

# Little North Santiam River and Elkhorn Creek Habitat Restoration

Environmental Assessment and Finding of No Significant Impact

Environmental Assessment Number: DOI-BLM-OR-S040-2011-0006-EA

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Bureau of Land Management  
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Marion County, Oregon

T. 9S, R. 3E, Sections 1 and 10

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This environmental assessment discloses the predicted environmental effects of a proposal to place instream large wood in Elkhorn Creek and a side channel to the Little North Santiam River on federal land located in Township 9 South, Range 3 East, Sections 1 and 10, Willamette Meridian; and within the North Santiam River 5<sup>th</sup> field watershed.

As the Nation's principal conservation agency, the Department of 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.

# FINDING OF NO SIGNIFICANT IMPACT

## Introduction

The Bureau of Land Management (BLM) conducted an environmental analysis (Environmental Assessment Number OR-SO40-2011-0006) of the Little North Santiam River and Elkhorn Creek Habitat Restoration project. The project includes the placement of large wood in the main channel floodplain and side channel habitats on lower Elkhorn Creek and in a side channel of the Little North Santiam River to improve floodplain and side channel connectivity, and provide high quality rearing habitat for ESA (Endangered Species Act) listed Chinook salmon and steelhead trout. Additionally, riparian tree seedlings would be planted on floodplains adjacent to wood placement sites.

The project is located on BLM lands within Township 9S, Range 3E, Sections 1 and 10, Willamette Meridian; within the Little North Santiam River 5<sup>th</sup> field watershed, approximately 21 miles east of the City of Stayton, Oregon. The project area includes a side channel of the Little North Santiam River adjacent to Elkhorn Golf Course at approximately river mile (RM) 12 (Northern portion of T. 9S, R. 3E, Section 10), and Elkhorn Creek about 0.5 mile upstream of its confluence with the Little North Santiam River at approximately RM 14 (West boundary of T. 9S, R. 3E, Section 1).

The Little North Santiam River and Elkhorn Creek Habitat Restoration Environmental Assessment (EA) documents the environmental analysis of the proposed project. The EA is attached to and incorporated by reference in this Finding of No Significant Impact determination (FONSI). The analysis in this EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS). The proposed project has been designed to conform to the *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP) (EA Section 1.3).

The EA and FONSI will be made available for public review **June 8, 2011** to **June 23, 2011**. The notice for public comment will be published in a legal notice by the *Stayton Mail* newspaper. Comments received by the Cascades Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before **June 23, 2011** will be considered in making the final decisions for this project.

## Finding of No Significant Impact

Based upon review of the Little North Santiam River and Elkhorn Creek Habitat Restoration EA and supporting documents, I have determined that the proposed project is not a major federal action 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 significant impacts not already adequately analyzed, or no significant impacts beyond those already analyzed, in the RMP/FEIS. Therefore, supplemental or additional information to the analysis in the RMP/FEIS in the form of a new environmental impact statement (EIS) is not needed. This finding is based on the following discussion:

**Context:** Potential effects resulting from the implementation of the proposed project have been analyzed within the context of the project area boundaries.

The proposed project would occur on approximately 65 acres of BLM land, along approximately 0.5 mile of the Elkhorn side channel of the Little North Santiam River, and 0.5 mile of Elkhorn Creek [40 CFR 1508.27(a)].

***Intensity:***

1. The proposed project is unlikely to have significant adverse impacts on the affected elements of the environment [40 CFR 1508.27(b) (1)] for the following reasons:
  - Project design features described in *EA section 2.2.1* would reduce the risk of effects to affected resources. As a result of implementing these design features, any potential effects to the affected resources are anticipated to be site-specific and/or not measurable (i.e. undetectable over the watershed, downstream, and/or outside of the project area)
  - *Floodplains and Riparian Areas:* The proposed action is expected to have beneficial effects on floodplain habitat and on the river's ability to access its floodplain (*EA section 3.2, 3.10*).
  - *Threatened/Endangered Fish and Critical Habitat:* See FONSI bullet 6.
  - *Other fish species with special status:* No other special status fish species are present in Elkhorn Creek or the Little North Santiam River (*EA section 3.9*).
  - *Essential Fish Habitat:* The proposed action is expected to have beneficial effects on Essential Fish Habitat as designated under the Magnuson-Stevens Fishery Conservation Act. No adverse effects to Essential Fish Habitat are expected (*EA section 3.4*).
  - *Soils:* Effects to soils would be unlikely to result in any reduction in soil productivity or disturb normal soil processes because the project effects would be light, discontinuous compaction of the surface horizon of the mineral soil in the tree selection and transport areas (*EA section 3.5*).
  - *Water Quality and Channel Function:* The planned alteration to channel morphology and hydraulics would directly increase habitat diversity, aquatic community complexity and structure, and the diversity of aquatic organisms to the benefit of aquatic species in the Elkhorn Creek and the Little North Santiam River, and also improve water quality by stabilizing floodplains and increasing stream shade. Any increase in turbidity resulting from the project activities is expected to be limited to the location of the disturbance and very short-term (hours) (*EA sections 3.6, 3.10*).
  - *Wild and Scenic rivers:* In the short term (for about one year) the primitive appearance of the Elkhorn Creek reach would be slightly impacted by soil and vegetation disturbance resulting from felling and moving trees with the cable-yarder or excavator. Over the long term impacts to primitiveness would be negligible as logs weather and other large wood (LW) accumulates from upstream reaches (*EA section 3.7*).
  - *T & E Wildlife:* The proposed action would have no effects to T&E wildlife or habitat due to the nature and timing of the project. See FONSI bullet 6.
  - *Other wildlife species with special status and migratory birds:* The proposal would not contribute to the need to list any special status wildlife species due to the nature, duration and timing of the project (*EA sections 3.8 and 3.9*).
  - *Late Successional Stands and Wildlife Habitat Components (snags, CWD):* Late successional habitat would be maintained. Adequate amounts of CWD and snags would be maintained on site to meet or exceed Northwest Forest Plan requirements (*EA section 3.8*).

2. The proposed project would not affect:
  - Public health or safety [40 CFR 1508.27(b)(2)];
  - Unique characteristics of the geographic area [40 CFR 1508.27(b)(3)] - There are no historic or cultural resources, parklands, prime farmlands, wilderness, or ecologically critical areas located within the project area (*EA section 3.9*); Districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, nor would the proposed project cause loss or destruction of significant scientific, cultural, or historical resources [40 CFR 1508.27(b)(8)] (*EA section 3.9*).
3. The proposed project is not unique or unusual. The BLM has experience implementing wood placement projects without highly controversial effects [40 CFR 1508.27(b) (4)], highly uncertain, or unique or unknown risks [40 CFR 1508.27(b) (5)] (*EA Section 3.0*).
4. 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 [40 CFR 1508.27(b)(6)]. No hazardous materials or solid waste would be created in the project area. There would be no reduction in the amount of late-successional forest habitat on federal forestlands (NWFP p. C-44) (*EA Sections 2.2.1, 3.8, 3.9*). The proposed project would not retard or prevent the attainment of the ACS objectives (*EA Section 3.10.2*).
5. The interdisciplinary team evaluated the proposed project in context of past, present and reasonably foreseeable actions [40 CFR 1508.27(b) (7)]. Potential cumulative effects are described in the attached EA (*EA Section 3.0*). The proposed project contributes to cumulative effects to the Water and Fisheries Resource. The proposed project will stabilize floodplains, and facilitate the development of riparian forest stands to shade channels to maintain water quality. In addition, spawning and rearing habitat for threatened anadromous salmonids would improve in reaches downstream of the project as a result of improvement in water quality (*EA sections 3.2-3.4, 3.6, 3.9, 3.10*).
6. The proposed project is not expected to have significant effects to Endangered or Threatened Species or habitat under the Endangered Species Act (ESA) of 1973 [40 CFR 1508.27(b) (9)].

**No threatened or endangered plants or animals were observed in the area.**

*Northern spotted owl:* Due to the nature, duration and timing of this project, no adverse effects to the northern spotted owls or their habitat are anticipated. No suitable habitat would be removed or downgraded, and suitable habitat would be maintained after individual tree removal for the project. The project would occur outside of the critical nesting season for spotted owls. The project area is not located in Critical Habitat and is not located within disturbance distance of any known spotted owl sites (*EA sections 3.8, 3.9, 5.2.1.1*).

*Fish:* The proposed action is expected to have beneficial effects on habitat for T & E fish, and consequently is likely to have positive effects on survival and production. No adverse effects are expected because of design features that would be implemented to reduce the risk of effects to the environment. In-channel work would be limited to periods of low flow when any increase in turbidity from the placement of large wood is expected to be limited to the location of the disturbance, and very short-term (hours) in duration. (*EA sections 2.2.1, 3.2-3.4, 3.6, 3.9, 5.2.1.2*).

7. The proposed project does not violate any known Federal, State, or local law or requirement imposed for the protection of the environment [40 CFR 1508.27(b) (10)]. The project is consistent with other Federal agency and State of Oregon land use plans and with the Marion County land use plan and zoning ordinances. Any permit requirements associated with the implementation of this project would be obtained and complied with. Project design features would assure that potential impacts to water quality would be in compliance with the State of Oregon In-stream Water Quality Standards and thus the Clean Water Act (*EA sections 1.4, 2.2*). Additionally, the proposed project is consistent with applicable land management plans, policies, and programs (*EA Section 1.4*).

Approved by: Cindy Enstrom  
Cindy Enstrom, Field Manager  
Cascades Resource Area

6/2/2011  
Date

# ENVIRONMENTAL ASSESSMENT

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## 1.0 INTRODUCTION

### 1.1 Summary of the Proposed Project

The proposal is to place large wood (trees and logs) in the Elkhorn side channel of the Little North Santiam River, and in main channel floodplain and side channel habitats of lower Elkhorn Creek to improve floodplain and side channel connectivity, and provide high quality rearing habitat for ESA listed Chinook salmon and steelhead trout. Riparian tree seedlings would also be planted on floodplains to facilitate development of riparian forests to shade channels and provide future sources of large wood.

#### 1.1.1 Project Area Location:

The project is located on BLM lands within Township 9S, Range 3E, Sections 1 and 10, Willamette Meridian; within the Little North Santiam River 5<sup>th</sup> field watershed, approximately 21 miles east of the City of Stayton, Oregon (Map 1). The project area includes both a side channel of the Little North Santiam River near the Elkhorn golf course (Northern portion of Section 10) at RM 12, and 0.5 mile of lower Elkhorn Creek located just upstream of its confluence with the Little North Santiam River at approximately RM 14 (West boundary of T 9S, R 3E, Section 1).

### 1.2 Purpose of and Need for Action

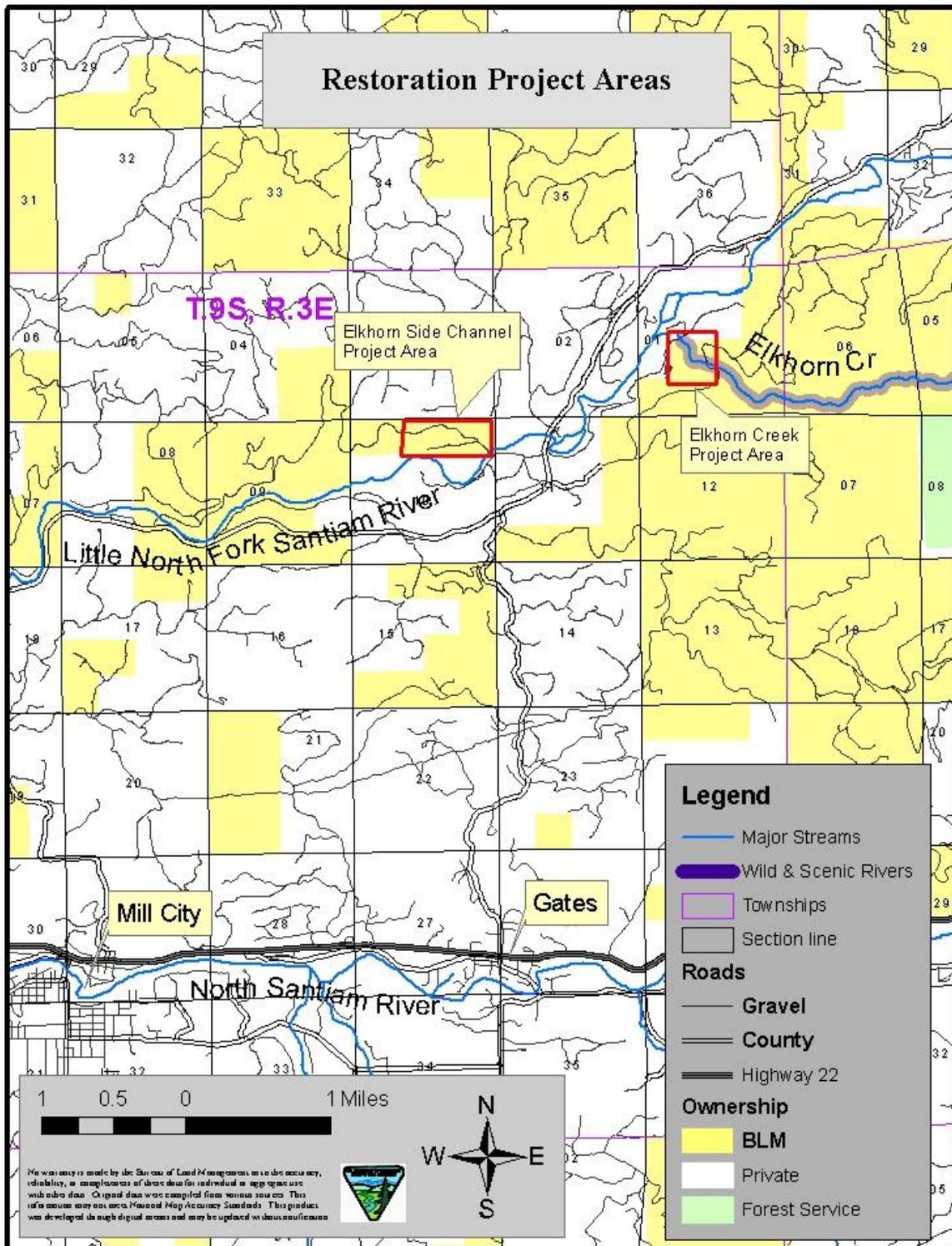
The Little North Santiam River is a key watershed for Upper Willamette River (UWR) winter steelhead spawning and rearing and is managed as a wild steelhead fishery by the Oregon Department of Fish and Wildlife (USBLM 1997). UWR Spring Chinook also spawn and rear in the Little North Santiam River. Both UWR winter run steelhead trout (*Oncorhynchus mykiss*), and UWR spring Chinook salmon (*O. tshawytscha*) are listed as ‘threatened’ under the Endangered Species Act of 1973 (ESA).

Listed fish (UWR Chinook salmon and UWR steelhead trout) use of the Little North Santiam River and Elkhorn Creek has been negatively impacted by the loss of habitat complexity and channel stability resulting from the historical removal of large wood (trees) from the river and its floodplain (USDI 1997). Listed fish are also negatively impacted by increased stream temperature in the Little North Santiam River and Elkhorn Creek due to loss of shade from riparian forest cover and increased solar heating resulting from over-widened channels in unstable floodplains.

The Water Quality Restoration Plan for the North Santiam River sub-basin (including the Little North Santiam Watershed) identified the need to restore floodplain and riparian conditions on the Little North Santiam River and on lower Elkhorn Creek to improve water quality and make progress towards Total Maximum Daily Load (TMDL) targets for water temperature for the sub-basin, lower Elkhorn Creek and the Little North Santiam River (USDI 2008).

Habitat surveys conducted by Oregon Department of Fish and Wildlife documented low levels of large wood (LW) in lower Elkhorn Creek and the Little North Santiam River (USDI 1997, ODFW 1994). LW amounts are inadequate to form complex stream habitats, and provide high quality spawning and rearing habitat for federally listed fish species.

**Map 1: Vicinity Map**



The addition of large wood (LW) to lower Elkhorn Creek and the Elkhorn side channel of the Little North Santiam River is needed to increase aquatic habitat complexity, provide high quality rearing habitat in stream side-channels for salmon and steelhead, and stabilize floodplain surfaces to facilitate the development of riparian forest and shrub (willow) stands to shade stream channels to maintain water quality (cool water temperatures).

The desired future condition for Elkhorn Creek and the Little North Santiam River includes stable, well-shaded channels with complex aquatic habitats created by LW that provide high quality spawning and rearing areas for salmon and steelhead, and resident coastal cutthroat trout. Additionally, the desired future condition includes providing high quality water for designated beneficial uses including salmonid spawning and rearing, and compliance with the TMDL for temperature for the North Santiam River sub-basin (USDI 2008).

The purpose of the project is to increase aquatic habitat complexity and stabilize floodplains of lower Elkhorn Creek and the Elkhorn side channel of the Little North Santiam River through the addition of LW, thereby improving fish habitat and maintaining water quality over both the short and long term. The project is consistent with Resource Management Plan (RMP) objectives to “promote the rehabilitation and protection of at-risk fish stocks and their habitat” and “restore and maintain water quality to protect beneficial uses in district watersheds (USDI 1995).

### **1.3 Decision Criteria/Project Objectives**

The Cascades Resource Area Field Manager will use the following criteria/objectives in selecting the alternative to be implemented. The field manager will select the alternative that would best meet these criteria. The selected action would:

- Meet the purpose and need of the project (Section 1.2);
- Comply with the *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP); and related documents which direct and provide the legal framework for management of federal lands within the project area (Section 1.4);
- Not have significant impacts on the affected elements of the environment beyond those already anticipated and addressed in the RMP/EIS;
- Add LW to improve floodplain function of Lower Elkhorn Creek and the Elkhorn side channel of the Little North Santiam River and to increase aquatic habitat complexity;
- Provide high quality rearing habitat in stream and river side-channels for salmon and steelhead;
- Facilitate the development of riparian forest and shrub (willow) stands to shade stream channels to maintain water quality; and
- Minimize erosion and impacts to soil productivity; and
- Not contribute to the expansion of invasive/nonnative weed populations.

## 1.4 Conformance with Land Use Plan, Statutes, Regulations, and other Plans

The Little North Santiam River and Elkhorn Creek Habitat Restoration Project conforms to the *Salem District Record of Decision and Resource Management Plan, May 1995 (RMP)*; *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 (the Northwest Forest Plan, or NWFP); and *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines*, January 2001.

The analysis in the Little North Santiam River Elkhorn Creek Habitat Restoration Project EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS). The RMP/FEIS includes the analysis from the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl*, February 1994 (NWFP/FSEIS). The RMP/FEIS is amended by the *Final Supplemental Environmental Impact Statement for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines*, November 2000.

The following documents provide additional direction in the development to the proposed action:

1. Little North Santiam Watershed Analysis (USDI 1997)
2. Water Quality Restoration Plan for the North Santiam River sub-basin (including the Little North Santiam Watershed; USDI 2008)

The above documents are incorporated by reference in this environmental analysis and are available for review in the Salem District Office.

### **Survey and Manage Species Review**

On December 17, 2009, the U.S. District Court for the Western District of Washington issued an order in *Conservation Northwest, et al. v. Rey, et al.*, No. 08-1067 (W.D. Wash.) (Coughenour, J.), granting Plaintiffs' motion for partial summary judgment and finding a variety of NEPA violations in the *BLM and USFS 2007 Record of Decision eliminating the Survey and Manage Mitigation Measure*. Previously in 2006, the District Court (Judge Pechman) had invalidated the agencies' 2004 RODs eliminating Survey and Manage due to NEPA violations. On October 10, 2006, following the District Court's 2006 ruling, parties to the litigation entered into a stipulation exempting certain activities from the Survey and Manage standard (Pechman exemptions), including riparian and stream improvement projects (Exemption C).

Following the Court's December 17, 2009 ruling, the Pechman exemptions are still in place. Judge Coughenour deferred issuing a remedy in his December 17, 2009 order until further proceedings, and did not enjoin the BLM from proceeding with projects. Nevertheless, I have reviewed this project in consideration of both the December 17, 2009 and October 11, 2006 order.

I have determined that this project complies with both the December 17, 2009 and October 11, 2006 orders for the following reasons.

This project meets Exemption C of the Pechman Exemptions (October 11, 2006 Order) because it is a riparian and stream improvement project where the riparian work is riparian planting, obtaining material for placing in-stream, and where the stream improvement work is the placement large wood, channel and floodplain reconstruction.

#### **1.4.1 Relevant Statutes/Authorities**

This section is a summary of the relevant statutes/authorities that apply to this project. Additional statutes/authorities that apply to this project are shown in Table 2 (section 3.9).

- **Federal Land Policy and Management Act (FLPMA) 1976** – Defines BLM’s organization and provides the basic policy guidance for BLM’s management of public lands.
- **National Environmental Policy Act (NEPA) 1969** – Requires the preparation of EAs or EISs on federal actions. These documents describe the environmental effects of these actions and determine whether the actions have a significant effect on the human environment
- **Endangered Species Act (ESA) 1973** – Directs Federal agencies to ensure their actions do not jeopardize threatened and endangered species.
- **Clean Air Act (CAA) 1990** – Provides the principal framework for national, state, and local efforts to protect air quality.
- **Clean Water Act (CWA) 1987** – Establishes objectives to restore and maintain the chemical, physical, and biological integrity of the nation’s water.

### **1.5 Scoping**

The BLM sent out a scoping letter describing the Little North Santiam River and Elkhorn Creek Habitat Restoration project to 52 federal, state and municipal government agencies, nearby landowners, tribal authorities, and interested parties on the Cascades Resource Area mailing list on April 15, 2011.

## **2.0 ALTERNATIVES**

### **2.1 Alternative Development**

Pursuant to Section 102 (2) (E) of the National Environmental Policy Act (NEPA) 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. No alternatives were identified that would meet the purpose and need of the project and have meaningful differences in environmental effects from the Proposed Action. Therefore, this EA will analyze the effects of the “Proposed Action” and the “No Action Alternative” in this project area.

### **2.2 Proposed Action**

The BLM proposes to place large wood (trees and logs) by use of a cable-yarder or an excavator in lower Elkhorn Creek and the Elkhorn side channel of the Little North Santiam River. Pieces would range from 15 to 36 inches in diameter at breast height and from 30 to 100 feet in length, and would be placed at up to 12 sites on a 0.5 mile long section of Elkhorn Creek (located at approximate RM 0.3) and at about 10 sites on a 0.5 mile long section of the Elkhorn side channel. Large wood (LW) would be placed in configurations of 1–5 pieces per site.

Where possible, the pieces would have intact rootwads. Placement sites would be selected that have existing structural and geomorphic features determined most likely to retain the placed wood. Pieces would not be artificially secured to the bed or banks of the stream, but would be allowed to interact naturally with the stream system. Small conifer trees (8 to 14 feet tall) would be incorporated into the log jams to increase habitat complexity and hiding cover for juvenile fish. The small conifer trees would be obtained from a tree thinning project on private land.

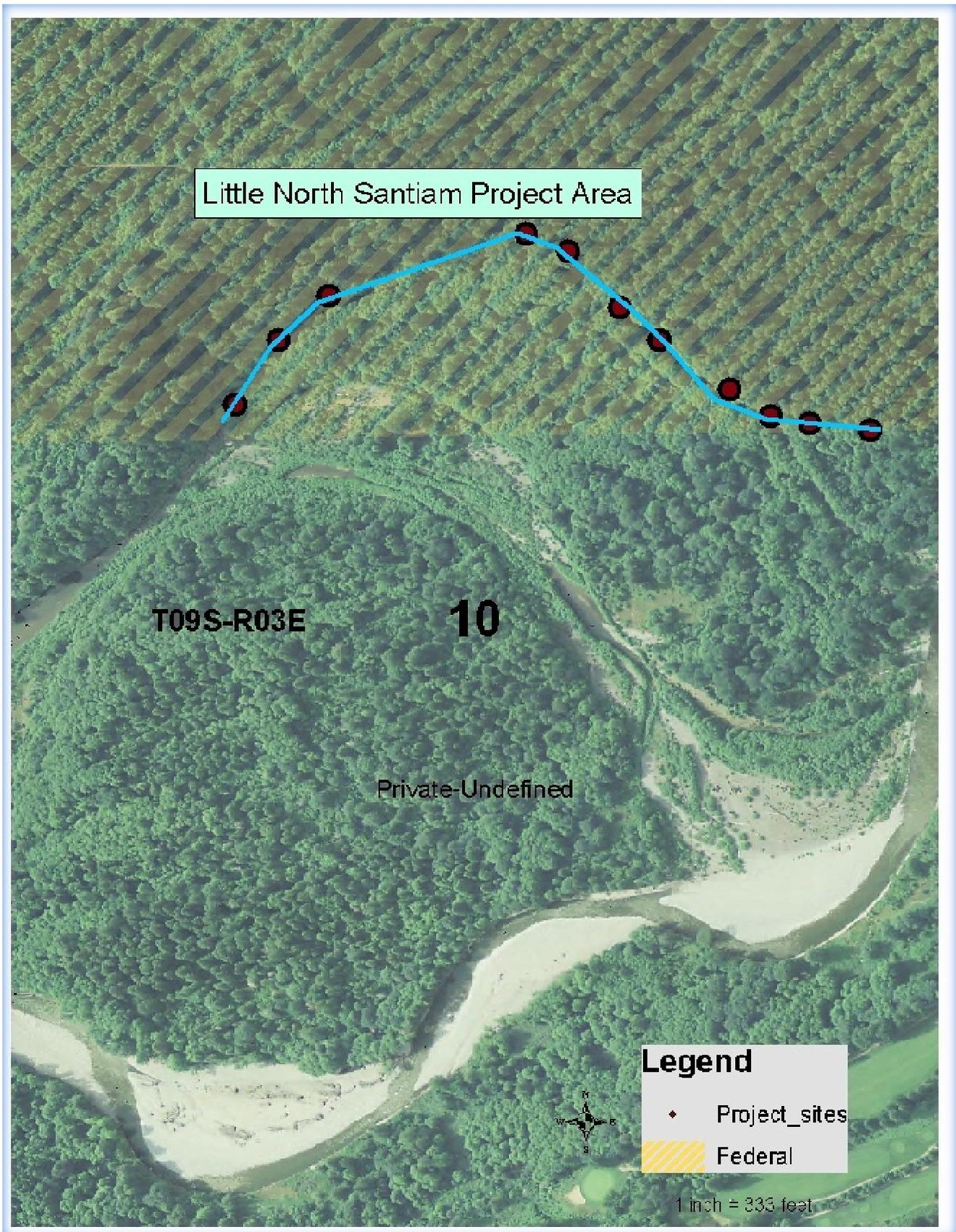
At some LW placement sites on the Elkhorn side channel, 1 to 3 cubic yards of stream substrate would be rearranged to facilitate placement of LW pieces. Small boulders, cobble, and gravel from LW placement areas would be placed on adjacent banks to anchor LW or spread on an adjacent appropriate bed-form (i.e., bar or riffle) in the side channel. LW in Elkhorn Creek would largely be added to key pieces of LW added to side channels and floodplain sites as part of restoration actions implemented in 2009 (USDI 2009).

Large wood used for the project would be obtained from BLM lands, both from trees in Riparian Reserves (RR) in the Elkhorn Creek and the Little North Santiam River project areas (Map 1), and from trees that blew down along Elkhorn Creek and BLM roads 9-3E-11.2 and 9-3E-11.3 in T. 9S, R.3E, Sections 1 and 11 during winter storms in 2009-2010. Blown-down trees adjacent to these roads would be yarded (moved) to the road edge if necessary, loaded onto a logging truck, and hauled to the project areas. Up to 30 live trees in a diameter range of 18-36 inches would be taken from RR on BLM land within 50-400 feet of Elkhorn Creek and the Elkhorn side channel of the Little North Santiam River (about 10 trees at Elkhorn Creek, and about 20 from Elkhorn side channel; see Maps 2 and 3: Proposed Action). About 15 to 20 blown-down trees would be used at the Elkhorn Creek project site. Trees would be pulled or pushed down with a cable-yarder or an excavator in order to keep the rootwads attached, then yarded to the LW placement sites.

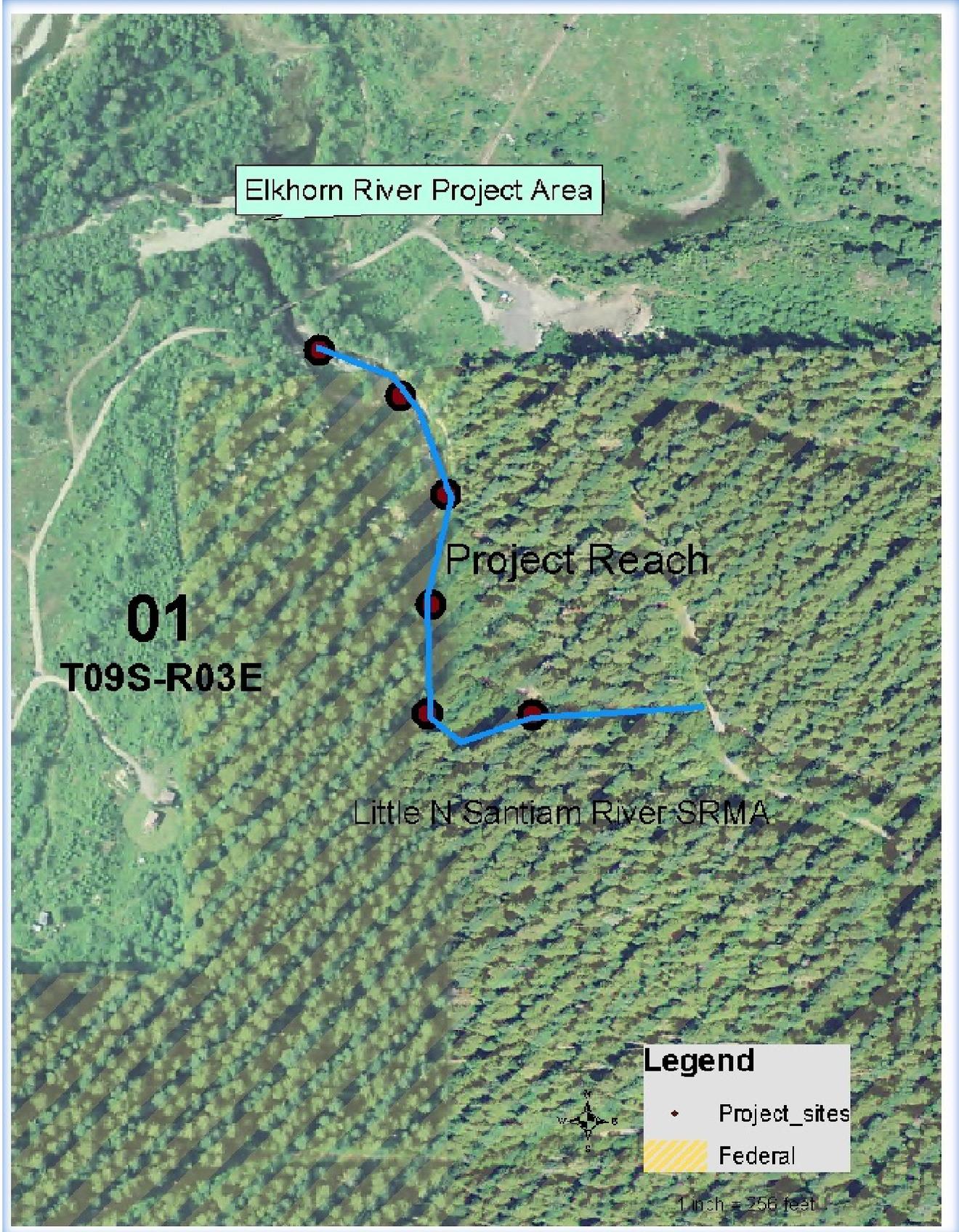
Riparian tree seedlings would also be planted on floodplains to facilitate development of riparian forests to shade channels and provide future sources of large wood.

Project implementation would take place between July 2011 and April 2012, depending on the timing of availability of materials and yarder or excavator. LW would be placed in channels and floodplains during instream work periods: July 15 through August 31 for the Little North Santiam River, and July 15 through September 30 for Elkhorn Creek. Riparian tree seedlings would be planted in late winter to early spring 2012.

**Map 2:** Proposed Action – Large wood placement sites (project sites) on the side channel of the Little North Santiam River.



**Map 3:** Proposed Action – Large wood placement sites (project sites) on lower Elkhorn Creek.



### **2.2.1 Project Design Features**

The following is a summary of the design features that reduce the risk of effects to the affected elements of the environment described in *Section 3.0*.

- Equipment would be cleaned to prevent spread of noxious weeds, free of fluid leaks, and in good operating condition prior to unloading at the project site.
- Contractor would be required to have a Spill Containment Kit and a Spill Prevention, Control, and Countermeasure Plan in case equipment leaks fuel or oil.
- The excavator or yarder would move and place large wood (LW) in channels only when soils are at high strength and soil moisture levels are low during July through October; turning and rocking of the excavator would be limited as much as practical to avoid displacing and gouging the mineral soil.
- Blown-down trees adjacent to roads 9-3E-11.2 and 9-3E-11.3 would be yarded to the road primarily during the months of July-October, but possibly beginning as early as May or extending into November provided soil moisture levels are low.
- In the tree removal area, excavator travel would be limited to a single pass and treads kept on top of organic material and slash as much as practical to avoid disturbing the mineral soil.
- At least one end of a log would be suspended whenever possible when moving logs to project sites to minimize soil disturbance.
- Live trees would be removed from RR on the north side of Elkhorn Creek and the Elkhorn side channel (outside of the primary shade zone).
- LW would be placed during the instream work period (July 15 through August 31).
- Breakage of trees and branches in the riparian zone would be minimized as much as practical.
- Implementation of the LW portion of the project would occur outside of the northern spotted owl critical nesting season (March 1 to July 15). Tree selection would be conducted in a manner that would not create openings in the stand or downgrade the suitability of the stand as habitat for the Northern spotted owl.
- If any cultural resources are encountered during project implementation all activities will cease until the archaeologist can be present to assess the significance of the findings.

### **2.3 No Action Alternative**

Under the No Action Alternative no large wood (LW) placement would occur in Elkhorn Creek or the Elkhorn side channel of the Little North Santiam River. Existing LW loading and the existing low habitat complexity in Elkhorn Creek and the Elkhorn side channel would remain at current levels. No improvement in instream habitat quality of side channels for Chinook salmon and steelhead trout would be likely to occur. A small proportion of the 0.5 mile reach of Elkhorn Creek located downstream of BLM road 9-3E-11.3 would continue to have unstable floodplain surfaces, and lower levels of stream shade.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

The elements of the environment affected by the proposed restoration project are Floodplains and Riparian Areas, Threatened / Endangered Fish Species and Critical Habitat, Essential Fish Habitat, Soils, Water Quality and Channel Function, Wild and Scenic Rivers, and Wildlife. EA Sections 3.2-3.10 describe the current conditions and trends of those affected elements, and the environmental effects of the alternatives on those elements.

#### 3.1 Existing Watershed Condition

The project is located within the Little North Santiam 5<sup>th</sup> field watershed, which is located approximately 20 miles east of the town of Stayton. Elkhorn Creek is a 6<sup>th</sup> field subwatershed to the North Fork Santiam and flows into the Little North Santiam River at about river mile (RM) 14. About 70% of the land in the Little North Santiam watershed is federally managed (Table 1).

**Table 1: Ownership in the Little North Santiam Watershed (Little North Santiam WA, Chpt. 2, p. 6)**

Owner	% of Watershed
BLM	18
Forest Service	50
State	3
Private - Industrial	23
Private – non Industrial	6

Instream habitat conditions of streams on federal lands in the eastern half of the watershed are fair to good (USDI 1997). Large wood (LW) recruitment potential in east side tributaries is generally good, but LW placement on the lower 0.5 mile of Elkhorn Creek was recommended in the Watershed Analysis (USDI 1997) and the Water Quality Restoration Plan (USDI 2008). Additionally, the Little North Santiam River has low levels of LW and generally low amounts of side channel habitat (side channel length <10% of length of the main channel; USDI 1997).

Portions of lower Elkhorn Creek and the middle portion of the Little North Santiam River (approximately river miles 12 to 14) have unstable floodplain surfaces with reduced levels of stream shade from riparian trees needed to maintain water quality (cool water temperatures; USDI 2008). Salmon and steelhead spawn and rear in the Elkhorn side channel of the Little North Santiam River, but large wood (LW) levels are low and as a result the side channel lacks complex aquatic habitat for juvenile rearing.

Upper Willamette River (UWR) steelhead trout (*Oncorhynchus mykiss*), and UWR chinook salmon (*O. tshawytscha*), both listed as threatened under the Endangered Species Act, inhabit the Little North Santiam watershed including the Little North Santiam River and lower Elkhorn Creek. Non-listed fish inhabiting Elkhorn Creek and the Little North Santiam River include coastal cutthroat trout (*O. clarki clarki*), and sculpins (*Cottus* spp.)

Critical habitat has been designated for UWR steelhead trout and UWR chinook salmon effective January 2006 by the National Marine Fisheries Service (70 FR 52,630, September 2, 2005). Designated critical habitat for chinook salmon is to RM 17 and for steelhead trout to RM 20 on the Little North Santiam River. Critical habitat for both species is designated to RM 2.25 on Elkhorn Creek.

## **3.2 Floodplains and Riparian Areas**

### *Affected Environment*

LW levels are low within the project area in Elkhorn Creek and the Little North Santiam River (USDI 1997, ODFW 1994). Within this reach Elkhorn Creek and the Little North Santiam River access several side channels primarily at high flows. LW is lacking to stabilize portions of the floodplain. Additionally, side channel habitat complexity and flows are lower than that expected for the site because of low amounts of LW. Lack of large wood also hinders the plant successional process of riparian shrubs and trees revegetating floodplain surfaces adjacent to the side channels. Thus, shade from riparian trees is lacking on portions of these stream reaches.

### *Environmental Effects*

#### **3.2.1 Proposed Action**

The addition of LW to lower Elkhorn Creek and the Little North Santiam River floodplain would increase the stability of floodplain surfaces and allow riparian trees to colonize these sites. Addition of LW would increase habitat complexity and duration of flows in side channels, and break up the scouring forces of high flows allowing riparian trees to colonize stable floodplain surfaces adjacent to stream channels. Riparian tree composition and structural diversity would improve over the long term with the planting of riparian tree seedlings.

#### **3.2.2 Cumulative Effects**

No cumulative effects are expected for floodplain function because the project is small in scale and all effects are expected to be limited to the project area.

#### **3.2.3 No Action Alternative**

Floodplain access would likely improve over the long term as a result of large wood (LW) delivery from upstream segments, but improvement in floodplain stability would be slower than that under the proposed action because less LW would be produced on site. Floodplain condition and side channel complexity would likely improve within 25-50 years as LW is delivered from upstream segments, compared to substantial improvement within 1-2 years under the proposed action. Tree diversity of riparian stands would lower than that of the proposed action.

## **3.3 Threatened / Endangered fish species and Critical Habitat**

### *Affected Environment*

Federally threatened Upper Willamette River (UWR) steelhead trout and UWR Chinook salmon spawn and rear in lower Elkhorn Creek and the Little North Santiam River (see Existing Watershed Condition). Habitat surveys conducted by Oregon Department of Fish and Wildlife documented low levels of large wood (LW) on lower Elkhorn Creek and the Little North Santiam River (ODFW 1994). LW levels are inadequate to form complex stream habitats, and provide high quality spawning and rearing habitat for federally listed fish species. Sections of lower Elkhorn Creek and the Little North Santiam River at the Elkhorn side channel have unstable floodplain surfaces and reduced levels of stream shade from riparian trees needed to maintain water quality (cool water temperatures).

## *Environmental Effects*

### **3.3.1 Proposed Action**

Placement of LW in side channel habitats would increase habitat complexity in lower Elkhorn Creek and the Little North Santiam River. Increased structure from LW would result in localized reductions in the velocity of high flows, which will result in sorting and deposition of bedload materials. Retention of bedload materials composed of sand, gravel and cobble would improve and create spawning areas for steelhead trout and Chinook salmon. Increased habitat complexity would improve rearing habitat for steelhead trout, Chinook salmon, and resident cutthroat trout. Habitat quality would improve in the short term with LW placement. Habitat quality would also be maintained and improved over the long term as the result of increases in riparian trees colonizing stable floodplain areas. Critical habitat for ESA listed fish would improve in the short and long term as the result of LW placement. The LW would create debris jams and woody complexes, stabilize floodplains, create scour pools in side channels for juvenile fish, and provide woody debris cover for juvenile and adult fish.

### **3.3.2 Cumulative Effects**

Cumulatively this action would add to the recovery of habitat for threatened fish species. This action, in combination with other restoration actions planned in the Little North Santiam River watershed (USDI 1997) would improve instream habitat conditions for listed and resident fish, and the condition of Critical Habitat for ESA listed steelhead trout and Chinook salmon.

### **3.3.3 No Action Alternative**

Over the long term with delivery of LW from upstream reaches, instream habitat conditions and the condition of Critical Habitat for ESA listed steelhead trout and Chinook salmon would be expected to improve, but at a slower rate than that of the proposed action.

## **3.4 Essential Fish Habitat**

### *Affected Environment*

Elkhorn Creek and the Little North Santiam River are designated as Essential Fish habitat under the Magnuson-Stevens Act because they are inhabited by Chinook salmon. Currently large wood (LW) levels are inadequate to form complex stream habitats, and provide high quality spawning and rearing habitat for federally listed salmon. Sections of lower Elkhorn Creek and the Little North Santiam River at the Elkhorn side channel have unstable floodplain surfaces and reduced levels of stream shade from riparian trees needed to maintain water quality (cool water temperatures).

### *Environmental Effects*

#### **3.4.1 Proposed Action**

Placement of LW in side channel habitats would improve floodplain connectivity and increase habitat complexity in lower Elkhorn Creek and the Elkhorn side channel of the Little North Santiam River. Increased structure from LW would result in localized reductions in the velocity of high flows, which will result in sorting and deposition of bedload materials. Retention of bedload materials composed of sand, gravel and cobble would improve and create spawning areas for Chinook salmon.

Increased habitat complexity would improve rearing habitat for Chinook salmon. Habitat quality would improve in the short term with LW placement. Habitat quality would also be maintained and improved over the long term as the result of increases in stream shade and LW production resulting from riparian trees colonizing stable floodplain areas. Condition of Essential Fish Habitat would improve both in the short and long term as the result of LW placement.

### **3.4.2 Cumulative Effects**

Cumulatively this action in combination with other restoration actions planned in the Little North Santiam River watershed (USDI 1997) would improve Essential Fish Habitat in the Little North Santiam River basin.

### **3.4.3 No Action Alternative**

Over the long term with delivery of LW from upstream reaches, instream habitat conditions and the condition of Essential Fish Habitat would be expected to improve, but at a slower rate than that of the proposed action.

## **3.5 Soils**

### *Affected Environment*

Soils adjacent to Elkhorn Creek and the Elkhorn side channel of the Little North Santiam River formed in alluvium associated with river deposition in flat areas or colluvium derived from the steep volcanic hillsides that constrain the stream. These soils tend to be sandy cobbly loams and are well drained. Soils in the source areas for trees are mapped as a Horeb loam on slopes of 2-20%, and a Whetstone stony loam on steeper slopes (USDA 2005). These soils formed in colluvium from volcanic parent materials and have a clay loam texture.

### *Environmental Effects*

#### **3.5.1 Proposed Action**

Use of a cable-yarder or an articulated excavator to pull or push over trees in stands adjacent to Elkhorn Creek and the Little North Santiam River and move them to the channel would have a direct effect on soil in that area. Soil bound to the root system of the trees, would be pulled up, inverted and disturbed as the trees are pushed over. This effect is analogous to what occurs when trees are blown down during large wind storms, and thus is similar to the natural disturbance regime and part of the normal process of soil formation in these forests. Yarding the trees to the channel would disturb the surface duff layer, but impacts to mineral soil would be minimized by following Project Design Features (See Section 2.2.1).

Removal of the pushed over trees or recently blown down trees that are on the forest floor is not part of the natural disturbance regime. Soil that remains attached to the tree roots would be removed from the site along with the organic material and nutrients stored in the trees. Removal of 30 trees is equivalent to < 1% of the above ground biomass in the 65 acre project area. Removal of this material is unlikely to have a long lasting effect on overall site productivity or the nutrient status of the remaining stand, and will be quickly regenerated.

Excavator travelling on soil surfaces and yarding downed trees to the channel would result in light compaction of the surface horizon of the soil (i.e., and increase in bulk density under 5%) in some locations. The surface compaction would be discontinuous and difficult to detect visually within one year of project completion. By carefully following Project Design Features (see section 2.2.1) disturbance to soils would be minimized. Surface duff layers and vegetation would buffer and protect mineral soil. For example, trees would be yarded while suspended from cables whenever possible. Soil compaction would be limited by allowing no more than one pass with the excavator along any individual route, and by operating the excavator on top of slash from the trees to help spread vehicular weight over a greater surface area.

Light discontinuous compaction of the surface horizon of the mineral soil would be unlikely to result in reduction in soil productivity or disturb normal soil process. Soil bulk density and processes would likely recover to pre-disturbance condition within one year following the project.

### **3.5.2 Cumulative Effects**

Because the effects of the proposed action on soils are expected to be short-term, (maximum one year), and localized, no cumulative effects are expected.

### **3.5.3 No Action Alternative**

No disturbance to soils would occur.

## **3.6 Water Quality and Channel Function**

### *Affected Environment*

Elkhorn Creek and the Little North Santiam River are subject to the conditions of the Willamette Basin TMDL completed by the Oregon Department of Environmental Quality (ODEQ) in 2005 (<http://www.deq.state.or.us/wq/TMDLs/docs/sandybasin/tmdlwqmp.pdf>). Essentially, the TMDL requires the recovery or maintenance of full potential shade along all perennial streams in the Willamette basin. The Water Quality Restoration Plan for the North Santiam River sub-basin (which includes the Little North Santiam Watershed) identified the need to restore channel and riparian conditions on lower Elkhorn Creek and the Little North Santiam River to improve water quality and make progress towards TMDL targets for water temperature for the sub-basin (USDI 2008). Sections of lower Elkhorn Creek and the Little North Santiam River at the Elkhorn side channel have unstable floodplain surfaces and reduced levels of stream shade from riparian trees. Addition of large wood (LW) to increase channel complexity was identified in the North Santiam Water Quality Restoration Plan<sup>1</sup> as a high priority for restoration of water quality in the Little North Santiam watershed, and in particular identified the need to add LW to lower Elkhorn Creek.

### *Environmental Effects*

#### **3.6.1 Proposed Action**

#### *Water Quality*

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<sup>1</sup> Willamette Basin Water Quality Restoration Plan. April 16, 2008, Bureau of Land Management; Salem and Eugene Districts, Chapter 5 North Santiam WQRP p. 41.

The addition of large wood (LW; trees with roots attached) to lower Elkhorn Creek and the Elkhorn side channel of the Little North Santiam River would increase the stability of floodplain surfaces and allow increased colonization of these areas by willows and riparian trees. Increased vegetative cover on the channel would help restore full potential shade at the site.

This action would have no immediate effect on water quality downstream of the project area because stream flow would be low during LW placement, such that little work would occur within the wetted channel that would mobilize fine sediment. Any increase in turbidity in the project area is expected to be limited to the location of the disturbance and very short-term (hours). Over the short term, water quality would be largely unaffected by this proposal; although some reduction in stream temperature could result from shading of surface waters by the increase in tree canopy, it would be difficult to detect. Sediment deposition may increase slightly in the short term as a result of LW locally reducing stream velocities.

Over the long term (years to decades) the proposed action is expected to help improve and maintain water quality by slowing the transport of sediment through the system and providing additional slow water velocity areas for the deposition of fine particles (silts, sand and clays). Restoring a stable vegetative community through LW placement and planting of riparian tree seedlings would help maintain cool temperatures in the springs that emerge in the source area of the project channel.

### ***Channel Function***

Placing LW into Elkhorn Creek and the Elkhorn side channel of the Little North Santiam River would affect streamflow and channel morphology by altering channel roughness and geometry, reducing stream velocity, and redirecting flow around the obstructions. Effects include: reductions in stream gradient and flow velocity upstream of obstructions with consequent deposition of suspended materials and a fining of (i.e., reduction in the medium particle size) of channel substrates; bed scour and increased velocities in the vicinity of obstructions; increased bank erosion in areas where materials divert stream flow into the bank; reductions in bank erosion in areas where materials divert flows away from the banks.

Overall, the increase in roughness elements in the channel is expected to decrease transit time for organic and inorganic materials moving through the system, increase hydraulic “complexity,” increase the quantity of sediment transported in the channel but reduce its rate of transport, increase sediment storage, increase complexity and alter the ratio of bed forms (i.e, pools and riffles), and increase over bank flood flows (on a small scale adjacent to deposited materials). All of these effects are anticipated to be highest immediately after large wood (LW) placement with a gradual diminution until a form of dynamic equilibrium is reached. The timing of this process will be highly dependent upon the timing, quantity and size of winter peak flow events, which are stochastic in nature.

In addition, over time the LW added by the project is expected to trap wood entering the stream from upstream riparian areas; trees in riparian zones will continue to grow, age and eventually fall into the channel. This will result in increases in the quantity and complexity of wood in the channel over the next century.

For the reasons described above, it is anticipated that these alterations to channel morphology and hydraulics will directly increase habitat diversity, aquatic community complexity and structure, and the diversity of aquatic organisms to the benefit of aquatic species in the watershed.

### **3.6.2 Cumulative Effects**

Cumulatively this action would add to the recovery of aquatic habitat, sediment transport regime and functional stream channels in the Little North Santiam (see section 3.10). This could contribute to a long term reduction in turbidity and stream temperature.

### **3.6.3 No Action Alternative**

Over the long term with delivery of LW from upstream reaches, water quality would improve due to increased floodplain stability and riparian tree colonization of areas with low tree shading. Improvement in water quality would be at a slower rate than that of the proposed action.

Additionally, with natural recruitment of large wood (LW), channel function would also improve in the long term, but at a slower rate than under the proposed action. Water quality would likely improve within 50 years as LW is delivered from upstream segments and trees colonize floodplain areas stabilized by the LW, compared to a similar level of improvement within 15-25 years under the proposed action.

## **3.7 Wild and Scenic Rivers**

### ***Affected Environment***

Two segments of Elkhorn Creek, totaling 6.4 miles, were designated as Wild and Scenic in the Oregon Omnibus Parks and Public Lands Management Act of 1996. Part of the proposed action takes place in the lower 0.6 mile segment of Elkhorn Creek, which was given a Scenic classification because it is free of impoundments, and features shorelines still largely and undeveloped, but accessible by roads in two places.

Outstandingly Remarkable Values for Elkhorn Creek WSR have been identified as Scenery and Wildlife. Scenic qualities of the river corridor are characterized by a wide range of features from vertical rock outcrops to dense, relatively undisturbed and mature forest. Throughout much of the designated reach, little evidence of human intrusion into the river corridor is present although this evidence is greatest in the lower 0.6 mile segment where the proposed action is located.

A portion of the proposed action also falls within a 24 mile segment of the Little North Fork Santiam River that was found 'eligible' for inclusion into the National Wild and Scenic River System by the BLM in the 1995 Salem District RMP. Potential classification was identified as Recreational based on the river's accessibility by road and the presence of shoreline development.

Potential Outstandingly Remarkable Values of Scenic, Recreation and Fisheries were identified for the Little North Fork Santiam River. The scenic qualities of this river corridor are highlighted by clear, rushing whitewater and deep, clear pools complimented by moss-covered boulders and overhanging vegetation. The recreational qualities of this river corridor are characterized by high quality angling and swimming opportunities, many easy points of access and numerous state and federal recreational facilities.

The immediate vicinity of the proposed action is closed to public vehicle access, though light off-highway vehicle use and other casual recreational activity has been observed. Per direction in the RMP, the BLM is required to provide interim protection to eligible rivers including the river's free flowing values and Outstandingly Remarkable Values.

## ***Environmental Effects***

### **3.7.1 Proposed Action**

The proposed action will have short term impacts to the Scenery ORV's of Elkhorn WSR, but these impacts are expected to be negligible in the long term.

No impacts are expected to the potential ORV's of the Little North Santiam River. There would be no impacts to the either river's free flowing characteristics.

The natural and undisturbed appearance of both the Elkhorn Creek WSR and Little North Fork Santiam River will be slightly impacted in the short term (one to two years) following project completion. This impact will result from felling and moving trees with the cable-yarder or excavator and their purposeful placement within the channel. The removal of trees with root wads attached in the Elkhorn Creek WSR is expected to minimize impacts to the river's scenic qualities by mimicking natural disturbance patterns. The short duration of the project and project design features that minimize soil and vegetation disturbance (such as limited skidding and excavator operation) will also minimize visual evidence of the project.

These impacts to the undisturbed and natural qualities of both project areas would become negligible in the long term (beyond two years) as placed logs weather and become more natural in appearance and other evidence such as soil disturbance is obscured by natural growth.

No impacts to the potential Recreational ORV of the Little North Santiam River are expected due to low rates of use and little to no expected displacement of visitors.

There is expected to be a moderate beneficial impact to the scenic qualities of both project areas. Increased stability of floodplain surfaces and the subsequent colonization of these sites by riparian trees will contribute to improvements in natural appearance by re-establishing stream shade, side channel pools and channel complexity.

### **3.7.2 Cumulative Effects**

This project does not contribute to any other past, present or reasonably foreseeable actions planned for either project area that would affect scenic or recreational qualities associated with WSR values. As a result, no cumulative effects are expected through completion of the proposed action.

### **3.7.3 No Action Alternative**

No impacts to the natural and undisturbed appearance of either river would be expected over the short term. Over the long term with delivery of large wood (LW) from upstream reaches, channel stability and instream habitat conditions and would be expected to improve. With improvement in channel stability the natural appearance of the river segments would also improve over the long term, but at a slower rate than that of the proposed action.

## 3.8 Wildlife

### *Affected Environment*

The project area is primarily late successional forest habitat in the mature seral stage, and riparian streamside habitat.

The late successional habitat consists of Douglas-fir, Western hemlock, and few Western redcedar. The riparian habitat consists of big-leaf maple, red alder, Douglas-fir, Western hemlock, and Western redcedar. Understory shrub layers and ground cover is diverse and well developed with vine maple, huckleberries, salal, Oregon grape, and sword fern predominating. Large coarse woody debris and snags are abundant and present in all decay classes, and currently exceeds Northwest Forest Plan requirements (USDI 1995; p.21).

Oregon slender salamander, a Bureau Sensitive Species, is expected to occur in the project area. Habitat is generally described as conifer stands dominated by Douglas-fir with large rotten (decay class 3 to 5) Douglas-fir down logs.

A number of bat species of concern are suspected to occur in the project area. These species are associated with caves and mines, bridges, buildings, cliff habitat, or decadent live trees and large snags with sloughing bark.

A number of migratory birds which are associated with late successional forest are expected to breed in the project area.

### *Environmental Effects*

#### **3.8.1 Proposed Action**

The project is expected to have effects on Oregon slender salamander due to disturbance of down CWD and the forest floor. Effects are expected to be minimal because the project would be of short duration and would occur during the summer when salamander activity is low. The down logs proposed for use in the project are harder material in the early stages of decay. Primary habitat for the Oregon slender salamander is large soft material in the more advanced stages of decay which would remain on site. Disturbance of this material is expected to be low.

Effects to bat species and habitat are expected to be low due to the nature and duration of the project. There are no caves and mines, bridges, buildings, cliff habitat present in the project area. The snags that would be affected by this project would be hard snags in the early stages of decay, and no decadent live trees or large snags with sloughing bark would be affected.

Effects to migratory birds and habitat are expected to be low due to the nature, duration and timing of this project. The project would not be implemented until later in the summer when the majority of bird species have finished nesting.

#### **3.8.2 Cumulative Effects**

Due to the nature, duration and timing of this project, cumulative effects to wildlife species, including special status species and migratory birds, would be minimal. No habitat types would be changed, degraded or downgraded as a result of this project. The project area would remain late successional forest, and snag and CWD levels would remain well above Northwest Forest Plan requirements (USDI 1995; p.21).

### 3.8.3 No Action Alternative

Late Successional habitat in the project area would remain unchanged and undisturbed due to human activity. Due to the nature, duration and timing of this project, there few differences between the action and the no action alternatives from a wildlife perspective.

## 3.9 Other Elements of the Environment Based On Authorities and Management Direction

**Table 2: Elements of the Environment to be analyzed based on Authorities and Management Direction**

Element of the Environment /Authority	Remarks/Effects
Aquatic Conservation Strategy	In compliance with PCFFA IV (Civ. No. 04-1299RSM), this project complies with the Aquatic Conservation Strategy described in the Northwest Forest Plan and RMP. This project also complies with the PCFFA II (265 F.3d 1028 (9th Cir. 2001)) by analyzing the site scale effects on the Aquatic Conservation Strategy. EA sections 3.2-3.4, 3.6-3.8, and 3.10 show how this project meets the Aquatic Conservation Strategy in the context of the PCFFA cases.
Air Quality (Clean Air Act as amended (42 USC 7401 et seq.))	This project is in compliance with this direction because the project will have no affect on air quality.
Cultural Resources (National Historic Preservation Act, as amended (16 USC 470) [40 CFR 1508.27(b)(3)], [40 CFR 1508.27(b)(8)])	Inventories were completed prior to project implementation resulting in compliance with this direction. The project would have no effect on this element because no cultural resources are known or suspected to be present in the proposed project areas.
Ecologically critical areas [40 CFR 1508.27(b)(3)]	The project would take place outside of areas of critical environmental concern (ACEC).
Energy Policy (Executive Order 13212)	This project is in compliance with this direction because this project would not interfere with the Energy Policy (Executive Order 13212).
Environmental Justice (E.O. 12898, "Environmental Justice" February 11, 1994)	This project is in compliance with this direction because project would have no effect on low income populations.
Fish Habitat, Essential (Magnuson-Stevens Act Provision: Essential Fish Habitat (EFH): Final Rule (50 CFR Part 600; 67 FR 2376, January 17, 2002)	This project is in compliance with this direction because NMFS' Biological Opinion (2008) determined habitat restoration actions would not result in adverse modification of EFH. Addressed in text (Section 3.4)
Farm Lands, Prime [40 CFR 1508.27(b)(3)]	The project would have no effect on this element because no prime farm lands are present on BLM land within the Cascades RA.
Floodplains (E.O. 11988, as amended, Floodplain Management, 5/24/77)	This project is in compliance with this direction. Addressed in text (Section 3.2)
Hazardous or Solid Wastes (Resource Conservation and Recovery Act of 1976 (43 USC 6901 et seq.) Comprehensive Environmental Repose Compensation, and Liability Act of 1980, as amended (43 USC 9615)	The project is in compliance with this direction because the Contractor is required to have a Spill Containment Kit and a Spill Prevention, Control, and Countermeasure Plan (SPCC) in case the excavator or yarder leaks fuel or oil during the large wood work. The SPCC Plan will be reviewed and accepted by the Contracting Officer prior to initiating project work.
Healthy Forests Restoration Act (Healthy Forests Restoration Act of 2003 (P.L. 108-148)	This project is in compliance with this direction because the project would have no adverse effect on the Healthy forests restoration act.
Migratory Birds (Migratory Bird Act of 1918, as amended (16 USC 703 et seq))	This project is in compliance with this direction. Addressed in text (Section 3.8)

<b>Element of the Environment /Authority</b>	<b>Remarks/Effects</b>
Native American Religious Concerns (American Indian Religious Freedom Act of 1978 (42 USC 1996))	This project is in compliance with the AIRFA because there no known Native American religious sites are in the project area and no concerns from any Tribes were received during the scoping period. Addressed in text (Section 5.2, 5.3).
Noxious weed or non-Invasive, Species (Federal Noxious Weed Control Act and Executive Order 13112)	This project is in compliance with this direction because due to the manner in which material will be transported to, and moved on site, no adverse effect from invasive species is anticipated. Cable-yarder, excavator, and self-loader will be washed and inspected prior to entering public lands to insure that no invasive weeds will be transported to the project site (USDI 2003).
Park lands [40 CFR 1508.27(b)(3)]	No Parklands are present within the project area.
Public Health and Safety [40 CFR 1508.27(b)(2)]	The project would have no adverse concern on public health and safety because all actions would follow established safety procedures for operating equipment, minimizing emissions, and avoiding fuel spills.
Other Special Status Species (BLM Manual 6840)	<p>Fish -No other special status fish species are present in Elkhorn Creek and the Little North Santiam River.</p> <p>Plants - No Special Status Species (SSS) are known from the proposed project area. Habitat for some SSS (i.e. hypogeous and epigeous fungi) does exist in the proposed project area, however, impact to the habitat or any undiscovered SSS that might occur is not anticipated and will not contribute to the need to list any SSS as threatened or endangered under the ESA act.</p> <p>Wildlife: The proposal would not contribute to the need to list any special status wildlife species due to the nature, duration and timing of the project. Addressed in text (Section 3.8).</p>
Threatened or Endangered Species (Endangered Species Act of 1983, as amended (16 USC 1531))	<p>This project is in compliance with this direction because there would be no adverse effects on Threatened or Endangered Species.</p> <p><i>Fish</i> - Addressed in text (Sections 3.3, 3.4, and 5.2.1.2)</p> <p><i>Plants</i> - No T&amp;E plant species or habitat are known or suspected to exist in the project area.</p> <p><i>Wildlife</i> - The proposed action would have no effects to T&amp;E wildlife or habitat due to the nature, duration and timing of the project. Addressed in text (Section 5.2.1.1)</p>
Water Quality –Drinking, Ground (Safe Drinking Water Act, as amended (43 USC 300f et seq.) Clean Water Act of 1977 (33 USC 1251 et seq.)	This project is in compliance with this direction. Addressed in text (Section 3.6)
Wetlands (E.O. 11990 Protection of Wetlands 5/24/77) [40 CFR 1508.27(b)(3)]	This project is in compliance with this direction because no jurisdictional wetlands are in the project area. Addressed in text (Section 3.2)
Wild and Scenic Rivers (Wild and Scenic Rivers Act, as amended (16 USC 1271) [40 CFR 1508.27(b)(3)]	This project is in compliance with this direction because the project follows direction for management within W&S rivers Addressed in text (Section 3.8)
Wilderness (Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.); Wilderness Act of 1964 (16 USC 1131 et seq.)	This project is in compliance with this direction because the project does not take place within Wilderness.

### 3.10 Compliance with the Aquatic Conservation Strategy

#### 3.10.1 Compliance with the Aquatic Conservation Strategy

Table 3 shows compliance with the four components of the Aquatic Conservation Strategy for all Action alternatives (1/ Riparian Reserves, 2/ Key Watersheds, 3/ Watershed Analysis and 4/ Watershed Restoration).

**Table 3: Compliance of Components of the Aquatic Conservation Strategy**

ACS Component	Project Consistency
<b>Component 1 - Riparian Reserves</b>	The proposed project would not negatively affect the integrity of Riparian Reserves. Placement of large wood (LW) would improve riparian and floodplain functioning.
<b>Component 2 - Key Watershed</b>	The Little North Santiam is a Tier 1 key watershed. The proposed project has been designed to meet the Tier 1 objective of conserving anadromous and resident fish species.
<b>Component 3 - Watershed Analysis</b>	The Little North Santiam Watershed Analysis (WA) was conducted by BLM in 1997. The WA recommended placement of large wood (LW) on lower Elkhorn Creek to stabilize channels and floodplains and improve aquatic habitat complexity (WA, Ex. Sum., Pg. 5), and the implementation of riparian restoration projects on the Little North Santiam River (WA, Ex. Sum., Pg. 4)
<b>Component 4 - Watershed Restoration</b>	The proposed project is a restoration project. The restoration objectives of the project are described in section 1.3.

#### 3.10.2 Documentation of Consistency with the Nine Aquatic Conservation Strategy Objectives for all Action Alternatives

This project was reviewed against the ACS objectives at the project scale. Table 4 describes the project's consistency with the nine Aquatic Conservation Strategy Objectives.

**Table 4: Consistency with the Nine Aquatic Conservation Strategy Objectives**

Consistency with ACS Objectives	Reasoning
<p><b>1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.</b></p> <p><i>Both the No Action and the Proposed Action Alternatives do not retard or prevent the attainment of ACS objective 1.</i></p>	<p><b>No Action Alternative:</b> The No Action alternative would maintain the simplified aquatic habitat that currently exists. The current distribution, diversity and complexity of watershed and landscape-scale features would also be maintained.</p> <p><b>Proposed Action:</b> The diversity and complexity of aquatic habitat would be enhanced. The aquatic system would be restored to more closely resemble that to which the species, communities and populations are adapted. (Section 3.3.1)</p>
<p><b>2. Maintain and restore spatial and temporal connectivity within and between watersheds.</b></p> <p><i>Both the No Action and the Proposed Action Alternatives do not retard or prevent the attainment of ACS objective 2.</i></p>	<p><b>No Action Alternative:</b> Current connectivity within and between watersheds would be maintained.</p> <p><b>Proposed Action:</b> Connectivity within the watershed may be improved through improvement of habitat complexity. (Section 3.3.1)</p>

Consistency with ACS Objectives	Reasoning
<p><b>3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.</b></p> <p><i>The No Action Alternative may retard the attainment of ACS objective 3. The Proposed Action does not retard or prevent the attainment of ACS objective 3.</i></p>	<p><b>No Action Alternative:</b> The current condition of physical integrity would be maintained or improve slightly over the long term</p> <p><b>Proposed Action:</b> The physical integrity of shorelines, banks and bottom configurations would be restored by means of reintroduction of large structural elements and the retention of bedload that currently is routed rapidly through the system. (Section 3.2.1, 3.3.1, and 3.6.1)</p>
<p><b>4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.</b></p> <p><i>Both the No Action and the Proposed Action Alternatives do not retard or prevent the attainment of ACS objective 4.</i></p>	<p><b>No Action Alternative:</b> The current condition of the water quality would be maintained.</p> <p><b>Proposed Action:</b> Placement of large wood (LW) would improve water quality over the long term by increasing stream shade. Water quality would also be improved by increasing sediment deposition by placing LW to create areas of decreased stream velocities. (Section 3.6.1)</p>
<p><b>5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.</b></p> <p><i>The No Action Alternative may retard the attainment of ACS objective 5. The Proposed Action does not retard or prevent the attainment of ACS objective 5.</i></p>	<p><b>No Action Alternative:</b> Sediment currently in Elkhorn Creek would be expected to route quickly through the system into the Little North Santiam River. Bedload transport in both the Little North Santiam River and Elkhorn Creek would continue at a rapid pace with little instream structure to retain it.</p> <p><b>Proposed Action:</b> The addition of LW structure would be expected to retain some of the bedload in Elkhorn Creek and the Elkhorn side channel. Throughout the project area the sediment regime would be restored to one more closely resembling that under which the aquatic ecosystems evolved. (Sections 3.3.1 and 3.6.1)</p>
<p><b>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.</b></p> <p><i>Both the No Action and the Proposed Action Alternatives do not retard or prevent the attainment of ACS objective 6.</i></p>	<p><b>No Action Alternative:</b> No change in in-streams flows would be anticipated.</p> <p><b>Proposed Action:</b> The project is not expected to change instream flows, however, it would result in localized reductions in the velocities of high flows, and would restore patterns of sediment, nutrient and wood routing. (Sections 3.3.1 and 3.6.1)</p>
<p><b>7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.</b></p> <p><i>Both the No Action and the Proposed Action Alternatives do not retard or prevent the attainment of ACS objective 7.</i></p>	<p><b>No Action Alternative:</b> The current condition of flood plains and their likelihood of inundation, as well as the water table elevations in meadows and wetlands is expected to be maintained.</p> <p><b>Proposed Action:</b> The Elkhorn Creek channel has limited floodplain habitat due to its confinement by canyon walls, however, the addition of large structure is likely to restore floodplain inundation and water table elevation to the extent that the channel allows. Addition of LW will help restore floodplain function on the Little North Santiam River. No meadows and wetlands are near the project area. (Section 3.2.1)</p>

Consistency with ACS Objectives	Reasoning
<p><b>8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.</b></p> <p><i>Both the No Action and the Proposed Action Alternatives do not retard or prevent the attainment of ACS objective 8.</i></p>	<p><b>No Action Alternative:</b> Development of physical complexity and stability will occur over the long term as LW is delivered to the project site from upstream reaches.</p> <p><b>Proposed Action:</b> Riparian tree plantings will improve the species composition and structural diversity of riparian plant communities and improve supplies of LW over the long term. Restoration of plant composition would occur faster than under the no action alternative. (Section 3.2.1)</p>
<p><b>9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.</b></p> <p><i>The No Action Alternative may retard the attainment of ACS objective 9. The Proposed Action does not retard or prevent the attainment of ACS objective 9.</i></p>	<p><b>No Action Alternative:</b> The aquatic habitat would remain in a simplified state and less capable of supporting well-distributed populations of native invertebrate and vertebrate populations.</p> <p><b>Proposed Action:</b> Aquatic habitat in Elkhorn Creek and the Elkhorn side channel of the Little North Santiam River would be more capable of supporting well-distributed populations of native invertebrate and vertebrate populations due to increased habitat complexity and diversity. (Section 3.3.1)</p>

#### 4.0 LIST OF PREPARERS

Resource	Name	Initials	Date
Cultural Resources	Heather Ulrich	<b>HU</b>	5/3/11
Hydrology/ Water Quality/Soil	Patrick Hawe	<b>WPH</b>	4/26/11
Botany TES and Special Attention Plant Species	Terry Fennell	<b>TGF</b>	4/29/11
Wildlife TES and Special Attention Animal Species	Jim England	<b>JSE</b>	4/29/11
Fisheries	Bruce Zoellick	<b>BWZ</b>	4/29/11
Recreation Sites and Visual Resources Management and Rural Interface	Adam Milnor	<b>AM</b>	4/27/11
NEPA	Carolyn Sands	<b>CDS</b>	5/23/11

## **5.0 CONTACTS AND CONSULTATION**

### **5.1 Coordination with other Agencies and Organizations**

Oregon Department of Fish and Wildlife (ODFW) biologists were consulted with regarding project impacts to salmon and steelhead habitats.

### **5.2 Consultation (ESA Section 7 and Section 106 with SHPO)**

#### **5.2.1 ESA Section 7 Consultation**

##### ***5.2.1.1 US Fish and Wildlife Service***

The only threatened or endangered species which this project could affect would be the northern spotted owl. Due to the nature, duration and timing of this project, no adverse effects to the northern spotted owls or their habitat are anticipated. No suitable habitat would be removed or downgraded, and suitable habitat would be maintained after individual tree removal for the project. The project would occur outside of the critical nesting season for spotted owls. The project area is not located in Critical Habitat and is not located within disturbance distance of any known spotted owl sites.

##### ***5.2.1.2 NOAA Fisheries (NMFS)***

Determinations have been made that the project may affect, but is not likely to adversely affect Upper Willamette River (UWR) steelhead trout, and UWR Chinook salmon. Consultation for aquatic restoration projects such as this are included in the Programmatic Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Fish Habitat Restoration Activities in Oregon and Washington, CY2007-CY2012 issued by NMFS on June 27, 2008.

#### **5.2.2 Cultural Resources - Consultation with State Historical Preservation Office:**

Pre-project cultural resource inventories were conducted according to our *Protocol for Managing Cultural Resources on Lands Administered by the Bureau of Land Management in Oregon*. No cultural resources were discovered within the project area, thereby removing any further need to consult with the State Historic Preservation Office.

### **5.3 Public Scoping and Notification**

A scoping letter was sent on April 15, 2011 to federal, state and municipal government agencies and interested parties on the Cascades Resource Area mailing list. The letter briefly described the project and included a map of the project area.

#### **5.3.1 EA public comment period**

The EA and FONSI will be made available for public review June 8, 2011 to June 23, 2011. The notice for public comment will be published in a legal notice by the *Stayton Mail* newspaper. Comments received by the Cascades Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before June 15, 2011 will be considered in making the final decisions for this project.

## 6.0 MAJOR SOURCES

### 6.1 Major Sources

ODFW (Oregon Department of Fish and Wildlife). 1994. *Physical Habitat Surveys 1994. Aquatic Inventories Project, Natural Production Program. Little North Fork Santiam River Basin.*

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USDI. Bureau of Land Management. 2003. *Environmental Assessment No. OR-080-02-02 and Finding of No Significant Impact, Cascades Resource Area Invasive Non-Native Plant Management.* Salem, Oregon

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USDI. Bureau of Land Management. 1995. *Salem District Record of Decision and Resource Management Plan.* Salem, Oregon.

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