

***FINDING OF NO SIGNIFICANT IMPACT, AND
ENVIRONMENTAL ASSESSMENT***

East Fork Nehalem Project

**Fish and Wildlife Habitat Enhancement,
Fish Passage and Riparian Planting**

July 2008

BLM/OR/WA/AE-08/021+1792

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering economic use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

Environmental Assessment Number OR-086-07-05

East Fork Nehalem Project

Fish and Wildlife Habitat Enhancement, Fish Passage and Riparian Planting

Finding of No Significant Impact And Environmental Assessment Number OR-086-07-05

*United States Department of Interior
Bureau of Land Management
Oregon State Office
Salem District
Tillamook Resource Area
Columbia County, Oregon*

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Responsible Agency:	Bureau of Land Management
Responsible Official:	Brad Keller Field Manager Tillamook Resource Area 4610 Third Street Tillamook, OR 97141 (503) 815-1100
For Further Information, contact	Russ Chapman Tillamook Resource Area 4610 Third Street Tillamook, OR 97141 (503) 815-1146

Abstract: The Bureau of Land Management proposes to implement a multi-year fish and wildlife habitat enhancement project within the East Fork Nehalem watershed. The project includes fish habitat enhancement on a total of approximately 7.8 miles of stream, wildlife habitat enhancement on approximately 216 acres, riparian planting on approximately 10 acres, and fish passage work at two culverts. Project actions on BLM land would be in the Riparian Reserve land use allocation (LUA). Project actions would also occur on private and private industrial land in cooperation with the land owners. Sections with proposed actions are Township 5 North, Range 3 West sections 31, 32, and 33, and Township 4 North, Range 3 West sections 5-9, 16, 17, 19 and 21 (Willamette Meridian).

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Introduction

The East Fork Nehalem Project Environmental Assessment (EA) documents the environmental analysis of the actions proposed. The EA is attached to and incorporated by reference in this Finding of No Significant Impact determination (FONSI). The EA analyzes fish habitat enhancement on 7.8 miles of stream, wildlife habitat enhancement on 216 acres, fish passage work at two culverts and 10 acres of riparian planting. Sections with proposed actions are Township 5 North, Range 3 West sections 31- 33, and Township 4 North, Range 3 West sections 5-9, 16, 17, 19 and 21 (Willamette Meridian).

The EA and FONSI will be made available for public review from **August 6, 2008 to September 5, 2008**. The notice for public comment will be published by the South County Spotlight newspaper. Comments received by the Tillamook Resource Area, 4610 Third Street, Tillamook, Oregon, 97141, on or before **September 5, 2008** will be considered in making the final decisions for these projects.

Finding of No Significant Impact

Based upon review of the East Fork Nehalem Project EA and supporting project record, I have determined that these projects are not major federal actions and would not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. There are no site specific impacts that would require supplemental/additional information to the analysis done in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS). Therefore, an environmental impact statement is not needed. This finding is based on the following discussion:

Context: The proposed projects are site-specific actions intended to directly benefit fish and wildlife including a total of 216 acres of wildlife habitat enhancement, 7.8 miles of fish habitat enhancement, 10 acres of riparian planting and two fish passage projects. Project actions would occur on BLM administered, private industrial and private lands. These actions by themselves do not have international, national, region-wide, or state-wide importance.

The discussion of the significance criteria that follows applies to the intended actions and is within the context of local importance. The EA details the effects of the action alternatives; none of the effects identified, including cumulative effects, are considered to be significant and do not exceed those effects described in the RMP/FEIS.

Intensity: The following discussion is organized around the Ten Significance Criteria described in 40 CFR 1508.27. The discussions below apply all project elements contained within the East Fork Nehalem Project EA.

1. **Impacts may be both beneficial and adverse.** Due to the project design features and the enhancement nature of the proposed project, the most noteworthy predicted impacts include: (1) Increased levels of large woody debris (LWD) throughout 7.8 miles of OC coho habitat that will lead to a greater level of complexity in the stream channel. A higher level of complexity has been shown to increase summer rearing and over winter survival capabilities, as well as increase the volume of spawning gravels. (2) A gain of approximately 2.2 miles of fish habitat resulting from removing, replacing or improving passage at the proposed culvert sites. (3) A slight short-term increase in turbidity is expected during fish habitat enhancement and culvert replacement or removal work in the stream channel and during high flow events for the first few years until the stream adapts to the newly placed LWD. (4) Increased late-seral stage wildlife habitat on about 216 acres in riparian reserves. Wildlife enhancement activities include creating snags, and snag-topped trees as well as coarse woody debris by felling,

girdling and topping conifers. (4) Planting conifers in riparian reserves would increase long-term bank stability and shade as well as provide a future source of LWD on about 10 acres. (5) Short term impacts to bank stability are anticipated from equipment working in the stream channel. (6) Social and economic benefits to the local community through contract work associated with the wildlife habitat enhancement and fish habitat restoration projects.

None of the environmental effects disclosed above and discussed in detail in Chapter 2 of the EA and associated appendices are considered significant, nor do the effects exceed those described in the RMP/FEIS.

2. The degree to which the selected alternative will affect public health or safety. Public health and safety was not identified as an issue. The proposed project is comparable to other similar enhancement projects undertaken within the Salem District with no unusual health or safety concerns.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farm lands, wetlands, wild and scenic rivers, or ecologically critical areas. There are no federally designated Wild and Scenic Rivers, park lands, prime farm lands, areas of critical environmental concern, wetlands or wildernesses areas located within the analysis area (EA, Appendix 2). Cultural resources are known to be present within the analysis area but not in the proposed action areas. The proposed project is not expected to affect cultural resource, but if cultural resources were found in pre-disturbance surveys, they would be assessed for significance before work began. There are no other known ecologically critical areas within or adjacent to the proposed project areas.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial. Scoping of the proposed project resulted in no project specific comments from the public. It is highly unlikely that any portion of the analyzed actions would be controversial.

The effects of the proposed project on the quality of the human environment were adequately understood by the interdisciplinary team to provide an environmental analysis. A complete disclosure of the predicted effects of the proposed project is contained within Chapter 2 of the EA and associated appendices.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks. The proposed project is not unique or unusual. The BLM has experience implementing similar projects in similar areas and have found effects to be reasonably predictable. The environmental effects to the human environment are fully analyzed in the EA. There are no predicted effects on the human environment which are considered to be highly uncertain or involve unique or unknown risks.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. The proposed project does not set a precedent for future actions that may have significant effects, nor does it represent a decision in principle about a future consideration. Any future projects will be evaluated through the NEPA (National Environmental Policy Act) process and will stand on their own as to environmental effects.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. The interdisciplinary team evaluated the proposed project in the context of past, present and reasonably foreseeable actions (Appendix 3). No significant cumulative effects have been identified. A complete disclosure of the effects of the action and no action alternatives is contained in Chapter 2 of the EA.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources. The proposed project will not adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor will the proposed project cause loss or destruction of significant scientific, cultural, or historical resources (EA, Appendix 1).

9. The degree to which the action may adversely affect an endangered or threatened species or its designated critical habitat under the Endangered Species Act of 1973.

There are expected effects resulting from the implementation of the proposed project upon the Northern spotted owl and Oregon Coast coho salmon. Effects to OC coho and their critical habitat are detailed in Chapter 2 of the EA and include minimal short-term increased turbidity within Critical Habitat; disruption of normal feeding and resting behavior; and possible direct mortality of a few individual juvenile fish. These impacts would have no discernable affect on the ESU. There would be no long-term adverse affect to OC coho critical habitat. Implementing the project as proposed “*May Affect, and is Likely to Adversely Affect*” OC coho.

Expected effects on spotted owls are detailed in Chapter 2 of the EA. There are no known current or historic nest sites and no designated critical habitat for Northern spotted owls within the project area, and very marginal suitable habitat. Impacts to Northern spotted owls are limited to possible disturbance by equipment if work occurs during the critical nesting period (March 1 – July 7). Implementing the project as proposed “*May Affect, but is Not Likely to Adversely Affect*” Northern spotted owls.

10. Whether the action threatens to violate; Federal, State, or local law or requirements for the protection of the environment. The proposed project does not violate any known Federal, State, or local law or requirement imposed for the protection of the environment. The EA and supporting Project Record contain discussions pertaining to the Endangered Species Act, Magnuson-Stevens Fisheries Conservation and Management Act, National Historic Preservation Act, Clean Water Act, Clean Air Act, Coastal Zone Management Act, Executive Order 12898 (Environmental Justice), and Oregon Scenic Waterways Act. State, local, and tribal interests were given the opportunity to participate in the environmental analysis process. Furthermore, the proposed project is consistent with applicable land management plans, policies, and programs.

Prepared by: _____
Russ Chapman
Team Leader
Date _____

Approved by: _____
William B. Keller
Tillamook Field Manager
Date _____

Table of Contents

1	INTRODUCTION	9
1.1	Project Location	10
1.2	Conformance with Land Use Plans, Policies and Programs	10
1.3	Decisions to be Made.....	12
2	Project 1 - Fish and Wildlife Habitat Restoration, Fish Passage and Riparian Planting	12
2.1	Purpose of and Need for Action	12
2.1.1	Objectives.....	14
2.2	Alternatives.....	15
2.2.1	Alternative Development	15
2.2.2	Alternative 1: No Action.....	15
2.2.3	Alternative 2: The Proposed Action.....	15
2.2.3.1	Connected Actions.....	17
2.2.4	Alternatives Considered and Not Further Analyzed	18
2.2.4.1	Project Design Features (PDF's)	21
2.3	Affected Environment and Environmental Effects	24
2.3.1	Forest Vegetation	24
2.3.1.1	Affected Environment (Forest Vegetation)	24
2.3.1.2	Environmental Effects Alternative 1: No Action (Forest Vegetation)	26
2.3.1.3	Environmental Effects Alternative 2: The Proposed Action (Forest Vegetation)	26
2.3.2	Threatened or Endangered Wildlife Species, Habitat and/or Designated Critical Habitat	27
2.3.2.1	Affected Environment (T&E Wildlife).....	27
2.3.2.2	Environmental Effects Alternative 1: No Action (T&E Wildlife).....	29
2.3.2.3	Environmental Effects Alternative 2: The Proposed Action (T&E Wildlife).....	30
2.3.3	Special Status Wildlife Species and Habitat	33
2.3.3.1	Affected Environment (SSS Wildlife).....	33
2.3.3.2	Environmental Effects Alternative 1: No Action (SSS Wildlife).....	37
2.3.3.3	Environmental Effects Alternative 2: The Proposed Action (SSS Wildlife).....	37
2.3.4	Soils.....	43
2.3.4.1	Affected Environment (Soils).....	44
2.3.4.2	Environmental Effects Alternative 1: No Action (Soils)	44
2.3.4.3	Environmental Effects Alternative 2: The Proposed Action (Soils).....	44
2.3.4.4	Cumulative Effects Proposed Action (Soils)	44
2.3.5	Water Quality	45

2.3.5.1	Affected Environment (Water)	45
2.3.5.2	Environmental Effects Alternative 1: No Action (Water)	47
2.3.5.3	Cumulative Effects No Action (Water)	47
2.3.5.4	Environmental Effects Alternative 2: The Proposed Action (Water)	47
2.3.5.5	Cumulative Effects Proposed Action (Water)	49
2.3.6	Threatened or Endangered Fish Species or Habitat	49
2.3.6.1	Affected Environment (T&E Fish)	50
2.3.6.2	Environmental Effects Alternative 1: No Action (T&E Fish)	52
2.3.6.3	Environmental Effects Alternative 2: The Proposed Action (T&E Fish)	53
2.3.6.4	Cumulative Effects (T&E Fish)	53
2.3.7	Fish Species with Bureau Status and Special Status Species (SSS)	54
2.3.7.1	Affected Environment (SSS)	55
2.3.7.2	Environmental Effects Alternative 1: No Action (SSS)	55
2.3.7.3	Environmental Effects Alternative 2: The Proposed Action (SSS)	55
2.3.7.4	Cumulative Effects (SSS)	55
2.3.8	Essential Fish Habitat Assessment (Magnuson-Stevens Act Species)	55
2.3.9	Invasive, Nonnative Species (Executive Order 13112)	59
2.3.9.1	Affected Environment	59
2.3.9.2	Environmental Effects Alternative 1: No Action (Invasive Species)	59
2.3.9.3	Environmental Effects Alternative 2: The Proposed Action (Invasive Species)	59
2.3.9.4	Cumulative Effects (Invasive species)	60
2.3.10	Recreation	61
2.3.10.1	Affected Environment (Recreation)	61
2.3.10.2	Environmental Effects Alternative 1: No Action Alternative (Recreation)	61
2.3.10.3	Environmental Effects Alternative 2: Proposed Action (Recreation)	61
2.3.10.4	Cumulative Effects (Recreation)	61
3	LIST OF PREPARERS	61
	Appendix 1 – Environmental Elements Table	62
	Appendix 2 - Aquatic Conservation Strategy Consistency	66
	Appendix 3 – Past, Present and Foreseeable Future Actions	72
	Bibliography:	74

1 INTRODUCTION

Project Scope

The East Fork Nehalem Project encompasses a sub-watershed scale enhancement and enhancement effort proposed by the Tillamook Resource Area (TRA). The proposed project includes restoration and enhancement with four similar key elements. These elements are fish habitat restoration, fish passage improvement, wildlife habitat enhancement, and riparian planting. While the various project areas and impacts associated with these four components may be discussed separately as appropriate, the East Fork Nehalem Project is being analyzed as a single multi-year project.

The key elements of the project presented in this EA are the result of an Interdisciplinary Team (IDT) review of recommendations in the East Fork Nehalem watershed analysis (BLM December 1996), the North Coast Stream Project Guide to Restoration Site Selection (ODFW June 1997), and professional experience in the watershed provided by Tillamook Resource Area specialists.

This project would be a cooperative multi-year effort between BLM, the Upper Nehalem Watershed Council, Oregon Department of Fish and Wildlife (ODFW), Weyerhaeuser and possibly others. Restoration work analyzed in this EA would occur on BLM-managed lands or adjacent privately owned lands in cooperation with interested landowners.

Proposed restoration areas on BLM land are located within the Riparian Reserve Land Use Allocation (LUA). Proposed actions on BLM land would include approximately 4.3 miles of fish habitat restoration with reaches on Kenusky Creek, the mainstem East Fork Nehalem, Gunners Lakes tributary, and Floeter Pond tributary. Fish passage activities would include a culvert replacement or removal on Kenusky Creek Road and placing boulders or logs at the confluence of the mainstem East Fork Nehalem and an unnamed tributary to improve fish passage through the existing culvert. Wildlife habitat enhancement would include up to 216 acres of treatment. Riparian planting would consist of up to 7 acres.

Proposed actions on Weyerhaeuser or other privately owned lands include up to 3.5 miles of fish habitat restoration with reaches in Kenusky Creek, mainstem East Fork Nehalem and Floeter Pond tributary; fish passage activities on Kenusky Creek Road; and up to 3 acres of riparian planting occurring mostly along Kenusky Creek and the mainstem East Fork Nehalem. Project actions on non-federal land would be implemented using the same methods, criteria and objectives as those on BLM managed lands. (Figure 2 sections 9 and 16). Wildlife habitat enhancement (snag creation) is not proposed on non-federal land.

Implementation of these project elements would contribute to moving the East Fork Nehalem sub-watershed toward the Desired Future Condition. This project is intended to be a multi-year effort that would begin with Kenusky Creek in the summer of 2009, and would be implemented as funding and time allow over the next 10-15 years.

1.1 Project Location

The proposed project is located within the East Fork Nehalem watershed and is approximately four air miles east of the community of Vernonia, Oregon in Columbia County. The proposed project areas occur on BLM (O&C) and private lands in Township 5 North, Range 3 West sections 31, 32, and 33, and Township 4 North, Range 3 West sections 5-9, 16, 17, 19 and 21 (Willamette Meridian). (See Figure 1)

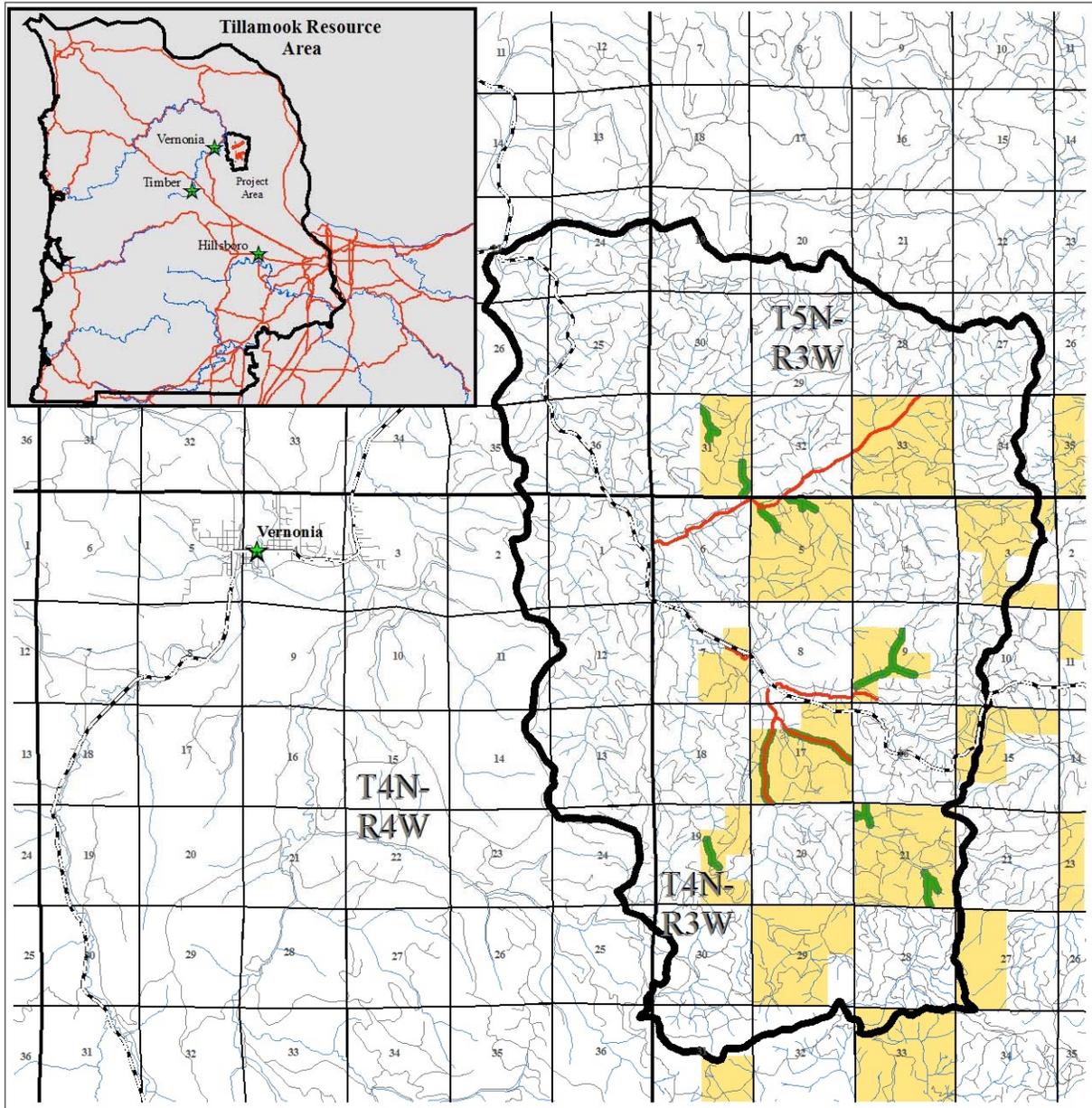
The East Fork Nehalem project is set in a context of Federal lands distributed in a scattered, non-contiguous or “checkerboard” fashion. Parcels of Federal lands are commonly less than a full section in size, and are surrounded by and intermingled with non-Federal forestland primarily managed for timber production on short rotations. Management practices on industrial timberlands tend to dominate the character of the forested landscape containing the proposed project.

1.2 Conformance with Land Use Plans, Policies and Programs

The proposed project is in conformance with the *Salem District Record of Decision and Resource Management Plan*, May 1995 (ROD/RMP) and tiers to the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (FEIS).

The proposed project is also in conformance with the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*, April 1994 (“Northwest Forest Plan”); *East Fork Nehalem Watershed Analysis*, December 1996; *Northern Coast Range Adaptive Management Area Guide*, January 1997; *Late-Successional Reserve Assessment for Oregon’s Northern Coast Range Adaptive Management Area*, January 1998 (LSRA); the *Record of Decision to Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans within the Range of the Northern Spotted Owl*, July 2007; the *Coastal Zone Management Act* of 1974, as amended and the *Endangered Species Act* of 1973, as amended (ESA); and the *Migratory Bird Treaty Reform Act* of 2004

Figure 1. East Fork Nehalem Project Location Map



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

-  Roads
-  Highways
-  Streams
-  EF Nehalem Watershed Boundary
-  Fish Restoration Reaches
-  Wildlife Restoration Areas
-  BLM Land



1.3 Decisions to be Made

The Tillamook Field Manager is the official responsible for deciding whether or not to prepare an Environmental Impact Statement (EIS), and whether to approve the East Fork Nehalem Project as proposed, not at all, or to some other extent.

2 Project 1 - Fish and Wildlife Habitat Restoration, Fish Passage and Riparian Planting

2.1 Purpose of and Need for Action

Project areas identified in this EA were initially described and recommended for improvement in the East Fork Nehalem Watershed Analysis prepared by the BLM Tillamook Resource Area in December 1996. The East Fork Nehalem watershed is approximately 20,594 acres of which the BLM manages approximately 22% or 4,575 acres. Approximately 68% of the watershed is owned by industrial timber companies and managed for timber production. Private industrial forests generally exhibit very simple canopy structure and are usually harvested prior to developing a diverse stand structure typical of late-successional stage stands. Therefore, in general private forests usually do not provide quality late-seral stage wildlife habitat features or provide quality natural recruitment of Large Woody Debris (LWD) into adjacent streams. Federal forested stands over seventy years old represent the best current opportunities in this watershed to recruit LWD into stream channels and riparian areas, and create Coarse Woody Debris (CWD) habitat for wildlife species.

Fish Habitat Enhancement

As stated in the East Fork Nehalem Watershed Analysis (BLM, December 1996), stream habitats within the East Fork Nehalem watershed have a high potential for protecting and enhancing populations of Oregon Coast (OC) Coho, chinook, steelhead and cutthroat trout. The average stream gradients in the proposed project areas are in many cases less than 1% and rarely go over 2%. These low gradient reaches are considered high quality potential habitat for OC coho. The existing levels of large woody debris (LWD), spawning gravels, number and quality of pools and channel complexity within the proposed project areas are severely lacking. Habitat surveys show these reaches do not meet either the Oregon Department of Fish or Wildlife (ODFW) 48 key pieces per mile (at least 24 inches diameter and at least 50 feet long) or the National Oceanic & Atmospheric Administration (NOAA) 80 key pieces per mile benchmarks considered to make up a properly functioning stream ecosystem in Western Oregon.

The desired future condition is one in which habitat for fish, aquatic life, and riparian dependent species is improved. Specifically, the riparian zone and active stream channel would contain a greater number of key pieces of large woody debris closer to the benchmarks set by ODFW and NOAA. This would result in more variations in stream velocities, which would create greater habitat diversity for fish and other aquatic life. Desired habitat features include interspersed pools, riffles, and glides, which promote processes such as a natural sediment regime and nutrient filtering. Logs that extend beyond stream habitats, into riparian zones and/or uplands would increase connectivity for riparian-dependent invertebrate and vertebrate species.

Fish Passage

Past management practices including road building in the East Fork Nehalem watershed and throughout the Pacific Northwest have limited migratory fish access to quality habitat that was historically accessible. Road

building has left some streams with high quality fish habitat or potential high quality fish habitat inaccessible or less accessible to anadromous fish due to impassable or nearly impassable culverts. Other past forest management activities have also reduced the amount of quality accessible habitat making the habitat that is blocked that much more important. Adult anadromous salmonids such as steelhead, OC Coho, chinook, and sea-run cutthroat cannot migrate upstream past these barriers to gain access to spawning and rearing habitat. Juvenile salmonids are also blocked from migrating up these smaller tributaries during the summer when temperature induced movement often occur.

The desired future condition is one in which two of these areas of low gradient (approximately 4% slope or less), high quality fish habitat are made accessible by replacing a current barrier culvert and improving fish passage at a culvert that may impede fish passage during part of the year. On a mix of private and BLM land there would be approximately 2.2 stream miles of spawning and rearing habitat made accessible to OC Coho, steelhead, cutthroat, and possibly chinook giving all species the ability to move freely upstream and downstream throughout the year as biological and environmental factors influence them.

Wildlife Habitat Enhancement

In general, forested stands in this watershed are highly fragmented, and of an early seral-stage. The wildlife habitat enhancement portion of the project would primarily be implemented within fully-stocked conifer dominated stands greater than approximately 70-years-old located within the first site potential tree height (approximately 200 feet) of streams in the Riparian Reserve LUA. These stands, as well as those in the surrounding landscape, are generally deficient in late-seral habitat features such as green trees with characteristics desirable for wildlife such as broken or dead tops, and coarse woody debris (both snags and down wood). The current condition, low occurrence, and limited distribution of these habitat features could limit biodiversity or populations of wildlife species that benefit directly or indirectly from these types of habitats and lengthen the time necessary for the development of late-seral habitat within these younger stands.

The desired future condition for the identified stands includes a greater abundance of green trees with characteristics desirable for wildlife such as broken or dead tops; accumulations of down wood; and a more diverse canopy containing snags - both individually and in small clumps. These habitat features would be used by a wide variety of species including woodpeckers; holes created by woodpeckers would then benefit numerous secondary cavity nesters such as flying squirrels and screech, pygmy, and saw-whet owls.

Riparian Planting

The primary purpose of the proposed riparian planting is to provide trees for shading streams and to provide a long-term future source of LWD recruitment for streams. The East Fork Nehalem River is on the Oregon 303(d) list of water quality limited streams because of elevated water temperatures. Current and historic watershed-wide management for timber production as well as many other factors have shown increases in water temperatures. Loss of shade in areas that have been logged generally result in higher than normal levels of thermal exposure in upper tributaries where cold water is essential to water quality as well as salmonid and other aquatic species survival. The current lack, and need for large wood in the streams has been previously discussed in this EA in the purpose and need (see section 2.1), and in the East Fork Nehalem Watershed Analysis.

The proposed riparian planting areas are currently dominated by reed canarygrass (*Phalaris arundinacea*) or by a “decadent” red alder overstory estimated to be in the age range of 70 to 80 years old. The red alder are currently in a state of decline as evidenced by crowns that are thin and dying back, allowing shrub species to dominate the understory. Red alder is a relatively short-lived species with a mortality rate that increases rapidly in stands over 90 years old. In either situation, riparian planting would contribute to the desired future condition of having trees, especially conifers, where they would otherwise be missing or suppressed far into the future.

2.1.1 Objectives

By comparing the existing conditions of the landscape in the project area to the management direction contained in the Salem ROD/RMP, and the East Fork Nehalem Watershed Analysis the IDT identified a number of specific resource conditions that do not meet the long-term management objectives. The proposed action is designed to modify these conditions, and move towards achieving the management direction and desired future conditions described in the ROD/RMP, and East Fork Nehalem Watershed Analysis.

1) Implement the following management direction and recommendations pertaining to the protection and restoration of fish and wildlife habitat.

- Promote the rehabilitation and protection of at-risk fish stocks and their habitat. (ROD/RMP p. 27)
- Design and implement fish habitat restoration and enhancement activities in a manner that contributes to attainment of Aquatic Conservation Strategy objectives. (ROD/RMP p. 27)
- Rehabilitate streams to enhance natural populations of anadromous and resident fish. Rehabilitation measures may include fish passage improvements, in stream structure placement to create spawning, rearing and over wintering habitat, and establishment or release of riparian coniferous trees. (ROD/RMP p. 28)
- Increase the amount of LWD in stream channels, floodplains, and riparian areas. Highest priority areas for restoration activities are those riparian areas that are dominated by hardwoods, or overstocked conifer stands that would benefit from thinning or underplanting. (EFN Watershed Analysis p. 52).

2) Implement the following management direction and recommendations pertaining to the management of lands in the Riparian Reserve LUA.

- Enhance and maintain biological diversity and ecosystem health in order to contribute to healthy wildlife populations. (ROD/RMP p. 24)
- Design activities to improve conditions for wildlife if they provide late-successional habitat benefits or if their effect on late-successional associated species is negligible (ROD/RMP p. 25)
- Provide for the maintenance of ecologically valuable structural components such as down logs, snags, large trees. (ROD/RMP p. 25)
- Maximize the current and future benefits derived from Riparian Reserves, LSRs and administratively withdrawn lands for cavity dwellers and other species dependant upon Late-seral stage habitat features. Potential beneficial treatments include thinning to encourage rapid growth and enhance the development of late seral stand habitat, creating snags (eventual down woody debris) and underplanting with long-lived coniferous species in areas where they are largely absent (EFN Watershed Analysis p. 54).

2.2 Alternatives

2.2.1 *Alternative Development*

Pursuant to Section 102(2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), Federal agencies shall "...study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." No unresolved conflicts concerning alternative uses of available resources (section 102(2) (E) of NEPA) were identified.

2.2.2 *Alternative 1: No Action*

Under Alternative 1, the BLM would not implement any element of the proposed action within the project areas. The fish, wildlife and plant communities and populations would continue to be dependant upon current trajectories and ecological processes resulting from the current conditions

2.2.3 *Alternative 2: The Proposed Action*

Fish Habitat Restoration

The proposed fish habitat restoration reaches are located on Kenusky Creek (T4N, R3W, sections 5 and 6 and T5N, R3W, sections 32 and 33); the mainstem East Fork Nehalem River (T4N, R3W, sections 7, 8 and 9); Gunners Lakes tributary and Floeter Pond tributary (T4N, R3W, section 17). (Figure 2) The proposed in-stream habitat restoration activities would include the placement of LWD into the proposed stream reaches. Large woody debris placed in streams would include up to 150 trees on 4.3 miles of stream on BLM land, and an additional 50 trees over 3.5 miles of stream on private land. Trees would either be felled or taken with rootwads specifically for the project or from existing blowdown trees with root wads still attached. Tree diameter at breast height (DBH) would be up to 32 inches with the average being approximately 24 inches and log lengths of up to 60 feet.

Trees for in-stream habitat restoration would be purchased from project partners, or come from existing blowdown and/or standing trees within the riparian reserve LUA. The tree sources are located within riparian reserves along portions of 4 miles of BLM roads in T4N, R3W sections 5 and 7, and approximately 2.8 miles of well-stocked forested riparian reserve stands adjacent to individual proposed stream reaches that are not accessible to ground-based equipment (Figure 3). Between thirty and fifty of the Trees would still have their rootwads attached. Trees with root wads would come from existing blowdown or be pulled/pushed over within riparian reserves along the road edges identified as potential tree sources (Figure 3). Trees from stands adjacent to the identified roads would be retrieved with an excavator, self-loading log truck or similar piece of equipment within one hundred feet of the road edge.

Log structures would be placed into the stream channel in the proposed project reaches (Figure 2). Log structures would be designed to result in higher stream complexity and more variations in stream velocities which would create greater habitat diversity for fish and other aquatic species. Logs would be placed to imitate natural accumulations of LWD throughout the proposed restoration reaches including single logs or log jams with up to 8 key pieces in one structure. Logs used in the stream channel would be of sufficient diameter and length (minimum of 1.5 times the active channel width) to resist downstream movement. To the extent possible, single logs and log jam structures would be keyed into existing streamside trees or boulders to provide stability and help keep them in place during high flow events. Rebar pins or wire rope may be used to anchor logs together to increase the mass of structures. Desired habitat features include interspersed pools, riffles, and glides, which promote processes such as a natural sediment regime and nutrient filtering. Trees cut from streamside stands

would be felled directly into the channel, some may be repositioned with a come-along or similar device in inaccessible reaches or with heavy equipment in the accessible reaches. All logs would be placed or felled into the stream channel and floodplain, with some logs extending into or beyond the riparian area. Logs that extend beyond stream habitats, into riparian zones and/or uplands would increase connectivity for riparian-dependent invertebrate and vertebrate species.

Accessible reaches where roads are within 400 feet of the stream channel would most likely utilize ground-based equipment such as a walking or tracked excavator for placing and maneuvering LWD into the stream channel. These accessible reaches would include; the lower parts of Kenusky Creek up to the T5N, R3W section 33 boundary of BLM land, the Scaponia Park reach, most of the East Fork Nehalem reach and the lower part of the Gunners Lakes reach. (Figure 2) Unlike the other proposed reaches the reach within Scaponia Park would not be designed to alter channel geometry. Placement of LWD in this reach would be designed to fortify existing unstable stream banks and create cover in the existing channel and not to reconnect with the floodplain, erode the existing stream banks, or create new braided channels.

Logs would be transported to the vicinity of the restoration reaches using a self-loading log truck or similar vehicle on existing roads. No new road construction is associated with this project. Logs would then be decked and moved to access trails by a walking or tracked excavator or they would be dropped near the access trails with the self loader. Logs would have a minimum of one end suspension when being moved from the road to the stream channel using access trails chosen to minimize habitat damage by equipment.

The proposed stream restoration reaches where access is a problem (i.e. more than 400 feet from an accessible road) would utilize no ground-based equipment and would therefore have no associated ground disturbance. These less accessible reaches would include; the upper reach on Kenusky Creek starting at the T5N, R3W section 33 boundary continuing upstream on BLM land, the upper reaches of the Floeter Pond tributary, and most of the Gunners Lakes tributary. All Trees in these areas would be felled directly into the stream channel from adjacent forested stands (Figure 3). Trees felled into the channel may be manipulated with hand tools such as a block and tackle, come-along or chainsaw winch after they are felled to optimize their placement.

Fish Passage

Proposed fish passage improvement includes work at two culverts (Figure 2). The culvert on Weyerhaeuser land in the Northeast corner of section 6 would either be replaced with a new culvert designed to facilitate fish passage, or would be removed completely. This culvert is on an unnamed tributary to Kenusky Creek. If this culvert was removed the stream channel at the crossing would be pulled back to a natural slope and then be subject to the natural channel forming processes of this tributary. This culvert currently blocks fish passage and is undersized for the existing perennial stream channel.

The other proposed fish passage culvert is located on the Scappoose-Vernonia Highway in section 8, near Scaponia Park on an unnamed tributary to the East Fork Nehalem River. The proposed action at this culvert location would not include removal or replacement. Work at this culvert would include placing a series of three to five small boulder weirs below the culvert outlet downstream to the confluence with the East Fork Nehalem River about sixty feet below. These boulder weirs would be designed to aggrade the channel throughout this sixty foot reach to create a low gradient backwater at the outlet instead of the current 10-inch drop. Equipment such as a walking or tracked excavator would be used to place these structures in the stream channel.

Wildlife Habitat Enhancement

The proposed wildlife habitat enhancement work would include creating CWD in up to 216 acres of forested stands located on BLM land. Proposed CWD creation would consist of felling trees or creating snags and snag-

topped trees by a variety of techniques. Techniques could include the felling of green trees, girdling green trees at the base as well as within the live crown, topping green trees and/or potentially inoculating trees with a heart rot fungus to enhance wildlife and/or fish habitat. Treatments would be located within approximately 200 feet of selected stream reaches throughout the watershed (Figure 2). The primary tree species to be treated would be Douglas-fir with up to five trees per acre treated. Wildlife Habitat Enhancement treatments are proposed within T5N, R3W, section 31, and T4N, R3W, sections 5, 9, 17, 19 and 21.

Riparian Planting

The BLM proposes to plant up to ten acres; approximately seven acres on BLM and approximately three acres located on Weyerhaeuser and other private landowners. The riparian planting would be adjacent to (within 200 feet of) the proposed fish restoration reaches in areas that are lacking streamside riparian area trees or have declining red alder (Figure 2).

Selection of riparian planting areas would be based on a current lack of trees or the lack of healthy understory trees to replace a declining red alder overstory. A further consideration in selecting planting areas would be current light availability. Planting areas would generally be existing openings, dominated by reed canarygrass or brush species such as salmonberry, vine maple, ferns, stinging nettles, etc. Although shade tolerant species would be planted, generally areas that need little or no alder felling to provide adequate growing conditions would be selected. Alders cut to increase light availability would be strategically selected to enhance existing openings. Further site preparation prior to planting may include cutting brush to provide planting spots. Planting spots would be scalped (cleared of vegetation and duff) down to mineral soil.

Selected riparian areas would be planted with a mix of native tree species including, but not limited to, western red cedar, grand fir, western hemlock, Douglas-fir, red alder, bigleaf maple and cottonwood. Species selection would be based on site specific objectives and site suitability. For bank stability and the rapid development of shade, hardwood species would be selected. For shade and a long-term source of LWD recruitment, conifers would be selected. Species would be selected based on their suitability to site factors such as shade and wet soil. Within these parameters, a mixture of species would be planted to promote stand diversity.

Trees would be planted singly in small patches of light or grouped in larger openings. Grouped trees would generally be planted at 10 ft. x 10 ft. spacing, but due to existing trees and ground conditions, spacing is expected to be variable. Depending on site conditions and height of planting stock, it may be necessary to cut brush around the trees for several years until they become established. Trees would be protected from animal damage by tubes (solid or mesh) and/or by fencing. Fencing would be used around groups of planted trees in areas where the potential for damage from animals (particularly beaver and elk) is high. This includes riparian planting proposed along Kenusky Creek. Fencing would be constructed from eight foot green colored T-posts and woven wire fencing. Planted areas would most likely require maintenance including replanting, fence repair or other similar activities until they were well established. Maintenance would be accomplished through existing BLM contracts for these types of activities or by BLM employees as part of post-project monitoring and maintenance.

2.2.3.1 Connected Actions

During the latter stages of developing this EA, Weyerhaeuser indicated an interest in removing the culvert located on Kenusky Creek road in section 6, and decommissioning approximately .75 miles of existing road above it. (See Figure 2) The culvert is located approximately 300 feet from the BLM property line, so the majority of the .75 miles being decommissioned would be on BLM land. The road would likely be blocked with a berm just below where the culvert is now located. There are also several culverts on small first and second order intermittent streams in this section of road that would likely be removed if this road is decommissioned. This area is already

isolated behind locked gates and should not create a loss of recreation opportunities or result in significant changes to the effects analyzed in this EA for the replacement or removal of the fish culvert in section 6.

As with any restoration or enhancement project that BLM implements, there would be a series of actions connected to this project. These actions could include; photo monitoring of created structures, creating cross sectional profiles to measure changes in stream channel dimensions and substrate, fish spawning surveys to monitor fish use in the vicinity of enhanced stream reaches, maintenance and monitoring of disturbed areas that were planted for erosion control, as well as ongoing maintenance for fenced riparian areas planted with conifer. Fences would need to be checked for damage due to animals or natural events. Stocking surveys would be done after the first season's growth and annually thereafter until the trees are free to grow. Subsequent visits to the planted areas would assess the need to thin the planted trees as well as when they were established enough to remove the fences.

Proposed fish habitat restoration actions in the Scaponia Park public recreation site may also provide education and outreach opportunities. These opportunities could include field trips or educational displays such as placards placed on site explaining salmon life history, habitat needs, water quality/quantity, and riparian zone functions, among others.

2.2.4 Alternatives Considered and Not Further Analyzed

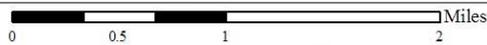
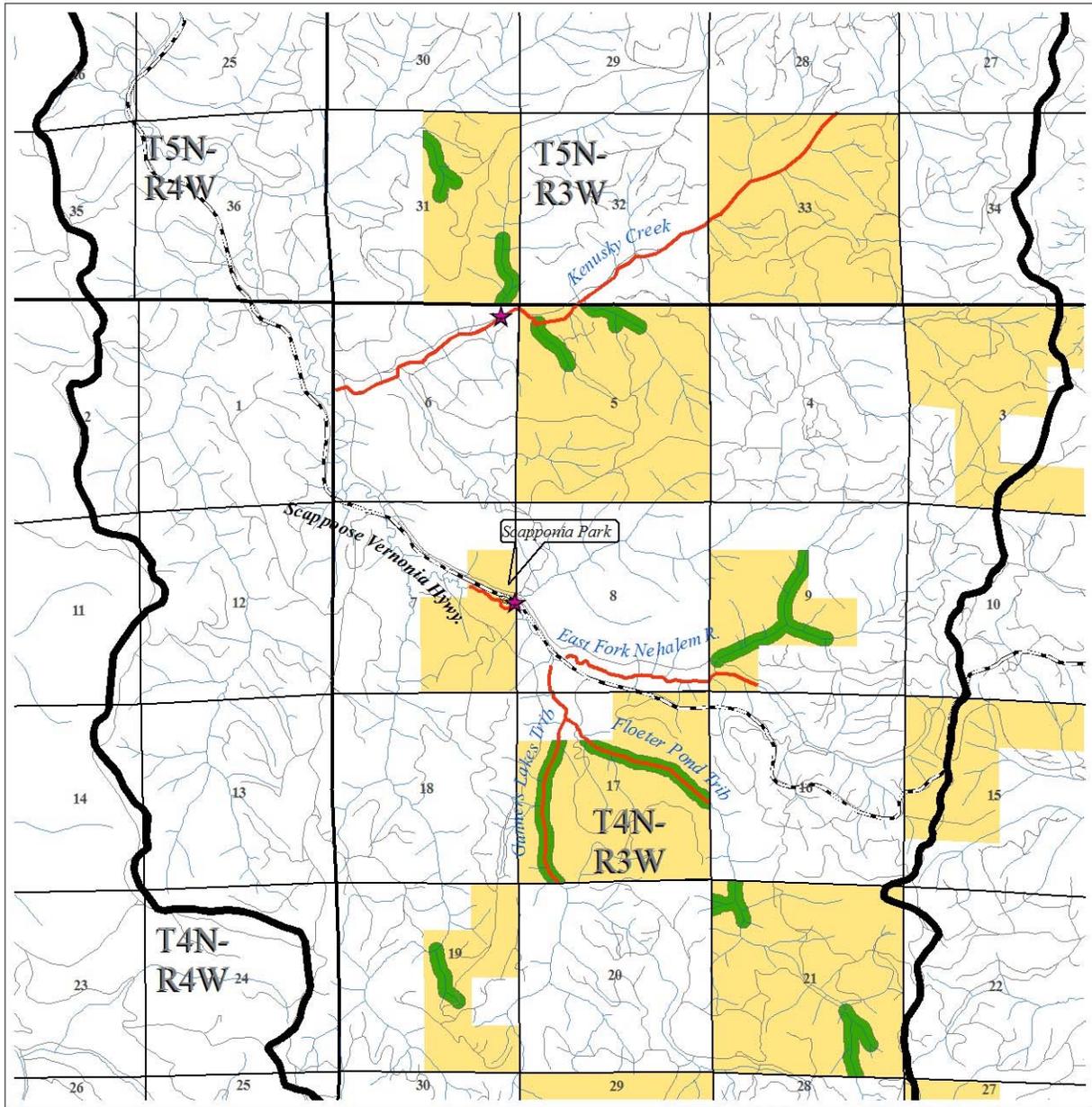
Fish Habitat Restoration

The IDT considered several other items during the planning process of this project. Initially the use of a helicopter to place LWD into additional stream reaches was considered. Several factors contributed to this alternative not being further analyzed. The areas identified for helicopter treatment were relatively small in the overall scope of the project and all of them were on private land. There were no suitable landings in the project vicinity to facilitate a safe refueling station, staging area for logs or to serve as a service landing for the helicopter. The bank full widths of the identified reaches were considered too small to justify using a helicopter for placement, as well as having limited potential for anadromous fish use.

Fish Passage

An alternative that included a fish passage element on a culvert located in T4N-R3W section 9 on an unnamed tributary to the mainstem East Fork Nehalem was considered but not carried forward. The IDT discussed the possibility of replacing or retrofitting this culvert, but decided that it was outside the scope of the proposed action and to remove this culvert from the project due to decision factors including; its location on a segment of the CZ Mainline (being converted to a hiking, biking trail); extensive amount of analysis required including engineering, waste storage, water quality implications; and finally cost for replacement. A fish ladder type of structure was also discussed at this location. This option was also discarded after concerns voiced by RA fish biologists regarding existing culvert length and grade, and performing a fish passage analysis using Fish Xing (V3) which shows that even if fish could negotiate the retrofitted ladder structure and gain access to the culvert, the 5% slope and 150 foot length of the culvert would not pass even the most fit fish.

Figure 2. Fish Restoration/Passage and Wildlife Habitat Enhancement Areas



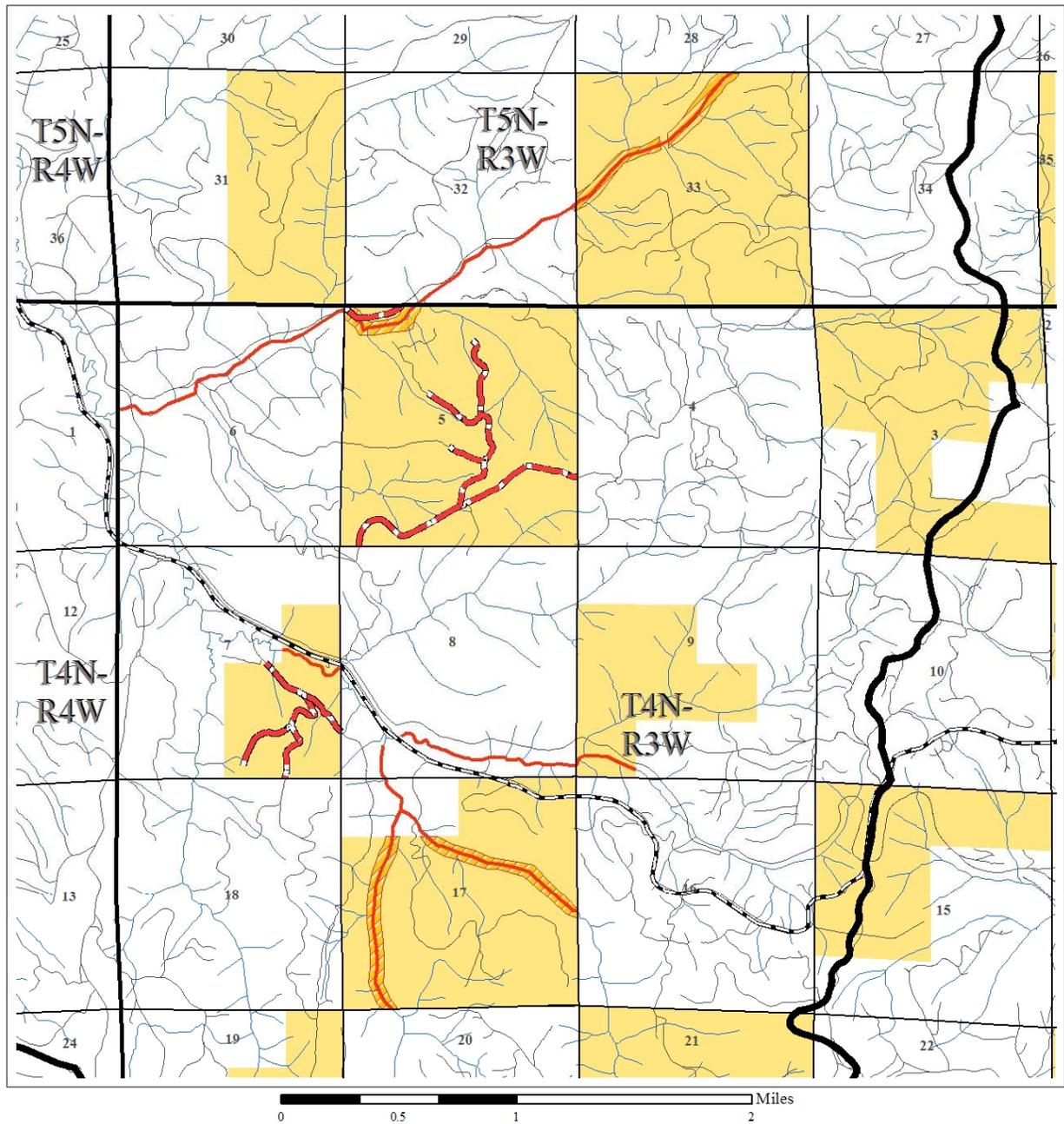
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- Roads
- Highways
- Streams
- Fish Restoration
- Fish Passage Work
- Wildlife Treatment Areas
- Scapponia Park
- EF Nehalem Watershed Boundary
- BLM Land



Figure 3. East Fork Nehalem Roadside and Streamside Tree Sources



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- Roads
- Highways
- Streams
- Fish Restoration Reach
- Roadside tree sources
- Trees felled from adjacent stands
- EF Nehalem Watershed Boundary
- BLM Land



2.2.4.1 Project Design Features (PDF's)

The following is a summary of the project design features that would be used to reduce the risk of adverse effects to the environment due to the proposed actions. The proposed actions would be implemented and contracts written consistent with the Aquatic Restoration Biological Opinion (ARBO) for restoration activities signed by NOAA Fisheries (tracking # P/NWR/2006/06532) and USFWS (Tails # 13420-2007-F-0055) (June 2007), which is valid through 2012; actions occurring after this date would be implemented under new programmatic coverage or project specific consultation.

The project design features are organized by proposed action elements.

Project Design Features (common to all project elements)

- All in stream elements of the project would be implemented during the ODFW in-stream work window (July 1 to August 31) unless a waiver is received from ODFW.
- All equipment used for in-stream work shall be cleaned and have leaks repaired prior to entering the project area. Be free of external oil and grease, dirt and mud prior to construction. Thereafter, inspect equipment daily for leaks or accumulations of grease, and fix any identified problems before entering streams or areas that drain directly to streams or wetlands
- Heavy equipment use would be restricted to periods of low soil moisture; generally June through October. Operations would be suspended during periods of heavy precipitation if resource damage would occur.
- Heavy equipment used to remove logs or trees from roadside stands would be operated on the existing road surface, or low gradient slopes within 100 feet of road.
- Conifers felled in the riparian areas would come from well stocked conifer stands. They would not come from riparian areas dominated by hardwoods with scattered conifers.
- Trees selected for cutting would not be greater than 32 inches in diameter at breast height (DBH).
- Trees would be selected cooperatively by a wildlife biologist and fish biologist.
- Trees selected for cutting would be:
 - Single or in small groups (2-4 trees) along the periphery of permanent openings (e.g. roads, rivers, etc.) or along the periphery of non-permanent openings (e.g. plantation edges);
 - Single trees would only be removed from the first two lines of trees along edges;
 - Single trees or small groups of trees must be spaced at least 200 feet apart and at least one crown width from trees with potential nesting structure for any listed species.
- To minimize soil disturbance or displacement, roadside trees would not be selected for removal from slopes steeper than 35%.
- Trees felled or selected for wildlife treatment or fish restoration logs would generally not include the largest, dominant trees within a given area, or trees with the fullest crowns and/or largest branches.

- Trees would not be felled on slopes at high risk of mass movement such as areas showing recent movement, slopes greater than 70 percent, inner gorge type topography, and abrupt slope breaks.
- Live trees with desirable habitat traits such as decay cavities or dead, forked and/or broken tops would not be cut.
- Treatments applied in the Riparian Reserves would extend down to the stream channel, however trees in this area would be selected so that stream shading would not be appreciably affected.
- Trees would be felled to avoid damage to currently suitable spotted owl or marbled murrelet nest trees, or any tree containing a suspected bird or mammal nest.
- Any newly discovered marbled murrelet sites (as per the Pacific Seabird Group Marbled Murrelet Technical Committee protocol) would be protected by a 0.5 mile radius buffer on all contiguous existing and recruitment federal habitat.
- Streamside trees would be directionally felled toward the stream to the extent possible.
- All felled or topped trees would be selected and felled or topped in such a way as to minimize impacts to existing decay class 3, 4, and 5 down woody debris which is greater than 15 inches in diameter.
- Upon completion of construction activities, all exposed soils would be stabilized and seeded or planted with appropriate native species, including trees. Trees would be planted and maintained as described under the proposed action for riparian planting.
- All regulatory permits and official project authorizations would be secured prior to project implementation.

Project Design Features (Fish Habitat Restoration and Passage Improvement)

- Part of the proposed fish restoration element is within the Scaponia Park public recreation area and would be closed for up to five days during implementation of the restoration project.
- All access routes (trails) for equipment would be chosen to minimize disturbance to riparian vegetation and compaction of soils.
- Equipment would be refueled outside of stream channels at sites designated by BLM
- A hazardous material action plan and approved spill containment plan that includes having a spill containment kit on-site and at previously identified containment locations would be required.
- The operation of equipment within sensitive stream banks and channels would be avoided where possible (specifically fine sediment substrates) and sensitive riparian areas (e.g., wetlands).
- Logs placed in the stream channel would be of sufficient size to resist downstream movement (generally considered to be a minimum of 1½ times the active channel width of the stream and eighteen inches in diameter)

- Log structures and root wads would be keyed into existing streamside trees, banks, or pinned (rebar) to other logs to increase mass, structure stability and the likelihood of structures staying in place under normal environmental conditions and stream flow regimes.
- To the extent possible excess dirt would be removed from trees with root wads attached before they are placed in the stream channel.
- Rebar used to pin structures together would be used to tie individual logs and root wads together within a structure to increase the mass of the structure, not to anchor the structure to substrates.
- Rebar pins would be placed to reduce visibility and would be bent over the tops of the logs in the structures.
- Boulders would be used where appropriate to help key log structures and root wads in place.
- Prior to culvert replacement the project area would be cleared of fish and water would be diverted around work area.

Project Design Features (Wildlife habitat enhancement)

Depending upon site-specific conditions, other potential design features include using CWD creation in such a way as to mimic bark beetle pockets and maximize the potential benefits through also releasing individual understory and/or overstory trees; some of the treated trees would be located in small clumps of up to about five trees. Some clumps of treated trees could be positioned in association with existing hemlock understory so as to potentially promote understory development, or be used to surround individual selected overstory trees with a ring of created snags thereby promoting the growth of individual large trees.

The proposed treatments would vary by treating up to five trees per acre; in general these trees would be scattered throughout the treatment units.

- In general, only healthy appearing Douglas-fir would be treated.
- Snag creation may occur during any time of the year. However, implementation of those portions of the project involving the felling of trees would most likely be scheduled to occur from approximately July – September especially near those areas with extensive *P.weirii* infestations to help minimize the potential for excessive Douglas-fir bark beetle damage.
- *Wildlife Special Status Species:* No tree which is currently suitable as a nest tree for the bald eagle, spotted owl or marbled murrelet, or contains a suspected nest of any other bird or mammal, would be treated. In addition, no tree would be treated adjacent to a potentially suitable bald eagle, spotted owl or marbled murrelet nest tree.
- Created snags or felled trees would generally not be located within approximately 150 feet of a drivable road, recreational trail or a property line boundary where BLM land abuts non-federal

ownership. This would reduce the potential for the creation of a safety hazard and/or the likelihood that CWD would be stolen or sold as firewood.

Project Design Features (Riparian planting)

- Riparian planting would occur where conifers capable of providing future in-stream LWD recruitment or shade to the stream channel are limited or absent.
- Generally, trees cut to provide additional sunlight to planted trees would be older individual alders that are not contributing significant shade to the stream or contributing to bank stability (e.g. located on the north side of the stream and not located directly on the stream bank).
- Alder or other hardwoods in the riparian area would not be felled that have cavities or other structures known to be quality habitat for wildlife including migratory songbirds.
- Trees cut to provide additional sunlight to planted trees should be directionally felled to avoid damaging remaining trees. Cut trees would remain on site. Cut limbs and brush would be scattered as necessary to provide planting spots.
- Refueling of chainsaws would occur at least 150 feet from the stream.
- Generally leave existing young, vigorous trees, including willow, cascara and red alder.
- Cottonwoods would not be planted in Scaponia Park because of the high likelihood they would become hazard trees as they mature.
- Planting would occur after the high flow period is over, in late February and March.
- Plant the largest stock available to minimize the need for brush release and to get trees out of the browsing range of deer and elk.
- Planted trees would be protected with tubes or fences where necessary.

2.3 Affected Environment and Environmental Effects

The East Fork Nehalem Fish and Wildlife Habitat Restoration Project includes four components. These components are fish habitat restoration, fish passage improvement, wildlife habitat enhancement and riparian planting. While the various project areas and impacts associated with these four components may be discussed separately as appropriate, the East Fork Nehalem Restoration Project is being analyzed as a single project.

2.3.1 Forest Vegetation

2.3.1.1 Affected Environment (Forest Vegetation)

Fish Habitat Restoration

Log sources for the in-stream restoration work would include individual trees and small groups of trees located within riparian reserves scattered along the edges of roads in the vicinity of the project area and/or scattered along the edges of stands adjacent to stream reaches where the logs would be placed. See Figure 3 for specific roadside and streamside tree sources. Standing trees would be felled or could also be taken with rootwads by pulling or pushing them over. Existing blowdown trees on or adjacent to the roads would also be used as sources of in-stream wood, often with the root wad left intact. According to BLM's FOI database, these stands are well-stocked Douglas-fir dominated stands that range in age from about 70 to 80 years-old. Other tree species found in the selected stands include; western hemlock, western redcedar, grand fir, bigleaf maple and red alder. The blown down trees are often associated with laminated root rot (*Phellinus weirii*) pockets. Trees selected for in stream restoration would be Douglas-fir, generally 18 to 32 inches in diameter at breast height (DBH). An estimated 200 Douglas fir trees would be felled, or pushed/pulled over from these locations and placed in the stream channel and/or adjacent riparian areas.

Fish Passage Improvement

Vegetation is only affected by this project to the extent that machinery would be operated in the riparian area immediately adjacent to the stream during the process of placing log or boulder weirs at the confluence of the East Fork Nehalem river and an unnamed tributary in T4N, R3W section 8 (Figure 2). Vegetation in this location can be characterized as grass and brush commonly associated with road prisms.

Wildlife Habitat Enhancement

As proposed, the Wildlife Habitat Enhancement treatments would treat approximately 216 acres of conifer-dominated forest currently 70-80 years old. All of these acres are located within the Riparian Reserve LUA within approximately 200 feet of the stream channel – within the first site-potential tree height. Douglas-fir dominates the majority of those portions of the stands proposed for treatment. Varying amounts of western hemlock, western redcedar, grand fir as well as bigleaf maple and red alder can also be found in some of these stands. Many of the riparian areas are dominated by hardwoods along the creeks and, in some areas, for various distances up the hillsides. Although there is some variability, portions of several of the stands proposed for treatment are relatively diverse in terms of vertical and/or horizontal stand structure while other areas are more homogeneous. This is largely a function of past management, stand age, stocking level and/or species of overstory trees and/or the presence of small pockets of laminated root rot disease within or near some areas proposed for treatment.

Current CWD levels within the proposed treatment areas vary but in general they are all considered deficient, especially in hard snags. These stands are also deficient or lacking in late-seral habitat features such as green trees with characteristics desirable for wildlife such as broken or dead tops. The overall current condition, low occurrence, and limited distribution of these habitat features are likely limiting general biodiversity and/or populations of wildlife species within the area that benefit directly or indirectly from these types of habitats (e.g. snags, logs and green trees with defects).

Riparian Planting

A total of up to ten acres would be planted. The majority of riparian planting would be located adjacent to the stream reaches identified for Fish Habitat Restoration. Planting would occur in a streamside zone characterized by a declining red alder overstory, with some bigleaf maple and black cottonwood and scattered conifer species including western redcedar, grand fir, western hemlock and Douglas-fir. Specific planting areas within this zone would be brushy openings of various sizes. The understory, including areas to be planted, is dominated by salmonberry, vine maple, native blackberries, ferns, stinging nettles, and a host of other brush and shrub species.

In addition, some of the areas identified for planting are characterized by a solid cover of reed canarygrass, lacking any appreciable amounts of other vegetation.

15% Standard and Guide

On November 15, 1999, an analysis was done of late-successional forest (LSF) stands on federal lands within the Upper Nehalem River fifth-field watershed. In that analysis, LSF was defined as those stands that are 80-years old or greater. The analysis showed that 4,316 acres of federal land are forested and of these lands, 86 acres (2%) meet the definition of LSF. This is below the level identified in the 15% retention S&G (Standard and Guideline found in the Northwest Forest Plan Record of Decision, page C-44). Additional stands, all in the 70-year age class and within modeled riparian reserves, were identified as “next best” LSF stands. When these additional “next best” stands are included with the stands over 80-years old, the watershed is over the 15% threshold. Proposed treatments, including wildlife habitat restoration, acquiring trees for instream restoration and the cutting of trees to enhance riparian planting spots, would occur in some of these 70-year old stands identified to meet the 15 percent. This includes work in T5N, R4W, Sections 31 and T4N, R4W, Sections 5, 7, 9, 17, 19 and 21. The proposed activities would enhance late-successional characteristics by creating small gaps (left by the cutting of one to four trees) or by creating snags and CWD.

2.3.1.2 Environmental Effects Alternative 1: No Action (Forest Vegetation)

Under this alternative the BLM would not implement the East Fork Nehalem project including fish habitat restoration, fish passage improvement, wildlife habitat enhancement and riparian planting. The local plant and animal communities would continue to be dependant upon and respond to ecological processes such as the natural CWD/LWD recruitment regimes that are currently in place. Under the “No Action” Alternative, the identified impacts of the action alternative would not occur within the identified project areas at this time.

Under the No Action Alternative, the effects on vegetation by forgoing Fish Habitat Restoration and Wildlife Habitat Enhancement would be negligible. Small, temporary gaps in the conifer canopy, created by removing or killing single trees or small groups of trees would not occur. A similar, ongoing process naturally occurs in stands and the overall effect would be indiscernible.

The effects of forgoing riparian planting would result in a delay in establishing conifers and vigorous hardwoods in the areas proposed for planting. The delay might be measured in decades. The brush layer that has developed in openings and beneath the alder would be expected to persist and retard and/or prevent the re-establishment of tree seedlings. It is not expected that the entire area would be replaced by a permanent layer of brush, especially as periodic flooding would create an opportunity for trees, especially red alder, to seed in. In areas dominated by reed canarygrass, it is expected that the dense monoculture would persist for the foreseeable future. The presence of beaver, mice and elk in the same area would further eliminate the possibility of competing vegetation, especially trees, from coming in on their own.

2.3.1.3 Environmental Effects Alternative 2: The Proposed Action (Forest Vegetation)

Under Alternative 2 the effects on vegetation from implementing Fish Habitat Restoration and Wildlife Habitat Enhancement would be negligible. Small, temporary gaps would be created in the conifer canopy by removing or treating single trees or small groups of trees. These gaps would allow additional light to reach the forest floor and the understory, including shade tolerant saplings that would be expected to respond to this additional light with increased growth and vigor. It is expected that the gaps would disappear over the course of 5 to 20 years as tree crowns grew together.

Implementing the proposed riparian planting would provide a future source of LWD/CWD in the riparian zone in a much shorter time frame than would otherwise occur. Planting of both conifers and hardwoods would provide a continuing source of shade to the streams and introduce additional diversity into the riparian zone. The planted areas would be largely “opportunistic” and capitalize on existing openings. Current diversity of understory species would not be expected to be noticeably impacted by this project. The exception to this would be in areas dominated by canarygrass, which may be effectively shaded out by a fairly dense planting of trees, especially red alder. Over time this would allow a more diverse understory of native plants, to re-establish itself.

2.3.2 Threatened or Endangered Wildlife Species, Habitat and/or Designated Critical Habitat

2.3.2.1 Affected Environment (T&E Wildlife)

Habitat Conditions within the East Fork Nehalem Watershed

As a result of past management practices, the East Fork Nehalem Watershed currently contains a very small proportion of habitat for those species dependent upon mature or late-seral stage habitat including large blocks of interior forest habitat and/or forest legacies such as large snags and down logs. As an example, based upon a GIS sort of BLM’s FOI (Forest Operations Inventory) database, there are only an estimated 95 acres of forested stands greater than or equal to 80-years-old on BLM land within the watershed; this represents 2.1 % of the BLM forested acreage within the watershed. Based upon stand characteristics and patch size, the bulk of this late-seral habitat is considered very marginal in quality. The amount of late-seral habitat on non-federal land is considered negligible. As a result of historical logging in the 1930’s, there is a relatively large representation of the 70- to 80-year-old age class on BLM land within the watershed. There is an estimated 1,900 BLM acres of conifer-dominated stands greater than or equal to 70-years-old within the watershed; this represents approximately 42% of the BLM land within the watershed. As a result of past management activities including salvage operations, the use of fire and historic snag felling programs, CWD especially higher quality, large hard snags and logs are deficient or totally lacking within large portions of the watershed.

According to BLM’s FOI approximately 38% (1,736 acres) of BLM’s 4,561 acres within the East Fork Nehalem Watershed that are 30-years-old or older, contain an appreciable red alder component. Approximately 815 of these acres are mixed conifer/hardwood stands dominated by alder, while 260 acres (primarily riparian areas) are timber-typed as being pure alder. Non-federal lands within the watershed also contain a sizable but undetermined quantity of habitats containing various hardwoods.

The trend for mid-seral aged stands (40 to 60+ years-old) on non-Federal land is one of decreasing quantities as merchantable stands are harvested - primarily through clearcut harvesting. Conversely, there is currently a great deal of habitat within the watershed for those species which depend upon or utilize early-seral stage habitats, smaller forested patches, and/or high contrast edges resulting from the juxtaposition of different habitat types. While many riparian corridors have been completely harvested or reduced to thin strips of red alder, the in-stream habitat conditions for aquatic species within the area are generally quite variable.

The impacts resulting from the East Fork Nehalem Project upon two wildlife species listed under the Endangered Species Act were analyzed; these species include the northern spotted owl and marbled murrelet. The final rule delisting the bald eagle from the Endangered Species Act was effective August 8, 2007 (USDI 2007); the bald eagle is now managed as “Bureau Sensitive” under the Bureau’s Special Status Species Policy.

Northern Spotted Owl - (FT)

Designated Critical Habitat

Critical Habitat is designated by USFWS to provide for the conservation and eventual recovery of the species. No portions of the East Fork Nehalem Restoration project areas are within or near Designated Critical Habitat for the spotted owl (USDI 1992).

Proximity to Known Spotted Owl Sites

There are no historic or known occupied spotted owl sites, 100-acre core areas as identified in the NWFP and Salem RMP, or spotted owl RPAs (Reserve Pair Areas) within the East Fork Nehalem Watershed, including near any of the East Fork Nehalem Project areas. The nearest known spotted owl site is the North Cedar Creek historical owl site which is located approximately two miles east of the East Fork Nehalem Watershed. Discovered in 1978, spotted owls have not been observed at this site since 1980.

Spotted Owl Surveys

No recent known spotted owl surveys have been conducted within or near the East Fork Nehalem Watershed. Given the nature of the proposed project and the lands to be impacted, pre-project spotted owl surveys are not required and none are scheduled to be conducted.

Spotted Owl Habitat

For the purpose of this evaluation, spotted owl suitable habitat is defined as conifer-dominated stands that have a mean tree diameter that exceeds 18 inches DBH and/or are greater than or equal to 80-years-old. Currently, there is no available stand exam data to determine the mean tree diameter of the affected stands. There are no stands known to be greater than 80-years-old within 0.25 miles of any of the areas affected by the proposed project including stream reaches identified for restoration, log source areas, or wildlife habitat enhancement areas. However, based upon a GIS sort of BLM's FOI database, there are conifer-dominated stands that are currently at least 70-years-old within or near (within 0.25 miles) the various proposed project areas; given the fact that as described the proposed project may take as long as ten years to fully implement, it is assumed that the majority of these 70-years-old stands would be considered spotted owl suitable habitat (albeit of marginal quality) at the time of project implementation - if they are not already by virtue of having a mean tree diameter that exceeds 18 inches DBH.

There are approximately 1,900 acres of BLM conifer-dominated stands within the East Fork Nehalem Watershed that are greater than or equal to 70-years-old; approximately 1,249 acres of these (BLM) acres are within or near (within 0.25 miles) the various proposed project areas. A total of approximately 445 of these acres are within 65 yards of an East Fork Nehalem project area where project design features would allow noise generating operations to occur within the critical spotted owl breeding season (prior to July 8th). Approximately 370 acres are within or near a Wildlife Habitat Enhancement unit and approximately 75 acres are within or near areas identified as a potential log source sites for the fish habitat restoration proposal. The distance of 65 yards represents the spotted owl disruption distance as defined by the interagency Level 1 Team (terrestrial subgroup) for the North Coast Province.

Spotted Owl Habitat within the Various Project Areas

For the purpose of this analysis, all of the stands proposed as log source areas for the fish habitat restoration proposal and the stands treated with wildlife habitat enhancement treatment are considered suitable habitat for the spotted owl. All of this habitat is considered to be marginal in quality based upon current stand age (approximately 70-years-old), lack of CWD (especially hard snags) and/or simple stand structure. Log sources for a portion of the instream restoration work would come from conifer-dominated stands located along approximately four miles of identified road segments located in T4N, R3W sections 5 and 7 and along 2.8 miles of the stream reaches identified for restoration. The Wildlife Habitat Enhancement portion of the project proposes to treat up to a total of approximately 216 acres of conifer-dominated forest that are located within approximately 200 feet of a stream.

Conditions that keep these stands from being considered higher quality habitat for owls primarily includes the relatively small patch size of the stand(s) and the highly fragmented, early-seral-stage nature of the surrounding landscape. In addition, the lack of nesting substrates (such as large sheltered platforms or large cavities in snags) and the lack of habitat for a suitable prey base, which is primarily the northern flying squirrel in this area, limit the current habitat quality. Flying squirrels have been found to be about twice as abundant in late-seral and old-growth stands as in younger seral stands and their presence is positively correlated to the abundance of large snags (Carey 1991). While scattered snags are present, the current and future habitat quality would benefit from additional CWD including higher quality snags.

Marbled Murrelet – (FT)

Designated Critical Habitat

Critical Habitat is designated by USFWS to provide for the conservation and eventual recovery of listed species. No portions of the East Fork Nehalem Restoration project areas are within marbled murrelet designated critical habitat (USDI 1996).

Proximity to Known Murrelet Sites

Ranging from approximately 40 to 45 miles from the ocean, the East Fork Nehalem project areas are located within marbled murrelet Zone 2 (NWFP C-10). In Oregon, Zone 1 is located in a band of land extending up to 35 miles inland and Zone 2 is located 35 to 50 miles from the sea; Zone 1 holds a higher likelihood for murrelet occupancy than Zone 2.

There are no known occupied murrelet sites within or near the East Fork Nehalem Watershed including within the vicinity of the proposed habitat restoration/enhancement project areas.

Suitable Habitat and Murrelet Surveys

The only areas within the East Fork Nehalem Watershed known to contain marbled murrelet suitable habitat and/or scattered individual trees with potential murrelet nesting platforms are located within T4N, R3W section 3. These areas were surveyed to protocol for murrelets in 1991-1992 in conjunction with the BLM timber sale program; there were no detections. There are no East Fork Nehalem Restoration activities proposed in these areas or within 0.25 miles of these areas.

There is no marbled murrelet suitable habitat or individual trees with potential murrelet nesting platforms identified that are located within the vicinity (within 0.25 miles) of any portions of the East Fork Nehalem Restoration Project. No marbled murrelet protocol surveys are required or scheduled to be conducted in association with any portions of the East Fork Nehalem Restoration Project.

2.3.2.2 Environmental Effects Alternative 1: No Action (T&E Wildlife)

Under this alternative the BLM would not implement the East Fork Nehalem project including fish habitat restoration, fish passage improvement, wildlife habitat enhancement and riparian planting. The local plant and animal communities would continue to be dependant upon and respond to ecological processes such as the natural CWD/LWD recruitment regimes that are currently in place. Under the “No Action” Alternative, the identified impacts of the action alternative upon wildlife and/or wildlife habitat would not occur within the identified project areas at this time.

Under the No Action Alternative, no in-stream/riparian log placement or riparian planting would occur. The current low LWD (Large Woody Debris) levels would continue for short- to near long-term (the next 5 to 20

years). During this time, recruitment of LWD from streamside riparian zones would not be sufficient to offset the natural loss of LWD as logs decay, break apart and move downstream. Reduction of LWD would result in a further loss of channel roughness, in faster stream flows, and a reduction in the streams' capacity to store sediment and organic matter. In the long-term (15+ years), riparian trees would continue to grow in size with a portion falling into the active stream channel and/or riparian area, increasing the supply of LWD. Eventually, perhaps after a century or more, LWD levels would return to desired levels and the channel complexity would approach historic conditions.

Under the No Action Alternative, 216 acres of conifer-dominated forest would not receive treatment to augment current levels of snags or snag-topped green trees. Where present the CWD habitat components within the treatment areas would continue to be heavily weighed toward down logs of the later decay classes rather than having a wider range of decay classes present within the stands and a larger percentage of the total CWD volume present in the form of snags. The forest stands would continue to grow and develop without management intervention. The development of those features of late-seral stage habitat promoted by implementation of the wildlife habitat enhancement treatments (e.g. green trees with defect and snags) would be expected to occur in a slower time frame than under Alternative 2. The Desired Future Condition, late-seral stage habitat with increased amounts of CWD, spread across all decay classes with approximately half of the volume being in snags and half in down logs would be expected to be eventually reached, but over a longer period of time.

There are no identified cumulative impacts to wildlife or wildlife habitat associated with the No Action Alternative.

Wildlife Species Proposed or Listed under the Endangered Species Act:

Selection of the "No Action" Alternative would be of "*NO EFFECT*" upon the marbled murrelet and spotted owl (and their critical habitat) and all other species listed under the ESA.

2.3.2.3 Environmental Effects Alternative 2: The Proposed Action (T&E Wildlife)

Wildlife Species listed or proposed under the Endangered Species Act:
(See Section 1.5 for Consultation documentation)

Northern Spotted Owl - (FT)

Designated Critical Habitat

The proposed East Fork Nehalem Restoration project would not occur within or near spotted owl Designated Critical Habitat therefore, the proposed project would be of "*NO EFFECT*" upon spotted owl Designated Critical Habitat.

Spotted Owl Surveys

No recent known spotted owl surveys have been conducted within or near the East Fork Nehalem Watershed. Given the nature of the proposed project and the lands to be impacted, spotted owl protocol surveys are not required and none are scheduled to be conducted.

Impacts to Known Owl Sites

There are no historic or known occupied spotted owl sites, 100-acre core areas as identified in the NWFP and Salem RMP or spotted owl RPAs (Reserve Pair Areas) within the East Fork Nehalem Watershed, including within or near any of the proposed East Fork Nehalem Restoration project areas. While there have been no recent known spotted owl surveys conducted within or near the East Fork Nehalem Watershed, no occupied spotted owl

sites would be expected to be located within the area due to habitat conditions within the watershed. No impacts to any currently known spotted owl sites would be expected to result from implementation of the East Fork Nehalem Restoration Project.

Impacts to Spotted Owls as a result from the Potential for Disturbance

For the purpose of this evaluation, spotted owl suitable habitat is defined as conifer-dominated stands that have a mean tree diameter that exceeds 18 inches DBH and/or are greater than or equal to 80-years-old. Currently, there is no available stand exam data to determine the mean tree diameter of the affected stands. There are no stands known to be greater than 80-years-old within 0.25 miles of any of the areas affected by the proposed project including stream reaches identified for restoration, log source areas, or wildlife habitat enhancement areas. However, based upon a GIS sort of BLM's FOI database, there are conifer-dominated stands that are currently at least 70-years-old within 0.25 miles of the various proposed project areas; given the fact that as described the proposed project may take as long as 10 years to fully implement, for the purposes of this analysis it is assumed that the majority of these 70-years-old stands would be considered spotted owl suitable habitat at the time of project implementation if they are not already by virtue of having a mean tree diameter that exceeds 18 inches DBH.

For various resource concerns, many of the proposed activities are proposed to occur either during periods of low soil moisture (generally June – October) and/or the ODFW instream work window (July 1 – August 31). In order to reduce the potential impacts to spotted owls as a result of disturbance, many of these activities have been scheduled to occur outside of the spotted owl critical breeding season (March 1 to July 7). These activities include felling of streamside trees for placement into streams, placement of logs and boulders into streams, culvert replacement. As designed, other noise generating activities (e.g. felling, loading, hauling and decking of roadside trees for placement into streams, and snag creation) may occur during any time of the year including within the spotted owl critical nesting season (March 1 – July 7).

There are 1,249 acres of (BLM) conifer-dominated stands currently at least 70-years-old within 0.25 miles of the various proposed project areas; for the purposes of this analysis, these 70-years-old stands are considered to be spotted owl suitable habitat. The amount of suitable owl habitat on non-federal land is considered to negligible. Approximately 445 of these acres are within 65 yards (the spotted owl disruption distance) of an East Fork Nehalem project area where project design features would allow noise generating operations to occur within the critical spotted owl breeding season (prior to July 8th). The disruption distance is defined as the distance from the project boundary outward within which the action is likely to cause spotted owls, if present, to be distracted to such an extent as to significantly disrupt their normal behavior and create the likelihood of injury. Approximately 370 acres are within or near a Wildlife Habitat Enhancement unit and 75 acres are within or near an area identified as a potential log source site.

Although considered unlikely, proposed actions which include tree felling, yarding, loading, hauling, log and boulder placement, brushing, and coarse woody debris and snag creation, that generate noise above local ambient levels may disturb northern spotted owls and interfere with essential foraging or nesting behaviors. Although adult birds can move away from a noise source, nesting adults moving away from disturbance could cause increased predation to young, or missed feedings, which could result in reduced fitness of the young and even death.

There are no historic or known occupied spotted owl sites near any of the proposed East Fork Nehalem project areas. Proposed disruptions within or near suitable habitat with no history of an owl nest site or activity center have the potential to occur within the disruption distance of an active nest site during the breeding season, however the potential likelihood of impacts is considerably less than operations occurring within the vicinity of a

known nesting pair of spotted owls. Therefore, potential disturbance resulting from implementation of the East Fork Nehalem Restoration Project *MAY AFFECT but is NOT LIKELY TO ADVERSELY AFFECT* spotted owls.

Impacts to Spotted Owl Habitat

That portion of the East Fork Nehalem Project addressing Fish Habitat Restoration proposes to fell up to a total of approximately 200 trees and place them into a total of approximately 7.8 miles of stream channel and/or adjacent floodplain. Log sources for in-stream habitat restoration would be purchased from project partners, come from existing blow down and/or forested stands adjacent to approximately 4 miles of selected BLM roads located in T4N, R3W sections 5 and 7, or from approximately 2.8 miles of well-stocked forested stands adjacent to individual proposed stream reaches that are not accessible to ground-based equipment. For the purposes of this analysis, it is assumed that all of the areas identified as log source areas are considered to be suitable habitat for the spotted owl - albeit of very marginal quality. Although trees selected for removal would be up to 32 inches DBH, most would be less than 24 inches DBH. No trees suitable as spotted owl nest trees would be removed. Although small isolated gaps would be created within the canopy as a result of the removal of these trees, impacts to the overall, average canopy cover of the stands are considered to be negligible.

The removal of the trees from areas identified as spotted owl suitable would not be expected to alter the ability of the area to function as suitable habitat. The primary focus of this project is the restoration of fish habitat although only a portion of any given tree or log would likely be placed in the active stream channel; an appreciable portion of the logs would be expected to be placed in the floodplain / adjacent riparian areas, where it would also be available to benefit a wide range of terrestrial species which utilize or depend upon downed logs including the spotted owl.

That portion of the East Fork Nehalem Project addressing wildlife habitat enhancement proposes to treat a total of approximately 216 acres with CWD enhancement treatments. For the purposes of this evaluation, all of these acres are considered suitable habitat for the spotted owl; this represents approximately 11.3% of the 1,900 acres of BLM identified suitable habitat within the watershed. Based upon the nature of the proposed Wildlife Habitat Enhancement treatments, no adverse impacts to spotted owl suitable habitat are expected; no suitable habitat would be degraded or removed from its current condition to function as suitable habitat. No tree which is currently suitable as a spotted owl nest tree or any tree adjacent to a potentially suitable nest tree would be impacted. Those portions of the project which would involve felling, topping or converting green trees into snags are expected to have a negligible impact upon the total average canopy cover of the affected stands.

Beneficial impacts to spotted owl habitat resulting from the implementation of the East Fork Nehalem Restoration Project include increasing the abundance of major constituent elements of spotted owl habitat in areas identified as deficient in those elements - Coarse Woody Debris in the form of both snags and down logs, as well as green trees with defect such as broken or dead tops. Several studies have found a strong positive correlation between the amounts of CWD within a stand and the abundance of numerous small-mammal species including the northern flying squirrel, the spotted owl's primary prey species in much of the Pacific Northwest (Carey and Johnson 1995, Carey et al 1997). Created snags or snag-topped green trees would generally enhance the quality of owl habitat by providing potential denning and foraging sites for various prey species and/or over time, by developing into suitable spotted owl nest trees.

Implementation of the East Fork Nehalem Restoration Project *MAY AFFECT but is NOT LIKELY TO ADVERSELY EFFECT* the spotted owl based upon the beneficial impacts to spotted owl habitat discussed above. No adverse affects to owl habitat were identified as a result of implementing the proposed project.

Marbled Murrelet - (FT)

Designated Critical Habitat

No portion of the proposed East Fork Nehalem Restoration Project would occur within Designated Critical Habitat for the marbled murrelet and therefore the project would be of *NO EFFECT* upon murrelet Designated Critical Habitat.

Impacts to Known Murrelet Sites

With the nearest known occupied marbled murrelet site being approximately 16 miles from the proposed treatment areas, there are no known occupied murrelet sites within the vicinity of the proposed Fish Habitat Restoration Project areas. No known murrelet sites would be impacted by the proposed action.

Potential for Disturbance

Based upon the fact that there is no known suitable or potential murrelet habitat within a minimum of approximately 0.25 miles of the proposed restoration treatment areas, including the log source areas, the East Fork Nehalem Restoration Project would be of *NO EFFECT* upon the marbled murrelet as a result of disturbance.

Impacts to Murrelet Habitat

No tree containing potentially suitable murrelet nesting platforms, trees providing cover to a potentially suitable nest tree or forested stand determined to be murrelet potential or suitable habitat would be impacted by any portion of the East Fork Nehalem Fish and Wildlife Habitat Restoration Project. In addition, majority of the trees impacted by implementation of the East Fork Nehalem Project (i.e. converted into snag, or felled for CWD or placement into a stream) would primarily include those trees with relatively little crown development. The average canopy closure of the stands identified as log sources would be negligibly impacted as an estimated 200 trees would be removed over an area adjacent to a total of 6.8 miles of either BLM road or stream segments. The average canopy closure of the stands treated for wildlife habitat enhancement would also be negligibly impacted. All portions of the East Fork Nehalem Fish and Wildlife Habitat Restoration Project would be of *NO EFFECT* upon the murrelet as a result of habitat modification.

2.3.3 Special Status Wildlife Species and Habitat

2.3.3.1 Affected Environment (SSS Wildlife)

There are no known special habitats (e.g., talus slopes, cliffs, caves, mines or abandoned wooden bridges) within the vicinity of any of the East Fork Nehalem proposed project areas.

Mollusks – (SEN)

All of the proposed East Fork Nehalem project areas except the Fish Passage Improvement site contain and/or are directly adjacent to potential habitat for eight species of mollusks identified as Sensitive on the Bureau's Manual 6840 Special Status Species List. They include the Crowned Tightcoil (*Pristiloma pilsbryi*); Evening Fieldslug (*Deroceras hesperium*); Pacific Walker (*Pomatiopsis californica*); Puget Oregonian (*Cryptomastix devia*); Salamander Slug (*Gliabates oregonius*); Spotted Tail Dropper (*Prophysaon vanattaie pardalis*); Tillamook Westernslug (*Hesperarion mariae*); and Warty Jumping-slug (*Hemphillis glandulosa*). Although there are likely species-specific variations in microhabitat requirements, in general all of these species are associated with the organic duff layer on the forest floor; in addition habitat types containing a hardwood component, especially big-leafed maple benefit a number of these mollusk species. Additional habitat features utilized by some of these species also include, uncompacted, cool, moist soils; hardwood leaf litter; abundant later-decay-class large and small woody debris; sword ferns; and mosses growing on the trunks of big-leaf maples.

There have been no known mollusk surveys conducted within the East Fork Nehalem watershed; there are no known sites for any Special Status mollusk species within the watershed including within or near the proposed project areas.

Cope's Giant Salamander (SEN)

Cope's Giant Salamander is most commonly known in the aquatic larval or neotenic forms; terrestrial adults are extremely rare. These salamanders most commonly inhabit permanent fast flowing creeks and small streams with clear cold water, but may also be found in seeps. Cope's Giant Salamanders are nocturnal and emerge from their diurnal hiding places and crawl about the rocky stream bottom, moist splash zone along the banks of streams and may forage in streamside forests on rainy nights.

Although this species has not been observed within the vicinity of the proposed action, streams within or near the proposed project areas afford suitable habitat for this species, most notably within the fish habitat restoration stream reaches and adjacent riparian areas. These stream reaches represent a very small percentage of the habitat suitable for this species located within the East Fork Nehalem watershed; potentially affected habitat in all cases interspersed with and/or juxtaposed to suitable habitat that would not be impacted by implementation of the project. Although rare, for the purposes of this analysis the species is assumed to be present within and near the project areas where suitable habitat is present.

Bald Eagle – (SEN)

The final rule delisting the bald eagle from the Endangered Species Act was effective August 8, 2007 (USDI 2007); the bald eagle is now managed as "Bureau Sensitive" under the Bureau's Special Status Species Policy.

Proximity to Known Eagle Sites

There are no known bald eagle communal winter roosts or nests within the watershed. The nearest known bald eagle nest site is near Vernonia, approximately three miles northwest of the closest project areas.

Dispersed eagle usage, primarily roosting or resting, may occur throughout the watershed, including near the proposed project areas, wherever suitable habitat is present. This occasional, dispersed eagle usage would most probably occur during the late fall or winter months.

Suitable Bald Eagle Habitat

For the purposes of this evaluation, bald eagle suitable habitat is considered to be conifer-dominated habitat generally 80-years-old or older, or younger stands containing scattered groups or individual residual old-growth or larger second-growth trees, located within approximately 1.0 mile of a major river or approximately 0.5 mile of a major tributary. For the purposes of this analysis, a major river is considered to be 6th order or larger; there are no "major rivers" within the East Fork Nehalem Watershed. A major tributary is considered to be 5th order; portion of the East Fork Nehalem is considered to be a 5th order stream and therefore a "major tributary" potentially influencing habitat suitability for bald eagles within and near a portion of the project areas - those project areas within T4N, T3W sections 5, 6, 7, 8 and 17. The potential habitat quality within the majority of these areas is likely limited due to the proximity of numerous private residences, Scaponia Park, the Scappoose-Vernonia Highway and/or the CZ Mainline Road.

NWFP Bats

The NWFP and Salem District RMP identify five species of bats that would benefit from additional habitat protection. Four of these five species have potential of being located within or near the proposed action areas.

These species include the fringed myotis, long-eared myotis, long-legged myotis, and the silver-haired bat; the fringed myotis is also covered by the Bureau's Special Status Species Policy as a Bureau Sensitive species (see Appendix 1). All of these bat species are known to inhabit mature and immature coniferous forest and may forage near riparian areas, open areas, and along forest edges while utilizing large hollow trees for roosting, hibernating, and maternity colonies; accumulations of large logs, snags or live trees with defect such as loose bark and cavities may function as additional day or night roosts.

There are no known bat roosting or hibernaculum sites within the project area. Surveys for these species are required under the NWFP if caves, mines, or abandoned wooded bridges and buildings are within or near the project area. There are none of these habitat types or structures within or near the project area therefore no bat surveys are required; no bat surveys are scheduled to be conducted within or near the East Fork Nehalem project areas.

Townsend's Big-Eared Bat - (SEN)

In addition to the bat species identified within the NWFP, one species of bat, Townsend's big-eared bat, is covered by the Bureau's Special Status Species Policy. Townsend's big-eared bats are seldom abundant but are known to occupy a variety of habitats. In western Oregon, these bats are associated with coniferous forests, but they are also considered characteristic dwellers of caves, abandoned mines, and buildings. No caves, abandoned mines or buildings are known to be located within the vicinity of the proposed action. Some of the more open forested and riparian habitats within and near the proposed treatment areas could function as foraging habitat and it is possible although rather unlikely that this species of bat could be encountered within or near the proposed project areas.

Red Tree Vole – (SEN)

The red tree vole is generally associated with mature or old-growth conifer or mixed hardwood-conifer forests. The tall, multi-layered canopies of mature or old-growth forests retain humidity and intercept fog, which functions as a climatic buffer and a source of free water. Large branches of mature and old-growth trees provide stable support for nests, protection from storms and travel routes. Although red tree voles have been located within younger stands, especially if they contain a component of larger remnant trees, mature and old-growth stands are thought to be their optimal habitat.

Portions of the proposed East Fork Nehalem Restoration project areas may contain suitable habitat for the red tree vole. These areas include the streamside and roadside sites which would be used for sources of trees to be used in the fish habitat restoration work, and those areas identified for CWD creation for wildlife habitat enhancement. Although all of this habitat would be best characterized as being very marginal in habitat quality, it is possible that portions of these areas may be currently occupied by red tree voles.

The Tillamook and Marys Peak Resource Areas (Salem District BLM) completed a survey effort in the fall of 2006, unrelated to pre-project surveys, to locate red tree voles, primarily on eastern slopes and foothills of the northern Oregon Coast Range. Patches of older forest considered to be among the best red tree vole habitat on BLM land within the areas were identified and via a service contract, a sample of the trees within these stands were climbed and searched for red tree voles and/or red tree vole nests. In conjunction with this effort, three stands within the East Fork Nehalem Watershed totaling 62 acres located in T4N, R3W, section 3 were sampled by climbing 35 trees and looking for red tree voles and/or tree vole nests. Although no treatments are proposed within this area, these acres contain the highest quality late-seral / red tree vole habitat within the East Fork Nehalem Watershed. This effort resulted in no red tree voles or red tree vole nests being located within the areas sampled.

Bird Species of Concern covered by the MBTA (Migratory Bird Treaty Act)

Migratory Bird “Species of Concern” are defined as “those species listed in the periodic report, Birds of Conservation Concern, published by the Fish and Wildlife Service Division of Migratory Bird Management; priority migratory bird species documented in comprehensive bird conservation plans (North American Waterbird Conservation Plan, United States Shorebird Conservation Plan, Partners in Flight Bird Conservation Plan); species or populations of waterfowl that the North American Waterfowl Management Plan identifies as a high, or moderately high, continental priority; listed threatened and endangered bird species in 50 CFR 17.11; or MBTA-listed game birds below desired population sizes.” In accordance with the Migratory Bird Treaty Reform Act of 2004, the MBTA no longer applies to non-native species. Migratory Bird “Species of Concern” within the Tillamook Resource Area are listed within Appendix 1 of the Biological Evaluation of wildlife resources in the East Fork Nehalem Fish and Wildlife Habitat Restoration project record. (located at the Tillamook Resource Area office)

Migratory birds use a wide variety of habitats, including late-successional forests, riparian areas, brush in recovering clear-cuts, and small trees in developing stands. Some birds, such as the Olive-sided Flycatcher, use residual canopy trees for perching and forage over adjacent clear-cuts. Some of the younger plantations in the project area with lower tree and shrub heights would provide these optimal foraging conditions. Many land birds are associated with deciduous shrubs and trees in early successional habitats (i.e., orange crowned warblers and rufous hummingbirds).

With the exception of the majority of the roadside areas identified as log sources for the Fish Habitat Restoration portion of the project, most of the East Fork Nehalem project areas are located within or near riparian areas. The Wildlife Habitat Enhancement treatments would treat conifers within approximately 200 feet of the stream channel. Forest stands adjacent to the stream reaches to be treated with the Fish Habitat Restoration Project currently range in age from about 67- to 77-years-old. Douglas fir dominates the majority of these stands however, western hemlock, western redcedar, grand fir as well as bigleaf maple, black cottonwood and red alder can also be found in or near some of these conifer-dominated stands. Most of these riparian areas contain scattered hardwoods along the creeks and for various distances up the hillsides. Stands located within the uplands, further from riparian influence, such as those identified as log sources for the Fish Habitat Restoration portion of the project, are more strongly dominated by Douglas fir and generally contain a smaller hardwood component. These project areas may provide habitat for several “Migratory Bird Species of Concern” including band-tailed pigeons, black-throated gray warblers, mourning doves, olive-sided flycatchers and rufous hummingbirds.

In addition to the species noted above, project areas near Gunners Lakes and Floaters Ponds¹ provide habitat for both mallards and wood ducks. A wildlife habitat enhancement project area is located adjacent to a Gunners Lake wetland in section 21; within section 17, about 0.25 miles downstream from a Gunners Lake wetland there is also a stretch of stream proposed for fish habitat restoration and CWD creation proposed for wildlife habitat enhancement slightly upslope – within 200 feet of the water. The vast majority of the project areas are not near identified suitable habitat for these species due to the lack of beaver ponds, ox bows, or temporary or seasonal wetlands.

¹ Potential duck habitat near Floaters Ponds is on non-federal land located in T4N, R3W section 20(SESE) and section 28 (N1/2), and on BLM land in T4N, R3W section 21(SWSW) and section 29 (NENE) and the habitat near Gunners Lakes is on non-federal land located in T4N, R3W section 16 (SWSW) and on BLM land in T4N, R3W sections 21 (NWNW).

Northern goshawks use a variety of forest types and structural stages as foraging areas but in the west, tend to nest in larger blocks of mature conifer habitats with a relatively dense canopy cover. With no more than six known recent records, breeding goshawks are quite rare in the Oregon Coast Range; goshawks use northern Coast Range habitats more frequently in the winter and during migration. A small amount of suitable goshawk nesting habitat exists within the East Fork Nehalem Watershed including within or near some of the proposed action areas although this habitat is considered to be very marginal in quality. Although goshawks or goshawk nests have not been observed in the vicinity of the project areas, migrating or dispersing birds could periodically use forested stands within and near the proposed treatment areas as foraging areas.

2.3.3.2 Environmental Effects Alternative 1: No Action (SSS Wildlife)

Other Special Status Wildlife Species:

Selection of the “No Action” Alternative would result in BLM not implementing any portions of the proposed action. Under the “No Action” Alternative, the minor impacts (identified as beneficial and/or adverse) resulting from implementation of Alternative 2 upon migratory bird, mollusk or bat species of concern, bald eagles, northern spotted owls, Cope’s giant salamanders and/or their habitats would not occur. The wildlife communities and populations would continue to be dependant upon current trajectories and ecological processes resulting from the current conditions. These conditions are largely influenced by past management actions including intense forest management activities throughout the watershed. In-stream habitats and forested riparian stands would follow the current general trends of simplification. The natural recruitment process for LWD into streams and for snags and green trees with defect would be maintained at its current low level. Increased stream complexity and resultant greater structural diversity and increased amounts and variety the microhabitats available for Cope’s Giant Salamanders (as an example) would not be realized. Proposed riparian planting areas would continue to be dominated by a few species of trees, brush and canary grass with limited potential for future increase in tree species diversity, structural complexity, LWD input or shade that would result from riparian planting. Natural processes would be the primary agent for the creation of coarse woody debris (both snags and down trees) within riparian stands. Competition-related mortality would result in a gradual increase in coarse woody debris recruitment, mainly from the smaller-diameter trees.

Alternative 1 would not be expected to result in the loss of population viability for any Special Status Species that may occur in the project area, or result in the need to elevate their status to any higher level of concern including the need to list under the ESA.

2.3.3.3 Environmental Effects Alternative 2: The Proposed Action (SSS Wildlife)

Other Special Status Species

Summary - Primarily as a result of the nature of the habitats impacted as well as the nature and scope of the proposed project (including incorporated design features to minimize the potential for adverse impacts) implementation of the East Fork Nehalem Restoration Project would not be expected to result in the loss of population viability for any Special Status Species that may occur in the project area, or result in the need to elevate their status to any higher level of concern including the need to list under the ESA.

The project involves the addition of down log and trees into the active stream channel and adjacent riparian areas and the creation of snags and green trees with defect. Overall, a wide range of species including Special Status Species that utilize or depend upon structurally diverse stream habitats or downed logs and snags would be expected to benefit from the proposal. In addition to those species discussed below, other species such as the

clouded salamander and pileated woodpecker would be expected to benefit from implementation of the Habitat Restoration Project.

From a cumulative impacts perspective, those portions of the East Fork Nehalem Project addressing the restoration or enhancement of fisheries or wildlife habitat would help offset some of the short- and long-term adverse impacts to existing and future CWD habitat features resulting from the various land management activities within the watershed. These activities primarily include the management of intermingled industrial timberlands, generally on relatively short rotations for timber production. This would be accomplished through the enhancement of current and future, aquatic and terrestrial habitat features within the project areas. There would be no identified adverse cumulative impacts to wildlife or wildlife habitat as a result of implementation of the East Fork Nehalem project.

Mollusks- (SEN)

There are eight species of terrestrial mollusks identified as Sensitive on the Bureau's Manual 6840 Special Status Species List and potentially located within the East Fork Nehalem project areas. They include the Crowned Tightcoil (*Pristiloma pilsbryi*); Evening Fieldslug (*Deroceras hesperium*); Pacific Walker (*Pomatiopsis californica*); Puget Oregonian (*Cryptomastix devia*); Salamander Slug (*Gliabates oregonius*); Spotted Tail Dropper (*Prophysaon vanattae pardalis*); Tillamook Westernslug (*Hesperarion mariae*); and Warty Jumping-slug (*Hemphillis glandulosa*).

There is potential for minor, very localized adverse impacts to Special Status mollusks and/or their habitats as a result of implementing those portions of the proposed project addressing fish habitat restoration. These potential adverse impacts are considered to be short-term and negligible based upon the nature of the project, minor scope of the expected impacts to habitat quality and the small portion of the available habitat to be impacted. Project design features have been included to help minimize the potential for adverse impacts to mollusks and mollusk habitat. These measures include minimizing soil disturbance which would serve to help reduce impacts to mollusk habitat. Additional design features include dispersing the green trees selected for removal over a relatively large area, directional falling of trees, limiting yarding equipment to use on roadways, where possible providing one end log suspension, and designating stream access points.

Due to the nature and scope of the project, should any of the Special Status mollusk species be located within a riparian area proposed for treatment or log source area, it would not be expected that disturbance to the area would result in the need to elevate any special status mollusk species to any higher level of concern including the need to list under the ESA.

Due to the nature of the project, negligible adverse impacts to Special Status mollusk species or their habitats are expected to result from that portion of the project addressing wildlife habitat enhancement. Should any populations of mollusk species of concern be present within or near a treatment area, the project would not be expected to adversely impact the maintenance of the population at the site, or contribute to the need to elevate their status to any higher level of concern including the need to list under the ESA.

Some mollusk species are known to make use of large and small woody debris, especially that of the later decay classes. The Fish Habitat Restoration and Wildlife Habitat Enhancement portions of the project propose to augment existing CWD levels within riparian areas and extending up to 200 feet from the stream; the Riparian Planting portion of the project would result in individual alders being felled to prepare some of the planting areas. Although relatively minor in scale, these additions of woody debris are viewed as beneficial to the maintenance and/or promotion of higher quality mollusk habitat.

Cope's Giant Salamander (SEN)

Although this species has not been observed within the vicinity of the proposed action, streams within or near the proposed project areas afford suitable habitat for this species, most notably within the fish habitat restoration stream reaches and the adjacent riparian areas. Although rare, for the purposes this analysis the species is assumed to be present within and near the project areas where suitable habitat is present.

There is potential for portions of the proposed action to result in short-term adverse impacts to a limited quantity of suitable salamander habitat and/or a few individual animals. This potential would be most notable within and near those portions of the project area that include in-stream work such as fish habitat restoration portions of the project and to a lesser degree, the portions of the project addressing fish passage. These potential adverse impacts are considered to be short-term and negligible based upon the nature of the project, minor scope of the expected impacts to habitat quality and the small portion of the available habitat to be impacted. Potentially affected habitat is all cases interspersed with and/or juxtaposed to suitable habitat that would not be impacted by implementation of the project. The project would not result in the need to elevate the status of Cope's giant salamanders to any higher level of concern including the need to list under the ESA.

In the longer-term, the project would be expected to result in greater structural diversity and an increased amount and variety of microhabitats available for this species. The project would result in a more properly functioning aquatic and riparian system through the addition of trees and logs into streams and/or riparian areas. This would be expected to benefit many wildlife species including Cope's giant salamander.

In general, the projects design features would help minimize the potential for adverse impacts to any Cope's giant salamanders that may be in the area and/or salamander habitat. These design features include the careful selection of access points or trails, diverting water around the culvert replacement site, equipment criteria requiring low impact and concerns addressing water quality. The access points or trails needing to be created through the riparian areas would not be expected to appreciably reduce the quantity or quality of the habitat within these areas. It would be expected that any reduced shade within the riparian area resulting from project implementation would rapidly recover to that of pre-disturbance as the retained and/or planted trees and brush species take advantage of any created openings.

In addition to the fish habitat restoration and passage improvement portions of the project, small portions of the riparian planting and wildlife habitat enhancement project areas may be located in direct proximity to suitable Cope's salamander habitat as treatments could be applied down to the stream channel. The potential for adverse impacts to salamanders and their habitat would be minimized by the design feature to select trees for treatment so as to not appreciably affect stream shading.

Bald Eagle - (SEN)

The final rule delisting the bald eagle from the Endangered Species Act was effective August 8, 2007 (USDI 2007); the bald eagle is now managed as "Bureau Sensitive" under the Bureau's Special Status Species Policy.

Impacts to Known Eagle Sites

There are no known bald eagle communal winter roosts within the watershed. The nearest known bald eagle nest site is near Vernonia, approximately three miles northwest of the closest project areas (stream segment proposed for restoration and forested stands identified for wildlife habitat enhancement). Because of the high visibility of bald eagles and bald eagle nests, it is unlikely that this project would be located in areas with undiscovered bald eagle nests or roosts. If a new bald eagle nest or roost is discovered, any project activity within 0.25 mile or 0.5-mile sight distance would immediately be evaluated by the unit wildlife biologist for potential effects on bald

eagles and mitigated to prevent disturbances. No impacts to any known eagle sites would be expected to result from implementation of the East Fork Nehalem Restoration Project.

Suitable Bald Eagle Habitat

For the purposes of this evaluation, bald eagle suitable habitat is defined as conifer-dominated habitat generally 80-years-old or older, or younger stands containing scattered groups or individual residual old-growth or larger second-growth trees, located within approximately 1.0 mile of a major river or approximately 0.5 mile of a major tributary. For the purposes of applying this definition to this analysis, a major river is considered to be 6th order or larger; there are no “major rivers” within the East Fork Nehalem Watershed. A major tributary is considered to be 5th order; portion of the East Fork Nehalem River is considered to be a 5th order stream and therefore a “major tributary” potentially influencing habitat suitability for bald eagles within and near portions of the project areas - those project areas within T4N, T3W sections 5, 6, 7, 8 and 17. The potential habitat quality within the majority of these areas is likely limited due to stand age and relatively uniform stand structure as well as the proximity of numerous private residences, Scaponia Park, the Scappoose-Vernonia Highway and/or the CZ Mainline Road.

Potential for Disturbance

There is suitable eagle habitat within and/or near (within 0.25 miles or 0.5 mile line-of-sight) portions of the proposed East Fork Nehalem Restoration Project. The potential dates of operation for the proposed project are such that activities may occur which would generate noise above the ambient level during the eagle breeding season (January 1 to August 31); however, there are no known eagle nests or communal roost sites within the vicinity of the project and based upon the high visibility of eagles and eagle nests none are expected.

Dispersed eagle usage may occur throughout the East Fork Nehalem Watershed including the project areas wherever suitable eagle habitat is present; this eagle usage would most probably occur during the late fall or winter months. Should the project displace dispersed foraging, perching or resting eagles, it would be expected that these displaced birds would simply, temporarily relocate to other areas containing suitable habitat and lower levels of activity.

Habitat Modification - Impacts to Eagle Habitat

Portions of the East Fork Nehalem project within T4N, T3W sections 5, 6, 7, 8 and 17 contain or are directly adjacent to suitable habitat for the bald eagle, albeit of marginal quality. These primarily include the Fish Habitat Restoration stream reaches within portions of sections 6, 8, and 17; the identified log source areas in portions of sections 5, 7 and 17; and the Wildlife Habitat Enhancement areas in a portion of section 17. No eagle nests have been observed in or near these patches of suitable eagle habitat.

Although these patches of bald eagle suitable habitat are probably best suited for dispersed eagle roosting and resting rather than nesting, no large residual old-growth or largest dominant second-growth trees suitable as bald eagle nest trees would be removed or converted into snags or snag-topped trees. Post-treatment, the acres of suitable eagle habitat impacted by the East Fork Nehalem Project would be expected to continue to function as suitable eagle habitat; the canopies of the affected stands are not expected to be appreciably impacted. This is based largely on the fact that the largest trees within a given area would not be impacted and the dispersed nature of the trees to be removed from the forested stands for placement into the active stream channel and/or riparian area, or converted into a snag or snag-topped tree.

Based upon the scale and nature of the proposed treatments, no short or long-term adverse impacts to eagle habitat are expected. The creation of additional snags or snag-topped trees within these areas has the potential for some minor longer-term beneficial impacts to the quality of eagle habitat by providing an increased opportunity for roosting sites and given enough time, potential nest sites. Additionally, since those portions of the proposed project addressing fish habitat restoration or fish passage improvement are designed to benefit anadromous fish, which are a primary food source for eagles within the region, there is potential for indirect beneficial impacts to bald eagles through improved fish stocks resulting in better eagle foraging opportunities. While these potential beneficial impacts would be considered to be long lasting, they are also considered relatively minor.

Bats (including NWFP bats and Townsend's Big-Eared Bat)

There are no known bat roosting or hibernaculum sites within the project area.

The bat species of concern are known to inhabit mature and immature coniferous forest and may forage near riparian areas, open areas, and along forest edges and roads. They utilize large hollow trees for roosting, hibernating, and maternity colonies; accumulations of large logs, snags or live trees with defect such as loose bark and cavities may function as additional day or night roosts.

The Fish Habitat Restoration portion of the project would be expected to a minor degree, improve the quality of bat habitat. The project involves the felling of scattered green conifers and placement of down logs and trees into the active stream channel and adjacent riparian areas. This would result in creating or maintaining small openings in the forest canopy potentially suitable as bat foraging areas. Additionally, downed logs and trees placed within riparian areas would augment existing CWD levels thereby potentially providing additional nighttime roost sites for use by bats foraging along and over the active stream channels.

The Wildlife Habitat Enhancement portion of the project would also be expected to improve the quality of bat habitat to a minor degree. This would result from potentially creating or helping to maintain small openings in the forest canopy thereby enhancing foraging habitat, and by augmenting existing quantities of snags, logs and green trees with defect providing additional potential roosting opportunity for a number of bat species.

Red Tree Vole - (SEN)

Portions of the streamside and roadside forested stands identified as log source areas for the Fish Habitat Restoration Project, as well as the majority of the proposed Wildlife Habitat Enhancement treatment units may contain suitable habitat for the red tree vole. It is possible, although considered unlikely, red tree voles may currently be occupying portions of these stands.

The Tillamook Resource Area recently completed a survey effort, unrelated to pre-project surveys, to locate red tree voles. As a part of this effort, within T4N, R3W section 3, a sample of trees within patches of older forest, considered to be among the best red tree vole habitat on BLM land within the East Fork Nehalem Watershed, were climbed and searched for red tree voles and/or red tree vole nests. This sampling effort resulted in no red tree voles or red tree vole nests being located within the area.

Potential adverse impacts to tree voles and their habitat have been minimized by the inclusion of the project design feature that no tree which contains a suspected nest of any bird or mammal, or any adjacent tree would be converted to a snag or snag-topped tree or felled, as well as by the dispersed nature of the trees removed for use in in-stream restoration - a total of approximately 200 trees from along 4.0 miles of road and 2.8 miles of stream. Additionally, trees selected for conversion to a snag or snag-topped tree, or felled for use in in-stream restoration would generally focus on those trees with relatively little limb development and smaller crowns and generally would not include the dominant trees within any given area. Impacts to individual red tree voles possibly

occupying the proposed project areas would be expected to be very unlikely as a result of implementing the proposed habitat restoration/enhancement project.

Based upon the nature and scope of the proposed project including the fact that a very small portion of the available habitat would be impacted, no portion of the proposed project would be expected to result in the elevation of the status of the red tree vole to any higher level of concern including the need to list under the ESA.

Bird Species of Concern covered by the MBTA (Migratory Bird Treaty Act)

With the exception of many of the roadside areas identified as log sources for the Fish Habitat Restoration portion of the project, most of the East Fork Nehalem project areas are located within or near forested riparian areas. While set in a context of a Douglas fir dominated landscape, most of the riparian areas contain scattered individual or various sized patches of hardwoods along the creeks and for various distances up the hillsides. Affected stands are generally forested with stands 67- to 77-years-old. These project areas may provide nesting and/or foraging habitat for several “Migratory Bird Species of Concern” including band-tailed pigeons, black-throated gray warblers, mourning doves, olive-sided flycatchers and/or rufous hummingbirds. Project areas near Gunners Lakes and Floaters Ponds² provide habitat for both mallards and wood ducks.

It is expected that implementation of the East Fork Nehalem Restoration Project could temporarily displace individual migratory birds as they react to the disturbance created by project implementation; a small portion of this displacement could occur within the breeding seasons of the species noted above. Depending upon a number of factors (including the timing of the disturbance relative to breeding chronology; the intensity and duration of the disturbance; distance to the nest site; tolerance to disturbance) some portion of the created disturbance could result in nest abandonment/failure. However, the failure of a nesting attempt during one nesting season would not be expected to reduce the persistence of any bird species in the watershed. The loss would not be measured at the regional scale; therefore, populations in the region would be unaffected. Those portions of the project addressing fish habitat restoration and fish passage improvement would be adhering to the ODFW in-stream work window (July 1 – August 31); this would largely exclude the potential for disturbance in or near most areas of suitable habitat for migratory bird species of concern for the vast majority, if not all of the breeding season – generally May 15 – July 15. Those portions of the project addressing wildlife habitat enhancement and riparian planting are not expected to be implemented within the breeding season.

The proposed action is expected to have no, or negligible adverse impacts upon habitats for “Migratory Bird Species of Concern”. This is primarily based upon the nature of the proposed treatments (designed as a fish and wildlife habitat restoration project) and the fact that the restoration areas are dispersed across a relatively large area, intermingled with similar habitat types not proposed for treatment (hardwood or hardwood/conifer mixed forest). According to BLM’s FOI (Forest Operations Inventory) approximately 38% (1,736 acres) of BLM’s 4,561 acres within the East Fork Nehalem Watershed that are 30-years-old or older, contain an appreciable red alder component. Approximately 815 of these acres are mixed conifer/hardwood stands dominated by alder, while 260 acres (primarily riparian acres) are timber-typed as being pure alder. Non-federal lands within the watershed also contain a sizable but undetermined quantity of habitats containing various hardwoods. The dispersed nature of the trees proposed for removal from conifer dominated stands and use in in-stream restoration - a total of approximately 200 trees from along 4.0 miles of road and 2.8 miles of stream would also help minimize potential adverse impacts to the habitats of migratory birds. Potential adverse impacts to migratory

² Potential duck habitat near Floaters Ponds is on non-federal land located in T4N, R3W section 20(SESE) and section 28 (N1/2), and on BLM land in T4N, R3W section 21(SWSW) and section 29 (NENE) and the habitat near Gunners Lakes is on non-federal land located in T4N, R3W section 16 (SWSW) and on BLM land in T4N, R3W sections 21 (NWNW).

birds have been additionally minimized by the inclusion of the project design feature that no tree that contains a suspected nest of any bird or mammal, or any adjacent tree would be converted to a snag or snag-topped tree or felled.

The wildlife habitat enhancement treatments have potential to result in relatively minor, long-term benefits to wood duck habitat as it would increase the number of snags, and/or snag-topped green trees in the vicinity of Gunners Lakes and Floaters Ponds; some portion of these created habitats may be suitable for wood duck nesting in the future (5 to 10+ years). The riparian planting portion of the project would result in individual and small clumps of alder being felled in an otherwise closed canopy to create planting areas for shade tolerant conifers such as cedar. Opening the canopy would also stimulate the development and/or diversification of the understory shrub layer which could benefit the habitat quality for rufous hummingbirds.

Northern Goshawk - The proposed action is expected to have no, or negligible short-term adverse impacts upon goshawks and goshawk habitat. This is based upon the low likelihood that goshawks are currently utilizing the area, the marginal quality of the affected habitats and the general nature of the proposed project. With no more than six known recent records, breeding goshawks are quite rare in the Oregon Coast Range; goshawks use northern Coast Range habitats more frequently in the winter and during migration. Although goshawks or goshawk nests have not been observed near the project areas (they tend to build relatively large nests that can be used by the original pair or successors for many years), migrating or dispersing birds could periodically use forested stands within and near the proposed treatment areas as foraging areas. Implementation of portions of the East Fork Nehalem Restoration Project in the late fall or winter (wildlife habitat enhancement and riparian planting) could temporarily displace individual migrating or dispersing birds as they react to the disturbance created by project implementation; these birds would likely just move to other areas affording similar habitat.

For the reasons noted above (dispersed nature of treatment areas intermingled with similar habitat types, and scope of the project) the proposed action would be expected to have no, or negligible adverse impacts upon habitats for Goshawks. The wildlife habitat enhancement treatments would be expected to result in relatively minor, long-term benefits to goshawk habitat by maintaining or increasing the growth rates of individual reserve trees, and promoting the development of snags, snag-topped trees and more complex stand structures thus aiding the development of some late-seral stage habitat features.

For the reasons note above, including the scope and nature of the proposal, the East Fork Nehalem Fish and Wildlife Habitat Enhancement Project would be expected to have no impact (beneficial or adverse) upon the population levels of any of the migratory bird species of concern.

2.3.4 Soils

The project and cumulative effects analysis area for soil resources is the activity area. Activity area rather than sub watershed is used because long-term soil productivity impacts are onsite. Off-site soil effects including sediment delivery and water runoff are discussed in the Water Quality section. The severity of productivity losses for a given level of impact generally increases as soil quality declines. The focus of this analysis will be the Fish Habitat Restoration and Fish Passage portion of the project. The proposed wildlife habitat restoration and riparian planting portion of the project (felling trees or creating snags and planting trees and maintaining them) would result in negligible soil disturbance.

2.3.4.1 Affected Environment (Soils)

The landscape consists of floodplains, low terraces, short hillslopes, and narrow valleys. The dominant soils in the project area are the Braun and Scaponia series on convex, gentle to very steep hillslopes and unnamed alluvial soils on level to gently sloping floodplains and terraces (USDA, 1986). Except for thickness, Braun and Scaponia soils are very similar. They are well-drained, moderate permeable and have silt loam textures with few rock fragments. Braun soils are moderately deep (20 to 40 inches) and Scaponia soils are deep (40 to 60 inches) to soft fractured siltstone. The unnamed alluvial soils are very deep and loamy textured. They vary in drainage from well to poor.

These soils have moderately good physical and biological properties for growing forest vegetation. Except for a portion of Scaponia Park, there has been little recent disturbance. Approximately 2.5 acres in Scaponia Park is heavily compacted. Compaction is reducing infiltration and causing increased runoff. The site index, the most common measure for potential forest productivity, is high and moderately high, ranging from 155 to 176 for Douglas-fir, 100-year basis (USDA –SCS, 1986). Because of the favorable climate and soil properties for growing forest vegetation, the soils are moderately resistant to disturbance. The primary management concern for these soils is compaction especially when they are moist.

2.3.4.2 Environmental Effects Alternative 1: No Action (Soils)

Under this alternative, the project in Alternative 2 would not be implemented. Because soils in the activity area would not be disturbed by this alternative, there would be no direct or incremental effects to soil resources. Soils would continue to respond to ecological processes such as organic matter accumulations and disturbances such as fire. Soils within the Scaponia Recreation Site would continue to be compacted for many decades.

2.3.4.3 Environmental Effects Alternative 2: The Proposed Action (Soils)

The proposed action would result in less than one acre of soil disturbance dispersed over several hundred acres. Soil disturbance would occur in narrow strips from equipment traffic and log dragging and in approximately 10 foot radiuses where whole trees (including root wads) are removed. Little soil erosion is anticipated. Most soil disturbance would occur on flat and gently sloping ground where the risk of erosion is low. Exposed soils on steep and sensitive sites would be water barred, seeded, mulched, or planted with native species. Vegetation in this area usually re-establishes itself within a year. Most eroded particles produced by the proposed action would travel a short distance (less than 30 feet) before being trapped by duff, woody materials, and other obstructions. Because soil disturbance would be small and dispersed, the proposed action is unlikely to effect long-term soil productivity.

2.3.4.4 Cumulative Effects Proposed Action (Soils)

There are no other projects or activities planned in the project area other than a continuation of recreation activities at Scaponia Park. It is theoretically possible that some of small long lasting effects (e.g., compaction and displacement) from the proposed project could overlap with the effects from recreation activities. Any cumulative effect however would be negligible. No change in the long-term soil productivity is expected.

2.3.5 Water Quality

2.3.5.1 Affected Environment (Water)

The analysis area is the project stream reaches (Floeter Pond tributary, Gunners Lakes tributary, Kenusky Creek, and Scaponia Park). At the fifth-field watershed scale, the scope of this project is too small for substantively altering current watershed functions. Therefore, the subwatershed is judged to be the most appropriate scale for analyzing cumulative effects.

The main water resource parameters that could be potentially be affected by these projects are water temperature, sediment and turbidity, and channel conditions.

Subwatershed Area

Setting

The East Fork Nehalem River subwatershed is located in the northern Oregon Coast Range at the divide between streams draining westward into the Nehalem River to the ocean and streams draining east and northeastward toward the Willamette Valley and the lower Columbia basin. BLM completed a watershed analysis of the subwatershed in 1996. There are no Key watersheds within or downstream of the project area.

The terrain is composed mainly of broad, rounded ridges with narrower ridges that are highly dissected by many draws and small streams. Slopes are generally short (less than 200 feet) and steep. Elevations range from 600 feet to 2,270 feet.

Rain is the primary hydrologic flow generating process. Precipitation averages about 60 inches annually, most of it falling in October through March. Typically, peak flows occur during the months of December through February and low flows occur during the mid to late summer.

Most stream channels in the subwatershed are low gradient, averaging 0.6%. They are commonly constrained by terraces or hillslopes, indicating that the channel geometry is a downcutting system (BLM, 1996). Glides and riffles are dominant. Pool quantity and quality is low. Sand substrate is frequent even in riffles, indicating the system is aggrading. Large wood is strongly lacking in most streams. Red alder dominate most riparian areas. Future recruitment of large wood is poor. Stream channel morphologies are simplified from past logging, agriculture, flood control, and road activities. Larger streams are deficient in off-channel habitats.

Forestry is the predominant land use in the 20,590-acre subwatershed. Private/private industrial forestland comprises about 78% of the subwatershed. Forests are managed for 40 to 60 year rotations that end in regeneration harvests. The BLM land, arranged in a checkerboard like pattern, comprises approximately 22% of the subwatershed. The land is managed for multiple use.

Past logging activities have resulted in low forest diversity and complexity. Most forest vegetation is in early or mid-seral. Very little is in late seral. The average road density in the subwatershed is approximately 4.9 miles per square mile.

Beneficial Uses

The major beneficial uses for the Nehalem River watershed include domestic and municipal consumption, cold-water fisheries (including anadromous fish), recreation, irrigation, manufacturing, livestock watering and wildlife.

There are no known municipal or domestic water users within ten miles of the project area. There are some irrigation and watering water use several miles downstream.

Water Quality

Water quality, with exception of water temperature, in the East Fork Nehalem is largely unknown. Aquatic surveys done throughout the subwatershed indicate that suspended sediment/turbidity levels are high.

The lower East Fork Nehalem River (mouth to 9.8 miles) has been listed as 303(d) water quality limited due to elevated summer water temperatures. All lands within the Nehalem River watershed are now included in the temperature total maximum daily load (TMDL) (DEQ, 2003). TMDLs are numerical loadings that are set by the state to limit pollutant levels (i.e., temperature). BLM will be developing a Water Quality Restoration Plan (WQRP) for impaired waters on BLM lands in the basin to address water temperature impairment.

Project Area

Streams

Most tributary streams upstream of proposed treatment reaches are small low order streams. They are generally narrow, with moderate gradient, low sinuosity and shallow to moderate entrenchment. Most contain low levels of large wood.

The stream channels proposed for treatments are third to fifth order streams with active channel widths ranging from about 15 to 35 feet. They are typically low gradient (less than 3%) with gravel/cobble substrates and are constrained by low terraces and valleys. (For additional channel and habitat characteristics for the proposed treatment reaches, see *Reach Specific Summaries for Proposed Fish Restoration* under Section 3.8.1.)

Water Quality

The most sensitive beneficial uses in the project area are cold-water fisheries habitat, including salmonid fish rearing and spawning. Salmonids rely upon well-oxygenated gravel beds and cool water temperatures during the low summer flows. The key water quality parameters critical to these designated beneficial uses that could be potentially affected by this project are water temperature, sediment/turbidity, and channel condition.

The main water quality concern in these streams is excessive fine sediment and turbidity from past road and timber harvest activities. While no streams within the subwatershed are listed for excess fine sediment, BLM personnel observations and aquatic habitat surveys by ODFW indicate that there are high levels of fine sediment in many of the reaches. BLM personnel have observed high turbidity levels during, and shortly after major storm events.

Field surveys and a review of aerial photos indicate that stream shading is near full potential (exceeding 80%) on project stream reaches. The highest temperature (7-day average maximum) collected by BLM personnel on these reaches in 2001 and 2003 was 61.7 degrees F, 2.3 degrees below the standard. To help ensure that shading levels remain high in the future, riparian trees were planted last year along most of mainstem East Fork Nehalem River in Scaponia Park where the overstory is dominated by old red alders.

Channel Condition

Stream channel conditions are generally poor within the project area, as are most of the streams within the East Fork Nehalem River subwatershed. They are simplified, and dominated by riffles. They lack deep pools, large woody debris, and off-channel areas. Large woody debris levels documented in a 2006 Oregon Department of Fish and Wildlife (ODFW) survey are currently 13% of levels deemed desirable on Kenusky Creek. Large

woody debris plays a vital role in maintaining channel complexity. Large woody debris creates scour, recruits and maintains spawning gravel, creates rearing pools, provides shelter from high flows, and increases overall channel complexity. Coarse woody debris on the floodplain provides shelter for young fish during flood flows and stores fine sediment and spawning gravel.

2.3.5.2 Environmental Effects Alternative 1: No Action (Water)

Under this alternative, the project action would not be implemented. Consequently none of the direct effects from the proposed action would occur. The current low levels of large wood in project streams and lack stream channel complexity as result of past logging actions would continue to decline until streamside trees grow and drop into channels and begin to reverse these conditions (approximately 40 plus years).

2.3.5.3 Cumulative Effects No Action (Water)

The overall lack of large woody debris and channel complexity in streams in the subwatershed is likely to continue to remain very low for the foreseeable future. Riparian conditions on private/private industrial forestland are generally in poor condition. Riparian areas commonly consist of a single row of red alder trees. Most headwater streams run through unbuffered young plantations. Most riparian areas on BLM lands are in fair to good condition. They are typically well stocked with a mixture of middle-aged conifers and hardwoods. BLM has no current project plans in this subwatershed. Management actions by other landowners in the subwatershed are unlikely to reverse this condition in this subwatershed

2.3.5.4 Environmental Effects Alternative 2: The Proposed Action (Water)

Channel Morphology

Adding large woody debris would physically change the channel geometry and shapes of the streams. Most of the changes would occur during subsequent high stream flows. Changes would include increased channel scour, increased sediment deposition and storage, and variations in flow patterns and water depths. These effects would reoccur until the streams reach equilibrium. The overall effect would be a slowing of stream velocities upstream of the structures, building up of sediment, and a decline in stream gradients.

The proposed project would have both short-term, negative effects and short and long-term beneficial effects. To minimize damage, ground-disturbing equipment would be stay on designated trails and would avoid sensitive stream banks and channels as much as possible. Root wads would provide some stabilization and help armor stream bank slopes.

Potential negative channel effects are streambank damage, increased stream erosion, and channel widening. Some streambanks would be disturbed during large wood placement. Small areas of channel beds and streambanks would be compacted or loosened when equipment crosses over it. Logs will be keyed into existing streamside to help keep them in place and placed in position to avoid directing flows to unstable banks. If, however, logs are dislodged (e.g., by large flood events), they could potentially increase bank erosion and cause channels to move laterally.

The most susceptible area to bank damage and unwanted bank erosion and changes in channel geometry is the Scaponia Park reach where 30 to 50 root wads would be placed. The stream reach is highly sinuous, moderately incised with very erodable, two to six foot, soft banks. Most if not all of the large

wood that would be placed are large root wads. Root wads would be placed to strengthen and protect unstable stream banks and placed in such a manner to avoid erosion of the existing channel banks.

Decommissioning the road along Kenusky creek and removing the three stream crossing culverts would cause some immediate minor disturbance within channel beds. During the first few years after removal, there will likely be some minor channel adjustments as the channel equalizes after removing these culverts.

Beneficial effects include immediate increase levels of large wood in channels and floodplains. Channel stability and complexity would improve over the long-term. Placed logs would trap wood, fine and coarse sediment, and bedload material moving downstream creating more diverse channel types including a greater number and quality of pools, more sediment storage, and greater floodplain connections. Channel conditions should eventually approach historic conditions when large wood was abundant in these stream channels.

The culvert removals would eliminate the risk of future culvert failures and help restore the physical integrity of the stream channels.

Planting of riparian trees should in the future (80 plus years) increase the natural potential recruitment of large wood into stream channels.

Water Quality

Sediment and Turbidity

Some proposed management activities have the potential to generate or add fine sediment that could potentially increase local stream turbidity and further degrade stream substrate conditions. Activities most likely to add fine sediment are the placement of approximately 200 large pieces of wood and some boulders into 7.8 miles of streams.

Placing large wood in stream channels and equipment working on stream banks and channels would cause localized short-term increases in turbidity (mostly pulses) during project implementation. Visible turbidity is expected to be short (less than 2 hours per day) and is not expected to extend beyond a half a mile downstream. There would also likely be small, localized increases in turbidity from increased bank and bed erosion during high flows during the first few years after project implementation.

The amount of sediment generated by the proposal is difficult to quantify. There are no known studies that have measured the amount of sediment that is generated from placing logs and root wads into streams. Implementation of best management practices and project design features will minimize soil and channel disturbance. Ground disturbing activities would occur in the dry season when soils are strong and stream flows are low. Erosion and sediment control measures would be required during all construction activities. Based upon field observations of similar projects, we estimate the following.

The additions of large wood in banks and channels would displace an estimated 0.25 cubic yard of stream bank material per piece of large wood, a total of approximately 40 cubic yards. Stream channels are expected to stabilize within a few years after the large wood has been placed. Most of the sediment (bankfull material) would be mobilized during high water flow events.

The addition of each root wad would add approximately 0.5 cubic yards of sediment or a total of 20 cubic yards. It is estimated that on average, approximately one third of soil attached to the roots would immediately fall into the stream during placement. The sediment would not initially move far downstream (probably no farther than

the first or second pool downstream), as all instream work would take place during periods of low flow. Nearly all of the fine sediment would be mobilized during the following first winter high flow and be moved out of the project area.

The removal of three small culverts would generate a total of about one cubic yard of sediment. The culverts are shallow and small and are located on small, first order intermittent streams. Sediment would be stored in the channel and banks until transported as suspended sediment downstream in the following winters.

Stream Temperature

Removal or disturbance of riparian vegetation is the primary activity that could increase stream temperatures. Trees in riparian areas would be selected for removal in areas where substantial portions of the canopy and streamside shading would be retained. Placing large wood placed over stream channels would provide some additional cover and reduce solar radiation. In addition, with increased development of gravel beds and pools from log placement there could be more subsurface flows, which would have a cooling and stabilizing effect on water temperatures. The project action would therefore maintain riparian microclimate conditions and protect streams from increases in temperature.

2.3.5.5 Cumulative Effects Proposed Action (Water)

The BLM currently has no other plans for other projects within this subwatershed. Most of the surrounding lands are not expected to be harvested in the near future (5 to 10 years). Most streams in the subwatershed lack large wood and have simplified channels.

The project action would have a beneficial cumulative effect by increasing the number of streams with good aquatic habitat conditions (adequate levels of large wood and high channel complexity). At the subwatershed scale, the amount of effect would be relatively minor. The proposed reaches on BLM and private lands (approximately 7.8 miles) cover approximately 17% of the total stream miles of this type of habitat in the East Fork Nehalem subwatershed.

The risk of adverse cumulative sediment effects at subwatershed scale is low because sediment loads generated from this project action would be very low compared to those produced farther downstream in the valley bottoms. When the sediment loads produced from the project action reach the bottom of this subwatershed they would be dissipated to such a degree from additional flows downstream that they would be unmeasurable and indistinguishable from background levels.

2.3.6 Threatened or Endangered Fish Species or Habitat

A recent District Court decision has prompted the National Marine Fisheries Service (NMFS) to list Oregon Coast (OC) coho as "Threatened" under the Endangered Species Act (ESA). The listing is posted in Federal Register notice Vol. 73 No. 28 dated February 11, 2008. The effective date of this listing is May 12, 2008 and also designates Critical Habitat (CH) for the Oregon Coast coho evolutionary significant unit (ESU). The East Fork Nehalem river and many of its tributaries including the proposed project reaches are within the species distribution for OC coho. Critical habitat for OC coho is present in the mainstem of the East Fork Nehalem river, and in Kenusky Creek. According to the ODFW North Coast Stream Project Guide to Restoration Site Selection (ODFW June 1997), and the East Fork Nehalem Watershed Analysis (BLM December 1996) the East Fork Nehalem subwatershed is one of the most productive in the Nehalem basin for OC coho.

Oregon Coast Coho (*Oncorhynchus kisutch*)

There is little current data on coho populations in the East Fork of the Nehalem. ODFW adult return spawner estimates for the whole Nehalem 4th field watershed in 2005 were approximately 9000 +/- 2000. This population estimate is suppressed from the historic numbers that were most likely present in the Nehalem 4th field watershed. The current population is a mix of hatchery origin and wild origin fish. The number of adult spawners in the East Fork is likely much less than the total for the whole watershed. BLM has conducted spawner surveys in Kenusky Creek and has documented adults in limited numbers.

In 1997, the National Marine Fisheries Service and the State of Oregon identified simplified channel morphology, lack of in-stream roughness, and substrate changes as “factors for decline” related to in-stream physical habitat conditions that potentially reduce or limit coho populations in the ESU (OCSRI 1997). These declines in habitat quality are most likely related to extensive timber harvest, road construction, and increases in human activity.

Coho historically used habitats distributed throughout a watershed, moving between different stream reaches as needed to maximize growth and survival at each life stage. However, past land management activities have had a significant impact on the distribution and quality of in-stream physical habitat for coho particularly the amount of LWD, lack of complex pools and disconnection from the floodplain.

Coho prefer to spawn in moderate gradients from one to five percent in small to medium size streams with gravel substrate from 1.3 to 10.2 cm in diameter with cold oxygenated water. After emergence in the spring, coho fry typically remain in freshwater for a full year. During their year in freshwater, young coho prefer complex pool, edge cover and backwater habitats over faster water habitats. These habitat types are particularly important to the survival of fry during heavy spring and winter flows to provide low velocity refugia. These complex habitat types are also used by adults for cover and resting while returning to spawn. The East Fork Nehalem 6th field watershed provides the low gradient potential habitat, as well as the only federally managed habitat in the Nehalem watershed. However, lack of LWD, quality spawning gravels, complex pools and stream channels connected to the floodplain limit the use of this potential high quality habitat.

2.3.6.1 Affected Environment (T&E Fish)

Fish Habitat Restoration

The proposed actions would occur on approximately 7.8 miles of third order and larger streams on BLM and private land. Third order and larger streams make up the majority of quality spawning and rearing habitat for OC coho and other anadromous fish. The proposed reaches represent 16.8% of the total stream miles of this type of habitat in the East Fork Nehalem watershed and 46.2% of third order or larger stream reaches managed by BLM within the watershed. Active channel widths range from approximately 15 to 35 feet for the proposed restoration reaches (See Figure 2) The proposed restoration reaches are generally characterized as low gradient (less than 4% slope) habitat. Primary channel substrates range from cobble dominated in the more constrained higher energy reaches to silt/sand/organic in the less constrained low energy reaches. Connection to the floodplain is generally poor due to a mix of low terrace, high terrace and valley constrained channels throughout the proposed reaches. The proposed reaches are generally lacking components of large wood, gravel and quality complex pools required to sustain fish populations. Proposed fish habitat restoration activities would add approximately two hundred trees (LWD) throughout these stream reaches to improve habitat for fish populations.

Fish Passage Improvement

The action as proposed would increase the amount of habitat accessible to fish by removing, replacing or improving passage at two culverts (Figure 2). By the nature of the proposed actions the affected environment would be constrained to a relatively small area including the road prism, and a short reach of stream above and

below the existing road crossings. The culvert on Kenusky Creek rd. that is proposed for replacement or removal is currently undersized and is impassable to most fish. The affected environment for the culvert on the unnamed trib near Scapponia Park would be limited to the area between the outlet and the confluence with the mainstem East Fork Nehalem (Less than 100 feet).

Wildlife Habitat Enhancement

The action as proposed would treat approximately 216 acres on well stocked conifer stands within 200 feet of selected streams in the watershed. For a full description of affected environment see section 2.3.2.1.

Riparian Planting

See Section 2.3.1.1 under Riparian Planting.

Reach Specific Summaries for Proposed Fish Restoration

An aquatic habitat inventory of Kenusky creek was completed in 2005 by ODFW. The survey started at the East Fork Nehalem river confluence and continued up to the headwaters, a distance of 6102 meters (3.71 miles). The survey was divided into 5 reaches that were delineated by valley morphology, changes in valley width index, and tributary junctions, or stream gradient changes. Habitat surveys of the remaining enhancement reaches are scheduled to be completed in the summer of 2007 with data available before project implementation would begin in those areas. Summaries of the other proposed project reaches come from data collected during 1993 ODFW Habitat surveys and pre-project site visits by Tillamook Fish biologists.

Kenusky Creek

The Kenusky Creek proposed project reach is approximately 1.3 miles of stream on BLM and 2.0 miles on Weyerhaeuser land (T5N-R3W sections 32 & 33, T4N-R3W sections 5 & 6). The reach is generally terrace or hill slope constrained. Floodplains are marginally accessible in places, with large meadow areas with meandering channels interspersed throughout this reach. Riparian areas on BLM land consist primarily of second growth well-stocked Douglas-fir stands in the 60-80 year class (16-26 inch DBH). Privately owned sections are primarily composed of alder dominated riparian zones and meadow habitats. Silt, organic fines, gravel, cobble, and sand were the primary substrate types throughout this reach. Simplified scour pools and riffles are the dominant habitat types. Large wood volume is low to moderate for the surveyed reaches. The trees found most frequently in the riparian zones were hardwoods 3-15cm and 30-50cm (based on sixteen riparian transects).

Mainstem East Fork Nehalem

The proposed project reach on the mainstem East Fork Nehalem (T4N-R3W sections 8 & 9) is mostly located on private and Weyerhaeuser land with only a 0.3 Mile reach on BLM managed land in section 9. Based on site visits this entire reach is potentially high quality habitat characterized by low gradient (less than 2%), a relatively unconstrained wide flood plain with a high sinuosity. Dominant substrates are mainly sand/gravels and cobble, with a moderate level of silts and fines. The riparian area is comprised of large meadow areas interspersed with hardwood dominated canopy, and areas of conifer (Douglas-fir and Cedar) dominated stands. There is a general lack of LWD, cover, and pool complexity throughout this reach. Evidence of beaver activity is also present in the area which can produce quality rearing habitat for juvenile salmonids.

Scapponia Park

The proposed project reach located through Scapponia Park (BLM recreation site) is approximately 0.31 miles on the mainstem East Fork Nehalem (T4N-R3W section 7) and is characterized by high constrained terraces of highly erodable soils. Dominant stream substrates are made up of medium sized gravels, with sub-dominant substrate being cobble. The riparian area is mostly dominated by mature conifer stands in the 80 + year class with average DBH of 18-26 inches. Douglas-fir is the dominant conifer present; however there are a number of mature

cedars interspersed throughout this reach. The riparian area throughout this reach has been recently planted by the upper Nehalem Watershed Council with native hardwoods and cedar. Large woody debris and complex pool habitat is nearly non-existent through this reach. It should also be noted that there are parasitic infestations of non-native English Ivy on many of the large conifers in the park.

Gunners Lakes Tributary

The proposed Gunners Lakes reach (T4N-R3W section 17) has approximately 0.78 miles on BLM land and 0.5 miles on private land. The channel is generally low terraced with multiple braided reaches, and connections to multiple side channels that are inundated in higher flows. The stream gradient is low at approximately three percent or less and the flood plain is wide, accessible and relatively unconstrained. There are very few quality complex pools greater than one meter deep. Most common habitat types are riffles, glides and shallow lateral scour pools. The riparian areas along the terraced floodplains are dominated by alder for much of the reach with mature conifer stands 70+ years old at an average DBH of 18-24 inches within approximately one hundred feet of the stream channel. Stream substrates are dominated by coarse gravels and cobble. The reach seems to be carrying a large amount of high quality gravels yet is not retaining it. This is most likely due to lack of LWD throughout this reach. Pools throughout the reach are simplified and lack complex cover and structure.

Floeter Pond Tributary

The proposed Floeter Pond tributary reach (T4N-R3W sec 17) is characterized by steeper than optimal stream gradient approximately five to seven percent, with a valley constrained channel. The lower end of the reach starts at a stream crossing culvert. The culvert is passing adult fish as juvenile coho were visually verified above the culvert on a recent site visit. The floodplain throughout this reach is relatively disconnected. There is not much room for the stream to move out of the current channel, and not much floodplain to access in this valley constrained reach. Riparian areas are mainly dominated by mature Douglas-fir stands in the 70+ year class averaging 16-22 inch DBH. Stream substrates are dominated by large cobble with little gravel present. Most common habitat types are riffle and rapid with relatively few pools. It should also be noted that there is a bedrock slide present approximately 0.3 Miles above the lower culvert that could be a barrier to anadromous migration at some stream flows. The bedrock slide has almost complete sheet flow (no indentions or pools) for approximately 125 feet at five to nine percent gradient. At low summer flows water depth is less than one inch all the way across the stream for the length of the slide.

2.3.6.2 Environmental Effects Alternative 1: No Action (T&E Fish)

The BLM would not implement any elements of the proposed action within the identified project area. Fish and wildlife populations would continue to be dependant upon current trajectories and ecological processes resulting from the current riparian stand conditions. These conditions would be largely influenced by past and current management actions including intense forest management activities throughout the watershed. In-stream habitats and forested riparian stands would retain the current low levels of LWD and simplified riparian stand structure. The natural recruitment process for LWD into streams would be maintained at its current low level. Stream complexity would remain low, possibly negatively affecting sediment routing and gravel sorting capabilities. Quality fish habitat that is currently blocked by culverts would remain inaccessible to fish. Proposed riparian planting areas would continue to be dominated by a few species of trees and brush with limited potential for future increase in tree species diversity, structural complexity or increasing shade that would come from riparian planting. Natural processes would be the primary agent for the creation of coarse woody debris (both snags and down trees) within riparian stands. Competition-related mortality would result in a gradual increase in coarse woody debris recruitment, mainly from the smaller-diameter trees.

2.3.6.3 Environmental Effects Alternative 2: The Proposed Action (T&E Fish)

Effects anticipated from proposed actions would be minimal and limited to short-term disturbances by following the design features outlined in section 2.2.3.2. Adverse effects to fish and their habitat would be limited to periods of in-stream work with equipment or when trees are felled or placed into the stream channel. The felling of stream side conifer and/or alder, fish passage work and the placement of LWD would increase the level of disturbance at each restoration site and would most likely temporarily alter fish behavior. There would also be short-term (less than two hours per day) increases in turbidity associated with in stream activity. This short-term increase in turbidity would not be expected to harm individual fish or fish populations and would likely settle out of the water column within a quarter mile downstream due to the timing of in stream work during low flow periods. Individual fish and fish populations further downstream than a quarter mile would not be affected.

The probability of falling trees, or any LWD placements, causing direct mortality to individual fish is possible but unlikely. Juvenile salmonids, and other resident fish species, would be disturbed from their normal feeding and resting behavior during in stream work. Fish would be expected move away from the activity and would reoccupy abandoned feeding and resting areas and resume normal behaviors upon completion of project activities.

No effects to fish are anticipated from roadside tree felling, log hauling, or elements of wildlife enhancement unless some part of the wildlife project directly contacts the stream which would then have similar effects as discussed for felling trees into the stream channel.

There would be long-term beneficial effects resulting from additions of LWD to the stream channel, improving fish passage and riparian planting. Benefits would include improved and/or expanded habitat for OC coho and other native fish throughout the proposed reaches as well as short and long-term improvements to channel complexity and stability. Expanded habitat would include 2.2 miles of low gradient classic coho streams currently fully or partially blocked. Riparian planting areas would increase riparian plant species diversity, increase stream shade as well as become a future source of LWD recruitment to the stream.

Habitat features resulting from LWD additions would likely include the creation of complex quality pools, riffles and glides. Sediment and nutrient filtering regimes would likely revert to a more desirable state and the treated reaches would likely begin to aggrade spawning gravels. The placed logs would also create calm areas that would contribute to the survival of juvenile OC coho and other native fish during high flow events. Connection of the stream to the floodplain would increase, which helps to dissipate energy during high water events.

2.3.6.4 Cumulative Effects (T&E Fish)

The BLM has no current plans to harvest timber in this watershed. There is a possibility of some timber harvest occurring on BLM land in the watershed further out than the current planning cycle of five years. Most of the private industrial lands in the watershed have been harvested within the last twenty years and are not expected to be active again for at least ten to twenty years. The Upper Nehalem Watershed council has plans for several culvert replacements along with ODFW and several possible LWD addition projects (See Past Present and Foreseeable future Appendix 3), however these are expected to have similar effects to those analyzed in this EA, including the many beneficial effects. There is little activity expected in this watershed in the near future (5-10) years that would contribute to cumulative adverse effects. The nature and scope of this project is intended specifically for the enhancement and expansion of habitat for all fish species present in the watershed. By following the project design features described in section 2.2.3.2.

2.3.7 Fish Species with Bureau Status and Special Status Species (SSS)

There are no Special Status fish species in the analysis area that require analysis. However, Oregon Coast steelhead are listed as a Strategic species in Oregon and Coastal Cutthroat trout and Pacific lamprey have been recently removed from the SSS list. While analysis is not required in accordance with BLM manual (6840), these species are important in the watershed for cultural reasons as a recreational sport fishery and biological diversity and therefore will be discussed in this EA.

Following is a species specific summary of these fish populations within the East Fork Nehalem analysis area and their habitat requirements.

Oregon Coastal Steelhead (*Oncorhynchus mykiss*)

Steelhead populations in the Nehalem watershed are doing relatively well. According to ODFW the winter steelhead population in the Nehalem is one of the healthiest in the state. The population is almost entirely of wild origin. There is steelhead habitat present throughout the proposed project reaches with the upper reaches being preferred for spawning. However the nature of the habitat in the East Fork Nehalem is more suited to coho salmon. Steelhead prefer higher gradient, high energy headwater streams over the low gradient low energy streams that make up most of the East Fork Nehalem watershed.

Steelhead enter the Nehalem in winter and migrate upstream to the headwater tributaries on the high winter flows and then spawn in the late winter or early spring. Juveniles generally stay in freshwater streams for one to two years then migrate to the ocean to spend two to five years at sea before returning to their natal rivers to spawn. Their preferred spawning gravels are similar to those of coho, however they generally tend to dig smaller redds due to the nature of smaller headwater streams. Adults use complex pool habitats as cover during their spawning migration. Juvenile steelhead prefer faster moving riffle habitats and utilize complex pool habitats for cover from predators and high flows. They require cold, oxygen rich water, and complex stream channels including the presence of LWD to optimize survival of juveniles and spawning adults.

Oregon Coastal Cutthroat Trout (*Oncorhynchus clarkii*)

Distribution data for coastal cutthroat trout is limited however they are thought to have wide distribution throughout the Nehalem watershed. There are two life history models followed by cutthroat throughout their distribution in coastal streams in the Pacific Northwest; anadromous (sometimes called Sea-runs or Bluebacks) and resident. They generally utilize habitat all the way up into stream headwaters, with anadromous distribution limited only by barriers.

The anadromous version goes to the estuary or out to sea for about a year after gaining sufficient size in freshwater streams. They are thought to be present in freshwater throughout the year below natural or manmade fish passage barriers, with a peak of adult spawning migration in late winter through early spring.

The resident version has both isolated populations above barriers as well as populations that occupy the same habitat as the anadromous version. Cutthroat trout of both life history traits require similar habitat characteristics as other salmonids present in the East Fork Nehalem watershed. They require complex habitat with cover and LWD, cold clean water and clean gravel substrate for spawning. Much of the habitat in the proposed project reaches is lacking in one or more of these characteristics.

Pacific Lamprey (*Lampetra tridentate*)

Pacific Lamprey have been documented in Kenusky creek during a site visit for the proposed projects. (Summer 2006, D. Neff, BLM fish biologist) There is very limited data on this species. It is thought that their populations

throughout their range were historically higher before intense forest management and human activity degraded their habitat. Some studies by ODFW have shown that lamprey do not have the homing sense that anadromous salmonids have. They do not typically return to their natal streams to spawn, which makes population estimates very difficult. BLM has no recent data for population estimates; however spawner surveys conducted by ODFW for other fish species have documented their presence in the larger Nehalem 4th field watershed. They are assumed to be present in limited numbers in the East Fork Nehalem watershed.

Pacific lampreys are anadromous and adults are thought to return to freshwater from May to June and may overwinter before spawning in gravel substrates (K. Kostow ODFW). Their habitat requirements differ after spawning though. Juvenile lamprey burrow into the silt and spend up to seven years in this habitat as filter feeders. They generally prefer silty deposits in close proximity to fast moving water which brings food to them since they are not very mobile at this life stage.

2.3.7.1 Affected Environment (SSS)

The affected environment is essentially the same as discussed for OC coho in section 2.3.6.1 of this EA.

2.3.7.2 Environmental Effects Alternative 1: No Action (SSS)

The BLM would not implement any elements of the proposed action within the identified project area. Fish and wildlife populations would continue to be dependant upon current trajectories and ecological processes resulting from the current riparian stand conditions. These conditions would be largely influenced by past and current management actions including intense forest management activities throughout the watershed. In-stream habitats and forested riparian stands would retain the current low levels of LWD and simplified riparian stand structure. The natural recruitment process for LWD into streams would be maintained at its current low level. Stream complexity would remain low, possibly negatively affecting sediment routing and gravel sorting capabilities. Quality fish habitat that is currently blocked by culverts would remain inaccessible to fish. Proposed riparian planting areas would continue to be dominated by a few species of trees and brush with limited potential for future increase in tree species diversity, structural complexity or increasing shade that would come from riparian planting. Natural processes would be the primary agent for the creation of coarse woody debris (both snags and down trees) within riparian stands. Competition-related mortality would result in a gradual increase in coarse woody debris recruitment, mainly from the smaller-diameter trees.

2.3.7.3 Environmental Effects Alternative 2: The Proposed Action (SSS)

Environmental effects to Bureau Status and SSS are essentially the same as those described in section 2.3.6.3 of this EA. None of the proposed actions are anticipated to elevate the current status of any fish species or contribute to the need to list under the Endangered Species Act.

2.3.7.4 Cumulative Effects (SSS)

There are no other known present or reasonably foreseeable actions within the analysis area that when combined with the proposed actions would result in adverse cumulative effects to Bureau Status or special status species.

2.3.8 Essential Fish Habitat Assessment (Magnuson-Stevens Act Species)

Oregon Coast (OC) coho and chinook are included under the Magnuson-Stevens Fishery Conservation and Management Act provisions for Essential Fish Habitat. All of the proposed reaches occur within designated

Essential Fish Habitat. Oregon Coast coho habitat is found throughout the proposed project reaches and chinook habitat is only present in the lower reaches of Kenusky Creek, the Gunners Lakes Trib and the mainstem East Fork Nehalem.

MSA Species life histories and habitat use in the Analysis Area

Oregon Coast (OC) Coho (*Oncorhynchus kisutch*)

See Section 2.3.6.1

Chinook (*Oncorhynchus tshawytscha*)

Information on Chinook in the basin is limited. Chinook populations are thought to be depressed from historic estimates of returns. Chinook salmon tend to prefer larger mainstem streams for spawning and rearing. Chinook distribution in the proposed project areas is most likely limited to fall run fish utilizing the lower sections of the mainstem East Fork Nehalem, Kenusky Creek and the Floeter Pond tributary.

Chinook in the Nehalem watershed have two distinct sub-populations. There is a fall run that was moderately hatchery influenced until 1985 when hatchery releases were discontinued, and a much smaller separate summer run which is almost exclusively wild. ODFW estimates the current fall run spawners at approximately 1,000 to 3,000 annually, and summer run spawners have been approximately 300 annually.

These two runs use similar type habitat in the watershed including large gravel bars with good water flow and dissolved oxygen (DO) content. The fall run is more likely to utilize the fall freshets to navigate further upstream to spawn on gravel bars in the late fall. The summer run fish hold in large pools in the lower river until late summer/early fall and then spawn in a relatively few high quality gravel bars in the mainstem Nehalem. Summer run fish do not generally utilize the smaller tributaries within the proposed project reaches, however there have been sightings of summer run chinook in the project area (around 1996 last sighted) including the lower reaches of the Gunners Lakes tributary and the Floeter Pond tributary. (Documented by Matt Walker, BLM fish biologist) Humbug Creek and Rock Creek are the only Nehalem tributaries habitually used by summer run chinook.

Juvenile chinook spend a relatively short time in the vicinity of where they were hatched. After emergence from the gravel substrates in spring they move to larger deep pools where they feed for several months before migrating downstream towards estuaries where they continue feeding until heading out to the ocean for two to seven years before returning as adults to spawn in their natal rivers.

Complex pools with elements of LWD, off-channel habitat, cover and cold clean oxygenated water are beneficial to the survival of juvenile chinook. The East Fork Nehalem streams are generally lacking in these habitat criteria. Pools are not complex, contain little cover, minimal off-channel habitat and are largely disconnected from the flood plains.

Description of the Project/Proposed Activity

This project proposes to implement fish and wildlife habitat restoration and enhancement as well as fish passage improvement and riparian planting within the Riparian Reserve LUA in Township 5 North, Range 4 West sections 31, 32, and 33, and Township 4 North, Range 4 West sections 5, 6, 7, 8, 9, 16 and 17 Willamette Meridian (See Figure 2.). The anticipated result of the proposed actions would be an increase in channel complexity and fish habitat quality and quantity throughout the restoration reaches. The amount of quality wildlife habitat and stream shading would also be increased. The purpose and need for action is discussed in detail in section 2.1 of this EA. The proposed actions are anticipated to begin in the summer of 2008 and are

expected to be completed over the next 10 to 15 years as time and funding allow. For a full description of the project see section 2.2.3

Proposed Mitigations

Adverse effects are anticipated to be minimal however mitigation criteria are discussed in this EA in section 2.2.3.2 (*Project Design Features*).

Effects of the Proposed Action to Essential Fish Habitat and MSA species

OC coho and chinook spawn and rear in the project areas. Juvenile salmon emerge from the gravel substrate early in the spring, and begin feeding and increasing in size. They should have gained adequate size and swimming ability to be highly mobile by the time of the ODFW in stream work window (July 1st – August 31st). It is likely juvenile coho will be the only MSA listed fish in the project areas during implementation. Adult OC coho and chinook generally return to the East Fork Nehalem to spawn in the late fall after the in stream work window. After hatching juvenile chinook migrate quickly downstream towards the ocean and would be out of the project areas before the work window starts on July 1st.

Water Quality, Water Quantity, and Substrate Characteristics

The proposed action would affect water quality, and substrate characteristics of the treated stream reaches. Water quantity would not be expected to change as a result of implementing the proposed actions. Adding LWD to the stream channel would likely improve long term water quality by creating a more desirable stream channel interface. Substrate characteristics would likely be altered from the current state. In general, the addition of LWD would create deposition and scour of gravels to form complex pools, riffles and glides. It is expected that treated reaches would begin to aggrade quality spawning gravels. For example; treated reaches that are currently dominated by cobble would likely start to fill in with gravel substrates in places and scour out pools around the LWD in the channel.

There would likely be a short-term water quality disturbance associated with equipment working in the stream channel during implementation of projects. This short-term disturbance would consist of possible sediment pulses while equipment is in stream channel and would be limited to 2 hours per day during implementation. Equipment working in the channel is likely to destabilize stream banks and create sediment input. Placing LWD with root wads attached would also pose a potential water quality impact at the time of placement and potentially the first few times stream flows increase after the instream work is completed. (See section 2.3.5.3).

It is likely that water quality and substrate characteristics would have short-term impacts over time as high water events would likely activate sediment pulses while the stream channel creates new routes past structures. This process of dynamic changes would most likely occur yearly until the stream reaches an equilibrium point after several high water events. This would most likely occur within two to five years of in stream enhancement work being completed. The sediment pulses associated with this process would be minimal and not distinguishable above normal background levels. Long-term benefits to essential fish habitat far outweigh the minor short-term impacts.

It is expected that spawning gravels would start to aggrade soon after implementation of the project. With each successive high water event, improvements in habitat quality would be expected as result of the proposed LWD additions. Placing LWD into the stream channel is widely accepted as beneficial to water resources as well as substrate characteristics and fish.

Large Woody Debris (LWD) in channel and source areas

Levels of LWD would increase throughout the proposed project reaches. The intent of the proposed action is to augment the existing habitat by placing LWD into stream channels and floodplains. The long-term benefits of increased levels of LWD in the stream channel and floodplain would include improved habitat conditions by increasing cover, scour pools and low velocity habitats. The placement of LWD logs into the stream channel would not degrade current levels of LWD existing in stream channels.

The riparian planting element of the project would increase the future natural recruitment of LWD into stream channels as the planted trees mature and over time fall into the channel.

Fish Passage

There would be no adverse effect to fish passage associated with the proposed actions. There are two fish passage activities associated with the proposed action described in section 2.2.3 of this EA. The proposed action would replace or remove an undersized culvert that is a current barrier to juvenile and adult salmonids, and add a series of weir structures to the outlet of an existing culvert to improve passage. These two actions would be the only effects to fish passage associated with the proposed actions. The replacement or removal and improvement of these culverts would allow access to approximately 2.2 miles of classic coho habitat that is currently blocked or hindered within designated Essential Fish Habitat under the MSA.

Forage Species

The proposed action would not have any adverse effect on forage species for MSA status fish. The additions of LWD, riparian planting, and wildlife treatments would increase shade and maintain water quality. This in turn has a direct effect on the quantity of forage species including terrestrial and aquatic invertebrates. Aquatic insects require cold clean water and feed on detritus and other organics that would coincide with the placement of LWD in the stream channel. Periods of disturbance during implementation may increase feeding opportunities for fish. Working in the stream channel stirs up food items that were no longer accessible to fish. The proposed actions would have minimal effects on forage species during project implementation. Increases in aquatic invertebrates would likely occur due to additional storage of organic debris over time and be beneficial in terms of a food source for MSA listed fish.

Channel Geometry

Streams are dynamic, and it is expected that channel geometry would change following implementation of the proposed actions. Changes in channel geometry would most likely occur over time as the LWD placed in the channel influenced the stream flow during high water events. This alteration is intended and an expected outcome of the project. Stream channels would be expected to reconnect to floodplains during high flows scouring out multiple braided channels in some reaches.

The reach within Scaponia Park would not alter channel geometry much. Placement of LWD in this reach would be designed to fortify unstable stream banks and create cover in the existing channel and not to reconnect with the floodplain or erode the existing stream channel banks.

Road Density

No new roads are proposed in the East Fork Nehalem projects. There could be a section of road 0.75 miles long that would be decommissioned along Kenusky Creek above the fish culvert location in section 6. If this section was decommissioned this would have a very minor lowering affect on road density within the East Fork Nehalem watershed.

Conclusion

Overall there would be minor short term adverse effects to MSA listed fish or their habitat (EFH). Short-term (0-2 years after implementation) adverse effects could include elevated levels of suspended particulates in the water column during high water events. This elevated level would likely not be discernable above the normal background particulate levels and the long term benefits of the LWD acting as cover during these high flows would far outweigh the minor short term adverse effects. The scope and intent of the project would have long-term beneficial effects to Essential Fish Habitat (EFH) and MSA species. The implementation of all elements of the proposed action would not have any long-term adverse effects on EFH.

2.3.9 Invasive, Nonnative Species (Executive Order 13112)

2.3.9.1 Affected Environment

Botanical surveys for invasive, non-native plant (NNP) species within the East Fork Nehalem Project area were conducted in August 2007. Where native plant communities were established non-native invasive species were non-existent. Species that were identified consisted of *Phalaris arundinacea* (reed canary grass), *Cirsium vulgare* (bull thistle), *Cirsium arvense* (canada thistle), *Cytisus scoparius* (scotch broom), *Senecio jacobaea* (tansy ragwort), *Rubus discolor* (blackberry), and *Hypericum perforatum* (St Johns wort). These species were located along road edges and areas that tended to have soil disturbance (i.e. older sediment deposits and slides within the riparian areas.). These aggressive weed species are recognized on the Oregon Department of Agriculture's noxious weed list, are prevalent throughout Western Oregon, and proliferate easily through vectors such as motor or foot traffic, birds, wind, and water into previously unaffected areas. Alteration to existing tree canopies that allow additional light to the understory plus ground disturbing activities such as culvert replacement and creating access points for instream restoration using ground based equipment are the most likely activities that could produce conditions conducive to noxious weed introduction and establishment. Some degree of invasive/non-native plant introduction or spread can be expected as management activities occur in the project areas. (refer to 3.2.1, "Affected Environment for forest vegetation" for more specific information concerning the existing forest vegetation in detail for each project).

2.3.9.2 Environmental Effects Alternative 1: No Action (Invasive Species)

All Proposed Projects

No Effect - Most Priority III species found were located along existing roadways and openings within the riparian zone. No appreciable increase in the noxious weed populations identified during the field surveys is expected to occur if no action is taken.

2.3.9.3 Environmental Effects Alternative 2: The Proposed Action (Invasive Species)

Fish Habitat Restoration and Fish Passage Improvement

Any use of ground based equipment will cause ground disturbance that will likely contribute to initial increase in population size and new establishment of invasive non-native plant species. The design features listed below would mitigate the introduction or spread of invasive non-native plant species.

- 1) - heavy equipment used for in stream habitat work would be inspected and cleaned prior to moving onto the project site in order to remove noxious weeds

- 2) - To minimize soil disturbance or displacement, roadside trees would not be selected for removal from slopes greater than 35%
- 3) - Trees would not be felled on slopes at high risk of mass movement such as areas showing recent movement, slopes greater than 70%, inner gorge type topography, and abrupt slope breaks.
- 4) – Upon completion of construction activities, all exposed soils would be stabilized and seeded or planted with appropriate native species, including trees. Trees would be planted and maintained as described under the proposed action for riparian planting.

Wildlife Habitat Enhancement

Minimal to No Effect - Project design features such as girdling or felling of individual trees would not result in the type or amount of disturbance that would allow for an increase in populations of invasive, non-native species. Because these activities would occur within established native plant associations, existing competition from native populations would mitigate the introduction and establishment of any invasive, non-native species.

Riparian Planting

No expected introduction or increase of existing invasive plant populations would occur due to this action. As native plant species are introduced to create shading to reduce stream temperatures, promote bank stability and eventually large down woody debris they will also become competitive with the existing populations of blackberry and reed canary grass. Both of these invasive species are not shade tolerant and their populations should eventually decline due to competition for sunlight.

2.3.9.4 Cumulative Effects (Invasive species)

The analysis area for cumulative effects to NNP species is in the Northern Coast Range on BLM land as well as on private land including Weyerhaeuser. The project includes fish habitat restoration on a total of approximately 7.8 miles of stream, wildlife habitat enhancement on approximately 216 acres, riparian planting on approximately 10 acres, and two culvert improvement/replacements for fish passage. These actions would occur on BLM, private and private industrial lands managed by Weyerhaeuser in Township 5 North, Range 3 West sections 31, 32, and 33, and Township 4 North, Range 3 West sections 5-9, 16,17, 19 and 21 (Willamette Meridian).

Examples of forest management activities and natural events within the affected area that will create soil disturbance, increase available light, and increase soil temperatures, all of which will influence the spread of NNPs are: commercial and pre-commercial density management thinning, young stand maintenance, new road construction, road de-commissioning, road maintenance, culvert replacements, helicopter landing zones, landslides, high flow sedimentation deposits, and off highway vehicle (OHV) activities. Activities that do not necessarily create disturbance but influence the spread of weed seeds are recreational hiking, biking, horseback riding, fishing and hunting. Other sources of seed dispersal are from wildlife movement, water movement, natural dehiscence and wind. Many past and present management and non-management activities tend to open dense forest settings and disturb soils therefore providing opportunities for widespread weed infestation to occur. Many of the NNP species identified in Appendix 6 are present throughout the project area. Because of their presence seed is readily available for dispersal. Most NNPs are not shade tolerant and will not persist in a forest setting as they become out-competed for light as tree and/or shrub canopies close and light to the understory is reduced.

Implementation of the projects as proposed when combined with other similar activities in this watershed is unlikely to create any measurable cumulative increase in populations of invasive species.

2.3.10 Recreation

2.3.10.1 Affected Environment (Recreation)

The primary recreational uses within the project area are hunting, day-hikes and camping. The proposed project would have little to no effect on the hunting and day-hikes. There would be minimal impacts to camping within Scaponia Park during project work within the park boundaries. Scaponia Park would be closed for approximately three to five days during work within the park boundaries.

2.3.10.2 Environmental Effects Alternative 1: No Action Alternative (Recreation)

The no action alternative would have no effect on recreation within the project area. The stream meanders along the border of the campground portion of Scaponia Park. Portions of the bank are eroding at a substantial rate, eventually widening or changing the course of the stream. Depending on the extent of the erosion over time, walking trails within the park may need to be moved or closed under this alternative.

2.3.10.3 Environmental Effects Alternative 2: Proposed Action (Recreation)

The proposed project would have limited impacts on camping due to the closure of Scaponia Park for in-stream placement of materials. Placement of structural materials may assist in limiting stream bank erosion within the boundaries of the campground. Limiting the erosion potential would provide for safety along the stream and enhance visual qualities. There would be no impact to other activities within the project area.

2.3.10.4 Cumulative Effects (Recreation)

The Tillamook BLM is not planning and does not know of other planned actions in this watershed. No adverse cumulative effects are anticipated from implementing the proposed project actions.

3 LIST OF PREPARERS

The following individuals participated on the interdisciplinary team, or were consulted in the preparation of this EA:

NEPA	Bob McDonald	
Interdisciplinary Team Lead/writer/ Fish Biology / GIS	Russ Chapman	
Assistant Team Lead/editor/ Technical Review	Matt Walker	
Wildlife Biology	Steve Bahe	
Silviculture	John Johansen	
Soils / Hydrology	Dennis Worrel	
Botany and Invasive Species	Kurt Heckerth	
Outdoor Recreation and Visual Quality	Debra Drake	

Appendix 1 – Environmental Elements Table

Environmental Assessment Number OR-086-07-05

In accordance with law, regulation, executive order and policy, the interdisciplinary team reviewed the elements of the human environment to determine if they would be affected by the alternatives described in EA (environmental assessment). The following two tables summarize the results of that review. Those elements that are determined to be “affected” will define the scope of environmental concern.

Table 1. Critical Elements of the Environment. This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.		
Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks
Air Quality (Clean Air Act)	Not Affected	The Fish and Wildlife Habitat Enhancement Project has the potential to create slash by cutting brush and felling a small number of hardwood trees within the proposed riparian planting treatment areas, however, these accumulations would not be expected to increase the fire hazard on the project level scale and the change would not be measurable on the watershed scale. Since no prescribed burning is recommended, the proposed action would have no adverse impact on air quality and would comply with the provisions of the Clean Air Act.
Areas of Critical Environmental Concern	Not Present	There are no ACEC's within the project area
Cultural, Historic, Paleontological	Not Affected	A review of cultural/historic records indicate that there are some historic sites within the project vicinity. Because there is a probability that sites are present, a field inspection will be conducted on these prior to project activity. Ground disturbing work would be suspended if cultural or historical property is discovered during pre-project inspections or during project work until an archaeologist can assess the significance of the discovery. The District Archaeologist may subsequently redesign the project or develop mitigation procedures to protect the cultural resource values present. Following the completion of project activity, a cultural resource inventory will be conducted on new ground disturbance in high to moderate sensitivity areas.
Native American Religious Concerns	Not Present	There were no Native American religious concerns associated with any of the proposed projects identified during the public scoping period.
Prime or Unique Farm Lands	Not Present	There are no Prime or Unique Farm Lands within the proposed project areas.
Flood Plains (Executive Order 11988)	Not Affected	Fish Habitat Enhancement would take place within flood plains. The proposed action, however, does not involve occupancy and/or modification of flood plains, and would not increase the risk of flood loss. As such, the proposed action is consistent with Executive Order 11988.
Threatened or Endangered Plant Species or Habitat	Not Affected	No Threatened or Endangered Species are documented within the Project Area. Habitat requirements for T&E species are not present.

Table 1. Critical Elements of the Environment. This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks
Threatened or Endangered Wildlife Species, Habitat and/or Designated Critical Habitat	Affected	See EA section 2.3.2
Threatened or Endangered Fish Species or Habitat	Affected	See EA section 2.3.6
Hazardous or Solid Wastes	Not Affected	None of the projects would generate hazardous or solid wastes in the project areas.
Water Resources (including ground and surface water quality)	Affected	See EA section 2.3.5
Downstream Beneficial Uses other than Fisheries. (See sections entitled “Fish Species with Bureau Status and Essential Fish Habitat” and “Threatened or Endangered Fish Species or Habitat”)	Not Affected	There are no known recreational or municipal uses in the vicinity of the project are that would be disturbed. The minimal generation of sediment during implementation would be the only effect on downstream beneficial uses. This disturbance would include slightly elevated sediment levels during instream work and would likely settle out of the water column within ¼ mile and all proposed project reaches are located well above the reach of any effects generated by implementing all aspects of the proposed action. For a full description see EA section 2.3.7.3
Key Watershed	Not Present	None of the proposed projects is located within a Key Watershed.
Wetlands (Executive Order 11990)	Not Present	There are no wetlands present in the proposed project areas.
Wild and Scenic Rivers	Not Present	There are no Wild and Scenic Rivers located within the project area.

Table 1. Critical Elements of the Environment. This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks
Wilderness	Not Present	There are no Wilderness Areas located within or near the proposed project areas. The project area consists of O&C lands managed for permanent forest production.
Invasive, Nonnative Species (Executive Order 13112)	Affected	See EA section 3.9
Environmental Justice (Executive Order 12898)	Not Affected	The proposed project is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

Other Elements of the Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Other Elements of the Environment
Land Uses (right-of-ways, permits, etc)	Not Affected	There are no known land uses that would be affected by the proposed projects.
Mineral Resources	Not Present	There currently are no mineral leases within the proposed project areas that would be affected and at the completion of the proposed projects the areas would maintain their current suitability for mineral development opportunities.
Energy Resources	Not Present	There currently are no energy developments within the proposed project areas that would be affected and at the completion of the proposed projects the areas would maintain their current suitability for energy development opportunities. The proposed projects would have no effect on energy development, production, supply and/or distribution.
Fire Hazard/Risk	Not Affected	The fuel load as measured in tons per/acre would increase to a minor degree in the 1 hour, 10 hour, and 100 hour (fine) fuels classifications immediately following brush cutting or hardwood tree felling in riparian planting treatment areas but would quickly return to pre-treatment levels (in less than 5 years). This small increase in fuel load would not be expected to result in an increase in fire hazard at the project level scale and the change would not be measurable at the watershed scale.
Rural Interface Areas	Not Present	There are no mapped Rural Interface Areas in the vicinity of the proposed project areas

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

Other Elements of the Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Other Elements of the Environment
Soils (productivity, erodibility, mass wasting, etc.)	Affected	See EA section 2.3.4
Visual Resources	Not Affected	Scapponia Park is in VRM class 2 and all other proposed project reaches are VRM class 4. There are no proposed actions in this project that would conflict with management for VRM.
Recreation	Affected	Effects would be limited to a short-term closure of the Scapponia Park Recreation site. See section 2.3.9.3
Special Status and SEIS Special Attention Plant Species and Habitat	Not Affected	No Bureau Sensitive species were observed or have been documented as known sites within or near the project areas. No habitat disturbance that results from this project will contribute to the need to list any species of concern.
Bureau Special Status and SEIS Special Attention Wildlife Species and Habitat	Affected	See EA section 2.3.3.3
Fish Species with Bureau Status and Essential Fish Habitat	Affected	See EA sections 2.3.7.3 and 2.3.7.4
Forest Vegetation Associated with Late-Successional Reserves and Riparian Reserves	Affected	See EA section 2.3.1.3

Appendix 2 – Aquatic Conservation Strategy Consistency

Documentation of Consistency with the Nine Aquatic Conservation Strategy Objectives for The East Fork Nehalem project.

<i>Aquatic Conservation Strategy Objective</i>	<i>Remarks (Alternative 1 addresses all projects)</i>
<p>1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features.</p> <p><i>None of the Alternatives retard or prevent the attainment of ACS objective 1</i></p>	<p>Alternative 1: The No Action alternative would maintain the development of the existing vegetation and associated stand structure at its present rate. The current distribution, diversity and complexity of watershed and landscape-scale features would be maintained.</p> <p>Fish Habitat Enhancement Alternative 2: Current levels of LWD are severely depleted compared to historic conditions. The addition of LWD into the identified reaches of the East for Nehalem would help restore the diversity and complexity of watershed features to which native aquatic and riparian species are uniquely adapted.</p> <p>Wildlife Habitat Enhancement Alternative 2: Creation of CWD in the project area would enhance, to a small degree, the diversity and complexity of forest stands in the affected watershed. At the landscape scale, diversity and complexity would be maintained.</p> <p>Riparian Planting Alternative 2: Planting of native vegetation would enhance, to a small degree, the diversity and complexity of forest stands in the affected watershed. At the landscape scale, diversity and complexity would be maintained.</p> <p>Fish Passage Alternative 2: Any fish passage improvements would enhance, to a small degree, the diversity and distribution in the affected watershed. At the landscape scale, diversity and distribution would be maintained.</p>
<p>2. Maintain and restore spatial and temporal connectivity within and between watersheds.</p> <p><i>None of the Alternatives retard or prevent the attainment of</i></p>	<p>Alternative 1: The No Action alternative would have little effect on connectivity except in the long-term within the affected watersheds.</p> <p>Fish Habitat Enhancement Alternative 2: Placement of logs would connect stream channels to larger floodplain areas.</p>

<i>Aquatic Conservation Strategy Objective</i>	<i>Remarks (Alternative 1 addresses all projects)</i>
<p><i>ACS objective 2</i></p>	<p>Wildlife Habitat Enhancement Alternative 2: Creation of CWD would improve connectivity within and between watersheds by enhancing habitat for late successional dependant species in the treatment areas.</p> <p>Riparian Planting Alternative 2: Riparian planting would have no effect on spatial and temporal connectivity within and between watersheds.</p> <p>Fish Passage Alternative 2: Fish passage improvement actively restores connectivity within this watershed.</p>
<p>3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.</p> <p><i>None of the Alternatives retard or prevent the attainment of ACS objective 3</i></p>	<p>Alternatives 1: The current condition of physical integrity would not be affected and would be dependant on natural processes.</p> <p>Fish Habitat Enhancement Alternative 2: LWD placements along proposed reaches within the East Fork Nehalem Watershed would reduce stream flow velocities and increase streambed roughness. Over time, log structures would trap additional wood and sediment moving downstream and increase channel stability and physical integrity of the aquatic system. Short-term impacts to banks and bottom configurations are anticipated, however this action returns the affected sites to a more natural condition. ** Structures placed in Scapponia Park would be designed to minimize channel instability and movement.</p> <p>Wildlife Habitat Enhancement Alternative 2: This project would have a beneficial effect on the physical integrity of the aquatic system at the site scale; at the watershed or larger scale the current condition would be maintained.</p> <p>Riparian Planting Alternative 2: This project would have a beneficial effect on the physical integrity of the aquatic system at the site scale providing bank stability and a future source of large wood. At the watershed or larger scale the current condition would be maintained.</p> <p>Fish Passage Alternative 2: Short-term impacts to banks and bottom configurations are anticipated; however this action returns the affected sites to a more natural condition.</p>

<i>Aquatic Conservation Strategy Objective</i>	<i>Remarks (Alternative 1 addresses all projects)</i>
<p>4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.</p> <p><i>None of the Alternatives retard or prevent the attainment of ACS objective 4</i></p>	<p>Alternative 1: The current low levels of large wood in project streams and lack stream channel complexity as result of past logging actions would continue to decline until streamside trees grow and drop into channels and begin to reverse these conditions (approximately 40 plus years)..</p> <p>Fish Habitat Enhancement Alternative 2: Placement of LWD into sites in the East Fork Nehalem River would improve water quality by providing some additional shade, restoring sediment transport and storage, and increasing the quantity and complexity of pool habitat. Short duration effects to water quality are anticipated however, these would maintain riparian, aquatic and wetland ecosystems.</p> <p>Wildlife Habitat Enhancement Alternative 2: This project would have no effect on water quality; therefore, the current condition would be maintained.</p> <p>Riparian Planting Alternative 2: This project would have no effect on water quality; therefore the current condition would be maintained.</p> <p>Fish Passage Alternative 2: Short duration effects to water quality are anticipated however these would maintain riparian, aquatic and wetland ecosystems. At the watershed scale no impacts to water quality would occur.</p>
<p>5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.</p> <p><i>None of the Alternatives retard or prevent the attainment of ACS objective 5</i></p>	<p>Alternative 1: It is assumed that the current levels of sediment into streams would be maintained.</p> <p>Fish Habitat Enhancement Alternative 2: This project would result in short-term increases in sediment during log placement in specific sites in the East Fork Nehalem Watershed. In the long-term, log structures would trap gravel and other substrate and the road would stabilize; therefore, the sediment regime would be restored.</p> <p>Wildlife Habitat Enhancement Alternative 2: This project would have no effect on the sediment regime; therefore the current condition would be maintained.</p> <p>Riparian Planting Alternative 2: This project would have no effect on the sediment regime; therefore the current condition would be maintained.</p>

<i>Aquatic Conservation Strategy Objective</i>	<i>Remarks (Alternative 1 addresses all projects)</i>
	<p>Fish Passage Alternative 2: This project would result in short-term increases in sediment during culvert replacement in specific sites in the East Fork Nehalem Watershed. In the long-term, culvert replacements would restore a more natural sediment regime at the site scale.</p>
<p>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.</p> <p><i>Both the Action and No Action None of the Alternatives retard or prevent the attainment of ACS objective 6</i></p>	<p>No Action Alternatives: No change in in-streams flows would be anticipated.</p> <p>Fish Habitat Enhancement Alternative 2: This project would have no effect on in-stream flows. It would improve sediment, nutrient, and wood routing. Therefore the current condition would be maintained</p> <p>Wildlife Habitat Enhancement Alternative 2: The project would have no effect on in-stream flows and aid in the restoration of patterns of sediment, nutrient, and wood routing to a more natural state at the site scale.</p> <p>Riparian Planting Alternative 2: This project would have no effect on in-stream flows and would restore future sources of nutrients, and wood routing.</p> <p>Fish Passage Alternative 2: This project would have no effect on in-stream flows and would restore patterns of sediment, nutrient, and wood routing.</p>

<i>Aquatic Conservation Strategy Objective</i>	<i>Remarks (Alternative 1 addresses all projects)</i>
<p>7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.</p> <p><i>None of the Alternatives retard or prevent the attainment of ACS objective 7</i></p>	<p>Alternative 1: The current condition of flood plains and their ability to sustain inundation and the water table elevations in meadows and wetlands is expected to be maintained.</p> <p>Fish Habitat Enhancement Alternative 2: The addition of LWD in sites within the East Fork Nehalem River Watershed would likely increase the frequency, and potentially the duration of floodplain inundation, as well as promote floodplain development.</p> <p>Wildlife Habitat Enhancement Alternative 2: This project would have very little effect on floodplains or water table elevation; therefore the current condition would be maintained.</p> <p>Riparian Planting Alternative 2: This project would have very little effect on floodplains or water table elevation; therefore the current condition would be maintained.</p> <p>Fish Passage Alternative 2: This project would have very little effect on floodplains or water table elevation; therefore the current condition would be maintained.</p>

<i>Aquatic Conservation Strategy Objective</i>	<i>Remarks (Alternative 1 addresses all projects)</i>
<p>8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands.</p> <p><i>None of the Alternatives retard or prevent the attainment of ACS objective 8</i></p>	<p>Alternative 1: The current species composition and structural diversity of plant communities would continue along the current trajectory. Diversification would occur over a longer period of time.</p> <p>Fish Habitat Restoration Alternative 2: The species composition and structural diversity would be maintained by the instream restoration.</p> <p>Wildlife Habitat Enhancement Alternative 2: This project would have very little effect on the species composition and structural diversity of plant communities.</p> <p>Riparian Planting Alternative 2: The species composition and structural diversity would be improved with the planting of shade tolerant native tree species and releasing conifers in riparian areas.</p> <p>Fish Passage Alternative 2: This project would have very little effect on the species composition and structural diversity of plant communities.</p>
<p>9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.</p> <p><i>None of the Alternatives retard or prevent the attainment of ACS objective 9</i></p>	<p>Alternatives 1: Habitats would be maintained over the short-term and continue to develop over the long-term with no known impacts on species currently present.</p> <p>Fish Habitat Restoration Alternative 2: Addition of LWD structures would provide more habitats for populations of native invertebrate and vertebrate riparian-dependent species.</p> <p>Wildlife Habitat Enhancement Alternative 2: Creation of CWD would provide more habitats for populations of native invertebrate and vertebrate riparian-dependant species.</p> <p>Riparian Planting Alternative 2: Planting of Native species would restore sites on which invertebrate and vertebrate, riparian species depend.</p> <p>Fish Passage Alternative 2: Replacement of fish passage culverts directly restores and supports the distribution of invertebrate and vertebrate riparian (aquatic) species.</p>

Appendix 3 – Past, Present and Foreseeable Future Actions

This list contains a number of identified ongoing and/or past, present or reasonably foreseeable future projects, activities or programs of work in the East Fork Nehalem project area. It serves as a source or pool of activities that various specialists may have considered while describing affected environments or conducting effects analysis for the East Fork Nehalem Restoration Project. Depending upon the resource and/or temporal or spatial scale of the analysis, projects to be considered include those projects which may continue to impact or are expected to impact the same resource at the same time and place as the proposed action, and/or have contributed to the current condition in a manner that still has impacts upon the same resources.

- Extensive large wood removal from streams (stream cleaning) - 1960s and 1970s.
- Since 1994, the BLM Tillamook Resource Area has implemented three timber sales within the East Fork Nehalem Watershed. The FY1995 New Dogma timber sale is located at T5N, R3W section 31; the FY1996 Gidget timber sale is located at T4N R3W section 5; and the FY1996 Firry Goon timber sale is located at T4N.,R3W sections 17 and 29). These projects resulted in a total of 129 acres of BLM forested stands within the watershed being treated with a regeneration harvest operation (New Dogma - 77 acres; Gidget - 40 acres; and Firry Goon - 12 acres) and 104 acres being treated with a commercial density management or thinning operation (Gidget - 57 acres and Firry Goon - 47 acres). These projects included riparian buffers and the reservation of down logs, snags and/or green wildlife trees consistent with the NWFP and Salem District RMP (May 1995). Currently, there are no future BLM timber management projects located in the Watershed within the Resource Area's internal planning processes.
- Fish passage improvement work within the East Fork Nehalem has been undertaken by the Upper Nehalem Watershed Council, Columbia County, and the BLM. A culvert removal was completed upstream of the Columbia County culvert located on the unnamed tributary to the East Fork Nehalem river just upstream of Scapponia Park by Hancock Natural Resources within the last 3 years.
- An occasional discretionary O&C Road Use Permit to haul timber or rock on BLM-controlled roads. Most recently (July 2007), a Road Use Permit was issued to JTF Inc. (Jeppeson Tree Farm Inc.) to haul approximately 550 MBF of timber across 1.69 miles of BLM controlled roads 4N-3-15, 4N-3-14.1 & 4N-3-20.1. The permit was issued for five years and would likely involve additional timber being hauled.
- Road maintenance (rock replacement, grading, ditch maintenance, drainage structure maintenance and replacement, landslide repairs) on BLM and private logging roads (OR-086-06-01 DNA).
- Occasional issuance of Special Forest Products permits in compliance with the Special Forest Products program (CX # OR-086-02-02).
- ODFW has identified Elk Creek in this watershed as a fish habitat restoration area, and is planning on placing up to 85 pieces of LWD at approximately 15 locations as time and funding allow, within the next several years.

- Columbia County replaced a culvert under the Scappoose-Vernonia Hwy at the unnamed Tributary just upstream of Scapponia Park, which created a plunge pool since installation; this plunge pool prohibits juvenile fish passage.
- Riparian Planting – The Upper Nehalem Watershed Council has been actively planting in the Scapponia Park recreational facility over the last few years. This location may also be selected for planting and fencing to improve establishment of conifers in the floodplain in this restoration project.
- Crown Zellerbach Trail (CZ) – Haul Road, “Rails to Trails Project” Columbia County is actively retrofitting four existing culverts with liners and placing overflow culverts in the upper third of the fill as well as converting the old rail line to a public trail system.
- Less information is available on habitat altering management activities that are scheduled to occur on non-Federal (private) lands within the watershed or across the larger landscape. The general trend on private land is one of harvest activities which result in decreasing quantities of mid- and late-seral habitat, that is, forest stands greater than 40- to 60-years-old harvested primarily through clear-cut harvesting. The majority of the forestland within the watershed is privately owned by industrial timber companies and is managed consistent with the Oregon Forest Practices Act for timber production on relatively short rotations. This effectively results in the private land base being maintained in a continual condition of earlier seral stage habitats and generally precludes the development and/or maintenance of mid- or late-seral habitats. A large portion of the private timberlands in the East Fork Nehalem have been clear-cut harvested in the last 20 years. Timber harvest on private industrial lands is expected to continue, as forested stands become harvestable.
- The large culvert located in T4N R3W section 9 under the old CZ Trail is a possible future fish passage project. The useful lifespan of this culvert is about another 20 years. The fill depth at the inlet is 46 feet and 58 feet at the outfall. As this culvert is an existing barrier to all fish it was considered for inclusion in this EA, however due to the scope of the work required to provide fish passage, including storage of waste material, the potential of extensive head cutting of the stream channel, the project was considered but not carried further. This culvert blocks access to approximately 1 mile of quality OC Coho habitat and the BLM would like to replace this culvert in the foreseeable future as time and funding allow.

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