

# Chapter 2 — The Alternatives

## Introduction

This chapter presents six alternatives for the management of Port-Orford-cedar (POC) on the Coos Bay, Medford, and Roseburg Bureau of Land Management (BLM) Districts and the Siskiyou National Forest (NF). Selection of one of the Action Alternatives would amend the land and resource management plans of those four administrative units. The alternatives apply only to lands administered by those four units. The alternatives would not amend any of the Standards and Guidelines for management of late-successional and old-growth-forest-related species adopted in 1994 as the Northwest Forest Plan.

The decision may also affect 5,400 acres owned by the Coquille Tribe. The Act (Public Law 104-208) creating the Coquille Indian Forest requires that these Indian lands be managed subject to the Standards and Guidelines of Federal forest plans on adjacent and nearby Federal lands. The responsible officials for this SEIS are the BLM State Director and Rogue River and Siskiyou National Forests Forest Supervisor. The applicability of the selected alternative for this SEIS and appropriate strategy for POC management on Coquille Forest lands will be determined by separate action of the Bureau of Indian Affairs and the Coquille Indian Tribe. Coquille Forest POC acres are not included in Federal acres described in this SEIS, and the Standards and Guidelines of the alternatives are assumed, for analysis purposes, not to apply to Coquille Indian Forest lands.

## Changes Between Draft and Final

The following changes were made to Chapter 2 between the draft and final SEIS. Minor corrections, explanations, and edits are not included in this list.

Changes/edits were made to:

- Clarify the role of the Klamath, Shasta-Trinity, Six Rivers, and Siuslaw NFs;
- change the deciding official for the FS from the Regional Forester to the Forest Supervisor;
- add another alternative, Alternative 6, to respond to public comments suggesting more protection for 7th field watersheds;
- change Alternative 2 to add emphasis to the 162 currently uninfested 7th field watersheds;
- expand the objective statements for several of the alternatives to more clearly include the objectives of controlling the disease on high-risk sites;

- incorporate the Siskiyou NFs' February 15, 2002 compilation of POC (and other) Best Management Practices into the description of the current direction;
- clarify or make minor changes in several of the Standards and Guidelines applicable to Alternatives 2 and 3;
- clarify that use of the POC Risk Key in Alternatives 2, 3, and 6 does not preclude the need to conduct site-specific NEPA-required analysis;
- expand the options with the POC Risk Key to include canceling or redesigning the project;
- include not building roads and closing roads as available options below the risk key;
- change provisions of Alternative 3 so trees exceeding 10 inches diameter at breast height would not be left on sanitized sites;
- several of the Alternatives Eliminated from Detailed Study, because the addition of Alternative 6 responded to them at least in part, and to remove assumptions about priorities between maintaining ecological function and meeting multiple-use objectives;
- move the detailed discussion of forest road rights-of-way agreements to Chapter 3&4;
- clarify that 100-year PL spread predictions are best professional estimates and not absolute;
- reflect minor changes in environmental effects resulting from changes in the alternatives or additional analysis. For example, the PL spread rate is lower for Alternative 2 in response to emphasis added for uninifested 7th field watersheds, and the previously described "significant" effect to listed coho salmon now only applies to certain situations under Alternatives 4 and 5; and,
- add additional mitigation measures and clarify that they are not part of the Alternatives unless separately selected by the decision-makers.

## **Background/Existing Port-Orford-Cedar Standards and Guidelines**

POC root disease was first identified within the natural range of POC near Coos Bay in 1952. POC in this part of the range are often well-distributed across the landscape, but typically make up only a small percentage (usually less than 5 percent) of the composition in any given stand of trees. Trees growing away from roads and streams are not as vulnerable, and those killed near roads and streams are often quickly replaced by other species. After 50 years of disease spread in the Coos Bay area, 70 to 80 percent of the trees are uninfected and the rate of disease spread has slowed.

In succeeding years, the disease moved south and east to the Siskiyou NF and Roseburg and Medford BLM Districts, and by the early 1980s had reached into the upper Smith River Watershed on the Six Rivers NF in Region 5. POC often makes up isolated remnants in unique habitats (ultramafic soils) or is scattered along the banks of streams and rivers in these areas. As the mortality of POC began to be of greater concern, several publications were issued describing the spread and effects of the disease, and offered strategies for control. These publications included “Port-Orford-Cedar Root Rot on the Siskiyou National Forest” (Harvey et al. 1985); “Siskiyou National Forest Tree Improvement Plan” (USDA-FS 1988); “Port-Orford Root Disease” (Roth et al. 1987); and “Ecology, Pathology, and Management of Port-Orford-Cedar (*Chamaecyparis lawsoniana*)” (Zobel et al. 1985). Though individual NFs and ranger districts had been instituting POC root disease management activities in their own areas for some years, there was no attempt to develop a coordinated effort for Federal lands prior to the mid-1980s.

After meeting with the Western Natural Resources Law Clinic on January 21, 1986 to discuss their concerns about management of POC and its root disease, and the Western Natural Resources Law Clinic’s formation of a Citizens’ Panel in February 1986, an interregional Port-Orford-cedar Coordinating Group was formed by the FS and BLM in May 1987. The Coordinating Group was composed of a line officer, pathologists, ecologists, geneticists, representatives from the NFs with POC, and a representative of the BLM. The purpose of the group was to coordinate all activities affecting POC within and between FS Regions 5 and 6 and the BLM. The Coordinating Group was charged with developing an action plan directed at the issues of highest concern (inventory, research needs, management, and public education). The “Region 5-Region 6 Port-Orford-Cedar Root Disease Action Plan” was completed in 1988. This document was a formal commitment by both Regional Foresters for (1) Inventory and Monitoring, (2) Research, (3) Public Involvement and Education, and (4) Management Policy. The 1989 “Siskiyou National Forest Land and Resource Management Plan” described this commitment as providing the support necessary to insure the viability and continued presence of POC in the ecosystem throughout its native range on FS-administered lands.

When the “Siskiyou National Forest Land and Resource Management Plan” was completed in 1989, it referenced the 1988 Action Plan as its primary management strategy for controlling and mitigating the spread of the disease. During the next 6 years, BLM and FS extensively mapped POC and the root disease, began resistance breeding, closed roads either seasonally or permanently, began sanitation treatments along high-risk roads, developed a test for determining the presence of the disease agent in water and soil, and pioneered and standardized many other treatments.

The POC program manager, an interregional FS position, was added in 1989 to oversee the activities of the POC coordinating group. The FS established this full-time position to serve as a vital link in coordinating and completing the tasks listed in the Action Plan and to provide a lead person for evaluation and transfer of new technology as research findings become available for management of POC and its root disease.

In 1993, the Forest Ecosystem Management Assessment Team rated POC as having a 10 percent likelihood of becoming restricted to refugia under “Option 9” (the basis for the Northwest Forest Plan), and suggested a mitigation measure of

... close roads and restrict further road construction in watersheds that contain uninfected stands (e.g., inland California populations).

The decision-makers for the NWFP did not adopt this mitigation measure apparently either because it could be better and more appropriately considered at the planning unit level (USDA-FS and USDI-BLM 1994b, p. 29), was redundant, or was too costly in relation to the uncertain benefits, the untested or ineffective nature of the measure, or the adverse effect on other resources or programs (USDA-FS and USDI-BLM 1994b, p. 33).

In 1994, the BLM issued the "Port-Orford-Cedar Management Guidelines." The Guidelines contain management objectives, implementation strategies, measures for timber sale and service contracts to minimize spread of the pathogen, and specifications for equipment washing and cleaning. The intent of the Guidelines is to assist in retaining POC as a viable part of the forest ecosystem and to reduce the occurrence of the root disease. The BLM Guidelines recommended administrative procedures and best management practices to be considered on a site-specific basis and analyzed in "National Environmental Protection Act" (NEPA) documents. In August, 1995, the BLM created and also filled a full-time Port-Orford-cedar Coordinator position.

The FS reviewed accomplishment of the tasks within the Action Plan in April 1995. The review determined that the majority of the items on the Action Plan had been accomplished or concluded and that ongoing items, such as monitoring, had been incorporated into individual forest plan management direction and forest-wide Standards and Guidelines. Based on these findings, the FS found that the Action Plan had been completed and could be concluded. The Regional Foresters accepted the recommendation and the Action Plan ceased to be operative May 16, 1995.

The Coordinating Group continues to function as a clearinghouse of information, to transfer technologies, and to coordinate rangewide activities dealing with POC. Two Federal agency coordinators are responsible for disseminating information, coordinating activities to insure that protective measures are understood and used, educating the public on issues surrounding POC, and pursuing measures that will protect this species in its natural habitat.

In general, the current Standards and Guidelines for both agencies place an emphasis on reducing the spread of *Phytophthora lateralis* (PL) and maintaining POC through various management practices applied at the project level following project-specific analysis. Although management practices may be locally effective, the disease continues to spread. In 1996 the disease was discovered to have spread to the disjunct population of POC in the Sacramento River drainage, over 150 road miles and in a different river drainage from the nearest known infection.

In January 1995 the Northcoast Environmental Center, along with several other environmental organizations, filed an action claiming the FS and BLM had failed to comply with the requirements of NEPA in developing their Action Plan and Guidelines, respectively. Plaintiffs sought an order enjoining the FS and the BLM

... to prepare a comprehensive, inter-regional EIS on their management of the Port-Orford-cedar and its habitat ... [and in the meantime] ... to undertake all necessary actions to prevent the spread or introduction of *Phytophthora lateralis* and to maintain healthy diverse Port-Orford cedar stands and habitat ...

which meant ceasing all road construction and maintenance, off-road vehicle use, timber harvest, mining, and commercial cedar bough and mushroom collection in the affected area, which encompasses southwestern Oregon and northwestern California. In August 1996, the U.S. District Court ruled that the plaintiffs could not challenge under the “Administrative Procedures Act” government “programs” in general. The Court found that the alleged “Port-Orford-cedar Program” was a term loosely applied to all the actions that the government took regarding managing POC, including public education efforts, research, and sharing databases. Such a general program was not a “final agency action” reviewable under the “Administrative Procedures Act.” As to challenges to specific decisions such as the adoption of the “BLM Port-Orford-cedar Management Guidelines” in the BLM’s resource management plan decisions, the Court found that the Guidelines merely contained possible control strategies for root disease which managers may or may not select in subsequent site-specific NEPA decision processes. The Court concluded that since the Guidelines did not require district managers to take any action or make any specific proposal or commit any resources, it was reasonable for the government to determine that the Guidelines did not constitute a major Federal action significantly affecting the quality of the human environment.

Plaintiffs appealed the decision to the Ninth Circuit. The Ninth Circuit in 1998 affirmed the District Court on the grounds that there was no final agency action and that the POC management documents do not constitute a major Federal action affecting the environment. The Court based its decision in part on an assumption that the government agencies would prepare a NEPA document before they proposed to implement particular control strategies with significant environmental impacts.

## The Sandy-Remote Lawsuit

The BLM proposed timber sales during 1996 within a portion of the Coos Bay BLM District known as the Sandy-Remote Analysis Area. The spread of POC root disease was among the issues identified in the environmental analysis (EA), with treatments specified to follow the 1994 “Port-Orford-Cedar Management Guidelines.” This decision became the subject of a lawsuit, *Kern v. BLM*, which followed up on the language in the *Northcoast Environmental Center* decision suggesting that a NEPA action would be ripe when the government took an action implementing a control strategy for managing the POC root disease. In one of their counts of alleged NEPA violations, the litigants in *Kern* contended that both the EA and the overriding EIS for the 1995 “Coos Bay Resource Management Plan” contained insufficient analysis of the range-wide cumulative effects of proposed timber harvesting on the spread of the root disease. Although the District Court ruled that the site-specific EA adequately addressed the impacts to POC within the watershed containing the proposed projects, the Ninth Circuit reversed on the grounds that the EIS to which the EA was tiered did not include an adequate analysis of effects of the adoption of control strategies on the species as a whole, and that the deficiencies of this tiered document were not addressed by the analysis in the EA of only the impacts on the affected watershed.

On February 12, 2003, under direction from the March 2002 decision by the U.S. Court of Appeals for the Ninth Circuit, the U.S. District Court for the District of Oregon ruled that

. . . the EIS for the Coos Bay District is inadequate under NEPA because it does not include an analysis of reasonably foreseeable future timber sales and other actions on *Phytophthora lateralis* and Port Orford cedar. In the absence of an EIS analyzing the impact of reasonably

foreseeable timber sales within the Coos Bay District under the proposed RMP, the Sandy-Remote Area EA is inadequate under NEPA because it lacks an analysis of the cumulative impacts of such sales within the Coos Bay District.

The Court went on to enjoin timber sale activities and related road building and maintenance in the Sandy-Remote area that involve harvest of POC until

... BLM completes adequate analysis of the direct, indirect and cumulative impacts on PL and POC.

This supplemental EIS is intended to fully rectify the deficiencies identified in the February 12, 2003 District Court decision and the March 2002 decision of the Ninth Circuit.

The Siskiyou NF has reviewed the Sandy-Remote Decision and, because of the similarity of their land management plan Standards and Guidelines and related analysis to the BLM plans, has determined similar deficiencies might exist in their plans. Further, because of a history of cooperation between the two Agencies regarding management of POC and the root disease, the Forest chose to participate in this analysis in the hope of adopting the same Standards and Guidelines as the BLM.

NFs in Region 5 similarly reviewed the court decision and determined that, although they were willing to help with the analysis and might borrow from it in the future, they would participate in the SEIS only as cooperators. The NF considers the existing POC management direction on these units to be more complete and more adequately analyzed in their respective land management plan EISs than was the case for the Oregon administrative units. Including these units as cooperators and addressing the potential environmental effects to POC in California from alternatives considered by the four action administrative units in Oregon meets the Court requirement for a cumulative effects analysis for the proposed action.

Similarly, the 1994 “Management Plan for the Oregon Dunes National Recreation Area” (Siuslaw NF) was deemed to adequately address their nearly 100 acres of POC, and the unit opted not to be a partner or cooperator in this SEIS. Also similarly, this analysis includes the actions under the 1994 plan for these acres as part of its cumulative impacts analysis.

## **The Supplemental Environmental Impact Statement**

The Council on Environmental Quality regulations implementing NEPA direct that agencies supplement an EIS

... if the agency makes substantial changes in the proposed action that are relevant to environmental concerns; or if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts (40 CFR 1502.9(c)(1)(i) and (ii)).

In this case the proposed action is the selected alternatives in the land and resource management plans of the Coos Bay, Medford, and Roseburg BLM Districts and the Siskiyou NF. There are significant new circumstances or information relevant to environmental concerns and bearing on the these action or their impacts. To respond to a court-identified deficiency in the existing EIS for the Coos Bay BLM District and likelihood or possibility that the EISs

for the other plans have the same or similar deficiency, the Agencies need to amend these previous land and resource management plan EISs to display the direct, indirect, and cumulative impacts of their current management on PL and POC. It follows that potential alternatives to the current direction need to be analyzed as well, in order to provide a context, or range of effects, within which the decision-maker can consider the required analysis and make an informed choice.

All alternatives would only affect a small portion of the land and resource management plan Standards and Guidelines, or their supporting EISs, for the affected administrative units. The proposed changes do not constitute an action separate and distinct from the existing land and resource management plans of the Agencies and do not warrant a new EIS. Therefore, it is appropriate to analyze the effects of the Proposed Action and alternatives in a supplemental EIS to the final EISs for the three BLM districts and one NF affected.

## Endangered Species Consultation

The BLM and FS have begun consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA)-Fisheries as required by the “Endangered Species Act.” Biological evaluations covering wildlife, botany, and fish, are in Appendix 7. These species are also discussed in the Wildlife, Botany, and Water and Fisheries sections of Chapter 3&4.

## The Planning Area

The planning area for this SEIS is the federally-administered land within the natural range of POC (Figure 1-1) within the Medford, Coos Bay, and Roseburg BLM Districts and the Siskiyou NF, generally in southwest Oregon (the Siskiyou NF extends slightly into California). No management direction is included here for other Federal lands, other American Indian trust lands, or state and private lands. However, cumulative impacts from expected management activities on these other lands, including NFs in California, were considered as part of the effects analysis in this SEIS. NFs in California within the range of POC contributed to the analysis in this SEIS as cooperators. There are no native POC on BLM-administered lands in California.

There will be two records of decision: The State Director for Oregon/Washington BLM will make the decision for the BLM districts; and the Forest Supervisor for the Rogue River and Siskiyou NFs will make the decision for the Siskiyou NF.

The decision may affect 5,400 acres owned by the Coquille Tribe. The Act (Public Law 104-208) creating the Coquille Indian Forest requires that these Indian lands be managed subject to the Standards and Guidelines of Federal forest plans on adjacent and nearby Federal lands. The applicability of the selected alternative for this SEIS and appropriate strategy for POC management on Coquille Forest lands will be determined by separate action of the Bureau of Indian Affairs and the Coquille Indian Tribe. Coquille Forest POC acres are not included in Federal acres described in this SEIS, and the Standards and Guidelines of the alternatives are assumed, for analysis purposes, not to apply to Coquille Indian Forest lands.

## Relationship of Alternatives to Existing Management Plans

If one of the Action Alternatives is selected, the direction established by the record of decision for this SEIS would remove the existing POC Standards and Guidelines in the land and resource management plans for three BLM and one FS administrative units (see direction described under the No-Action Alternative, Alternative 1) and replace them with the Standards and Guidelines of the selected alternative.

### Bureau of Land Management

Adoption of one of the action alternatives would be consistent with 43 CFR 1610.5-5 and would amend the resource management plans for the Medford, Coos Bay, and Roseburg BLM Districts in Oregon. Because the action alternative would modify only a small portion of each of these resource management plans, plan revisions would not be necessary (43 CFR 1610.5-6).

When a decision is made to prepare an EIS, the amending process follows the same procedure required for preparation and approval of the plan (43 CFR 1610); consideration is limited to that portion of the plan being considered for amendment. The BLM resource management planning process includes nine steps—the planning steps that pertain to this SEIS include:

- Issue identification;
- data collection;
- formulation of alternatives;
- estimation of effects;
- selection of the Preferred Alternative; and
- selection of the proposed plan amendment.

If several plans are being amended simultaneously, a single EIS may be prepared to cover all amendments (43 CFR 1610.5-5).

### Forest Service

Adoption of one of the action alternatives would result in amendment of the “Siskiyou National Forest Land and Resource Management Plan” (forest plan) in Region 6.

If an amendment to a forest plan results in a significant change in the plan, the “National Forest Management Act” and its 1982 implementing regulations under which this SEIS is prepared, require that the amendment process follow the procedures used in the initial development of the plan. If the proposed change in the plan is not significant, public notification and completion of the NEPA procedures are still required [16 USC 1604 (f)(4) and 36 CFR 219.10(f)]. Significant change in the plan is determined by different criteria than those used in evaluating significance in the NEPA process. For the “National Forest Management

Act” requirement, the Forest Service Manual 1922.51 and .52 provides specific direction as follows.

Forest Service Manual 1922.51 – Changes to the Forest Plan that Are Not Significant.

1. Actions that do not significantly alter the multiple-use goals and objectives for the long-term land and resource management.
2. Adjustments of management area boundaries or management prescriptions resulting from further on-site analysis when the adjustments do not cause significant changes in the multiple-use goals and objectives for long-term land and resource management.
3. Minor changes in Standards and Guidelines.
4. Opportunities for additional management practices that will contribute to achievement of the management prescription.

Forest Service Manual 1922.52 – Changes to the Forest Plan That Are Significant.

1. Changes that would significantly alter the long-term relationship between levels of multiple-use goods and services originally projected (36 CFR 219.10(e)).
2. Changes that may have an important effect on the entire forest plan or affect land and resources throughout a large portion of the planning area during the planning period.

None of the alternatives would result in a significant change to the Siskiyou forest plan. The alternatives would not significantly alter the multiple-use goals and objectives for the long-term land and resource management. Changes in the various alternatives to management prescriptions would not result in significant changes (in part because the additional protection areas of Alternatives 3 and 6 are mostly located in reserves), and changes to the Standards and Guidelines would be minor, and in some respects better contribute to achievement of many existing forest plan objectives. The alternatives would not significantly alter the long-term relationship between levels of goods and services originally projected, and would not have an important effect on the entire forest plan or affect resources throughout a large portion of the planning area. Therefore, the selection of any of the alternatives described in this SEIS would not constitute a significant forest plan amendment as defined for the “National Forest Management Act,” planning steps beyond those conducted from this SEIS are not required, and the deciding official is the Forest Supervisor.

## The Alternatives

### Overview

There are six alternatives introduced here and described in detail in following sections. These alternatives apply to the Medford, Coos Bay, and Roseburg BLM Districts and the

Siskiyou NF. If one of the Action Alternatives is adopted, the Standards and Guidelines of that alternative would replace the existing Standards and Guidelines for management of POC. For reasons described in the Background section, management direction for the Klamath, Six Rivers, Shasta-Trinity, and Suislaw NFs is not being considered for change at this time. The current direction for these forests is held constant across all of the alternatives listed below, and is used in the cumulative effects discussions in later sections of this SEIS. The current POC management direction for these NFs is displayed in Appendix 3, and is considered under Cumulative Effects near the beginning of Chapter 3&4. Summaries of management practices for other lands, including those administered by the National Park Service, are also included in the Cumulative Effects and Background sections in Chapter 3&4.

**Alternative 1 — Continue Existing Direction (the No-Action Alternative):** This alternative continues the current direction in the land and resource management plans of the BLM districts and the Siskiyou NF. In general, this direction (Standards and Guidelines) places an emphasis on reducing the spread of PL and maintaining POC using all available means as appropriate. Under this direction, the Agencies have employed a combination of ongoing research to find additional tools and evaluate their effectiveness, monitoring of disease spread, public and within-Agency education, interagency and interregional cooperation and coordination, development of resistant stock, and application of a wide range of disease-controlling management practices applied at the project level following project-specific analysis. As a result, POC root disease control is considered, and control techniques are applied, at all levels of project planning and execution, including wildland fire fighting. In addition to the relevant Standards and Guidelines shown in this chapter, a summary of specific disease-control efforts implemented by the Agencies in Fiscal Years 2001 and 2002 is included in Appendix 2, and serves as the assumed approximate level of management activity that would continue to occur under this alternative.

**Alternative 2 — Proposed Action:** This alternative continues all of the research, monitoring, education, cooperation, resistance breeding, and disease-controlling management practices of Alternative 1 to reduce the spread of PL and maintain POC. For this alternative, however, the Standards and Guidelines specifically describe all currently available disease-control practices, dividing them between those that should be applied generally (such as community outreach and restoration) and those that may, depending upon site conditions, be applied to specific management activities (such as timber sales). For the latter group, a risk key is included to clarify the environmental conditions that require implementation of one or more of the listed disease-controlling management practices. The risk key also requires management to reduce significant risk to 162 currently uninfested 7th field watersheds (Map 2). The principal differences, when compared to Alternative 1, are a more detailed and updated description of the array of available disease-control treatments, more consistent implementation of those treatments based on the risk key, and an emphasis placed on keeping PL out of currently uninfested 7th field watersheds.

**Alternative 3:** This alternative contains all of the management elements of Alternative 2 except the risk key linkage to 7th field watersheds, and seeks to slow the spread of PL even more by adding additional protection for 31 currently uninfested 6th field watersheds having at least 100 acres of stands containing POC. Specific protection measures are prescribed for the POC stands within these watersheds (POC core areas), and somewhat different protection is prescribed for the remainder of these watersheds (POC buffers) to lessen the possibility of infection within the POC core.

**Alternative 4:** This alternative would remove current site-specific measures used to control the root disease spread, but would accelerate the resistance breeding program. The resistance breeding program is designed to supply seedlings to replace (at the same site or elsewhere) POC killed by the disease. Quickly replacing dead POC in natural stands with resistant POC seedlings, and planting microsites at less risk of exposure to PL, would be emphasized.

**Alternative 5:** This alternative would remove current site-specific measures used to control the root disease spread and discontinue the resistance breeding program. All current management described in Alternative 1 would be discontinued except for the operational POC seed production orchards. Seedlings from existing resistant seed orchard trees would continue to be used to reforest areas of mortality occurring in the same breeding zone, but resistant seed for other breeding zones would not be developed.

**Alternative 6:** This alternative contains all of the management elements of Alternative 2, and seeks to slow the spread of PL even more by adding additional protection for 162 currently uninfested 7th field watersheds having at least 100 acres of stands containing POC. Specific protection measures are prescribed for the POC stands within these watersheds (POC core areas), and somewhat different protection is prescribed for the remainder of these watersheds (POC buffers) to lessen the possibility of infection within the POC core.

## Standards and Guidelines for Each Alternative

### Alternative 1 — Continue Existing Direction

The alternative meets the Council on Environmental Quality requirements for a No-Action Alternative described at CFR 1502.14(d).

This alternative continues the current direction in the land and resource management plans of the BLM districts and the Siskiyou NF. In general, this direction (Standards and Guidelines) places an emphasis on reducing the spread of PL and maintaining POC using all available means as appropriate. Under this direction, the Agencies have employed a combination of ongoing research to find additional tools and evaluate their effectiveness, monitoring of disease spread, public and within-agency education, interagency and interregional cooperation and coordination, development of resistant stock, and application of a wide range of disease-controlling management practices applied at the project level following project-specific analysis. As a result, POC root disease control is considered, and control techniques are applied, at all levels of project planning and execution, including wildland fire fighting. In addition to the Standards and Guidelines shown here, a summary of specific disease-control efforts implemented by the Agencies in Fiscal Years 2001 and 2002 is included in Appendix 2, and serves as the assumed approximate level of management activity that would continue to occur under this alternative.

The objectives of this alternative, as stated in existing plan direction, are to:

- Reduce the spread of root disease.
- (*For BLM*) Retain POC as a species, identify resistant individuals, and incorporate them into a tree improvement program. Incorporate PL control strategies as management objectives in Riparian Reserves, Late-Successional Reserves, and Matrix. Provide POC as a primary forest product, promote public involvement in POC management, and develop an implementation schedule of the POC Management Program.
- (*For FS*) Insure the viability and continued presence of POC in the ecosystem throughout its native range on FS-managed lands. POC is to be managed as a major component of appropriate plant associations in areas of low to moderate risk of infection. Appropriate practices identified from experience and research should be applied on a site- or drainage-specific basis to prevent or reduce the spread and severity of root disease.

### **General Direction**

The existing Standards and Guidelines (management direction) for the administrative units in Oregon are displayed as follows.

### **Existing Direction — Roseburg, Medford, and Coos Bay BLM Districts**

Page 60 of the “Roseburg District Record of Decision and Resource Management Plan” (1995) states:

Conform all management activities within the range of Port-Orford-cedar to the guidelines described in the BLM Port-Orford-cedar Management Policies to mitigate damage caused by *Phytophthora lateralis*. Site specific analyses for projects within the range of Port-Orford cedar will consider possible effects on the species.

Similar language appears on page 75 of the “Medford District Record of Decision and Resource Management Plan” (1995) and page 52 of the “Coos Bay District Record of Decision and Resource Management Plan” (1995).

The “Port-Orford-Cedar Management Guidelines” (1994a) document is displayed in its entirety in Appendix 1. It includes the following sections:

- I. Introduction
- II. *Phytophthora lateralis* and Port-Orford-Cedar
- III. *Phytophthora lateralis* and Pacific Yew
- IV. Management Objectives for Port-Orford-Cedar
- V. Implementation Strategy to Achieve Port-Orford-Cedar Management Objectives
  - A. Proactive management: limit the spread of *Phytophthora lateralis* and reduce the number of infested areas
  - B. Retain Port-Orford-Cedar as a species, identify resistant individuals, and

- incorporate them into a tree improvement program
- C. Incorporate *Phytophthora lateralis* control strategies as management objectives in Riparian Reserves, Late-Successional Reserves, and in the Matrix
1. Riparian Reserves
  2. Late-Successional Reserves
  3. Matrix
- D. Provide Port-Orford-Cedar as a primary forest product
- E. Public Involvement
- F. Develop a budget and implementation schedule for the Port-Orford-Cedar Program
- VI. Mitigation Measures for Timber Sale and Service Contracts

#### APPENDICES

- Appendix 1: Synopsis of Region 5 and 6 Port-Orford-Cedar Coordinating Group Action Plan
- Appendix 2: General Specifications for a Washing Station
- Appendix 3: Equipment Cleaning Checklist
- Appendix 4: Project Analysis and Implementation

#### ACKNOWLEDGEMENTS

#### PEER REVIEWERS

#### REFERENCES

### **Existing Direction — Siskiyou National Forest**

The following is from page IV-63 of the “Siskiyou National Forest Land and Resource Management Plan” (1989).

#### Forest-wide Standards and Guidelines

12-8: Strategies for POC shall be integrated into environmental analyses and project planning for all areas that support POC. An example is to interplant existing plantations that are scheduled for planting or have been planted. POC should be managed as a major component of the appropriate plant association in areas of low to moderate risk of infection. Representative areas within plant associations containing POC will be identified and protected.

Appropriate practices identified from experience and research should be applied on a site- or drainage-specific basis to prevent or reduce the spread and severity of POC root disease. Additional information and suggested practices can be found in “Port-Orford-Cedar Root Rot on the Siskiyou National Forest” (Harvey et al. 1985); “Siskiyou National Forest Tree Improvement Plan” (Tibbs et al. 1988); “Port-Orford Root Disease” (Roth et al. 1988), and “Ecology, Pathology, and Management of POC (*Chamaecyparis lawsoniana*)” (Zobel et al. 1985).

Of special significance to the support of management of POC was the “Region Five-Region Six Port-Orford-Cedar Root Disease Action Plan” dated June 29, 1988. This is a formal commitment by both Regional Foresters for (1) Inventory and Monitoring, (2) Research, (3) Public Involvement and Education, and (4) Management Policy. In short, this commitment provides the support to insure the viability and continue presence of POC in the ecosystem throughout its native range on Forest Service-managed lands.

To emphasize the importance of achieving success in this effort, specific examples of requirements are listed below:

1. Silvicultural prescriptions for sites having potential for growing POC will provide for the establishment of the species through natural or artificial regeneration and maintenance as a viable stand component through the current and future rotations. Prescription analysis will also consider distribution of POC so that spacing will inhibit spread of the disease, particularly in susceptible habitats.
2. Road construction and use that can potentially affect POC will be evaluated and appropriate control measures used that limit the spread of the disease. Road closures or controlled access can be used as part of the overall management scheme to reduce the risk of contamination of individual areas (such measures should be documented in the road management objectives).
3. Logging systems used in infested POC stands should minimize disturbance and redistribution of soil. In a given case, this might exclude use of ground-yarding equipment such as tractors or rubber-tired skidders. In other situations, it might require full suspension of logs during yarding operations with skyline systems or helicopters. It might also be necessary to operate during the drier time of the year to reduce soil movement.

The accomplishments of the 1988 “Region Five-Region Six Port-Orford-Cedar Root Disease Action Plan” were reviewed in 1995, with the decision that the majority of the items of the Action Plan had been completed. Specific completed tasks included giving general inventory directions to the affected NFs, establishing local maps, issuing directions for field monitoring, and preparing a report on the effects of disease-control measures. Continuing Action Plan items include active POC/PL forest monitoring programs and collaborating with the BLM, National Park Service, and private landowners.

Additional emphasis on POC and control of PL was added to the management strategies for the Siskiyou NF with the February 15, 2002 release of “Interim Direction for Best Management Practices (BMPs) for Noxious Weed Prevention and Management, Port-Orford-cedar Root Diseases Prevention and Management, and Sudden Oak Death Prevention and Management.” The BMPs are goal statements and related practices to, along with reducing the spread of noxious weeds and Sudden Oak Death, reduce spread of PL. Direction focuses on roads but also includes other projects and the use of Clorox.

**Alternative 2 — General Direction Plus Port-Orford-Cedar Risk Key (Proposed Action)**

This alternative builds upon the research, monitoring, education, cooperation, resistance breeding, and disease-controlling management practices of Alternative 1 to reduce the spread of PL and maintain POC. For this alternative, however, the Standards and Guidelines specifically describe all currently available disease-control practices, dividing them between those that would be applied generally (such as community outreach and restoration) and those that may, depending upon site conditions, be applied to specific management activities (such as timber sales). For the latter group, a risk key is included to clarify the environmental conditions that require implementation of one or more of the listed disease-controlling management practices. The risk key also requires management to reduce significant risk to 162

currently uninfested 7th field watersheds (Map 2). The difference, when compared to Alternative 1, is a more detailed and updated description of the array of available disease-control treatments, more consistent implementation of those treatments based on the risk key, and emphasis on keeping PL out of currently uninfested 7th field watersheds.

The objectives of this alternative are to:

- Maintain POC on sites where the risk for infection is low;
- reduce the spread and severity of root disease in high-risk areas to retain its ecological function to the extent practicable;
- reestablish POC in plant communities where its numbers or ecosystem function have been significantly reduced; and
- reduce the likelihood of root disease becoming established in disease-free 7th field watersheds.

### **General Direction**

**Integrated Management Approach.** Implement an integrated approach to dealing with PL which includes prevention, restoration, detection, evaluation, suppression, and monitoring. Management goals are directed toward maintaining POC and reducing root disease losses. Elements of the management strategy include management of POC bough cutting, community outreach, genetics, interagency coordination, planning, wildland fire operations, snag retention, project-specific direction, risk key, management practices, and monitoring.

In portions of the natural range, POC is widespread across the landscape. In these areas, POC conservation would emphasize management on sites naturally at low risk for infection. In many forest types, management of POC can focus on sites where conditions make it likely to escape infection by PL, even if the pathogen has already been established nearby. POC on such sites often has escaped infection because the sites have characteristics that are unfavorable for the spread of the pathogen. These sites are above and away from roads, uphill from creeks, on ridgetops, and on well-drained soils.

In the majority of the natural range, POC is localized on moist microsites (such as along streams) or sites favorable for establishment of the species. In these areas, opportunities for managing for POC on sites unfavorable to the pathogen are more limited. Treatments to prevent new infestations would be emphasized in this portion of the range, and there is a potential for eradication treatments in certain circumstances.

**Restoration of Port-Orford-Cedar.** Restore POC to sites within its natural range (Figure 1-1) where the species is essential for meeting land and resource management plan objectives for both aquatic and terrestrial ecosystems, Tribal, or product uses or function. This would be accomplished using resistant and nonresistant (generally on low-risk sites or away from potential infection sources) stock for reforestation and other elements of the integrated management approach.

**Adaptive Management.** Adaptive management is a continuing process of action-based planning, monitoring, researching, evaluating, and adjusting with the objectives of improving the implementation and achieving the goals of the selected alternative. Under the concept of adaptive management, new information would be evaluated and a decision would be made

whether to make adjustments. The Agencies would continue to develop and evaluate techniques to protect POC, and prevent disease intensification and spread within and around areas where PL infestations already occur.

**Bough Cutting.** To reduce or eliminate the spread of PL by POC bough cutters, limit POC bough cutting to roadside sanitation, commercial thinning, and precommercial thinning units (or stewardship contracts with specific provisions to protect and enhance POC).

POC bough collection shall be by permit only, and require:

- Dry season operations;
- designation of access and egress routes;
- designation of parking areas;
- unit scheduling (collect all uninfested areas prior to infested areas);
- washing of boots and equipment;
- daily inspections;
- stopping operations during and after rains; and
- easily identifiable areas where boughs are to be collected.

**Community Outreach.** Continue to improve public awareness of the root disease and the need to control it by using methods such as periodic press releases; distributing posters and pamphlets; coordinating with Tribal groups; creating and maintaining POC websites; conducting public symposiums; preparing and installing informational signs on or at trailheads, gates, and other closures; and/or other measures. Consider focusing these efforts on user groups most likely to engage in activities at more risk for spreading PL. Coordinate with state, local, industrial, and small woodland owners to help meet overall POC management objectives.

**Eradication.** In watersheds or other geographic areas where PL infestations are localized or infrequent in comparison to the amount of POC, POC eradication may be tried as a management technique to prevent/reduce spread of the disease and reduce the need for other management practices in the long term. If experience demonstrates techniques and conditions where this treatment can be effective, its use can be increased. Additional tools for eradicating PL in the soil would be sought, developed, and implemented as evidence warrants.

**Genetics.** Develop resistant stock and make it available for all POC reforestation and restoration projects.

The existing interagency resistance breeding program would be continued as needed, contingent on available funding. The objectives are to (1) select and evaluate families for resistance and develop durable resistance to PL while maintaining broad genetic diversity within the species, and (2) produce seed genetically resistant to PL for deployment throughout the range of where PL is present. The POC resistance breeding program would continue as follows:

- Develop operational resistant seed for breeding zones (breeding blocks plus elevation zones) based upon management needs within the range of POC;

- continue efforts to inform the public about the availability and use of resistant seed;
- find ways to provide resistant seed to non-Federal landowners; and
- monitor the operational performance of resistant plantings.

In addition, collect and maintain about 0.5 pound of resistant seeds for each POC breeding zone in organized conservation seedbanks. This seed would be reserved exclusively for reforestation areas after the occurrence of stand-replacement events such as large-scale wildfires. Where possible, resistant POC seedlings would be planted in such locales, with the goal to reintroduce POC to all pre-event locations.

**Interagency Coordination.** The agencies would continue to coordinate management practices including research, genetic resistance breeding, and public education.

**Planning.** Consideration of how to achieve the POC management objectives would be addressed, as applicable, in new NEPA documents, watershed analyses, Late-Successional Reserve assessments, wild and scenic river management plans, transportation planning (roads analysis process or transportation management objectives), fire management plans, recreation planning, and other activities or strategies in all watersheds with POC.

**Wildland Fire Operations.** Management strategies to prevent/reduce spread of PL would be a part of wildland fire preparedness planning. When practicable, these measures would be incorporated into firefighting activities. Such practices may include treating firefighting water with Clorox bleach or other registered material to kill waterborne PL spores, washing vehicles, and washing tools and clothing. However, POC issues may become a secondary priority during wildland fire operations. While management objectives for POC are a concern, safety of firefighters and the public, and protection of property is always a higher priority. Existing or “in-place” disease-controlling management practices such as road closures may be compromised.

Road closures and other compromised POC disease-controlling measures would be reinstalled following suppression and emergency rehabilitation unless changed circumstances indicate otherwise. Fire rehabilitation efforts would include POC and PL considerations.

**Snag Retention.** Emphasize the retention of POC snags in Riparian Reserves because they are resistant to decay and the resultant down logs can provide durable structural components for both aquatic and terrestrial ecosystems. Retention numbers should consider that few additional large POC snags are likely to become available in the near future in infested areas because of the current mortality and presence of PL. This direction is particularly applicable to plant associations on ultramafic soils and other locations where POC can be some of the largest and most abundant trees.

**Disease Export.** Where the agencies have reason to believe heavy equipment working in infested stands would next travel through or to substantially uninfested private or public POC areas, such as in uninfested watersheds or different administrative units, heavy equipment, including road maintenance equipment that has left surfaced (rocked or paved) roads in infested POC areas, would be washed upon leaving infested project areas to minimize

transport of infested soil to uninfested areas. Washing areas would be located as described under Management Practice 11 (Washing Project Equipment) in the following Management Practices section.

### **Project-Specific Direction and Port-Orford-Cedar Risk Key**

One or more of the management practices listed under the following Management Practices subheading would be applied to site-specific management activities when a need is indicated by the Port-Orford-Cedar Risk Key, Table 2-1. This approach precludes the need for additional project-specific analysis of risk because the risk key describes conditions where risk reduction management practices are assumed (expected) to be applied. When a project-specific application of the risk key shows the risk is low, no additional management practices are needed. Project-specific NEPA analysis will appropriately document the application of the risk key and the consideration of the available management practices. Application of the risk key and application of resultant management practices (if any), will make the project consistent with the mid- and large-geographic and temporal-scale effects described by the SEIS analysis, and will permit the project analysis to tier to the discussion of those effects.

**Table 2-1.—Port-Orford-Cedar Risk Key: Site-specific analysis to help determine where risk reduction management practices would be applied**

1a. Are there uninfested POC within, near <sup>1</sup>, or downstream of the activity area whose ecological, Tribal, or product use or function measurably contributes to meeting land and resource management plan objectives?

1b. Are there uninfested POC within, near <sup>1</sup>, or downstream of the activity area that, were they to become infected, would likely spread infections to trees whose ecological, Tribal, or product use or function measurably contributes to meeting land and resource management plan objectives?

1c. Is the activity area within an uninfested 7th field watershed <sup>2</sup> as defined for Alternative 6 (see Table A12-2).

*If the answer to all three questions, 1a, 1b, and 1c, is no, then risk is low and no POC management practices are required.*

*If the answer to any of the three questions is yes, continue.*

2. Will the proposed project introduce appreciable additional risk <sup>3</sup> of infection to these uninfested POC?

*If no, then risk is low and no POC management practices are required.*

*If yes, apply management practices from the list below to reduce the risk to the point it is no longer appreciable, or meet the disease control objectives by other means, such as redesigning the project so that uninfested POC are no longer near or downstream of the activity area. If the risk cannot be reduced to the point it is no longer appreciable through practicable and cost-effective treatments or design changes, the project may proceed if the analysis supports a finding that the value or need for the proposed activity outweighs the additional risk to POC created by the project.*

<sup>1</sup> In questions 1a and 1b, "near" generally means within 25 to 50 feet downslope or 25 feet upslope from management activity areas, access roads, or haul routes; farther for drainage features; 100 to 200 feet in streams.

<sup>2</sup> Uninfested 7th field watersheds are listed on Table A12-2 as those with at least 100 acres of POC stands, are at least 50% federal ownership, and are free of PL except within the lowermost 2 acres of the drainage.

<sup>3</sup> *Appreciable additional risk* does not mean "any risk." It means that a reasonable person would recognize risk, additional to existing uncontrollable risk, to believe mitigation is warranted and would make a cost-effective or important difference (see Risk Key Definitions and Examples for further discussion).

For the application of this risk key, the definition of *project* would not be limited to any one type of management activity. For example, projects such as road maintenance projects, livestock grazing permits, recreation management projects and permits, fuelwood permits, non-POC special forest products permits, and other uses likely to introduce significant risk to essential POC would require implementation of applicable management practices at the time of planning or reissuance of permits when indicated by application of the key.

The objective of the risk key is to identify project areas/situations where new infections should be avoided, and guide the application of one or more of the management practices until the risk is acceptably mitigated. The risk key describes circumstances under which the various risk reducing management practices would be applied where needed.

### ***Port-Orford-Cedar Risk Key Definitions and Examples***

***Additional risk*** ~ The intent is to mitigate or avoid the potential risk for infection, commensurate with the value of the potentially affected resource and the cost of the mitigation or avoidance, that is appreciably above background or existing risk levels. Where background or existing potential risk of infection levels are low, such as in uninfested inventoried roadless areas (see Map 3), an apparently minor activity such as a permitted one-time event or trail maintenance, might create appreciable additional risk. In checkerboard ownerships near private timberlands, near roads that have reciprocal rights-of-way agreements not addressing POC, or near major public use areas, such activities would likely not create appreciable “additional” risk since the risk already exists. In other words, mitigation (application of management practices or other options identified in the risk key) is only required by the key when, in the context of the risk coming from already existing activities essentially beyond the practical control of the Agencies, it can make a cost-effective and important difference.

***Measurably contributes to meeting land and resource management plan objectives*** ~ The uninfected POC in question is so located, or covers such a geographic area such, that it measurably contributes to meeting land and resource management plan objectives and/or all applicable laws and regulations. The effects discussions in this SEIS provide much of the basis for this determination; if no adverse effect is identified for POC mortality, then the likelihood of various mortality having an adverse effect on land and resource management plan objectives is low.

***Land and resource management plan objectives*** ~ Includes, but is not limited to, maintaining forested landscapes, species diversity, soil stability, stream temperatures (including State 303(d) requirements), buffering seasonal stream flow fluctuations, supplying large wood from streams and wildlife, visual quality, habitat for rare or unique plants, habitat for threatened, endangered, sensitive/special status, Survey and Manage, or other Agency-emphasis species, product collection and harvest, wilderness values, research opportunities, and genetic diversity.

***Measurably contributes to*** ~ Means the POC at risk from the proposed activity makes a meaningful and unique contribution to the plan objective in question. Where POC is a small percentage of the stand or does not provide unique stand attributes (not providing the largest trees in the stand, for instance), its loss is probably not meaningful when measured against management objectives. Similarly, where stream shading, bank stabil-

ity, and other riparian functions are readily performed by other species onsite, POC mortality is probably not meaningful. Where POC mortality could affect rare or unique plants, but mortality has been demonstrated to benefit such plants, POC mortality is probably not meaningful.

On the other hand, where POC is a significant portion of the riparian vegetation and its loss would likely lead to creating or exacerbating stream temperature, bank stability, turbidity, or other problems, POC is making a meaningful contribution to land and resource management plan objectives. Significant geographic areas in wilderness are making a meaningful contribution. POC as a large percentage of the stand in recreation or visually sensitive areas are probably making a meaningful contribution. Where POC is part of the reason for the designation of a research natural area or area of critical environmental concern, it is making a meaningful contribution. POC protecting rare plants, or serving as nest structures for listed species, are probably making a meaningful contribution if substitutes are not readily available. It is more likely that POC is making a meaningful contribution to land and resource management plan objectives if the site is within the 90,900 acres in Oregon where POC is prominent in the overstory (see Table 3&4-12, Ecology section).

### ***Management Practices***

Management practices are designed to:

- Prevent/reduce the import of disease into uninfested areas (offsite spores picked-up and carried into an uninfested project area);
- prevent/reduce the export of disease to uninfested areas (onsite spores moved to offsite, uninfested area); and
- minimize increases in the level of inoculum or minimize the rate of spread in areas where the disease is localized or infection is intermittent.

One to several of the management practices from the list below would be selected and implemented when there is a management need indicated by the POC Risk Key. No priority is assumed by the order listed below; the one or combination of specific practices best fitting the nature of the risk and the site-specific conditions would be applied when indicated by the risk key. Practices can be modified or partially implemented if such changes still meet risk reduction objectives and/or better fit site conditions. As noted in the Pathology section of the SEIS, combinations of practices can be more effective than single practices, depending on site-specific circumstances.

**1) Project Scheduling:** Schedule projects during the dry season or incorporate unit scheduling (Management Practice 3) and vehicle and equipment washing (Management Practice 11) as part of project design.

**2) Utilize Uninfested Water:** Use uninfested water sources for planned activities such as equipment washing, road watering, and other water-distribution needs, or treat water with Clorox bleach to prevent/reduce the spread of PL (see Appendix 4 for Clorox bleach label and instructions for use).

- 3) Unit Scheduling:** Conduct work in all timber sale and other activity units or areas where PL is not present before working in units infested with PL.
- 4) Access:** Designate access and egress routes to minimize exposure to PL.
- 5) Public Information:** Increase public awareness of the root disease and the need to control it by using informational signs on or at trailheads, gates, and other closures, and holding coordination meetings with adjacent industrial and small woodland landowners.
- 6) Fuels Management:** Clean boots, vehicles, and incorporate other management practices to avoid moving infested soil out of treatment areas. Incorporate unit scheduling and vehicle and equipment washing as described in Management Practice 1 as part of project design. Select water sources as described in Management Practice 2. Specify travel routes as shown in Management Practice 4.
- 7) Incorporate POC Objectives into Prescribed Fire Plans:** Incorporate POC objectives (such as sanitation) into prescribed fire treatment plans. These include using uninfested or treated water sources and, potentially, aiding with eradication treatments.
- 8) Routing Recreation Use:** Route new trails (off-highway vehicle, motorcycle, mountain bike, horse, and foot) away from areas with POC or PL, or provide other mitigation such as seasonal closures. Trailheads would be relocated and/or established trails would be rerouted in the same manner where trails present significant risk to POC, or provide other mitigation such as site hardening.
- 9) Road Management Measures:** Implement proactive disease-prevention measures including not building roads, not using existing roads, seasonal or permanent road closures, road maintenance, and/or sanitation removal of roadside POC to help reduce the likelihood of spreading the disease—especially to high-risk areas and/or identify prevention measures at a site-specific or drainage-specific level. Road design features include pavement over other surfacing, surfacing over no surfacing, removal of low water crossings, drainage structures to divert water to areas unfavorable to the pathogen, and waste disposal.
- 10) Resistant POC Planting:** Plant resistant POC 25 feet apart or in approximately 10 tree clusters at 100 to 150-foot spacing to lessen the potential for root grafting (a source of PL spread). Silvicultural prescriptions for sites having potential for growing POC would provide for the establishment of the species through natural or artificial regeneration and maintenance as a viable stand component through the current and future rotations.
- 11) Washing Project Equipment:** Wash project equipment prior to beginning work in uninfested project areas, when leaving infested areas to work in uninfested areas, and when leaving the project area to minimize the transportation of infested soil to uninfested areas. Equipment includes maintenance and harvest equipment coming in contact with soils, and project vehicles, including trucks and crew vehicles, leaving surfaced roads or traveling on other roads deemed at risk for spreading disease (generally project area secondary roads around diseased POC). Project areas should be compartmentalized by road system in areas with mixed ownership (Federal and private). A road system with

infested areas and noninfested areas would be considered infested. Washing areas should be placed at optimum locations for minimizing spread, such as at entry/exit points of the road system with Federal control. Washing should take place as close as possible to infested sites. Wash water would be from uninfested water sources or treated with Clorox bleach. Wash water should not drain into watercourses or into areas with uninfested POC. Ideally, equipment should not travel for any substantial distance prior to being washed unless being transported on surfaced roads. Equipment moving into uninfested areas may be washed miles away as long as they do not travel through infested areas to reach their destination. Effectiveness testing indicates large reductions in inoculum by washing. Additional information about washing, and suggested parameters for washing stations, can be found in Appendix 2 of the BLM "Port-Orford-Cedar Management Guidelines," which can be found in Appendix 1 of this SEIS. An updated equipment cleaning checklist can be found in Appendix 13 of this SEIS, and a Clorox bleach label and updated mixing instructions are in Appendix 4 of this SEIS.

**12) Logging Systems:** Use non-ground-based logging systems (cable or helicopter).

**13) Spacing Objectives for Port-Orford-Cedar Thinning:** POC spacing objectives during thinning projects (commercial or precommercial) should be to create discontinuous POC populations across the management unit.

**14) Non-Port-Orford-Cedar Special Forest Products:** No special forest products permits, including firewood permits, would be issued in the wet season where POC is present, unless administration previously mentioned for Bough Cutting under General Direction can be implemented. Educate the public on the risks associated with collecting in areas with POC.

**15) Summer Rain Events:** Apply permit or contract clause or otherwise require cessation of operations when indicators such as puddles in the roadway, water running in roadside ditches, or increases in soil moisture (as measured by moisture meter or equivalent) indicate an unacceptable increase in the likelihood of spreading PL.

**16) Roadside Sanitation:** Remove or kill POC along both sides of the road. Recommended minimum width is 25 feet above the road or to the top of the cutbank, and 25 to 50 feet below the road. Roads that are open year-round generally pose the highest risk and would benefit most from sanitation treatment. Maintenance would be essential to retain benefits. POC should be re-treated as soon as possible after they reach a height of 6 inches above ground level. Sanitation treatments could be incorporated as part of routine road maintenance.

**17) Site-Specific POC Management:** Where possible, emphasize management of POC on sites where conditions make it likely that they will escape infection by PL, even if the pathogen has already been established nearby or may be introduced in the future. POC above roads, uphill from creeks, on ridgetops, and on well-drained sites are less likely to become infected. Emphasis may include priority retention during thinning or other silvicultural treatments, and planting to increase the presence of POC in areas unfavorable to the pathogen.

## **Monitoring**

The monitoring plan for this alternative is in Appendix 5.

### **Alternative 3 — Port-Orford-Cedar Cores and Buffers in 6th Field Watersheds**

This alternative contains all of the management elements of Alternative 2 except the risk key linkage to 7th field watersheds, and seeks to slow the spread of PL even more by adding additional protection for 31 currently uninfested 6th field watersheds having at least 100 acres of stands containing POC. Specific protection measures are prescribed for the POC stands within these watersheds (POC core areas), and somewhat different protection is prescribed for the remainder of these watersheds (POC buffers) to lessen the possibility of infection within the POC core.

The objectives of this alternative are to:

- Maintain POC on sites where the risk for infection is low;
- reduce the spread and severity of root disease in high-risk areas to retain its ecological function to the extent practicable;
- accelerate reestablishment of POC in plant communities where it has been significantly reduced in numbers by root disease; and
- apply additional management techniques to reduce the likelihood of root disease becoming established in disease-free 6th field watersheds.

## **General Direction**

Except for the specific requirements for the POC cores and buffers described below, and minor differences in the monitoring plan shown in Appendix 5, and not including the risk key linkage to 7th field watersheds, all direction for Alternative 2 applies to this alternative.

## **Management of Port-Orford-Cedar Cores**

Analysis of watersheds with greater than 100 Federal acres in stands that include POC (not including plantations where POC did not previously occur) shows that there are currently 31 6th field watersheds in Oregon where at least the Federal lands are uninfested with PL (see Map 1). These stands occur in Matrix as well as various Reserve land allocations. Uninfested POC stands within these watersheds (about 34,000 acres) would be referred to as POC cores (see Table 2-2 and Appendix 12). POC cores are not necessarily contiguous acres. POC cores are represented in red on Map 1 using existing geographic information system (GIS) stand mapping. Actual watersheds included and POC core boundaries would depend on the absence of PL (at this time) and where POC occurs on the ground. Stands with any level of POC are included. Watersheds no longer qualify for POC cores and buffers if 5 percent or more of the POC core area becomes infested with PL.

The following measures apply to POC cores:

**Table 2-2.—Alternative 3, summary of 6th field watershed cores and buffers <sup>1</sup>**

District or Forest	Federal acres					
	Number of watersheds	Core Matrix/ Riparian Reserve/ Adaptive Management Area acres	Core reserve acres	Buffer acres	Federal and private acres in watershed	% Federal ownership
Coos Bay	0	0	0	0	0	0
Medford	9	1,633	5,449	91,990	162,124	61
Roseburg	1	5	105	6,773	25,561	27
Siskiyou	21	3,772	23,055	361,703	407,179	95
<b>Total</b>	<b>31</b>	<b>5,419</b>	<b>28,609</b>	<b>460,464</b>	<b>594,863</b>	<b>83</b>

<sup>1</sup> See Appendix 12 for a complete list of watersheds.

- 1) Minimize Entry:** Administratively controllable entry into POC cores would be minimized. For example, product collection or other special use permits would not be issued in these areas.
- 2) Transportation Analysis:** A transportation analysis would be conducted to determine road needs for the POC cores. Management objectives would minimize the road system within the POC core, which could result in decommissioning parts of the existing road system. New (discretionary) road construction would not be permitted.
- 3) No Vehicles:** To the extent road access is controlled by the Agencies, all vehicular traffic would be excluded, with the exception of administrative access. Off-highway vehicle use would not be permitted.
- 4) No Timber Harvest:** Timber harvest, including salvage, would be prohibited, unless a stand-replacing event results in the area no longer qualifying as a POC core area. Stand treatments not involving timber harvest would be permitted.
- 5) Water Sources:** To the extent consistent with firefighter safety and water availability, wildland fire operations within the POC cores would utilize water from within the uninfested watershed. Water sources would be mapped.
- 6) Trails:** New trails would not be built in POC cores. Whenever practicable, move existing trails so they do not pass through POC cores.
- 7) Roadside Sanitation:** Remove or kill all POC along both sides of all roads not permanently closed. Recommended minimum width is 25 feet above the road or to the top of the cutbank, and 25 to 50 feet below the road. Maintenance would be essential to retain benefits. POC should be re-treated as soon as possible after they reach a height of 6 inches above ground level.
- 8) Eradication:** All areas within the POC cores that become infested with PL in the future would be considered for eradication treatments. Where practicable, the objective is to reduce and eventually eliminate PL from POC cores. Eradication treatments could be a source of commodities.

### **Management of Port-Orford-Cedar Buffers**

To reduce the likelihood of introducing root disease within POC cores, the remainder of the 6th field watershed containing POC cores would be managed as a POC buffer. This includes all land allocations. The measures below for POC buffers are intended to reduce the possibility of introducing PL into the POC cores, as described below. There are 31 POC buffers in the analysis area, ranging from 3,285 to 27,743 acres. On Map 1, Federal lands within the buffers are shown in four colors depending on their land use allocation.

The following measures apply to POC buffers:

**1) Transportation Analysis:** A transportation analysis would determine road needs for the POC buffers. Management objectives would minimize the road system available for public use, particularly for vehicle traffic, both within and entering the 6th field watershed. This may include, but does not necessarily mandate, reduction in the total number of road miles. Emphasis would be on limiting public road use to the dry season with seasonal closures of selected roads.

**2) Water Sources:** Planned management actions (outside of wildland fire operations) would use water from within the POC core or buffer, or from sources known to be uninfested. To the extent consistent with firefighter safety and water availability, wildland fire operations within the POC buffer would utilize water from uninfested sources when possible.

### **Monitoring**

The monitoring plan for this alternative is in Appendix 5.

### **Alternative 4 — Passive Project Management with Accelerated Resistance Breeding**

This alternative has no site-specific or project-specific requirements to reduce the spread of PL, but would accelerate the resistance breeding program. The resistance breeding program is designed to supply seedlings to replace (at the same site or elsewhere) POC killed by the disease. Quickly replacing dead POC in natural stands with resistant POC seedlings, and planting microsites at less risk of exposure to PL, would be emphasized.

The objectives of this alternative are to:

- Maintain POC on sites where the risk for infection is low;
- permit the disease to run its course in high-risk areas;
- attempt to quickly reestablish POC in plant communities where it has been significantly reduced in numbers by root disease.

### **General Direction**

Except when coincident with other management activities or programs, or when there is potential to spread the root disease from infested federally-administered lands to adjacent

uninfested private lands, active Federal forest efforts to limit the spread of the pathogen would be discontinued. Examples of when coincident treatments would continue would be when washing vehicles for the control of noxious weeds, relocating a trail for other reasons, or discriminating against POC when thinning next to a road.

**Genetics.** The ongoing interagency breeding program at the FS Dorena Genetic Resource Center located at Cottage Grove, Oregon, would be intensified. Operational containerized seed orchards, organized into previously identified breeding zones, would be developed at a faster pace and maintained to produce resistant seed. Screening and breeding activities to increase the level and diversity of resistance available would accelerate for those zones of concern. Any forms of partial resistance are likely to need several cycles of selection and breeding to be of most benefit—with POC, this can be accomplished much faster than with most other forest tree species. Further research would be done to uncover more information on the array and number of resistance mechanisms available, and their underlying basis. For testing and reforestation purposes and for orchard development, an adequate production flow of rooted cuttings would also be assured.

Resistant stock would be developed and made available for all POC reforestation and restoration projects. About 50 to 75 percent of resistant seedlings or root cuttings have survived during exposure to PL in short-term (1 or 2 year) greenhouse and raised-bed testing, compared to 0 to 5 percent for the most susceptible.

The existing interagency resistance breeding program would be continued as described in a POC interagency agreement between the FS and BLM. The objectives of this agreement are to (1) select and evaluate families for resistance and develop durable resistance to PL while maintaining broad genetic diversity within the species, and (2) produce seed genetically resistant to PL for deployment throughout the range of POC where PL is present. The POC resistance breeding program would continue as follows:

- Develop operational resistant seed for breeding zones (breeding blocks plus elevation zones) based upon management needs within the range of POC;
- continue efforts to inform the public about the availability and use of resistant seed;
- find ways to provide resistant seed to non-Federal landowners; and
- monitor the operational performance of resistant plantings.

In addition, about 0.5 pound of resistant seed for each POC breeding zone in organized conservation seedbanks would be collected and maintained. This seed would be reserved exclusively for reforesting areas after the occurrence of stand-replacement events such as large-scale fires. Where possible, resistant POC seedlings would be planted in such locales, with the goal to reintroduce POC to all pre-fire locations.

**Snag Retention.** In Riparian Reserves, emphasize the retention of POC snags because they are resistant to decay and the resultant down logs can provide durable structural components for both aquatic and terrestrial ecosystems. Retention numbers should consider that few additional large POC snags are likely to become available in the near future in infested areas because of the current mortality and presence of PL. This direction is particularly applicable

to plant associations on ultramafic soils and other locations where POC can be some of the largest and most abundant trees.

### **Monitoring**

The monitoring plan for this alternative is in Appendix 5.

### **Alternative 5 — Passive Project Management with Reduced Resistance Breeding**

This alternative has no site-specific or project-specific requirements to reduce the spread of PL, and it would discontinue the resistance breeding program. All current management activities described in Alternative 1 would be discontinued except for the operational POC seed production orchards. Seedlings from existing resistant seed orchard trees would continue to be used to reforest areas of mortality occurring in the same breeding zone, but resistant seed for other breeding zones would not be developed.

The objectives of this alternative are to:

- Maintain POC on sites where the risk for infection is low; and
- permit the disease to run its course in high-risk areas.

### **General Direction**

Except when coincident with other management activities or programs, or when there is potential to spread the root disease from infested federally-administered lands to adjacent uninfested private lands, active Federal forest efforts to limit the spread of the pathogen would be discontinued. Examples of when coincident treatments would continue would be when washing vehicles for the control of noxious weeds, relocating a trail for other reasons, or discriminating against POC when thinning along a road..

**Snag Retention.** In Riparian Reserves, emphasize the retention of POC snags because they are resistant to decay and the resultant down logs can provide durable structural components for both aquatic and terrestrial ecosystems. Retention numbers should consider that few additional large POC snags are likely to become available in infested areas because of the current mortality and presence of PL. This direction is particularly applicable to plant associations on ultramafic soils and other locations where POC can be some of the largest and most abundant trees.

### **Monitoring**

The monitoring plan for this alternative is in Appendix 5.

### **Alternative 6 — Port-Orford-Cedar Cores and Buffers in 7th Field Watersheds**

This alternative contains all of the management elements of Alternative 2, and seeks to slow the spread of PL even more by adding additional protection for 162 currently uninfested 7th field watersheds having at least 100 acres of stands containing POC. Specific protection measures are prescribed for the POC stands within these watersheds (POC core areas), and

somewhat different protection is prescribed for the remainder of these watersheds (POC buffers) to lessen the possibility of infection within the POC core.

The objectives of this alternative are to:

- Maintain POC on sites where the risk for infection is low;
- reduce the spread and severity of root disease in high-risk areas to retain its ecological function to the extent practicable;
- reestablish POC in plant communities where it has been significantly reduced in numbers by root disease; and
- apply additional management techniques to reduce the likelihood of the root disease becoming established in disease-free 7th field subwatersheds.

**General Direction**

Except for the specific requirements for the POC cores and buffers described below, and minor differences in the monitoring plan shown in Appendix 5, all direction for Alternative 2 applies to this alternative.

**Management of Port-Orford-Cedar Cores**

Analysis of watersheds with greater than 50 percent Federal ownership and with greater than 100 Federal acres in stands that include POC (not including plantations where POC did not previously occur) shows that there are currently 162 7th field watersheds in Oregon where at least the Federal lands are uninfested or essentially uninfested (see below) with PL (see Map 2). These stands occur in Matrix as well as various Reserve land allocations. Uninfested POC stands within these watersheds (about 49,000 acres) would be referred to as POC cores (see Table 2-3 and Appendix 12). POC cores are not necessarily contiguous acres. POC cores are represented in red on Map 2 using existing GIS stand mapping. Actual watersheds included and POC core boundaries would depend on the absence of PL (at this time) and where POC occurs on the ground. Stands with any level of POC are included. Watersheds no longer qualify for POC cores and buffers if 5 percent or more of the POC core area becomes infested with PL. Because these watersheds some times empty into a larger stream

**Table 2-3.—Alternatives 2 and 6, summary of 7th field watershed cores and buffers <sup>1</sup>**

District or Forest	Federal acres					% Federal ownership
	Number of watersheds	Core Matrix/ Riparian Reserve/ Adaptive Management Area acres	Core reserve acres	Buffer acres	Federal and private acres in watershed	
Coos Bay	0	0	0	0	0	0
Medford	18	8	7,137	22,201	33,414	88
Roseburg	0	0	0	0	0	0
Siskiyou	144	6,343	35,881	193,799	244,867	96
<b>Total</b>	<b>162</b>	<b>6,351</b>	<b>43,018</b>	<b>216,000</b>	<b>278,281</b>	<b>95</b>

<sup>1</sup> Includes watersheds with up to 2 acres PL; excludes watersheds with less than 50% Federal administration. See Appendix 12 for a complete list of watersheds.

that is infested, infestations within the lowest 2 acres of the watershed (and lowest 200 feet of stream) do not count against the current uninfested status or the 5 percent.

The existing mapping protocols used for determining the 7th field watersheds shown on Map 2 are not necessarily consistent between administrative units or with standard 6th field mapping. If 7th field watershed maps are revised to a regional standard in the future, only buffer areas would be affected. POC core areas identified with the existing protocol would be considered permanent unless 5 percent or more become infested, or they are changed through a future NEPA decision.

The following measures apply to POC cores:

- 1) Minimize Entry:** Administratively controllable entry into POC cores would be minimized. For example, product collection or other special use permits would not be issued in these areas.
- 2) Transportation Analysis:** Pending required transportation analyses, close all discretionary roads in POC cores except mainline (tie) roads. New (discretionary) road construction would not be permitted.
- 3) No Vehicles:** To the extent road access is controlled by the Agencies, all vehicular traffic would be excluded, with the exception of administrative access. Off-highway vehicle use would not be permitted.
- 4) No Timber Harvest:** Timber harvest, including salvage, would be prohibited, unless a stand-replacing event results in the area no longer qualifying as a POC core area. Stand treatments not involving timber harvest would be permitted.
- 5) Water Sources:** To the extent consistent with firefighter safety and water availability, wildland fire operations within the POC cores would utilize water from within the uninfested (portion of the) watershed. Water sources would be mapped.
- 6) Trails:** New trails would not be built in POC cores. Whenever practicable, move existing trails so they do not pass through POC cores.
- 7) Roadside Sanitation:** Remove or kill all POC along both sides of all roads not permanently closed. Recommended minimum width is 25 feet above the road or to the top of the cutbank, and 25 to 50 feet below the road. Maintenance would be essential to retain benefits. POC should be re-treated as soon as possible after they reach a height of 6 inches above ground level.
- 8) Eradication:** All areas within the POC cores that become infested with PL in the future would be considered for eradication treatments. Where practicable, the objective is to reduce and eventually eliminate PL from POC cores. Eradication treatments could be a source of commodities.
- 9) Land Exchange:** Consider land exchanges to block-up these watersheds and obtain control of access routes, especially on serpentine soils.

## **Management of Port-Orford-Cedar Buffers**

To reduce the likelihood of introducing root disease within POC cores, the remainder of the 7th field watershed containing POC cores would be managed as a POC buffer. This includes all land allocations. The measures below for buffers are intended to reduce the possibility of introducing PL into the POC cores, as described below. There are 162 POC buffers in the analysis area, ranging from 71 acres to 3,600 acres. On Map 2, Federal lands within the buffers are shown in four colors depending on their land use allocation.

The following measures apply to POC buffers:

**1) Transportation Analysis:** A transportation analysis would determine road needs for the POC buffers. Management objectives would minimize the road system available for public use, particularly for vehicle traffic, both within and entering the 6th field watershed. This may include, but does not necessarily mandate, reduction in the total number of road miles. Emphasis would be on limiting public road use to the dry season with seasonal closures of selected roads.

**2) Water Sources:** Planned management actions (outside of wildland fire operations) would use water from uninfested areas within the POC core or buffer, or from other sources known to be uninfested. To the extent consistent with firefighter safety and water availability, wildland fire operations within the POC buffer would utilize water from uninfested sources when possible.

## **Monitoring**

The monitoring plan for this alternative is in Appendix 5.

## **Alternatives Considered But Eliminated From Detailed Study**

An EIS must rigorously explore and objectively evaluate all reasonable alternatives. The range of alternatives is limited by the requirement to fulfill the Purpose and Need to which the Agencies are responding in proposing the alternatives.

Many of the alternatives considered by the interdisciplinary team were eliminated from detailed study in attempts to find reasonable alternatives that would fulfill the underlying Need for the Proposed Action and the Purpose of this SEIS. The Need, as described in Chapter 1, is

. . . the need for maintenance of POC as an ecologically and economically significant species on BLM and NF lands. POC plays a key role in the forest ecosystem because it serves as a component of many habitats and plant communities, provides culturally significant products for Tribes, and provides unique forest products.

This Need leads to Purposes to reduce disease introductions, slow the spread of the disease where present, and/or mitigate the occurrence of the disease on POC, to the degree such treatments are needed and cost-effective. The Agencies also must continue to meet all applicable laws governing management of NF and BLM lands, and, to the degree practicable, meet their multiple-use mandates, including providing access to products, public use, and wildland fire suppression. Since the progression of the root disease over time can neither be completely stopped even with a very conservative alternative, and since POC will not be extirpated from large areas even under a no management alternative, the interdisciplinary team chose to include a relatively wide range of alternatives for consideration in detail to ensure a reasonable range of resource effects relative to each issue. Alternatives were more likely to be eliminated from detailed study because they were too much like other alternatives, not because they did not meet the Purpose and Need.

Among potential alternatives considered were various strategies proposed by the public during the scoping and public comment process, as well as some strategies proposed by Agency staff. Some proposals reflected belief that the disease would run its course no matter what efforts were made to prevent its spread, and a combination of natural resistance and tree placement would be sufficient to provide for continuation of POC. Alternatives 4 and 5 best respond to these types of comments. Some proposals suggested prevention of new infections by prohibiting road access, harvest, and other management activities. These proposals are addressed by Alternatives 3 and 6. Many proposals suggested that application of various control measures which the agencies were already implementing, along with careful monitoring and development of additional strategies, would allow for forest use, products, and POC protection. These comments are best addressed by Alternatives 1 and 2. The interdisciplinary team appreciated the number of knowledgeable comments received during scoping. Many of the issues addressed in Chapter 3&4, as well as elements of the alternatives, came directly from scoping.

### **More Proactively Harvest Within Port-Orford-Cedar Stands**

This alternative would reduce the spread of the disease by more actively thinning POC stands to reduce root contact between trees, cutting trees rooted into infested streams, and removing trees immediately upslope from riparian areas where POC serves a key function. This alternative would also actively salvage dead cedar in all land allocations where quantities exceed those required to meet other management objectives.

This alternative was not analyzed in detail for two reasons. First, it is a variation on the No-Action Alternative that encourages or permits such treatments where site-specific analysis indicates it would benefit aquatic resources. Salvaging dead cedar is permitted to some degree in all alternatives (although generally not in the POC cores in Alternatives 3 and 6), and can already be accelerated under existing guidelines. Second, an across-the-board increase in POC thinning and streamside sanitation would not meet the Need for maintenance of POC as an ecologically significant species, because it would remove trees in important riparian and stream habitats regardless of risk.

## **Retain Most Disease-Control Techniques, Particularly in High Public Use Areas, But Do Not Close Roads**

This alternative would manage the spread of root disease by application of the full range of management techniques except closing roads. Roads would remain open for recreation, extraction, and other forest use. This is essentially a variation on other alternatives. Alternatives 1 and 2, and to a large extent Alternative 3, provide a menu of treatments to be applied based on site-specific conditions and disease-control needs. Managers can choose to close roads or apply other measures. The discussions of effects in Chapter 3&4, particularly the effects in the Pathology section, address the specific Standards and Guidelines, land use, and management practices that most affect POC root disease spread. Managers can make that balance to the extent other techniques adequately control root disease spread, and as public use favors keeping roads open. Roads would not be closed without first completing a transportation analysis. It would be unreasonably arbitrary to foreclose the possibility of closing unneeded roads which pose a risk to POC.

## **Retain All Port-Orford-Cedar Old-Growth Stands and Large Trees**

This alternative would prohibit harvest of large POC and old-growth stands of POC. It would help address the concerns that: Larger trees are killed at higher percentage and take longer to replace; ecosystem function and persistence in the ecosystem continues after POC die; the old-growth POC remaining on Federal lands is only a fraction of the old-growth POC that historically occurred within the POC range; and, because of the root disease, old-growth POC would likely not become well distributed on the entire 80 percent of the Federal forests managed as Reserves. This alternative is very similar to Alternatives 3 and 6, and to some degree Alternatives 1 and 2, in that (1) about 80 percent of the landscape is in reserves that preclude old-growth harvest, (2) the percent of POC acreage in Reserves may exceed 90 percent because POC is a riparian species over much of the eastern part of its range, (3) Alternatives 3 and 6 place additional Matrix POC off-limits to harvesting, and (4) ecologically significant POC within Matrix areas may still be considered for retention in site-specific analyses. This alternative is also similar to Alternative 1 in that the amount of old-growth or large POC tree harvest taking place now is extremely limited. However, the exclusion of all harvest would thwart the objective of supplying wood for specialty products, and would limit sanitation and other silvicultural options for meeting POC and other stand management objectives. Furthermore, the retention of additional trees outside of riparian and other reserves would be of limited value because POC is used by terrestrial wildlife at a lower rate than other tree species.

## **Restore Old-Growth to its Presettlement Range**

This alternative would prohibit harvest of any large trees and attempt to restore old-growth to presettlement levels. Resistant stock could be used. The aspect of this alternative prohibiting harvest of any large trees is discussed under Retain All Port-Orford-Cedar Old-Growth Stands and Large Trees section above. Restoring POC to presettlement levels is not feasible because of uncontrollable aspects of the root disease, and the costs involved. While devoting sufficient land, time, protection, seed, and seedlings to this single objective could provide substantial esthetic and ecological benefits, costs would be exorbitant and other multiple-use objectives would not be met. Such an alternative would require eradication of the disease at

a large scale, which has not yet shown to be effective. Aspects of this alternative are met by the Proposed Action which encourages planting on low-risk sites beyond those currently occupied by POC (see the Need in Chapter 1, the objective statements for Alternative 2 in Chapter 2, and the Planting Assumption in the Assumptions and Clarifications section early in Chapter 3&4.)

### **Provide For Restoration of Port-Orford-Cedar on Sites Impacted by *Phytophthora lateralis***

This alternative would examine different strategies for introducing resistant stock, include evaluation and success criteria, and describe changes in other management practices if resistant stock is not successful. This alternative is a variation of elements of several of the alternatives considered in detail. The resistance breeding program common to five of the alternatives (although at different levels), as well as the Planting Assumption (found in the Assumptions and Clarifications section early in Chapter 3&4) common to these same alternatives, propose to replace ecologically significant POC lost to disease. Overall monitoring requirements call for tracking disease spread and reconsidering the management direction as appropriate. Alternatives 4 and 5 are identical, except for emphasis on resistance breeding; the expectations from that program are described and contrasted with the effects of discontinuing the current breeding program. Alternatives 1, 2, 3, and 6 rely on a mix of management strategies that would ensure minimizing root disease spread even if resistant stock does not meet expectations. No alternative, except Alternative 4, places full reliance on the resistance breeding program. Although the other alternatives (1, 2, 3, and 6) assume that the long-term effects of the resistance breeding program would mitigate the loss of existing POC to disease, these benefits would not be realized in the near future. Hence, there are no specific provisions for relaxing management practices in favor of using resistant stock in those alternatives.

### **Plant Port-Orford-Cedar In Other Suitable Habitats**

The alternative would vigorously plant POC in wet, but upslope, open, alder, and other low-risk areas suitable for its survival and growth. This alternative would help provide POC products for the future and potentially help maintain POC in some habitats. This alternative is included in other alternatives. The Need statement in Chapter 1 includes:

The agencies also have an opportunity to mitigate some of the damage caused by the disease by developing disease-resistant planting stock to replace disease-killed trees.

The Planting Assumption (found in the Assumptions and Clarifications section early in Chapter 3&4), applicable variously to all alternatives, includes the assumption that resistant POC will be planted on sites not previously occupied by POC. Use of this technique exclusively, however, would not meet the Purpose and Need, since POC is an important component of some streamside habitats and should be maintained.

## **Design Different Management Strategies for Different Parts of the Range to Address Different Conditions**

This alternative recognizes there are significant differences in the location and ecological function of POC between the northwest part of the range (where POC grows away from streams, across the landscape) and the rest of the range (where POC is more of a riparian species). In the northwest part of the range, up to 80 percent of the POC grows away from streams and roads, and is therefore not at risk from these two primary infestation sources. In other parts of the range, particularly on the ultramafic soils, POC can be primarily limited to Riparian Reserves, and therefore can be put at risk by activities that put the pathogen in the streams. This alternative would prescribe different measures for these different parts of the range. This alternative is essentially a variation of Alternatives 2, 3, and 6, because the application of the risk key in these alternatives would result already in the variable treatments suggested. A discussion of this point, the variable treatments likely to result between the North Coast Risk Region and the rest of the range from application of the risk key, can be found under the Differences in Risk Regions subheading in the Comparison of Alternatives section of this chapter.

## **Intensively Evaluate Individual Plant Association Group (PAG) Sites and Implement PAG-Specific Management Criteria**

This alternative would identify representative samples for each of the 90 PAGs that are distributed across the range of POC in which POC is prominent. Close examinations of POC ecological functions and subpopulation characteristics would be performed, including determining genotypic differences using allozyme studies, DNA marker techniques, and common garden study plots. Based upon PAG-specific data, specific management regimes would be conceived and desired treatments implemented. Individual management criteria would be applied to each site, including collecting and retaining seed from representative PAG sites in every breeding block. This alternative is not considered in detail because analysis has determined that PL will not completely eliminate POC from any given PAG, nor will it eliminate significant genetic variation, so such intensive scrutiny and management are not warranted. Such an alternative is not necessary to meet the Need, and therefore would not meet the cost-effectiveness test in the Purpose.

## **Increase Port-Orford-Cedar by Encouraging Planting On Private Lands**

This alternative would continue development of resistant POC in quantities sufficient to meet private land needs. This alternative would have the benefit of providing POC products and potentially meeting certain ecosystem and habitat needs. This alternative is a variation of Alternatives 1, 2, 3, 4, and 6 that specifically identify a goal of supplying resistant seedlings to private and state lands. It is particularly similar to Alternative 4, which emphasizes the resistance breeding program. Further, language has been added to Alternatives 2, 3, and 6 to

... coordinate with state, local, industrial, and small woodland owners to help meet overall POC management objectives.

## Impose Stronger Protections

This alternative, suggested by public comments during scoping, would impose stronger protections for POC throughout their entire natural range by:

- 1) Withdrawing all uninfested areas from mineral entry;
- 2) banning new road building and road reconstruction;
- 3) closing Level 1 and 2 roads and trails in, or leading into, uninfested watersheds;
- 4) prioritizing road closure over the practice of “sanitation” logging;
- 5) prohibiting motorized vehicles in all inventoried roadless areas (see Map 3);
- 6) prohibiting motorized vehicles in landscapes affected by the Biscuit Fire, including the watersheds of Rough and Ready, Rancherie, Baldface, and Fall and Baker Creeks; and
- 7) evaluating the benefits of wilderness protection for inventoried roadless areas (see Map 3) to prevent/reduce the spread of PL.

Some aspects of this alternative are included in other alternatives. The SEIS emphasizes that roads are the most significant agent of disease spread, and options to close roads, not use roads, or not build roads in the first place are included in the management practices below the risk key in Alternatives 2, 3, and 6. Discussion in the Pathology section makes it clear to managers using the key that road closures are superior to sanitation in terms of reduced risk. Closing roads in uninfested 6th and 7th field watersheds to the extent allowed under current permits and laws is a feature of Alternatives 3 and 6, respectively. Most motor vehicle use is already prohibited in inventoried roadless areas.

Regarding withdrawing all uninfested areas from mineral entry, the discussion under the alternative Close Roads and Eliminate Mining in Wilderness to Exclude *Phytophthora lateralis* in this section is illustrative. As noted there, mining is an important and legitimate use of public lands, providing raw materials for a variety of industrial uses. Congress considered these uses so important that the 1964 “Wilderness Act” had a grace period for filing and beginning operations on mining claims in wilderness. Such a sweeping restriction was not included in any alternative because there are other measures that can be taken under the Standards and Guidelines of Alternatives 1, 2, 3, and 6 that would more strategically meet the Need. On NFs, operations of any size, and even most prospecting, requires a plan of operation to be filed with the local administrative unit if the proposed activity would likely cause significant disturbance of surface resources. Applications typically trigger an EA or other NEPA analysis. Depending upon the risk, the Agency is required to provide reasonable terms and conditions for the operation. In this case, requirements to follow the same POC management practices used on other Agency activities would be binding on the claimant. The BLM rules are similar. Evaluating the benefits of wilderness protection for all inventoried roadless areas, or otherwise eliminate vehicles from all inventoried roadless areas goes beyond the Purpose and Need and is beyond the scope of this analysis. While it is clear in the analysis that any management decision that reduces access to the forests is likely to slow the spread of the disease, the SEIS provides analysis for what amounts to various levels of access and management restrictions by examining a range of alternatives defined in part by exclusions in, or emphasis on, uninfested watersheds. There is a strong correlation between these uninfested watersheds and roadless areas. Further, management activities are currently very limited in inventoried roadless areas, and project-specific NEPA evaluation of additional activities would be expected, within the range of POC, to consider effects to potentially significant populations of POC. A need for a carte blanche closure is not indicated by this analysis.

Site-specific decisions about management of areas affected by the Biscuit Fire are outside the scope of this programmatic SEIS and are more appropriately considered in NEPA documents specific to the Biscuit Fire.

### **Focus on Prevention Rather Than Mitigation or Control**

This alternative would try to eliminate all new infections by eliminating management activities and most other access into uninfested areas of any size. Given the uncertainties about the resistance breeding program and the potential ecological value of POC, considering the fact that remaining Federal population is only a percentage of the historic population levels, substantial efforts toward disease prevention should be included in one or more alternative. This alternative is a variation of Alternative 6, which identifies and prohibits most management activities in POC in uninfested 7th field watersheds, and applies all elements of Alternative 2. No alternative considers “eliminating management activities” because to do so would not meet the Agencies’ multiple-use goals or requirements of the “O&C Act,” and nothing in the analysis indicates that such a drastic measure is necessary to accomplish the desired objective.

### **Limit Risky Activities Such as Bough Harvest to the Matrix**

This alternative would restrict bough cutting to the Matrix to prevent bough-cutting related infections from about 80 percent of the Federal lands. This alternative is a variation of a Standard and Guideline in Alternatives 2, 3, and 6 which severely restricts all bough cutting. Further, such a limitation would probably not meet the Purpose and Need because illegal bough cutting and accidental cutting in reserves would be difficult to enforce if bough cutting were allowed nearby in the Matrix. This cutting in the Matrix would continue to contribute significantly to the spread of disease. The effects of this activity can be better mitigated by the educative influence through the permitting process, rather than a strict prohibition which would be very costly and difficult to enforce.

### **Broaden Risk Analysis to Include Road Maintenance, Road Use, Recreation Use, and Other Broad-Scale Activities Not Necessarily Subject to Project-Level or NEPA Analysis**

This alternative would require routine forest use and management activities to be examined for the effect on root disease spread, and mitigation or control measures applied as appropriate. This alternative is a variation on other alternatives considered in detail. Alternatives 1, 2, 3, and 6 already have such requirements. For Alternative 1, as described in Appendix 2, road maintenance techniques and road-side sanitation are examples of activities triggered by road use and location, not by specific projects. Water sources are mapped, roads are closed, trails are moved, the public is informed about how to avoid spreading the disease, roads crossing streams are removed, road maintenance and other crews regularly clean vehicles and are aware of the location of infested areas, and integrated planning takes place. For Alternatives 2, 3, and 6, there is a specific requirement to apply the risk key to such activities at the time of planning or reissuance of permits.

## **Eliminate Timber Harvest in Port-Orford-Cedar Areas**

This alternative would prohibit timber harvest in POC stands, thereby reducing the likelihood of carrying the pathogen into uninfested stands, or out of infested stands. This approach is applied to POC stands in currently uninfested watersheds in Alternatives 3 and 6. Application of this approach to the entire range would not meet the Need for making POC products available, or meet the Purpose of allowing the Agencies to continue to meet other multiple-use mandates, including the extraction of a wide range of products. On lands managed for regularly-scheduled timber harvest, POC typically makes up no more than 5 to 10 percent of the stands. Even if the agencies harvested no POC, the prohibition against harvesting in these stands would have a substantial effect on other harvest objectives. The discussion of the Northwest Forest Plan in Chapter 3&4 shows POC stands in Matrix/Adaptive Management Area/Riparian Reserves to be 92,600 acres, and discussion in the Timber Harvest section for uninfested watersheds shows probable sale quantity (PSQ) comes from about 42 percent of these acres at an average rate of 0.29 million board feet per thousand acres. At this rate, the 92,600 acres would contribute roughly 11 million board feet annually of the 49 million board feet PSQ for the Oregon portion of the POC range under the Northwest Forest Plan. This alternative would also prohibit the use of commercial silvicultural treatments for the maintenance of POC, or to meet other objectives in POC stands including Late-Successional Reserve habitat improvement or fuels reductions. While such an emphasis would undoubtedly reduce the spread rate, disease spread would continue via other human vectors. Other human vectors besides logging, for example, are implicated in all but one of the five or six longest-distance spreads. Singling out this particular activity for such a drastic measure is not warranted under the analysis and is not necessary to achieve the objectives.

## **Prohibit Logging During the Wet Season When the Likelihood of Disease Spread is Highest**

This alternative would limit the likelihood of spreading POC root disease by limiting timber harvest to dry periods when the likelihood of moving infested soil is lowest. This treatment is already included as a management practice available under Alternatives 2, 3 and 6, reading in part

... schedule projects during the dry season or ...

and an additional management practice describing cessation of activities following dry-season storm events. Additionally, such scheduling is already practiced to the extent possible in order to protect soils, roads, and streams, particularly for ground-based skidding. To place further restrictions than these two, when coupled with existing seasonal restrictions for nesting wildlife and other purposes, would be unnecessarily duplicative. It would also not meet the Purpose that control measures be cost-effective. Limiting harvest while other uses continue during the wet season could reduce, but not nearly eliminate, disease spread.

## **Reverse *Phytophthora lateralis* Infestations and Eliminate it from the Landscape**

This alternative would eliminate the root disease from the range of POC by temporarily (estimated 10 years) removing all POC in, around, and for up to 200 feet downstream of infested areas, and keep them free of POC long enough for the pathogen to die-out of the soil. This alternative is not feasible or practical for several reasons. First, the pathogen currently infests an estimated 34,400 acres in Oregon, an acreage (plus surrounding buffers) that would be prohibitively expensive if not impossible to treat. Second, the impact of killing these trees all at once, particularly downstream from the infestations, may have a worse effect than the gradual advance of the disease. Third, while eradication success is promising enough to try in isolated cases such as in POC cores (Alternatives 3 and 6), limited Agency experience with eradication treatments has shown that treatments are not always successful. The pathogen can persist in the soil for many years. In very limited trials so far, even prescribed fire has, to date, not been uniformly demonstrated to kill the pathogen. Fourth, even if eradication were typically more successful, some infestations would escape the treatment. For example, although research shows infections to be typically located within 525 feet of an upstream infection source, anecdotal evidence indicates the disease can travel much farther. Fifth, trees naturally resistant to the disease would be removed with such treatments. Finally, the disease would not be removed from private lands, so there would continue to be an infection source.

Treatments suggested by this alternative are already included in Alternatives 2, 3 and 6 to some extent. Eradication treatment is one of the management options, and will be used on limited infections. An eradication treatment for a small, isolated infestation is being done on the Shasta-Trinity NF, for example. These alternatives call for an increase in eradication if this technique proves successful.

## **Manage According to Stand-Specific Risk Assessment Methods**

This alternative would employ methodologies for identifying elements of risk (value, hazard, exposure, and susceptibility), and a resulting range of possible management objectives and strategies to deploy on a landscape scale (Jimerson et al. 1999; USDA-FS and USDI-BLM 2003b). This alternative is essentially a variation of Alternatives 2, 3, and 6, because these alternatives acknowledge inherent POC values and then, embedded as an integral component of the risk key, identify relative hazard based upon exposure and susceptibility on a project basis. Information, including detailed maps of POC and relevant risk factors, needed to accomplish this at the range-wide scale through this SEIS, is not available. As maps are improved and additional site-specific information becomes available, it can be incorporated into site-specific analysis (under the risk key in Alternatives 2, 3, or 6, for example).

## **Close Roads and Eliminate Mining in Wilderness to Exclude *Phytophthora lateralis***

This alternative would administratively, or by purchase, eliminate existing mining claims in the Kalmiopsis (and any other) Wilderness Area and restore access roads. The alternative would not meet the element of the Purpose to continue to meet multiple-use needs by provid-

ing access to products. Mining is an important and legitimate use of public lands, providing raw materials for a variety of industrial uses. Congress considered these uses so important that the 1964 “Wilderness Act” had a grace period for filing and beginning operations on mining claims in wilderness, and such claims remain valid as long as they are maintained. Closing such claims could constitute a “taking,” and would require purchase by the Federal government. Also, such a restriction may not have the desired effect, because the sources of infestations near mining activity are simply not well known.

Finally, there are other measures that can be taken under the Standards and Guidelines of Alternatives 1, 2, 3, and 6. On NFs, operations of any size, and even most prospecting, requires a plan of operation to be filed with the local administrative unit if the proposed activity would likely cause significant disturbance of surface resources. Applications typically trigger an EA or other NEPA analysis. Depending upon the risk, the Agency is required to provide reasonable terms and conditions for the operation. In this case, requirements to follow the same POC management practices used on other Agency activities would be binding on the claimant. Infection risk from mine operations are currently reduced because the Kalmiopsis claim owner has been using helicopters to bring in equipment, and travels the road via horseback.

The BLM rules are similar to those described above.

### **Include Disease Control Provisions for Sudden Oak Death**

This alternative would provide Standards and Guidelines for the prevention and eradication of Sudden Oak Death. Although there are some similarities between the diseases, there are also substantial differences. At this time, scientists and land managers have no way of predicting the movement of Sudden Oak Death, *Phytophthora ramorum*, across the range of POC in southwestern Oregon or northern California. In California, the pathogen is present and causes disease in many plant species in coastal areas, with the disease being most abundant and severe in forest types with a significant component of tanoak. Since the disease was discovered and identified in 2000, it has increased dramatically in California and now extends to within 125 miles of the Oregon border. Presently, the disease is not known to occur in Del Norte County or northern Humboldt County, California. In Oregon, the disease has been found at 22 locations within a 9 square-mile area near Brookings, now regulated by Oregon Department of Agriculture. Infesting not more than 55 acres, all of these areas have been cut and burned in an effort to eradicate all populations of the pathogen. There have also been discoveries of Sudden Oak Death in nursery stock near Gresham, Oregon, that were (apparently) successfully eradicated. None of the current known Oregon locations are within the natural range of POC.

Research is underway in California to describe factors that affect spread of the disease across the landscape, but at present these are poorly understood. Therefore, spread of the disease cannot be predicted. Sudden Oak Death has not been analyzed as part of POC-SEIS because too little is known about the disease-spread mechanisms and pathology to design proven control measures. *P. ramorum* has only been clearly known and studied for a few years. Too little is known about the disease for development of an impacts analysis and disease management evaluation.

PL is a root disease, but *P. ramorum* attacks plant stem and leaf tissues. While the major host species for *P. ramorum* and PL share some habitats and occupy some of the same plant associations, there are obvious host differences in the species range, habitats occupied, and life history that suggest a different disease mechanism is operating. POC is generally restricted to sites near groundwater; moisture regime strongly influences community development and plant associations within the range of POC. Tanoak is not strongly dependent on a consistent supply of soil moisture and is usually found on sites that are much drier than those for POC. The range of tanoak extends much further south into the hotter, drier climates of the central California coast range (and even into the Sierra) than does POC. In California, there is a correlation between the spread of *P. ramorum* into tanoak and its association with high population levels of California laurel (*Unbellularia californica*). There is no known connection between high population levels of California laurel tree, sometimes called Oregon myrtle, and POC. Additionally, *P. ramorum* has been found to kill or injure a wide variety of host species, while PL is only known in two host species (Anonymous 2002).

The differences between *P. ramorum* and PL and their host species are enough to suggest that the difference in environmental affects resulting from each disease and the difference in disease management practices would be substantial.

## Close More Roads within Federal Lands

This alternative would close roads in uninfested Federal lands, especially those also going through nearby infested private lands. This alternative was not considered in detail because there are provisions within other alternatives to consider closing roads where needed and appropriate. But in particular, a substantial increase in road closures is not possible in many cases, at least not without purchasing existing private interests to those roads. The limitations on closing roads with reciprocal rights-of-ways or other encumbrances are discussed in the Encumbered Forest Roads section of Chapter 3&4.

## Comparison of the Effects of the Alternatives

**Introduction:** Descriptions of ongoing management and other activities taking place in the forest are provided in the Affected Environment portions of the Timber Harvest, Special Forest Products, Recreation, Fire and Fuels, Mining, Livestock Grazing, and other “management activities” sections in Chapter 3&4. The alternatives have direct effects on these activities, and these are described under Environmental Effects below. However, these activities, and other disease-spread vectors (such as wildlife, private land use, and down-slope and down-stream movement), provide the basis for understanding the disease spread. The elements of these activities that spread the disease (such as vehicles, feet, and equipment) and the relative importance and risk associated each, are addressed in the Pathology section in Chapter 3&4. Then, in the Effects of the Alternatives part of the Pathology section, the elements of the various alternatives (each designed to address, mitigate, or otherwise counteract a spread vector or practice) are considered, and a 100-year disease spread prediction is made for each alternative. Finally, it is this 100-year disease spread prediction that is the basis for estimating the ecological effects for each alternative for Water and Fisheries, Wildlife, Botany, Ecology and Plant Associations, and other resources where POC may be a significant contributor. As a result, it is the Pathology section that is the heart of the analysis.

Combining the effects of various forest uses and the effects (on disease spread) of the various alternatives, the Pathology section provides a cumulative effect of all activities on disease spread, which in turn serves as the basis for the “indirect” or ecological effects.

**Disease Spread:** Three risk regions differ in the way POC is distributed on the landscape relative to the primary disease spread avenues of water and roads. Put another way, the risk regions differ in the percentage of POC acres potentially affected by root disease in the future. In the North Coast Risk Region (Coos Bay BLM District and Powers Ranger District on the Siskiyou NF), POC is well-distributed across the landscape because of favorable moisture conditions. POC at high risk to infection because of proximity to streams and roads is approximately 20 percent of the total POC acreage. Because PL has been in this area more than 50 years, much of that time without active Agency disease-control measures, the disease has reached approximately 75 percent of these high-risk sites, or 15 percent of the total POC acreage. Because spread is limited almost exclusively to high-risk sites, this area is approaching disease saturation and the annual new infestation rate has substantially declined from previous decades.

In the Oregon portions of the Siskiyou Risk Region (Siskiyou NF) and Inland Siskiyou Risk Region (Roseburg and Medford BLM Districts), POC is more concentrated in riparian areas, raising the percent of POC acres in proximity to water and therefore at high risk to infestation. Higher road density and more checkerboard ownership pattern in the Inland Siskiyou Risk Region further increases the area at high risk, so the area of POC at high risk to infestation in these two risk regions is 40 and 60 percent, respectively. The root disease has not been in these areas as long, and the potential for rapid expansion of the disease acres is still high.

The Standards and Guidelines of each alternative affect the percentage of high-risk sites that will become infested within the next 100 years. The predictions consider not only the provisions of the alternatives and the kinds of activities and uses taking place, but the location and context of Federal lands within the larger POC landscape. In addition to the 272,000 acres of POC stands and estimated 34,400 acres of infestation on Federal lands in Oregon, there are over 50,000 acres of POC and over 8,500 acres of infestation on private lands, often checkerboarded with agency lands and being actively managed for timber production at all times of the year.

According to predictions detailed in the Pathology section of Chapter 3&4, the percentage of currently uninfested high-risk areas that will become infested within the next 100 years is predicted to be 40, 30, 20, 80, 80, and 18 percent for Alternatives 1, 2, 3, 4, 5, and 6, respectively. Combining each of these predictions with the existing infestation level, and the portion of the area at high risk, results in the 100-year infestation percentage and acreage calculations shown in Table 2-4. These numbers are best professional estimates of average PL spread rates made after considering the characteristics of the landscape, the level and nature of forest uses, and the requirements of the individual alternatives. They may or may not prove true for the stated 100 years, but required monitoring will track actual PL spread and alert the Agencies if any changes in the strategy are needed in the future. For at least the first decade, these predictions provide a sufficient estimate both of the magnitude of effect (expected to be within 0 to 5 percent) and the relative differences between the alternatives and between risk regions to allow the decisions-makers to make a reasoned choice from among the alternatives.

**Table 2-4.—100-year infestation prediction for Oregon by alternative <sup>1</sup>**

Alternative	% of risk region high risk	Currently infested high-risk area [as % of risk region] <sup>1</sup>	Uninfested high-risk area [as % of risk region]	% of uninfested high-risk areas predicted to become infested [new] in 100 years <sup>2</sup>	Uninfested high-risk areas predicted to become infested [as % of risk region] <sup>3</sup>	Total [new and current] area to be infested in 100 years [as % of risk region]	Total [new and current] area to be infested in 100 years [in acres] <sup>4</sup>	Total [new and current] area to be infested in 100 years [as % of high-risk areas only]
<b>North Coast Risk Region [126,248 acres]</b>								
1	20	15	5	40	2	17	21,500	85
2	20	15	5	30	2	17	20,800	82
3	20	15	5	20	1	16	20,200	80
4 & 5	20	15	5	80	4	19	24,000	95
6	20	15	5	18	1	16	20,100	79
						[Current]	[18,900]	[75]
<b>Siskiyou Risk Region [Oregon portion] [116,374 acres]</b>								
1	40	11	31	40	12	23	27,200	58
2	40	11	31	30	9	20	23,600	51
3	40	11	31	20	6	17	20,000	43
4 & 5	40	11	31	80	25	36	41,700	89
6	40	11	31	18	6	17	19,300	41
						[Current]	[12,800]	[27]
<b>Inland Siskiyou Risk Region [29,341 acres]</b>								
1	60	9	51	40	20	29	8,600	49
2	60	9	51	30	15	24	7,100	40
3	60	9	51	20	10	19	5,600	32
4 & 5	60	9	51	80	41	50	14,600	83
6	60	9	51	18	9	18	5,300	30
						[Current]	[2,600]	[15]
<b>Totals [271,963 acres]</b>								
1	33	13	21	40	8	21	57,300	64
2	33	13	21	30	6	19	51,600	58
3	33	13	21	20	4	17	45,800	51
4 & 5	33	13	21	80	17	30	80,300	90
6	33	13	21	18	4	16	44,700	50
						[Current]	[34,400]	[38]

<sup>1</sup> Projected infestation is assumed to be within the high-risk areas; does not include an estimated 0.1% per year on low-risk sites, much of which is offset by regeneration and growth.

<sup>2</sup> From Table 3&4-6.

<sup>3</sup> Previous two columns multiplied together.

<sup>4</sup> Mortality in infested areas is expected to be about 90%; table does not include replacement with resistant stock.

As shown in Table 2-4, the total area predicted to be infested at 100 years in Oregon varies between 16 and 30 percent (from 13 percent today) depending upon alternative. The percent of high-risk areas predicted to be infested in 100 years is also displayed because some effects, such as water temperature, are dependent more on the percent of PL infestation near streams, not the percent infestation on the entire landscape. The percent of high-risk riparian areas predicted to be infested in 100 years varies between 50 and 90 percent (from 38 percent today), depending upon the alternative. In both cases, the 100-year infestation percentage varies by risk region. Regardless of risk region, however, it is important to note that POC is not at risk of extirpation. Under the “no management” alternative, Alternative 5, disease infestation is predicted to reach 30 percent of all POC acres in 100 years (from 13 percent today), with no risk region exceeding 50 percent.

**Differences in Risk Regions:** In the North Coast Risk Region, most (75 percent) of the high-risk areas are already infested. Since the alternatives primarily affect the percentage of high-risk areas to become infested in the future, there is little difference in 100-year infestation percentage between the alternatives in this area (16 to 19 percent of the total area, 80 to 95 percent of high-risk riparian areas). The similarities in this region between all of the

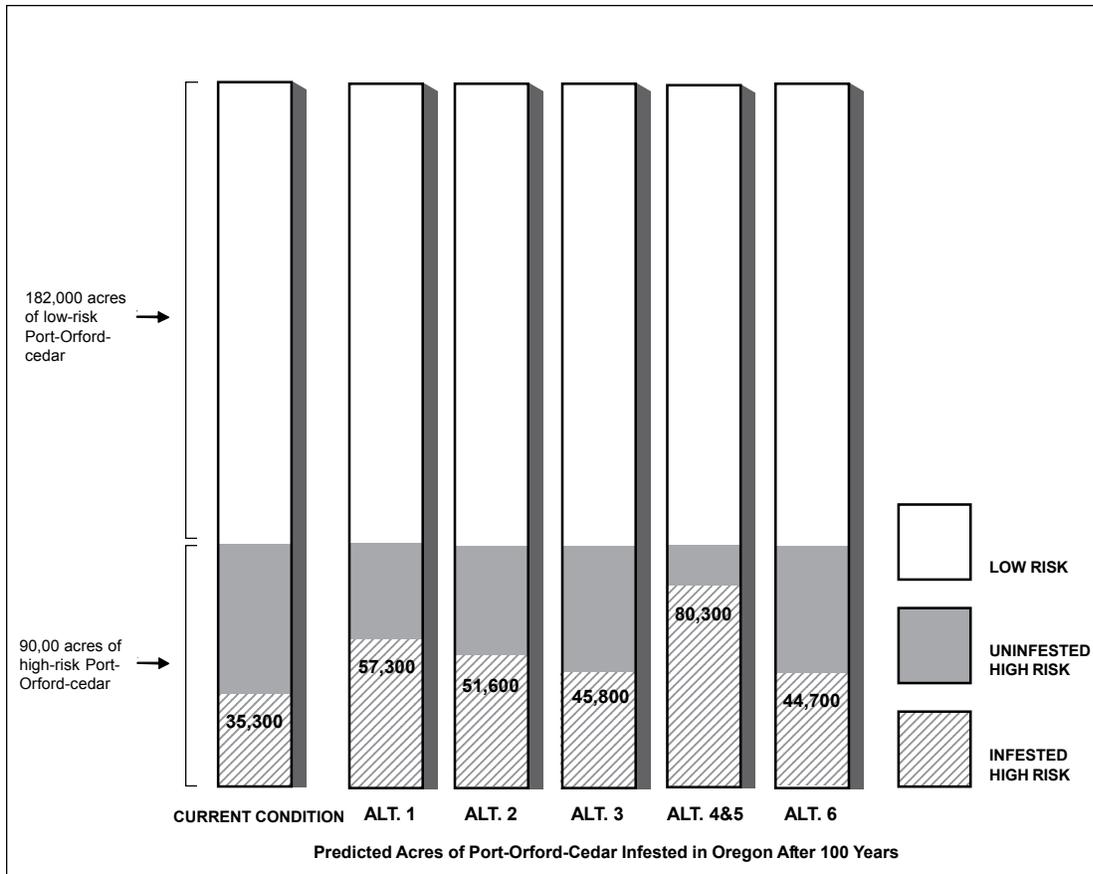
action alternatives become more apparent upon examining the way they would be applied. The risk key in Alternatives 2, 3, and 6 requires project-specific management actions to be applied when there is appreciable additional risk to uninfested POC in the area whose ecological, Tribal, or product use or function measurably contributes to land and resource management plan objectives. If there are few uninfested areas nearby, or if those uninfested areas make no measurable contribution to ecological, Tribal, or product use or function (use or function that is not equally met elsewhere or by other species), the key will not lead to the application of any project-specific management practices. This situation will likely occur more often than not in this risk region because most high-risk areas are already infested, and because the terrestrial distribution of POC places 80 percent of its acres on low-risk sites. The various effects sections in this SEIS (see Summary and Comparison of Effects, Table 2-5) support this generalization that few important functions will be at risk; they do not identify any significant adverse ecological effect in this risk region from any of the alternatives.

In the Inland Siskiyou and the Oregon portion of the Siskiyou Risk Regions, the differences between alternatives are more pronounced. The 100-year infestation prediction varies from 17 to 36 percent in the Siskiyou Risk Region, and 18 to 50 percent in the Inland Siskiyou Risk Region, between the most and least protective alternatives. The alternatives also vary in the percent of high-risk riparian areas infested, from 41 to 89 percent in the Siskiyou Risk Region and 30 to 83 percent in the Inland Siskiyou Risk Region, between the most and least protective alternatives. These percentages become particularly meaningful on ultramafic soils where POC can be prominent and is often the largest species present. On such soils, mortality can decrease stream shading, reduce fish survival, and have other measurable and predictable adverse effects. Compounding this mortality is the likelihood of future high-intensity fire. In the same 100 years, wildland fire could kill up to 50,000 acres of POC, or up to 35 percent of the combined Inland Siskiyou and Siskiyou Risk Regions in Oregon. These percentages are not additive; some of the future fire mortality is the same as that predicted for PL.

**Effects:** A graphic representation of the predicted 100-year disease spread is shown in Figure 2-1. Of the 272,000 acres of POC on Federal lands in Oregon, an average of 33 percent (from Table 2-4) or about 90,000 acres, is high risk. The roughly 35,000 acres of current infestation is assumed to be nearly all in these acres.

In 100 years, the disease is predicted to spread to between 44,700 acres and 80,300 acres, depending on the alternative selected. (Anticipated replacement with resistant stock is not included.) The incremental difference between the alternatives is readily apparent. It is this incremental difference that is bought by the costs of the various alternatives, but that provides the differences in environmental effects between the alternatives. The effects analysis in this SEIS is designed to describe these differences.

For resource effects that are spread more or less evenly across the landscape, such as retention of genetic resources, availability of special forest products, or wildlife nesting habitat, the difference between the alternatives is a small percentage of the total POC acreage (16 to 30 percent, from 13 percent today), and therefore no significant environmental effects are identified for any of the alternatives. However, for resource effects that are closely related to water, such as stream temperature, fish habitat, or habitat for certain unique plants, the differences between the alternatives is much more pronounced. In these generally water-related high-risk areas, the difference between the alternatives range from 50 to 90 percent of



**Figure 2-1.—Current acres of Port-Orford-cedar in Oregon and predicted acres of infestations at 100 years by alternative**

the area infested in 100 years (from 38 percent today).

The degree to which POC mortality-related, or indirect, effects vary by alternative is summarized in Table 2-5 and described in detail in Chapter 3&4. It is important to note that these indirect effects, those resulting from POC mortality, do not all occur at once, but are predicted to occur over the next 100 years as the disease advances into new areas.

There are also direct effects from the Standards and Guidelines themselves. The exclusion of timber harvest in the POC core areas in Alternatives 3 and 6, for example, would reduce scheduled harvest levels and reduce opportunities to treat fuels build-ups and diversify habitats. On the other hand, POC-related road closures can also benefit soil stability and water quality resources. These direct effects for each alternative are also displayed in Table 2-5. In general, across the range of alternatives, as the negative direct effects increase, the negative indirect effects decrease, and vice versa.

The various combinations of risk region, ultramafic soils, riparian areas, and POC prominence leads to a complex combination of affected environments and effects that generally defies range-wide generalizations. However, the effects (both positive and negative) listed on Table 2-5 are greatest in the Siskiyou and Inland Siskiyou Risk Regions where mortality differences between the alternatives are greatest, and lower in the North Coast Risk Region where differences between the alternatives are generally slight or nonexistent. The nature of

**Table 2-5.—Summary and comparison of the environmental consequences (effects) of the alternatives**

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
<b>Resource/Topic</b>						
<b>Pathology</b>	57,300 acres [21%] infested in 100 years, 64% of high risk riparian.	51,600 acres [19%] infested in 100 years, 58% of high risk riparian.	45,800 acres [17%] infested in 100 years, 51% of high risk riparian.	80,300 acres [30%] infested in 100 years, 90% of high risk riparian.	80,300 acres [30%] infested in 100 years, 90% of high risk riparian.	44,700 acres [16%] infested in 100 years, 50% of high risk riparian.
<b>Ecology and Plant Associations</b>	Possible losses in species diversity and ecological function in one or more of 64 identified plant associations where POC is a prominent component, more of a concern in ultramafic soils where POC is a component, effect by alternative is proportional to acres infested. Some rare and/or riparian plant associations could suffer substantial POC mortality, thus altering their contributions to stream shading and structure, nutrient cycling, downed wood, and other functions.					
<b>Botany</b>	There are probably benefits to some rare plants proportional to decreased infestation acres because of reduced shading and other protection. Also Alternatives 1, 2, 3, and 6 road closures reduce noxious weed introductions and trampling. However, some rare plants benefit when nearby cedars die. No negative effects to agency sensitive, threatened, or endangered plants are identified.					
<b>Water and Fisheries</b>	Insignificant coho salmon and steelhead loss due to temperature increases. Possible localized mortality of salmonids from C-brook in fire suppression water drops and tanker spills. Road closures benefit water quality and fish, more so in Alternatives 3 and 6.					
<b>Wildlife</b>	There are no species dependent specifically upon POC, but spotted owl and murrelet are "may affect" because of large-tree losses in habitat. Because pure stands are the exception, other effects are minimal. In Alternatives 3 and 6, late-successional forest-related wildlife benefits from reduced timber harvest, but reduced Late-Successional Reserve thinning could slightly reduce future habitat for these species. Alternatives 1, 2, 3, and 4 possible localized mortality of aquatic species from Chlorox fire-suppression spills or water drops.					
<b>Ultramafic Soils</b>	No known difference in effects to soil productivity. Small POC mortality-related effect on soil stability, highest in Alternatives 4 and 5, lowest in Alternatives 3 and 6.					
<b>Pacific Yew</b>	POC survival in all alternatives is sufficient to avoid loss of common genes and prevent large scale population divergence. Loss of rare genes possible, not significantly different than natural levels.					
<b>Genetics</b>	Good major gene resistance and early fruiting of POC, plus very limited genetic variability in the pathogen, predicts successful development of durable resistant stock for replanting infested areas					
<b>Resistance</b>	Stock available in all breeding zones within 45 years.					
<b>Fire and Fuels</b>	Increased suppression and fuel treatment costs about 2 percent (Alternative 3 and 6 slightly more). Alternative 3 would reduce access to 51,000 acres and prohibit using timber harvest for fuels treatment on 2,700 acres of wildland-urban interface. Alternative 6 would reduce access to 19,800 acres and prohibit using timber harvest for fuels treatment on 3,240 acres of wildland-urban interface.					
<b>Air Quality</b>	Air quality effects are unquantifiable and inconsequential under all alternatives.					
<b>Recreation, Visual, Wildemess, and Wild and Scenic Rivers</b>	Negative effects to some users if roads and areas closed; greatest in Alternative 3 and 6. Positive effects to visuals, wildemess, and wild and scenic river values [esthetic] of reduced mortality.					
<b>Areas of Critical Environmental Concern and Research Natural Areas</b>	Resistance breeding mitigates esthetic impacts over time, fastest in Alternative 4; not all areas in Alternative 5. The risk of an infestation start in the 14 ACECs or RNAs without PL is proportional to the predicted disease spread for each alternative; highest in Alternatives 4 and 5, lowest in Alternatives 3 and 6.					
<b>Cultural Products for Tribes</b>	Insignificant difference between alternatives because of modest levels used and access on other lands.					
<b>Special Forest Products</b>	Current level 4% of bough market, plus firewood and other collections.	Current level of bough collection, and slightly more reduction in firewood and other collections than Alternative 2.	Current level of bough collection, and slightly more reduction in firewood and other collections than Alternative 2.	Increase of bough harvest by 100 to 200 tons annually plus slight increase in firewood and other collections from current levels.	Increase of bough harvest by 100 to 200 tons annually plus slight increase in firewood and other collections from current levels.	Slight increase in bough collection. Reduction in firewood and other collections similar to Alternative 3.
<b>Timber Harvest</b>	Continue current cost to purchasers of about \$0.80/thousand board feet.	No change.	Incalculable reduction in volume offered.	Removal of current \$0.80/thousand board ft mitigation costs.	No effect of PSQ or volume offered.	Decrease in PSQ approximately 0.9 million board feet and no thinning in 9,000 Late-Successional Reserve acres.
<b>Livestock Grazing</b>	Little effect on permit operations.	Could close roads within, but not to, 2 allotments.	Could close roads within, but not to, 2 allotments.	No effect on permit operations.	Possible effects on 3 allotments.	Possible effects on 3 allotments.
<b>Mining</b>	Potential cost increases for PL-reducing practices and possibly restoration.					
<b>Direct Costs</b>	\$860,000	\$846,000	\$932,000	\$477,000	Probably no effect.	Same as Alternatives 1-3.
<b>Environmental Justice and Civil Rights</b>	Current level.	Slight job decrease, primarily affecting Asians and Hispanics.	Job decrease includes 7 timber jobs, a few Asian and Hispanic special forest products collectors.	Job increase of 6 related to bough collection.	\$93,000	993,000
<b>Critical Elements</b>	Alternatives 1, 2, 3, and 6 could increase energy transmission costs; other effects are included in resource sections above.					
<b>Note.</b>	The planning area includes 1.5 million acres of Federal lands and 272,000 acres with some level of POC stocking, a projected 34,400 of which are infested with root disease.					

each of the various effects, and the affected environment in which those effects occur, are described in detail in Chapter 3&4.

**Resistance Breeding:** Alternatives 1, 2, 3, 4, and 6 include some level of resistance breeding for all breeding zones, and Alternative 5 would only use resistance stock in the 26 percent of the breeding zones for which it has already been developed. There is an expectation that the resistance breeding program will mitigate at least some, and potentially many, of the adverse indirect effects in the long term, as POC killed by the disease are gradually replaced by planted resistant stock and their offspring. Alternative 4, scheduled to have seed for all breeding zones within 10 years, would be able to begin mitigating disease-related mortality up to 35 years sooner in some zones than Alternatives 1, 2, 3, and 6. Although there are long-term uncertainties in any resistance breeding program, the chance for durable resistance in POC is good because it appears to have major gene resistance, the pathogen has very low genetic variability indicating a low likelihood of it adapting to kill resistant trees, the pathogen spreads relatively slowly, and POC begin to produce cones as early as age 5 in greenhouse conditions which makes a rapid breeding program possible.

However, because uncertainties about Agency funding in Alternatives 1, 2, 3, and 6 (which include language *per available funding*), and the long timeframes involved for planted POC to be large enough to substantially mitigate adverse effects of POC mortality, the expected benefits are generally not included in the effects summarized on Table 2-5. The level of benefit will depend on the success and application of the breeding program. Planting resistant stock can only reduce, not increase, negative effects displayed in the effects discussions. Fortunately, every dead tree need not be replaced by direct planting. POC begins fairly prolific seed production earlier than other conifers, typically by age 25 in natural stands and possibly sooner for tended planted stock. Successful plantings of a few dozen resistant trees per acre in an infested area should be sufficient to begin a cycle of natural regeneration of resistant or partially-resistant stock with adequate genetic variability. In any event, however, significant reduction of the adverse indirect effects summarized in Table 2-5 will probably not begin to occur until resistant trees exceed 100 years of age, and will not occur at all in some breeding zones if the program is not funded.

## Potential Mitigation Measures

The implementing regulations of NEPA, at CFR 1502.14(f) and CFR 1502.16(h), require identification of measures to mitigate adverse environmental impacts. It is important to note that the alternatives considered in this SEIS are themselves different levels of mitigation measures that apply to other forest management and use. All currently known measures to mitigate the spread of PL are included in some form in one or more of the alternatives. Even measures that have not been proven, such as eradication, are encouraged for trial and evaluation in one or more of the alternatives. The monitoring section specifies continued evaluation of various PL-reducing management techniques so management can best mitigate the spread of PL on future activities.

In Alternatives 2, 3, and 6, the definition of an *activity* with respect to the use of the risk key is purposely broad in order to force consideration of the full range of potential PL-spreading activities.

The resistance breeding program is another mitigation program, and one that can be used to

mitigate adverse effects in sensitive habitats. Where POC losses occur near sensitive or listed wildlife, botanical, or fish species, opportunities to plant resistant stock will be identified and implemented as appropriate.

Mitigation for direct effects to other programs are included in the alternatives as well. For example, a provision for some level of bough harvesting in Alternatives 2, 3, and 6, helps reduce the job losses attributable to bough harvest restrictions. This will help mitigate adverse effects identified in the Environmental Justice and Civil Rights sections.

Measures that would be somewhat more effective than any of the alternatives at slowing the spread of PL include more road closures; indeed, large area closures. Given the analysis of the likely spread of the disease, and the need for other uses of our public lands, and the emphasis already given to road closures in one or more of the alternatives, consideration of additional closures would not meet the Need. This topic is dealt with in the Alternatives Considered but Eliminated from Detailed Study section.

Potential and likely adverse effects identified in Chapter 3&4 are listed in Table 2-6, along with possible mitigation measures for each. The mitigation option of selecting a different alternative is also a choice, and is not included in the table. In general, mitigation measures listed here are ones not explicitly part of the referenced alternative, or at least not part of the alternative at levels that would completely mitigate the adverse effect described.

**Table 2.6.—Identified adverse environmental effects and possible mitigation measures**

Resource Elements	Adverse Effect	Possible Mitigation
<b>Pathology</b>	Disease spread and related effects to private, other units, long-distance spread; mostly in Alternatives 4 and 5.	1] Clarify "reduced spread" objective of Alternatives 4 and 5, by adding "avoid disease export" provision from Alternative 2. 2] Increase public education in offsite areas regarding the risk of receiving disease from unfamiliar equipment. 3] Encourage State to enact POC root disease measures on non-Federal lands. 4] Develop disease-resistant seedlings for use on private lands, and on sites not currently occupied with POC. Function, not mortality, is the effect; mitigation for function loss discussed under other headings.
<b>Ecology</b>	Increase in POC infestations and mortality on Agency lands.	1] Improve risk-mapping of POC to improve efficiency and effectiveness of disease-reduction measures. 2] Plant disease-resistant stock or alternate species in affected areas.
<b>Botany</b>	Possible POC mortality-caused reduction in plant diversity; greatest in Alternatives 4 and 5.	1] Plant disease-resistant stock or alternate species in affected areas. 2] Identify species and sites most affected by POC mortality, and protect or plant those sites specifically. 3] Map uninfested water sources.
<b>Water</b>	POC mortality-related increase in stream temperatures in ultramafic soils, particularly in Alternatives 4 and 5.	1] Plant disease-resistant stock or alternate species in affected areas. 2] Apply the uninfested watershed provisions of Alternative 3 or 6 to specific watersheds.
<b>Fisheries</b>	Streams in ultramafic soils. POC mortality-related negative effect on coho [ESA listed] in upper Illinois River Watershed, and on steelhead in Alternatives 4 and 5.	1] Plant disease-resistant stock or alternate species in affected areas. 2] Map uninfested water sources.
<b>Wildlife</b>	POC mortality-related slight general long-term effect on snag, down wood, and riparian-dependent species not detectable at the landscape scale; greatest with Alternatives 4 and 5. "May affect" spotted owl and murrelet from large tree loss in preferred alternative.	1] Plant disease-resistant stock or alternate species in affected areas. 2] Map uninfested water sources.
	Alternatives 3 and 6 prohibition on commercial thinning in POC cores prevents silvicultural acceleration of late-successional habitat; slight effect.	None known; alternatives themselves are mitigation measures applied to various forest activities.
<b>Wildlife and Fish</b>	Possible isolated Clorox-related mortality of fish and other aquatic species from fire-suppression tanker spills or water drops in Alternatives 1, 2, 3, and 6.	1] Permit commercial thinning in POC cores in Late-Successional Reserves. 2] Thin and leave material on site, if consistent with fuels objectives.
<b>Fire</b>	1 to 2% cost increase and potential increase in burned acres to implement disease-control measures in Alternatives 1, 2, 3, and 6.	1] Attempt to limit water drops on streams by educating suppression crews of the risk so they can direct drops accordingly. 2] Fly farther to get uninfested water. 3] Neutralize Clorox in water by adding aeration or treating with chemical neutralizer such as ammonium salts [which may have their own risks]. 4] Drop from higher-up to increase spread [limiting amount in stream] and increase volatilization [evaporation] of the active ingredient. 5] Only add Clorox bleach to tankers after leaving the stream area.
<b>Fuels</b>	Slight reduction in acres of fuels treated in Alternatives 1, 2, 3, and 6, and additional reduction in wildland-urban interface acres treated in Alternatives 3 and 6.	1] Remove POC disease control measures for fire-fighting, especially in dry weather and conditions where introduction risk is low. 2] Permit water dips from rivers during summer flows when movement of PL is low. 3] Map uninfested water sources.

<b>Recreation</b>	Some restrictions on OHV use and road access in Alternatives 1 and 2; greatest in Alternatives 3 and 6; could displace some users and intensify use in other areas.	1] Identify more appropriate use areas and educate using public. 2] Apply seasonal, rather than complete, closures where possible.
<b>Wilderness</b>	POC mortality-related loss of scenic quality, especially near water-related activities; greatest in Alternatives 4 and 5.	1] Design developed sites to keep use away from POC. 2] Sanitize between use areas and POC before mortality occurs.
<b>Areas of Critical Environmental Concern and Research Natural Areas</b>	Possible POC mortality-related reduction in wilderness values; greatest in Alternatives 4 and 5. Areas devoted to botanical study or exceptional value adversely affected by POC mortality; greatest with Alternatives 4 and 5.	1] Plant disease-resistant stock or alternate species in affected areas consistent with management policies. 2] Try eradication treatments if permitted by management policies. 3] Specifically limit access. 4] Educate user to the risks and provide shoe-cleaning stations. 5] Add PL considerations into the management plan for each area. 6] Map uninfested water sources.
<b>Cultural Products for Tribes</b>	Slightly reduced access to products from road and area closures and harvest restrictions in Alternatives 1 and 2, and more so in Alternatives 3 and 6.	1] Make exceptions for Tribal collections. 2] Work with Tribes to identify collections areas. 3] Map uninfested water sources.
<b>Special Forest Products</b>	Slight but immeasurable POC mortality-related reduction in long-term collectable POC products; greatest in Alternatives 4 and 5.	1] Plant disease-resistant stock or alternate species in affected areas. 2] As large-free mortality occurs, harvest and store logs for later use. 3] Encourage resistant POC planting on Tribal or private lands, or Federal lands not currently occupied with POC.
<b>Timber Harvest</b>	Nearly complete restriction on POC bough sales, and slight restrictions on firewood, mushrooms, and other products, in Alternatives 1 and 2, and more so in Alternatives 3 and 6. \$0.80/thousand board feet POC-related harvest cost in Alternatives 1, 2, 3, and 6, and PSQ reduction of 0.65 million board feet in Alternative 3; 0.9 million board feet in Alternative 6.	1] Educate collectors about risks and direct them to open collection areas. 2] Identify bough collection areas for long-term stewardship contracting. 3] Encourage development of private POC bough orchards. 4] Do not apply Alternative 3 or 6 POC cores to Matrix lands [would negate largest gain]. 5] Designate the POC cores and buffers as Late-Successional Reserves and remove Late-Successional Reserve designation from corresponding habitat elsewhere [a Northwest Forest Plan amendment].
<b>Environmental Justice/Civil Rights</b>	Loss of 7 timber jobs in Alternative 3, and 10 timber jobs in Alternative 6.	See mitigation for Timber Harvest and Special Forest Products.