



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

COOS BAY DISTRICT OFFICE

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In Reply Refer To:

5820/1792 (ORC040)

DOI-BLM-OR-C040-2010-0002-EA

Applying Glyphosate on Tanoak to Aid in Sudden Oak Death

April 7, 2010

Dear Citizen:

We have completed the Applying Glyphosate on Tanoak to Aid in Sudden Oak Death Environmental Assessment (DOI-BLM-OR-C040-2010-0002-EA) and have prepared a draft Finding of No Significant Impact (FONSI). These documents have analyzed the potential impacts of incorporating the use of the herbicide glyphosate in the current treatment methods to eradicate Sudden Oak Death. The project is designed to implement management objectives and direction of the 1995 Coos Bay District Resource Management Plan.

The environmental assessment contains the analysis of the effects of a no-action alternative and a proposed action alternative. The proposed action would include the use of glyphosate to treat tanoaks in the eradication zone by one of three methods: injection and frill (hack and squirt), cut stump and foliar application. These methods could be used on any identified infected BLM lands within the current quarantine area identified by the State of Oregon.

You are encouraged to read the EA and comment on the appropriateness of the FONSI prior to the end of the 30-day comment period, May 7, 2010. This EA is located on our BLM web site at <http://www.blm.gov/or/districts/coosbay/plans/index.php>. A Decision Document will be published prior to implementing project activities.

Comments, including names and street addresses of respondents, will be made available for public review at the address above during regular business hours (8:00 a.m. to 4:30 p.m.), Monday through Friday, except holidays, and may be published as part of the EA document or other related documents. 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 in 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 public inspection in their entirety.

Questions should be directed to Aimee Hoefs at (541) 756-0100. Written comments on the appropriateness of the draft FONSI may be sent to Coos Bay District BLM, 1300 Airport Lane, North Bend, OR 97459-2000 Attn: Aimee Hoefs or e-mail to OR_CoosBay_Mail@blm.gov, RE: SOD.

Sincerely,

/s/ Kathy Westenskow

Kathy Westenskow
Myrtlewood Field Manager



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In Reply Refer To:

5820/1792 (ORC040)

DOI-BLM-OR-C040-2010-0002-EA

FINDING OF NO SIGNIFICANT IMPACT

For the

Applying Glyphosate on Tanoak to Aid in Sudden Oak Death

Eradication Environmental Assessment

DOI-BLM-OR-C040-2010-0002-EA

I. Introduction

An Interdisciplinary Team has prepared an Environmental Assessment (EA) to analyze the effects of using the herbicide glyphosate in addition to current Sudden Oak Death (SOD) eradication treatments. This EA is hereby incorporated by reference. This document contained two alternatives: a no-action alternative and a proposed action alternative. The no action alternative would continue current eradication methods on BLM-managed lands within the SOD quarantine area as designated by the State of Oregon. These include a rapid response to cut the infected plants and every host species within the eradication zone around the infected plant(s). The proposed action would include the application of the herbicide glyphosate in any of the following methods: injection and frill (hack and squirt), cut stump and foliar application.

II. Background

This EA was developed under the management direction of the 1995 Coos Bay District Record of Decision and Resource Management Plan (1995 ROD/RMP). The analysis supporting this decision tiers to the *Final Coos Bay District Proposed Resource Management Plan/Environmental Impact Statement* (UDSI 1994). The 1995 Record of Decision is also supported by, and in conformance with, the *Final Supplemental Environmental Impact Statement (EIS) on Management of Habitat for Late-Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl (Northwest Forest Plan)* (USDA and USDI 1994) and its *Record of Decision* (USDA and USDI 1994a) as supplemented and amended.

III. Finding of No Significant Impact

I am adopting the EA, in which the effects analysis indicates that there would not be a significant impact on the quality of the human environment from the implementation of either alternative. This finding and conclusion is based on my consideration of the Council of Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), both with regard to context and intensity of the impacts described in the EA.

Context

The proposed action would occur within the Matrix, Riparian Reserve and Late-Successional Reserve land use allocations as designated by the 1995 Coos Bay District ROD/RMP. The RMP anticipated the need to "manage timber stands to reduce the risk of stand loss from fires, animals, insects and disease (p. 52)." As stated in the ROD for the Northwest Forest Plan, the Aquatic

Conservation Strategy (ACS) was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems on public lands within the range of Pacific Ocean anadromy. Consistency of the proposed alternative with the ACS objectives is included in Chapter 3 and 4 of the EA (pp. 24-28).

The proposal consists of approximately no more than 250 acres of treatment per year. The objective of the project is to prevent the spread of Sudden Oak Death from becoming regional or national in scope.

Intensity

Impacts that may be both beneficial and adverse (40 CFR 1508.27 (b)(1))

Any impacts, both beneficial and adverse, are not significant as they are consistent with the range and scope of those effects analyzed in the 1994 Final Coos Bay District Proposed Resource Management Plan /Environmental Impact Statement to which the EA is tiered. While the pathogen *Phytophthora ramorum* was not discovered in Oregon until 2001, the 1994 FEIS analyzed for the loss of forested habitats from the spread of disease.

Public Health and Safety (40 CFR 1508.27(b)(2))

No aspect of the proposed action would have an effect on public health and safety.

Unique characteristics of the geographic area (40 CFR 1508.27(b)(3))

There are no known parklands, prime or unique farmlands, wetlands, floodplains or Wild and Scenic Rivers that would be affected in the project area. The North Fork Chetco River ACEC is located within the current quarantine area. However, analysis in the EA has concluded that the effects to this ACEC are not significant to the values for which the ACEC was designated (EA pp. 16 and 17).

Degree to which effects are likely to be highly controversial (40 CFR 1508.27(b)(4))

The effects on the quality of the human environment of the proposed activity are not highly controversial. Glyphosate is the most commonly used herbicide in Oregon where there is broad support for the eradication of Sudden Oak Death.

Degree to which effects are highly uncertain or involve unique or unknown risks (40 CFR 1508.27(b)(5))

The possible effects of the proposed action on the quality of the human environment are not highly uncertain and do not involve unique or unknown risk.

Consideration of whether the action may establish a precedent for future actions with significant impacts (40 CFR 1508.27(b)(6))

The proposed project does not establish a precedent for future actions or represent a decision in principle about future actions with potentially significant effects. An Environmental Impact Statement has been under development to analyze the effects of herbicide use on BLM lands in Oregon.

Consideration of whether the action is related to other actions with cumulatively significant impacts (40 CFR 1508.27(b)(7))

There are no cumulatively significant impacts identified by the environmental assessment.

Scientific, cultural, or historical resources, including those listed in or eligible for listing in the National Register of Historic Places (40 CFR 1508.27(b)(8))

The proposed activities would not affect districts, sites, highways, structures or objects listed in or potentially eligible for listing in the National Register of Historic Places, nor would the activities cause a loss or destruction of significant scientific, cultural or historical resources.

Threatened or endangered species and their critical habitat (40 CFR 1508.27(b)(9))

Consultation with the U.S. Fish and Wildlife Service (USFWS) was re-initiated in December 2008 for FY2009-2012 Sudden Oak Death Eradication Activities. The Biological Opinion “includes a finding that implementation of the proposed actions would not jeopardize the continued existence of the spotted owl or the murrelet, nor result in the adverse modification of their designated critical habitats” (FWS TAILS # 13420-2009-F-0022).

Consultation was requested with the National Marine Fisheries Service (NMFS) for Southern Oregon/Northern California Coasts (SONCC) coho salmon and coho and chinook Essential Fish Habitat.

Any effects that threaten a violation of Federal, State, or local laws or requirements imposed for the protection of the environment (40 CFR 1508.27(b)(10))

The proposed action would not violate Federal, State or local laws imposed for the protection of the environment. These include the Endangered Species Act and the Clean Water Act.

Analysis has also concluded that implementation of the proposed actions will not change the likelihood of and need for listing of any Special Status Species under the ESA as identified in BLM Manual 6840 and BLM OR/WA 6840 policy.

Conclusion

Based on the information contained in the EA (DOI-BLM-OR-C040-2010-0002-EA), and all other information available to me I have determined that the proposed action would not have a significant impact on the human environment within the meaning of section 102(2) (c) of the National Environmental Policy Act of 1969, and that an Environmental Impact Statement is not required. I have determined that the effects of the proposed activities would be in conformance with the 1995 *Record of Decision/Resource Management Plan* for the Coos Bay District.

Kathy Westenskow
Myrtlewood Field Manager

Date

Applying Glyphosate on Tanoak to Aid in Sudden Oak Death Eradication



Environmental Assessment **DOI-BLM-OR-C040-2010-0002-EA**

Coos Bay District
Bureau of Land Management
1300 Airport Lane
North Bend, OR 97459

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Chapter I Purpose and Need

Background

Sudden Oak Death (SOD) is caused by *Phytophthora ramorum*, a recently-described invasive pathogen of unknown origin. Millions of oaks and tanoaks have been killed by this pathogen (primarily in California) since the disease became evident in the mid-1990s; as of December 2009, there were 840 infected tanoaks in southwest Oregon. The pathogen is multi-cyclic, because it can produce many generations of sporangia in a given year. A rapid response is essential for effective treatment. This pathogen infects a large list of hosts, many of which are economically important nursery and landscape plants.

Phytophthora ramorum is subject to both state (ORS 603-052-1230) and federal (7 CFR 301.92) quarantine regulations that restrict the human-assisted movement of hosts from infested areas into disease-free areas. Oregon state regulations require eradication of the pathogen when it is found. A Sudden Oak Death control program was put in place under an Oregon State statute in an attempt to eradicate the disease on private and State lands, but it is not automatically applied to Federal lands. However, Federal land managers (BLM and USFS) recognize that success of the local SOD eradication effort depends on the application of control treatments across the landscape without regard to land ownership and have cooperated in this effort since 2001. As of March 23, 2010, the BLM has completed 417 acres of cutting and 228.5 acres of burning treatment, on BLM-managed lands in Curry County.

There is no effective direct control method. Current methods of eradication on private and USFS lands include: 1) glyphosate (USFS) and imazapyr (private lands) injection (herbicide treatment) of tanoak prior to cutting to prevent resprouting; 2) mechanical removing (cutting) of infected host species (e.g. tanoak) and all other target hosts (evergreen huckleberry and Pacific rhododendron) within a defined treatment area; and 3) burning of all cut vegetation. On BLM lands current methods include mechanical removal (cutting) of infected host species and all other target hosts within a defined treatment area and then burning the cut vegetation. Sites may be re-treated if the pathogen persists.

Need for the Project

The BLM has been operating under a 1984/1987 court mandated injunction preventing the use of herbicides for vegetation treatments except for the control of noxious weeds. Monitoring information provided by the Forest Service Health Protection Pathologist has indicated that using herbicides reduces the number of infected sprouts post-treatment, thus reducing the potential for continued spread of the disease.

On June 22, 2009, this injunction was amended allowing the BLM to use the herbicide glyphosate to specifically treat tanoaks within the quarantine area to prevent the spread of Sudden Oak Death.

Herbicide treatments incorporated into eradication treatments in Curry County appear more effective at controlling the pathogen than the mechanical-only treatments BLM is currently using. Tanoak sprouts are highly susceptible to the pathogen. Lack of or reduced sprouting eliminates a potential inoculum source. In 2008-2009, federal and state plant pathologists established plots around the stumps of 119 known-infected tanoak trees that had undergone an eradication treatment in 2001-2007. Soil samples were collected and host vegetation was carefully examined. All samples were tested for the presence of *P. ramorum*. Six percent of the 106 plots on private lands had infected tanoak re-sprouts (post treatment) using herbicide in some form (injected, cut stump, or foliar application). Thirty-eight percent of 13 plots

on BLM lands where herbicides were not used had infected tanoak re-sprouts (post treatment)¹. While the small non-herbicide sample size reduces the statistical strength of the apparent trend, the data nevertheless supports the pathologist’s earlier impressions that herbicide use reduces the number of infected sprouts post treatment, thus reducing the potential for continued spread of the disease.

Purpose (Objectives) of the Project

Any action alternative to be given serious consideration as a reasonable alternative must meet the objectives provided in the ROD/RMP for projects to be implemented within the planning area. The following management direction is to be applied within the analysis area on BLM-managed lands:

- Manage timber stands to reduce the risk of stand loss from fires, animals, insects, and disease (p.52) by:
 - Incorporating the use of glyphosate into ongoing and future SOD eradication treatment efforts.
- Apply herbicides, insecticides, other toxicants and other chemicals only in a manner that avoids impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives (p.16/25).

Location

The project area would be located within the SOD quarantine area as defined by the Oregon Department of Agriculture Plant Division (ORS 561.510 and 561.540). The quarantine area is primarily located within the lower portion of the Chetco River watershed and the southernmost portion of the Pistol River watershed which is located roughly eight miles southeast of Gold Beach and ends approximately four miles northeast of Brookings. The current quarantine area is approximately 102,996 acres in size with BLM lands totaling 13,478 acres. The proposed treatment activities would be located on BLM-managed lands within the quarantine area. The BLM-managed lands currently included within this area include T. 39 S., R. 14 W., Section 23; T. 39 S., R. 13 W., Sections 1-35; T. 39 S., R. 12 W., Section 8; T. 40 S., R. 13 W., Sections 4,5,6,8,9,10,11,12,13,14,15,17,18,19, 20 and 21, Willamette Meridian.

Table I: Ownership within the Analysis Area/Quarantine Area

BLM Acres	USFS Acres	Private/Other Acres	Total Acres
13,478	19,928	69,590	102,996

Decision Factors

In choosing the Alternative that best meets the Purpose and Need, consideration would be given to the extent to which each alternative would:

1. Most successfully continue co-ordination and co-operative efforts with ODA, ODF, USFS, South Coast Lumber, and other neighboring landowners towards the eradication of the pathogen *Phytophthora ramorum*.
2. Quickly and effectively treat pathogen-infected tanoak within a designated treatment area.
3. Prevent the spread of the pathogen to adjacent lands.
4. Keep the pathogen contained within the quarantine area.

Conformance with Existing Land Use Plans

This EA is tiered to and in conformance with the *Coos Bay District Resource Management Plan/Final Environmental Impact Statement* (USDI 1994) and its *Record of Decision* (USDI 1995) and the *Final Supplemental Environmental Impact Statement(FSEIS) on Management of Habitat for Last Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl (Northwest Forest*

¹ Data from Ellen Michaels Goheen, USFS Plant Pathologist, Rogue River National Forest. Personal communication 2010. This data is referenced throughout this document.

Plan [NFP] (USDA and USDI 1994a) and its *Record of Decision* (USDA and USDI 1994b) as supplemented and amended by:

- *Management of Port-Orford-cedar in Southwest Oregon Final Supplemental Environmental Impact Statement* (USDA and USDI 2004) and its *Record of Decision* (USDI 2004).
- *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigations Measures Standards and Guidelines* (USDA and USDI 2001).

This EA is also tiered to and in conformance with the *Final Programmatic Environmental Impact Statement Vegetation Treatments Using Herbicides On Bureau Of Land Management Lands in 17 Western States* (USDI 2007a) and its *Record of Decision* (USDI 2007b).

Documents Incorporated by Reference

The following documents were used to assist in the analysis of this project and are referenced within this environmental assessment:

- North Fork Chetco Watershed Analysis (USDI 1997a)
- Pistol River Watershed Assessment (Maguire 2001b)
- Chetco River Watershed Assessment (Maguire 2001a)
- Draft Environmental Impact Statement (DEIS) for Vegetation Treatments Using Herbicides on BLM lands in Oregon* (USDI 2009b)
- Biological Opinion for SOD eradication activities scheduled to occur on federal lands administered by the Rogue River-Siskiyou National Forest (Forest) and the Coos Bay District Bureau of Land Management (District) (USDI 2009a)

Endangered Species Act

Consultation has been requested with the National Marine Fisheries Service (NMFS) for Southern Oregon/Northern California Coasts (SONCC) coho salmon and coho and chinook Essential Fish Habitat.

Consultation with the U.S. Fish and Wildlife Service (USFWS) was re-initiated in December 2008 for FY2009-2012 Sudden Oak Death Eradication Activities. The Biological Opinion “includes a finding that implementation of the proposed actions would not jeopardize the continued existence of the spotted owl or the murrelet, nor result in the adverse modification of their designated critical habitats” (FWS TAILS # 13420-2009-F-0022).

Decisions to be Made

The Field Manager of the Myrtlewood Field Office, Coos Bay BLM, must decide whether to incorporate the use of the herbicide glyphosate in addition to current Sudden Oak Death eradication treatments. This project is described in detail starting in Chapter 2.

The Field Manager must also determine if the selected alternative would or would not be a major Federal action significantly affecting the quality of the human environment. If the Manager decides it would not significantly affect the quality of the human environment, then the Manager can prepare and sign a FONSI (Finding of No Significant Impact).

If the Manager determines that the selected alternative would significantly affect the quality of the environment, then the project must either be dropped or modified, or have an EIS (Environmental Impact Statement) and a ROD (Record of Decision) prepared and signed before the project could proceed.

Public Involvement

The primary purpose of scoping is to identify agency and public concerns relating to a proposed project and helps define the environmental impacts of concern to be examined in detail in the EA. The initial

scoping process involved informing the public through a Scoping Letter, requesting comments on the proposal. Scoping letters were sent to adjacent landowners, agencies that have requested these documents, and other interested parties on the District NEPA mailing list. The Scoping Notice was published in The World newspaper on November 11, 2009, and posted on the District web page. The formal scoping period ran from November 11 – December 15, 2009. Only two comments were received; one expressed support for the project and the other documented compliance of the project with Oregon State regulations concerning herbicide use.

Chapter 2 Alternatives

This Chapter provides a description of each alternative and summarizes the environmental consequences of the alternatives.

This EA contains an analysis of a no action alternative and a proposed action alternative. Analysis of the no action alternative is required under CEQ regulation §1502.14. For an action alternative to be considered it must meet the purpose and need while not violating any minimum environmental standards. The alternatives developed are consistent with the RMP and satisfy the purpose and need of implementing the RMP.

No Action Alternative

The no action alternative provides a baseline for the comparison of the alternatives. This alternative describes the existing condition and the continuing trends.

Under this alternative, the BLM would continue using the current vegetative treatments to prevent or reduce the spread of the *Phytophthora ramorum* pathogen. After infection sites and treatment areas are identified by Forest Pathologists, all tanoaks, regardless of size, are felled. This treatment area is comprised of an approximately 300-foot radius around the infected trees. Evergreen huckleberry and Pacific rhododendron (other host species) are also cut. All cut material is hand or machine piled and burned; in a few cases the site is amenable to a broadcast burn operation. In areas that are predominantly tanoak, the area is re-planted with Douglas-fir.

On State and private lands, the herbicide imazapyr is used to kill and prevent re-sprouting of tanoak within the treatment area. The Forest Service uses glyphosate only. All cut material is burned.

Proposed Action Alternative

The proposed action is to include the use of the herbicide glyphosate² in addition to current treatment methods (described in the No Action Alternative). Glyphosate would be used only on tanoaks in any one or more of the following hand application methods: frill and injection (hack and squirt), cut stump, and foliar application. Foliar application is limited to re-sprouts of tanoak. Glyphosate is one of the most commonly used herbicides in Oregon, where it is primarily used to manage weeds in food production. Glyphosate herbicides (one common brand name is Rodeo) are available for use by the general public.

These treatments would occur within the General Forest Management Area (GFMA) and Connectivity portions of the Matrix Land Use Allocation (LUA), within the Late-Successional Reserve LUA and within the Riparian Reserve LUA as defined in the 1995 Coos Bay District Resource Management Plan (1995 RMP).

Frill and Injection (Hack and Squirt)

This method employs a tool such as a hatchet or machete that cuts into the bark and exposes the cambium layer. A cup-like trench is formed by cutting downward into the bark (see Figure 1) and the herbicide is applied into this cut area without running down the stem. Once the tanoak is dead (approximately two weeks to three months), it is cut and piled for burning. Where allowed and feasible, all tanoak with stems meeting the minimum requirements suitable for injection (approximately one inch in diameter) within the treatment area would be injected.

² The amendment to the injunction limits the BLM to the use of glyphosate only.



Figure 1 Photo showing the injection and frill "hack and squirt" application method.

Cut Stump

Immediately (within 15 min) of cutting a live tanoak, the exposed cambium on the stump would be treated with half to full strength glyphosate. Typically, this would include the outer 2 to 3 inches on larger tree stumps (no heartwood). A spray bottle, hand held sprayer or backpack sprayer with a single nozzle would be used to direct herbicide onto the cambium layer. All tanoaks within the eradication zone would be treated.



Figure 2 Example of the cut stump application.

Foliar Application

This application directs a diluted (1.5-8% solution of glyphosate) mixture directly onto the leaves of the re-sprouting tanoak. The herbicide would be applied with a hand-held or back-pack sprayer. Herbicide

would be applied to the leaves and stems of tanoak and would thoroughly cover foliage, but not to the point of run-off. Low spray pressure and large droplet size would reduce the potential for overspray.

Foliar application would only be used for the control of re-sprouting tanoak.

Glyphosate is most effective when applied in late summer or fall. Foliar applications would likely require follow-up treatments before control is accomplished.



Figure 3 Examples of Foliar Application

Design Features for the Proposed Action

Design Features are site-specific measures, restrictions, requirements or mitigations included in the design of a project in order to reduce environmental impacts.

General

- The District would use BLM-approved aquatic label glyphosate formulations such as Accord®, Aquamaster®, or Rodeo® and a blue dye such as Hi-Light®.
- The product label would be followed. In addition, the following restrictions would also be used:
 - The maximum application rate would be limited to 3 pounds active ingredient (approx. 2.2 quarts of product) per acre per year.
 - There would be no aerial applications (no application by helicopter or fixed-wing aircraft).
 - No herbicide would be directly applied to water.
- An Oregon Commercial Pesticide Operator/Applicator or a BLM-licensed Applicator certified in forestry application would apply herbicide. Equipment and container cleaning, storage and disposal would occur off BLM lands and follow all applicable State and Federal laws. The licensed pesticide applicator would prepare and submit a written Spill Contingency Plan in advance of the actual herbicide application, then submit it to the Authorized Officer prior to operations. A copy would be kept with each crew. An agency approved Spill Containment Kit would be on-site during all stages of applications.
- Herbicide operations would be prohibited when any of the following conditions exist within the spray treatment area:
 - Wind velocity exceeds 10 miles per hour at eye level height.
 - Snow or ice is on plants or the ground.
 - Rain is forecast within 24 hours after application time.
 - Temperature inversions or unstable air that could cause drift exist in the project area.
 - Any other weather which would preclude the application of herbicides.

- All staging, mixing and loading of chemicals would take place in areas where an accidental spill would not contaminate a stream or other body of water. A minimum 100-foot distance would be maintained from any water source.
- All chemical mixing, loading, hauling and application equipment would be free from leaks and operating as intended.
- Water used in mixing would come from a domestic source.
- If any objects or sites of possible cultural value such as historic or prehistoric ruins, fossils or artifacts, are found during work described herein, all activities in the vicinity of these objects or sites would immediately be suspended and the authorized officer will be notified of the findings. Operations may resume at the discovery site upon receipt of written instructions and authorization by the authorized officer. Pursuant to 43 CFR 10.4(g) the authorized officer must be notified by telephone, with written confirmation, immediately upon discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), activities in the vicinity of the discovery must be stopped, and the discovery must be protected for 30 days or until notified to proceed by the authorized officer.

Foliar Application

- Adjuvants such as LI-700®, Induce® and Agri-Dex® would be used to adhere the herbicide to the leaves of the plant. A full list of the adjuvants available for use on BLM lands is located in Appendix A.
- Adjuvants POEA and R-11 would not be used.
- A wildlife biologist and botanist would review the proposed treatment sites for the presence of Special Status Species prior to treatment and appropriate buffers or mitigation measures would apply where needed.
- Foliar application would not occur within 25 feet of known sites of Bureau Sensitive amphibian or mollusk species.
- Foliar application would not occur within 10 feet of ephemeral or permanent shallow ponds, pools, springs, seeps or moist swales.
- Adjacent to stream channels, applicators would stand with their backs to the stream and spray away from the stream.

Additional Design Features

These were included in the Biological Assessment sent to the U.S. Fish and Wildlife Service for formal consultation on effects to the northern spotted owl and marbled murrelet (USDI 2009).

- If equipment or crews have worked in infested areas, the BLM will be notified prior to the start of the work.
- On a daily basis, chainsaws would be cleaned of all sawdust and wood chips and sprayed with a 10% bleach solution with water.
- On a daily basis, boot soles would be sprayed with a 10% bleach solution with water before leaving the treatment site.
- Vehicle washing would be required during the progress of treatment if the government suspects a vehicle has been contaminated with spores or infested material.
- A fresh bleach solution would be mixed daily.

Northern Spotted Owl

- When possible, activities would not take place within 65 yards (or appropriate threshold distances) of unsurveyed suitable nesting habitat or within threshold distances of nest sites or activity centers of known pairs or resident singles from **1 March to 30 September**.
- When possible, activities within threshold distances of suitable habitat would be delayed until after **September 30**.

- Disturbance activities would be concentrated spatially and temporally as much as possible (get in and get out, in as small an area as possible; avoid spreading impacts over time and space).
- The threshold distances may be modified by the action agency biologist based on topographic breaks or other site-specific information.

Marbled Murrelet

- When possible, activities would not take place within 100 yards (or appropriate threshold distances) of unsurveyed suitable murrelet occupied sites from **1 April to 5 August**. In addition, from **6 August to 15 September** work would be restricted to between 2 hours after sunrise and 2 hours before sunset (Daily Operating Restrictions – DOR) when eradication efforts would not be appreciably slowed (generally, DOR would be followed outside of fire season).
- When possible, activities within threshold distances of suitable habitat would be delayed until after **September 15**.
- The action agency biologist has the option to adjust the restricted season and zone based on site specific conditions such as activity levels at the site, topography, or the type of impact.

Chapter 3&4 Affected Environment and Environmental Consequences

This Chapter combines the affected-environment (typically EA Chapter 3) and effects-analysis discussion (Chapter 4) and has been arranged by specific resource values that may be affected. The affected environment includes the current baseline conditions within the project area and includes other reasonably foreseeable actions as if they were completed on the ground. This Chapter also addresses the interaction between the effects of the proposed action and the environmental baseline, describing the effects that might be expected, how they would occur, and the incremental effects that could result.

Reasonably Foreseeable Actions

Annual recurring activities are likely to occur within the project area. These include, but are not limited to, fire suppression activities, construction of roads across BLM lands under existing right-of-way agreements, routine road maintenance, control of noxious weeds and silvicultural activities in young stands.

The following actions have been planned or are currently being implemented in the analysis area and will be used to analyze the cumulative effects where applicable:

SOD eradication treatments on Private and USFS lands

- Private landowners continue current SOD-eradication methods in accordance with the guidance of the Oregon Department of Agriculture and The Oregon Department of Forestry.
- The Forest Service has had only three detections (40 acres) to date on their property but is prepared to act if more are discovered.
- All methods of treatment, including the use of herbicides, would be used.

BLM SOD eradication treatments

- As of March 23, 2010, there are 159 acres that have been cut and piled but have not been burned. Burning of these acres will occur when site conditions and weather permit.
- The BLM will continue the current SOD-eradication practices until a decision is made to incorporate the use of glyphosate.

Other forest landowner management

- Road construction activities consistent with Oregon Forest Practices.
- Timber Harvest – Assumed rotation of approximately 40 years.

Cumulative Effects Considerations

The Council on Environmental Quality (CEQ) provided guidance on June 24, 2005 as to the extent to which agencies of the Federal government are required to analyze the environmental effects of past actions when describing the cumulative environmental effect of a proposed action in accordance with Section 102 of the National Environmental Policy Act (NEPA). CEQ noted the “[e]nvironmental analysis required under NEPA is forward-looking,” and “[r]eview of past actions is only required to the extent that this review informs agency decision making regarding the proposed action.” This is because a description of the current state of the environment inherently includes effects of past actions. Guidance further states that “[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effect of past actions without delving into the historic details of individual past actions.”

The information on individual past actions is merely subjective, and would not be an acceptable scientific method to illuminate or predict the direct or indirect effects of the action alternative. The basis for predicting the direct and indirect effects of the action alternative should be based on generally accepted scientific methods such as empirical research. The cumulative effects of this project upon the

environment did not identify any need to exhaustively list individual past actions in order to complete an analysis which would be useful for illuminating or predicting the effects of the proposed action.

Resources

Water Quality

Affected Environment

The proposed treatment area is located in the Chetco River, Pistol River and the Whalehead Creek Frontal – Cape Ferrelo Watersheds. Watershed is defined as the 5th field hydrologic unit level. Sub-watershed refers to a smaller, 6th field hydrologic unit which varies from about 15 - 50 square miles for the affected sub-watersheds. Table 1 below shows the location and scale of treated BLM areas by sub-watershed. These seven sub-watersheds comprise the analysis area for water resources.

Table 1 - Location and BLM Area Previously Treated by Watershed

Watershed (5 th field)	Sub-watershed (6 th field)	Area* (mi ²)	Area* (Acres)	BLM Treated Areas* (Acres)	Percent of Sub-watershed
Chetco River	North Fork Chetco River	40.4	25,824	387	1.5
	Eagle Creek	48.5	31,068	0	0.0
	Nook Creek	45.9	29,378	0	0.0
	Jack Creek	16.8	10,750	28	0.3
Pistol River	South Fork Pistol River	25.7	16,442	0	0.0
Whalehead Creek Frontal – Cape Ferrelo	Thomas Creek Frontal	36.3	23,243	2	0.0
Totals		213.6	136,705	417	0.3

*Approximate values based on GIS data

The Oregon Department of Environmental Quality (ODEQ) develops water quality standards that protect beneficial uses of rivers, streams, lakes and estuaries. Beneficial uses for water bodies that could be affected by herbicide treatments include domestic water supply and fish/aquatic life. The primary concern of herbicide treatment is direct entry or migration of the chemical into nearby water bodies.

Water bodies that do not meet water quality standards are placed on the States' 303(d) list as Water Quality Limited (ODEQ 2006). The Chetco River and North Fork Chetco River are listed for elevated stream temperatures. No other water bodies in the analysis area are listed as impaired for any water quality parameter.

No Action

The BLM would continue SOD control measures without the use of glyphosate. Herbicide treatment on adjacent private and Forest Service lands in the analysis area would continue. Mechanical and herbicide treatments together are believed to be more effective than mechanical treatments alone. Therefore, there is a higher potential for the SOD infestation to spread on BLM lands and more retreatment would be required where tanoak re-sprout occurs. More entries for mechanical treatment could result in more soil disturbance and potential effects to water quality.

Proposed Action

The risk for glyphosate treatment to affect water quality would be negligible. Glyphosate, along with a BLM-approved adjuvant, would be hand applied to tanoak as described in the Project Design Features (PDFs). Only glyphosate formulations approved for aquatic use would be used for treatment. Risk to water quality is assessed below by a combination of two factors; (1) The probability for glyphosate to enter water bodies from herbicide treatment, and (2) The magnitude of effects to water quality from glyphosate entering water bodies.

Glyphosate bonds very strongly to soil and is expected to be immobile (EPA 1993b). Therefore, there is a negligible risk for glyphosate to enter groundwater or streams from percolation through soil adjacent to treated tanoak.

Glyphosate would not enter water from rain-splash or sheet erosion because non-compacted forest soils in the Pacific Northwest have very high infiltration capacities and are not effective in transporting sediment (Dietrich *et al.* 1982) or soil containing glyphosate. In addition, glyphosate would not be applied in the rain or when rain is forecast within 24 hours.

A small quantity of glyphosate could enter water bodies by drifting through the air during sprayer use. Since glyphosate is approved for aquatic use and SOD infections can occur near streams, tanoak adjacent to water bodies would be treated. The amount of overspray would be limited to a portion of the glyphosate applied to sites located directly adjacent to water bodies. A standard buffer for non-aquatic herbicide and hand-spray application is 10 feet (USDI 2007a). Therefore, when applied using the PDFs, glyphosate used on tanoak greater than 10 feet from the stream is not expected to enter the stream. These PDFs include:

- Use of Licensed Applicators to apply glyphosate.
- No treatment if wind velocity exceeds 10 miles per hour for foliar application.
- No treatment if rain is forecast within 24 hours after application time.
- Use of proper application equipment (e.g., spray equipment that produces 200- to 800-micron diameter droplets [spray droplets of 100 microns and less are most prone to drift]).
- No treatment when any other conditions exist that would preclude the application of glyphosate in accordance with specific label requirements.
- For foliar application, no spraying would be allowed within 10 feet of ponds or ephemeral pools.

Based on past treatments, we estimate that less than 1% of the treated tanoak would occur within 10 feet of a water body. We also estimate that less than 1% of glyphosate used for those trees within 10 feet could directly enter the stream through overspray. Therefore, less than 0.01 % (1% of 1%) of the total glyphosate used for SOD treatment could enter water bodies through air during spray treatment. Based on an expected treatment area of 2,000 acres over 10 years and an application rate of 3 lbs/acre, approximately 6 lbs of glyphosate (2000 acres x 3 lb/acre x 0.01%) could enter water bodies through overspray. This amount would be the 10 year total for the analysis area, so approximately 0.6 lbs of glyphosate per year could enter water bodies in the analysis area from overspray.

A risk assessment prepared for the USFS (Durkin 2003) concurs with the earlier EPA analysis (EPA 1993b) that effects from glyphosate to mammals, birds, fish and invertebrates are minimal. There would be no adverse affects to the quality of drinking water. The EPA worst case risk assessment of food uses shows that human dietary exposure and risk from glyphosate are minimal (EPA 1993b).

There would be no adverse affects to non-plant aquatic life. The EPA states that glyphosate is practically non-toxic to fish and aquatic invertebrates and that they do not expect aquatic organisms would be affected by registered uses of glyphosate (EPA 1993a). The proposed project would use a maximum of 3 lbs/acre. A recent analysis of risks to endangered salmon and steelhead (Patterson 2003) concluded that there would be “no effect” at use rates of 5 lb/acre or less and, for flowing water, effects would be “negligible and discountable” even at application rates above 8 lb/acre.

Effects to aquatic plants would be negligible. Glyphosate could cause adverse affects to non-target aquatic vegetation under certain use conditions (EPA 1993b). However, glyphosate formulations for aquatic use are designed to target emergent portions of aquatic vegetation. Toxicity to aquatic

macrophytes and algae are similar. Studies have shown that growth is inhibited at concentrations above 3 mg/L. However, several studies have also noted algal growth is stimulated at lower concentrations of 0.002 – 0.3 mg/L or higher (USFS 2003). Concentrations in flowing water decline through dilution, microbial degradation and binding of the chemical to sediment particles. In flowing water, decomposition of any aquatic plants affected locally would not be great enough to affect dissolved oxygen levels. Non-flowing water such as ponds and ephemeral pools would have a 10-foot no-spray buffer for foliar application. Therefore, it is not likely that glyphosate would enter non-flowing water, and there would be no effects to non-target aquatic vegetation in ponds or ephemeral pools.

A BLM-approved adjuvant (Appendix A) would be used to increase the effectiveness of glyphosate treatment. The adjuvants POEA and R11 would not be used. Preparing a risk assessment for every adjuvant is not feasible. However, to the degree a toxic substance is known to pose a significant human or ecological risk, the BLM has undertaken the necessary analysis to assess its impacts through risk assessments (USDI 2007a).

Fisheries and Other Aquatics

Affected Environment

Fish Habitat

Fish habitat has been influenced by human activities within the analysis area. Many stream channels in the lower valleys are down-cut and are not connected with their floodplains. Road development near streams caused channelization and reduced stream meander. Past timber harvest practices near streams caused a loss of large wood and a diminished recruitment of large wood. Fish habitat within the analysis area is generally lacking in-stream structure, channel complexity and large wood.

For a detailed description of fish habitat and fish distribution in the analysis area refer to the North Fork Chetco Watershed Analysis (USDI 1997a), Pistol River Watershed Assessment (Maguire 2001a), and Chetco River Watershed Assessment (Maguire 2001a).

Water quality including parameters such as temperature, dissolved oxygen and sedimentation can affect fish survival. The Chetco River and the North Fork Chetco River are listed on the Oregon Department of Environmental Quality 303(d) list for elevated water temperatures (ODEQ 2006). Small streams within the proposed treatment units are generally well shaded by conifers and occasional hardwoods such as big leaf maple and alder. Streams in the analysis area are not listed for any other water quality parameters such as dissolved oxygen or sedimentation.

Endangered Species Act

The analysis area is located within the federally listed threatened Southern Oregon/Northern California Coasts coho, *Onchorhynchus kisutch*, evolutionarily significant unit (ESU). The National Marine Fisheries Service (NMFS) published the listing determination and critical habitat designation for Southern Oregon/Northern California Coasts coho May 6, 1997 (62 FR 24588) and May 5, 1999 (64 FR 24049) respectively. An ESA recovery plan has not been established for SONCC coho.

Magnuson-Stevens Act

Streams used by coho and chinook salmon within the analysis area are designated as essential fish habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act. The Magnuson-Stevens Act defines EFH as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (67 FR 2343)."

Special Status Species

Aquatic Sensitive species from the Bureau Special Status Species list which occur in the analysis area include Southern Oregon/Northern California Coasts coho (federal threatened), Klamath Mountains Province steelhead (Sensitive), Southern Oregon Northern California chinook salmon (Sensitive) and the foothill yellow-legged frog (Sensitive). Yellow-legged frogs are covered in the wildlife section.

No Action

The BLM would continue to treat tanoak in infected sites. Treatment without the use of herbicides is believed to be less effective in reducing the number of infected sprouts post treatment and reducing the spread of SOD. Reduced SOD treatment effectiveness could result in the need to treat more acres thus more disturbance in Riparian Reserves.

Proposed Action

Fish Habitat (Including Special Status Species)

Potential effects to fish and fish habitat, including special status species, from all three methods of herbicide application are similar. Therefore this effects analysis combines all three methods of herbicide application resulting in a generalized analysis.

The water quality analysis determined the risk for glyphosate treatment to affect water quality would be negligible. The water quality analysis determined there would be no adverse affects to non-plant aquatic life from the proposed glyphosate treatment. The water quality section found glyphosate treatment could have negligible effects to aquatic plants, but not to the extent however which would affect dissolved oxygen levels. Based on these findings there would be no direct or indirect effects to fish or fish habitat, including special status species. Following the proposed action there would be no need to list the Sensitive species under the Endangered Species Act.

PDFs (p. 9-11) would minimize if not eliminate the potential for glyphosate to enter stream channels.

Endangered Species Act/Essential Fish Habitat

A Biological Assessment was prepared for Southern Oregon/Northern California Coasts coho CCH and EFH, which included the analysis of hack and squirt using aquatic labeled glyphosate. The biological assessment for Southern Oregon/Northern California Coasts coho salmon, CCH and EFH is located in the analysis file and hereby incorporated by reference. Consultation with National Marine Fisheries Service is ongoing.

Cumulative Effects

The proposed herbicide application would not affect fish or fish habitat in the analysis area, therefore it would not add to ongoing federal or non-federal actions at the 6th or 5th field watershed scale.

Area of Critical Environmental Concern

Affected Environment

The North Fork Chetco River Area of Environmental Concern (ACEC) is located about ten road miles north of Brookings, Curry County, Oregon. It encompasses about 600 acres in Sections 4, 5, 8 and 9 of Township 40 South, Range 13 West (Willamette Meridian). The North Fork Chetco River drainage runs generally north to south between the eastern flank of Morton Butte and the western flank of Palmer Butte. At its southern edge, the ACEC includes the Bravo Creek confluence which drains from the east and the confluence of an unnamed drainage which drains to the west.

The ACEC was designated for several natural resource values: special status species, natural system/botanical, fish/wildlife habitat and historic/cultural resources. Many of these values are based on

maintaining the complex forest cover that is threatened by Sudden Oak Death (SOD). Control of this non-native pathogen is important for sustaining many of the values for which the ACEC was designated.

No Action Alternative

The ACEC was designated for an array of natural resource values, including special status species (wildlife), unique plant communities, wildlife and fisheries habitat, and historic/cultural resources. Under the no-action alternative, the glyphosate would not be used to combat the spread of SOD. Current treatment methods would not have an impact to these resource values.

Proposed Action

Glyphosate would be judiciously applied to facilitate the control of SOD in the ACEC. The use of glyphosate would not threaten the resource values for which the area was established.

Botany

Affected Environment

The analysis area is part of the mixed-evergreen (Pseudotsuga-sclerophyll) zone described by Franklin and Dyrness (1973), also called the Southwest Oregon Mixed conifer-hardwood forest (Johnson and O'Neil 2001) and is the dominant vegetation type in Curry County. Douglas-fir (*Pseudotsuga menziesii*) and tanoak (*Lithocarpus densiflorus*) are the major climax species in this zone (Franklin and Dyrness 1973). Other overstory trees include madrone (*Arbutus menziesii*), red alder (*Alnus rubra*), California laurel (*Umbellularia californica*), and knobcone pine (*Pinus attenuata*). Common shrub species include evergreen huckleberry (*Vaccinium ovatum*), salal (*Gaultheria shallon*), Oregon grape (*Berberis nervosa*), and Pacific rhododendron (*Rhododendron macrophyllum*). Common herbaceous species include sword fern (*Polystichum munitum*) and bear grass (*Xerophyllum tenax*). The majority of the analysis area is part of the tanoak (LIDE) series. Tanoak often dominates the understories of stands in this zone.

Much of the potential project area was surveyed in 2003 for the Curry Hardwood Conversion EA and surveys were done for those species requiring pre-disturbance surveys. Vascular plant species diversity is low throughout the area and is dominated by saprophytic plant species (ground cone, spotted coralroot, gnome plant and California pinefoot), bear grass, rhododendrons and evergreen huckleberry.

In general, both lichen and bryophyte species diversity is low. The greatest diversity of non-vascular species occurred on and around the Douglas-fir trees present in some units and in areas with more moisture available such as intermittent and ephemeral streams or seasonally wet areas. The down wood component of these units appears to be very dry much of the summer and supported few bryophyte species. In areas that are predominately tanoak, lichen and bryophyte diversity are very low.

Special Status/Survey & Manage

A review of existing GIS data layers from the Oregon Natural Heritage Information Center (ORNHC) and the Geographic Biotic Observations (GeoBob) showed that 24 Special Status Species and 11 Survey and Manage Species were found within the Sudden Oak Death Quarantine Area. However, these species are associated with Late-Successional conifers. These trees would not be affected under either alternative. No threatened or endangered plant species were identified as known or suspected in the quarantine area.

No Action

Vascular Plants

Cutting and burning of tanoak would continue, resulting in vigorous resprouting of tanoaks which would remain a primary component on treated sites. These and other host species for Sudden Oak Death would remain in the treatment area and would continue to be susceptible to infection. Removal of vegetation

would also open the stand to sunlight which could result in growth of new plants from the seed bank. Newly emerging sprouts from cut tanoaks are highly susceptible to infection and are capable of maintaining the pathogen on infested sites. Maintenance of the pathogen on a given site increases the probability of infection of native plants and the spread to uninfested sites via natural or human-assisted means. Disturbance created by cutting and burning is expected to result in mortality to native plants, but would not affect common non-target plant populations as a whole. Vascular plant diversity would remain low with SOD-susceptible species (tanoak, Pacific rhododendron and evergreen huckleberry) common. Continuation of this alternative would increase the number of entries into infested sites, the number of treatments necessary and the impact to native species from repeated disturbance.

Non-Vascular Plants

Bryophyte and lichen diversity would remain low and be greatest on and around the widely scattered Douglas-fir trees and in areas that have more moisture available such as intermittent and ephemeral streams and seasonally wet areas. Project design features are included to avoid cutting Douglas-firs, particularly those over 16 inches DBH, to facilitate falling of tanoaks. The low species diversity in these areas and the protection of potential host trees reduce the effects to bryophyte and lichen species within treatment units.

For units that are predominantly tanoak, they would be replanted with conifers. As these conifer-dominated plantations grow older bryophyte and lichen diversity would increase (Rambo and Muir 1998) and would likely be greater than in the existing tanoak-dominated forest.

Proposed Action

Vascular Plants

The addition of the use of herbicide would have an effect on tanoak. The use of glyphosate to kill infected and adjacent tanoaks would remove the pathogen's ability to persist in large quantities and reproduce abundantly – which are factors implicated in the spread of SOD. Herbicide is not proposed for use on the other known hosts (huckleberry and rhododendron). Treatment of resprouting tanoak in the immediate vicinity of previously infected plants would further reduce the likelihood that the pathogen would persist and regenerate. This alternative would be more effective at helping reduce the amount of resprouting tanoak that could be infected.

Although glyphosate is a non-selective herbicide and has the potential to kill or injure plants, risk to non-target plants is negligible due to the application methods and project design features. The probability of overspray is extremely low for cut-stump or hack-and-squirt applications. Foliar application would be a higher risk to non-target plants; this risk is still low given the infrequency of other plants in the treatment area. Project design features are included to minimize the potential of drift when the tanoak is sprayed. Excess glyphosate is strongly bound to the soil – eliminating effects to seed beds or other emergent growth that comes up with the increased sunlight.

Non-Vascular Plants

The addition of herbicide to control tanoak and prevent the spread of SOD would have no effect on non-vascular species. While species growing on the tanoak within the eradication zone would be impacted by the removal of tanoak, they are not likely to be impacted by the herbicide. Glyphosate is systemic – meaning it has to move through the plants' transport mechanism to effectively kill the plant. Non-vascular plants do not have a transport mechanism.

Wildlife

Northern Spotted Owl (*Strix occidentalis caurina*)

Affected Environment

For a detailed description of spotted owl life history and habitat characteristics, see the *Final Recovery Plan for the Northern Spotted Owl* (USDI 2008).

Spotted owls rely on the following stand characteristics for nesting, roosting, and foraging (NRF): a multi-layered, multi-species canopy dominated by large overstory trees; moderate to high canopy closure; a high incidence of trees with large cavities and other types of deformities; numerous large snags; an abundance of large, dead wood on the ground; and open space within and below the upper canopy for spotted owls to fly (Thomas *et al.* 1990). Dispersal habitat is forested area greater than 40 years of age with canopy cover above 40 percent which offers cover from predators, provides some foraging opportunities and provides adequate space for flight. Tanoak is known to be a component of both NRF and dispersal habitat, and it likely provides cover and food for spotted owl prey species.

Spotted owls within the Oregon Klamath Physiographic province have a median annual home range radius of 1.3 miles (3,340 acres) of which 40 percent or more (1,336 acres) should be suitable habitat to avert impairment of owl life history functions (USDI 2008).

Summary of Spotted Owls within the 2008 SOD Quarantine Area:

- Nesting, Roosting and Foraging (NRF) Habitat: 4,650 acres under BLM management (34% of all BLM acres within quarantine area).
- Known Nest Sites/Activity Centers: Four known sites – #2320, #3949, #3950 and #3951. One of these sites is within Late Seral Reserve #251.
- Critical Habitat: None
- Structurally Complex Forest: Stand exams and field reviews are necessary to classify forest as complex, but we estimate that a minimum of 3,490 acres (75 percent) of the 4,650 acres of NRF habitat would meet that definition.

No Action

This alternative would cause an increase in adverse effects on owls assuming current eradication methods (without glyphosate) increase the rate of SOD spread. Re-sprouting of tanoak would be higher without glyphosate use; increasing the need for additional cutting treatments. As chainsaw noise is disturbing to nesting owls this alternative would increase that disturbance by increasing the amount of re-treatment entries into these areas which could occur during the nesting season.

Proposed Action

This alternative would cause no direct adverse effects to owls from the use of glyphosate. Disturbance to nesting owls would decline with the use of glyphosate because there would be a decrease in chainsaw use due to the reduction in tanoak sprouting which would need re-treatment. The proposed action would slow the rate of removal and modification of owl NRF and dispersal habitat caused by SOD treatments.

No adverse effects to owls are anticipated beyond those listed in the *Revised FY 2009-2012 Programmatic Biological Assessment for the Initiation of Consultation on Sudden Oak Death Eradication Activities* (USDI 2009a). Based upon information provided to them in the Biological Assessment, the U.S. Fish & Wildlife Service will determine whether take of owls would occur and quantify that take, if applicable. In addition, all pertinent mandatory terms and conditions outlined in the Biological Opinion would be incorporated.

Marbled Murrelet (*Brachyramphus marmoratus*)

Affected Environment

For a detailed description of marbled murrelet biology and habitat characteristics refer to the *Marbled Murrelet Recovery Plan* (USDI 1997c) and the *Final 5-Year Review for the Marbled Murrelet* (USDI 2009c).

The analysis area is within the Siskiyou Coast Range Conservation Zone 4 which extends from North Bend, Oregon to the southern end of Humboldt County, California (USDI 1997b). At-sea surveys for murrelets have been conducted since year 2000 and are used to monitor murrelet populations in each of the 5 murrelet conservation zones. The 2009 5-year review concluded the murrelet population within Zones 1 through 5 combined has declined at an annual rate of 2.4 to 4.3 percent since 2002 (USDI 2009c). Trend analyses did not detect statistically significant trends at the scale of the individual conservation zone, but all zones showed a decline in mean number of birds between 2001 and 2008. There are currently 221 occupied murrelet sites (>28,000 acres) identified on Coos Bay District BLM. These sites represent about 75 percent of all known sites on Oregon BLM lands.

Because the 2008 SOD quarantine area is from two to ten miles from the Pacific Ocean, the analysis area is entirely within the NWFP Inland Management Zone 1 (<35 miles inland). Habitat within this distance has a higher likelihood of occupancy and is probably of higher value to murrelets because murrelets forage in the ocean.

Summary of marbled murrelets within the 2008 SOD Quarantine Area:

- Suitable Murrelet Habitat: 3,525 acres under BLM management (26% of all BLM acres within the quarantine area).
- Occupied Murrelet Sites: 9 (886 acres)
- Critical Habitat: 1,878 acres of BLM land within the quarantine area are within murrelet Critical Habitat Unit #OR-07-d.

No Action

This alternative would cause an increase in adverse effects on murrelets assuming current eradication methods (without glyphosate) cause SOD to spread more rapidly. Re-sprouting of tanoak and other host species would be higher without glyphosate, thereby increasing the need for additional re-treatments. As chainsaw noise is disturbing to nesting murrelets this alternative would increase that disturbance by increasing the amount of re-treatment entries into these areas which could occur during the nesting season.

Proposed Action

This alternative would cause no direct adverse effects to murrelets from the use of glyphosate. Disturbance to nesting murrelets would decline with the use of glyphosate, because there would be a decrease in chainsaw use during the breeding season. Whenever possible, seasonal restrictions (PDFs p.10-11) would be implemented to avoid disruption of murrelet activities. The proposed action would slow the rate of modification of murrelet suitable habitat caused by SOD treatments.

No adverse effects to murrelets are anticipated beyond those listed in the *Revised FY 2009-2012 Programmatic Biological Assessment for the Initiation of Consultation on Sudden Oak Death Eradication Activities* (USDA and USDI 2008). Based upon information provided to them in the Biological Assessment, the U.S. Fish & Wildlife Service will determine whether take of murrelets would occur and

quantify that take, if applicable. In addition, all pertinent mandatory terms and conditions outlined in the Biological Opinion would be incorporated.

Other Special Status Species

Bureau sensitive species are those species that require special management consideration to avoid potential listing under the ESA and that have been identified in accordance with procedures set forth in BLM 6840 policy.

There are three species that are likely to occur within the project area and could be affected by the proposed project: the green sideband snail, the California slender salamander, and the foothill yellow-legged frog.

Green sideband snail (*Monadenia fidelis beryllica*)

Affected Environment

This is primarily a Curry County species. No intensive surveys have been conducted for its presence in the project area. There are no identified sites within the project area; however, there are two sites in the Hunter Creek watershed to the north of the quarantine area. Little is known about the life history and habitat needs of this species, but green sidebands are generally associated with deciduous trees (including alder) and brush in wet, undisturbed forest at low elevation (USDI 2005).

No Action

Current treatment methods would disrupt this species through direct mortality, habitat alteration and changes in micro-climate from tree felling and site burning. Fragmentation between sites would diminish the ability of this low-mobility species to disperse. Overall, riparian areas are less intensely treated (because typically there is less tanoak present and large conifers remain), so the species would likely persist in these areas after treatment. Not using glyphosate may allow a more rapid rate of SOD spread which could impact larger areas of habitat over time.

Proposed Action

The addition of glyphosate to current treatments would likely have minimal to no measurable impacts beyond current eradication methods. Foliar application would have a small possibility of causing direct mortality to snails if the species is sensitive to the herbicide or adjuvant, and the application occurs when snails are emergent. However, risk to the species would be minimized and they would persist within the quarantine area because mitigation measures would buffer known sites of green sidebands (if identified), the species would likely be absent from areas of heavy tanoak due to the xeric nature of those sites, and foliar application would target tanoak re-sprouts with only a small percent of the spray reaching the ground.

California slender salamander (*Batachoseps attenuates*)

Affected Environment

This species has been documented in the analysis area at four sites in the North Fork Chetco sub-watershed. The species has not been located north of the Rogue River, so the river is assumed to be the northern limits of its range.

In Oregon this salamander appears to be closely associated with humid coastal forests, and is rare when compared to populations in the California redwoods zone. Surveys on District seem to support that observation because, despite extensive surveys for Del Norte salamanders in the North Fork Chetco drainage, the California slender species was only located at four sites, all within four miles of the ocean. This salamander is tightly associated with down wood, especially class 3-4 large down logs in late-seral forests.

No Action

Current treatment methods would disrupt this species through direct mortality, habitat alteration and changes in micro-climate from tree felling and site burning. Fragmentation between sites would diminish the ability of this low-mobility species to disperse. Overall, riparian areas are less intensely treated (because typically there is less tanoak present and large conifers remain), so the species would likely persist in these areas after treatment. Not using glyphosate may allow a more rapid rate of SOD spread which could impact larger areas of habitat over time.

Proposed Action

The addition of glyphosate to current treatments would have minimal to no measurable negative impacts beyond treatments currently employed. Direct application to individuals could occur with foliar application because salamanders are more active during the fall/winter application period. However, the risk is minimal because adult amphibians have shown no effects to glyphosate exposure, project design features would buffer known sites, foliar application would target tanoak re-sprouts, this salamander typically remains under down wood and the species is unlikely to be present in dense tanoak stands.

Foothill yellow-legged frog (*Rana boylei*)

Affected Environment

This species has been documented at four sites in the quarantine area in N. Fork Chetco River, Bravo Creek and Ransom Creeks. Yellow-legged frogs require partially shaded permanent (and some types of intermittent), low-gradient, medium size streams (4th-6th order). Once considered abundant in southwestern Oregon, some populations may be greatly reduced. Contributing factors for decline include habitat alteration, airborne agrochemicals, and/or effects of exotic species (NatureServe 2008).

No Action

The current treatments would disrupt this species through habitat alteration and changes in micro-climate near occupied streams. Overall, riparian areas are less intensely treated (because typically there is less tanoak present and large conifers remain), so the species would persist within these areas. Not using glyphosate may allow a more rapid rate of SOD spread which could impact larger areas of habitat over time.

Proposed Action

The addition of glyphosate to current treatments would have minimal to no measurable negative impacts beyond treatments currently employed. Foliar application of herbicide has a small possibility of causing sub-lethal adverse effects if application were to occur along stream banks when young froglets are present (typically September through November). There is little risk to adults because they quickly escape into streams when approached. There would be no risk to species' persistence at the project level because mitigation measures would prevent the application of glyphosate within 25 feet of known sites, foliar application specifically targets tanoak re-sprouts, there is little to no tanoak along the stream banks where yellow-legged frogs would be found and only non-POEA aquatic approved formulations of glyphosate would be used.

Survey & Manage Species

There are three wildlife species within the analysis area that require some form of management in the 2001 ROD. These species are associated with late-seral and mature conifer forests. Detailed information about their life requirements can be found in the 2000 Final SEIS. The three species and their management directions are:

- Oregon red tree voles (Category C) – Pre-disturbance surveys required; manage high-priority sites.

- Del Norte salamanders (Category D) – Pre-disturbance surveys not required; manage known sites.
- *Megomphix hemphilli*, south (Category F) – Status undetermined but pre-disturbance surveys not required; manage sites known as of 9/30/99.

Oregon red tree voles (*Arborimus longicaudus*)

There are 29 active nests within the quarantine area, all of which are on Forest Service lands. As of 2007, active nests have been located at 551 locations in the Mesic Biological Zone, wherein this project lies (USDA and USDI 2007). This FSEIS also states that red tree voles in the mesic zone had a high number of sites, were found to be well distributed and would likely persist. Red tree voles are primarily associated with older forests (primarily Douglas-fir) and rely on conifer trees for foraging and nesting.

Del Norte salamanders (*Plethodon elongatus*)

There are 140 sites documented within the quarantine area. As of 2007, there are 2,167 known sites on Federal lands (USDA and USDI 2007). This FSEIS states that Del Norte salamanders had a high number of sites, were found to be well distributed and would likely persist within their range. Del Norte salamanders are closely associated with talus.

Megomphix hemphilli

This snail has not been found within the quarantine area. As of 2007, there are 1,141 known sites on Federal lands south of Lincoln, Benton and Linn County lines (USDA and USDI 2007). This FSEIS states that *M. hemphilli* had a high number of sites, were found to be well distributed and would likely persist within their range. The number of known sites for this species was among the highest of all species included in Survey and Manage.

No Action

This alternative would continue current treatments without glyphosate. These treatments would disrupt these species through direct mortality, habitat alteration and changes in micro-climate from tree felling and site burning. Fragmentation between sites would diminish the ability of species to disperse. Overall, riparian areas are less intensely treated (because typically there is less tanoak present and large conifers remain), so all three species would likely persist in these areas after treatment. Not using glyphosate may allow a more rapid rate of SOD spread which could impact larger areas of habitat over time.

Proposed Action

This alternative would likely have no measurable impacts beyond current eradication methods. Risks to the Del Norte salamander would be very low and is comparable to those for the California slender salamander and green sideband snail. There would be no risk to persistence of these species within the quarantine area because known sites would be buffered, foliar application would specifically target tanoak re-sprouts, all large conifer and most large (non-tanoak) hardwood trees would remain and the populations for these species are high throughout their ranges.

Westside Forested Land Birds

Western birds on the U.S. Fish and Wildlife Services' *Bird Species of Conservation Concern* and *Game Birds below Desired Condition* are to be addressed when actions could potentially affect those species. These lists are based primarily on declining trends in North American breeding bird survey data which can be accessed at <http://www.mbr-pwrc.usgs.gov/bbs/> (Sauer *et al.* 2007).

No Action

Current treatments would disrupt these species through direct mortality and habitat alteration. Nest sites and foraging opportunities would be diminished for migratory birds. Overall, riparian areas are less

intensely treated (because typically there is less tanoak present and large conifers remain), so all species would persist in these areas after treatment.

Proposed Action

The addition of glyphosate to current treatments would likely have no measurable impacts to migratory birds beyond current eradication methods. The USDA determined that effects to birds would be minimal (Durkin 2003).

Cumulative Effects

Preliminary monitoring suggests that herbicides may diminish the chance of continued infection in plants known to have been infected with *P. ramorum* prior to treatment. If the spread is decreased there would be a corresponding decrease in the number of acres needing re-treatment. This would result in a decrease in effects to wildlife from direct mortality, habitat loss and habitat modification. Disturbance effects to wildlife from chainsaw use would decrease with the use of glyphosate on BLM lands, because the decrease in sprouting would require less mechanical retreatment of sites.

Consistency with the Aquatic Conservation Strategy

Aquatic Conservation Strategy Components

There are four components to the Aquatic Conservation Strategy (ACS): Riparian Reserves, Key Watersheds, watershed analysis and watershed restoration. A “fifth” component is the standards and guidelines for management activities located in the Coos Bay District RMP. These standards and guidelines were incorporated into the Draft Coos Bay District Management Plan preferred alternative. With the signing of the Record of Decision for the RMP in May of 1995, these standards and guidelines were superseded by the RMP management actions/direction.

1) Riparian Reserves:

The Riparian Reserve widths within the analysis area are two site potential tree heights for fish bearing streams and one site potential tree height for perennial and intermittent streams. A site potential tree height is 160 feet in the North Fork Chetco River 5th field watershed, the Pistol River 5th field watershed, and the Whalehead Creek Frontal – Cape Ferrelo 5th Field Watershed.

2) Key Watersheds:

A portion of the analysis area is located within a Key Watershed. The North Fork Chetco is listed in the 1995 Coos Bay RMP as a Key Watershed.

3) Watershed Analysis:

Watershed Analysis and Assessments completed within the analysis area include North Fork Chetco Watershed Analysis (USDI 1997a), Pistol River Watershed Assessment (Maguire 2001b) and Chetco River Watershed Assessment (Maguire 2001a). The Watershed Analysis and Assessments were written before treatment for SOD began in the analysis area, thus no relevant recommendations for SOD treatment were included.

4) Watershed Restoration:

The Coos Bay RMP states watershed restorations “most important components are control and prevention of road-related run-off and sediment production, restoration of the condition of riparian vegetation, and restoration of in-stream habitat complexity.” The proposed action does not fall into any of these types of watershed restoration listed in the RMP. The proposed action will aid in reducing the spread of SOD.

5) Management Actions/Direction:

The following is the management action/direction for management within Riparian Reserves applicable to the proposed action.

General Riparian Area Management

- Apply herbicides, insecticides, other toxicants and other chemicals only in a manner that avoids impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.

Aquatic Conservation Strategy Objectives

Potential effects to fish habitat and Riparian Reserve characteristics from all three methods of herbicide application are similar. Therefore this effects analysis combines all three methods of herbicide application resulting in a generalized analysis.

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

The landscape-scale features necessary to ensure the protection of the aquatic systems applicable to this EA include the riparian area associated forest stands. These stands provide many functions which include “the maintenance of surface and ground water quality in aquatic systems; . . . maintenance of streambank and streambed stability; maintenance and protection of habitat structure for fish, wildlife, and vegetation; and maintenance of favorable microclimates for riparian-dependant species” (Everest and Reeves 2006).

Riparian area functions that will be analyzed include microclimate, water quality, streambank stability, sediment regimes, and habitat provided for riparian associated species. Microclimate will be addressed under ACS objective 1. Water quality issues are addressed under objectives 3 and 5; streambank stability and sediment regimes under objectives 4, 6, and 7; and providing habitat for riparian associated species under objectives 2, 8 and 9.

Site Scale Analysis

Short-Term/Long-Term

Microclimates found in riparian areas are important components of watershed and landscape-scale features needed to ensure the protection of the aquatic systems. Anderson *et al.* (2007) found that microclimate gradients in headwater riparian zones were strongest within 10 meters of the stream center, “a distinct area of stream influence within broader riparian areas.” Chan *et al.* (2004) found the greatest change in microclimate occurs between stream center and 15 meters regardless of upland treatment. Existing riparian vegetation such big leaf maple and alder would maintain microclimates adjacent to streams. Treating tanoak in Riparian Reserves with herbicides would not affect the microclimate adjacent to streams.

5th Field Analysis

Short-Term/Long-Term

There would be no impact to the overall condition of the watershed and landscape-scale features at the site scale, therefore there would be no change at the 5th field scale in the short or long terms.

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

Site Scale Analysis

Short-Term/Long-Term

Maintaining the Riparian Reserve network would ensure the effectiveness of the spatial and temporal connectivity within and between watersheds at the site scale in the short and long terms.

The herbicide application in Riparian Reserves would not affect floodplains, wetlands, upslope areas, or headwater tributaries. Intact refugia needed by aquatic and riparian-dependant species for fulfilling life history requirements would remain following the proposed action. The proposed herbicide application in Riparian Reserves would not inhibit spatial or temporal connectivity within and between watersheds.

Migration routes would not be chemically obstructed because water quality would be maintained.

5th Field Analysis

Short-Term/Long-Term

There would be no impact to the spatial and temporal connectivity within and between watersheds at the site scale; therefore there would be no impact at the 5th field scale. The spatial and temporal connectivity within and between watersheds at the 5th field in the short and long terms would remain unchanged following the proposed action.

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

Site Scale Analysis

Short Term

The physical integrity of the aquatic system including shorelines, banks, and bottom configurations would be maintained at the site scale in the short term. The proposed action would not adversely modify stream channels or aquatic habitat, nor remove any wood from stream channels.

Long Term

The proposed action would not affect the development of late successional characteristics in Riparian Reserves or the potential for large woody debris recruitment to reach stream channels at the site scale in the long term. Large woody debris in stream channels provides channel structure and complexity which improves bank stability.

The loss of tanoak as a future large woody debris source within the treatment units would not adversely affect stream channels or aquatic habitat in the long term. Tanoak has the potential to attain diameters greater than 24 inches, but because of relatively frequent fire return intervals in the analysis area tanoak typically do not attain 24-inch diameters. Hardwoods lack the durability and the sustainability in stream channels and are less suitable than conifers as large wood material. Hardwoods are generally smaller and do not have the diameter size needed to provide habitat to sustain quality pools and sorting of spawning gravels.

5th Field Analysis

Short Term/Long Term

As there would be no noticeable impact to the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations at the site scale, there would be no change at the 5th field scale in the short or long terms.

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

Site Scale Analysis

Short Term/Long Term

Water quality necessary to support healthy riparian, aquatic and wetland ecosystems would be maintained at the site scale in the short and long terms. Water quality would remain within the range that maintains the biological, physical and chemical integrity of streams. As stated in the water quality analysis, the proposed action would have no measurable adverse effects to water quality. The proposed herbicide application would not affect turbidity levels in streams.

5th Field Analysis

Short Term/Long Term

As there would be no noticeable impact to water quality at the site scale, there would be no change in water quality at the 5th field scale in the short- or long-terms as a result of the proposed action.

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

Site Scale Analysis

Short Term/Long Term

The sediment regime under which aquatic ecosystems evolved would be maintained at the site scale in the short and long terms. The timing, volume, rate, and character of sediment input, storage, and transport would be maintained. The proposed herbicide application would not result in sediment delivery to stream channels. There are no ground disturbing activities, such as the use of heavy equipment, proposed.

5th Field Analysis

Short Term/Long Term

As there would be no noticeable impact to the sediment regime at the site scale from the proposed action, there would be no change at the 5th field watershed scale in the short or long terms.

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

Site Scale Analysis

Short Term/Long Term

In-stream flow sufficient to create and sustain riparian, aquatic and wetland habitat would be maintained at the site scale in the short and long terms. Patterns of sediment, nutrient and wood routing in addition to the timing, magnitude, duration and spatial distribution of peak, high, and low flows would be maintained at the site scale in the short- and long-terms. Stream flow would not be affected as a result of the proposed action.

5th Field Analysis

Short-Term/Long-Term

There would be no changes at the 5th field scale because in-stream flows as well as the timing magnitude, duration and spatial distribution of peak, high, and low flows would not be affected at the site scale in the short- and long-terms.

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

Site Scale Analysis

Short Term/Long Term

The timing, variability and duration of floodplain inundation and water table elevation in meadows and wetlands would not be affected by the proposed action at the site scale in the short- or long-term. The interaction of water with wetlands and meadows would be unaffected at the site scale both in the short- and long-terms. The proposed action does not include water diversions or well drilling, activities usually associated with lowering water tables.

5th Field Analysis

Short Term/Long Term

Because there would be no noticeable impact to the timing, variability, or duration of floodplain inundation and water table elevation in meadows or wetlands at the site scale there would be no change at the 5th field watershed scale in the short- or long-terms.

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

Site Scale Analysis

Short Term/Long Term

Removing tanoak from treatment units would not affect species composition or structural diversity to the extent that changes would occur to summer and winter thermal regulation, nutrient filtering, surface erosion, bank erosion, or channel migration. The loss of tanoak as a future large woody debris source within the treatment units would not adversely affect the physical complexity and stability of stream channels.

5th Field Analysis

Short Term/Long Term

Because there would be no noticeable adverse impact to species composition and structural diversity of plant communities in riparian and wetland areas at the site scale there would be no change at the 5th field watershed scale in the short or long term.

Using the herbicide glyphosate would reduce the spread of SOD, thus reduce tanoak mortality at the 5th field scale in the short and long terms.

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

Site Scale Analysis

Short Term/ Long Term

Habitat needed to support riparian-dependent species would be maintained at the site scale in the short and long term. Removing tanoak from the treatment units would not affect riparian-dependent species including plants, invertebrates and vertebrates. Plant species other than tanoak would not be affected by the proposed herbicide application because tanoak would only be treated with hand application techniques. The water resources and fish sections determined the proposed herbicide application would not adversely affect water quality, fish or aquatic species.

5th Field Analysis

Short Term/Long Term

Because there would be no noticeable adverse impacts to habitat for riparian-dependant species at the site scale, there would be no change at the 5th field watershed scale in the short or long terms.

Resources Not Analyzed in Detail

Due to the lack of concern expressed by the Scoping respondents, adequacy of existing best-management practices and policy, and the limited intensity or scope of the effects on the affected resource, the items below are excluded from detailed comparative analysis as directed by CEQ regulation §1500.1(b), 1500.2(b) and other sections. Supporting information on these conclusions is included in the Analysis File.

Air Quality

The final products of glyphosate degradation are carbon dioxide, water, nitrogen and phosphate. When glyphosate is burned in air, the decomposition products are carbon ash (28%), water (25%) and acetonitrile (4%) with the remaining 43% coming off as carbon dioxide and phosphorus pentoxide. None of these compounds is known to be a health hazard at the levels which would be found in a vegetation fire. Because of the small amount of compound used per acre and the time from application to burning, pile burning of tanoak treated by frill or foliage treatments would be comparable to non-treated pile burning.

Cultural Resources

The project area contains two distinct physiographic components with differing potential for affects on prehistoric cultural resources. The present infection area is located in upland areas in the Siskiyou Provenience Mountains. Preserved prehistoric cultural material would be lithics, which are impervious to herbicide. The coastal strip and terraces along the lower reaches of rivers and streams leading to the Pacific Coast form the second physiographic component considered for prehistoric cultural resource effects. Here, prehistoric cultural material could include shell and bone, as well as lithic materials. Use of herbicide is destructive to shell. However, BLM does not manage lands along the coastal strip with known prehistoric shell midden sites, thus the lands covered in this analysis would not be affected.

Drinking Water Protection Areas

There are no Public Drinking Water Source Areas on BLM lands in the analysis area.

Environmental Justice/Native American Concerns

The proposed area of activity is not known to be used by, or disproportionately used by Native Americans and minority or low-income populations for specific cultural activities at greater rates than the general population. This includes their relative geographic location and cultural, religious, employment, subsistence, or recreational activities that may bring them into the project area. Also, BLM concludes that no disproportionately high or adverse human health or environmental effects would occur to Native Americans and minority or low-income populations as a result of the proposed action.

Noxious Weeds

There would be no difference in effects concerning the control of noxious weeds. Noxious weed control is addressed in the District weed control EA and would continue regardless of SOD treatments.

Currently, there are no proposals for noxious weeds treatments in the quarantine area. Standard weed spread prevention measures would be applied with this project. Human caused disturbance and natural events that foster the introduction and spread of weeds would be the same under either alternative. The risk of weed spread from this project is very low.

Soils

Application of glyphosate herbicides on BLM-managed lands would not negatively affect the soil resources within the quarantine area. BLM treatments amount to approximately 10% of the total treated area, and as of 2009, approximately 2300 acres had been treated on various landowners' property within the SOD quarantine area (Goheen, personal communication). Glyphosate herbicides have been found to bind to the soil preferentially and do not infiltrate to ground water. Glyphosate is rapidly and extensively degraded in soil, under both aerobic and anaerobic conditions, by local microorganisms. Studies show that glyphosate does not accumulate in the soil following multiple applications (Voth *et al.* 2006).

Unaffected Resources

None of the following critical elements of the human environment are located within the project area or within a distance to be affected by implementation of either alternative:

- Farmlands, Prime or Unique
- Flood Plains (as described in Executive Order 11988)
- Wild and Scenic Rivers
- Wilderness Values

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Chapter 6 List of Preparers

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Barry Hogge	Air Quality, Fire
Jay Flora	GIS
Elizabeth Earp	Hazardous Materials
Stephan Samuel	Cultural Resources, Environmental Justice
Kip Wright	ACEC Coordinator

Chapter 7 List of Agencies and Persons Contacted

The public was notified of the planned EA through the publication of Coos Bay District's Planning Update, Scoping notification on the district web site, and advertisement of Scoping in *The World* newspaper.

The following public agencies and interested parties were notified directly with scoping letters:	
Association of O&C Counties	NOAA National Marine Fisheries Service
Cascadia Wildlands Project	NW Environmental Defense Center
Coast Range Association	Oregon Dept. of Agriculture
Confederated Tribes of Siletz	Oregon Dept. of Environmental Quality
Coquille Indian Tribe	Oregon Dept. of Fish and Wildlife
Curry County Commissioners	Oregon Dept. of Forestry
Division of State Lands	Oregon Wild
Douglas Timber Operators	U.S. Fish and Wildlife Service
Governors Natural Resources Office	Umpqua Watersheds
Kalmiopsis Audubon Society	Numerous Private Citizens
Klamath-Siskiyou Wildlands Center	

Appendix A Approved BLM Adjuvants

Adjuvants Approved for Use on BLM Administered Lands

Update November 13,2009

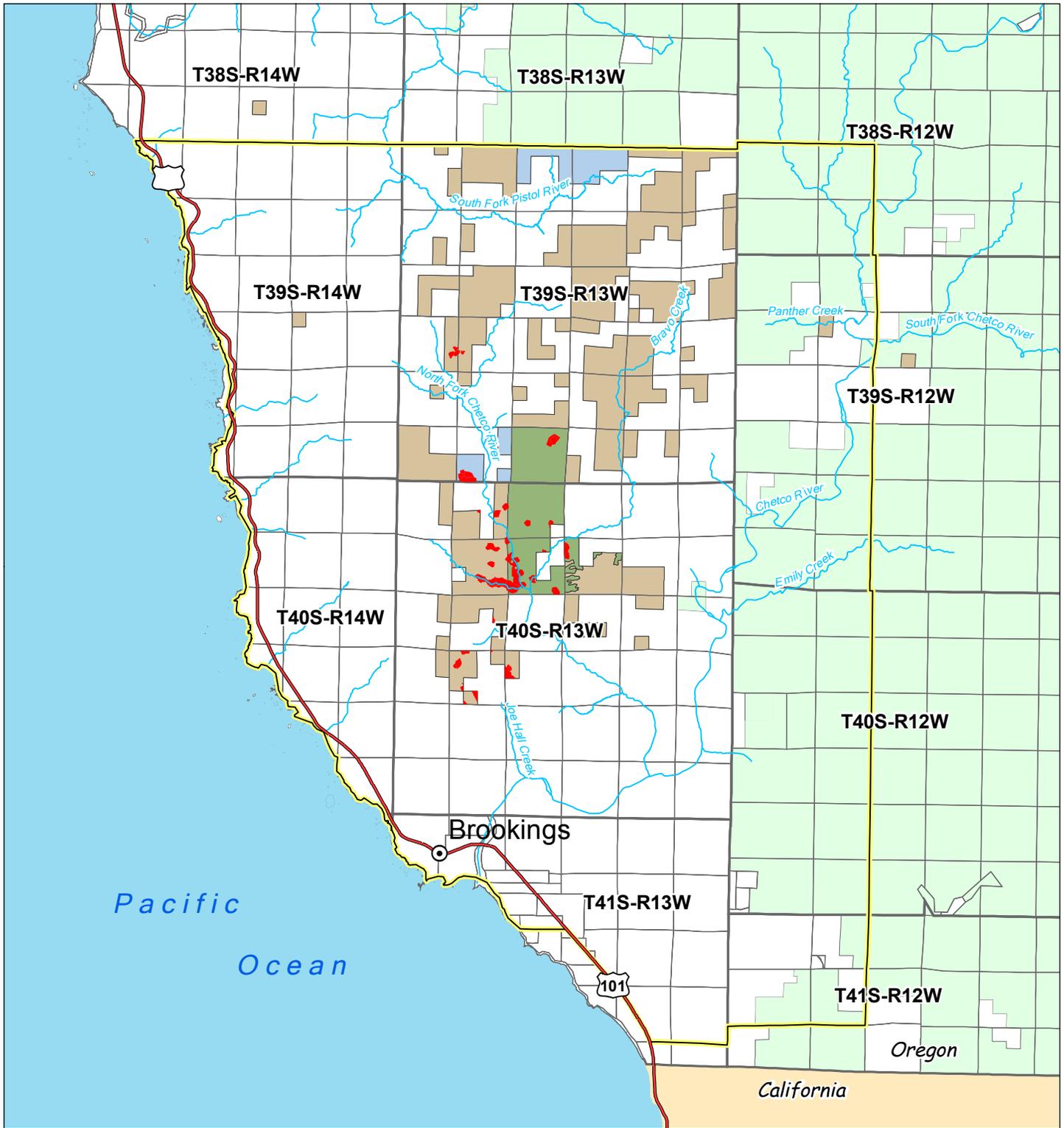
Adjuvant Class	Adjuvant Type	Trade Name	Manufacturer	Comments	
Surfactant	Non-ionic	Agrisolutions Preference	Agriliance, LLC.	WA Reg. No. 1381-50011	
		Aqufact	Aqumix, Inc.		
		Brewer 90-10	Brewer International		
		Baron	Crown (Estes Incorporated)		
		N.I.S. 80	Estes Incorporated		
		Spec 90/10	Helena		
		Optima	Helena		CA Reg. No. 5905-50075-AA
		Induce	Setre (Helena)		CA Reg. No. 5905-50066-AA
		Actamaster Spray Adjuvant	Loveland Products Inc.		WA Reg. No. 34704-50006
		Actamaster Soluble Spray Adj.	Loveland Products Inc.		WA Reg. No. 34704-50001
		Activator 90	Loveland Products Inc.		CA Reg. No. 34704-50034-AA
		LI-700	Loveland Products Inc.		CA Reg. No. 34704-50035 WA Reg. No. AW36208-70004
		Spreader 90	Loveland Products Inc.		WA Reg. No. 34704-05002-AA
		UAP Surfactant 80/20	Loveland Products Inc.		
		X-77	Loveland Products Inc.		CA Reg. No. 34704-50044
		Red River 90	Red River Specialties, Inc.		
		Cornbelt Premier 90	Van Diest Supply Co.		
		Spray Activator 85	Van Diest Supply Co.		
		Agripharm 90	Walco International		
		R-900	Wilbur-Ellis		
		Super Spread 90	Wilbur-Ellis		WA Reg. No. AW-2935-70016
		Super Spread 7000	Wilbur-Ellis		CA Reg. No. 2935-50170 WA Reg. No. AW-2935-0002
			Agrisolutions Preference		Winfield Solutions, LLC
Spreader/Sticker		Agri-Trend Spreader	Agri-Trend		
		TopFilm	Biosorb, Inc.		
		Bind-It	Estes Incorporated		
		Surf-King PLUS	Crown (Estes Incorporated)		
		CWC 90	CWC Chemical, Inc.		
		Cohere	Helena	CA Reg. No. 5905-50083-A	
		Attach	Loveland Products Inc.	CA Reg. No. 34704-50026	
		Bond	Loveland Products Inc.	CA Reg. No. 36208-50005	
		Tactic	Loveland Products Inc.	CA Reg. No. 34704-50041-AA	
		Nu-Film-IR	Miller Chem. & Fert. Corp.		
		Lastick	Setre (Helena)		
		Insist 90	Wilbur-Ellis		
		R-56	Wilbur-Ellis	CA Reg. No. 2935-50144	
Silicone-based		SilEnergy	Brewer International		
		Silnet 200	Brewer International		

Adjuvant Class	Adjuvant Type	Trade Name	Manufacturer	Comments		
Silicone-based contd.		Bind-It MAX	Estes Incorporated			
		Thoroughbred	Estes Incorporated			
		Aero Dyne-Amic	Helena	CA Reg. No. 5905-50080-AA		
		Dyne-Amic	Helena	CA Reg. No. 5095-50071-AA		
		Kinetic	Setre (Helena)	CA Reg. No. 5905-50087-AA		
		Freeway	Loveland Products Inc.	CA Reg. No. 34704-50031 WA Reg. No. 34704-04005		
		Phase	Loveland Products Inc.	CA Reg. No. 34704-50037-AA		
		Phase II	Loveland Products Inc.			
		Silwet L-77	Loveland Products Inc.	CA Reg. No. 34704-50043		
		Sun Spreader	Red River Specialties, Inc.			
		Sylgard 309	Wilbur-Ellis	CA Reg. No. 2935-50161		
		Syl-Tac	Wilbur-Ellis	CA Reg. No. 2935-50167		
		Oil-based	Crop Oil Concentrate	Brewer 83-17	Brewer International	
				Majestic	Crown (Estes Incorporated)	
Agri-Dex	Helena			CA # 5905-50094-AA		
Crop Oil Concentrate	Helena			CA Reg. No. 5905-50085-AA		
Crop Oil Concentrate	Loveland Products Inc.					
Herbimax	Loveland Products Inc.			CA Reg. No. 34704-50032-AA WA Reg. No. 34704-04006		
Red River Forestry Oil	Red River Specialties, Inc.					
R.O.C. Rigo Oil Conc.	Wilbur-Ellis					
Mor-Act	Wilbur-Ellis			CA Reg. No. 2935-50098		
Methylated Seed Oil				SunEnergy	Brewer International	
		Sun Wet	Brewer International			
		Methylated Spray Oil Conc.	Helena			
		MSO Concentrate	Loveland Products Inc.	CA Reg. No. 34704-50029-AA		
		Red River Supreme	Red River Specialties, Inc.			
		Sunburn	Red River Specialties, Inc.			
		Sunset	Red River Specialties, Inc.			
		Hasten	Wilbur-Ellis	CA Reg. No. 2935-50160 WA Reg. No. 2935-02004		
		Super Spread MSO	Wilbur-Ellis			
Methylated Seed Oil + Organosilicone	Inergy	Crown (Estes Incorporated)				
Vegetable Oil		Noble	Estes Incorporated			
		Amigo	Loveland Products Inc.	CA Reg. No. 34704-50028-AA WA Reg. No. 34704-04002		
		Competitor	Wilbur-Ellis	CA Reg. No. 2935-50173 WA Reg. No. AW-2935-04001		

Adjuvant Class	Adjuvant Type	Trade Name	Manufacturer	Comments		
Fertilizer-based	Nitrogen-based	Quest	Setre (Helena)	CA Reg. No. 5905-50076-AA		
		Dispatch	Loveland Products Inc.			
		Dispatch 111	Loveland Products Inc.			
		Dispatch 2N	Loveland Products Inc.			
		Dispatch AMS	Loveland Products Inc.			
		Flame	Loveland Products Inc.			
		Bronc	Wilbur-Ellis			
		Bronc Max	Wilbur-Ellis			
		Bronc Max EDT	Wilbur-Ellis			
		Bronc Plus Dry EDT	Wilbur-Ellis	WA Reg. No.2935-03002		
Fertilizer-based cont.	Nitrogen-based - cont.	Bronc Total	Wilbur-Ellis	CA Reg. No. 2935-50171		
		Cayuse Plus	Wilbur-Ellis			
Special Purpose or Utility	Buffering Agent	Buffers P.S.	Helena	CA Reg. No. 5905-50062-ZA		
		Spray-Aide	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50006-AA		
		Oblique	Red River Specialties, Inc.	CA Reg. No. 2935-50152		
		Tri-Fol	Wilbur-Ellis			
	Colorants	Hi-Light	Becker-Underwood			
	Hi-Light WSP	Becker-Underwood				
	Marker Dye	Loveland Products Inc.				
	BullsEye	Milliken Chemical				
	Signal	Precision				
Special Purpose or Utility - cont.	Compatibility/	E Z MIX	Loveland Products Inc.	CA Reg. No. 36208-50006		
		Suspension Agent	Support	Loveland Products Inc.	WA Reg. No. 34704-04011	
	Blendex VHC		Setre (Helena)			
	Deposition Aid	Cygnet Plus	Poly Control 2	Brewer International	CA Reg. No. 1051114-50001	
			CWC Sharpshooter	CWC Chemical, Inc.		
			ProMate Impel	Helena		
			Pointblank	Helena		CA Reg. No. 52467-50008-AA-5905
			Strike Zone DF	Helena		CA Reg. No. 5905-50084-AA
			Compadre	Loveland Products Inc.		CA Reg. No. 34704-50050
						WA Reg. No. 34704-06004
		Intac Plus	Intac Plus	Loveland Products Inc.	CA Reg. No. 34704-50030-AA	
			Liberate	Loveland Products Inc.		WA Reg. No. 34704-04008
		Reign	Reign	Loveland Products Inc.	CA Reg. No. 34704-50045	
					WA Reg. No. 34704-05010	
		Weather Gard	Weather Gard	Loveland Products Inc.	CA Reg. No. 34704-50042-AA	
			Mist-Control	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50011-AA	
	Secure Ultra	Secure Ultra	Red River Specialties, Inc.	CA Reg. No. 5905-50068-AA		
		Sta Put	Setre (Helena)			
	Agripharm Drift Control	Agripharm Drift Control	Walco International	CA Reg. No. 2935-50163		
		Bivert	Wilbur-Ellis			

Adjuvant Class	Adjuvant Type	Trade Name	Manufacturer	Comments
Special Purpose or Utility - cont.	Deposition Aid	Coverage G-20	Wilbur-Ellis	
		EDT Concentrate	Wilbur-Ellis	
	Defoaming Agent	Defoamer	Brewer International	
		Fighter-F 10	Loveland Products Inc.	
		Fighter-F Dry	Loveland Products Inc.	
		Foam Fighter	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50005-AA
		Foam Buster	Setre (Helena)	CA Reg. No. 5905-50072-AA
		Cormbelt Defoamer	Van Diest Supply Co	
	Diluent/Deposition Agent	Improved JLB Oil Plus	Brewer International	
		JLB Oil Plus	Brewer International	
	Diluent/Deposition Agent - cont.	Hy-Grade I	CWC Chemical, Inc	
		Hy-Grade EC	CWC Chemical, Inc	
		Red River Basal Oil	Red River Specialties, Inc.	
	Foam Marker	Align	Helena	
		R-160	Wilbur-Ellis	
	Invert Emulsion Agent	Redi-vert II	Wilbur-Ellis	CA Reg. No. 2935-50168
	Tank Cleaner	Wipe Out	Helena	
		All Clear	Loveland Products Inc.	
		Tank and Equipment Cleaner	Loveland Products Inc.	
		Kutter	Wilbur-Ellis	
		Neutral-Clean	Wilbur-Ellis	
		Cormbelt Tank-Aid	Van Diest Supply Co.	
	Water Conditioning	Rush	Crown (Estes Incorporated)	
Blendmaster		Loveland Products Inc.		
Choice		Loveland Products Inc.	CA Reg. No. 34704-50027-AA WA Reg. No. 34704-04004	
Choice Xtra		Loveland Products Inc.		
Choice Weather Master		Loveland Products Inc.	CA Reg. No. 34704-50038-AA	
Cut-Rate		Wilbur-Ellis		

SOD Quarantine Area and Known SOD Locations on BLM-Administered Lands



Map Features (Not all map features necessarily occur in the area mapped above.)

- | | |
|---------------------|---------------------------------|
| Highway 101 | U.S. Forest Service |
| Major Streams | Private / Other Ownership |
| SOD Quarantine Area | BLM Land Use Allocations |
| Known Sod Locations | GFMA |
| | Connectivity |
| | LSR |



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Coos Bay District Office
Myrtlewood Resource Area



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