Down Log Relocation

Environmental Assessment
EA # OR-120-04-05
Date: March 8, 2004
Coos Bay District
Bureau of Land Management

Chapter 1.0: Purpose of and Need for Action

1.1 Introduction

The Down Log Relocation Environmental Assessment (EA) is intended to programmatically analyze the relocation of down logs to restore down log levels across the landscape in areas identified as deficient in these structures. Projects are for the benefit of aquatic and terrestrial species and will take place in upland habitat and riparian reserve areas throughout the District regardless of Land Use Allocation (LUA). Trees selected for placement may become available from such disturbances as fire, insects, disease, landslides, and windstorms or are hazard trees that pose a threat to public safety or have a high probability of theft. These locations are located within, or immediately adjacent to, a road prism or are located at an established site, such as: recreation sites, utility corridors, communication sites, maintenance sites, etc. The analysis area includes all lands administered by the Coos Bay District Bureau of Land Management.

1.2 Need for Log Relocation Projects

1.2.1 Terrestrial Habitat

Widespread inventories for down logs on the District have documented that many areas are below management goals for these structures. The Coos Bay District Resource Management Plan (1995) directs that Matrix lands be managed to provide down logs at a minimum of 120 linear feet/acre of class 1 or 2 logs. Watershed Analysis typically recommends that Reserve lands (i.e. LSRs, Riparian Reserves, Administrative Withdrawals, and Congressional Withdrawals) be managed to provide down logs at levels within the range of natural variability of unmanaged stands. Watershed Analyses often identify current deficiencies of down logs and recommend log creation projects to restore these key habitat elements to the landscape. The *South Coast - Northern Klamath Late-Successional Reserve Assessment*, dated May 1998 also prescribes down log management goals for LSRs. Past management practices usually left fewer of these structures than our current land management plan requires and often resulted in the general removal of down logs across the landscape through salvaging and illegal fire wood cutting.

1.2.2 Aquatic Habitat

Aquatic habitats have suffered impacts from past land management practices. These include removal of stream side trees through logging and the "stream cleaning" practice of removing large wood stream structures for better fish passage. These practices have resulted in the loss of streamside vegetation and function, habitat loss in the decreased amount of large logs in streams and loss of deep pools and channel form, increased water temperatures, and decreased water flows and quality. As stated in the Oregon Plan for Salmon and Watersheds, "Large wood placements temporarily address habitat deficiencies caused by past land management activities until wood can be recruited to the stream naturally from adjacent riparian and upslope areas" (P. 6, Watershed Restoration Inventory). Currently, only 39% of District lands within 200 feet of streams are capable of inputting wood of the size needed to influence aquatic habitat quality.

1.3 Objectives

Objective #1: Relocate wood that is not available for a Salvage sale and also either poses a threat to public safety, or has a high probability of theft.

Objective #2: Increase the coarse wood component in aquatic and terrestrial habitats for the benefit of dependant fish and wildlife species.

1.4 Scope of This Environmental Analysis

1.4.1 Relevant Planning Documents That Influence the Scope of This Environmental Analysis

This EA is tiered to the *Coos Bay District Resource Management Plan* and its Record of Decision (USDI BLM 1995); which is in conformance with the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl (Northwest Forest Plan)* and its Record of Decision (USDA-USDI 1994). This EA is also in conformance and tiered with the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (USDA-USDI 2001) as well as the *Final Supplemental Environmental Impact Statement Management of Port-Orford-Cedar in Southwest Oregon* (USDA-USDI 2004).

The Log Relocation EA is also consistent with the *South Coast / Northern Klamath Late-Successional Reserve Assessment* (USDA-USDI 1998); *Coos Bay District Integrated Noxious Weed EA* (EA No. OR120-97-11), the *Western Oregon Districts Transportation Management Plan* (USDI BLM 2002), and the District Salvage Sales Procedures (USDI BLM 2003, Instruction Memorandum No OR120-2003-03). Actions described in this EA are designed to be in conformance with the Aquatic Conservation Strategy (ACS) Objectives listed on page B-11 and the Standards and Guidelines for Riparian Reserves on pages C-31 to C-37 of the *Northwest Forest Plan* (USDA-USDI 1994).

The Analysis File contains additional information used by the interdisciplinary team (IDT) to analyze impacts and alternatives and is hereby incorporated by reference.

1.4.2 Issues Studied in Detail

The Down Log Relocation IDT carefully considered comments received from BLM resource specialists. The IDT determined that the following issues are relevant to the decisions that must be made concerning Down Log Relocation Projects. These issues directly influenced the technical design of the project.

Issue #1: Increasing the Spread of Noxious Weeds

Equipment that is brought in to facilitate log movement and/or transport has the ability to spread unwanted noxious weed seeds from other areas. Even further, the transport of logs from watershed to watershed could bring seeds from an infected area and introduce them to another watershed.

Issue #2: Port-Orford-Cedar

Transport of infected logs across watersheds could spread the disease to uninfected areas. Also, as the disease is spread through water systems, the nature of the proposed aquatic projects could spread the infection.

1.4.3 Issues Eliminated From Further Study

The Down Log Relocation IDT eliminated the following issues from detailed study, as directed by CEQ regulation §1500.1(b), 1500.2(b) and other sections, because the proposed project would have no effect or cause only inconsequential effects to occur to these issues. No further information on these eliminated issues appears in this Environmental Assessment. However, the Project File contains reports dealing with these eliminated issues.

- **New Road Construction**
  There will be no new road construction as a result of this project.

- **Energy Development**

As there are no road closures associated with any of the Alternatives, energy development and accessibility would remain unchanged from its current condition.

- **Air Quality**
  Burning of debris left on site after a relocation project is not planned; therefore, the projects will not have an effect on air quality. Debris is expected to be "swept" from roadways and left on site to naturally decompose

- **Farmlands, Prime Unique**
  The project areas, by their nature as forested lands, will have no direct effect on any farmlands.

- **Environmental Justice/Native American Trust Resources**
  The proposed activities concern wood materials that would not normally be available to the public for use. There would be no adverse impacts to Native Americans, minority or low-income populations if either Alternative is implemented. The local Indian Tribes (Coos, Lower Umpqua and Siuslaw, and Coquille) have no known Indian Trust Resources on the District.

- **Wild & Scenic Rivers/ Wilderness**
  There are neither designated Wild & Scenic Rivers nor designated Wilderness on the Coos Bay District.

- **Special Status Areas**
  In RNA areas, trees that fall within the road prism will be moved enough to allow vehicular passage and then left on site. In ACEC areas, down wood will be managed in accordance with the ACEC's management plan.

1.5 Decisions That Must Be Made

The District Manager of the Coos Bay District BLM, must decide whether to implement down log relocation projects as described in detail in Chapter 2.

The District Manager must also determine if any of the alternatives would or would not significantly affect the quality of the human environment. If the District Manager determines that they would not significantly affect the quality of the human environment, then a FONSI (Finding of No Significant Impact) can be prepared.

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

Chapter 2.0: Alternatives Including the Proposed Action

2.1 *Introduction*

This Chapter describes the activities of the No-Action Alternative and one Action Alternative. Then, based on the relevant resources described in Chapter 3: Affected Environment and the predicted effects of the Alternatives in Chapter 4: Environmental Consequences, this chapter briefly summarizes the predicted attainment of project objectives and the predicted effects of the Alternatives on the quality of the human environment.

This chapter is composed of the following three major sections:

- Alternative Design, Evaluation, and Selection Criteria
- Alternatives Considered but Eliminated From Further Study
- Description of Alternatives

2.2 *Alternative Design, Evaluation, and Selection Criteria*

The District Manager and the IDT have identified the following criteria with which to design and evaluate the Down Log Relocation project and with which to make an alternative selection decision.

2.2.1 Management Directions For the Down Log Relocation Project (ROD/RMP pages 27-30)

The Down Log Relocation project would be applied across the Coos Bay District and comprises almost entirely the Land Use Allocations (LUA) of Riparian Reserves and Late Successional Reserves. From the ROD/RMP the team reviewed the desired future condition, goals, and standards for Riparian Reserves and Late Successional Reserves and identified the following project area directions:

- Enhance and maintain biological diversity and ecosystem health to contribute to healthy wildlife populations.
- Maintain or enhance the fisheries potential of streams and other waters.
- As identified through watershed analysis, rehabilitate streams and other waters to enhance natural populations of anadromous and resident fish. Possible rehabilitation measures would include … instream structures using boulders and log placement to create spawning and rearing habitat.
- Where appropriate, wildlife habitat enhancement opportunities will be identified through [watershed analysis].
- Follow the Aquatic Conservation Strategy through implementation of Watershed Restoration. Watershed Restoration will be an integral part of a program to aid recovery of fish habitat, riparian habitat, and water quality.

2.2.2 Down Log Relocation Project Objectives

- Relocate wood that is not available for a salvage sale and also either poses a threat to public safety, or has a high probability of theft.
- Increase the coarse wood component in aquatic and terrestrial habitats for the benefit of dependant fish and wildlife species.

2.2.3 Evaluation and Selection Criteria

The first criterion to be met is that the wood is unavailable for Salvage Sales or Firewood Cutting.

Additionally, any combination of the following criteria would be used to determine if a log is suitable for relocation:

- Active In-stream Restoration Site Located Near-by
- Future Restoration Projects Planned in the Area
- Adjacent Upland Habitat is Deficient in Coarse Wood
- Adjacent Aquatic Habitat is Deficient in Coarse Wood
- Degree of Noxious Weeds Present at the Site

2.3 *Alternatives Considered But Eliminated From Study*

The Down Log Relocation Project went through several revisions until it reached its present proposed configuration. Some initially identified placement configurations were eliminated from further study because they did not satisfactorily fulfill the need as stated in Section 1.2 or because they did not comply with the project design criteria listed in Section 2.2. In various ways and degrees, these design iterations dealt with the objectives listed in Section 1.3 and the issues listed in Section 1.4.2. Issues that were eliminated from study are located in Section 1.4.3.

2.4 *Description of Proposed Alternatives*

2.4.1 Alternative A: No Action

The no action alternative would maintain the status quo and there would be no change in BLM's current management strategy. As a result, trees that become available from such disturbances as fire, insects, disease, landslides, and windstorms, or are hazard trees that pose a threat to public safety, or have a high probability of theft will be left on site. These locations are usually located within a road prism or at an established site, such as recreation sites, utility sites, communication sites, etc. These trees would be prone to theft and would provide minimal habitat for forest associated species. Wildlife projects to restore downed coarse wood habitats within Riparian Reserves and Late Successional Reserves would occur only in association with commercial timber harvest activities. Aquatic habitat restoration projects would continue to occur as funding and wood become available from other sources.

2.4.2 Alternative B: Down Log Relocation Project

Trees that become available from such disturbances as fire, insects, disease, landslides, and windstorms or are hazard trees that pose a threat to public safety, or have a high probability of theft would be evaluated as described in Section 2.2.3, and those trees selected to be relocated could be moved in one of the following ways:

- Relocated into adjacent streams as aquatic habitat,
- Relocated into adjacent uplands as down coarse wood,
- Transported offsite to be stored for future aquatic/terrestrial habitat projects,
- Transported to offsite restoration project areas.

On-site or adjacent relocation projects could include the use of, but are not limited to, cable yarding systems, backhoes, front end loaders, horses, tractors, and excavators.

Off-site relocation to project sites and/or storage areas could include the use of, but are not limited to, cable yarding systems, backhoes, front-end loaders, self-loaders, tractors, excavators, and/or trucks/trailers. Off-site relocation sites could also include the use of equipment to off-load and place logs into a project site, either upland in terrestrial habitat, or riparian/in-stream for either terrestrial or aquatic habitat. These project sites could be similar to sites described as "On-site projects." Specifically, these actions could involve:

1. Directly yarding or machine placing material into streams, riparian areas, or upland sites by cable, horse, backhoe, front-end loader, self-loader, tractor, or excavator. This EA

will analyze upland, riparian zone, and in-stream placement, whether the project is on- or off-site.

2. Directly yarding, by machine or cable, material to an existing road to be loaded onto a truck and hauled either to another project site or to a stockpile site. If the material is hauled to another project site, the off-loading and placement activities would be similar to the activities described above. The stockpile sites (for security and to prevent wood cutting) will most likely be maintenance yards operated by the Coos Bay District road maintenance crews. These sites are fenced, maintained in a weed-free environment as much as possible, and are relatively secure.

2.2.4.1 Project Design Features - Alternative B

Design Features Applicable to All Proposed Action Relocations

Botany: S&M, Bureau Sensitive Species

□ Pre-Disturbance surveys for S&M species in Categories A and C are **not** required if one of the following three situations applies to site specific situations:

1. Tree relocation is small in scope and area, generally less than one acre.
2. A tree(s) is blown down adjacent to the road and the tree may need to be removed quickly to avoid theft.
3. Pre-disturbance surveys would delay implementing an activity that would result in unacceptable environmental risk.

□ Pre-Disturbance surveys for S&M species in Categories A and C **may** be conducted in situations where tree relocation is large in scope and area (> 1 acre), and there is no environmental risk. There are three triggers for these pre-disturbance surveys: the project lies within the known or suspected range for the species, the project lies within, and/or could affect, suitable habitat for the species, and the project has the potential to cause a significant negative effect on the species habitat or the persistence of the species at the site. Persistence is generally defined as at or above an 80% probability of survival at the site.

□ Surveys for Bureau Sensitive vascular and non-vascular plants are recommended. However, due to the timing of log relocation, it may not be possible or practical to conduct both vascular and non-vascular surveys. After information analysis/site visit, staff botanists would be able to make appropriate site specific recommendations.

Botany: Noxious Weeds

□ Clean heavy equipment before moving onto BLM lands/ before changing geographic areas.

□ Logs will remain within the immediate infected area and are not available for transport to uninfected areas at sites that have a high level of contamination of weeds, such as but not limited to gorse.

□ Non-native invasive tree species, such as but not limited to eucalyptus, would not be used for these projects.

□ Disturbed sites and exposed soils will be seeded with the appropriate BLM-approved grass mixture.

Botany: Port-Orford-Cedar (POC)

□ POC trees that are infected will remain on site; infected trees are not available for transport.

The following management practices are based on the preferred alternative in the *Final Supplemental Environmental Impact Statement Management of Port-Orford-Cedar in Southwest Oregon (FSEIS-POC, USDA USDI 2004)* and are not inconsistent with the existing RMP direction for POC. These management practices will be modified as needed to be consistent with the Record of Decision for Port-Orford Cedar management when it is signed.

1. The following actions are required regardless of the level of risk or significance of POC.

A. When heavy equipment, including road maintenance equipment, has left surfaced (rocked or paved) roads in infested POC areas, it will be washed upon leaving the project.

2. Additional management practices, listed on pages 2-20 through 2-22 of the FSEIS-POC, are to be considered when **both** of the following apply:

A. Projects encounter the following key ecological characteristics or functions:

1. Distinct POC populations/ metapopulations within the range of the species
    a. Remnant populations of POC
    b. POC populations filling identified natural heritage ecological cells
2. Distinctive community ecology
    a. Areas with identified Port-Orford-Cedar associations where these associations are rare
    b. Areas with pure stands of POC. Such stands are considered rare within the range of the species
3. Areas where POC is a component of distinctive communities that are rare in current landscapes
    a. Lowland terraces/swamps
    b. Sand dunes
    c. *Darlingtonia* bogs
    d. Distinctive (rare) ultramafic communities
    e. Sites with distinctive microclimates, where POC plays a key role in increasing landscape-level diversity
4. Provision of key ecological functions
    a. Provision of snags, down wood and vertical diversity by large POC, in habitats where other large conifers are absent and unlikely to establish
    b. Provision of shade-tolerant conifer understory in areas where other shade-tolerant conifers are absent and unlikely to establish
    c. Support of sensitive plant or animal species specifically associated with POC (none thus far have been identified)
    d. Provision of important stream shading not likely to be replaced by other species.
5. Presence of uninfested POC of tribal or product value significance that would be lost if infested.

These types of POC key ecological habitats and functions, tribal, or product value significance, are rarely found on the Coos Bay District, so application of additional management practices will usually not be applied to these types of projects.

B. The project will introduce appreciable additional risk of infection. In these rare instances, additional mitigation would be applied. The FSEIS explains on page 2-43; " 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 [BLM], it can make a cost-effective and important difference." Therefore, in the rare instances that would be encountered, management practices would be employed where additional risks have been added to areas identified as key ecological areas.

Wildlife

Determination of disturbance effects on listed species is a major component of any Environmental Assessment (EA). Activities which may cause disturbance (i.e., tree cutting, hauling, etc) have been restricted during the nesting season for listed species. For the northern spotted owl, marbled murrelet, bald eagle, and peregrine falcon, the distances over which these activities have been restricted have become an accepted standard, and have been incorporated into numerous EAs, Biological Assessments (BAs) and Biological Opinions (BOs).

Currently, the Coos Bay District BLM is reconsulting with the U.S. Fish and Wildlife Service regarding disturbance and disturbance distances to the northern spotted owl and marbled murrelet for a variety of forest management projects. Relocation of down wood typically meets criteria for low disturbance projects and the recommendations in the BO will be applied to projects developed in this EA. The recommendations for seasonal restrictions in the forthcoming BO are hereby incorporated as design features by reference.

Fisheries

□ Co-ordination with an Oregon Department of Fish and Wildlife Fisheries Biologist is required to attain a waiver for working out of the in-stream work window for wood placement during the spawning season (generally Oct-May).

□ In-stream wood placement would occur away from active spawning areas and avoid unnecessary disturbance to active redd sites.

□ Minimize the number and length of access points through riparian areas.

□ In-stream placement would use whole trees or tree pieces that are preferably 1.5 to 2.0 times the active channel width with root-wads attached (if available).

Hydrology

□ Field observations for the potential recruitment and transport by fluvial processes would be completed by a resource hydrologist, fish biologist and or geologist before removal or relocation of logs from Riparian Reserves.

□ If deficient, logs that fall within one site-potential tree height to the stream would be maintained on site, but may be repositioned due to safety issues or to reduce the risk of theft.

□ Down logs beyond one site-potential tree to the stream may be available for off-site habitat projects. A hydrologist would be consulted to participate in the site specific analysis of log placement in streams. The following guidelines would be incorporated by the hydrologist into the project specific design process:

- Meeting the long term potential recruitment of logs to nearby streams before relocation of logs to a different stream reach or drainage network
- Designing in-stream habitat structures to withstand the forces of flood flows and the effects on channel conveyance and sediment transport should be considered before implementation.
- Thoroughly investigating of the design and viability of project objectives
- Thoroughly analyzing the condition of upland tributaries before relocating or removing logs from adjacent Riparian Reserves to fulfill habitat projects off site.

Soils

□ All operations shall follow BMPs for maintaining water quality and soil productivity as found in the District RMP, Appendix D. This would include:

- Levels of compaction and disturbance will not exceed what is acceptable in Conservation Practices for Timber Harvest

□ During the rainy season (generally Oct. – May), if is reasonably certain that ground based equipment would need to work off of gravel/paved road surfaces, consultation with a Soils Scientist is warranted. Under these conditions, additional design features may be added as per the Soils Scientist on a project by project basis. The following are examples of what these additional design features may include:

a. Ground-based vehicles would use previously compacted road surfaces or skid-trails when available.
b. When operating rubber-tired vehicles on non-compacted or undisturbed soils, vehicle passes shall be limited to no more than two, i.e. in and out. When operating tracked vehicles on such non-compacted surfaces, passes shall be limited to no more than six.
c. When multiple logs in one area are to be relocated, the number of passes in and out on the same traveled surface shall remain the same as above i.e. two or six respectively.
d. When multiple logs are to be relocated using the same access route, use equipment equipped with a thumb; use shovel logging techniques to move all logs as a group along access route.
e. Skid trails and log yarding paths will have erosion control and drainage measures applied to reduce sediment delivery to nearby streams.

Recreation Sites

□ Trees within developed recreation sites would be removed as quickly as possible (due to safety issues) and avoid damage to existing facilities and natural resources to the maximum extent possible. If damage to existing facilities is likely, documentation with photos pre- and post- tree relocation activities for damage assessment purposes would be appropriate.

□ Trees within undeveloped recreation sites would be removed to minimize damage to natural resources and alleviate safety concerns.

□ Trees that present as an "attractive nuisance" would be removed. These types of trees entice recreationists (usually children) to endanger their safety.

Hazardous Materials

□ Proposed project areas would be screened for recognized environmental conditions (RECs) by project personnel, and any concerns documented on the NEPA Level 1 Site Survey, or Hazardous Materials Site Report (Form OR 120 1703-1), and submitted to the district Hazardous Materials Coordinator for investigation or response.

□ Activity resulting from the proposed action would be subject to State of Oregon Administrative Rule No. 340-108, *Oil and Hazardous Materials Spills and Releases,* which specifies the reporting requirements, cleanup standards and liability that attaches to a spill or release or threatened spill or release involving oil or hazardous substances. In addition, the Coos Bay District Hazardous Materials Contingency Plan and Spill Plan for Riparian Operations apply when applicable to operations where a release threatens to reach surface waters or is in excess of reportable quantities.

Cultural Resources

□ Native American Grave Protection and Repatriation Act Notification Requirements (43 CFR Part 10; IM OR-97-052) would be followed. If any cultural materials are encountered during the project, all work in the vicinity would stop and the District Archaeologist would be notified at once.

Chapter 3: Affected Environment

3.1 *Introduction*

This Chapter describes the existing condition of environmental resources within the Down Log Relocation project area that would affect or that would be affected by the implementation of Alternative B: Down Log Relocation. The description of the existing conditions reflects the application of Alternative A: No Action, and serves as the baseline for measuring the effects of the Proposed Action.

3.2 *Description of Relevant Affected Resources*

3.2.1 Project Area Location

The project area encompasses federal lands administered by the Coos Bay District, Bureau of Land Management. These lands are located on the western slopes of the Oregon Coast Range and total 329,679 acres of land within four counties (Coos, Curry, Douglas, and Lane). The project specific locations will primarily occur within two designated Land Use Allocations (LUA), Riparian Reserves and Late-Successional Reserves. The total acreages for these LUAs are 89,600 acres and 136,800 acres respectively. Map 1-1 illustrates the complete planning area and these LUAs.

3.2.2 Vegetation, Including Sensitive Species

Coos Bay District Flora
The Coos Bay District flora includes over 2,160 species: over 920 nonvascular species and 1,240 vascular species (Brian 2003). Additional species will be added to the total as future botanical surveys are conducted, especially in rare and unusual habitats. The district has about 28 % (or 1,240 of the 4,400) of the state's vascular flora represented.

Sensitive Species
Estimates of the number of sensitive species vary. The U. S. Fish & Wildlife Service considers 0.2 % of the state's flora to be threatened or endangered, the Oregon Department of Agriculture considers the figure to be about 1.4 %, and the Oregon Natural Heritage Information Center considers it to be 8 % (Kaye et al. 1997).

Ninety-six special status vascular plant species (or about 8 % of the district's flora) are documented or suspected to occur on the Coos Bay District (Brian 2002). These plants are termed Bureau sensitive (also known as federal species of concern), assessment, and tracking species. In addition, there are 33 non-vascular special status plant species (i.e., fungi, lichens, mosses, hornworts, and liverworts) known to occur. The majority of the special status plants are known from unique habitats such as coastal dunes, serpentine fens, bogs, cliffs, grassy balds, and meadows.

Survey & Manage Species
Of the 304 Survey & Manage (S&M) species listed for Oregon and Washington in 2003, there are 14 botanical species known or suspected to occur on District lands. These species include 10 lichen, 2 bryophyte, 1 fungi, and 1 vascular plant that are within the rare (Category A) and uncommon (Category C) categories. Some S&M species are also considered special status plant species. Every year, an annual species review is issued where species categories may be changed or removed from the S&M lists. The *Final Supplemental Environmental Impact Statement To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines (USDA/USDI 2004)* contains the lists of species in each category. There are different species lists under the different Alternatives; this EA will conform to the Alternative that is chosen in the signing of the Record of Decision.

Non-native Plants
About 16 % of the vascular species on the district are considered exotic. In comparison, approximately 17.4 % of the Californian flora is considered exotic (Hickman 1993). Exotic plants are those that are not indigenous to a given area, species occurring as a result of introduction, or species that have escaped and become naturalized.

Noxious Weeds
Some exotic species are also considered noxious. These plants have been officially determined to be injurious to public health, agriculture, recreation, wildlife, or any public or private property by the state's Noxious Weed Control Program (Oregon Department of Agriculture 2003). Noxious weeds are present throughout the district. They range from a few isolated plants to large areas. Most noxious species occur along roadsides and in disturbed areas. The infestations are at or below accepted management levels and are considered to pose few risks to resources.

The common noxious weeds on the Coos Bay District include English ivy, Canadian thistle, bull thistle, tansy ragwort, Scotch broom, French broom, common gorse, Himalayan blackberry, purple loosestrife, St. Johnswort (also known as Klamath weed), and Brazilian waterweed. Four species are of most concern on the district: (1) Scotch broom occurs across the entire district with large/heavy infestations in the Umpqua River drainage and become lighter and more scattered to the south. This species is still thought to be spreading. (2) French broom is mostly located in Curry County with large infestations in the Coquille River drainage and along the coast. This species is believed to be spreading more rapidly than Scotch broom. (3) Common gorse is most common along the coast in Coos and Curry Counties. Isolated occurrences are found inland and are thought to be spread by heavy equipment use. (4) Purple loosestrife is only known to occur at the Dean Creek Elk Viewing Area. Other sites are not expected due to the lack of open wetland habitat.

Port-Orford-Cedar
Port-Orford-Cedar (POC) is an ecologically and economically important tree species. It is a regional endemic, occurring only in Southwest Oregon and Northern California. On the Coos Bay District, the northern limit of the species is the coastal dunes north of North Bend, within the Coos Watershed.

Port-Orford-Cedar is affected by an exotic root pathogen, *Phytophthora lateralis* (PL), which is nearly always fatal to the trees it infects. Spread of the pathogen is linked, at least in part, to transport of spore-infested soil by human and other vectors, such as animals. The largest areas of contamination and most likely candidates for spreading the pathogen occur along roadsides. Currently, on the Coos Bay District, there are 82, 410 acres of POC with 319 acres of non-roadside PL infestations and 2,391 acres of roadside considered infested. The vast majority of PL infected POC on Coos Bay District lands is in the south half of the district, south of the North Fork Coquille and Coos River drainages.

For more detailed information about POC and PL, please refer to the *Final Supplemental Impact Statement Management of Port-Orford-Cedar in Southwest Oregon* (2004), from which the above statements are extracted.

3.2.3 Wildlife, Including T&E Species

General Wildlife
Numerous species of wildlife such as Roosevelt elk, black-tailed deer, black bear, mountain lion, mink, long-tailed weasel, beaver, American marten and fisher are present on lands administered by the Coos Bay District. Birds present include numerous species of resident and neo-tropical migratory songbirds such as the western tanager, brown creeper and varied thrush; upland birds such as ruffed grouse, California quail, and mountain quail; raptors such as Cooper's and sharp-shinned hawk, red-tailed hawk, and spotted owls; and marbled murrelets. Small mammals include red tree vole, northern flying squirrel, porcupine, brush rabbit, and several species of shrew. Reptile species include western fence lizard, northern alligator lizard, probably the rubber boa, and two species of garter snake. Amphibians include southern torrent, clouded, Dunn's, western red-backed, Pacific giant and ensatina salamanders.

Down wood is used by roughly 130 species of wildlife and are especially important for small mammals and amphibians (Brown, 1985). Large logs are used as breeding sites by terrestrial salamanders (Jones and Aubry, 1985) and are important components of nutrient cycling and water storage in unmanaged forests (Franklin et al. 1981). Large snags and large down wood typically associated with late-seral and old-growth forests are critical to the persistence of many bird, mammal and herptile populations. In western Oregon and Washington, snags are used by more than 90 species of wildlife, 53 which are considered dependant on cavities (Brown, 1985). Aubry, 1988 found 74% of ensatina captures in his study were at the base of snags where the top had broken off, the wood was soft and most or all of the bark had sloughed to the ground, while red-back salamanders were most often found under moderately decayed logs 10 - 30 cm in diameter.

Appendix A contains a list of special status species potentially found within the Coos Bay District boundaries and a summary of habitat and potential impacts. The list was derived from the BLM Oregon State Office special status species database. Included is all terrestrial special status species listed as "documented" (present) or "suspected" (likely) to occur on the Coos Bay District with the exception of marine and coastal species.

Lands administered by the District are within the range of three federally listed Threatened and Endangered wildlife species: the northern spotted owl, marbled murrelet, and bald eagle. In addition, Critical Habitat for northern spotted owls and marbled murrelets has been designated. Currently, the Coos Bay District BLM is re-consulting with the U.S. Fish and Wildlife Service regarding disturbance and disturbance distances to the northern spotted owl and marbled murrelet for a variety of forest management projects. Relocation of down wood typically meets criteria for low disturbance projects and the recommendations in the BO will be applied to projects developed in this EA. The recommendations for seasonal restrictions in the forthcoming BO are hereby incorporated as design features by reference.

Northern Spotted Owl

Most of the District was thoroughly surveyed for spotted owls during a demographic study between 1990-1994. There are approximately 106 known sites on the District, 68% of which are protected in mapped LSRs (see Table 5). The majority of the remaining sites have 100 acre cores (unmapped LSRs) established around them. Most of the best habitat occurs in LSRs as do the best owl sites (i.e. the ones with the most available habitat, stable occupancy, and successful reproduction). While most sites contain < 40% of their home-range radius in suitable habitat, nearly half of the protected sites contain > 30% habitat (Table 3). Spotted owl sites in LSRs have been consistently occupied and producing young. Most of the large LSRs contain > 20 owl sites and all contain > 12 sites (Table 4). The rate of annual population decline on nearby demographic study areas (2.8% and 1.7% annual decline) was less than the average decline (8.3% average decline, Franklin et al 1999) suggesting that conservation measures at the scale of the species range (i.e. the NFP) are appropriate at the scale of the District as well. Since the matrix contains relatively few spotted owl sites and 75% of the federal land base is protected (Table 5), we expect the population to stabilize fairly quickly in the network of reserves.

On 15 January 1992, the Service published its Final Rule designating critical habitat for the northern spotted owl. Critical habitat is defined as those specific areas which provide physical and biological features essential to the conservation of the species, and that may require special management considerations or protection. They include, but are not limited to the following:

- Space for individual and population growth, and for normal behavior;
- Food, water, or other nutritional or physiological requirements;
- Cover or shelter;
- Sites for breeding, reproduction, rearing of offspring; and
- Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

Marbled Murrelet

Surveys for murrelets have been conducted on the Coos Bay District since 1989 and intensive survey efforts began in 1993. About 19% (18,686 acres) of the suitable murrelet habitat on the District has been surveyed to Pacific Seabird Group protocol for murrelets (USDI 2000). To date, there are 152 occupied murrelet sites in the Coos Bay District; 12,914 acres of occupied site LSRs have been designated outside existing mapped LSRs as per the NFP. Occupied sites have been found throughout the District, but 45% are in two 5th field watersheds (Lower Smith River in the Umpqua Resource Area and East Fork Coquille in Myrtlewood Resource Area). There are currently 99,061 acres of suitable marbled murrelet habitat on BLM/Tribe land in the action area, 99% of which is in Zone 1 (within 35 miles of the coast).

Critical habitat was designated by the Service (USDI 1996). The designation included 3.9 million acres of Federal land, most of which occurs in mapped LSRs under the NFP. Coos Bay District BLM manages 141,383 acres of critical habitat, 139,097 ac (98%) of which is also mapped LSR. Most (83%) of the murrelet CHU outside mapped LSRs is in the Spencer Creek drainage where there are numerous occupied sites (unmapped LSRs). The CHUs

contain 59,477 acres (42%) of suitable murrelet habitat. Critical habitat is defined as those specific areas which provide physical and biological features essential to the conservation of the species, and that may require special management considerations or protection. They include, but are not limited to the following:

- Space for individual and population growth, and for normal behavior;
- Food, water, air, light, minerals or other nutritional or physiological requirements;
- Cover or shelter;
- Sites for breeding, reproduction, rearing of offspring; and
- Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

Bald Eagle
Many statewide goals set by the Pacific Bald Eagle Recovery Plan (USDI 1986) have been met. Coos Bay District BLM has 8 bald eagle territories and 24 others exist on other ownerships. Most nests are along the Umpqua and Smith Rivers, and to a lesser extent, the Coos River. All ownerships within the District boundary potentially can support eagle nesting territories. At present, there are no known bald eagle roost sites on BLM lands in the Coos Bay District, but there could potentially be roosts on all ownerships within the District boundaries. The Umpqua and Smith Rivers have been fairly intensively surveyed for eagles for many years. Most of the other river systems in the vicinity of BLM lands have had at least cursory surveys and consistent attention for incidental sightings.

Peregrine Falcon
Peregrine falcons were de-listed and removed from the Endangered Species list in 1999. As a requirement of the delisting process, agencies are monitoring site productivity. Peregrine falcons prey on other bird species (i.e. Band-tailed pigeons, Stellar's jays), and typically nest on cliffs that are inaccessible to mammals, and close to a water source. There are at least two documented peregrine falcon sites on District and with the abundance of cliffs throughout, additional sites are very likely.

Neo-tropical Migrates and other forest birds
Neo-tropical migrants and most other bird species are protected under the Migratory Bird Treaty Act. Neo-tropical migrates include a large group of species with diverse habitat needs spanning nearly all successional stages of most plant community types (Niles, 1992). In the Pacific Northwest, migrates typically arrive from late April to early May, are breeding by late May, fledging young in July and August and have departed for their wintering grounds sometime in late August/early September (Tim Rodenkirk, Per.Com). These birds are import to forest health in that the majority of them are insectivores, feeding on a wide variety of insects, and many are important for seed dispersal as well.

American Marten and Fisher
There have been several documented sightings of American marten and fisher within Coos Bay District boundaries. Marten and fisher typically inhabit late-seral conifer forests, have fairly large home ranges, and are known to use snag and down logs for natal and maternal denning sites. In areas with snowfall, martens follow circuitous routes over their large home ranges, staying close to overhead cover, and investigating openings into the subnivean space where coarse wood penetrates the snow surface (Buskirk and Ruggiero 1994).

3.2.4 Fisheries, Including T&E Species

Fish Species Occurrence
Common Fish species known or believed to occur in Coos Bay District waters are:

Chinook salmon	Redside shiner
Coho salmon	Dace sp.
Steelhead trout	Pacific and Western brook lamprey
Sea-run and resident cutthroat trout	Sculpin sp.
Chum salmon	Striped bass
	American shad

All of the fish species listed above are believed to occur within the Coos Bay District. As the project areas would occur anywhere across the district itself, it is safe to assume that at any given time many of the above species may be present during aquatic project activities.

On the Coos Bay District, coho salmon are located within the Oregon Coast (OC) Evolutionary Significant Unit (ESU), which extends south of the Columbia River to Cape Blanco, and the Southern Oregon/Northern California Coast (SO/NC) ESU, which extends from Cape Blanco to Punta Gorda, Ca. The following summarizes the Endangered Species Act (ESA) status of Coho salmon within these ESUs:

- SO/NC coho salmon were listed as a "threatened" species on May 6, 1997. Critical Habitat was designated on November 25, 1997.

- OC coho salmon were listed as "threatened" on August 10, 1998. However, in September 2001, the US District Court for the District of Oregon (Judge Hogan) determined that the listing was unlawful and it was set aside as being arbitrary and capricious (*Alsea Valley Alliance v. Evans*). Hogan wrote that the listing by the National Marine Fisheries Service (NMFS) arbitrarily excluded hatchery spawned coho.

- In review of Judge Hogan's ruling, the Ninth Circuit Court of Appeals issued a stay on December 14, 2001. This decision will remain in place until the Court makes a final ruling, which could be months or years. At the time of the writing of this EA, the listing of OC coho salmon as "threatened" has been reinstated.

- In response to the *Alsea Valley Alliance v. Evans* September ruling, on February 11, 2002, the NMFS decided to review 14 ESUs currently listed as endangered or threatened. This review includes the OC and SO/NC coho salmon ESUs. The current listing status for these species will remain in effect until the review is concluded.

- OC coho salmon Critical Habitat was designated February 16, 2000. However, on March 11, 2002, the NMFS announced it was moving to withdraw the current critical habitat designations for 19 salmon and steelhead populations. This was in response to the 10th Circuit Court findings in *New Mexico Cattle Growers Association v. U.S. Fish and Wildlife Service,* that the analysis of economic impacts for such designations must be more specific than the current approach. The analysis in this case was the same used to designate the 19 salmon and steelhead populations; thus, the voluntary effort by the NMFS to re-evaluate these designations. At this time, the NMFS intends to publish designations in March 2004 followed by final designations in 2005.

The Oregon Coast Steelhead trout have the same ESU boundary as OC coho salmon. Oregon Coast Steelhead trout were listed as "candidate" species on March 19, 1998. Critical habitat is not designated for candidate species.

On April 5, 1999 the Oregon Coast coastal cutthroat ESU was designated as a "candidate" for listing. This species is under the jurisdiction of the U.S Fish and Wildlife Service.

3.2.5 Hydrology

Stream Flow

The public lands across the district experience the typical characteristics of the southern Oregon Coast Range. Precipitation more often arrives in the form of rain and drives the interaction between the amount, intensity, and distribution of rainfall events corresponding to annual yield, peak flows, low flows, and groundwater levels of the watershed. In general, public lands consist of high drainage densities of steep cascading and step-pool channels confined by hill slopes, which may experience periods of extremely low flows or dry completely.

The correlation of peak flows being largely dependent on the duration and intensity of rainfall has been well documented. It's been established that high flows will occur during the winter months after the antecedent moisture conditions are satisfied. In contrast, low stream flows occur from July to October and are characterized by extremely low base flows and, occasionally, dry stream channels. Land management practices from past timber harvests may have contributed to the de-synchronization of flow magnitudes and timing in some streams.

Water Quality

The Oregon Department of Environmental Quality (ODEQ) determines water quality standards for each water body in the state. Water bodies that do not meet water quality standards are placed on the states' 303(d) list as Water Quality Limited (ODEQ 2002). These standards are designed to protect each water body for its most sensitive beneficial use (Miner *et al*. 1996, p. 1).

Temperature

High water temperature is the primary non-point source pollutant of surface water on the Coos Bay District (ODEQ 2002). Elevated stream temperatures are primarily solar induced due to a lack of stream shading, a high width to depth ratio and/or low summer flows (Moore and Miner 1997). These conditions are often interrelated and can result in additive amounts of stream heating.

Based on the results of recent Water Quality Restoration Plans (WQRPs), most reaches on federally administered lands are at or near maximum shade values with little potential for improvement in average shade conditions (EF Coquille, 2000; NF Coquille, 2001; NF Chetco, Big Creek, 2001; Lower SF Coquille, 2003).

Other water quality parameters such as, fecal coliform, dissolved oxygen, aquatic weeds or algae are described, but are less frequent. A complete list of water bodies and the parameters for which they have been listed can be found at the Oregon Department of Environmental Quality homepage (http://www.deq.state.or.us/wq/WQLData/SearchChoice02.htm).

Sediment

Natural and management related erosion processes introduce sediment to stream channels. According to Townsend *et al.* (1977, p. 33), "landslides such as debris avalanches and slumps which produce debris and sediment in the streams" are commonly associated with intense winter storms. Most sediment is delivered to the stream channel by gravity and flowing water. Primary sediment sources include landslides, stream banks and roads.

Channel Condition and Large Wood

Large wood serves an important role in creating and maintaining stable and functional stream channels in Coast Range watersheds. A stable stream channel is one that maintains its pattern, profile, and dimension over time and neither aggrades nor degrades (Rosgen 1996). Streams in these watersheds have historically been dependent on large wood to help reduce stream energy, retain stream sediments, maintain lower width/depth ratios, and allow floodplain development. The streams of certain watersheds are deficient in large wood and have down-cut to bedrock in many cases. A lack of large wood and its disassociation from the floodplain have allowed increased stream velocities to continually scour stream channels during high flows.

In the natural range of variability, it is likely that streams surveyed across the district have consistently experienced shifts in the amount of large wood levels of varying degrees. These wood levels would change over time as a result of fires, floods, and other forms of large disturbance events that pulsed through the watershed. It is not likely, however, that virtually all of the larger fish-bearing tributaries in a larger 5th field watershed would be lacking large wood at the same time. This occurrence is a direct result of human land management activities within the watershed.

3.2.6 Soils

Soils information, including distribution and physical properties, has been collected by the Natural Resource and Conservation Service (formerly the Soil Conservation Service) and BLM soil scientists and is available at the Coos Bay District Office. A Timber Productivity Capability Classification (TPCC) provides additional site-specific information and recommendations about land the district manages. This inventory identifies fragile sites with

naturally limiting soil properties and landform characteristics. More detailed TPCC classification descriptions are contained in Oregon Handbook 5251-1, which includes the Coos Bay District Supplement.

3.2.7 Recreation

Developed recreation sites on the Coos Bay District include 5 Special Recreation Management Areas (e.g. Loon Lake SRMA, Dean Creek Elk Viewing Area, etc.) as well as 9 additional recreation sites ranging from campgrounds to scenic overlooks. These 14 different facilities constitute 4,644.61 acres of BLM managed lands. Available for a variety of uses, there are also 30.3 miles of developed recreation trails.
There are also numerous undeveloped "dispersed" recreation sites which are spread across 322,708 acres.

3.2.8 Hazardous Materials / Solid Waste

Historical records and site assessments will identify any recognized environmental conditions (REC's) for either hazardous substances or solid wastes on those portions of federally-managed lands covered under this proposal. Discovery of REC's may require the activation of the district Hazardous Materials Contingency Plan depending upon the source and circumstances of those condition(s).

3.2.9 Cultural Resources and Native American Religious Concerns

The Coos Bay District contains lands within the southern subarea of the Northwest Coast Cultural Area and received considerable influence from the Northwest Californian Cultural Area. Currently, there are 80 prehistoric sites identified, one of which has been listed on the National Register of Historic Places, and eight others are deemed eligible. There have been 348 historical sites identified; one is registered on the NRHP, and three others are deemed eligible. Nineteen paleontological sides have also been identified on Coos Bay District lands.

Chapter 4: Environmental Consequences

4.1 *Introduction*

This Chapter is organized by the issues in Chapter 1 and the resources listed in Chapter 3.

Analysis of the No Action and Proposed Action Alternative has shown no impacts to Areas of Critical Environmental Concern (ACEC), Prime or Unique Farmlands, Wild and Scenic Rivers, Wilderness Values, Energy Development, Air Quality, Environmental Justice/Native American Trust Resources, or Special Status Areas.

4.2 *Effects of Implementing Alternatives A or B on Issue 1- Noxious Weeds*

4.2.1 Alternative A: No Action / Alternative B: Down Log Relocation

Direct:
The only direct effect to weeds would be plant damage inflicted through the relocation of down logs. This would eliminate the mature parent weed plant but would not eliminate the weed seed bank in the soil, which can last up to 80 years for weeds like the brooms (e.g. scotch or French broom).

Indirect :
The presence or spread of noxious weeds would continue at current rates. Newly disturbed areas, whether natural or human caused, would be subject to noxious weed establishment. This is due to the presence of residual weed seed beds, surrounding mature weed plants, or human and animal activities that transport weed seeds into disturbed areas. Once established, noxious weeds can dominate a site preventing the establishment of native plants.

Cumulative:
No significant changes in the current rate of spread or population size of existing noxious weeds would be expected. BLM ownership is scattered among other ownerships, and is available for access by the general public. This dispersed ownership and access increases the potential for the introduction of new weed species and spread of existing weeds. This potential is the same for both the "No Action and Action Alternatives." Even with the project design features in the Action Alternative, weed spread would continue through the sources listed above.

4.3 *Effects of Implementing Alternatives A or B on Issue 2- Port Orford Cedar*

4.3.1 Alternative A: No Action

Direct, Indirect, Cumulative
There are no discernible effects on Port-Orford-Cedar from this alternative. Large POC trees that become available for habitat projects will not be utilized. POC trees are highly resistant to decay and may be expected to have a longer residence time in streams than other associated conifers. This highly demanded quality will not be taken advantage of in the form of aquatic habitat structure. The spread of the pathogen PL will continue at its current rate though other vectors.

4.3.2 Alternative B: Down Log Relocation

Direct, Indirect, Cumulative
Down POC that becomes available for habitat enhancement projects will be relocated. Through the application of Best Management Practices, there will be no direct effect to POC through the spread of PL in implementing these types of projects. Aquatic habitat projects using POC will maintain structure integrity longer than if using another conifer.

4.4 *Effects of Implementing Alternatives A or B on Vegetation, Including Sensitive Species*

4.4.1 Alternative A: No Action

Direct, Indirect
Trees that are downed along roadways, recreation sites, utility sites, and communication sites would pose a threat to public safety and be prone to theft. During illegal removal there may be disturbance to the soil and associated vegetation. The disturbed sites may be colonized by weedy and/or noxious plant species that would germinate quickly and spread. If this does occur, native vegetation would be impacted by competition with non-native species.

Cumulative
Illegal removal of logs would in the long-term deplete the supply of downed woody logs suitable for colonization by vascular and non-vascular species such as lichen, fungi, mosses, liverworts, and hornworts.

4.4.2 Alternative B: Down Log Relocation

Direct, Indirect
Proper removal of downed trees along roadways, recreation sites, utility sites, and communication sites would aid reestablishment of native vegetation. The material would be removed with a minimum of disturbance by staff using the proper methodology and suitable equipment, such as cable, horse, backhoe, front-end loader, self-loader, excavator, cable yarding systems, and/or trucks/trailers. It is a district policy to wash heavy equipment to restrict the spread of noxious species. Site restoration entails soil preparation, seeding of native grass, forb, shrub, and tree species, temporary erosion control, fertilizers, and/or mulch. These methods would promote establishment of native vegetation and decrease the likelihood of exotic and noxious species becoming established. Post-treatment evaluation of the site would alert management to any noxious weed infestation. Timely removal of these infestations would aid ecosystem function.

Cumulative
Placement of logs in forested and riparian settings would in the long-term increase the supply of downed woody logs suitable for colonization by vascular and non-vascular species such as lichen, fungi, mosses, liverworts, and hornworts.

4.5 *Effects of Alternatives A or B on Wildlife, Including T&E Species*

4.5.1 Alternative A: No Action

Direct, Indirect
Trees that are downed along roadways, recreation sites, utility sites, and communication sites may pose a threat to public safety and be prone to theft. Illegal removal, particularly during the breeding season, may disturb spotted owls, marbled murrelets, and bald eagles nesting nearby as well as negatively impact wildlife dependent on these structures.

Cumulative
Illegal removal of logs would in the long-term deplete the supply of down logs (large and small) suitable for use by wildlife species such as woodpeckers, American marten and fisher, and salamanders.

4.5.2 Alternative B: Down Log Relocation

Direct and Indirect
Implementing the project design features would result in no discernable direct or indirect impacts to the wildlife resource.

Cumulative

Overall, there will be a net beneficial effect through the implementation of this alternative. These key habitat structures that have been depleted because of past management practices and theft would be restored at faster than current rates. Habitat complexity in the uplands and riparian reserves would increase, benefiting wildlife species dependant on these structures for all or a part of their life history.

4.6 *Effects of Alternatives A or B on Fisheries, Including T&E Species*

4.6.1 Alternative A: No Action

Direct
There would be no direct effects to the fisheries resource from the implementation of this alternative.

Indirect, Cumulative
Down wood that becomes available for in-stream habitat enhancement projects would not be utilized. Stream enhancement projects would continue at their current rate, utilizing logs from other sources (such as donations from partners, or purchased from local mills).

4.6.2 Alternative B: Down Log Relocation

Direct
Implementing the project design features would result in no discernable direct impacts to the fisheries resource. Coordination with ODFW will minimize the direct impact of log placement in streams to nearby spawning salmon.

Indirect
Placement of log structures in streams may cause turbidity in areas immediately downstream from project sites. However, due to the small size of project areas, this would only be a temporary disturbance (less than a few hours) to fish located immediately downstream.

Cumulative
Overall, there would be a net beneficial effect through the implementation of this alternative. Habitat complexity of streams would increase, promoting survival rates of juveniles through increased cover and pool depth, and encouraging increased spawning activity through the increase in gravel recruitment.
These key habitat structures that have been lost or destroyed would be restored at faster than current rates. The small disturbances to fish as a result of these projects are very short in duration as well as distance.

4.7 *Effects of Alternatives A or B on Hydrology*

4.7.1 Alternative A: No Action

Stream Flow
The timing and magnitude of flows would remain relatively unaffected by the no action alternative because no change to the locations of down logs would occur and associated actions to relocate logs, such as hauling, would not be implemented. Annual yield, low flows, and peak flows will be unaffected by maintaining present forest conditions.

Water Quality

Stream Temperature
Stream temperatures would not be affected in the short-term as no relocation of logs would take place in Riparian Reserves. Riparian shade will continue to increase on those reaches that have not yet reached or matured to their potential condition.

Sediment
There would be no short-term soil displacement or potential for sediment delivery to streams as a result of the no action alternative.

4.7.2 Alternative B: Down Log Relocation

Stream Flow
Following the project design features concerning wood placement in streams would result in a beneficial effect to stream flow, however small and immeasurable. Large wood structures tend to increase summer storage levels, create deeper pool habitat, and increase inundation of associated floodplains. Small increases in low flows may be beneficial to aquatic species during the summer if stream temperatures are reduced and wetted width and stream volume increase.

Water Quality

Stream Temperature
The addition of LWD to the stream channel has the potential to decrease stream temperature by temporarily creating scour pools of deep, cool water refugia.

Sediment
Some short-term soil displacement and pathways for sediment delivery may occur as a result of localized soil disturbance from yarding and the use of ground based equipment during relocation operations. However, implementation of the project design features would result in no discernable effects.

Channel Condition and Large Wood
Providing large wood to streams is an important component in meeting Aquatic Conservation Strategy objectives. The recruitment of large woody debris is an integral part of watershed recovery and restoration of aquatic habitat. Large wood contributions to the channel from upslope processes and Riparian Reserves would provide several benefits to channel function and water quality. Large wood can serve to capture substrate, reduce stream energy, aggrade the stream channel, and re-establish a connection with the floodplain. Aggradation of the channel also has the potential to raise the water table, increase floodplain water storage and increase summer stream flows. Increased summer flows would contribute to lower stream temperatures.

4.8 *Effects of Alternatives A or B on Soils*

4.8.1 Alternative A: No Action

Direct and Indirect Effects
This alternative would have minimal impact on existing soil conditions in areas of disturbance where down logs could be removed and transported to another location. Sediment delivery would continue at the present rate from within channel sources and the areas of disturbance. Large quantities of down logs represents mostly immobilized nutrients and undecomposed organic matter, which would be released and incorporated gradually over time into the soil by biological and physical decomposition.

Cumulative Effects
Over time the multiple soil processes of decomposition, leaching of nutrients, nutrient input from the environment, and increasing nutrient uptake by growing biomass, results in a relative state of equilibrium of the surface soil layer where nutrient loss is balanced by storage and accumulation (Satterlund and Adams, 1992). Slow decompaction of historically impacted soils would also continue with natural processes such as root growth, mixing by animals and soil organisms, and the continuing development of the surface organic layer.

4.8.2 Alternative B: Down Log Relocation

Direct and Indirect Effects
Some downhill transport of fine sediment with surface flow is likely to occur as a result of bare soil exposure created by cable yarding and ground-base equipment. This exposure will be localized within narrow yarding corridors and vehicle operation routes. Effects of soil disturbance and sediment transport outside disturbance areas are expected to be minimal and temporary due to the extensive surrounding vegetation reclaiming impacts and the moderate to high forest soil infiltration rates (0.6 – 6.0 in./hr.) present on District forest soils.

Undetermined quantities of organic matter and the incorporated nutrients would be removed from sites after log relocation. The same decomposition and recycling would take place in the post-relocation period as in the no action alternative, but with smaller amounts of organic matter and nutrients present. These impacts are expected however, and they would not be significant or long lasting. If log removal occurs from a landscape with a surplus of down logs to one with a deficiency, then the tradeoff would be beneficial to soils. Satterlund and Adams (1992) have observed that when revegetation is not inhibited, disturbed sites rapidly revert to a condition of nutrient accumulation until the site gradually comes to a steady state where inputs and exports of nutrients come into balance.

Some compaction of the surface soil may occur from the removal of logs by yarding equipment and operational vehicles; however if removal is performed following District RMP Best Management Practices and the EA Design Features for soils, there would be no definable compaction damage.

Cumulative Effects
The incremental impacts of the proposed action when coupled with other past, present or reasonably foreseeable actions taken by either public or private groups would be difficult to determine. The cumulative effect of using the District RMP Best Management Practices to maintain soil productivity and reduce soil erosion would be very slight within the District watersheds if other land managers are not employing similar practices. As in the no action alternative, over time the multiple soil processes of decomposition, leaching of nutrients, nutrient input from the environment, and increasing nutrient uptake by growing biomass would result in a relative state of equilibrium in the surface soil layer where nutrient loss is balanced by storage and accumulation. Slow decompaction of historically impacted soils would also continue with natural processes such as root growth, mixing by animals and soil organisms, and the continuing development of the surface organic layer.

4.9 *Effects of Alternatives A or B on Recreation*

4.9.1 Alternative A: No Action

Direct, Indirect, Cumulative
Within developed recreation sites, down logs could become hazards (health and safety issues) for visitors and maintenance facilities, dependant upon the tree's final resting place. The logs present a climbing opportunity which increases the dangers associated with people climbing among broken branches with sharp, ragged tips. There is also the potential for the tree to dislodge or roll. The most likely occurrence is for people to use the downed tree as firewood, which beckons a host of safety issues on its own. Not removing the down logs would exacerbate these types of situations.

Dispersed, undeveloped recreation sites do not have maintenance facilities, but the likelihood of the down wood being used as illegal firewood is much greater.

4.9.2 Alternative B: Down Log Relocation

Direct, Indirect, Cumulative

Through the removal of down logs, developed recreation sites would decrease the potential hazard to health and human safety as well as minimize the damage to existing maintenance facilities.

4.10 *Effects of Alternatives A or B on Hazardous Materials / Solid Waste*

4.10.1 Alternative A: No Action

There are no discernible effects on Hazardous Materials and Solid Wastes from this alternative.

4.10.2 Alternative B: Down Log Relocation

Direct Effects
There are no direct effects anticipated from the Proposed Action.

Indirect Effects
The use of heavy equipment in the performance of the work identified under this alternative creates a risk to the environment as a result of any release of petroleum product, particularly near or leading to surface waters. Any such release is governed under provisions of State of Oregon Administrative Rule No. OAR 340-108. A Spill Control and Countermeasures Plan (SPCC) conforming to the standards of OAR 340-108 is required. The SPCC should also correlate to the Coos Bay District Hazardous Materials Contingency Plan and the District Spill Plan for Riparian Operations (if applicable). Included in the SPCC and District plans is the requirement for an oil Spill Kit to be onsite during operations. The contents and use of the Spill Kit are to be detailed in any contract provisions resulting from this alternative. Notification and response processes are also detailed in the District plans.

Cumulative Effects
In the event of a release of hazardous substances or petroleum product, migration of the contaminant to surface waters would create a variety of problems, dependent upon amount and type. Most probable source would be the rupture of hydraulic fluid lines or poor maintenance of equipment, resulting in the leak or discharge of oil. The type of soils impacted would dictate how much of the contaminant could be contained, removed, or allowed to dissipate. A spill confined to dry land would be contained and cleaned up to appropriate levels identified under Oregon State Soil Clean-up Matrix guidelines.

Under Oregon State Law, a Reportable Quantity (RQ) of petroleum product to water is defined as: *"…any quantity of oil that would produce a visible oily slick, oily solids, or coat aquatic life, habitat or property with oil…." (Reference: Oregon Administrative Rule No. 340-108-010, Reportable Quantities).* A release to dry land, with no potential for migration to water, is defined as 42 US gallons or greater. Either release would generate a series of reporting, response and monitoring requirements by Federal and State authorities.

4.11 *Effects of Alternatives A or B on Cultural Resources and Native American Religious Concerns*

4.11.1 Alternative A: No Action

There are no discernible effects on Cultural Resources from this alternative.

4.11.2 Alternative B: Down Log Relocation

There are no anticipated direct, indirect, or cumulative effects on cultural resources or Native American religious concerns from the proposed action if project design features are followed. The proposed action is not likely to expose, damage, or destroy any cultural resources.

4.12 *Consistency With Aquatic Conservation Strategy Objectives*

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

Instream structure, such as large wood, was once an essential part of the aquatic system. Returning these structures to the aquatic system is a step in restoring the diversity and complexity of functioning aquatic systems.

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

By adding instream structure to the aquatic system, spatial and temporal connectivity is increased within the watershed. Structures will allow for reconnection with floodplains and wetland areas by slowing the velocity of water and collecting gravel over bedrock areas which will decrease stream temperatures. The structures themselves will not constitute new barriers but will increase stream habitat connectivity by creating pools between glides and riffles.

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

Stream banks will be protected from excessive erosion by adding structures that will slow down velocities and buffer the riparian areas during high water events. Structures should also begin to hold gravel and cobbles, restoring the bottom configuration of the stream channel from its current bedrock dominated condition.

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

With the addition of instream structures, natural materials will begin to aggrade such as cobbles and gravels. This aggradation will result in additional water storage (an increase in low flow levels) and cooler temperatures.

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

By increasing the amount of structure within the stream channel, sediment is more likely to become trapped as these structures hold back materials from being flushed during high flow events.

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

Placement of large woody debris in stream channels would narrow width/depth ratios, reconnect the stream to its floodplain, promote sinuosity of the stream, and increase sediment and water storage.

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

Through the addition of large woody debris, other habitat components will be retained (cobble, gravel, other wood). These structures will eventually replace the bedrock bottom and raise the elevation of the water table, reconnecting the stream to its flood plain.

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

There will a localized, small, short term impact to plant communities as the ground adjacent to the stream channel will be disturbed through the placement of instream structures. Any exposed soils will be seeded and mulched following completion of the project. Due to the small size of the project these effects are expected to be minimal.

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

The addition of large, channel-spanning structures will aid in the mobility of numerous vertebrate and invertebrate species by increasing the connectivity from one stream bank to the other.

Chapter 5: List of Preparers

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References:

Aubry, K.B.; Jones, L.L.C.; Hall, P.A. 1988. Us of woody debris by Plethodontid salamanders in Douglas-fir forests in Washington. Pp. 32-37 In Management of amphibians, reptiles, and small mammals in North America. U.S.D.A. Forest Service, GTR RM-166, Fort Collins, CO.

Brian, N. J. 2002. Status reports on the eleven Bureau sensitive plant species of the Coos Bay District Office, Bureau of Land Management. Unpublished document on file at the Coos Bay District Office, North Bend, OR. 146 pp.

Brian, N. J. 2003. An annotated checklist of the nonvascular and vascular flora of the Bureau of Land Management's Coos Bay District Office, Coos Curry, Douglas, and Lane Counties, Oregon. Unpublished document on file at the Coos Bay District Office, North Bend, OR. 119 pp.

Brown, E.R. (tech ed) 1985. Management of wildlife and fish habitats in forests of western Oregon and Washington. Pub. No. R6-F&WL-192-1985. U.S.D.A. Forest Service, Pacific Northwest Region, Portland, OR.

Buskirk, S.W. and L.F. Ruggiero. 1994. American marten. pp 7-37. Ruggiero, L.F., K.B. Aubry, S.W. Buskirk, L.L. Jack, W.J. Zielinski, tech. eds. In *The scientific basis for conserving forest carnivores: American marten, fisher, lynx and wolverine in the western United States*. Gen. Tech. Rep. RM-254. Ft. Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

Franklin, J.F., K. Cromack, Jr, W. Denison, A.J. McKee, C. Maser, J. Sedell, F. Swanson, and G. Juday. 1981. Ecological characteristics of old-growth Douglas-fir forests. U.S. Forest Service General Technical Report PNW-8.

Hickman, J. C. (editor) 1993. The Jepson Manual. Higher plants of California. University of California Press, Berkeley, CA. 1400 pp.

Jones, L.L.C., and K.B. Aubry. 1985. Reproduction: *Ensatina eschcholtzii oregonensis* (Oregon ensatina). Herpetological Review 16:26.

Kaye, T. N., R. J. Meinke, J. Kagan, S. Vrilakas, K. L. Chambers, P. F. Zika, and J. K. Nelson. 1997. Patterns of rarity in the Oregon flora: Implications for conservation and management. Pages 1-10. *In*: T. N. Kaye, A. Liston, R. M. Love, D. L. Luoma, R. J. Meinke, and M. V. Wilson (editors). Conservation and Management of Native Plants and Fungi. Native Plant Society of Oregon, Corvallis, Oregon.

Miner, R., J. Buckhouse, and M. Borman. 1996. The Water Quality Limited Stream Segments list– What does it mean? Oregon State University Extension Service. Corvallis.

Moore, J.A., and J.R. Miner. 1997. Stream Temperatures, Some Basic Considerations. Oregon State University Extension Service. Corvallis, Oregon.

Niles, L.J., 1992. Protection of neotropical migrants as a major focus of wildlife management. In *Status and management of neotropical migratory birds*. 392-395. General Technical Report RM-229. Fort Collins, CO: USDA Forest Service.

Oregon Department of Agriculture. 2003. Noxious weed policy and classification system. Oregon Department of Agriculture Noxious Weed Control Program. Available at **www.oda.state.or.us**. 9 pp.

Oregon Department of Environmental Quality. 2002. Oregon's Final 2002 Water Quality Limited Streams -303(d) List.

Rodenkirk, T., 2001. Personal communication. U.S. Department of the Interior, Bureau of Land Management, Coos Bay District Office, North Bend, Oregon.

Rosgen, David L. 1996. Applied River Morphology. Wildland Hydrology Books, Pagosa Springs, Colorado.

Satterlund, D. R., and Adams, P. W. 1992. p. 371. Wildland Watershed Management. John Wiley & Sons, New York.

Townsend, M.A.; Pomerening, J.A.; Thomas, B.R. 1977. *Soil Inventory of the Coos Bay District*. USDI BLM Coos Bay Dist, Coos Bay, OR 259 pgs + attached maps.

USDI BLM 2001. *North Fork Coquille Watershed Analysis*, 2nd Iteration, on file Coos Bay District, North Bend, OR.

(NFP FSEIS). USDA-USDI 1994. *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Related Species Within the Range of the Northen Spotted Owl*. United States Department of Agriculture, Forest Service, United States Department of the Interior, Bureau of Land Management. 1994 Portland, Oregon.

(NFP ROD). USDA-USDI 1994. *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl.*. United States Department of Agriculture, Forest Service, United States Department of the Interior, Bureau of Land Management. 1994 Portland, Oregon.

(NFP S & G's). USDA-USDI 1994. *Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl.* United States Department of Agriculture, Forest Service, United States Department of the Interior, Bureau of Land Management. 1994 Portland, Oregon.

(FSEIS POC). USDA-USDI 2004. *Final Supplemental Environmental Impact Statement of Port-Orford-Cedar in Southwest Oregon.* United States Department of Agriculture, Forest Service, United States Department of the Interior, Bureau of Land Management. 2004 Portland, Oregon.

(FSEIS S & M). USDA-USDI 2004. *Final Supplemental Environmental Impact Statement To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines.* United States Department of Agriculture, Forest Service, United States Department of the Interior, Bureau of Land Management. 2004 Portland, Oregon.

(RMP FEIS) USDI BLM 1994. *Final Coos Bay District Proposed Resource Management Plan Environmental Impact Statement.* United States Department of the Interior, Bureau of Land Management, Coos Bay District, North Bend, OR.

(RMP ROD) USDI BLM 1995. *Coos Bay District Record of Decision and Resource Management Plan*. United States Department of the Interior, Bureau of Land Management, Coos Bay District, North Bend, OR.

U.S. Department of the Interior. 1992. Endangered and threatened wildlife and plants;
determination of critical habitat for the northern spotted owl; final rule. Pages 1796-1838, Federal Register, January 15, 1992.

U.S. Department of the Interior. 1996. Endangered and threatened wildlife and plants;
determination of critical habitat for the marbled murrelet; final rule. Pages 26255-26320, Federal Register, May 24, 1996.

U.S. Fish and Wildlife Service. 1986. Recovery plan for the Pacific Bald Eagle. U.S. Fish and Wildlife Service, Portland, OR. 160 pp.

Appendix A: Wildlife Special Status Species in the Coos Bay District

Scientific Name	Common Name	Status	Presence on District	Key habitat features, presence information	Impacts
Birds					
Melanerpes formicivorus	Acorn Woodpecker	BT	present	Oak habitats	None expected, habitat not affected
Falco peregrinus anatum	American Peregrine Falcon	BS	present	Cliffs	**See Text**
Falco peregrinus tundrius	Arctic Peregrine Falcon	BS	present	Cliffs, potentially present as winter migrant	None expected
Haliaeetus leucocephalus	Bald Eagle	T	present	Late-seral forest, known nest sites throughout the district	**See Text**
Riparia riparia	Bank Swallow	BT	present	coastal migrant	None expected, habitat not affected
Dolichonyx oryzivorus	Bobolink	BT	rare	Grassland, presence very unlikely, coastal migrant	None expected, habitat not affected
Speotyto cunicularia hypugaea	Burrowing Owl	BS	present	Occasional winter migrant along coast	None expected, habitat not affected
Melanerpes lewis	Lewis' Woodpecker	BS	rare	Recently burned forest, oak/pine habitats, presence very unlikely	None expected, habitat not affected
Brachyramphus marmoratus	Marbled Murrelet	T	present	Late-seral forest, known occupied sites throughout the District	**See Text**
Accipiter gentilis	Northern Goshawk	BS	present	Late-seral forest, rare but potentially present	None expected
Strix occidentalis caurina	Northern Spotted Owl	T	present	Late-seral forest, known nest sites throughout the district	**See Text**
Seiurus noveboracensis	Northern Waterthrush	BA	unlikely	Rare migrant presence very unlikely	None expected

Contopus cooperi	Olive-sided flycatcher	BT	present	Early and mid-seral, open forests	None expected
Pooecetes gramineus affinis	Oregon Vesper Sparrow	BS	pesence	Coastal grasslands	None expected, habitat not affected
Dryocopus pileatus	Pileated woodpecker	BT	present	Snags, especially large ones, variety of seral stages	None expected
Progne subis	Purple Martin	BS	present	Snags in early-seral habitats, potentially present	None expected
Buteo swainsoni	Swainson's hawk	BT	not present	probably not on District	None expected
Sialia mexicana	Western bluebird	BT	present	Snags in early-seral habitats, potentially present	None expected
Elanus leucurus	White-tailed kite	BA	present	Pastures, open grasslands	None expected
Empidonax traillii brewsteri	Willow flycatcher	BT	present	Riparian (esp. willow)	None expected
Mammals					
Martes americana	American marten	BT	present	Late-seral forests, logs and snags	**See text**
Martes pennanti	Fisher	BS	present	Late-seral forests, logs and snags	**See text**
Myotis thysanodes	Fringed myotis	BA	present	Rock crevices, caves, bridges, buildings	None expected, habitat not affected
Myotis evotis	Long-eared myotis	BT	present	Snags, bark, rock crevices, caves; also buildings	None expected, habitat not affected
Myotis volans	Long-legged myotis	BT	present	Snags, bark, rock crevices; also buildings, bridges, and caves	None expected, habitat not affected
Bassariscus astutus	Ringtail	BT	present	Rocky habitats, forest generalist; may be outside the range	None expected, habitat not affected
Lasionycteris noctivagans	Silver-haired bat	BT	potential	Snags, bark, rock crevices; also buildings and caves	None expected
Corynorhinus townsendii	Townsend's Big-Eared Bat	BS	present	Caves, rock crevices, buildings, bridges	None expected, habitat not affected
Sciurus griseus	Western gray squirrel	BT	unlikely	Oak forest and conifer forest with oak component	None expected, habitat not affected

Phenacomys albipes	White-footed vole	BT	potential	Riparian (esp. alder)	None expected
Myotis yumanensis	Yuma myotis	BT	present	Caves, buildings, bridges, cavities	None expected
Amphibians					
Batrachoseps attenuatus	California slender salamander	BA	present	Late-seral forest, large down logs; outside of range	None expected
Plethodon elongatus	Del Norte salamander	BA	present	Late-seral forests, talus; outside of range	None expected
Ascaphus truei	Tailed frog	BA	present	cold, clear streams and rivers	None expected
Aneides ferreus	Clouded salamander	BT	present	Late-seral forests; large, class 3 down logs and snags	None expected
Bufo boreas	Western toad	BT	present	Ponds, marshes	None expected
Rana boylii	Foothill yellow-legged frog	BA	present	Rocky rivers, possibly in Coos River	None expected
Rana aurora aurora	Red-legged frog	BA	present	Ponds, marshes, slow-moving streams. Upland generalist during non-breeding	None expected
Rhyacotriton variegatus	Southern torrent salamander	BT	potential	seeps and cold, clear, small streams	None expected
Reptiles					
Lampropeltis zonata	California mountain kingsnake	BT	unlikely	Outside of range	None expected, habitat not affected
Lampropeltis getulus	Common kingsnake	BA	unlikely	Probably outside range	None expected, habitat not affected
Sceloporus graciosus	Northern sagebrush lizard	BT	potential	Sagebrush, shrub habitats	None expected, habitat not affected
Contia tenuis	Sharp-tailed snake	BT	present	Moist forest, meadows, edges	None expected, habitat not affected
Clemmys marmorata	Western Pond Turtle	BS	present	Ponds and slow moving rivers and creeks, potentially present	None expected, habitat not affected
Invertebrates					

Helminthoglypta hertleini	Oregon shoulderband snail	BS	unlikely	Rocky and talus substrates, many surveys but no records in District	None, presence very unlikely, rocky/talus habitats not affected
Monadenia fidelis beryllica	Green sideband snail	BS	unlikely	unknown	unknown
Plebejus saepiolus insulanus	Insular blue butterfly	BS	unlikely	Open areas, clover	None, presence unlikely
Polites mardon	Mardon skipper butterfly	FC	unlikely	Open grasslands with fescue grasses, nearest populations Jackson/Klamath counties and near Mt. Shasta	None, habitat not affected, presence unlikely

Status:
T = Threatened
BS = Bureau Sensitive
BA = Bureau Assessment
BT = Bureau Tracking
FC = Federal Candidate