcel.

Response: The proposed action was designed to maintain existing oak on the site, with a small component of conversion from conifer to oak as to learn from as an adaptive management trial. Maintaining oak savanna is a long-term commitment because it will require periodic disturbance (cutting or prescribed fire) to prevent later conversion back to Douglas-fir. The accessibility and topography of the site favor efficient maintenance entries. After restoration objectives are achieved, it may be possible to maintain conditions with entries every 5-10 years.

Comment: How will the risk of prescribed fire escape to adjacent landowners be managed?

Response: A prescribed burn plan will be prepared and approved prior to ignition. The burn plan will address the amount and placement of equipment and personnel and cooperative resources necessary to minimize the risk of escaped prescribed fire, and to effectively deal with the contingency of escaped fire if it occurs.

Comment: Understory species, including blackberry, poison oak, and Scot's broom will really take over the site when it is opened up.

Response: Treatments to address unwanted or competing vegetation are included in the action alternatives, and their effects are analyzed in the Environmental Consequences section. A vegetation management analysis consistent with the process prescribed in the *Western Oregon Program-management of Competing Vegetation Record of Decision* (August, 1992) is included in the silvicultural prescription for this project. Implementation and monitoring of these treatments are an important part of the restoration project.

Comment: I am concerned about the possibility of large Douglas-fir on BLM land just adjacent to my barn blowing down. In this project, it would be beneficial to remove trees near the boundary line that could fall on my barn.

Response: While the BLM is under no legal requirement to remove such trees, there are many oak trees in that particular area, and most conifer trees will be removed to release oak. Since oak tends to be windfirm and do not grow as tall, this is expected to greatly diminish the risk of a tree falling onto the barn.

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Appendix 1: Environmental Elements Review Summary

The following table summarizes environmental features, which the Bureau of Land Management is required by law or policy to consider in all Environmental Documentation (BLM Handbook H-1790-1, Appendix 5: Critical Elements of the Human Environment).

Environmental Elements Review Summary			
Environmental Feature		**Affected/ Not Affected /N/A (not present within the project area)**	**Remarks (Survey dates, if applicable)**
Air Quality		Affected	Pile burning and broadcast burning would be in compliance with Oregon Smoke Management Plan. See Fuels/air quality effects, Ch. IV.
Areas of Critical Environmental Concern (ACEC)		N/A	
Cultural, Historic, Paleontological		Not Affected	Pre-disturbance survey conducted 11/02, no sites found.
Prime or Unique Farm Lands		N/A	
Flood Plains		N/A	
Native American Religious Concerns		Not Affected	
Threatened or Endangered	Plants	N/A	
	Terrestrial Wildlife	N/A	
	Fisheries	N/A	
Hazardous or Solid Wastes		N/A	
Water Quality (Surface and Ground)		Not Affected	
Wetlands or Riparian Zones		N/A	See hydrology effects sec., Ch. IV.
Wild and Scenic Rivers		N/A	
Wilderness		N/A	
Invasive, Nonnative Species		Affected	See vegetation effects sec., Ch. IV.
Environmental Justice		N/A	

Aquatic Conservation Strategy Objectives Review Summary (RMP pages 5-6)		
ACS Objective	**Does the project retard or prevent attainment of this ACS objective?**	**Remarks**
1) Maintain and restore distribution, diversity, and complexity of watershed and landscape features to ensure protection of aquatic systems.	**No**	The purpose of this project is to restore a habitat type that contributes to landscape diversity.
2) Maintain and restore spatial connectivity between watersheds.	**No**	Project would increase connectivity of oak habitat.
3) Maintain and restore physical integrity of the aquatic system including shorelines, banks and bottom configurations.	***N/A***	
4) Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.	**No**	See hydrology discussion in effects section
5) Maintain and restore the sediment regime under which the system evolved.	**No**	Project would partially restore pre-settlement vegetation and disturbance regime. Sediment regime assumed to be closely linked. See soils and hydrology discussions in effects section.
6) Maintain and restore in-stream flows.	***N/A***	See hydrology discussion in effects section
7) Maintain and restore the timing, variability, and duration of flood plain inundation and water table elevation in meadows and wetlands.	***N/A***	No meadows or wetland in project area.
8) Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide thermal regulation, nutrient filtering, and appropriate rates of bank erosion, channel migration and CWD accumulations.	***N/A***	No direct effects on riparian habitat or species expected.
9) Maintain and restore habitats to support well-distributed populations of native plant, invertebrate, and vertebrate riparian dependent species.	***N/A***	No direct effects on riparian habitat or species expected.

Downstream Beneficial Uses Review Summary (Salem FEIS 3-9)		
Downstream Beneficial Uses	**Affected/ Not Affected/ N/A (not present within the project area)**	**Remarks**
Public Water Supply	**N/A (not present within the project area)**	Municipal water supplies lower in watershed
Private Domestic Water Supply	**N/A (not present within the project area)**	Adjacent domestic water supplies from wells.
Irrigation	**Frazier Creek, (south of project area) downstream irrigation withdrawal.**	Project expected to have no effect on in-stream flows or irrigation.
Fisheries	**N/A (not present within the project area)**	No effect on downstream fish due to project area slope and distance to stream.
Wildlife	**Affected**	Positive benefits expected for wildlife associated with oak woodland. No effect expected for aquatic/riparian wildlife habitat.
Recreation	**N/A (not present within the project area)**	No water-related recreation in project area. Salt creek typically does not meet State water quality
Maintenance of Aesthetic Quality	**N/A (not present within the project area)**	No water-related aesthetic qualities within project area.

Appendix 2: **RELATIONSHIP OF ALTERNATIVES TO RELEVANT MANAGEMENT DIRECTION**

The following table shows how this action relates to required components of the Aquatic Conservation Strategy (*RMP*, pp. 5-7):

Component	Relationship to this Action
Interim Riparian Reserves	No activities are proposed within Riparian Reserves. Watershed Analysis that would underlie proposed management actions in the Riparian Reserves has not yet occurred on this isolated parcel. Upland activities have been designed to attain Aquatic Conservation Strategy objectives, consistent with direction to promote long-term ecological integrity (*RMP* p.14).
Key Watersheds	The proposed project area is not in a Key Watershed.
Watershed Analysis	Watershed Analysis for Salt Creek or the South Yamhill River watershed that includes this isolated parcel has not yet occurred. This proposed action is consistent with recommendations in nearly all watershed analyses completed to date to inventory, maintain and restore special habitats. Conditions on the project area create some degree of urgency (see I. Purpose and Need).
Watershed Restoration	This was not designed as a watershed restoration project; it focuses on primarily on restoration of an upland habitat. Direction from the Salem District Resource Management Plan to enhance and maintain biological diversity (P. 24), identify special habitats and protect their relevant values (P. 26), and maintain or restore habitat for special status wildlife species (P. 28) provide part of the purpose and need for this proposed action. However, it was designed to attain Aquatic Conservation Strategy objectives. Effects to resources described in the ACS objectives (stream physical integrity, water quality, sediment regime, in-stream flows, species composition, etc.) are addressed in the Environmental Consequences section of this EA.