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SDS Company LLC
(dba Stevenson Land Company)
and Broughton Lumber Company
Northern Spotted Owl Safe Harbor Agreement

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Acronyms and Abbreviations

BLC	Broughton Land Company
circles	northern spotted owl management circles
dbh	diameter at breast height
ESA	Endangered Species Act
Forest Practice Rules	Washington Forest Practices Rules and Regulations
FR	Federal Register
GIS	geographic information system
HCP	habitat conservation plans
Northern spotted owl	spotted owl or owl
Parties	SDS, BLC, and FWS
Permit	Enhancement of Survival Permit
RD	Relative Density
SDS	SDS Company, LLC (dba Stevenson Land Company)
SHA	Safe Harbor Agreement
SMA	Special Management Area
SOSEA	Spotted Owl Special Emphasis Area
SSA	Special Set-Aside
State	State of Washington
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources

1 Introduction

SDS Co. LLC and its registered business name Stevenson Land Company (together SDS) and Broughton Lumber Company (BLC), herein referred to as the Applicants, own private timberlands in Skamania and Klickitat Counties in Washington, and Hood River and Wasco Counties in Oregon. BLC's approximately 13,000 acres and SDS' approximately 72,000 acres are within a 35-mile radius of the SDS Lumber Company's mills located in Bingen, Washington (Figure 1-1). A legal description of the ownership's covered lands is provided in Appendix A. SDS, founded in 1946, and BLC, founded in 1923, is committed to the sustainable management of their timberlands in a manner that has provided continued business certainty that promotes sound conservation practices, and supports family-wage jobs.

Currently, Washington Forest Practices Rules and Regulations (Forest Practices Rules) requires northern spotted owl (*Strix occidentalis caurina*) (spotted owl) circle management and protection on private timberlands (WAC 222-10-041, WAC 222-16-050). Under Forest Practices Rules, within Spotted Owl Special Emphasis Areas (SOSEAs), private landowners are restricted from conducting timber harvest of spotted owl habitat within a 0.7 mile radius circle, and the highest quality 2,605 acres of spotted owl habitat within 1.8-mile radius circle around spotted owl site centers (WAC 222-10-041). Two SOSEAs, the White Salmon and Columbia Gorge SOSEAs, encompass approximately 54% of the Applicants' lands in Skamania and Klickitat Counties. Thus, on these acres, the Applicants must comply with the Forest Practices Rules and operate under spotted owl circle protection rules that result in fixed radius circles managed to protect 0.7-mile radius "inner" circles and provide 40% suitable habitat within the 1.8-mile radius median annual home range circle. For private forest landowners, this approach to spotted owl conservation is restrictive and creates an incentive to eliminate spotted owl habitat as early as possible so that it is not their lands, but another's that are encumbered by the 40% requirement. Circle management has therefore created a disincentive for private forest landowners to create new habitat or allow existing suitable habitat to remain on their property out of concern that other landowners' will harvest their portions of the circle first and leave them unable to harvest their own. Fixed-circle habitat protection is also less desirable for the spotted owl than a landscape management approach (USFWS 2011, USFWS 2012). Circle management can restrict or exacerbate the ability of forest landowners to address forest health issues in the fire prone landscapes of the eastern Cascade Mountains, where the Applicant's lands are located. Here, large blocks of habitat can be eliminated in a single fire or forest health event. For this reason, permanently fixed habitat areas involve greater risk and are less desirable than landscape plans.

In Oregon, the Oregon Department of Forestry evaluates proposed activities within a half mile of a spotted owl nest site or activity center. Operations must leave a minimum 70-acre "core area" consisting of the best available suitable habitat encompassing the nest site. In most cases, timber harvesting within the core area is not allowed. Forest practices inside and outside of the core area that disturbs owls' nesting behavior must be deferred until the end of the breeding and fledgling season.

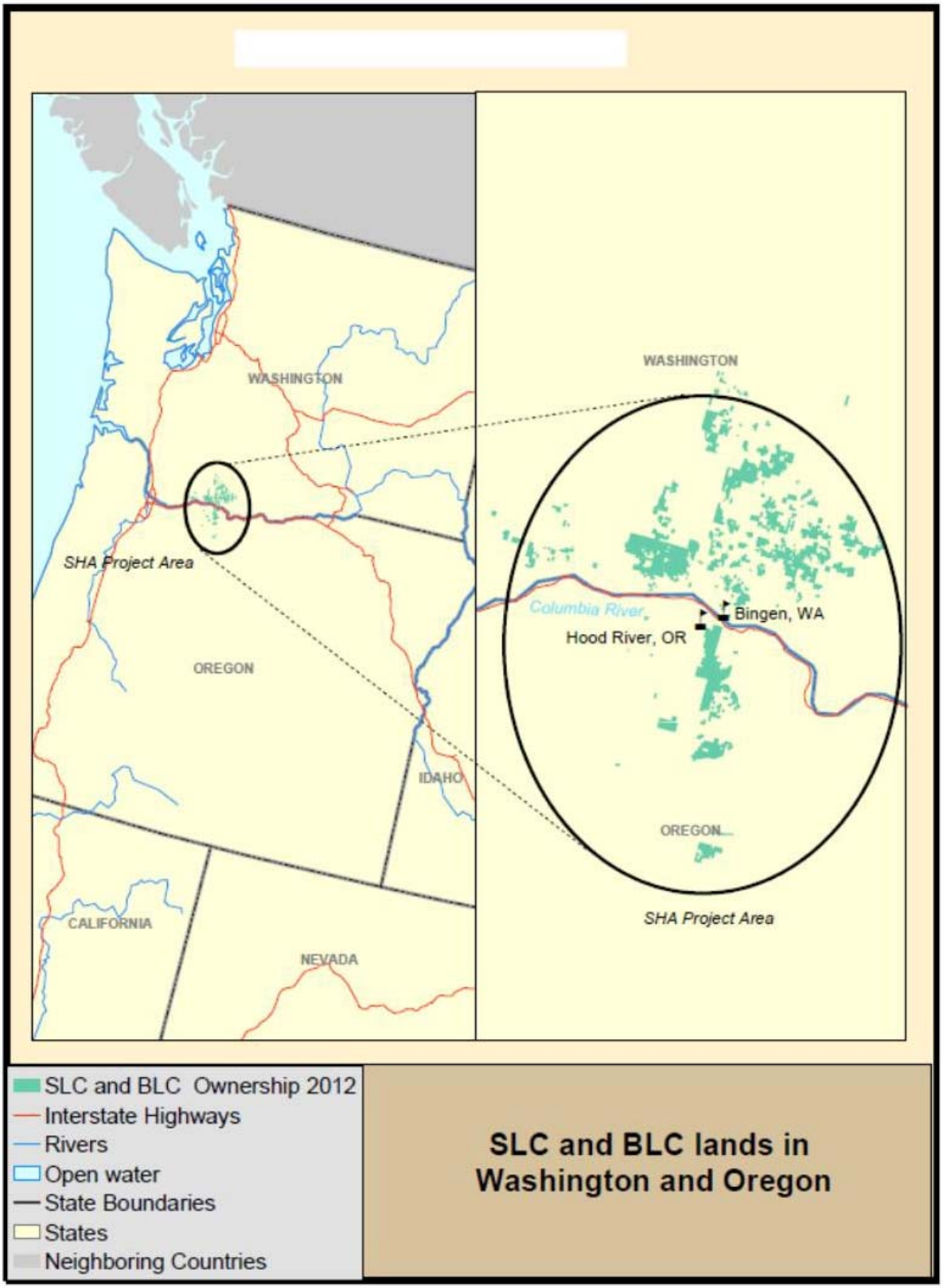

Figure 1-1. Project Area Location

To address spotted owl conservation and sustainable forestry issues, the Applicants and the U.S. Fish and Wildlife Service (FWS) have been engaged in a collaborative effort to develop a Safe Harbor Agreement (SHA) covering the Applicants' forestlands in south-central Washington and north-central Oregon. The purpose of this collaboration, underway since early 2011, has been to develop a conservation strategy with a landscape approach that accommodates the Applicants' desire to manage a sustainable forest in an economically viable manner while conserving the spotted owl according to Forest Practices Rules, as well as the ESA. The Applicants' landscape management approach contributes to owl recovery by complementing the existing owl landscape management strategies on adjacent federal and state forestlands. With the Applicants' participation in spotted owl conservation, it will be the first time in these SOSEAs, that a private landowner will join state and federal land managers to implement a landscape approach for spotted owl habitat.

Under the SHA, the Applicants propose to implement conservation measures that will provide immediate net benefits to the owls in the first year of the SHA as well as over the term of the SHA. This SHA will allow the Applicants to conduct future forest management activities in a predictable manner with the knowledge that future federal actions under the ESA will not result in additional restrictions to these activities.

1.1 Goals and Objectives

The goal of the Applicants is to be able to manage their forestlands with a landscape approach that results in a sustainable forest management regime and conservation plan that provides a net conservation benefit to the spotted owl. To that end, the Applicants are applying to FWS for an Enhancement of Survival Permit (Permit) from the FWS under Section 10(a)(1)(A) of the ESA, that allows them to conduct their forest management activities consistent with the SHA for the net benefit of the owl. As part of the application, the Applicants have prepared this SHA for submittal to FWS along with the Permit application. The only species to be covered in this SHA and by the Permit is the spotted owl, which was federally listed as threatened on July 23, 1990 (USFWS 1990a).

The Applicants anticipate that by agreeing to implement the provisions of the SHA, they will contribute to the conservation of the spotted owl by providing a net benefit to the species beginning in the first year, as well as over the term of the SHA while allowing them to manage their forest lands and to conduct forest management activities within the SOSEAs. The SHA eliminates the regulatory disincentives so that the Applicants can actively manage their forestlands and provide benefits to the spotted owl without concern that current and future Forest Practices Rules might restrict management of their lands.

The Applicants' SHA goals and objectives for the spotted owl are to provide dispersal and young forest marginal habitat as well as sub-mature and higher quality habitat in harvest set asides. These habitats provide both dispersal and demographic support, an established goal for lands within the SOSEAs. SOSEA goals are identified in the Forest Practices Rules and shown on the SOSEA maps (see WAC 222-16-086). SOSEA goals provide for demographic and/or dispersal support as necessary to complement the spotted owl protection strategies on federal lands within or adjacent to the SOSEA (WAC 222-16-010). The SHA provides sufficient

contributions to meet SOSEA goals by complementing the landscape management approach of the adjacent federal and state land managers. The Applicants will achieve these goals and objectives both in the near term and over the term of the SHA by immediately protecting Special Set-Aside Areas (SSAs) of spotted owl habitat and managing commercial forested lands in the plan area on an average rotation length of 60 years. In addition, the SHA provides silvicultural measures to benefit the spotted owl, including a snag-retention and creation program. The SHA will provide immediate benefits and there is no anticipated incidental take of owls in the near term, for many reasons, including the high presence of barred owls (*Strix varia*) and the lack of occupied nest sites on the covered property, the SHA provisions for a 240 acre nesting SSA and a 411-acre reserve in the White Salmon SOSEA, a 10 year deferral of harvest of any habitat in the 0.7 mile circle of the four site centers in which the Applicants' covered lands comprise greater than 15%, future nest site protection, and the support and enhancement of existing conservation agreements. The SHA will include a monitoring and reporting schedule to ensure that the anticipated benefits will accrue both in the near term and over the term of the SHA.

Several conditions have prompted the Applicants to seek a SHA and Permit from FWS. Although there are no recent records of owls on the SDS lands within the SOSEAs, they are known to have occurred (and may continue to occur) in activity centers on adjacent ownerships in close proximity to their forestlands. In addition, a large portion of SDS ownership lies within the SOSEAs, exposing it to potential regulatory risk from habitat requirements for regulatory owl circles as mentioned previously. Much of this ownership is comprised of potential habitat but it is outside of any owls circles and therefore currently available for harvest under Forest Practices Rules. The Applicants are currently implementing a 45-year rotation age harvest regime intended to eliminate current suitable owl habitat on all lands, inside and outside of the SOSEAs, to avoid potential regulatory burdens created in the future. Additionally, the Applicants' current management regime ensures that no habitat will grow into suitable owl habitat.

The Applicants would like to be relieved of these disincentives and the pressure to eliminate suitable owl habitat to avoid regulatory burdens. The Applicants' current management regime is necessary to ensure that they protect their ability to obtain logs to support the SDS Lumber Company mill and family wage jobs and to manage their forestlands for future rotations. These circumstances have prompted the Applicants' to pursue a SHA to manage their forest lands for operational, administrative, and economic flexibility while providing net benefits to the spotted owl. Specifically, the Applicants would like to manage their forestlands on a longer rotation than the industry standard of 45 years but are concerned that this would potentially create or enhance habitat used by spotted owls. With the assurances associated with the SHA, regulatory disincentives are eliminated and the Applicants can meet their goals while providing net benefits to the owl. Therefore, the Applicants seek to obtain authorizations and approvals for a 60-year conservation plan that addresses the conservation needs of the spotted owl, and that will support their management goals to foster economic stability and flexibility.

The goal for FWS is to provide greater conservation and protection for listed species under the ESA than would occur under Section 9 (take prohibition) of the ESA. By providing landowners with incentives to proactively create, retain, and enhance habitat for listed species, such as Safe

Harbor Agreements and Enhancement of Survival Permits, FWS improves its ability to conserve and protect listed species. At the same time, this SHA and Permit will provide assurances to the Applicants that they can continue to conduct long-term forest management activities without concern that future ESA take prohibitions may restrict their activities should the spotted owl occupy their lands in the future. Without this cooperative government-private effort, a landowner may be less likely to manage habitats in a manner considered beneficial for the covered species in the foreseeable future. The SHA offers a way to secure the willingness of a landowner to undertake such activities.

1.2 Contents of this Safe Harbor Agreement

This SHA submitted in support of an enhancement of survival permit will include information about the following:

- conservation goals and objectives;
- spotted owl habitats covered, including the habitat conditions and the enrolled property;
- elevated baseline for the spotted owl within the SHA covered lands;
- management actions that would be undertaken to accomplish the expected net conservation benefits to the spotted owl in the White Salmon SOSEA, the Columbia Gorge SOSEA and more generally over the Applicants' forest lands;
- benefits that will lead directly or indirectly to recovery, where the benefits would be achieved within the SOSEAs and outside the SOSEAs' and the timing of these benefits;
- agreed-upon time-frames in which these management actions will remain in effect to achieve the anticipated net conservation benefits;
- an assessment of whether incidental take is expected to occur during the term of the SHA and, if so, when the incidental take might occur;
- a notification requirement to provide FWS or appropriate state agencies with a reasonable opportunity to rescue individuals of a spotted owl before any authorized incidental taking occurs, if appropriate;
- landowner assurances;
- reporting requirements;
- the process for land additions, amendments, dispute resolution, and permit termination, transfer, and renewal;
- consistency of the SHA with applicable federal, state, and county laws and regulations; and
- monitoring schedule and the responsible parties who will monitor maintenance of the elevated baseline, implementation of terms and conditions of the SHA, and any incidental take as authorized in the Permit.

2 Authority and Purpose

2.1 Regulatory Environment

2.1.1 Federal

Sections 2, 7, and 10 of the ESA allow FWS to enter into this SHA. Section 2 of the ESA states that encouraging interested parties to develop and maintain conservation programs, through federal financial assistance and a system of incentives, is a key to safeguarding the nation's heritage in fish, wildlife, and plants. Section 7 of the ESA requires FWS to review programs that it administers and to use such programs to further the purposes of the ESA. By entering into this SHA, FWS will use its programs to promote such conservation. Section 10(a)(1)(A) of the ESA authorizes the FWS to issue enhancement of survival permits for listed species. This SHA is entered into pursuant to the Final Safe Harbor Policy (U.S. Department of the Interior and U.S. Department of Commerce 1999), Final Rule (U.S. Department of the Interior 1999), and Revisions to the Regulations for Safe Harbor Agreements and Candidate Conservation Agreements With Assurances (U.S. Department of the Interior 2004), and implements the intent of the Applicants and the FWS to follow the procedural and substantive requirements of section 10(a)(1)(A) of the ESA.

The purpose of this SHA is for the Applicants and FWS (Parties) to collaborate to develop a SHA that provides net benefits to the spotted owl while providing regulatory certainty for the Applicants to continue to actively manage their forestlands. By implementing enhanced forest management measures such as establishing SSAs, longer harvest rotations, thinning to accelerate forest growth and suitable owl habitat, a snag creation program, retaining more down wood than is required by Forest Practices Rules, and monitoring certain aspects of the SHA, the Applicants will retain and create potential habitat for the spotted owl. It is anticipated that management of the Applicants' lands in southern Washington and northern Oregon, as described in this SHA, will produce conditions that will facilitate dispersal of owls across their ownership, particularly in the White Salmon and Columbia Gorge SOSEAs, as well as provide demographic support. The Applicants will receive a Permit that authorizes incidental take of any owls due to the implementation of proactive habitat enhancement measures that increase habitat to the elevated baseline above the baseline, as defined in this SHA.

2.1.2 State of Washington

In 1974, the Washington State legislature passed the Forest Practices Act to provide protection to forest soils, fisheries, wildlife, water quality and quantity, air quality, recreation, and scenic beauty, while at the same time maintaining a viable forest products industry. The Forest Practices Act regulates forest practices such as timber removal, road construction and maintenance, reforestation, and the use of forest chemicals. The Forest Practices Rules, embodied in the WAC (Title 222 WAC) were first adopted in 1976 and apply to non-federal and non-tribal forestlands in the state. All forest landowners must conduct their forest management activities according to the Forest Practices Rules but only landowners that cut more than 5,000 board feet per year have to file a Forest Practices Application/Notification. However, the current Forest Practices Rules provide for exceptions to operating under standard rules (Washington Forest Practices Board 2002). These exceptions include, among others, conducting forest

management operations under a federal conservation plan authorized under section 10 of the ESA (WAC 222-16-080).

In addition, the Washington Department of Natural Resources (WDNR) had adopted a Habitat Conservation Plan (HCP) to address state trust land management issues relating to compliance with the ESA (WDNR 1997). This plan covers state land managed by WDNR within the range of the spotted owl. WDNR amended its HCP to provide greater conservation benefits to the spotted owl in the Klickitat Planning Unit (HCP Amendment No. 1, Administrative Amendment to the Northern Spotted Owl Conservation Strategy for the Klickitat HCP Planning Unit 2004) (WDNR 2004).The Applicants lands are adjacent to WDNR lands (Figure 2-1) and the SHA would contribute to owl conservation for the State by enhancing and providing connectivity to the WDNR's HCP, as amended, for its spotted owl landscape management approach.

2.1.3 State of Oregon

In Oregon, the Forest Practices Act (ORS 527.610) identifies forest practices as any operation conducted on or pertaining to forestland, including but not limited to: (a) reforestation of forestland; (b) road construction and maintenance; (c) harvesting of forest tree species; (d) application of chemicals; (e) disposal of slash; and (f) removal of woody biomass. The rules specifically state that compliance with the forest practices rules does not substitute for or ensure compliance with the ESA and nothing in the rules imposes any state requirement to comply with the ESA. Landowners and operators are advised that federal law prohibit a person from taking certain threatened or endangered species, which are protected under the ESA.

Forest management operations must submit to the State Forester a written plan as required by ORS 527.670(3) before conducting any operations requiring notification under OAR 629-605-0140, including those operations within (1) 300 feet of a specific site involving threatened or endangered wildlife species, or sensitive bird nesting, roosting, or watering sites; or (2) 300 feet of any resource site identified in OAR 629-665-0100 (Sensitive Bird Nesting, Roosting and Watering Resource Sites on Forest lands), 629-665-0200 (Threatened and Endangered Species that use Resource Sites on Forest lands), or 629-645-0000 (Significant Wetlands), or (3) 300 feet of any nesting or roosting site of threatened or endangered species listed by the FWS or by the Oregon Fish and Wildlife Commission by administrative rule. Written plans required under OAR 629-605-0170 must contain a description of how the operation is planned to be conducted in sufficient detail to allow the State Forester to evaluate and comment on the likelihood that the operation will comply with the Forest Practices Act or administrative rules.

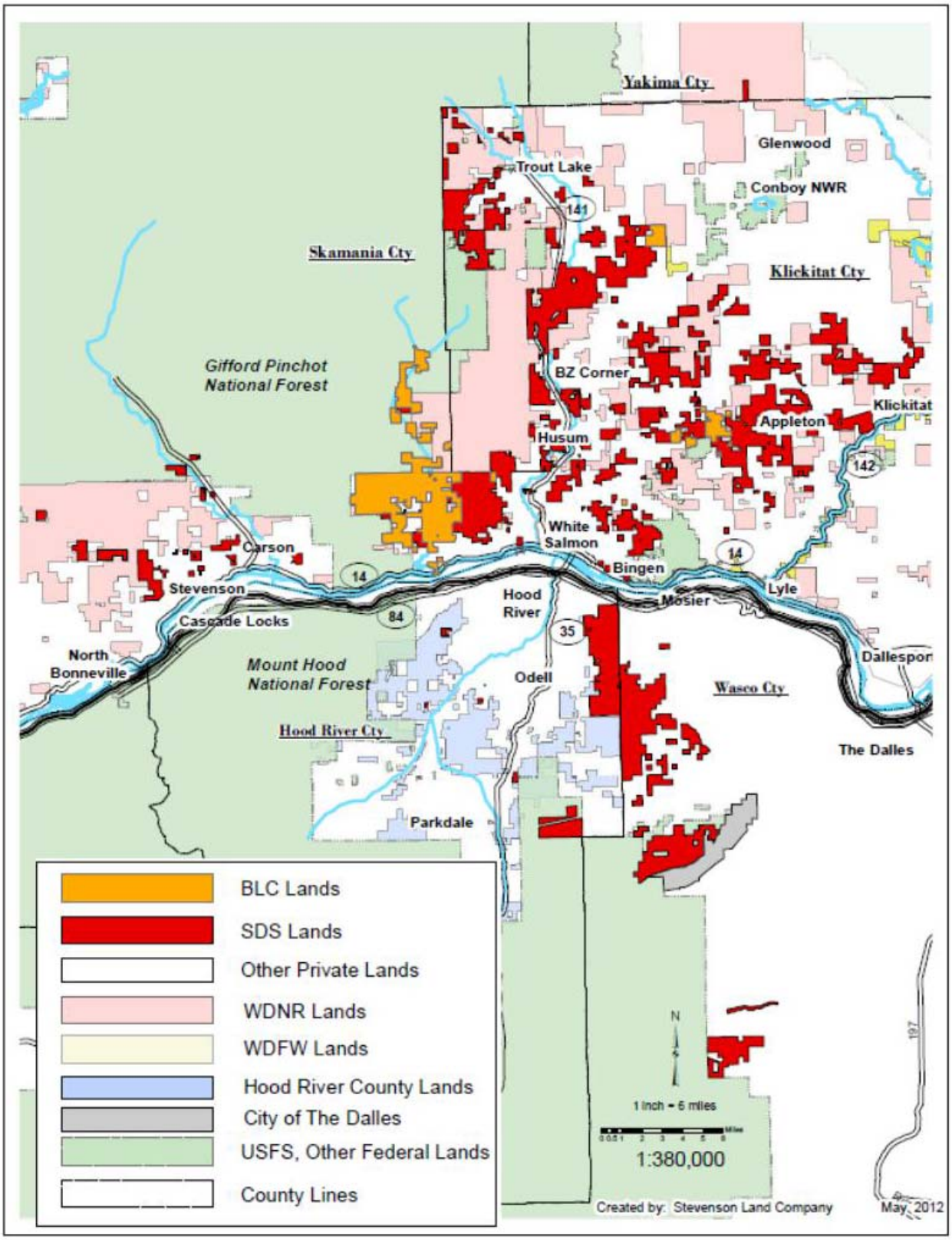

Figure 2-1. Applicant's Lands and Adjacent Ownerships

3 Background

This chapter describes the lands and the species covered under the SHA, and the species and baseline conditions of the Applicants' ownership in Skamania and Klickitat Counties in Washington, and Hood River and Wasco Counties in Oregon.

3.1 Description of Covered Area

3.1.1 General

Applicant SDS owns a total of 71,857 acres located in south-central Washington in Klickitat, Skamania, and Yakima Counties and in north-central Oregon in Hood River and Wasco Counties (Table 3-1). Of this ownership, 13,472 acres are classified as non-commercial forestland where hardwood dominated forests or mixed conifer-hardwood forests exist. The primary hardwood species in the area is Oregon white oak and the primary conifer species in the area of applicant's lands is Douglas fir. Of applicant SDS' 71,857 total acres, 58,385 acres (81%) are considered to be commercial forestlands available for active forest management. The 13,472 acres (19%) of non-commercial forestlands contribute valuable spotted owl prey base and biological and habitat diversity to the region. Deducting from the total acreage, SDS is excluding 2,671 acres from coverage under the SHA because of current or planned non-forestry uses that may be incompatible with long-term forestry. Therefore, the covered acreage of SDS is 69,186 acres.

Applicant BLC owns a total of 12,956 acres located in Skamania and Klickitat Counties of Washington (Table 3-1). Of this ownership, 1,355 acres are classified as non-commercial forestland where hardwood dominated forests or mixed conifer-hardwood forests exist. The primary species on BLC's lands is Douglas fir. Of applicant BLC's 12,956 total acres, 11,601 acres (90%) are considered to be commercial forestlands available for active forest management. The 1,355 acres of non-commercial forestlands contribute valuable spotted owl prey base and biological and habitat diversity. Deducting from the total acreage, BLC is excluding 555 acres from coverage under the SHA because of current or planned non-forestry uses that may be incompatible with long-term forestry. Therefore, the covered acreage of BLC is 12,401 acres.

Combined, the Applicants SDS and BLC desire to have SHA coverage on 81,587 acres of their lands intended for long-term resource management as shown in Figure 3-1 and detailed in Table 3-1. For clarity, Applicant desires to have SHA coverage on all of their lands except those shown as excluded in Figure 3-1. As mentioned above, Applicants' have current and planned alternate uses on a small portion of their lands (3,226 acres or 4%) that are inconsistent with the long-term commitments and obligations regarding forest management included within this SHA. Rather than amending this SHA in the future for current and planned non-forestry uses, Applicants intend to exclude these lands from coverage under the SHA. The excluded lands include commercial rock quarry, agricultural operations, existing and proposed residential uses, and the largest exclusion for a proposed wind energy project on Applicant's lands (Figure 3-1). Nearly all exclusions are currently non-habitat and outside of existing circles. The exclusion of these lands does not affect the net conservation benefits available from the SHA.

Table 3-1. Acreage of SDS and BLC Lands in Oregon and Washington.

Acreage of both SDS and BLC lands in Oregon and Washington.
Note: BLC has no land in the Columbia Gorge SOSEA or in Oregon.

	Washington						Oregon		
	White Salmon SOSEA		Columbia Gorge SOSEA		Outside SOSEA				
Land Use Type	**SDS**	**BLC**	**SDS**	**BLC**	**SDS**	**BLC**	**SDS**	**BLC**	**Totals**
Total Acres	***21,530***	***11,107***	***3,103***		***28,071***	***1,849***	***19,153***		***84,813***
Commercial Forestlands	18,672	9,888	2,927		24,645	1,713	12,141		69,986
Oak Woodland	1,123	111	0		1,132	38	5,285		7,689
Productive Oak Woodlands	949	0	0		843	0	920		2,712
Leave Areas – Riparian, Wetlands, Waterways	139	176	84		224	0	43		666
Leave Areas - Other	13	0	17		2	0	8		40
Brush	189	557	9		80	74	122		1,031
Grassland	172	71	0		589	24	561		1,417
Non- Forest (Roads, Utilities, Rights of Way)	246	288	64		389	0	51		1,038
Rock & Pits	27	16	2		167	0	22		234
SUBTOTALS	***21,530***	***11,107***	***3,103***		***28,071***	***1,849***	***19,153***		***84,813***
Excluded from SHA (proposed non-forestry uses)	(1,152)	(524)	0		(1,519)	(31)	0		(3,226)
Total Covered Acres under Safe Harbor	***20,378***	***10,583***	***3,103***		***26552***	***1,818***	***19,153***		***81,587***

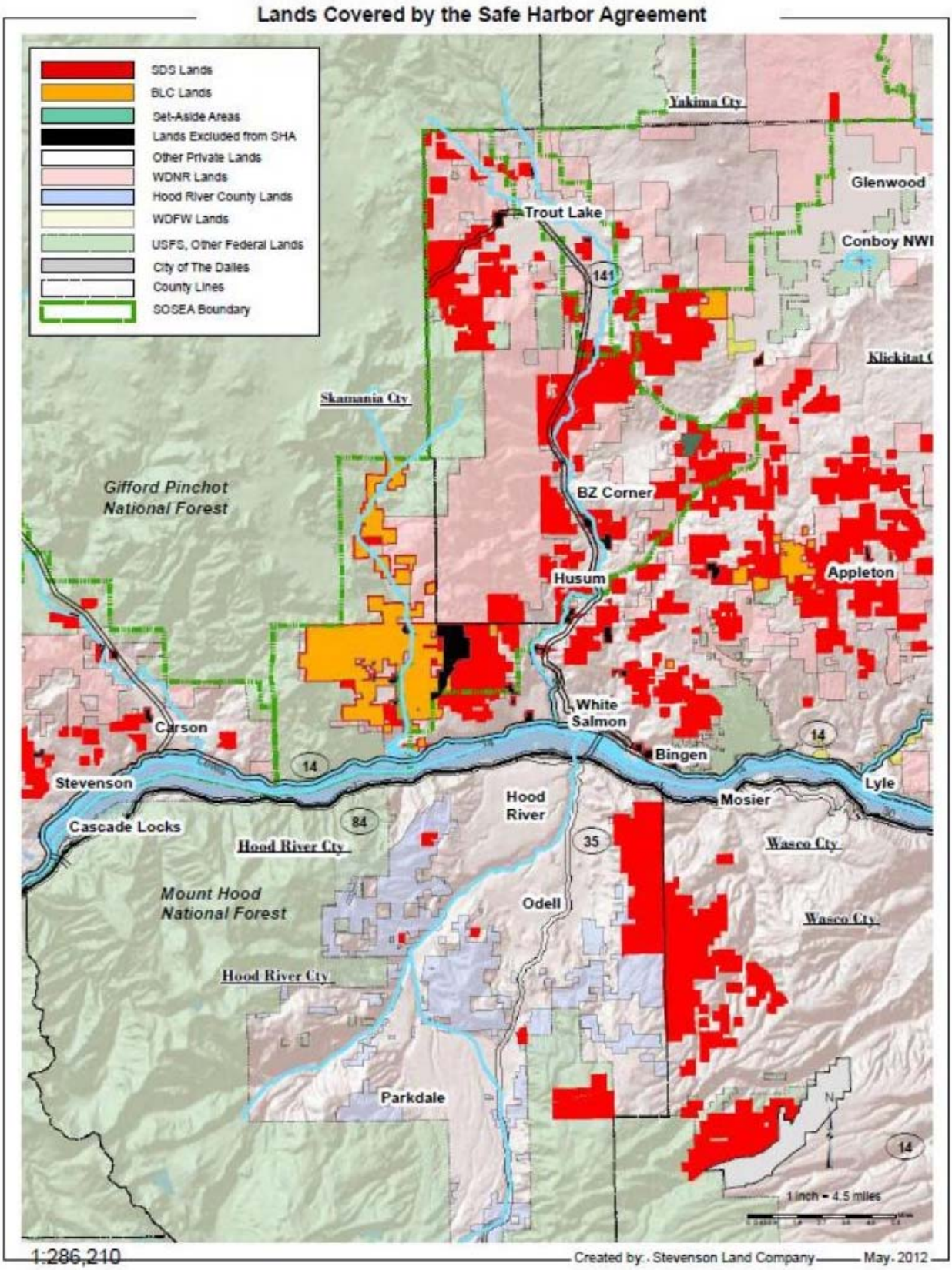

Figure 3-1. Geographic Details of Applicants Ownership & Covered Lands

Most of the Applicants' lands are situated, in general, at lower elevations near the Columbia River Gorge, within the general landscapes of the lower Wind River, Little White Salmon River, White Salmon River, and the Appleton Plateau physiographic areas in Washington. Additional lands occur along the Gilmer Creek, Rattlesnake Creek, and Klickitat River drainages in Washington, and the lower Hood River, Mosier Creek and Rock Creek drainages in Oregon (Figure 3-1). Western portions of the ownership are within wetter portions of the Cascades rain shadow, receiving over 100 inches of rain per year and support western hemlock/Douglas fir dominated forests (mostly within the Columbia Gorge SOSEA). Farther east, in the western portions of the White Salmon SOSEA, Douglas fir is the dominant forest tree, with some western red cedar and grand fir also commonly occurring. In the eastern portions of the White Salmon SOSEA and lands to the east, rain shadow effects diminish the overall dominance of Douglas fir, where it now co-occurs with increasing amounts of ponderosa pine, grand fir, and other dry forest species. Big leaf maple and some red alder are important deciduous species in many stands in the western portions of the ownership. Oregon white oak becomes the dominant deciduous species in eastern portions of the ownership, where it can form almost pure stands in some areas. Applicant's lands in Oregon are very similar in forest conditions as the eastern portions of the White Salmon SOSEA and lands to the east of the White Salmon SOSEA. Douglas fir is the dominant species with grand fir, ponderosa pine, and Oregon white oak as secondary species.

The lower elevations found on most of the Applicants ownership allow for a situation where forest stands useful for spotted owl roosting, foraging, and dispersal, can be achieved in shorter time frames than is typical for mid- to high elevation sites in the southern Cascades of Washington. As shown by recent surveys to identify stands in the Washington portions of the covered area that meet the Washington state definitions of Eastside Young Forest-Marginal (YFM) Habitat, this habitat can occur as young as 38 years, but more commonly after age 45, and almost assuredly after age 60 (Raedeke Associates, Inc., unpubl. data).

In some cases, 40-year-old stands on Applicant's ownership may have the characteristics and function to be useful for spotted owls as foraging and roosting habitat, but they do not exactly meet every component of the definition of Eastside YFM Habitat. The most typical missing component is usually sufficient numbers of intermediate trees to meet the definition of Eastside YFM-Closed Canopy habitat. These stands had developed in such a fashion that the smaller intermediate trees had been suppressed by the time the stand had reached age 40, and the overall vigor of the stands and lack of disturbances that could have opened light gaps, prevented the growth of an intermediate tree layer. While some of these stands may be missing this intermediate tree component of the Eastside Young Forest Marginal-Closed Canopy habitat definition, they may still be used by spotted owls as foraging and roosting habitat. This is particularly relevant during the non-breeding season, when habitat preferences expand beyond those that are well known during the breeding season (Hamer et al. 2007). In almost all cases, 40-year stands function as spotted owl dispersal habitat, and are capable of meeting the definitions of Eastside Dispersal Habitat.

In addition, the Applicants lands are unique among large private forestlands in Washington in the abundance of Oregon White oak habitat on their ownership. Spotted owl use of this habitat is poorly studied in the State. We canvassed local biologists with some knowledge of this

habitat type and its use by spotted owls (including data from telemetry studies), and all of them stated that spotted owls will use stands of oaks, particularly at night for foraging. Some commented that owls would even use this type for roosting during the daytime, particularly if there are patches of Douglas fir large enough to provide secure roosting sites (T. Fleming, M. Neutzmann, D. Rock; pers. comm.). Oregon White oaks produce acorns that are undoubtedly important food for major prey species of spotted owls (e.g., northern flying squirrels and bushy-tailed wood rats), which likely triggers the utility of this habitat for foraging by spotted owls.

3.1.2 Adjacent Landowners

In Washington, the covered lands in southern Skamania County, near the towns of Stevenson and Carson, are intermingled with WDNR managed lands and other private ownerships with the Gifford Pinchot National Forest to the north. To the east, the covered lands are adjacent to Columbia Gorge National Scenic Area along the Columbia River. The covered lands in Klickitat County are more widely dispersed and intermingled with WDNR, numerous private ownerships and local jurisdictions. Large blocks of WDNR-managed lands are located west and north of covered lands in Klickitat County while parts of the Gifford Pinchot National Forest also border the covered lands to the west. Along the Columbia River in Klickitat County, substantial acquisitions of both state and private land has occurred by the United States Forest Service as special management areas of the Columbia Gorge National Scenic Area (See Figure 2-1).

In Oregon, SDS lands in northern Hood River and Wasco Counties are bordered by other private ownerships and forestlands owned by Hood River County to the east and west. The covered lands are adjacent to the Mount Hood National Forest to the south, and the City of the Dalles ownership to the southeast.

3.2 Covered Species

The only listed species with the potential to occur in the covered lands is the spotted owl, which, as stated previously, is federally listed as threatened. The spotted owl is also listed as endangered on the WDFW State Species of Concern list. The spotted owl is the only “covered species” in the SHA, as defined in the FWS Safe Harbor Policy (U.S. Department of the Interior 1999).

3.2.1 Northern Spotted Owl

Status - The owl was federally listed as threatened under the ESA on June 26, 1990 (USFWS 1990a). Detailed accounts of the taxonomy, ecology, reproductive characteristics, and status and trends of the spotted owl are found in numerous federal documents (Courtney et al. 2004, USFWS 2008, USFWS 2011, Davis et al. 2011).

On May 16, 2008, the FWS announced the release of the Final Recovery Plan for the Northern Spotted Owl (USFWS 2008). Of note are five main elements of the recovery plan, one of which was to create incentives to non-federal landowners to contribute to owl recovery through land management. On June 28, 2011, the FWS released the Revised Recovery Plan for the Northern Spotted Owl, wherein FWS reiterated the important role that State and private lands can play toward implementing a coordinated and cooperative effort to recover the spotted owl (USFWS 2011). The FWS stated they will continue to work with these landowners to use a

variety of voluntary incentives and approaches that will help contribute to spotted owl recovery through protection and development of unoccupied, high-quality habitat. Lands covered under section 10 of the ESA provide for the conservation of key habitat areas and occupied sites. The net conservation benefits of SHAs are often direct contributions to recovery, even if of a limited temporal nature. Specifically, Recovery Action 14 encourages applicants to develop Habitat Conservation Plans and Safe Harbor Agreements that are consistent with the recovery objectives.

The FWS' Revised Recovery Plan for the Northern Spotted Owl was intended to inform the FWS' revision of the designation of critical habitat for the Northern Spotted Owl. In 1992, FWS designated critical habitat for the owl within 190 Critical Habitat Units, which in Washington encompassed 2.2 million acres (USFWS 1992). At that time, only federal lands were designated as critical habitat in the final rule. On March 8, 2012, FWS released its proposed rule to revise the designated critical habitat for the spotted owl, which would include State and private lands in the designation (USFWS 2012). However, FWS proposes to exclude certain areas from the final designation after taking into consideration economic impacts, impacts on national security, and any other relevant impacts of specifying any particular area as critical habitat. One of these exclusions includes approximately 936,816 acres of State and private lands that have a Habitat Conservation Plan, Safe Harbor Agreement, conservation easement, or similar conservation protection. In particular, in its proposed rule the FWS stated that it was in the process of negotiating a conservation plan with the Applicants. The FWS further identified the Applicants' SHA in Table 5 – Private Lands Proposed or that May be Considered for Exclusion from the Final Rule. *Id.* at 14133. The Secretary may exclude areas from critical habitat if the Secretary determines that the benefits of exclusion outweigh the benefits of including those areas as part of the critical habitat. Consistent with the FWS' Safe Harbor Policy, the FWS recognizes the importance of creating incentives for private landowners to provide conservation measures for listed species and the need for partnerships with private landowners to provide conservation for listed species. The Applicants and FWS share the goal of having the SHA completed and the permit issued in time for the FWS to consider the provisions of the SHA in its final critical habitat rulemaking.

Ecology - The current range of the owl is similar to its historical range where forested habitat still exists, including western Washington (Gutierrez et al. 1995). The distribution of habitat is influenced by the natural and human-caused fragmentation of vegetation and natural topography (Thomas and Raphael 1993).

Owls generally rely on older forested habitats because they contain the structures and characteristics required for nesting, roosting, foraging, and dispersal. These characteristics include the following: (1) a multi-layered, multi-species canopy dominated by large overstory trees; (2) moderate to high canopy closure; (3) a high incidence of trees with large cavities and other types of deformities; (4) numerous large snags; (5) an abundance of large, dead wood on the ground; and (6) open space within and below the upper canopy for flight (Thomas et al. 1990; USFWS 1990b).

Owl home range size is variable, generally increasing from south to north, which is likely in response to decreasing habitat quality (USFWS 1990b). Home range size has been linked to

habitat type, availability, and abundance of prey (Zabel et al. 1995). Because the actual configuration of the home range is rarely known, the estimated median annual home range of an owl pair, based on radio telemetry data from Washington, is represented by a circle centered upon an owl activity center. Home range size for owl activity centers in the Washington Cascade Mountains is based on a 1.8-mile radius circle. FWS uses a 0.7-mile radius circle (984 acres) to delineate the core area most heavily used by owls during the nesting season.

In Washington, owl foraging occurs in nesting and roosting habitat, as well as in coniferous forest with smaller trees and less structural diversity, if prey such as the northern flying squirrel are present (Hanson et al. 1993). In the western Washington Cascade Mountains, owls used mature/old forests dominated by trees greater than 20 inches diameter at breast height (dbh) with greater than 60% canopy closure for roosting during the non-breeding season more often than expected, and used young forests with trees 8 to 20 inches dbh with greater than 60% canopy closure less often than expected based on availability (Herter et al. 2002). In the dry forests of eastern Washington, Loehle et al. (2011) found spotted owls preferred forest stands at moderate elevation below the cold subalpine zone but above the dry lowland open pine forests. Specifically they preferred; 1) riparian areas near small order streams; 2) forest types with Grand fir as a primary subcomponent of the stand, and 3) stands with greater than 50% canopy closure with average live tree dbh greater than 9 inches.

Owls exhibit high adult annual survival rates and are relatively long-lived (Anthony et al. 2006). Nest sites are usually located within stands of old-growth and late-successional forest dominated by Douglas fir, and they contain structures such as cavities, broken treetops, or mistletoe brooms (Forsman and Geise 1997, Gutierrez et al. 1995, Courtney et al. 2004). Owls do not build their own nests. Most nesting occurs within naturally formed cavities in live trees or snags. In general, courtship and nesting behavior begin in February through March with nesting occurring from April through June. After young fledge from the nest, they depend on their parents until they are able to fly and hunt on their own.

Natal dispersal of owls from Oregon and Washington typically begins from mid- to late September, and it is remarkably synchronous across broad areas (Forsman et al. 2002). Dispersal direction from individual territories may be non-random in response to the local distribution of habitat and topography (Forsman et al. 2002). Natal dispersal occurs in stages, with juveniles settling in temporary home ranges between bouts of movement (Forsman et al. 2002). Successful dispersal of juvenile owls depends on their ability to locate unoccupied suitable habitat (LaHaye et al. 2001). Breeding dispersal occurs among a small proportion of adult owls; these movements are more frequent among females and unmated individuals (Forsman et al. 2002). Breeding dispersal distances are shorter than natal dispersal distances and also apparently random in direction (Forsman et al. 2002). Large non-forested valleys are apparent barriers to natal and breeding dispersal. Forested foothills between valleys may provide the only opportunities for dispersal (Forsman et al. 2002). Dispersing juvenile owls experience high mortality rates, exceeding 70% in some studies (U.S. Fish and Wildlife Service 1990a; Miller 1989). Leading known causes of mortality are starvation, predation, and accidents (Miller 1989; U.S. Fish and Wildlife Service 1990a; Forsman et al. 2002).

Composition of prey in the owl's diet varies regionally, seasonally, annually, and locally, likely in response to prey availability (Carey 1993; Forsman et al. 2001; Forsman et al. 2004). Owls are mostly nocturnal (Forsman et al. 1984) but they may forage opportunistically during the day (Laymon 1991; Sovern et al. 1994). Northern flying squirrels are usually the predominant prey throughout the range, with bushy-tailed wood rats, pocket gophers, pikas, and other medium-sized rodents also important prey in eastern Washington forests () .Thomas et al. 1990, Forsman et al. 2004).

Non-federal lands were determined to be an important contribution to achieving the range-wide goal of the conservation and recovery of the owl (Thomas and Raphael 1993). FWS's main expectations for private lands are for their contributions to demographic support (pair or cluster protection) and/or habitat connectivity. Much of the current conservation for owls on private lands is provided by HCPs developed under section 10 of the ESA or through Forest Practices Rules. There are approximately ten completed HCPs and SHAs with incidental take permits issued for owls in Washington. While each Section 10 conservation plan is unique, there are several general approaches to mitigation of incidental take of owls common to these plan, including 1) reserves of various sizes, some associated with adjacent federal reserves; 2) forest harvest that maintains or develops suitable habitat; 3) forest management that maintains or develops dispersal habitat; and 4) deferral of harvest near specific sites.

In 1996, the Washington Forest Practices Board adopted rules (Washington Forest Practices Board 1996) that would "contribute to conserving the owl and its habitat on non-federal lands" based on recommendations from a Science Advisory Group, which identified important non-federal lands and recommended roles for those lands in owl conservation (Hanson et al. 1993; Buchanan et al. 1994). The 1996 rules designated 10 SOSEAs in Washington that comprise over 1.5 million acres of state and private lands, where owl habitat protection on non-federal lands would be emphasized. At all sites within SOSEAs, any proposed harvest of suitable owl habitat within a territorial owl circle is considered a Class-IV Special and would trigger SEPA review.

In SOSEAs, all suitable habitat within 0.7 mile of owl activity centers, and 40% of suitable habitat within the provincial median annual home range circle surrounding an occupied activity center, is generally protected from timber harvest. Proposed harvest that would reduce habitat amounts below these levels are considered to have a probable significant adverse effect on the environment with respect to SEPA. If a determination of significance is made, preparation of a SEPA Environmental Impact Statement (EIS) is required prior to proceeding. If a determination of non-significance or mitigated determination of non-significance is reached, the action can proceed without further environmental assessment. Under the 1996 Washington Forest Practices Rules, suitable owl habitat located on non-federal lands outside of owl management circles or SOSEA boundaries was not protected from timber harvest, except for the 70-acre core around the activity center, protected only during the nesting season.

3.2.2 Spotted Owl Emphasis Areas

SOSEAs are defined and identified in the Forest Practices Rules (WAC 222-16-010, WAC 222-16-086). The SHA commitments are established based upon the existing SOSEA boundaries,

irrespective of any changes in the Forest Practices Rules. Different SOSEAs have different biological goals for spotted owls depending on the geographic location of the SOSEA and the conservation needs of the spotted owl based on past scientific documentation (Thomas et al. 1990, Buchanan et al. 1994). Both the Columbia Gorge and White Salmon SOSEAs have a goal of providing a combination of dispersal support and demographic support, where either suitable spotted owl habitat should be maintained to protect the viability of the owl(s) associated with each spotted owl site center or a variety of habitat conditions should be provided which in total are more than dispersal support and less than demographic support. This can be accomplished by providing:

(a) Dispersal support as defined in the Forest Practices Rules;

(b) Areas of suitable spotted owl habitat that contain some opportunities for nesting as well as roosting and foraging habitat; and

(c) Connectivity between areas of SOSEAs designated for demographic support or adjacent federal lands, which are designated as late successional reserves, congressionally reserved areas, or administratively withdrawn areas.

Within SOSEAs, the following amounts of suitable habitat are generally assumed to be necessary to maintain the viability of the owl(s) associated with each spotted owl site center, in the absence of more specific data or a mitigation plan:

(a) All suitable spotted owl habitat within 0.7 mile of each spotted owl site center;

(b) A total of 2,605 acres of suitable spotted owl habitat within the median home range circle (1.8-mile radius).

Outside SOSEAs, during the nesting season (between March 1 and August 31), 70 acres of the highest quality suitable spotted owl habitat surrounding a northern spotted owl site center should be maintained. The 70 acres for one site center shall not be utilized for meeting suitable habitat needs of any other site center.

Overall, approximately 40% of the Applicants' total lands fall within the Columbia Gorge and White Salmon SOSEAs (WAC 222-16-086) (Figure 3-2) and, thus, forest management operations are expected to result in retention of habitat within 0.7 mile radius of existing spotted owl site centers, as well as retention of habitat on the Applicants' lands if considered part of the highest quality 2,605 acres within the 1.8 mile radius circle. Thirty spotted owl home range circles of 1.8-mile radius overlap some portion of the Applicants' land base. However, only site centers located within the White Salmon and Columbia Gorge SOSEAs have regulatory status under Washington Forest Practices rules. With the exception of only one site center, Site #753, located on the Applicants' ownership within the White Salmon SOSEA, all site centers within SOSEAs are currently located on USFS or WDNR ownership. Four of these sites are located within the Columbia Gorge SOSEA and 14 sites are located within the White Salmon SOSEA. The remaining twelve sites that overlap the Applicants' lands are not within a SOSEA.

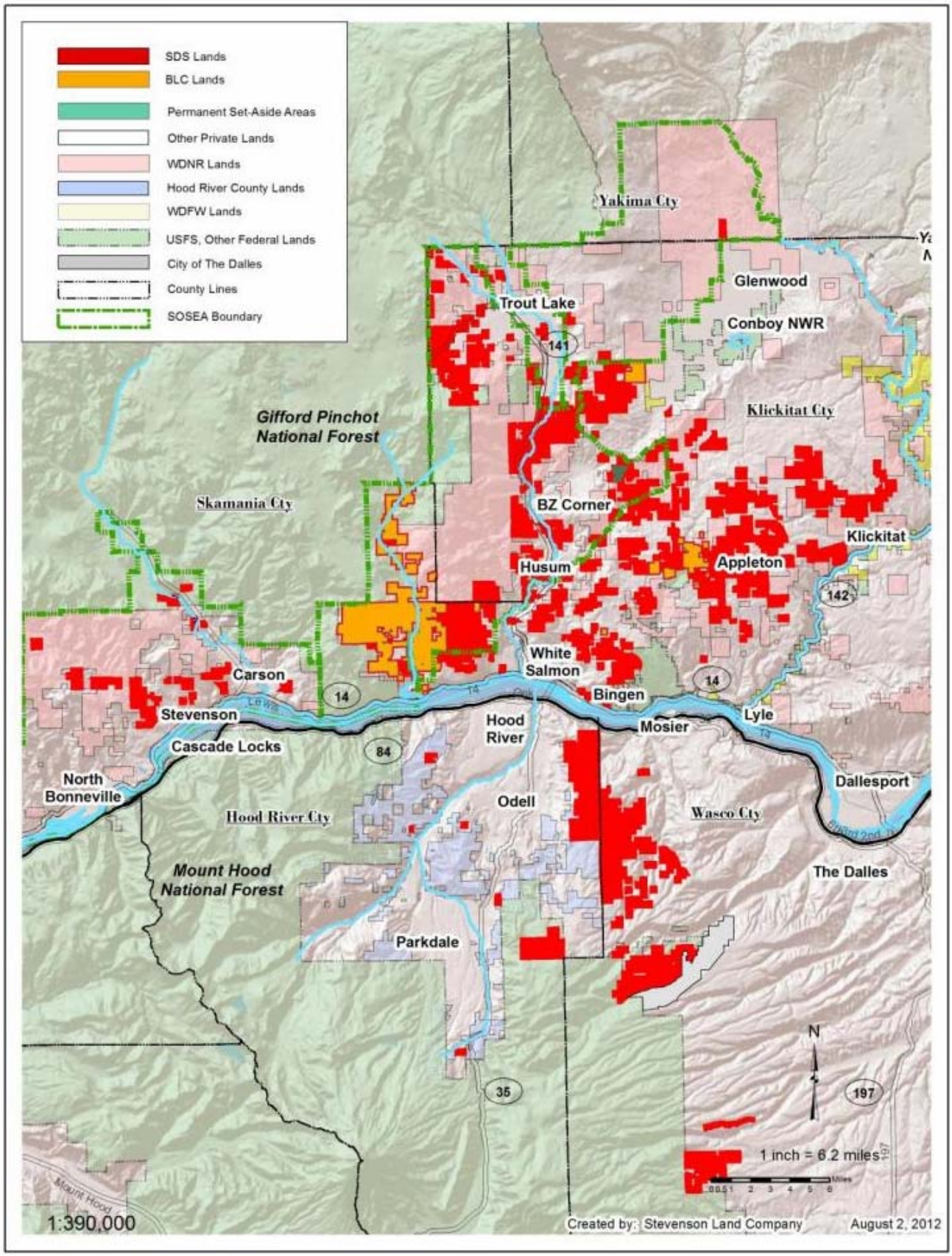

Figure 3-2. SOSEAS

3.3 Current Landscape Conditions

The Applicant's forestlands are generally site class III forestlands located in the transitional forest zone of the eastern foothills of the Cascade Mountains in Oregon and Washington. Forests in this area receive a high of 60 inches of rainfall per year in the western portions, to a low of 20 inches of rainfall per year in the eastern portions. The average rainfall on the covered lands is approximately 35 inches per year.

Forests on Applicant's lands are dominated by Douglas fir throughout the covered area, in both Oregon and Washington. Pure Douglas fir forest stands exist in the western and central areas of the covered lands while mixed Douglas fir, Grand fir and Ponderosa Pine forest stands exist in the eastern areas.

For many decades, the Applicant's forest management strategy was to practice long-rotation forestry, harvesting minimally to maintain forest health and allowing forest values to increase. The Applicant's lands were reserved from harvest because other sources of logs were generally available for harvest. As a result of this strategy, the Applicant's lands carry an inventory that is dominated by older forest age classes and larger diameter logs. Applicant's covered lands in Washington are shown in Figures 3-3 and 3-4. Applicant's covered lands in Oregon are in similar age class conditions. Applicant's combined commercial forest acreage with stands over 40 years of age is approximately 50,000 acres, or 60% of the total. Thus, the condition of the Applicant's forestlands is unusual among forest industry ownerships.

In approximately 1998, driven in part by declining supply of logs from Federal, State and other private sources, the Applicant's strategy changed to reduce total forest inventory and shorten the average rotation ages to be in line with industry standards. The principle reason behind this decision is the dwindling marketability of large diameter logs. As a result, the Applicants desire to achieve a lower average forest age with smaller average log diameters, gradually over the next several decades, in a manner that results in a desired age class distribution in the future. This conversion process, however, is being expedited due to regulatory risks that have been previously mentioned. Without the regulatory assurance of the SHA, the Applicants are driven to aggressively accelerate this conversion process to occur over the next decade. The result will be a rapid increase in the flow of harvested logs for a short period of time, which will result in economic disruption to local mills, including SDS Lumber Company, and communities. With the regulatory assurances provided by the SHA, the Applicants can proceed with achieving a conversion in a more orderly, sustainable fashion as determined by market conditions and resource management decisions.

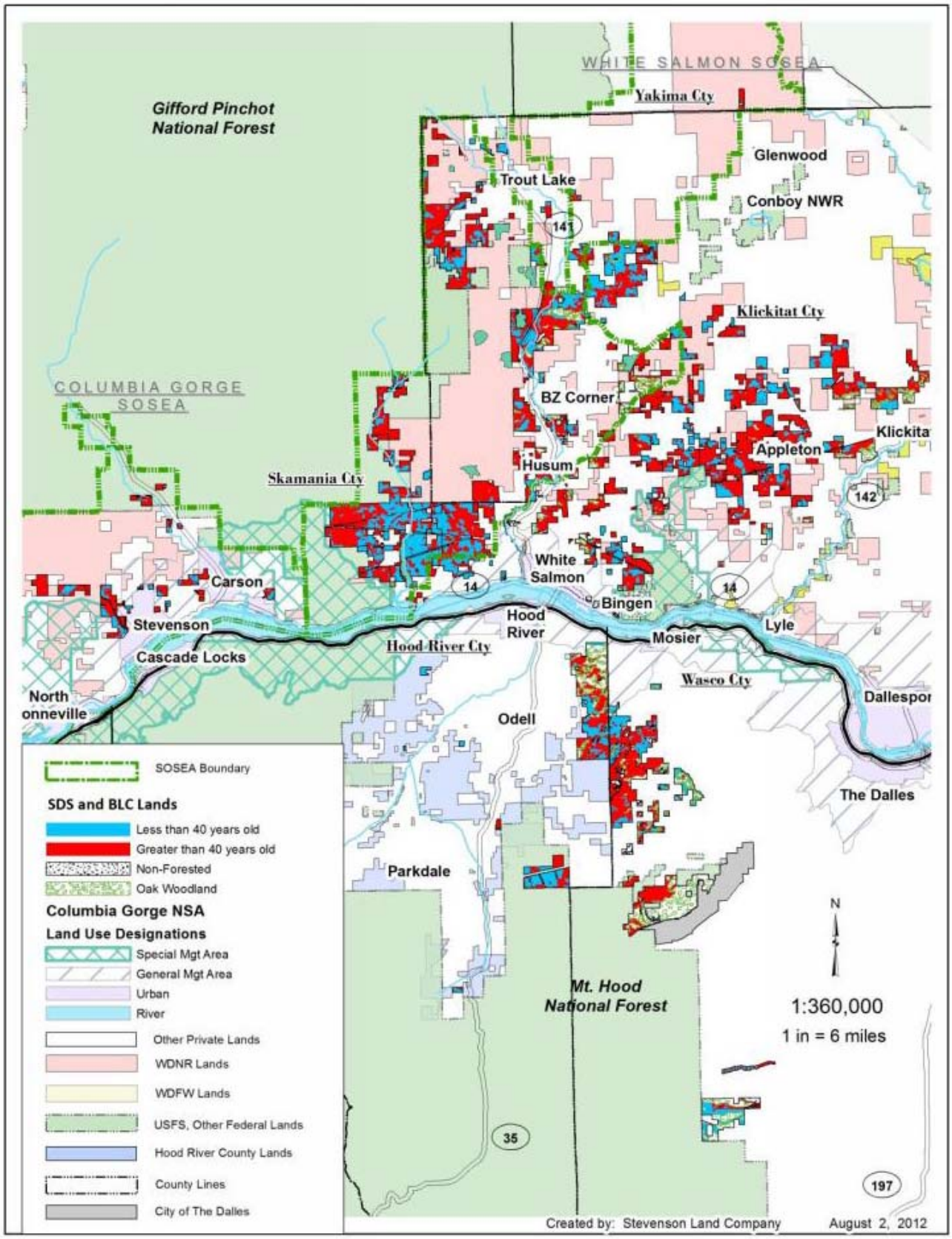

Figure 3-3. Covered Lands Greater and Less Than 40 Years of Age

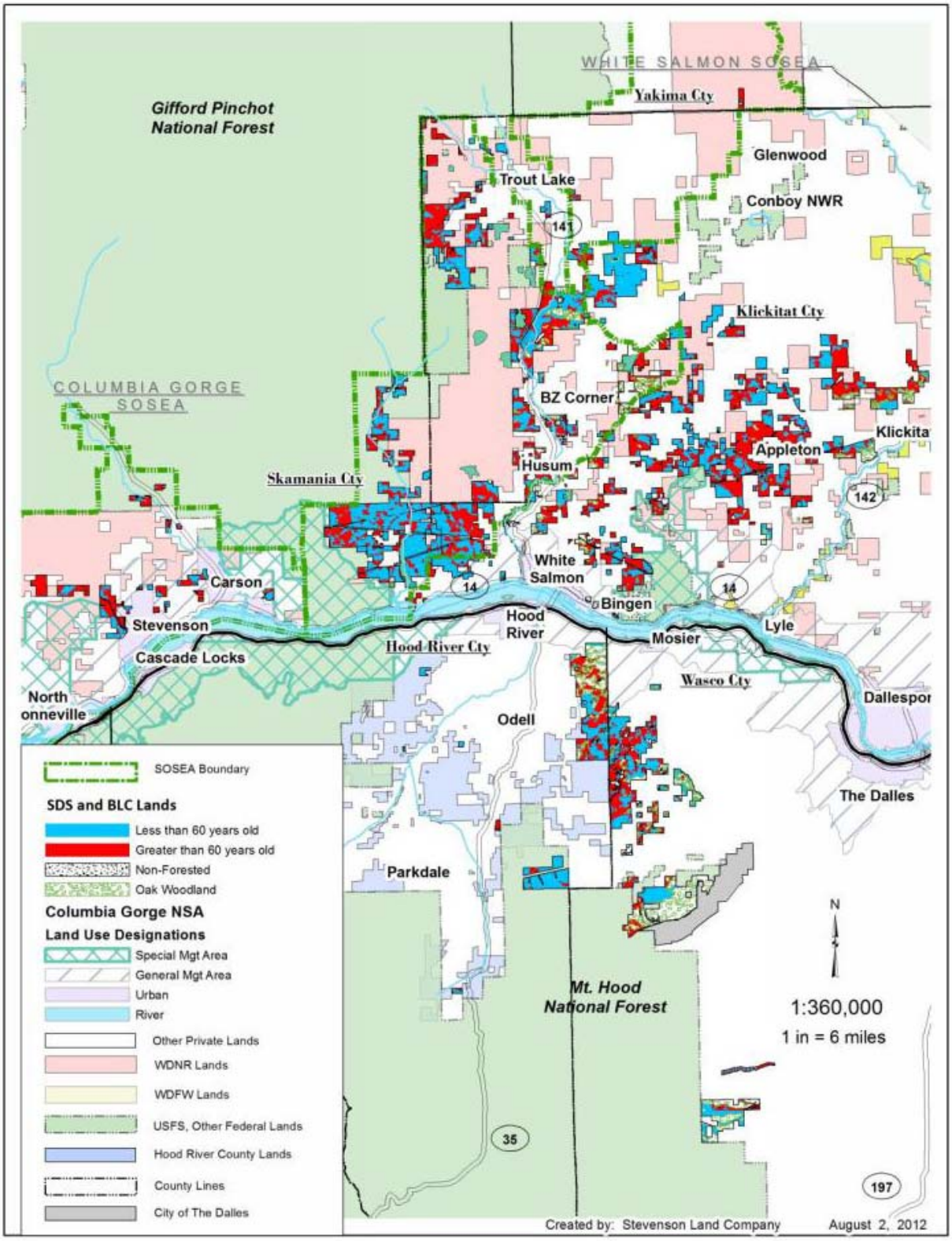

Figure 3-4. Covered Lands Greater and Less Than 60 Years of Age

3.3.1 Baseline

The baseline is the forest conditions on the Covered Lands that would result from application of the Applicants' current forest management strategy allowed under existing Oregon and Washington Forest Practices Rules. Because the current regulatory environment has created great uncertainty and disincentives for the Applicants to provide spotted owl habitat on their lands, SDS and BLC are induced to aggressively focus on eliminating potential spotted owl habitat on their lands outside of home range circles and through the harvest of surplus habitat (habitat in excess of the 2,605 acres identified as critical) within spotted owl home range circles. The Applicants are currently harvesting their lands on a 45-year average forest rotation age and are aggressively managing their lands to convert habitat to younger forests over the next 10 years. The Applicants are strategically harvesting the highest quality spotted owl habitat as early as possible which will result in a highly fragmented landscape, eliminating the potential use by owls and avoiding additional regulatory burdens on their private timberlands.

SDS' commercial forestland, defined as productive timberlands suitable for forestry, totals 46,244 acres in Washington and 12,141 acres in Oregon. BLC has 11,601 acres of commercial forestland in Washington. Together, Applicants own 69,986 acres classified within its inventory as commercial forestland (See Figure 2-1 and Table 3-1). The baseline includes all lands that the Applicants manage in Washington and Oregon under the current Forest Practices Rules which totals 81,587 acres.

3.3.1.1 Applicants Forest Lands in Washington

Washington Forest Practices Act - The Forest Practices Rules govern timber and logging operations in Washington. A permit from the WDNR is required for any timber operations on private lands containing spotted owls. The Forest Practices Rules classify all forest practices under five categories depending upon the impact of the operation: Class I, Class II, Class III, Class IV – General, and Class IV- Special (WAC 222-16-050). Logging on private land containing spotted owls falls under either Class III or Class IV – Special (WAC 222-16-050. The Forest Practices Rules established spotted owl special emphasis areas (SOSEAs) to provide protection to spotted owls and its habitat (WAC 222-16-086). The WDNR classifies any forest practice proposed on habitat within 1.8 miles of a spotted owl site center located within a SOSEA as Class IV – Special (WAC 222-10-041). Forest practices classified as Class IV-Special are subject to review under the State Environmental Policy Act (SEPA). For the spotted owl, these forest practices include activities involving habitat within a 1.8-mile radius of spotted owl nest sites within the boundary of a SOSEA, and outside a SOSEA if between March 1 and August 31 and if within the seventy acres of highest quality suitable habitat surrounding an owl site (WAC 222-16-080). An exemption is granted for forest practices on lands owned or controlled by a landowner whose forest land ownership within the SOSEA is less than or equal to 500 acres and where the forest practice is not within 0.7 miles of a spotted owl site center. Once a SEPA review is triggered, the SEPA guidelines for forest practices involving threatened and endangered species (WAC 222-10-040), and the spotted owl specifically (WAC 222-10-041), govern the review.

The Forest Practices Rules addressing the spotted owl proscribe certain forest management activities depending on the type of habitat goals for the affected SOSEA. The two SOSEAs

within the Applicants' lands, the Columbia Gorge and White Salmon SOSEAs, have a goal of providing a combination of demographic support and dispersal support (WAC 222-16-086; 222-10-041). Demographic support means providing sufficient suitable spotted owl habitat within the SOSEA to maintain the viability of spotted owl sites identified as necessary to meet the SOSEA goals (WAC 222-16-010). Dispersal support means providing sufficient dispersal habitat for the interchange of spotted owls within or across the SOSEA, as necessary to meet SOSEA goals. In SOSEAs or areas of SOSEAs where the goal is a combination of dispersal support and demographic support, either suitable spotted owl habitat should be maintained to protect the viability of the owl(s) associated with each spotted owl site center or a variety of habitat conditions should be provided which in total are more than dispersal support and less than demographic support (WAC 222-10-041).

In the absence of more specific data, the rules establish amounts of suitable habitat that are generally assumed to be necessary to maintain the viability of the spotted owls. Within SOSEAs, all suitable spotted owl habitat within 0.7 mile of each spotted owl site center is considered the core area for the owl and no harvest is allowed (WAC 222-10-041). Outside the 0.7 mile radius and within the median home range circle (1.8 mile radius), a total of 2,605 acres of suitable habitat (including the suitable spotted owl habitat within 0.7 mile of each spotted owl center) is generally assumed to be necessary to maintain the viability of the owl(s) associated with each spotted owl site center. Note that suitable spotted owl habitat identified outside 0.7 mile of a spotted owl site center may support more than one median home range circle. Any habitat within a 1.8 mile radius home range circle in excess of the 2,605 is considered "surplus" and available for harvest.

Outside SOSEAs, during the nesting season (between March 1 and August 31), 70 acres of the highest quality suitable spotted owl habitat surrounding a spotted owl site center must be maintained (i.e. no harvest is allowed). The 70 acres for one site center may not be utilized for meeting suitable habitat needs of any other site center.

There are 30 northern spotted owl site centers in the vicinity of the Applicants' lands in Washington. Only circles within the SOSEAs have regulatory protection under Washington laws. Four of these circles are within the Columbia Gorge SOSEA and 14 are within the White Salmon SOSEA. All site centers within SOSEAs, except for one, are located on USFS or WDNR. For each of the site centers within the SOSEAs, the highest quality 2,605 acres of suitable habitat is determined by WDNR and landowners are prohibited from harvesting this habitat without submitting an Environmental Impact Statement under SEPA (Figures 3-5 and 3-6). The highest quality 2,605 acres for each owl site center in the White Salmon SOSEA has been identified by WDNR and Applicant's restricted acreage is known. At the time of drafting this document, WDNR has not completed identification of the highest quality 2,605 acres for each owl site center in the Columbia Gorge SOSEA. In the absence of this information, Applicants have conservatively assumed that all current acres of habitat on their lands will be identified as part of the highest quality 2,605 acres in the Columbia Gorge SOSEA. Using this approach, a total of 4,697 acres of SDS and BLC lands are identified as currently restricted from harvest on Applicant's lands in the White Salmon and Columbia Gorge SOSEAs. This acreage includes all suitable spotted owl habitat within 0.7 mile of each site center, and that portion of SDS and BLC ownership identified as part of the highest quality 2,605 acres of habitat between

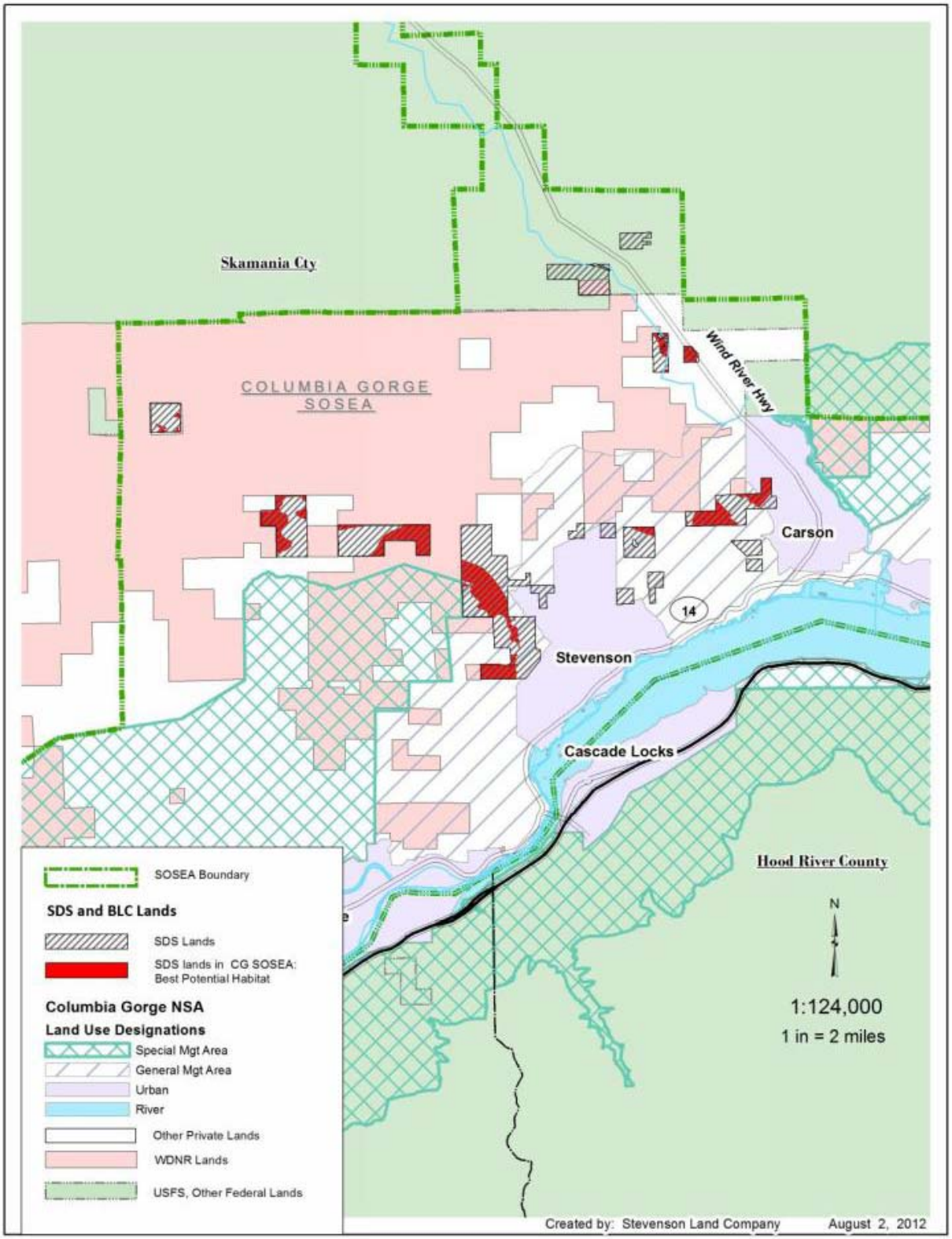

Figure 3-5. Highest Quality Suitable Habitat on Covered Lands in Columbia Gorge SOSEA

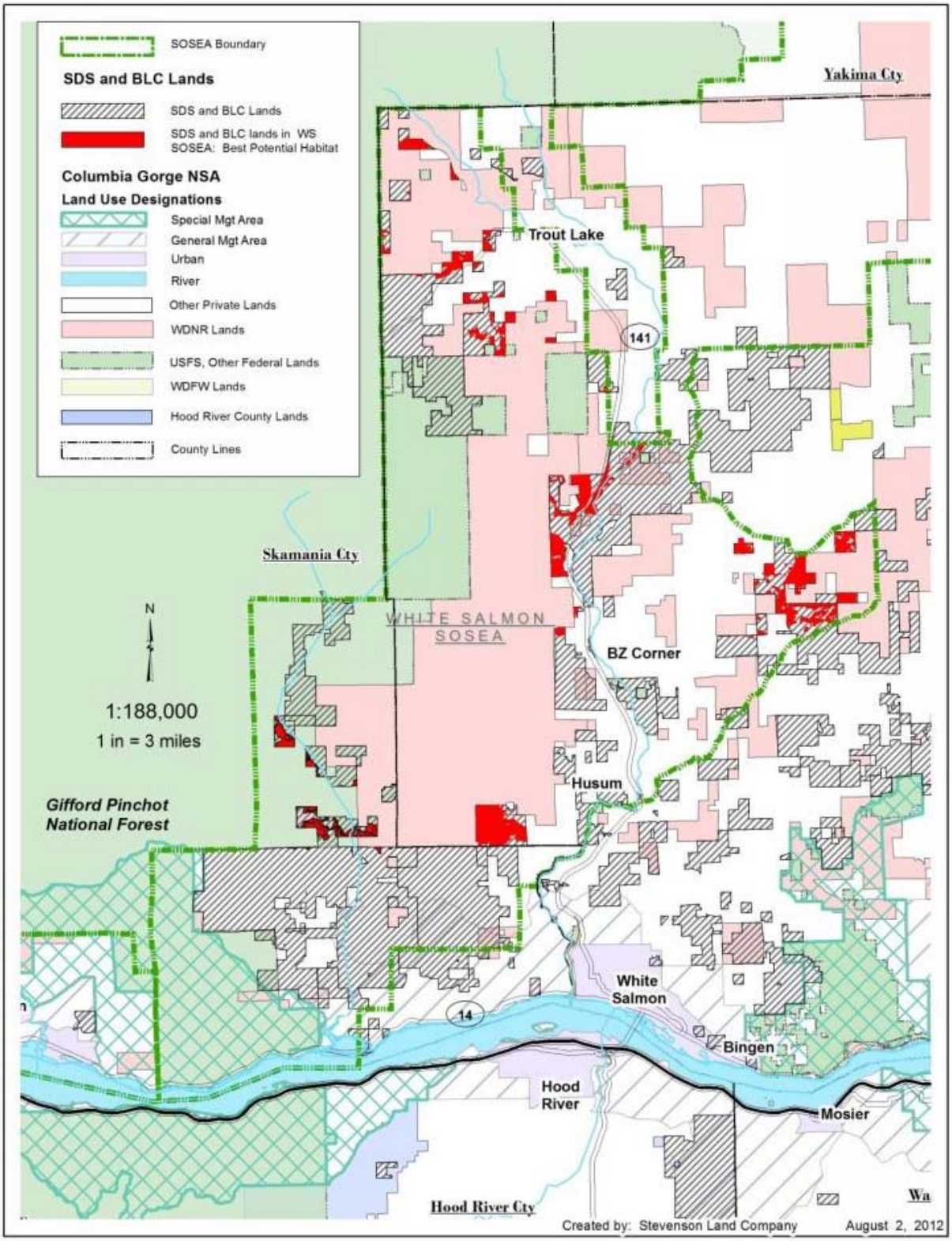

Figure 3-6. Highest Quality Suitable Habitat on Covered Lands in the White Salmon SOSEA

0.7 and 1.8 miles of each site center. (Note, again, that suitable spotted owl habitat identified outside 0.7 mile of a site center may support more than one median home range.)

Current Harvest Regime on Applicants' Lands in Washington - Over the past decade, the Applicants have regeneration harvested a mixture of age classes depending upon market conditions, with an emphasis however, on older age classes with large average diameter logs that are approaching a size of limited markets. Recently, due to regulatory uncertainty, the Applicants are substantially increasing the rate of harvest as part of the Applicant's strategy to purposefully and tactically harvest the best allowable spotted owl habitat within their ownership as soon as possible to manage their business risk and uncertainty with the respect to the spotted owl. Harvest at this increased level will result in 4,697 acres of habitat remaining on the Applicants lands at the end of a decade in areas currently restricted under existing regulatory mechanisms. In addition to the aggressive forest management and shorter rotations, the Applicants are not allowing non-habitat within spotted owl circles to grow into suitable owl habitat to avoid additional regulatory burdens.

3.3.1.2 Applicants Forest Lands in Oregon

Oregon Forest Practices Act - The Oregon Forest Protection Act protects resource sites through a notification process but the State Forester does not issue permits or approvals. Oregon Forest Practices Rules protect active spotted owl nesting sites or activity centers occupied by a pair of adult owls capable of breeding. Resource sites receive protection where the State Forester determines (a) it is an active spotted owl site and (b) the proposed forest practices conflict with the resource site. The State Forester is required to maintain an inventory of protected resource sites that are used by threatened and endangered species, including the spotted owl. A written plan is required when the State Forester determines an operation will conflict with the protection of a nesting site or when the forest operation is 300 feet from any nesting site of any threatened or endangered species. A written plan provides, among other things, protection of a 70-acre core area around the spotted owl nest site (see Section 2.1.3).

Current Harvest Regime on Applicants' Lands in Oregon - SDS owns 19,153 acres in Oregon while BLC does not own any land in Oregon. Oregon Department of Forestry and U.S. Fish and Wildlife Service records indicate that there are no known spotted owl nests on the Applicants land in Oregon. There are six spotted owl sites on National Forest land in proximity to SDS lands; however, none of the 70-acre cores intersects SDS lands. Because there are no spotted owls or activity centers on SDS land in Oregon, there are no harvest restrictions under the Oregon Forest Practices Rules. Therefore, under the current management regime without a SHA, all stands that qualify as owl habitat will be prioritized for harvest with the goal of eliminating potential habitat within the next 10 years. That is, no owl habitat is expected to remain on the Applicants Oregon lands by the end of the next decade.

3.3.2 Northern Spotted Owl

Thirty spotted owl home range circles of 1.8-mile radius overlap some portion of the Applicants' land base. However, only site centers located within the White Salmon and Columbia Gorge SOSEAs have regulatory status under Washington Forest Practices rules. With the exception of only one site center, Site #753, located on the Applicants' ownership within the White Salmon

SOSEA, all site centers within SOSEAs are currently located on USFS or WDNR ownership. Four of these sites are located within the Columbia Gorge SOSEA and 14 sites are located within the White Salmon SOSEA. The remaining twelve sites that overlap the Applicants' lands are not within a SOSEA.

4 Conservation Agreement

The Applicants' goal of the SHA is to provide greater business certainty for their timber management operations and supply to the local mills while providing a net conservation benefit to the spotted owl. The FWS' goal in developing the SHA is to support the Applicants' conservation efforts to improve habitat for the spotted owl and to ensure the SHA provides a net conservation benefit required for issuance of the Permit.

4.1 Conservation Measures

The Applicants will conduct their forest management activities in accordance with the provisions of the SHA, which include Forest Practices Rules in place at the signing of this Agreement, as well as additional provisions to set aside special areas of habitat for the term of the Permit, and grow, enhance, and maintain suitable habitat that will result in a net benefit to the spotted owl.

The Applicants' propose a landscape management approach that accommodates the Applicants desire to manage a sustainable forest in a manner that conserves spotted owls and eliminates the need for the Applicants to harvest habitat and formally pursue decertification of owl sites that have been occupied by barred owls. Over time, some acres of owl habitat will be harvested that is currently restricted under the current Forest Practices Rules in Washington but there will be more connectivity and lands managed for the benefit of owls across the Applicants' ownership landscape in Oregon and Washington to provide a net conservation benefit. This landscape management approach contributes to owl recovery by maintaining and growing more habitat than would exist without the SHA and by complementing the existing owl landscape management strategies on adjacent federal and state forestlands.

4.1.1 Forest Management

The State prepared an HCP covering forest practices activities on non-federal and non-tribal land in Washington to address the conservation needs of anadromous and native fish and seven stream-associated amphibians (WDNR 2005). FWS and the National Marine Fisheries Service (NMFS) approved the Washington Forest Practices HCP and provided take authorizations to the State under section 10 of the ESA. The take authorizations for aquatic species apply to qualifying landowners receiving an approved forest practices permit, who conduct forest management activities that affect aquatic resources, according to the Forest Practices Rules. The forest management activities that are covered by the take authorizations are, for the most part, conducted in the riparian areas adjacent to fish- and non-fish-bearing streams, and road construction and maintenance activities in proximity to streams. The Applicants' forest management activities as they relate to effects on aquatic species are covered under the Washington Forest Practices HCP and incidental take permit, and were analyzed under the associated EIS. Thus, these activities are not described except where the resulting habitat may benefit the species covered by this SHA.

The conservation elements of this SHA that constitute a net conservation benefit to the spotted owl include the Applicants' forest management activities conducted under the current Forest Practices Rules (incorporated by reference), and voluntary measures that exceed the those rules, as well as additional conservation measures. The measures that the Applicants will implement extend beyond standard Forest Practices Rules in Oregon and Washington, and

industry standards, and result in development, maintenance, and retention of potentially suitable habitat for the covered species. The SHA will not change riparian zone management practices on the covered lands. The Washington Forest Practices HCP provides for riparian management provisions (WDNR 2005). The landscape management conservation strategy and the specific conservation measures of the SHA are described below.

4.1.2 Landscape Management Conservation Approach

The conservation strategy for the spotted owl in the Applicants SHA is based on a landscape approach to biology and forest management that results in a measured timber harvest beneficial to the Applicants and the local economy, and a habitat plan beneficial to the spotted owl. A landscape approach in this area of the state (in the White Salmon and Columbia Gorge SOSEAs and surrounding areas) to support spotted owl conservation has already been adopted by the state through the WDNR HCP and the federal government through the implementation of the President's Northwest Forest Plan (Interagency SEIS Team 1994). Both landscape plans are strongly supported by the FWS as preferred to "circle management" to provide habitat necessary for the recovery of the spotted owl.

Currently, state rules employ circle management on private timberlands. Thus, the Applicants operate under spotted owl circle protection rules that result in fixed radius circles managed to provide 40% suitable habitat. As previously noted, fixed-circle habitat protection is less desirable for the spotted owl than a landscape approach, particularly as regards to forest health and the fire prone landscapes of the eastern Cascade Mountains, where the covered lands are located. Here, large blocks of habitat can be eliminated in a single fire or forest health event.

Equally important, the current regulatory environment is creating great uncertainty and disincentives for the Applicants to provide spotted owl habitat on their lands. Without the regulatory assurances available through a SHA, the Applicants are induced to aggressively focus on eliminating spotted owl habitat on their lands through the harvest of surplus habitat within spotted owl circles, and all other areas of the Applicants ownership containing suitable spotted owl habitat. With the landscape approach provided through a SHA, disincentives for the Applicants providing spotted owl habitat are removed since they will be provided the regulatory assurances necessary to continue their desired timber harvest and thinning operations across the landscape into the future. At the same time, they will be able to manage for healthy forests that are less susceptible to fire and insect infestation.

More specifically, this conservation strategy will allow the Applicants to alter their current forest management operations by slowing their current rate of harvest and allowing existing potential owl habitat to continue to grow for longer periods than would occur under current forest practices rules, manage their commercial forest lands for longer rotations to achieve a 60-year average forest rotation age, promote the development of suitable owl habitat in the future, including areas that are currently not owl habitat, through commercial thinning and implementation of a snag creation and downed wood program that can expedite habitat development. Thus, with the SHA, Applicants will be creating and providing owl roosting, foraging and dispersal habitat across 81,587 total acres of forestland including mixed conifer and hardwood forests. Applicants will ensure a continuous spatial and temporal distribution of

habitat across the biologically important White Salmon SOSEA, and in areas of historic owl use, by agreeing to an elevated baseline of 33% of their commercial forest lands in the White Salmon SOSEA in habitat at all times throughout the SHA term, consisting of dispersal and YFM or better habitat.

In addition, under the SHA, Applicants will create special set aside areas consisting of large patches of owl nesting habitat in biologically strategic locations across the landscape, defer harvest within certain strategic locations of historic owl use, and commit to nest site protections for future owls that may occur.

These components of this owl conservation strategy are consistent with the goals of the White Salmon and Columbia Gorge SOSEA's for owl dispersal and demographic support. This landscape management approach includes strong ecological benefits by retaining patches of owl nesting habitat and by growing and enhancing owl foraging and dispersal habitat, as well as habitat for their prey species across a large area of 81,587 acres. It also contributes to owl recovery by complementing the existing owl landscape management strategies on adjacent Federal and State forestlands. For the first time in these SOSEAs, state, federal, and private landowners would be collectively implementing a landscape approach to spotted owl conservation.

4.1.3 Special Set Aside Areas

The Applicants propose two major special set aside reserves (SSA's) for the term of the SHA on the covered land. The set aside of these lands will provide immediate benefits to the owls in the first year of the SHA and continuing through the term of the SHA (Figures 4-1 and 4-2).

Little White Salmon Special Set Aside Area (411 acres). One reserve is approximately 411 acres of approximately 80 years and older forest with YFM and Sub-mature habitat characteristics along a 2.9-mile section of the Little White Salmon River. Under current rules, approximately 70 acres of these 411 acres are restricted from any timber harvest and an additional 70 acres can be partial cut (30% every ten years). Outside of these buffer zones, there is currently no regulatory prohibition from conducting harvest on the remaining property. The allowed partial cutting and other harvest activities in this area could result in fragmentation and loss of the quality and function of this habitat.

Under the SHA, no timber harvest will occur in this area for the term of the SHA. This reserve is situated in an area of owl habitat along the Columbia River. This SSA will benefit owl dispersal in this area and is consistent with, and supports past efforts to preserve habitat on USFS property immediately to the west in Late Successional Reserves and in the Columbia River Gorge Scenic Area. As previously mentioned, most of this Little White Salmon set-aside currently consists of older forest stands (80 year +) and will immediately continue to provide benefit to spotted owls.

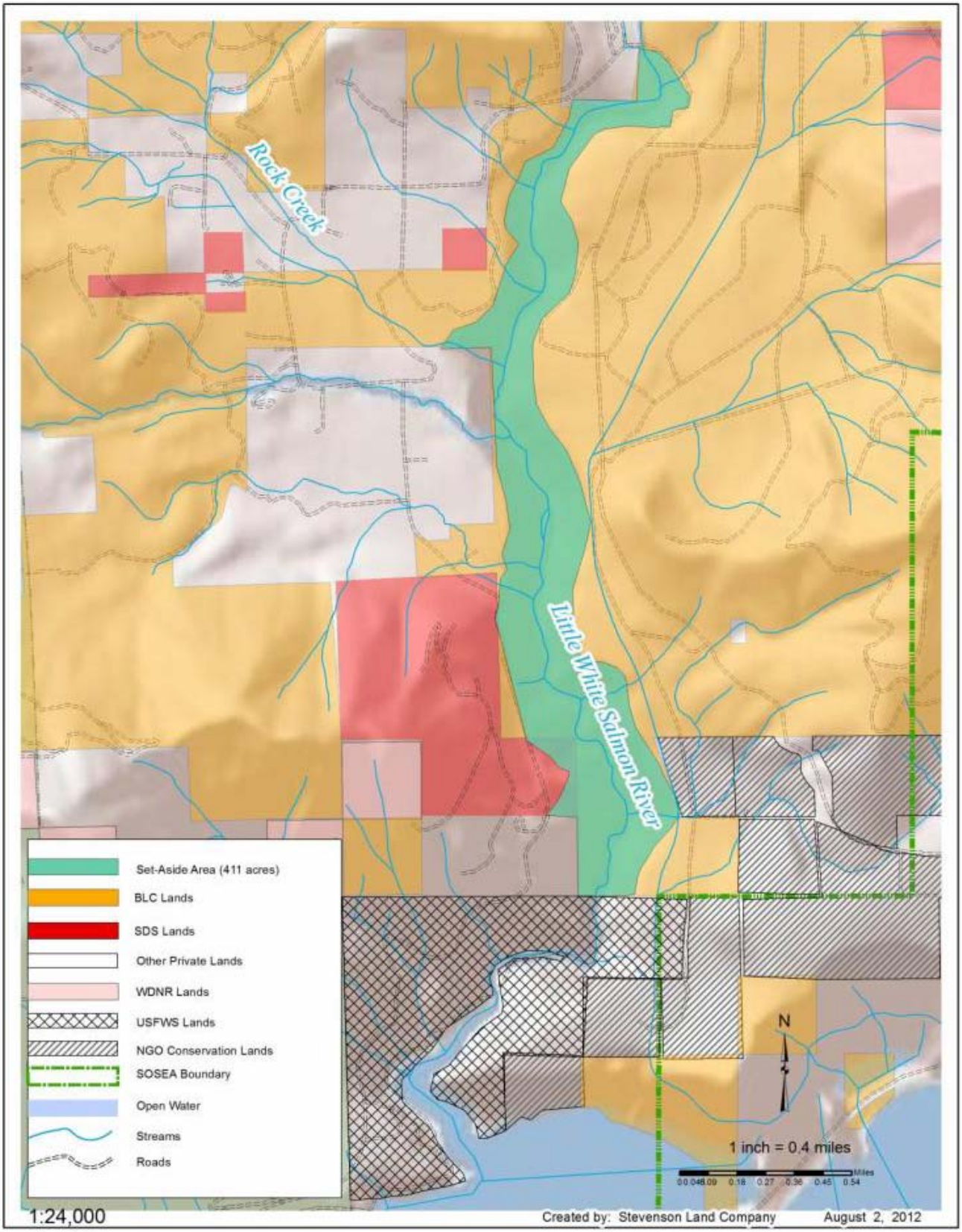

Figure 4-1. Little White Salmon Special Set Aside Area

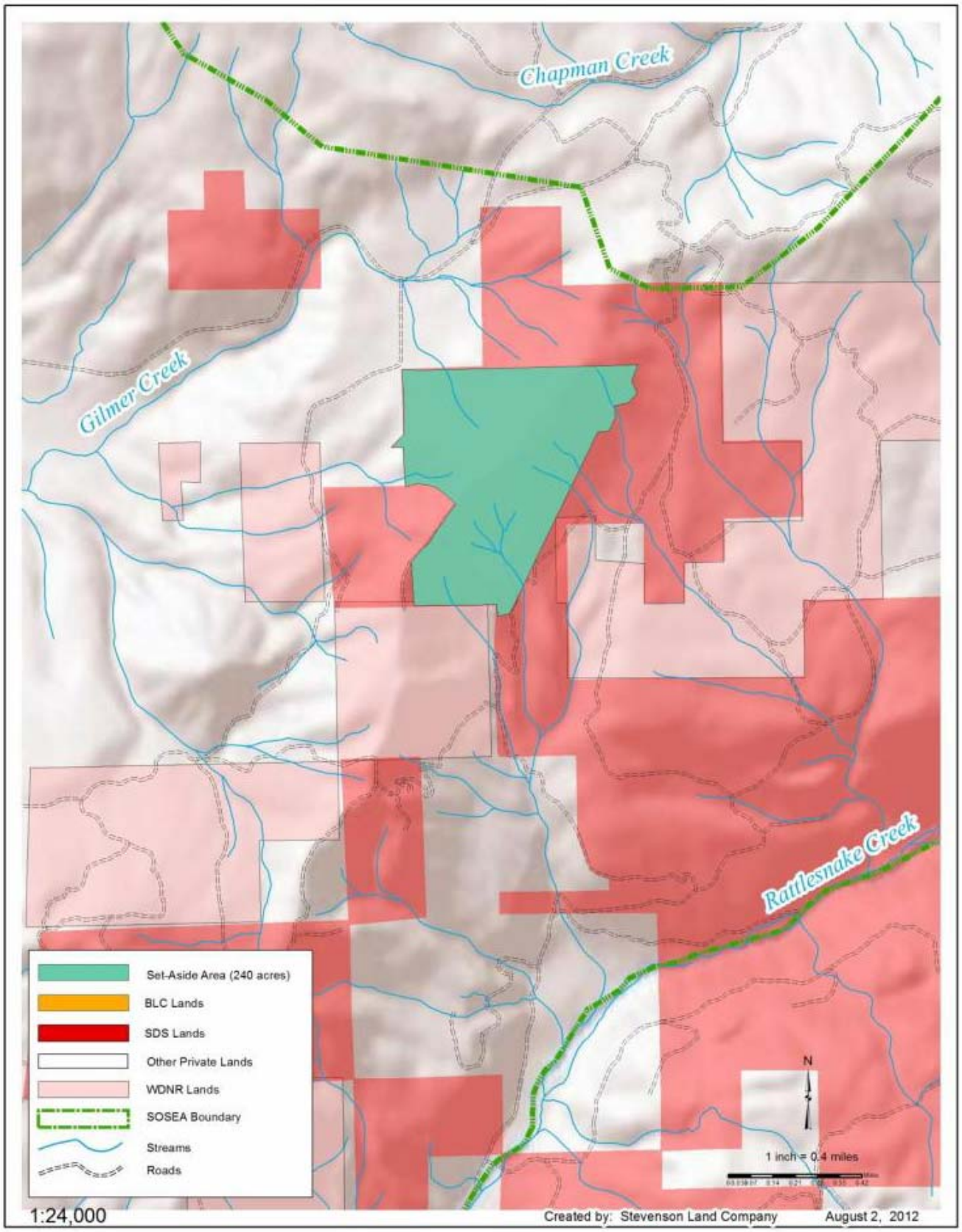

Figure 4-2. Gilmer Creek Special Set Aside Area

Nest Habitat Core Area SSA (240 acres). The second reserve is approximately 240 acres around the one nest site on the Applicants' covered lands (site #753; South Gilmer Creek). Recent survey efforts by WDNR have not detected spotted owls at this site, however, the site is considered active for forest practices review, and the potential for spotted owl return does exist. Within the 240-acre reserve being created by Applicants, no timber harvest will occur for the term of the SHA. This reserve is designed to provide a sufficient nest core for any current or future occupancy by spotted owls and to further the owls' ability to continue or resume use of the site as a nesting territory. This SSA mirrors and complements nest cores established by WDNR on the remainder of the White Salmon SOSEA and links to WDNR habitat immediately adjacent to this core. Most of this SSA currently consists of older Douglas-fir forest stands and/or Oregon white oak stands with large pockets of Douglas-fir forest. This SSA would immediately provide nesting, roosting, and foraging habitat for spotted owls and may encourage owl occupancy in this area.

The inclusion of patches of mixed Oregon white oak/Douglas fir habitat in this SSA is based on observed use by the owls from this site center within this habitat. On 12 May 1997, F. Backus from SDS and a WDFW biologist located the male spotted owl during daylight hours in this mixed oak/fir habitat within this proposed SSA. Spotted owls are known to use mixed oak/fir patches in Klickitat County and adjacent Yakima County for both roosting and nighttime foraging (telemetry data: M. Nuetzmann – Yakama Tribe; nighttime responses: T. Fleming– formerly of NCASI, pers. comm.). Daytime roosting and nighttime foraging is also known to occur in this habitat during the non-breeding season in Oregon (telemetry data: D. Rock – NCASI, pers. comm.). While this habitat may not meet Washington Forest Practices Board definitions of owl habitat, it's documented potential as important foraging habitat for owls, and as productive mast-producing feeding habitat for owl prey species, warranted inclusion of these oak/fir patches as an important part of the SSA for this owl site.

While the majority of the enrolled lands will be on a 60-year harvest rotation, some areas in addition to the two reserves mentioned above will not be harvested. This SHA describes special set asides and special management areas as locations distributed throughout the covered lands that will not be harvested because of their location and topography. Riparian zones and other regulatory set aside areas will mature and develop more complex forest structure, providing the opportunity for owls to also use these habitat areas for dispersal, roosting and foraging.

4.1.4 Rate of Harvest and Extended Forest Rotations

Under the SHA, important changes to the forest management strategy and practices will occur that provide significant benefits to the spotted owl, its prey base and other resources.

Rate of Harvest. Under the SHA, Applicants will be relieved of the disincentives to allow habitat to exist on their property and the desire to eliminate suitable owl habitat to avoid future regulatory burdens in Oregon and Washington. Without these pressures, the Applicants can lower their average forest age more gradually, over multiple decades, in a manner that will result in a desired age class distribution in the future. With the regulatory assurances provided by the SHA, the Applicants can proceed with this conversion in a more orderly, sustainable

fashion as determined by market conditions and resource management decisions, not out of concern for future regulatory restrictions.

Extended Forest Rotations. An important component of the Applicants' forest management strategy under the SHA that is expected to result in conservation benefits to the spotted owl is the implementation of a longer harvest rotation of conifer-dominated stands. This commitment precipitates a number of management options that will improve habitat conditions for the owl on the Applicants' covered lands in Oregon and Washington. Under this SHA, timbered stands generally will reach harvest age at an average of 60 years, with a range of about 50 to 70 years of age. This is notably different from the industry standard for timber harvest in this region at an age of 45 years or younger (WDNR 2007). The Applicants will determine stand age using two methods: 1) based on known planting records; and 2) for stands that originated under previous ownerships where stand age is unknown, The Applicants will core five dominant/co-dominant conifer trees per stand to determine an average stand age.

The Applicants will use several different silvicultural regimes to ensure the proper growth and health of conifer-dominated forest stands during this SHA term. The primary regime will include several options for mid-rotation management, determined by a number of factors including steepness of slopes, and the feasibility of using ground-based logging equipment. The specific options for this management regime are:

- plant and monitor until "free to grow"; controlling competing vegetation as needed;
- consider the most suitable mid-rotation management:
  - no mid-rotation management,
  - pre-commercial thin at 10 to 12 years old,
  - commercial thin at 25 to 45 years old,
  - conduct intermediate snag creation treatment, or
  - apply both pre-commercial and commercial thinning to some stands;
- monitor stand health and damage, and salvage opportunistically to recover value;
- conduct regeneration harvest of conifer-dominated stands at approximately an average age of 60 years;
- establish special management areas:
  - leave tree areas,
  - potentially unstable slopes,
  - forested wetlands,
  - cliffs, talus slopes, rock outcrops, and caves,
  - shrub lands -and meadows;
  - oak forests and mixed oak-conifer forests
- establish SSAs;

- enhance green and wildlife tree retention areas; and
- implement a snag-development program.

Under this management regime, conifer stands develop through various stages until they reach the quality and structure desired for final harvest. Timber quality is improved by creating stand conditions that promote radial growth while limiting the retention of green limbs. The target conifer-dominated stand structure at age 60 has an average stocking of 130 trees per acre, although actual stocking would vary within stands as well as from site to site and may range between 116 and 148 trees per acre for individual stands. Stand conditions vary across the covered area due to changes in aspect, elevation, exposure to disease, species composition, and natural events beyond the Applicants' control such as windstorms and wildfires. Some of these elements (e.g., disease) help create small-scale openings in the forest canopy and enhance structural diversity within stands, which is believed to promote biodiversity. Other openings are created during thinning operations as storm-damaged or weak and suppressed trees are removed. The desired stocking levels are generally achieved on slopes less than 35% through commercial thinning. Conifer trees in commercially thinned stands would generally average about 18 inches dbh by the age of 60. Stem diameter also varies within and between stands with stand averages ranging from 16 to 21 inches dbh. The Applicants make thinning decisions based on stand and market conditions, targeting an average post-thinning Relative Density (RD) of 40, ranging from 35 to 45 for residual stand conditions.

Within the covered areas, forestlands would be managed using even-aged and uneven-aged harvest strategies. Even-aged management would be the primary option for regeneration harvest. The Applicants would manage conifer-dominated stands for long rotations, normally between 50 and 70 years of age. For purposes of the SHA, the assumed average rotation age will be 60 years. Uneven-aged management would be used during thinning and salvage operations using conventional logging equipment.

During all management activities, the Forest Practice Rules would be met or exceeded in both Oregon and Washington. Where applicable, alternate plans allowed under Forest Practices Rules in Oregon and Washington may be developed and utilized provided they meet or exceed the levels of resource protection provided by the forest management activities described in this SHA. The alternate plans would be developed in consultation with FWS. The selection of stands for regeneration harvest or even-aged management is the result of an evaluation of several conditions including: health, species composition, market conditions, and age. Decisions regarding harvest timing usually are made based on the same set of factors, although soil condition also may be a limiting factor.

Uneven-aged management is the preferred strategy of the Applicants for mid-rotation stand enhancement. Through proper application, stand structure and wood quality can be improved over a shorter period of time. Decisions to enhance stands begin when stand ages reach 10 years old and continue through age 50. The timber stands are continually monitored for stocking, relative density, health, and mortality.

4.1.5 Pre-Commercial Thinning

Candidate stands for pre-commercial thinning enhancement are on slopes less than 35%, within the 10-15 year age class, and would have stocking levels between 550 and 650 or more trees per acre. For slopes greater than 35%, the stocking goal is 450 to 550 or more trees per acre. Conifer trees of this age would generally be 3 to 5 inches dbh. After a pre-commercial thinning application, stands would have 300 to 325 residual trees per acre. This stocking allows for increased radial growth and short-term woody debris, because the cut trees are not removed from the stand. Pre-commercial thinning is generally accomplished by hand cutting and does not involve the use of heavy equipment. Under the SHA, pre-commercial thinning prescriptions will include leaving some shade tolerant trees and hardwood trees, if available, to create forest diversity and enhance future owl habitat.

4.1.6 Commercial Thinning & Intermediate Snag Creation

Without the SHA, Applicants will conduct regeneration harvests on forest stands that are non-habitat and conduct very little commercial thinning as they attempt to avoid the creation of new habitat. With the SHA, Applicants will be relieved of these disincentives and will thin to enhance forest growth and habitat development.

Investigations in western Washington suggest that mid-rotation thinning, in combination with cavity-tree retention and/or creation can accelerate development of late successional habitat features in young forests (Garman et al. 2003, Beggs 2004, Lindh and Muir 2004)). Thinning and cavity-tree retention have been suggested as a primary management technique for enhancing forest understory's for northern flying squirrels (*Glaucomys sabrinus*) (Carey and Johnson 1995, Carey 2000), the primary prey species of owls in western Washington (Forsman et al. 2004). Thinning of second-growth coniferous forests in western Washington has been proposed by Oliver (1992) as a critical element of an overall landscape strategy for creating and maintaining terrestrial wildlife habitats in young managed forests. Thinning of Douglas-fir forests allows for competitive release of canopy dominants and shade-tolerant understory trees, resulting in multiple canopy layers, increases in canopy depth, and enlargement of tree crowns (Oliver et al. 1991); these enhancements are associated with owl habitat, and tend to increase niche availability for breeding birds.

Typically, with a harvest rotation age of 45 years or younger, SDS and BLC would not conduct commercial thinning operations on their timberlands. However, by incorporating an average 60-year harvest rotation into their forest management plan, they could commercially thin qualifying conifer-dominated stands. This activity generally results in healthier conifer stands, with larger tree diameters, and wider spacing. The latter characteristic provides the potential for owls to move through these stands as they disperse, and to forage more effectively. With the inevitable defect that develops, due to weather factors, in older stands that are left free to grow, these stands also have the potential to develop into owl prey habitat. This is one of the potential benefits to owls from implementing a 60-year average rotation age for conifer-dominated stands. Specific management considerations and actions related to the decision to conduct commercial thinning are described below.

When conifer stands reach ages between 30 and 40 years, they are reviewed for RD, stocking, wood quality characteristics, and health. Stands of this age class would typically be 10 to 14 inches dbh. On slopes less than 35%, conifer stands with RDs greater than 55 and stocking between 285 and 350 or more trees per acre would be selected for commercial thinning, given the proper market conditions. Thinning typically occurs in stands between ages 35 and 45. During commercial thinning activities, spacing and vigor of trees are the primary means of determining which trees will be retained or cut. Large, healthy, dominant conifer trees are generally selected for retention as future crop trees. However, if they are too closely spaced, some larger trees would be removed. Suppressed, smaller co-dominant and dead or dying trees are generally removed from the stand. Spacing may result in retention of some smaller co-dominant trees, and some defective trees would be retained for future wildlife trees.

Under the SHA, all commercial thinning applications on the Applicants covered lands in Oregon and Washington will apply prescriptions designed to create YFM habitat by incorporating certain habitat characteristics (Appendix B). These prescriptions include 1) retaining some smaller sub-merchantable trees, especially shade-tolerant and hardwood species where they exist; 2) retaining some intermediate trees where they exist with the objective of creating areas within the stand with 2 or more canopy layers for vertical diversity; 3) retaining a variable diameter distribution of leave trees where they exist; and 4) targeting total canopy closure of greater than or equal to 70% (thereby achieving YFM – Closed). Target canopy closure can be reduced to greater than or equal to 50% (thereby achieving YFM – Open) if snags are created in the thinning using the snag prescriptions outlined in Section 4.1.11 for commercial thinning with the addition of one additional snag per acre (totaling 3 per acre, 20 inches or greater, or largest diameter class available) as a surrogate for the mistletoe requirement in YFM-Open habitat definition. The target stocking of overstory trees for these stands is 185 to 225 trees per acre after the commercial thinning operation, but may vary within and between stands. Generally, commercial thinning would increase the average diameter of the remaining stand (i.e., by removing predominantly smaller trees).

During commercial thinning, yarding corridors (e.g., skid trails and cable-yarding corridors) create openings in the canopy allowing for improved solar penetration. Yarding corridors average 60 feet apart, although this spacing is dependent on topography, and corridor spacing would vary from 50 to 80 feet apart. Corridors are generally 15 to 20 feet wide. Landings are also required to facilitate thinning activities. Landing placement varies from 400 to 800 feet apart, although this is dependent on topography and soil conditions. Landings generally range from 40 to 60 feet in diameter. Extraction corridors and landings have the effect of creating variable-density stocking throughout the thinned stand when combined with the skips and gaps from normal operations. Together, landings and corridors may occupy 8 to 15% of a thinned stand. The soil disturbance combined with the increased solar penetration encourages understory and groundcover germination.

Most, if not all, thinning operations use modern processing machinery capable of felling, delimbing, and bucking trees into various lengths for shipment to markets. Significant amounts of coarse woody debris are created during commercial thinning activities. The actual amount of woody debris created will vary and depends on pulp prices and market conditions at the time. However, as a general rule of thumb (based on the criteria set forth above), the difference

between initial stocking of 285 to 350 trees per acre and residual stocking of 185 to 225 trees per acre is 113 stems per acre. Thus, it is estimated that the removal of approximately 113 stems per acre during commercial thinning would create at least 113 tops measuring from 2 to 4 inches in diameter and 8 to 16 feet in length per acre. This debris is in addition to any existing residual downed logs already present in the stand that SDS and BLC will leave on the forest floor while conducting commercial thinning management activities.

During the thinning activity, efforts will be made to allow shade-tolerant saplings (e.g., grand fir, western red cedar and western hemlock) to remain undisturbed. Yarding corridors and landings provide openings for understory development and adjacent trees tend to retain lower branches longer or develop epicormic branching. Areas between yarding corridors that are beyond the reach of equipment (greater than 30 feet) would have additional trees and would further add to canopy diversity. Areas surrounding trees and snags left for future wildlife trees may have additional trees strategically retained without thinning. Within many stands, rocky or wet locations would result in natural openings within stands that would also contribute to canopy and within-stand diversity. Larger areas that may fall within harvest units, such as unstable slopes, riparian areas, and logistically unreachable lands, may develop into larger pockets of habitat that serve as foraging and roosting locations.

For purposes of defining dispersal habitat under this SHA, Applicant has identified unmanaged (not thinned) conifer-dominated stands beginning at age 40 as having the conditions necessary to provide dispersal opportunities for owls. These stands also have the potential to provide foraging opportunities as unmanaged stands of this age frequently contain dead and defective trees that may provide habitat for owl prey species.

For purposes of defining YFM habitat under this SHA, conifer dominated stands age 60 or greater, conifer dominated stands age 50-59 that have been thinned under the thinning prescriptions defined herein, conifer dominated stands age 50-59 that are un-thinned but have had the commercial thinning snag and wildlife tree prescription applied, and/or stands of any age that have been surveyed and found to contain all YFM definitional components will all be considered YFM habitat. Thinning or snag and wildlife tree creation conducted under these prescriptions are expected to provide enhanced YFM characteristics including canopy closure, prey habitat structure, vertical diversity, and/or canopy lift, allowing owls to better utilize the stand.

Commercial thinning will be conducted across all the covered lands in Oregon and Washington wherever economically feasible, to expedite the creation of new YFM habitat by age 50. Across the Applicants' entire productive forestlands (total acreage less non-productive lands, utility corridors, roads, etc.), approximately 76% of the acreage is less than 35% slope steepness and conducive to ground based harvest methods and commercial thinning. These percentages are consistent across all of the Applicants' lands, i.e., inside and outside of the White Salmon SOSEA, including the Applicants' lands in Oregon. All commercial thinning harvests will employ the thinning prescriptions defined in this section and snag prescriptions as defined in Section 4.1.11.

In the White Salmon SOSEA, stands that are not on track to meet YFM habitat by age 50 will be evaluated for commercial thinning and/or snag creation treatments to contribute toward the minimum 16.5% of all acres within this SOSEA (4712 acres) required to be equivalent to YFM or better habitat. A minimum of 500 acres will be commercially thinned in the White Salmon SOSEA under these prescriptions in the first decade to provide YFM. In addition, during the 10 year deferral of any habitat removals in the four identified 0.7-mile owl circles, the Applicants will commercially thin wherever economically where feasible to provide new YFM habitat.

4.1.7 Regeneration Harvest

Due to location in the eastern Cascades forest ecosystem, the Applicants lands include areas with a high degree of landscape and tree species diversity, including patches of Oregon white oak and other deciduous species mixed within conifer forests being regeneration-harvested. These patches provide significant value to wildlife and spotted owl prey base. At the time of regeneration harvest, where they exist and to the extent practical and economically feasible during harvest activities, the Applicants' foresters will prioritize these patches of valuable habitat for inclusion as wildlife reserve tree and snag creation areas (Section 4.1.11).

Stands selected for regeneration harvest will generally be 50 years of age or older (averaging a stand age of 60 years). Stands are examined for health, species composition, and wood quality to match the existing market conditions. When the final selection is made, regardless of slope, the stand is placed on the annual harvest plan. Several harvest systems might be used during regeneration harvests depending on topography and soil conditions. Ground-based equipment may include logging shovels, skidders, crawlers, or forwarders. Normally on slopes less than 35%, felling is conducted with processing equipment. Due to potential soil compaction, skidders and crawlers are restricted to long reaches (i.e., greater than 800 feet), where other equipment would not be economical.

On slopes greater than 35%, hand felling is the only means of felling and bucking, and cable systems are employed with landings positioned at either the top or bottom of the unit, or both. Cable yarding provides additional challenges in distribution of legacy trees for the future stand. Whereas ground-based equipment provides some limited opportunities for distribution of legacy trees within the unit, cable yarding is far more constrained. Legacy trees would generally be retained along edges, in fewer but larger patches, or triangular wedges at ends of cable runs.

During regeneration harvest on slopes less than 35%, legacy trees may be clumped, distributed, or distributed in smaller clumps depending on logistics and economics. Where snags are retained, i.e., Types 3 and 4 wildlife reserve trees as defined in Washington Forest Practices (WAC 222-16-010) but also applied to the Applicants' covered Oregon lands, there may be a small clump of live trees surrounding these snags for safety considerations. For snags without a lean, this patch would generally be circular with a radius equal to one and a half times the height of the snag or from the point of potential breakage to the top. Such retention would add stand diversity to the subsequent developing stand.

4.1.8 Salvage

Salvage refers to the removal of individual or small pockets of diseased or damaged stems from a timbered stand without damaging or removing the residual trees, similar to a commercial thinning activity. However, when larger areas, greater than two acres, become severely diseased or damaged, it is generally more efficient to harvest the entire area containing the infected or damaged trees. Stands are continually monitored for health and storm damage following commercial thinning. The decision to enter a stand for salvage is based on overall stand health, the percent of stems affected, stand age, and market conditions. For economic reasons, stands are not entered to remove less than two truckloads of logs. This economic constraint requires that more than 20% of the stems per acre in a stand be affected with disease or damage. This percentage would differ depending on age and stand structure ranging from 10 to 35%, lower for an older stand and higher for a younger one. Salvage operations are generally limited to slopes less than 35% for logistic, economic, and efficiency reasons unless the “greater than 2 acre” condition is met.

As with thinning, salvage requires the use of extraction corridors. However, because of the random nature of damage and disease, corridor patterns would vary, creating both large and small openings in the canopy. All efforts are made to recover all the merchantable timber throughout the operation, although not all the merchantable timber can be reached due to topography and soil conditions. Non-merchantable sections of the damaged or diseased stems are left in the residual stand for economic reasons, but they provide important biological benefits as coarse woody debris. The amounts of non-merchantable tree sections would vary with stand age, reason for salvage, and topography. When conducting salvage logging operations, SDS and BLC will leave two downed logs per acre to promote the conservation of biological diversity within managed stands. The downed logs would measure 12 inches dbh or greater on the small end and have a length greater than or equal to 20 feet, or contain the equivalent volume. During salvage, special efforts are made to avoid disturbing shade-tolerant saplings such as western red cedar. This practice would retain forest understory and promote the development of a more structurally diverse forest canopy. As with thinning entries, existing downed wood is retained and left undisturbed whenever possible.

Disturbance events, acting individually or in concert, would increase within-stand forest structural diversity. Wind and ice effects are often unpredictable, affecting both individual trees and patches of trees. Minor wind throw and breakage created by wind and ice events goes unnoticed at a stand level and is not salvaged. Wind and ice events, however, in the Columbia River Gorge area can be severe and require aggressive salvage and/or regeneration harvest to prevent outbreak of Douglas-fir bark beetle and other insects that can cause more significant forest health concerns and increased fire risk. Applicant is providing, through this SHA and its associated ESP, certain commitments of habitat (e.g., 10-year deferral of harvest in defined areas, 33% habitat within White Salmon SOSEA). Given the higher potential for disturbance events, forest health events and fires in eastern Washington and on the Covered Lands, Applicant requires the ability to respond to disturbance events with salvage activities. Under this SHA and ESP, Applicant will be allowed to deviate from the habitat commitments in emergency forest health situations, such as spruce budworm or bark beetle outbreaks, storm damage, and other natural landscape events that are beyond the control of Applicant’s, but only

after conferring with USFWS. Applicant's will make USFWS aware of current or potential forest health situations as soon as possible and Applicant and USFWS may mutually agree upon proactive measures, outside the terms of this SHA, in emergency situations to prevent natural forest health situations from occurring or worsening.

The covered area contains a number of pathogens, such as laminated root rot (*Phellinus wierii*), armillaria root disease (*Armillaria spp*), and dwarf mistletoe (Arceuthobium spp.), that are common factors in forest ecology. Pockets of *Phellinus* kill Douglas-fir and hemlock trees and result in understory development and/or enhanced growth of red alder and western red cedar. During management activities, depending on stand age, SDS and BLC considers planting such *Phellinus* pockets with more resistant commercial tree species. *Armillaria* species, which are fungi, have a huge host range, including many conifers and hardwoods and some herbaceous plants. These species cause root disease in all hosts and are difficult to manage. Dwarf mistletoes are host-specific, parasitic flowering plants. Tree damage from dwarf mistletoe includes growth reduction, loss of wood quality, poor tree form, predisposition to insect infestation and diseases, premature death, and reduction in seed crops. SDS and BLC management may include planting of resistant trees under infected trees as a replacement for when infected trees are removed, or regeneration harvest of infected stands.

In spring, black bears (*Ursus americanus*) commonly feed on the cambium of young Douglas-fir trees in plantations that are between 15 to 25 years of age. Many of these damaged trees die while others survive with potential defects becoming evident in the future. Because bears seek trees with higher sugar concentrations, their damage patterns often form pockets as the adjacent trees receive more sunlight. Adjacent to such pockets, trees tend to retain their lower branches longer or may develop epicormic branching, both of which may create potential roost trees in the future.

4.1.9 Road Construction and Maintenance, and Forestry Rock Pits

Under the SHA, road construction and maintenance, and forestry rock pit activities will be conducted to comply with current Forest Practices Rules (WAC 222-24). The current Forest Practices Rules include a requirement to develop Road Maintenance and Abandonment Plans (RMAPs), which were incorporated into the Forest Practices HCP (WDNR 2005). The RMAPs are designed to improve the forest road systems on private ownerships to avoid and minimize effects to aquatic resources. Road construction and maintenance covered by the Forest Practices Rules are expected to minimize sediment to streams and minimize removal of shade trees near streams. Construction of new forest roads and forest rock pits will result in removal of trees from the uplands but this activity will be conducted on a small scale, similar to regeneration harvest activities.

4.1.10 Other Silvicultural Activities

Other forest management and forest silvicultural activities (e.g., forestry burning, spraying, reforestation, seed orchard management, insect and animal damage control, etc.) will be conducted on the Covered Lands in compliance with current Forest Practices Rules in Oregon and Washington.

4.1.11 Snag and Wildlife Tree Prescriptions

The Applicants will provide other conservation measures related to snag and wildlife tree development intended to enhance the foraging component of owl habitat on the Covered Lands in Oregon and Washington by providing structure for owl prey species utilizing the unique mosaic of conifer and hardwood tree species available on the landscape as follows:

- Commercial thinning (select one of the following prescriptions):
  - **Prescription 1:** Two defective trees per acre will be retained. Defective trees are defined as, but not limited to, conifer snags, hardwood trees greater than 10 inches diameter, and damaged or deformed live conifer trees in the management unit with characteristics such as broken or multiple tops, bayonet or candelabra tops, or having sinuosity characteristics, i.e., Type 1 wildlife reserve trees described in the Washington Forest Practices Rules (WAC 222-16-010).
  - **Prescription 2:** One defective tree per acre will be retained and one snag per acre will be left or created using mechanical topping at or above 12 feet or girdling or chainsaw boring. When selecting trees for snag creation, priority will be given to residual leave trees from the previous regeneration harvest, including hardwood trees greater than 20 inches diameter (or largest diameter class available).
  - **Prescription 3:** Two snags per acre will be left or created using mechanical topping at 12 to 18 feet, girdling, or chainsaw boring. When selecting trees for snag creation, priority will be given to residual leave trees from the previous regeneration harvest, including hardwood trees greater than 20 inches diameter (or largest diameter class available).
- Regeneration harvest (select one of the following prescriptions). In addition to the Washington Forest Practices Rules requiring two green recruitment trees and two wildlife reserve trees per acre when they are available (WAC 222-30-020), and the Oregon Forest Practices Rules requiring retention of two snags or green trees per acre (ORS 527.676), the Applicants will select one of the following prescriptions during regeneration harvest:
  - **Prescription 1:** Regardless of the number of residual snags (e.g., Type 3 and Type 4 Wildlife Reserve Trees as defined in WAC 222-16-010) present within an even-aged harvest unit, the Applicants will create additional snags at a rate of 20 per 100 acres and retain six green recruitment trees per acre. When selecting green recruitment trees and trees for snag creation, priority will be given to residual leave trees from the previous regeneration harvest or hardwood trees greater than 20 inches diameter (or largest diameter class available).
  - **Prescription 2:** Regardless of the number of residual snags present within an even-aged harvest unit, the Applicants will retain two snags per acre (either residual or created) and supplement Forest Practices Rules requirements with one additional green recruitment tree (three trees per acre). When selecting green recruitment trees and trees for snag creation, priority will be given to residual leave trees from the previous regeneration harvest or hardwood trees greater than 20 inches diameter (or largest diameter class available).

Snags are defined as standing dead conifer trees greater than or equal to 15 inches dbh and greater than or equal to 12 feet tall and standing dead hardwood trees greater than or equal to 10 inches diameter and greater than or equal to 12 feet tall. Snag creation methods to be employed include girdling or coring with a chain saw, mechanical topping at or above 12 feet, and/or natural recruitment. Average distance between groupings of snags or green recruitment trees will be no further than 1000 feet, and no point within the unit will be further than 800 feet from snags or green recruitment trees.

4.1.12 Dispersal and Young Forest Marginal Habitat

A subset of stands in the covered lands was surveyed to determine at what age they met the YFM habitat definition in the Washington Forest Practices Rules (Appendix B). Characteristics measured included an assessment of canopy closure, presence of 70 ft. trees, presence of 2 or more layers of forest canopy, a count of intermediate trees on the plot, and an assessment of mistletoe abundance (low, moderate, or high infection). This data was then compared with inventory data for each stand to determine if minimum thresholds for YFM (either open- or closed-canopy) were present. Results of habitat determinations are provided in Appendix C. Young Forest Marginal habitat was reached as young as 38 years in one stand, occurred on 2 stands aged 45 years, but was not consistently identified until stands aged 58 years or more were sampled. Although most of the stands over 40 years old appeared to provide functional owl habitat (D. Herter, pers. comm.), some components of the Washington Forest Practices Rule definition for YFM habitat were missing in several stands. Typically, this feature was a noted lack of intermediate trees in the quantity required by the YFM definition. We did not assess stands for the presence of dispersal habitat, however, SDS inventory data indicated that almost all stands 40 years or older meet this minimal habitat definition.

If several of the stands that did not meet YFM habitat definitions had been thinned at some point in their development, intermediate trees would likely have been present by the time we sampled them. This change alone would have brought several stands into this habitat category. For this reason, forest management such as commercial thinning which can immediately create intermediate trees, snags and down logs, and/or snag creation on acres unable to be thinned which can enhance foraging habitat by providing denning sites useful for spotted owl prey, can be utilized to enhanced habitat characteristics that convert dispersal habitat into YFM habitat.

Given the Applicant's inability to survey and maintain habitat typing of its entire ownership, for the purposes of monitoring and compliance with the term of this SHA, a correlation between habitat type and forest age classes must be used. Given the sampling of habitat characteristics observed and the available habitat enhancement methods described above, for the purposes of monitoring and compliance with this SHA, spotted owl habitats on the Covered Lands in Oregon and Washington will be defined as follows:

- Forest stands from age 40-59 years of age are determined to be Eastside spotted owl dispersal habitat at a minimum;
- Stands 50-59 years of age, that have undergone one of the following processes are determined to be YFM: 1) had a statistically valid survey and biological habitat assessment to determine the definitional characteristics of Eastside YFM (Appendix B)

exist naturally, or 2) have been thinned employing the commercial thinning and Snag and Wildlife Tree prescriptions included in this SHA, or 3) had snags created under the Snag and Wildlife Tree prescriptions in this SHA for commercial thinning. For stands with the potential for commercial thinning, Applicant will attempt to apply commercial thinning prescriptions as early as operationally and economically feasible in order to provide greater amount of time to affect tree growth for intermediate trees, and snags time to age and provide den sites; and

- Stands 60 years of age or older, for purposes of this SHA, are determined to be Eastside YFM habitat at a minimum.

In order to enhance net conservation benefits to spotted owls across a biologically important landscape, Applicant will ensure a spatial and temporal distribution of owl habitat throughout the SHA term in the White Salmon SOSEA and in other areas of important biological function as follows:

- At minimum, 33% (9,424acres)[1] of all of the Applicants' commercial forest lands (Table 3-1) located within the White Salmon SOSEA will, for the duration of the SHA, be in a habitat condition that meets or exceeds the definitions of owl habitat as defined in this SHA;
- No more than one-half of this acreage (16.5%) will be in the habitat definition of Eastside dispersal spotted owl habitat, and no less than one-half (16.5%) will be in the Eastside YFM spotted owl habitat definition;
- It will also be required that 33%, at minimum, of all of the Applicants' commercial forest lands within a 0.7 mile radius circles of each of the spotted owl sites #991, 1003, 1048, 753, 1116, 852 and 734 located within the White Salmon SOSEA (Table 4-1), will, for the duration of the SHA, be in a habitat condition that meets or exceeds the definition of Eastside YFM spotted owl habitat; and
- When conducting harvest activities within the 0.7 mile radius circles of these spotted owl site centers as allowed under this SHA, the Applicants will attempt to prioritize these harvest activities as follows:
  - To the extent economically feasible, attempt to commercial thin and/or implement the provisions of the snag creation/enhancement program on non-habitat to expedite the development of new habitat as soon as possible; and
  - When conducting regeneration harvests of habitat in excess of the 33% minimum threshold, to the extent economically feasible, attempt to select harvest activities to occur in areas farthest from the site center first.

Under this SHA and ESP, Applicant may be allowed to deviate from these habitat commitments only in emergency forest health situations, such as spruce budworm or bark beetle outbreaks, storm damage and/or other natural landscape events that are beyond the control of Applicant, but only after conferring with USFWS. Applicant will make USFWS aware of current or potential

[1] All special set aside areas, reserve areas, and buffers on the covered lands within the White Salmon SOSEA will apply toward this 33% requirement.

Table 4-1. Comparison of Baseline to Elevated Baseline with SHA, Habitat Conditions in 0.7 and 1.8 Mile Ranges in SOSEAs

			0.7 mile radius circle							Between 0.7 and 1.8 mile radius circle					
Owl Site Centers within W.S. SOSEA	*% of Habitat remaining in 1.8 radius circle*	*Surplus Habitat Acreage (all owners)* [a]	*Acreage of nest set aside/ Protection via USFS Late Successional Reserve, DNR HCP or SHA* [b]	*SDS/BLC Ownership restricted within best 2605 (Baseline)* [c]	*Baseline Sub Mature habitat*	*Baseline YFM Habitat*	*Elevated Baseline with SHA, Sub Mature & YFM (33% of lands within 0.7 mile circle)*	*Current non-habitat allowed to become habitat as a result of SHA*	*Net change in available habitat as result of SHA* [d]	*SDS/BLC Ownership restricted within best 2605 (Baseline)*	*Baseline Sub Mature habitat*	*Baseline YFM Habitat*	*Elevated Baseline with SHA , Likely YFM & Dispersal Habitat (with 33% of lands within WS SOSEA in habitat)* [e]	*Current non-habitat allowed to become habitat as a result of SHA*	*Net change in available habitat as result of SHA* [f]
SDS															
Bear Creek-Trout Lake Creek #828	52	757	41/DNR	0	0	0	0	1	1	246	32	214	236	378	368
Cave Creek--#852	47	449	209/DNR	72	0	72	26	8	-38	268	0	268	278	459	469
White Salmon River--#875	36	0	256/DNR	6	0	6	6	14	14	108	17	91	281	658	831
Dry Crk-White Salmon--#734 **	50	662	301/DNR	253	238	15	120	110	-23	230	0	230	636	1217	1623
Wieberg Crk-#1116 **	52	769	198/DNR	154	14	140	55	16	-83	94	34	60	425	867	1198
Phelps Crk-#874	53	827	201/DNR	0	0	0	0	0	0	51	5	58	69	100	118
Monte Cristo-#284	53	855	USFS/LSR	0	0	0	0	0	0	0	0	0	50	151	201
Gilmer Creek (Twin Mtn) -#753 **	44	261	240/SDS	346	0	346	240	159	53	421	0	421	263	210	52
Rattlesnake-Mill Crk-#1048	59	1235	DNR	76	0	76	29	12	-35	285	0	285	711	828	1254
Mill Creek-White Salmon-#991	57	1105	168/DNR	131	124	7	44	1	-86	456	212	244	371	486	401
Subtotal		**6920**		**1038**	**376**	**662**	**520**	**321**	**-197**	**2159**	**300**	**1871**	**3320**	**5354**	**6515**
BLC															
Moss Creek Campground--#1003 **	55	951	USFS/LSR	118	10	108	96	169	147	177	16	161	685	1422	1930
Moss Creek-#289	75	2313	USFS/LSR	0	0	0	0	0	0	202	39	151	258	360	416
Little Wind River Upper-#824	71	2049	USFS/LSR	0	0	0	0	0	0	0	0	0	0	0	0
Berry Creek-#970	67	1784	USFS/LSR	0	0	0	0	0	0	0	0	0	159	225	384
Subtotal		**7097**		**118**	**10**	**108**	**96**	**169**	**147**	**379**	**55**	**312**	**1102**	**2007**	**2730**
Total White Salmon SOSEA		**14017**		**1156**	**386**	**770**	**616**	**490**	**-50**	**2538**	**355**	**2183**	**4422**	**7361**	**9245**
Total Columbia Gorge SOSEA		**N/A**		**0**	**0**	**0**	**N/A**	**0**	**N/A**	**1003**	**313**	**690**	**N/A**	**1021**	**N/A**

* *Data Source WADNR (2011)*

** *Circles subject to 10 year deferral of any habitat removal in 0.7 mile radius*

a – acres of suitable owl habitat exceeding the minimum of 40% (2,605 acres) required of an owl territorial range circle in the Cascade Mountains
b – acres around known owl nest site centers protected as reserves
c – SDS/BLC acres restricted from harvest by Washington Forest Practices Rules because they are part of the 2,605 acres of highest quality habitat
d – net difference between existing suitable habitat available and the combination of habitat retained and allowed to grow under the SHA
e – estimated habitat acres in each outer circle based on the SHA requirement to provide 33% of the ownership in in the SOSEA in YFM and dispersal habitat
f – net difference between existing suitable habitat available and the combination of habitat retained and allowed to grow under the SHA

forest health situations as soon as possible, and Applicant and USFWS may mutually agree upon proactive measures, outside the terms of this SHA, in emergency situations to prevent natural forest health situations form occurring or worsening.

4.1.13 Habitat Deferral in Regulatory Circles

Survey data suggests that most of the spotted owl site centers across this landscape are probably unoccupied at the present time, largely due to expansion and increase in the local barred owl population, combined with limited below-threshold habitat loss at a few sites outside of SOSEAs. Survey data for spotted owl site centers on or near the Applicants' landscape indicate/suggest that very few are occupied, or possibly that spotted owls are not responding to traditional survey methods. Only one site is known to contain a spotted owl pair as of 2011 (within the White Salmon SOSEA; T. Fleming, pers. comm.), however several sites have not been regularly surveyed in recent years. For purposes of this discussion, current status may not be directly relevant, as we treat all regulatory sites as potentially capable of sustaining a resident spotted owl single or pair, and may be re-occupied in the future should recovery activities, such as barred owl population control, be initiated in the local area (USFWS 2012).

The Applicants ownership comprise insignificant amounts, i.e., less than 15%, of most of the 0.7 mile radius spotted owl site centers within the White Salmon and Columbia Gorge SOSEAs , with WDNR and USFS comprising the majority of ownership inside these circles (Table 4-2). In addition, WDNR's HCP provides permanent nest area set asides on a majority of the site centers in the White Salmon SOSEA involving the Applicants' lands. Those site centers not owned by WDNR are owned by USFS with the exception of site #753. The Applicants' largest ownerships are within site centers #753 (56% of acreage), #1116 (18%), #1003 (30%), and #734 (36%). Within these four site centers, Applicants' will defer any habitat-removing harvest within the 0.7 mile radius circle for the first ten years of the SHA. Non-habitat with habitat potential will be encouraged to be thinned or treated with snag prescriptions, and be allowed to become habitat with the SHA. One example of this potential habitat is approximately 110 acres in the Dry Creek owl circle (Site #734). Currently the trees are approximately 35 years of age. The 10-year deferral in harvest of habitat within the 0.7 mile circles in four sites within the SOSEA is designed to not only allow benefits of the SHA to accrue prior to allowing any habitat removal in 0.7 mile circles, but also to allow this potential habitat to grow into, or be thinned to become, suitable habitat before habitat is harvested in the 0.7 mile circles. This habitat would only be allowed to become suitable owl habitat with the SHA and not under current Forest Practices Rules, i.e., the baseline.

Table 4-2. Ownerships Within 0.7-mile Spotted Owl Circles*

SOSEA	Site Name and Number	SDS & BLC	Other Pvt	State	Federal
White Salmon	Bear Creek #828	0%	1%	98%	1%
White Salmon	Cave Creek #852	8%	22%	65%	5%
White Salmon	White Salmon River #875	2%	19%	17%	62%
White Salmon	Dry Creek WSR #734	36%	0%	64%	0%
White Salmon	Phelps Creek #874	0%	0%	87%	13%
White Salmon	Weiberg Creek #1116	18%	14%	68%	0%
White Salmon	Monte Cristo #284	0%	0%	0%	100%
White Salmon	Rattlesnake Creek #1048	9%	5%	86%	0%
White Salmon	Gilmer Creek South #753	56%	37%	7%	0%
White Salmon	Mill Creek #991	13%	0%	87%	0%
White Salmon	Moss Creek Campground # 1003	30%	9%	37%	24%
White Salmon	Moss Creek #289	0%	0%	0%	100%
White Salmon	Little Wind River- upper #824	0%	0%	0%	100%
White Salmon	Berry Creek #970	0%	0%	0%	100%
Columbia Gorge	Carson Ridge #647	0%	34%	66%	0%
Columbia Gorge	Red Bluffs #765	0%	9%	35%	56%
Columbia Gorge	Budweiser Creek #302	0%	0%	100%	0%
Columbia Gorge	Steep Creek #667	0%	0%	2%	98%

*Source: (WDNR2012)

4.1.14 Occupied Nest Site Provisions

The landscape approach in this SHA complements the existing federal and state landscape approaches for the protection of the spotted owls and moves away from circle management. This approach always provides for owl nesting opportunity in suitable owl habitat over the landscape and encourages the Applicants to maintain and grow suitable owl habitat without the threat of additional regulatory burdens. With the exception of spotted owl site #753 (Gilmer Creek South), all currently known nest sites for spotted owls in the White Salmon SOSEA are located on WDNR or USFS lands (see Figure 3-2). With the addition of the 240-acre SSA nest reserve by SDS on site #753, all known nest sites will have large nest reserves around the nest trees.

Although not highly probable given current owl behavior, it is possible that spotted owls may use alternate nest sites on a shifting or periodic basis. During the term of the SHA, some mature and submature forest conditions will be retained and developed in riparian management zones and the SSAs on Applicant's lands. These areas, and areas of submature forests currently on the Applicants landscape that are not currently occupied by owls, may become occupied by new owls prior to regeneration harvest as a result of Applicant's entering into this SHA. The possibility of owls occupying the covered lands is consistent with the fundamental principles of the Service's safe harbor policy that encourages private landowners to manage their lands in a manner that may encourage species occupancy without additional regulatory burdens.

Consistent with the Service's safe harbor policy, if, during the course of normal operations, the Applicants discover or are informed of the presence of new owl nest sites they will not be threatened with additional regulatory burdens. However, the Applicants will implement actions to help minimize any impacts of the taking for which they are authorized. These actions would help further the effectiveness of the landscape approach by providing demographic and dispersal habitat, and connectivity for owls and would further the conservation of the owl. These conservation actions are described below.

New Owl Sites Inside the White Salmon SOSEA. If a new spotted owl site is discovered inside the White Salmon SOSEA, then the Applicants in coordination with the Service will verify the status and location of the newly occupied owl site. Under this SHA provision, an owl nest site is defined as the nest tree of a breeding pair and the 70 acres of highest quality suitable owl habitat surrounding the nest tree. The Applicants will protect whatever portion of this 70 acre core is on their lands. In the first year the new nest site is discovered, the Applicants will establish a nest box cluster to provide replacement nesting opportunity in the nearest and highest quality spotted owl habitat available of sufficient size for nesting.

Nest box clusters could be placed on lands not owned by the Applicants with the landowner's permission. This process can be repeated multiple times if a pair persists in the same general area over time. A nest box cluster would consist of three or more nest boxes placed in appropriate situations and would be constructed consistent with the best available science. Nest boxes for spotted owls have been successful in portions of northern California and on the Gifford Pinchot National Forest in providing alternative nest sites (E. Forsman, J. Kulig, pers. comm.). No harvest will occur within this 70 acre core for at least three years after the new nest is discovered.

The Applicants will monitor the nest boxes for determining spotted owl presence and to ensure that barred owls are not using them. The Applicants in coordination with the FWS will assess the information and determine if barred owls are using the boxes and if barred owls are utilizing them, determine how the boxes should be made inaccessible to their use. After five years, if the spotted owls have not moved to the nest box cluster, the Applicants, in discussion with the Service, will make the nest tree temporarily unusable for up to three additional years in an attempt to encourage relocation of the owls to the nest box cluster site. After this eight year period (or earlier if the owls have moved to the nest boxes), SDS will be able to harvest the 70 acre core, outside of the nesting and breeding season, leaving the nest tree and several trees surrounding it to provide a future nesting site.

Existing Spotted Owl Sites – Shifted Nest Trees to Covered Lands. If any of the currently existing spotted owl sites shift their nesting site to SDS or BLC private lands then the Applicants in coordination with the Service will verify the origin, status and location of the newly occupied owl site. Under this SHA provision, an owl nest site is defined as the nest tree of a breeding pair and the 70 acres of highest quality suitable owl habitat surrounding the nest tree. The Applicants will protect whatever portion of 70 acres is on their lands. In the first year the new nest site is discovered, the Applicants will install a nest box cluster. Nest box clusters could be placed on lands not owned by the Applicants with the landowner's permission. This process can be repeated multiple times if a pair persists in the same general area over time. A nest box

cluster would consist of three or more nest boxes placed in appropriate situations and would be constructed consistent with the best available science. Nest boxes for spotted owls have been successful in portions of northern California and on the Gifford Pinchot National Forest in providing alternative nest sites (E. Forsman, J. Kulig, pers. comm.). No harvest will occur within this 70 acre core for at least three years after the new nest is discovered.

The Applicants will monitor the nest boxes for determining spotted owl presence and to ensure that barred owls are not using them. The Applicants, in coordination with the FWS, will assess the information and determine if barred owls are using the boxes and if barred owls are utilizing them, determine how the boxes should be made inaccessible to their use. After three years, if the owls have not moved to the nest box cluster provide, the Applicants, in discussion with the Service, will make the nest tree temporarily unusable for up to three additional years in an attempt to encourage relocation of the owls to an alternate nest or nest box cluster site. After this six year period (or earlier if the owls have moved to the alternate nest or nest boxes), SDS will be able to harvest the 70 acre core, outside of the nesting and breeding season, leaving the nest tree and 5 acres of trees surrounding it to provide a future nesting site.

New Sites Outside the White Salmon SOSEA. If a new nest site is discovered outside the White Salmon SOSEA within the covered lands in Washington or Oregon, then the Applicants in coordination with the Service will verify the status and location of the newly occupied owl site. Under this SHA provision, an owl nest site is defined as the nest tree of a breeding pair and the 70 acres of highest quality suitable owl habitat surrounding the nest tree. The Applicants will protect whatever portion of this 70 acre core is on their lands. No harvest will occur within this 70 acre core for at least three years after the new nest is discovered. After three years, harvest of the 70 acre core, other than the nest tree and several trees around it, can occur outside of the nesting and breeding season.

Under any of the scenarios above, the Applicants will minimize noise disturbance around a known nest site during the nesting and breeding season. While actual disturbance distance restriction for various activities may change over time, the Applicants will follow those accepted by the Service: 105 feet for heavy equipment; 195 feet for chainsaws; 180 feet for impact pile drivers, jackhammers, and rock drills; 360 feet for small helicopters or single-engine airplanes; and 1 mile for blasting, large helicopters, and large airplanes (USFWS 2003). However, site-, equipment-, and method-specific information can be used to modify the 1-mile distances.

4.2 Contribution to Recovery

The Applicants' SHA conservation strategy outlined above supports the recovery action recommendations identified in the Final Recovery Plan, i.e., near-term recommendations to guide the activities needed to accomplish the recovery objectives and achieve the recovery criteria. The SHA net conservation benefits contribute all three recovery objectives as follows:

- Contributes to creating a sufficiently large and distributed spotted owl populations such that the species no longer requires listing;
- Contributes by making adequate habitat available to allow the species to persist without ESA protection; and

- Contributes by reducing the threat of habitat elimination in the southeast portion of its range in Washington.

The SHA contribution to recovery and net benefit is provided through implementation of a conservation strategy that is consistent with the White Salmon and Columbia Gorge SOSEA goals for a combination of dispersal and demographic support of the spotted owl by providing current and future foraging-dispersal habitat, and nest patches, across a landscape of 81,587 acres in an area that supports owl distribution and complements owl conservation strategies on nearby USFS and WDNR lands.

The SHA is particularly responsive to Recovery Action 14 addressing contributions of State and Private Lands by encouraging applicants to develop HCPs and SHAs that are consistent with the recovery objectives. The Applicants' SHA is consistent with the SHA for small woodlot owners in Oregon, identified in this Recovery Action, by increasing the time between harvests (with deferrals) and modifying thinning practices to increase tree diameter size and stand diversity. The Applicants' SHA will provide current and future demographic and dispersal support by providing suitable habitat across the landscape through their forest management plan and snag program.

4.3 Net Conservation Benefits

The following provides a discussion of the net conservation benefit to the spotted owl as a result of the Applicants' enhanced forest management activities. This discussion will fulfill a requirement of an approved SHA. Management actions with and without the terms and provisions of the SHA are summarized in Table 4-2 at the end of Section 4.3. The Applicants' objective is to manage the covered area to contribute to the habitat goals of the Columbia Gorge and White Salmon SOSEAs and, thus, contribute to the recovery of the spotted owl, while continuing to receive an economic benefit from forest management operations. More specifically, the SHA is designed to facilitate the dispersal of owls between areas of suitable habitat within the SOSEA and adjacent lands being managed to produce nesting and foraging habitat, i.e., WDNR HCP lands, the Gifford Pinchot National Forest, and the Columbia Gorge National Scenic Area. In addition, the SHA provides demographic support by 1) providing nest site suitable habitat protection of the only spotted owl site center located on their ownership (similar to the WDNR HCP strategy for the same area) for the term of the SHA, 2) protecting from harvest 411 acres of mature forest along the Little White Salmon River for the term of the SHA, and 3) ensuring that 33% of the covered lands in the White Salmon SOSEA is in owl habitat which supports conservation management activities on adjacent (USFS and WDNR) ownerships. In addition, the Applicants' slower rate of harvest, longer rotations, harvest deferrals, occupied nest site protections, and the snag and green tree retention program, are expected, in combination, to result in potential habitat available for use by dispersing, foraging, and nesting spotted owls in south-central Washington and north-central Oregon.

4.3.1 Habitat Set Aside Areas

The Applicants propose two major SSAs for the term of the SHA on their lands (See Figures 4-1 and 4-2). One reserve (411 acres) occurs along the lower Little White Salmon River with no harvest activity to occur for the term of the SHA. This SSA will benefit owl dispersal in this and

supports past efforts to preserve habitat on USFS property immediately to the west in Late Successional Reserve and in the Columbia River Gorge Scenic Area. Most of the Little White Salmon set-aside currently consists of older forest stands and will immediately continue to provide benefit to spotted owls contribute to the demographic support goal of the SOSEA.

The second set-aside of 240 acres around the one nest site on the Applicants' lands (site # 753; South Gilmer Creek) is designed to provide a sufficient nest core for any future occupancy by spotted owls, and to further their ability to resume use of the site as a nesting territory. This set-aside mirrors and complements nest cores established by WDNR on the remainder of the White Salmon SOSEA, and links to WDNR habitat immediately adjacent to this core. Most of this set-aside currently consists of older forest stands and/or Oregon white oak stands with Douglas fir inclusions, and will immediately contribute to demographic support by continuing to provide nesting, roosting, and foraging benefits to spotted owls. Nesting habitat is available by virtue of the presence of the older forest stands. Roosting and foraging opportunities for spotted owls are expected to be available in the mixed oak/fir habitat because spotted owls are known to use mixed oak/fir patches in Klickitat County and adjacent Yakima County for both roosting and nighttime foraging (telemetry data: M. Nuetzmann– Yakama Tribe; nighttime responses: T. Fleming– formerly of NCASI, pers. comm.). Daytime roosting and nighttime foraging is also known to occur in this habitat during the non-breeding season in Oregon (telemetry data: D. Rock – NCASI, pers. comm.). While this habitat may not meet Washington Forest Practices Board definitions of owl habitat, it's documented potential as important foraging habitat for owls, and as productive mast-producing feeding habitat for owl prey species, warranted inclusion of these oak/fir patches as an important part of the reserve for this owl site and will add to the overall net benefits of this SSA.

4.3.2 Slower Rate of Harvest and Extended Harvest Rotations Provides Significantly More Suitable Owl Habitat

The overwhelming beneficial effect of the SHA is that it will provide appreciably greater total acres of habitat useful for spotted owls across the covered lands in the landscape management plan. Without implementation of the SHA, the Applicants will continue to reduce their exposure to regulatory impacts on future timber harvest by reducing their holdings of spotted owl habitat by the maximum allowable under current Oregon and Washington Forest Practices Rules. Habitat distribution in year 2023, with and without the SHA, is shown in Figures 4-3 and 4-4. Figures 4-5 through 4-8 show a graphic depiction of the differences (net benefit) in habitat quantity and quality that occur with and without the SHA. This habitat reduction will occur across all of Applicant's lands, inside and outside the SOSEAs. Thus, the only owl habitat that would remain on the Applicants' landscape

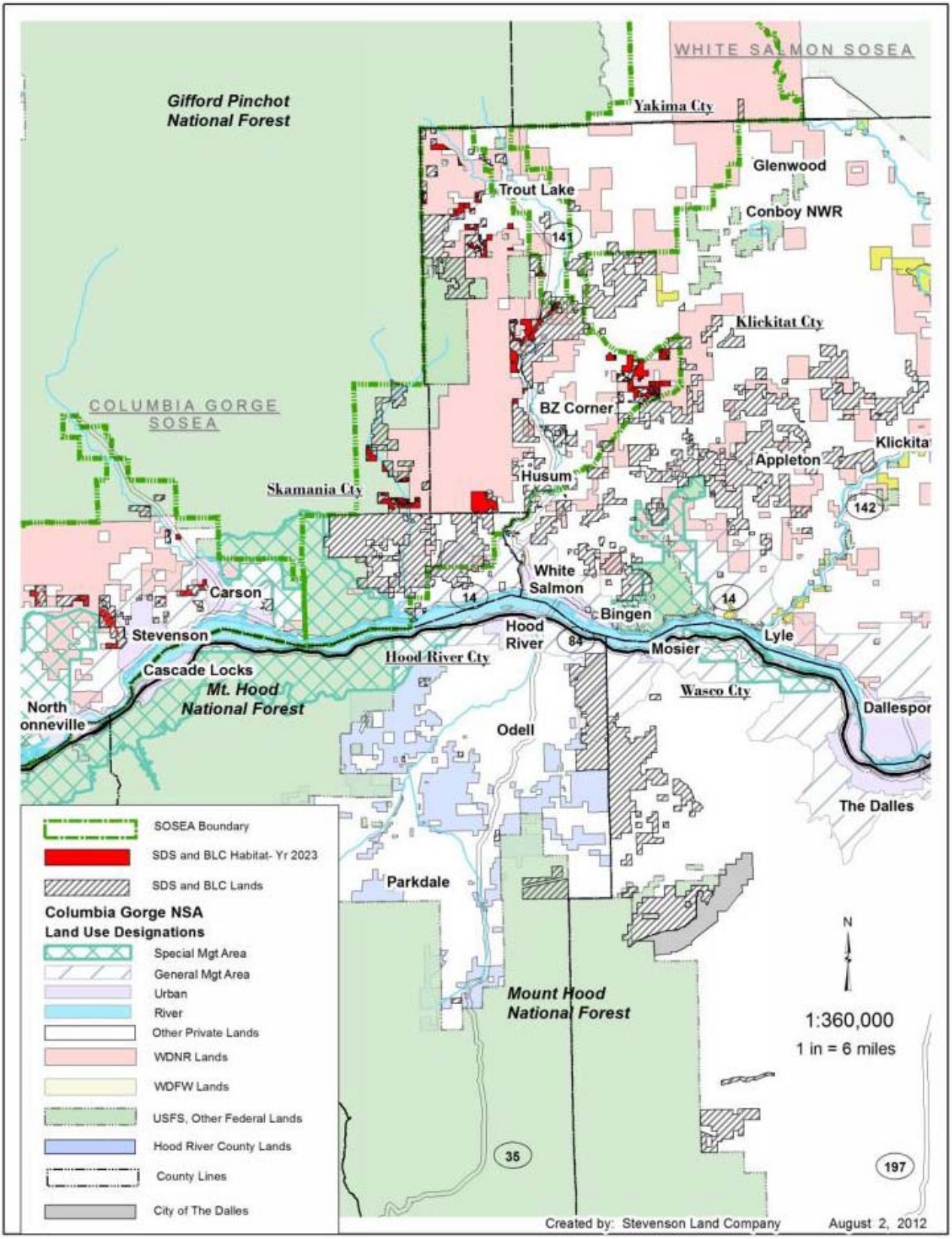

Figure 4-3. Owl Habitat Distribution without the SHA in Year 2023

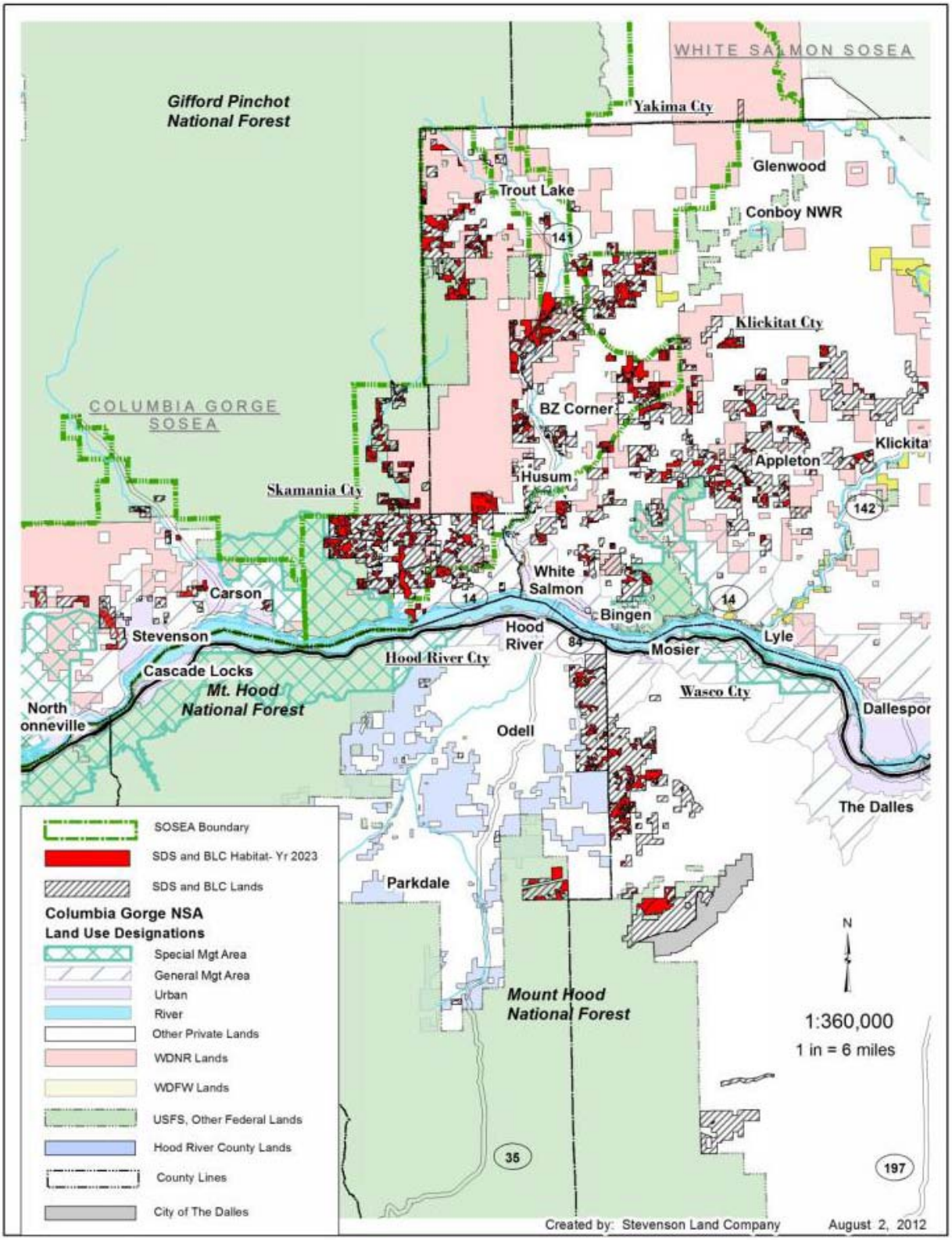

Figure 4-4. Owl Habitat Distribution with the SHA in Year 2023 (note: this illustration does not represent actual or expected harvest unit planning)

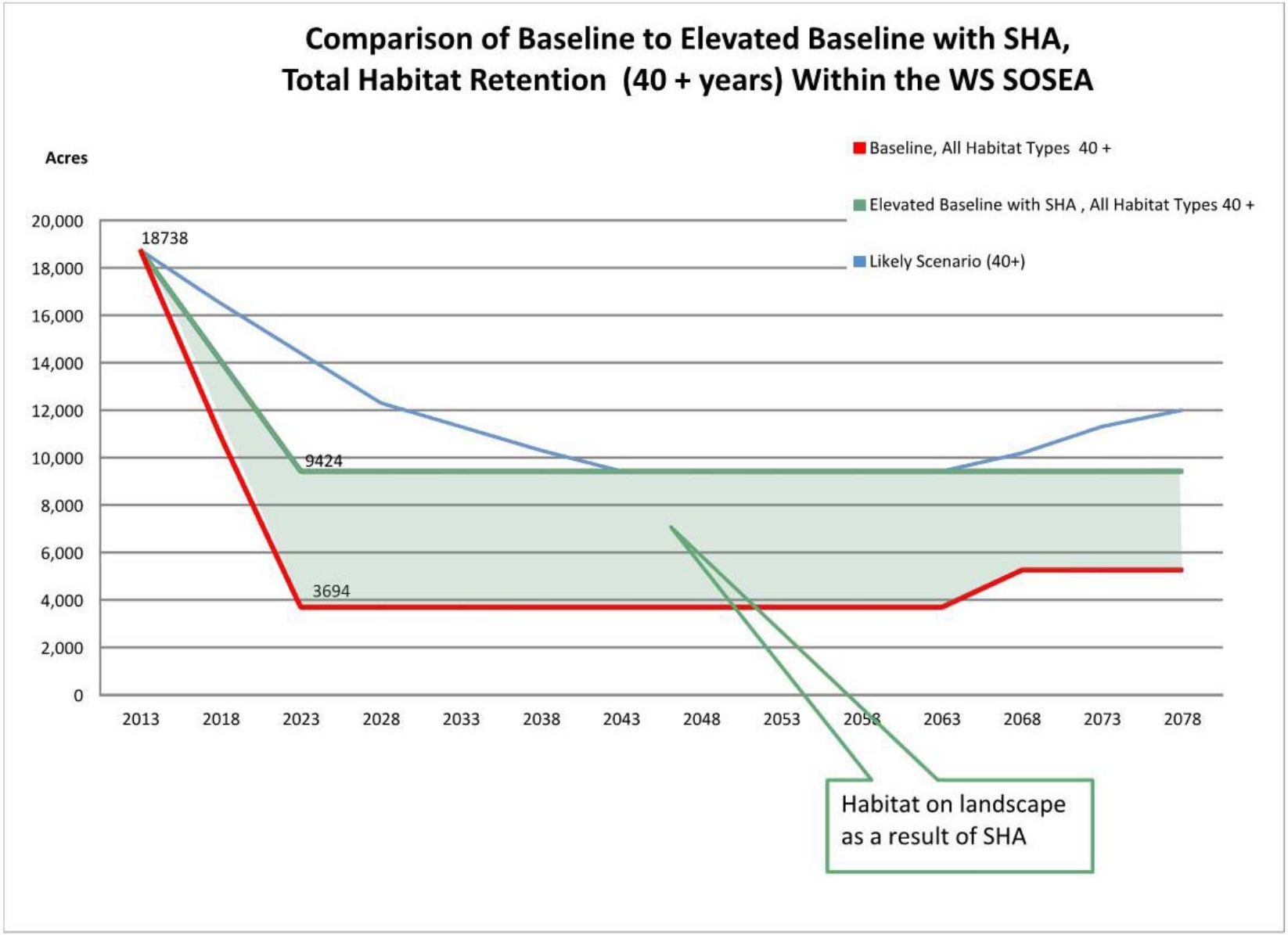

Figure 4-5. Comparison of Baseline to Elevated Baseline with SHA within the WS SOSEA

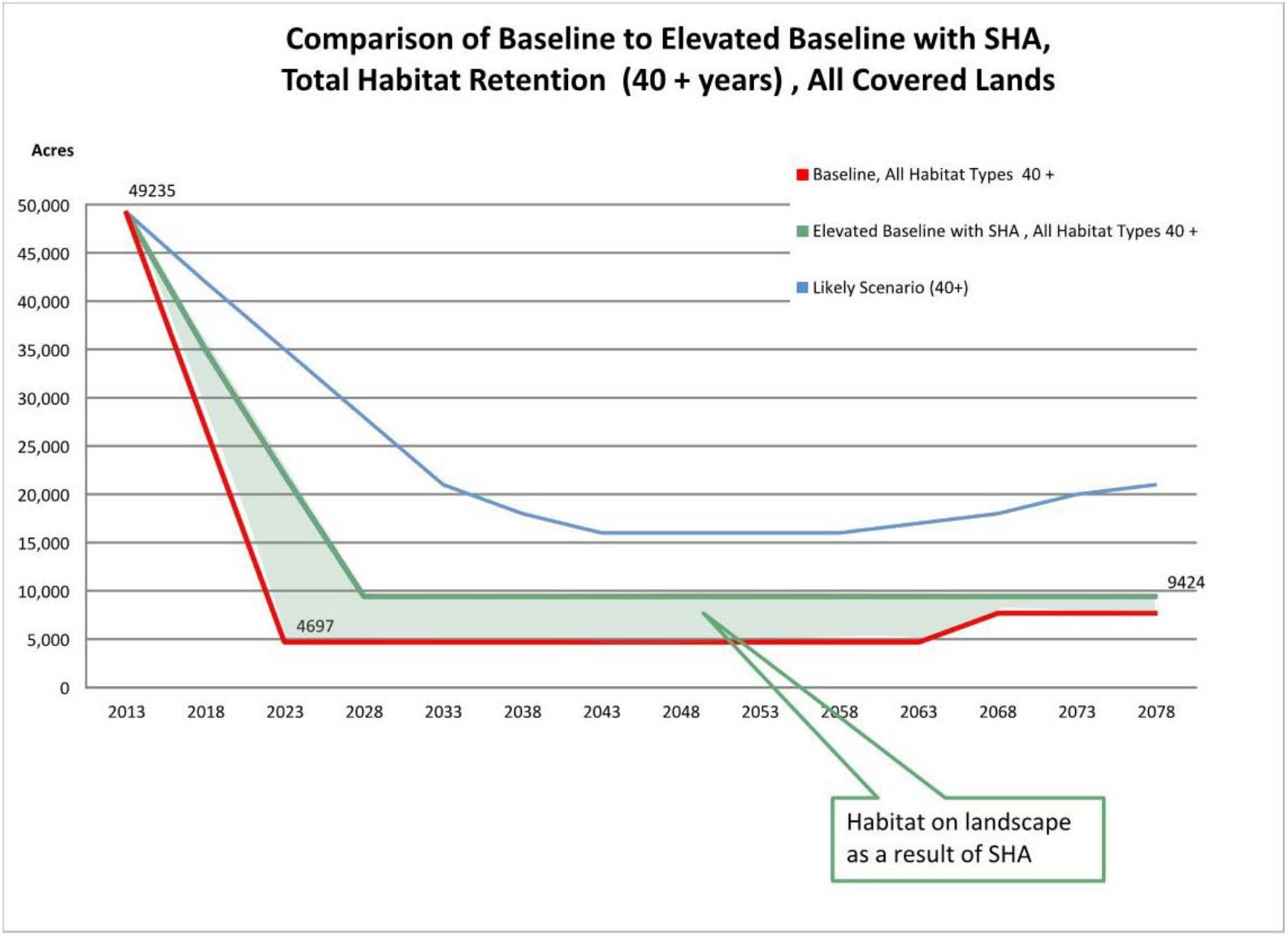

Figure 4-6. Comparison of Baseline to Elevated Baseline with SHA, All Covered Lands

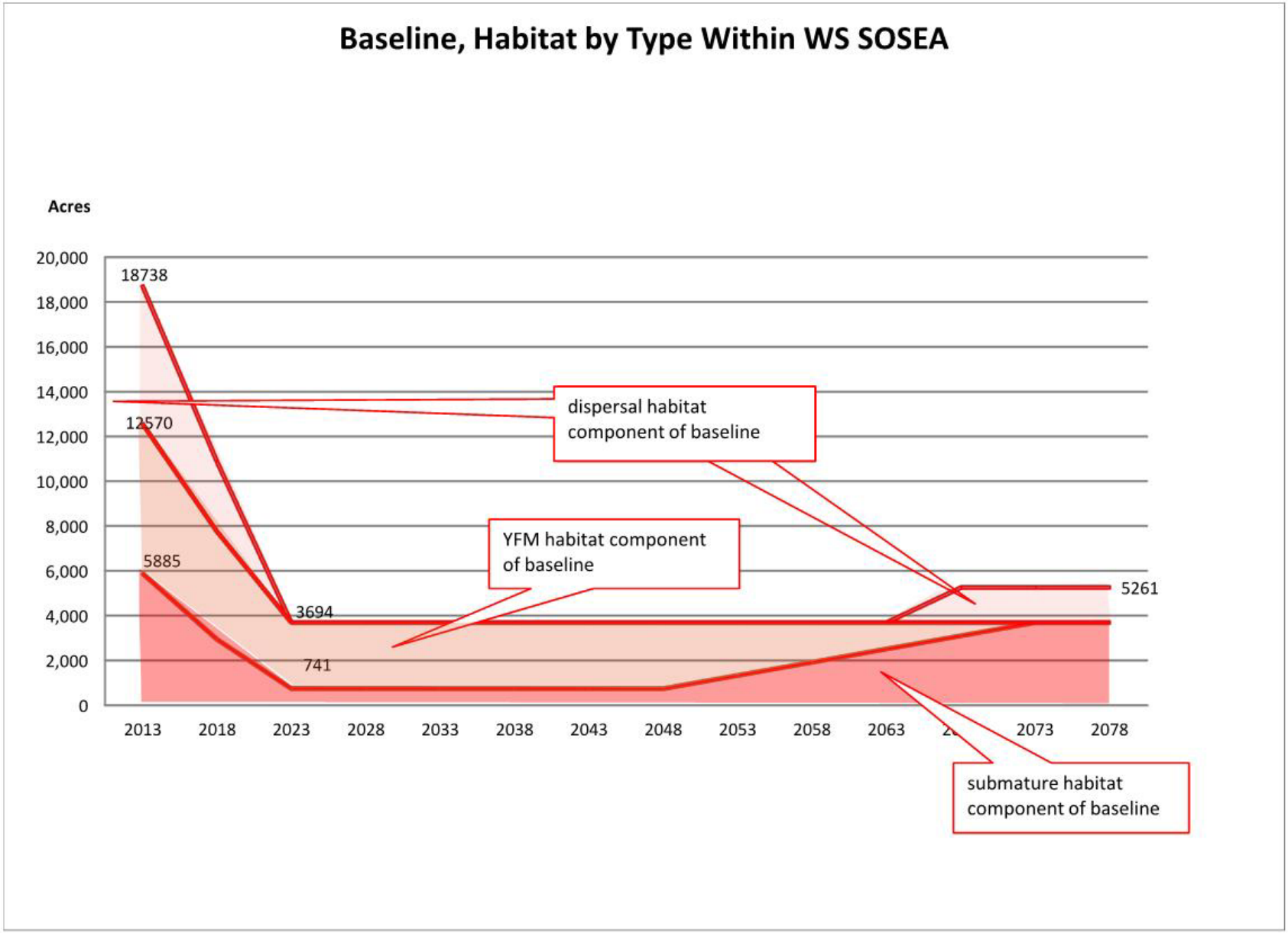

Figure 4-7. Baseline, Habitat by Type within WS SOSEA

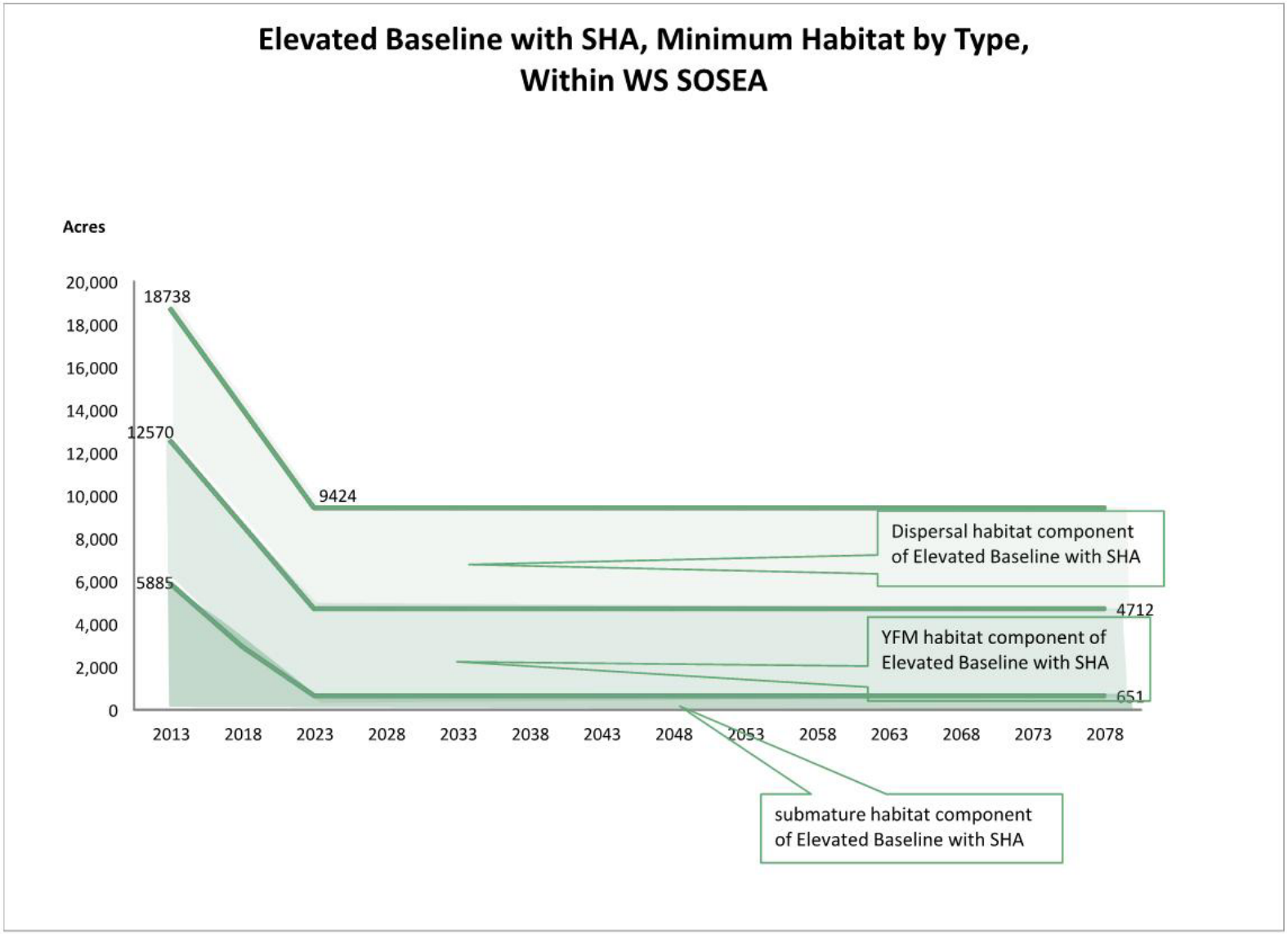

Figure 4-8. Elevated Baseline with SHA, Minimum Habitat by Type within WS SOSEA

in future years would be that portion of the 0.7-mile circle of all owls sites within SOSEAs and portions of the best 2,605 within all owls sites in SOSEAs, totaling 4,697 acres (See Figures 3-2, 3-5 and 3-6).

Under the current conditions across the landscape (See Figures 3-3 and 3-4), forest stands aged 40 years and older provide at least dispersal habitat, and stands aged 60 years and older provide YFM habitat or better. Without the SHA, with a rotation age of 45 years, only scattered small parcels of dispersal-quality habitat (stands aged 40-45 years) would be present on the covered lands beyond the 4,697 acres of habitat currently restricted in existing spotted owl circles. Any non-habitat within existing spotted owl circles would be managed to prevent it from ever becoming habitat.

With the SHA, Applicants will slow the rate of harvest and manage their commercial forest lands on longer rotations. The effects in different portions of the covered lands will be as follows:

Lands Outside of SOSEAs: Applicant's covered lands outside of SOSEAs consists of 47,523 acres (60% of which is in Washington and 40% in Oregon). Applicant's commercial forest land outside of SOSEAs is 38,499 acres. Under the SHA, the Applicants' are committed to a 60 year rotation on all of their covered commercial forest lands in Oregon and Washington. This extended rotation forestry will result in greater habitat conditions across these lands outside of SOSEAs than would occur without the SHA. These extended rotations should, on average, provide spotted owl Dispersal and YFM habitat on approximately 1/3 (12,705 acres) of these covered commercial forest lands in Oregon and Washington in any given year. Outside of SOSEAs, there are currently no spotted owl circles or regulatory requirements for the Applicants to maintain any spotted owl habitat on their lands. Comparing the potential of having 12,705 acres of habitat under the SHA, to minimal amounts of scattered dispersal habitat patches aged 40-45 years without the SHA, the benefits of the SHA considering habitat quantity alone are significant across this landscape. While this benefit is likely to occur, there is no requirement that the Applicants maintain 33% of all covered lands outside SOSEAs in habitat throughout the SHA term, as there is within the White Salmon SOSEA, due to the need for operational flexibility in the Applicant's forest management.

White Salmon SOSEA: Under the SHA, a minimum of 33% (9,424 acres) of the Applicant's commercial forest land in the White Salmon SOSEA (28,560 acres of commercial forestlands with potential for becoming owl habitat) will remain in habitat (½ in Eastside Dispersal and ½ in Eastside YFM or equivalent). This acreage is significantly greater than the acreage on the Applicants' White Salmon SOSEA lands that cannot be harvested under current Forested Practices Rules (3,694 acres) (See Figure 3-6). Therefore, the quantity of suitable habitat available to owls will be almost 2.5 times greater within the White Salmon SOSEA under the SHA than what will occur under Forest Practices Rules.

Columbia Gorge SOSEA: Applicants own only 3,103 total acres in the Columbia Gorge SOSEA, 2,927 acres of which is commercial forest land (Table 3-1). Managing for a percentage habitat commitment on such a small land ownership is operationally infeasible, therefore, under the SHA there is no similar commitment to 33% habitat within the Columbia Gorge SOSEA. In addition, Applicant's covered lands in the Columbia Gorge SOSEA currently contain a relatively

small amount of suitable habitat (1003 acres). On average, however, given a 60-year rotation age, it is expected that approximately 33% (967 acres) of commercial forest acres (2,927 acres) will be habitat in most decades within the Columbia Gorge SOSEA under the SHA. For this SOSEA, there will effectively be little change in habitat quantity under the SHA, however, strategies to maintain and enhance habitat with snag and thinning prescriptions, will be implemented to improve owl habitat quality, and there will be an incentive to maintain higher quality habitat throughout the SOSEA.

<u>0.7-mile and 1.8-mile Circle Analysis:</u> Based on current Washington DNR habitat typing data, inside the 0.7-mile owl circles within SOSEAs, the Applicants own a total of 1,156 acres of habitat, consisting of 386 acres of Sub-Mature owl habitat and 770 acres of YFM (Table 4-1). All the Applicants ownership within 0.7-mile circles is within the White Salmon SOSEA. The Applicants do not own habitat within 0.7 mile circles in Columbia Gorge SOSEA or elsewhere on the Covered Lands. Without the SHA, this habitat will remain in place under current restrictions, but is subject to forest health issues and stand replacing fires. With the SHA, approximately 285 acres of this habitat within five circles would be available for harvest immediately, however, Applicant's ownership in these circles represent minor percentages of the available habitat (Table 4-2). Of the remaining 871 acres, 240 acres will be excluded from harvest in the Gilmer Creek nest site (Site #753) SSA. The remaining 631 acres may be harvested; however, several additional measures are proposed to minimize the potential of habitat removal that could result in impacts spotted owls. These measures include a 10-year deferral of any habitat removal in certain circles and the requirement that no less than 33% of the Applicant's commercial forest land ownership within the 0.7 mile circles in the White Salmon SOSEA be in an Eastside YFM (open or closed canopy) habitat condition. Under the SHA, 490 acres of current non-habitat will be allowed to grow to become habitat in these 0.7 mile circles.

Based on Washington DNR habitat typing data, currently, between the 0.7 and 1.8 mile radius circles within both SOSEAs, the applicant owns 2,538 acres of restricted habitat in the White Salmon SOSEA (Table 4-1). At the time of drafting this SHA, DNR has not identified the restricted habitat in the Columbia Gorge SOSEA. In the absence of this data, and in an effort to be conservative in this analysis, Applicant is assuming that all of its 1,003 acres of habitat in the Columbia Gorge SOSEA is also restricted. Therefore, in both SOSEAs combined, Applicants own 3,541 acres of restricted habitat between the 0.7 and 1.8 mile radius circles. This habitat is composed of 668 acres of submature and 2,873 acres of YFM habitat. Without the SHA, this habitat will remain in place under current restrictions but is subject to forest health issues and stand replacing fires. With the SHA, this habitat will be available for harvest and the circle approach to habitat management will be replaced with a landscape approach where 33% of Applicants lands in the SOSEA are retained in spotted owl habitat condition. Also as a result of the SHA, 7,361 acres of current non-habitat in the White Salmon SOSEA (Table 4-1), and 1,021 acres of non-habitat in the Columbia Gorge SOSEA, for a total of 8,382 acres of non-habitat will be allowed to grow into suitable habitat.

In total, within 1.8 mile radius circles in both SOSEAs, currently restricted habitat totals 4,697 acres, based on Washington DNR habitat analysis (Table 4-1). This restricted habitat consists of 1,054 acres of submature habitat and 3,643 acres of YFM habitat. This habitat will remain in place without the SHA but will be subject to forest health issues and wildfire threats as it would

remain unmanaged under circle management restrictions. Without the SHA, under circle management, any habitat that Applicant owns that is identified as surplus (habitat not part of the best 2,605 for each circle) will be harvested and managed in the future to prevent it from becoming habitat (Figure 4-1). Without the SHA, 8,872 acres of current non-habitat in the White Salmon and Columbia Gorge SOSEAs will remain as non-habitat. With the SHA, most of the currently restricted habitat would eventually be available for harvest, subject to the 10-year deferral of any habitat removal in specific circles, the 33% habitat requirements within 0.7 mile circles in the White Salmon SOSEA, and the 240 acre Gilmer Creek nest site SSA. However, this habitat will be replaced with greater amounts of habitat (33% of Applicants lands in the White Salmon SOSEA or 9,424 acres) across the landscape.

In the short term, this replacement habitat will consist of existing submature and YFM habitat that will remain on the landscape longer than it would without the SHA (Figures 3-4, 4-7 and 4-8). As this habitat is harvested, it will be replaced by habitat on a landscape that has been managed to produce a maximum of 50% dispersal (4,712 acres) and a minimum of 50% YFM or better habitat (4,712 acres). In the future, only a small amount of new Sub-Mature habitat will be created over most of the landscape under the SHA; however, over 651 acres of habitat, much of it already Sub-Mature, will be preserved in SSAs as a result of the SHA. With the SHA, habitat that will be provided across the White Salmon SOSEA landscape represents 5,730 more acres than will exist without the SHA. Across all covered lands, 4,727 more habitat acres will exist under the SHA than without the SHA. Additional habitat will be provided outside of the White Salmon SOSEA as lands are managed under extended rotations and with habitat enhancements, but this analysis is conservatively not considering it because there is no requirement to provide a minimum of 33% habitat at any given time in this area.

Age classes of habitat that will be harvested across the covered lands in the first 45 years of the SHA range from 60 to 100+ years. This habitat will be harvested more slowly than would occur without the SHA and without emphasis on habitat removal out of concern for additional regulatory burden. This is important spotted owl habitat that will persist longer on the landscape under the SHA than would without it. Figures 4-3 and 4-4 illustrate an example of what could be the case in 10 years on the Applicants' lands with and without a SHA in place. [Note: We arrived at Figure 4-4 by simply deleting older stands first until the expected harvest levels shown on Figure 4-5 are reached. This illustration does not represent actual or expected harvest unit planning. The illustration does, however, provide an example of anticipated habitat quantity distributed across the landscape]. It is easy to see that more habitat, distributed more widely, will result after the first 10 years of the SHA and would continue throughout the SHA term.

<u>Habitat Quality:</u> Under the SHA, the Applicants will actively manage young potential habitat, particularly within the White Salmon SOSEA where it may do the most good, to advance the creation of YFM habitat by age 50 or earlier. Without the SHA, habitat that remains in 0.7 mile circles and in the highest quality 2,605 (virtually the only habitat that will remain) will age without harvest interventions, however, there is no ability to protect these stands from forest health issues or fire, and stand-replacing events are likely to diminish this habitat over the next 60 years (i.e., the term of the SHA) (See Figure 4-5). With the SHA, there is not only an ability but also an incentive to protect stands from forest health issues and fire, particularly because of the

commitment to 33% habitat retention over the term of the SHA in the White Salmon SOSEA, and the possibility of harvest of habitat after age 60 (Figure 4-9).

The primary approach in the SHA to generate higher quality owl habitat across the landscape is designation of SSAs, slowing current rates of harvest, extending the harvest rotations to an average age of 60 years, thinning stands where applicable and economical, and implementing a defective tree and snag creation strategy. The intent of these active management approaches is to provide the physical space for owls to fly through stands, promote the development of an intermediate tree layer, and to improve prey resources for owls. Within the White Salmon SOSEA, active management practices will be implemented to promote the development of YFM Habitat in stands which can occur as young as 40 years old, but attempting to insure that most of the stands come into this habitat (or its equivalent, e.g., YFM-Closed Canopy Habitat lacking sufficient intermediate trees but making up for this loss with additional created snags) near age 50.

Prey species of spotted owls often use snags or other defective trees for denning. Foraging adult owls and dispersing juvenile spotted owls require adequate prey resources to increase their chances of survival. The SHA commits to protecting and developing snags to benefit northern flying squirrels and other prey species, and ultimately, provide owls with increased prey. The details of the snag program and green tree retention program are described in Section 4.1.7. Any enhancement beyond current Forest Practices Rules will only provide more habitat opportunity for prey species in Dispersal and YFM habitats, where these opportunities are often lacking.

Stands over 60 years of age (i.e., YFM and higher quality habitat) will be present longer on the Applicants' landscape with the SHA. Without the SHA, these stands will continue to be targeted for immediate harvest to reduce the liability of retaining spotted owl habitat on any of their lands. Given the vagaries of timber markets, mill limitations, etc., it is likely that habitat older than 60 years would remain on the landscape longer than even the current predictions tell us, and therefore, habitat quality over the entire Applicants' ownership will remain high for at least 45 years.

There will also be corresponding reductions in the amount of young forest (0-40 years) across the landscape. The quality of older forest stands (40-60 years) will improve as these will be allowed to age beyond those under a 45-year rotation. The application of commercial thinning in conjunction with snag retention and development at time of regeneration harvest, will improve the quality of those habitats.

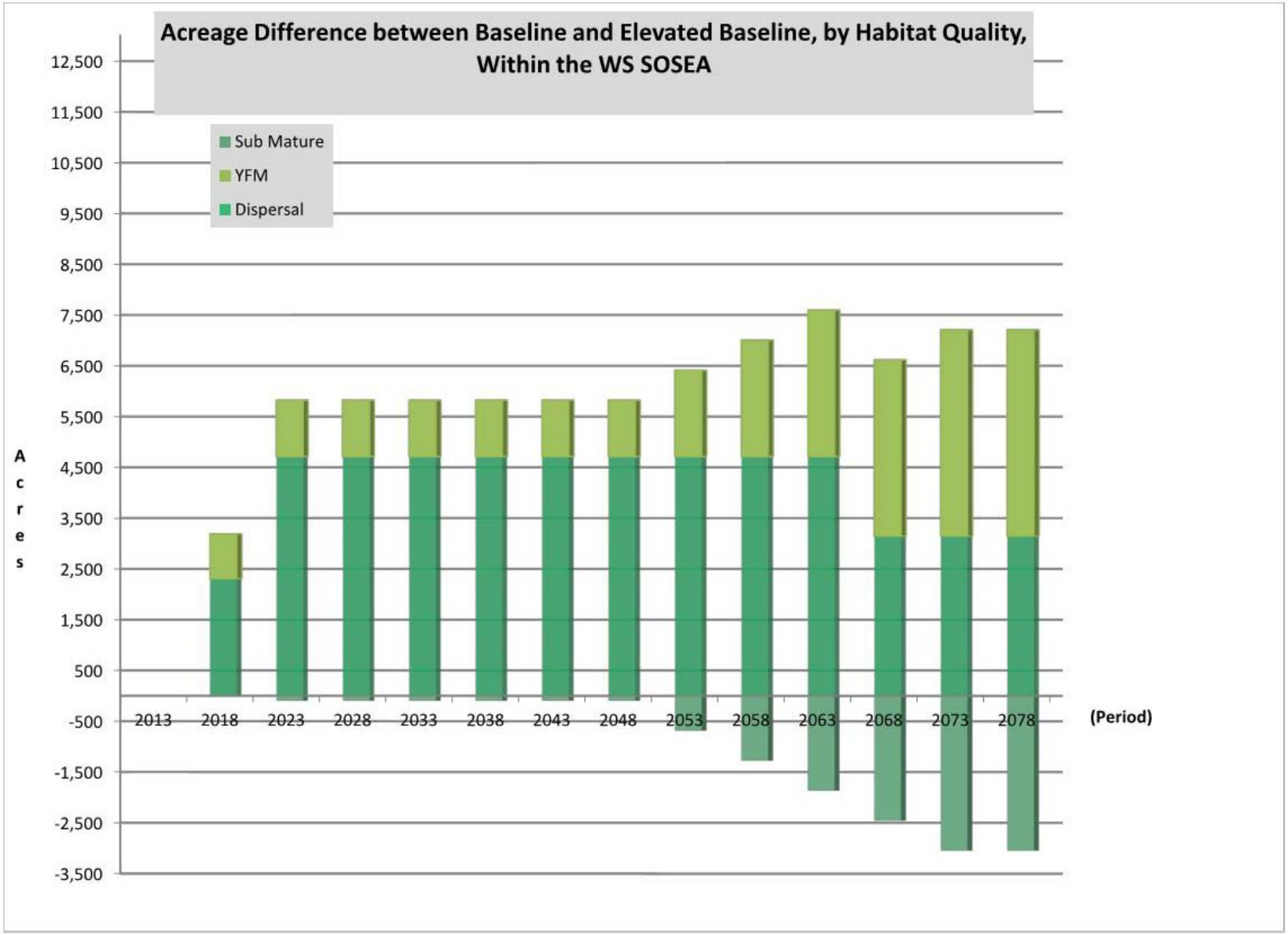

Figure 4-9. Acreage Difference Between Baseline and Elevated Baseline, by Habitat Quality within WS SOSEA

Habitat Distribution: In the White Salmon SOSEA, and within a 0.7-mile radius of three owl sites within this SOSEA, there is an assurance that 33% of commercial forest acres will remain in spotted owl habitat. As seen in Figure 4-5, most of the Applicants ownership lies west of the White Salmon River and in the Gilmer Creek drainage (north and east of BZ Corner on the map). Habitat remaining and created on these lands, along with USFS and WDNR habitat reserves, will provide continued and direct support to over ten owl territories. Without the SHA, habitat will occur only within existing circles within the SOSEAs, however, it will never increase or remain over the landscape where it might be better positioned for future owl occupancy and use.

Under the SHA, owl habitat will, probably at a minimum, occur on approximately 33% of the entire the Applicants landscape because of the desire to level out stand acreage in each of the decadal divisions from age 0 to 60, i.e. approximately even amounts of six age classes. Without the SHA, virtually no habitat will occur outside of existing circles within SOSEAs. There have been status 1-3 owl sites outside of SOSEAs on the Applicants landscape in the past. Therefore, some benefit to owls, should they occupy these sites in the future, will accrue given the implementation of the SHA. Virtually no habitat benefits will accrue to any owl sites outside of SOSEAs without the SHA. The cumulative habitat acreage difference between the baseline and the elevated baseline in the SHA is provided in Figure 4-10.

Habitat Regrowth: Currently, the Applicants own 490 acres of non-habitat (with habitat potential) within the 0.7-mile regulatory circles of 8 of the 14 owl sites within the White Salmon SOSEA and 8,382 acres of non-habitat between the 0.7 mile circles and 1.8 mile circles in both SOSEAs. These acres will only be allowed to become habitat with the SHA in place, but not under current Forest Practices Rules. A large portion (110 acres) of this potential habitat is in the Dry Creek owl circle (Site #734) and is currently at age 35 years. The 10-year deferral in harvest of habitat within 0.7 mile circles on three sites within this SOSEA is designed to allow potential habitat such as this to grow into habitat before any additional habitat acreage is harvested in the 0.7-mile circles. In addition, Applicant owns approximately 20,000 acres of under 40 year old forests across the covered lands that are outside of existing circles. Without the SHA, these lands will be managed on a 45 year rotation and will provide only 5 years of habitat development and potential use before harvest, primarily as dispersal habitat. With the SHA, these lands will be managed on average 60 year rotation and provide at least 15 additional years of habitat (both dispersal and YFM) development and potential use before harvest.

Consistency with State and Federal Planning: Spotted owl management on USFS lands in and near the Applicants ownership falls under the regulations provided in the President's Northwest Forest Plan (USDA 1994), which essentially allows for little harvest of spotted owl habitat beyond required salvage and maintenance programs. Spotted owl management on WDNR lands in and near the Applicants' ownership falls under their Habitat Conservation Plan and amendments (WDNR 1997, 2004). Their strategy of preserving large nest cores (often 200+ acres) around known pair sites and retaining approximately 2/3 of remaining lands in SOSEAs in NRF and near NRF owl habitats, allows for greater harvest of owl habitat than on USFS lands, but is still a beneficial conservative strategy. Both of these land managers, along with the

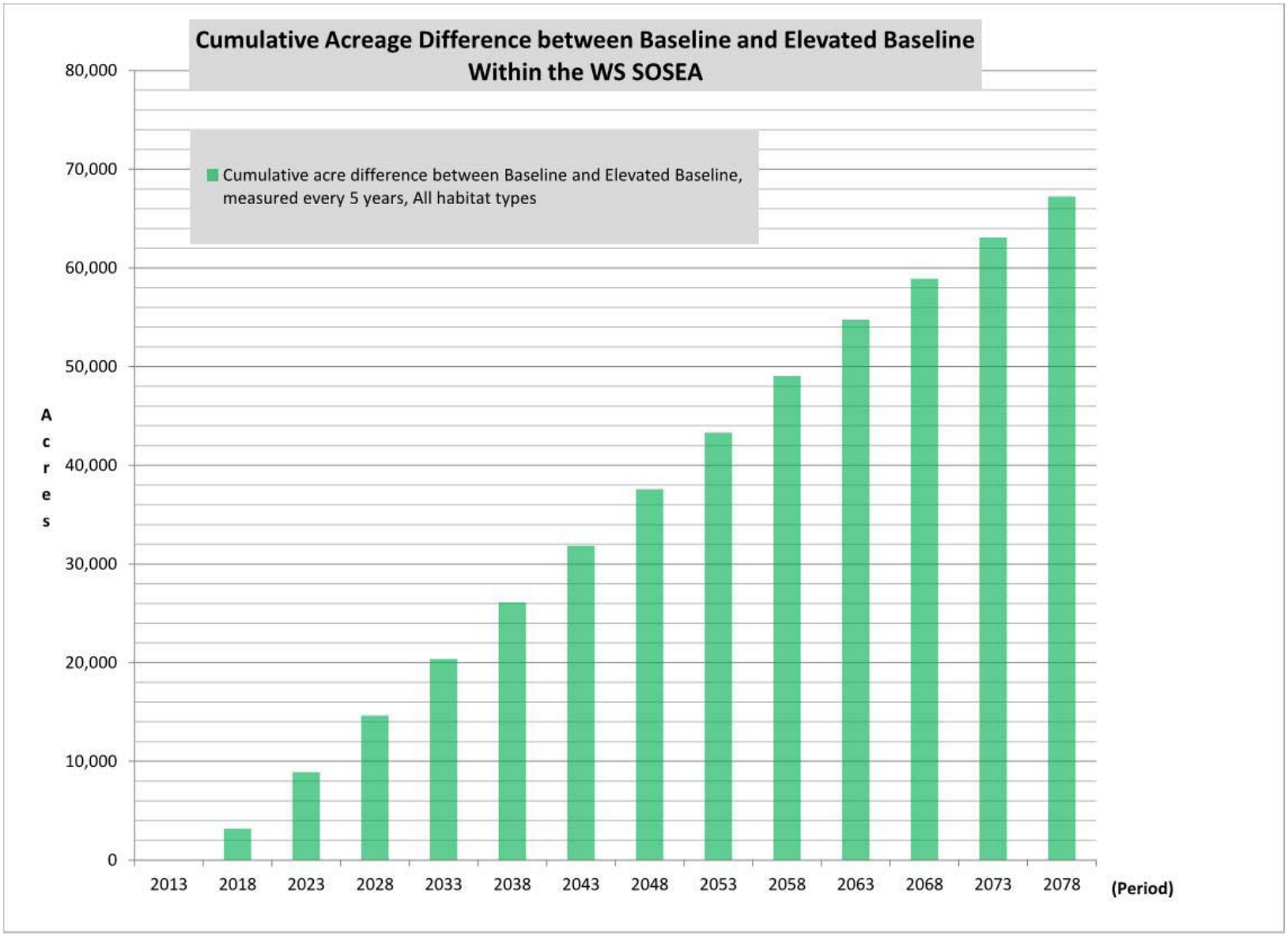

Figure 4-10. Cumulative Acreage Difference between Baseline and Elevated Baseline within the WS SOSEA

Applicants, and other private forestland management entities, constitute the major land owners in both SOSEAs in the region.

With the above landscape plans for spotted owl management already in place on large portions of adjoining habitat blocks, the Applicants' SHA fits in nicely with these ongoing land management plans. Current habitat will remain on the landscape both within the SOSEAs and outside of SOSEAs for longer periods of time than without a SHA, and incentives to maintain habitat within the SOSEAs in particular would be in place. The benefits of this joint landscape planning will produce obvious benefits for spotted owls in this region (Table 4-3). The SHA is also consistent with Recovery Action 15 of the recently published Northern Spotted Owl Recovery Plan (USFWS 2011): "Encourage applicants to develop Habitat Conservation Plans/Safe Harbor Agreements that are consistent with the recovery objectives." In addition, under the Forest Practices Rules, the recovery objectives on both of the SOSEAs; "Dispersal and Demographic Support," are met under this SHA, with provision for Dispersal Habitat to support dispersing juvenile owls, enhancement of stands to promote YFM Habitat (a habitat type that is known to support roosting and foraging by breeding spotted owls), and provision for a nest core in the one pair site lacking a core set-aside in the White Salmon SOSEA.

The SHA provides a landscape management approach for the protection of spotted owls, moves away from owl circle management, and eliminates incentives to harvest existing suitable habitat. This SHA would provide owls with habitat connectivity across the Little White Salmon and Columbia Gorge SOSEAs, on state, federal, and the Applicants private land ownerships. Dispersal capability of juvenile owls, as well as nesting, roosting, and foraging by adult owls will be enhanced by this plan, primarily through an increase in habitat on the Covered Lands in Oregon and Washington. SOSEA goals of dispersal and demographic support, along with improved distribution of habitat within SOSEAs will be furthered by the plan. In addition, the landscape management approach provides qualitative benefits to owls such as greater habitat protection from catastrophic fire and forest health events. Some harvest of habitat within 0.7-mile core zones will occur under the SHA but is limited in scope. Far greater quantities of habitats useful to spotted owls would be distributed across the landscape under this SHA for longer periods of time than without it. The SHA provides a clear net benefit to the owls from both a qualitative and quantitative perspective and advances the regional goals for spotted owl recovery, cooperative landscape planning, and local economic sustainability. A summary of overall net benefits to the spotted owl is provided in Table 4-4.

Table 4-3. Comparison of Conditions by Management Strategy – Net Conservation Benefit

Element	Without the SHA	With the SHA	Difference; Net Conservation Benefit (+) or Temporary Loss (-)
Landscape Management	Avoidance of harvest only within regulatory owl circles (0.7-mile core zone and best 2605 acres outside of cores). Most habitats outside of these specific locations will be removed and not allowed to re-establish. Habitat expected to be removed in the next 10 years totals almost 30,000 acres. In addition, as forest stands become habitat on other ownerships, SDS and BLC will seek opportunities to harvest previously harvest-restricted habitat. All lands outside of existing regulatory circles are managed on 45 year rotations.	Owl habitat will be retained and re-grown across the entire ownership given the longer (60 year) rotation age resulting in increased habitat availability across the entire landscape. Within the White Salmon SOSEA, a minimum of 9,424 acres of habitat (consisting of no more than 50% dispersal habitat and no less than 50% Young Forest Marginal or higher quality habitat) will be present on the landscape in any given year. At the landscape level, based on 60-year harvest rotation instead of 45 year rotation age, on average, approximately 12,705 more acres will be in dispersal and YFM habitat in any given year;	+ SHA moves away from circle management and eliminates incentives to harvest potential owl habitat as allowed by current regulations. + Some habitat within owl circles will be harvested but there will also be active forest management to produce new suitable owl habitat in the circles and the overall quantity of habitat across SDS & BLC ownership will be greater under the SHA and will be provided over a broader area than without the SHA; 12,705 acres of habitat available to owls across the landscape that would not occur without the SHA. + A landscape management approach provides greater protection for the owl from catastrophic fire events and/or forest health.
Habitat Reserves (SSAs)	None.	1) A large, contiguous SSA will be established for the term of the SHA consisting of 411 acres of high quality riparian habitat along the Little White Salmon River. This older forest habitat will benefit numerous wildlife species, including owl prey species. It also provides spotted owl nesting, roosting and foraging habitat potential and a dispersal corridor between within and between important habitat areas. 2) 240 acres will be set aside, for the term of the SHA, around the one core zone (Site #753) containing a spotted owl nest site on SDS land to provide nesting, roosting and foraging habitat potential.	+ 651 acres of older forest will be retained as spotted owl habitat reserves under the SHA, vs. none without the SHA. + The Little White Salmon corridor set-aside will provide connectivity with habitat to the north in the Gifford Pinchot National Forest and to the south, providing a movement corridor within the SOSEA and potentially to habitat in Oregon across the Columbia River. This has been an area of concern presented in previous versions of the Recovery Plan. 411 acres of YFM & Sub Mature habitat provided, 341 acres protected that could be harvested without SHA; credit 341 acres of YFM & SM habitat. + The only spotted owl nest site known to occur on SDS or BLC lands will be preserved along with a sufficient core to allow occupation by nesting owls. This provision is consistent with, and complements, the approach being applied to site centers on DNR lands under their HCP.

Table 4-3. Comparison of Conditions by Management Strategy – Net Conservation Benefit

Element	Without the SHA	With the SHA	Difference; Net Conservation Benefit (+) or Temporary Loss (-)
Habitat Availability in the Columbia Gorge SOSEA	Reduce to minimum required to be retained under forest practices rules (best 2605 habitat acres in each regulatory circle and current habitat acreage within 0.7 mile of all site centers). Maximum acres of habitat that will remain will not exceed 1,003 acres over next 10 years.	Actively manage lands and allow habitat to exist across landscape. Operation under an extended rotation age of 60 years will provide additional habitat through life of SHA. Active forest management, i.e., commercial thinning utilizing snag creation prescriptions, across the landscape will create enhanced Young Forest Marginal habitat; approximately 33% (967 acres) of 2,927 acres of commercial forest acres will be in habitat in most decades.	-/+ Allows for some harvest of habitat in regulated circles, but provides incentives to allow non-habitat to become habitat. + Removes incentives to target current habitat for harvest immediately that could be useful to spotted owls, and provides assurance of foraging and dispersal habitat across a broader landscape. + Extended rotation ages allow future habitat to remain on landscape longer than without SHA; an increase of 967 acres more habitat will be available than would occur without the SHA. + Snag prescriptions will be used to create higher quality habitat across the landscape.
Habitat Availability in the White Salmon SOSEA	Reduce to minimum required to be retained under forest practices rules (best 2605 habitat acres in each regulatory circle and current habitat acreage within 0.7 mile of all site centers). Maximum acres of habitat that will remain will not exceed 3,694 acres over next 10 years. Submature habitat will be reduced where not restricted.	Provide 33% of SDS & BLC lands in habitat in all years within the White Salmon SOSEA (no more than ½ in Eastside Dispersal, no less than ½ in Young Forest Marginal or better quality). The total acreage will be approximately 9,424 acres. Defer removal of habitat for 10 years in 4 spotted owl circles (0.7-mile radius) in which SDS & BLC own more than 15% of the acreage in these circles. After 10 years, 33% of SDS & BLC lands within these 0.7-mile circles will remain as Young Forest Marginal or better quality habitat. Submature habitat will be reduced where available for harvest but loss offset by habitat retention, growth, and acceleration in the SOSEA, and throughout the landscape.	-/+ Allows for some harvest of habitat in regulated circles, but provides for more habitat (9,424 acres minimum) to exist within the SOSEA, an increase of 5,730 acres of habitat retained than would occur without the SHA (Fig. 4-5); loss of 90 acres of submature habitat (Figs. 4-7 & 4-8). + 10 year deferral period on habitat removal in 4 sites will allow benefits of SHA to accrue before any habitat can be harvested in these circles. 240 acres of core nest zone habitat within Site #753 will protected for the term of the permit, similar to and complementing the owl circle protections of the DNR HCP. + During the 10 year deferral of habitat removal, current non-habitat with potential to become habitat, can be thinned and enhanced to provide new habitat before other habitat is removed. -/+ Two 0.7-mile circles within the White Salmon SOSEA, where SDS and BLC ownership is smaller, will have some immediate potential for harvest, but area of potential harvest is unlikely to compromise site function and DNR has established core nesting zones for these sites. All sites have either DNR-established or SDS-established protected core

Table 4-3. Comparison of Conditions by Management Strategy – Net Conservation Benefit

Element	Without the SHA	With the SHA	Difference; Net Conservation Benefit (+) or Temporary Loss (-)
			nest zones where no harvest will occur in the near future. + 33% of SDS and BLC lands within SOSEA as habitat will ensure spatial and temporal habitat distribution throughout the SOSEA landscape. + Existing surplus habitat and potential habitat will remain on landscape longer than without SHA; 1,108 acres more YFM will be provided than what will occur without the SHA (Figs. 4-7 & 4-8). + Extended rotation ages allow future habitat to remain on landscape longer than without SHA. SOSEA. + Snag prescriptions will be used to create enhanced habitat across the landscape
Habitat Enhancement in the White Salmon SOSEA	No current incentives outside State forest practices best management practices	Stands that are not on track to meet Young Forest Marginal by age 50 will be targeted for commercial thinning or snag creation treatments to provide 16.5% of all habitat within this SOSEA (4712 acres), to be equivalent to YFM or better habitat; 500 acres to be thinned in the first decade.	+ The SHA provides incentives to actively manage habitat both within and outside the White Salmon SOSEA for spotted owls and not immediately remove it once it becomes habitat. This strategy results in an increase in habitat quality, i.e., development of 500 acres of habitat that would not occur without the SHA.
Habitat Outside of the White Salmon SOSEA	Target older stands immediately and manage all potential habitats under a 45 year rotation. Within 10 years all potential habitat will be removed.	Actively manage lands and allow habitat to exist across landscape. Operation under an extended rotation age of 60 years will provide additional habitat through life of SHA. Active forest management, i.e., commercial thinning utilizing snag creation prescriptions, across the landscape will create enhanced Young Forest Marginal habitat.	+ Removes incentives to target current habitat for harvest immediately that could be useful to spotted owls, and provides assurance of foraging and dispersal habitat across a broader landscape. + Extended rotation ages allow future habitat to remain on landscape longer than without SHA. + Snag prescriptions will be used to create enhanced habitat across the landscape.
Habitat Connectivity	Preservation of best 2605 acres only does nothing to improve habitat connectivity in SOSEAs or provide for dispersal corridors.	Landscape management, along with set-asides and incentives to increase available habitat improves connectivity, particularly in the White Salmon SOSEA.	+ Set-asides and increased habitat availability, particularly in the White Salmon SOSEA, enhances use by both foraging adult and dispersing juvenile spotted owls.

Table 4-3. Comparison of Conditions by Management Strategy – Net Conservation Benefit

Element	Without the SHA	With the SHA	Difference; Net Conservation Benefit (+) or Temporary Loss (-)
Non-habitat within 0.7-Mile Regulatory Circles	Non-habitat with potential to become habitat will not be allowed to reach an age where it could be considered habitat. The estimated amount of existing non-habitat within the 0.7 mile circles is 490 acres.	490 acres of non-habitat in WS SOSEA with habitat potential will be allowed to become habitat.	+ Removes incentives to target current non-habitat for harvest before it becomes habitat. Provides assurance of foraging and dispersal habitat across a broader landscape; an increase of 490 acres of habitat that would not occur without the SHA.
Non-habitat between 0.7-Mile and 1.8-Mile Regulatory Circles	Non-habitat with potential to become habitat will not be allowed to reach an age where it could be considered habitat. The estimated amount of existing non-habitat between the 0.7-mile and 1.8-mile circles is 8,382 acres.	8,382 acres of non-habitat in both SOSEAs with habitat potential will be allowed to become habitat.	+ Removes incentives to target current non-habitat for harvest before it becomes habitat. Provides assurance of foraging and dispersal habitat across a broader landscape; an increase of 8,382 acres of habitat that would not occur without the SHA.
Green-tree, and Snag Provisions	Not required to proactively create wildlife trees or snags; will implement minimum Forest Practices Rules for snag and green tree retention.	Commercial Thinning: *Prescription 1*: Two defective trees per acre will be retained; i.e., conifer snags, hardwood trees greater than 10 inches dbh and damaged or deformed live conifer trees, i.e. Type 1 wildlife reserve trees described in the Forest Practices Rules (WAC 222-16-010). *Prescription 2*: One defective tree per acre will be retained, and one snag per acre will be left or created using mechanical topping at or above 12 feet or girdling or chainsaw boring. Hardwood leave tree preference will be for trees greater than 20 inches diameter (or largest diameter class available). *Prescription 3*: Two snags per acre will be left or created using mechanical topping at 12 to 18 feet, girdling, or chainsaw boring. Hardwood leave tree	+ The SHA provides incentives to actively manage habitat for spotted owls. Key components of this will be the snag and green tree retention prescriptions that will enhance owl prey habitat and create a foraging element to dispersal habitat. Snag enhancements will accelerate development of Young Forest Marginal habitat and provide habitat components (snags) that are typically deficient on the landscape. Snag retention and creation provisions take place immediately providing two snags per acre (either residual or created) and leave one additional green recruitment tree (three trees per acre); this is an improvement of habitat quality by providing two snags and one green tree more than what would occur without the SHA.

Table 4-3. Comparison of Conditions by Management Strategy – Net Conservation Benefit

Element	Without the SHA	With the SHA	Difference; Net Conservation Benefit (+) or Temporary Loss (-)
		preference will be for trees greater than 20 inches diameter (or largest diameter class available). Regeneration Harvest: In addition to the Forest Practices Rules requiring two green recruitment trees and two wildlife reserve trees per acre when they are available (WAC 222-30-020), SDS will select one of the following prescriptions with hardwood leave tree preference for trees greater than 20 inches diameter during regeneration harvest (or largest diameter class available): *Prescription 1*: Create additional snags at a rate of 20 per 100 acres and retain six green recruitment trees per acre. *Prescription 2*: Retain two snags per acre (either residual or created) and supplement Forest Practices Rules with one additional green recruitment tree (three trees per acre).	
Rotation Age	45 years	60 years; at the landscape level, under the 60-year harvest rotation, approximately 28,000 acres of dispersal and YFM habitat are likely to be retained after 10 years.	+ Under 60 year rotations, future dispersal and YFM habitat (aged 40-60 yrs.) that develops across the landscape will be available, on average for 20 years, an increase in habitat availability of 15 years longer than under a 45 year rotation. a potential increase of approximately 18,576 acres of habitat available to owls above the commitment of 9,424 acres within the WS SOSEA with the SHA (Figure 4-6).
Nest site protection	No nesting habitat would develop outside of riparian zones.	Nesting habitat would develop in riparian management zones and SSAs, and could develop in other areas of the covered lands. Owl sites would be protected under specific conditions.	+ Should a new nest site be discovered, up to three nest site core zones (whatever portion of a 70-acre core on Applicants land) would be protected in any given year for a minimum of three years. Additional nesting opportunities would be provided by construction and placement of nest box clusters

Table 4-3. Comparison of Conditions by Management Strategy – Net Conservation Benefit

Element	Without the SHA	With the SHA	Difference; Net Conservation Benefit (+) or Temporary Loss (-)
		Nest box clusters would be established.	as alternate nest sites.
Forestland Conversion	Regulatory uncertainty is creating incentives to convert forestlands to other uses.	The disincentive of regulatory uncertainty to keep forestlands in forestry production, and the potential of their eventual conversion to residential or non-forestry uses, will be reduced or eliminated under the SHA.	+ More lands will be retained under active forest management and the potential to provide additional owl habitat will be incentivized.
Neighboring Landowners	Incentive to compete with neighboring landowners for harvest of surplus habitat in owl circles.	Complements and supports DNR (HCP) and USFS landscape management planning	+ SDS & BLC lands provide a major link in the goal of managing both the Columbia River and White Salmon SOSEAs under a unified landscape management regime rather than a competitive harvesting regime under owl circle management.
Forest Health	Spotted owl habitat will be concentrated in existing regulatory circles where it is kept off-limits to harvest and management. Eastside forests are prone to forest health and fire risks. Reliance on habitat in fixed locations can result in risk to owl survival due to forest health and fire events.	Spotted owl habitat will be provided in key areas and across broad landscapes. Distribution of habitat across a larger landscape will reduce risks associated with forest health events.	+ Greater habitat availability across a larger landscape will provide greater ability of owls to survive forest health or fire episodes. + Active management of forest lands and owl habitat will provide healthier forests and higher quality habitat.
Long-term Commerce	Initial push to harvest habitat will create a bubble of economic activity for the local community but result in a decline in economic potential after 10-15 years.	Less aggressive harvest regimes will create sustainable economic opportunities for the local community.	+ Acceptance of the SHA will result in more long-term job opportunities and more consistent economic potential over the long-term.

Table 4-4 Summary of Net Benefits

SHA Conservation Provisions	Net Benefit
Landscape Management	SDS & BLC will maintain a minimum of 33% (16.5% YFM or better quality and a maximum of 16.5% dispersal), or 9,424 acres, of their lands in habitat in the WS SOSEA in any given year. At the landscape level, under the 60-year harvest rotation, approximately 28,000 acres of dispersal and YFM habitat are likely to be retained after 10 years; increase of approximately 18,576 acres of habitat available to owls above the commitment of 9,424 acres within the WS SOSEA with the SHA (Figure 4-6).
Habitat Set Aside Reserves	411 acres of high quality habitat (YFM & sub-mature) in lower Little White Salmon River drainage for NRF, and as dispersal/connectivity corridor; 341 more acres than required by Forest Practices riparian rules. 240 acres of existing habitat in 0.7 mile circle of site #753 in White Salmon SOSEA.
Habitat Deferrals – White Salmon SOSEA	Defer harvest for 10 years in 4 owl circles (0.7-mile radius) in which SDS & BLC own more than 15% of the acreage in these circles. After 10 years, SDS & BLC provide a minimum of 33% of SDS and BLC lands within these 4 owl circles (0.7-mile circle) in YFM or better habitat for permit term.
Habitat Growth – White Salmon SOSEA; 0.7-mile Circles	During ten-year harvest deferral period, 490 acres of non-habitat with habitat potential will be allowed to become dispersal or YFM habitat within 4 specific 0.7-mile circles where SDS & BLC own more than 15% of acreage.
Habitat Growth – Both SOSEAs; between 0.7-mile and 1.8-mile circles	During ten-year harvest deferral period, non-habitat growth in both SOSEAs outside the 0.7-mile circles and within 1.8 mile circles will be allowed to become habitat; increase of 8,382 acres of habitat development that would not occur without the SHA.
Habitat Conservation – White Salmon SOSEA	Rate of harvest will be slowed dramatically compared to baseline; existing YFM, sub-mature and other habitats will remain in circles and on landscape longer than would otherwise occur; provide a minimum of 33% of SDS and BLC lands in the SOSEA in habitat (½ dispersal and ½ YFM) for the permit term (9,424 acres) representing 5,730 more acres than what would occur without the SHA (3,694 acres); of the YFM available for harvest, there will be 1,108 acres more YFM on the SOSEA landscape with the SHA.
Habitat Enhancement – White Salmon SOSEA	Stands that are not on track to meet YFM by age 50 will be targeted for commercial thinning and/or snag creation treatments to provide 16.5% of all habitat within this SOSEA (4,712 acres), to be equivalent to YFM; a minimum of 500 acres are expected to be commercially thinned or treated with snag prescriptions in the White Salmon SOSEA in the first decade of the SHA to provide higher quality YFM.
Habitat Conservation – Columbia Gorge SOSEA	SHA will provide YFM through active management, i.e. commercial thinning, across the landscape within the Columbia Gorge SOSEA. Extended rotation age of 60 years will result in an increase of 967 acres of habitat available to owls that would not occur without the SHA.
Habitat Enhancement Outside White Salmon SOSEA	SHA will provide YFM through active management, i.e. commercial thinning, across the landscape outside of the White Salmon SOSEA. Extended rotation age of 60 years will be employed.
Green-tree and Snag Creation Program	Commercial Thinning - 2 potential wildlife trees or snags/acre will be retained; Regen: 2 snags/acre will be retained or created, and 1 additional green tree/acre will be retained, or an additional 4 green trees/acre will be retained and, on average, 1 additional snag/5 acres will be retained or created; increase improvement of habitat quality by providing two snags and one green tree more than what would occur without the SHA. Hardwood leave tree preference will be for trees greater than 20 inches diameter (or

Table 4-4 Summary of Net Benefits

SHA Conservation Provisions	Net Benefit
	largest diameter class available).
Rotation Age	Under 60 year rotations, future dispersal, and YFM habitat (aged 40-60 yrs.) that develops across the landscape will be available, on average, for 20 years, an increase in habitat availability for 15 years longer than under a 45-year rotation; increase of 12,705 acres of habitat available to owls across the landscape.
Nest Site Protections	Upon discovery on the Applicant's covered lands, up to three new nest sites would be protected, in the form of habitat (best 70 acres) and disturbance avoidance, in any given year for a minimum of three years. Alternate nest sites would be provided by construction and placement of nest box clusters.

4.4 Incidental Take

Thirty spotted owl territories overlap some portion of the Applicants' land base. Only one site center is located on Applicant's ownership. All other site centers are located on USFS or WDNR. No spotted owls are currently known to occupy the covered lands. However, because the Applicants commitment to manage their commercial forest lands for a substantially longer rotation than the typical 45-year rotation, and to implement additional conservation measures, it is possible that spotted owls could occupy the covered area in the future. At such, time it is possible that incidental take of spotted owls could occur.

Incidental take would likely be in the form of harm from covered forest management activities that result in habitat degradation, and/or harassment from forest management activities that cause disturbance to spotted owls. Incidental take in the form of harassment by disturbance could occur anywhere in the covered area although it is most likely to occur near former spotted owl nest sites, particularly the site located on the covered lands (Site #753). Pre-commercial and commercial thinning will occur in every decade of the Permit term. Harm and harassment could occur during regeneration harvests that will also occur during each decade of the Permit term. The Applicants will perform routine road maintenance and construction activities, including rock pit development that may disturb covered species. The conditions of incidental take are described below.

4.4.1 Northern Spotted Owl

There are owl territories that overlap Applicants lands but no spotted owls are known to currently known to occupy the covered lands. Surveys in the area suggest that most of the spotted owl site centers across this landscape are probably unoccupied at the present time, largely due to expansion and increase in the local barred owl population, combined with limited below-threshold habitat loss at a few sites outside of SOSEAs. Surveys at spotted owl site centers on the Applicants' landscape suggest that very few site centers are occupied (D. Rock, D. Herter, pers. comm.). However, they may be re-occupied in the future should recovery activities, such as barred owl population control, be initiated in the local area (USFWS 2012).

If previously occupied nest sites on the Applicants' or adjacent lands become re-occupied, implementation of the enhanced forest management provisions of the SHA will provide dispersal and demographic support to these spotted owls. This will be accomplished through retention and creation of functional owl dispersal and YFM habitat in the White Salmon SOSEA, as well as dispersal and likely some YFM habitat outside the White Salmon SOSEA on the SHA landscape. The SHA also provides for protection of SSA habitat reserves, which could attract spotted owls and could become occupied in the future. Although there is no occupancy, the SHA makes the conservation assumption that spotted owls could in the future occupy the covered lands. Based on this assumption, incidental take could occur through removal of habitat outside of critical nest cores but within a 0.7 mile radius of the nest site, removal of habitat within a 1.8 mile radius, and disturbance of spotted owls through forest management activities within certain ranges.

Disturbance – Disturbance to spotted owls could occur anywhere on the landscape where harvest, thinning, and other forest management activities occur in the vicinity of spotted owls

that are nesting, roosting, foraging or dispersing. Stands in the White Salmon SOSEA that are not on track to meet YFM by age 50 will be targeted for commercial thinning and/or snag creation treatments to provide 16.5% of all habitat within this SOSEA (4712 acres) to be equivalent to YFM or better habitat. Part of this 16.5% YFM habitat will consist of a minimum of 500 acres, mostly non-habitat, that are expected to be commercially thinned or treated with snag prescriptions within the White Salmon SOSEA landscape in the first decade of the SHA to provide higher quality YFM. Thus, take in the form of disturbance potentially may occur in association with these 500 acres of commercial thinning, and other harvest activities allowed by this SHA within the 1.8 mile radius home range circles of spotted owls. In the future, owls will likely find suitable habitat for dispersal and foraging on the covered lands as the stands grow older and contain snags and defective trees. Dispersing juveniles are likely to use the habitat provided on the covered lands because of its location in or near the SOSEAs. Incidental take of owls would likely be in the form of disturbance to dispersing owls associated with the covered forest management activities, including but not limited to commercial thinning, regeneration harvest, road construction and maintenance and other forestry activities described in this SHA.

Habitat Removal Within 0.7 Mile Radius Circle - The Applicants' total ownership comprises less than 15% of the total acreage of ten of the 0.7 mile radius spotted owl site centers within the White Salmon SOSEA. There are no ownership lands within a 0.7 mile circle within the Columbia Gorge SOSEA. The Applicants' largest ownerships are within site centers #753 (36% of acreage), #1116 (17%), #1003 (30%), and #734 (36%).

Take could occur when habitat is harvested under the SHA within 0.7 mile radius of any of the site centers but several measures are taken to minimize the potential. The SHA provides that covered lands be managed to provide a minimum of 33% of the commercial forestry acreage as dispersal and YFM habitat (minimum of 16.5% YFM or better quality) across the White Salmon SOSEA landscape at all times. In addition, while providing this 33% habitat on the White Salmon SOSEA landscape, covered lands will also be managed to provide a minimum of 33% of the commercial forest acreage within 0.7 mile circles of the 14 spotted owl site centers in the White Salmon SOSEA as YFM habitat (dispersal habitat is excluded within these areas). Furthermore, within the four site centers mentioned above, the Applicants will defer any removal of habitat within the 0.7 mile radius circle for the first ten years of the SHA. Thus, no incidental take in the form of habitat removal can occur within 0.7 mile radius in the first decade in these four site centers. Thirteen of the site centers have nesting core areas of approximately 200 acres in size provided on WDNR land through their HCP. The 14th site center, located on the covered lands, will have a 240-acre nesting core provided by Applicants to further minimize the potential for take. Lastly, when harvest is allowed in any of the 0.7 mile radius circles of these 14 sites, Applicants will, where economically feasible, harvest in the areas farthest from the nesting cores first to further minimize the potential for take.

Currently, inside all 0.7-mile owl circles within the White Salmon SOSEA, the Applicants own a total of 1156 acres of habitat (386 acres of Sub-Mature owl habitat and 770 acres of YFM (both Closed and Open canopied] habitat. Under the SHA, 916 acres of the 1156 acres of habitat will eventually be harvested (excludes the Gilmer Creek-South, Site #753, 240 acre set aside) although not immediately due to the 33% requirement and the 10 year deferral of harvest activity within four 0.7 mile radius circles as described above. Approximately 285 acres in five

0.7 mile owl circles within the White Salmon SOSEA is not subject to the 10 year deferral and could be available for harvest immediately (only two of the five circles currently contain more than six acres of habitat), however the requirement that 33% of Applicant's lands within a 0.7 mile radius contain YFM reduces this amount and the potential for take. Habitat in the amount of 631 acres will be deferred from removal by harvest for 10 years in the four circles addressed above. Additionally, the potential for take through habitat removal will be minimized by growing 490 acres of what is currently non-habitat in the 14 circles in the White Salmon SOSEA into YFM quality habitat over the life of the SHA.

Habitat Removal Within 1.8 Mile Radius Outer Circle - Currently, within the 1.8 mile radius owl circles, (not including the acreage within the 0.7 mile circle), Applicants own 2,538 acres of restricted habitat in the White Salmon SOSEA, 1003 acres in 4 circles in the Columbia Gorge SOSEA along with some acreage of habitat in unregulated circles that may exist outside of either SOSEA. Take could occur when habitat considered part of the highest quality 2,605 acres of habitat that is available is harvested under the SHA within the 1.8 mile radius of any of the site centers, however, several measures will be taken to minimize this potential. First, the SHA provides that covered lands be managed to provide a minimum of 33% of the commercial forestry acreage as dispersal and YFM habitat (minimum of 16.5% YFM or better quality) across the White Salmon SOSEA landscape at all times. This measure results in a minimum of 9,424 acres of habitat across a broad landscape, instead of within individual circles, available for owls. In addition, the SHA provides for 33% of the commercial forest acreage to be YFM or better quality habitat within 0.7 mile circles of the 14 spotted owl site centers in the White Salmon SOSEA, the deferral of any removal of habitat within the 0.7 mile radius circle for the first ten years of the SHA, protection of nesting core areas, and other measures to maintain a biologically sound core area that minimizes the potential for take associated with habitat removal in the outer areas.

Currently, within the outer circles (1.8 mile owl circles less the 0.7 mile circles) within the Columbia Gorge and White Salmon SOSEAs, the Applicants own a total of 3,541 acres of habitat (668 acres of Sub-Mature owl habitat and 2,873 acres of YFM (both Closed and Open canopied) habitat. Under the SHA, which is shifting to a landscape approach to habitat instead of circles, this habitat will eventually be harvested although not immediately or simultaneously due to the 33% requirement and other SHA restrictions. Offsetting the potential for this take as a result of shifting to a landscape approach are the minimum of 9,424 acres of habitat (33%) that will be provided across the landscape, including the 411-acre Sub-Mature habitat SSA in the White Salmon SOSEA and other landscape habitat enhancement measures such as the snag program. Further minimizing the potential for take, through habitat removal within the 1.8 mile outer circles, are 8,382 acres of what is currently non-habitat in the 14 circles in the White Salmon SOSEA and 4 circles in the Columbia Gorge SOSEA that will be grown into YFM quality habitat over the life of the SHA.

Subsequent take may occur as roosting, foraging, and dispersal habitat is eliminated when commercially mature forest stands are harvested in the covered lands. However, as with any landscape approach to habitat protection, there will always be other habitat available for owls to move to if disturbed and this habitat acreage will always be greater than the baseline. Take in the form of harassment associated with removal of dispersal habitat is difficult to quantify

because dispersal habitat will mature and become available to the spotted owl while harvesting occurs during the Permit term. The harvest rate assumed in the SHA is conservative for purposes of analyzing the net benefit to the owl. However, given market conditions and other factors such as forest health, the harvest rate will be variable over the term of the SHA.

There are older forest patches in riparian areas and in the two SSAs, and some submature owl habitat in portions of the covered lands. Thus, the probability of an owl pair nesting on the covered property is possible, although the likelihood is low, because nearby federal and state lands contain larger patches of higher quality nesting, roosting, and foraging habitat. If owls are discovered to be nesting on the covered lands, the Applicants will implement measures defined in this SHA to minimize take. It is expected that only a few owls may nest on the ownership, likely in the SSAs or riparian areas near existing owl circles on adjacent WDNR or USFS lands. Eventually, these nest sites could be taken but it is uncertain how many that would be. Since the baseline for actual occupancy by owls is zero or nearly so, it is assumed that all nest sites outside of SSAs that become established on the covered lands will be taken at some time during the SHA term.

4.5 Monitoring and Reporting

The Applicants will conduct monitoring activities as follows:

- conduct periodic forest inventories to monitor changes in the amount and distribution of forest stand characteristics on the covered area;
- map all SSAs, and leave tree areas containing snags and defective trees following regeneration harvest;
- the snag and leave tree prescriptions employed during commercial thinning and regeneration harvest;
- monitor any new nest sites of owls located on the covered lands; and
- monitor nest box clusters for use by spotted owls or barred owls.

The Applicants reporting will include, but not be limited to, the following:

- forest management activities, including thinning operations and regeneration harvests that occurred;
- the amount (percentage) of functional dispersal and YFM and better habitat on the covered lands;
- maps of the locations of dispersal, YFM and higher quality habitats on covered lands;
- maps showing the location of SSAs;
- the snag and leave tree prescriptions employed during commercial thinning and regeneration harvest;
- information on marked snags and defective trees retained to improve the quality of owl dispersal habitat;

- any new data on covered species occurrences and/or habitat use; and
- Reports will be provided on a biennial basis for the first 10 years of the SHA, and every five years for the remainder of the SHA term.

4.6 Training

To ensure that Applicants staff and contractors understand the prescriptions of the SHA and associated responsibilities, The Applicant will conduct the following training activities:

- provide internal SHA implementation training to all of the Applicants' employees (foresters, engineers, silviculturalists) that will be working on the covered lands;
- provide the Applicant's employees, and all contractors, with a guide describing the management prescriptions and goals of the SHA;
- conduct pre-harvest meetings between the Applicants' foresters and all contractors to review prescriptions and obligations of the SHA prior to the start of contractor work on the covered lands; and
- have the Applicants employees involved in the layout of management units and activities attend an annual pre-management activity-planning meeting to ensure that the SHA obligations and prescriptions are understood.

4.7 Funding

The Applicants have been in the forest management and timber harvest business for 66 years and 89 years, respectively. The companies are solvent and will continue to conduct their business to remain operational through the term of this SHA. As such, they are committed to providing the funding necessary to implement the SHA.

5 Responsibilities of Parties

5.1 Applicant Responsibilities

The Applicants agree to implement the management actions and other provisions of this SHA, to adhere to the Terms and Conditions of their respective Permits, and to provide sufficient funding and other resources necessary to implement the SHA.

With reasonable advance notice, Applicants will allow FWS, WDNR, and WDFW personnel, or other properly permitted and qualified persons designated by FWS, to enter the enrolled property at reasonable hours and times for the general purposes specified in Title 50 Code of Federal Regulations § 13.21(e)(2).

5.2 U.S. Fish and Wildlife Service Responsibilities

Upon execution of the SHA and satisfaction of all other applicable legal requirements, FWS will issue an enhancement of survival permit to SDS and to BLC in accordance with ESA section 10(a)(1)(A), authorizing take of the covered species as a result of lawful activities on the enrolled property in accordance with the term of such permit. The term of the permit will be 60 years.

FWS will provide the Applicants with technical assistance on implementation of the SHA, to the maximum extent practicable, when requested.

FWS will ensure that the term of the SHA will not be in conflict with any ongoing conservation or recovery programs for the covered species.

5.3 Shared Responsibilities

The Applicants and FWS will ensure that the SHA and the actions covered in the SHA are consistent with applicable federal, state, tribal, and local laws and regulations.

Nothing in this SHA will be construed to limit or constrain the Applicants or FWS, WDNR, and WDFW, or any other entity from taking additional actions at its own expense to protect or conserve the covered species.

Nothing in this SHA will limit the ability of federal and state conservation authorities to perform their lawful duties, and to conduct investigations as authorized by statute and by court guidance and direction.

The Applicants and FWS will have all remedies otherwise available to enforce the terms of the SHA and the Permit, except that neither will be liable in damages for (1) any breach of this SHA, (2) any performance or failure to perform and obligation under this SHA, (3) termination of the Permit or SHA, or (4) any other cause of action arising from this SHA.

The Applicants, FWS, WDNR, and WDFW agree to work together in good faith to resolve any disputes, using dispute resolution procedures agreed upon by the parties.

6 Landowner Assurances

Through this SHA, FWS provides the Applicants assurances that if additional conservation measures are deemed necessary, FWS may request such measures, but only if they are limited to modifications within the enrolled property, if any, for the covered species and these measures maintain the original terms of the SHA to the maximum extent possible. Additional conservation measures are voluntary on the part of the Applicants and will not involve the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources otherwise available for development or use under the original terms of the SHA without the consent of the Applicants from whom such a commitment is sought or to whom such restrictions would be applicable. Failure of the Applicants to perform additional conservation measures requested by FWS will not constitute a breach of this SHA or result in any liability under the ESA.

These assurances allow the Applicants to alter or modify their enrolled property, even if such alteration or modification results in the incidental take of the covered species consistent with the SHA and the IA and each Applicant's permit. These assurances depend on compliance with the obligations in this SHA and in the Permit by Applicants. Further, the assurances apply only to this SHA, only if the SHA is being properly implemented by the Applicants and only with respect to the covered species.

7 Implementation

An Implementation Agreement (IA) is attached to this SHA as Appendix D. The IA is an integral part of the SHA and enhancement of survival permit, and the terms of the IA guide implementation of both the SHA and enhancement of survival permit. By executing this SHA, both the Applicants and FWS agree to be bound by the terms of the IA during the term of the SHA and enhancement of survival permits.

The sections below describe provisions contained in the IA and are intended for explanatory purposes only. In the event of conflicts between the SHA, enhancement of survival permits, and IA, the terms of the IA will override the others.

7.1 Safe Harbor Agreement Term

As provided in Section 6 of the IA, the term of the SHA is 60 years.

7.2 Safe Harbor Agreement Renewal

As provided in Section 6 of the IA, the SHA can be extended with the written approval of both the Applicants and FWS.

7.3 Safe Harbor Agreement Modifications and Amendments

As provided in Section 16 of the IA, any party may propose minor modifications to the Plan, the permit or the IA by providing written notice to the other parties. The Applicants and FWS will have 30 days to evaluate proposed modifications. Minor modifications must be approved in writing by each. As provided in Section 16 of the IA, the IA may be amended with the written consent of the Applicants and the FWS.

7.4 Transfer of Safe Harbor Agreement Benefits

As provided by Section 11 of the IA, the Applicants agree to notify FWS in writing if ownership of all or a portion of the enrolled property is to be transferred to another owner. If the Applicants transfer full or partial ownership of the enrolled property, FWS will regard the new landowner as having the same rights and obligations as the Applicants under this SHA, if the new landowner agrees, in writing, to become a Party to the original SHA and any subsequent amendments.

7.5 Land Acquisitions & Dispositions

As provided in Section 11 of the IA, the Applicants may add, at their discretion, new forest lands acquired within the “land addition boundary” identified in Exhibit 1 of the IA that are unoccupied and of similar forest type and character and use as the lands covered by the original SHA. SDS or BLC must notify FWS of the proposed inclusion of additional lands and FWS will have an opportunity to review and concur or object. This action will not require an amendment or modification of the IA or the Plan.

Additionally, Section 11 of the IA provides that the Applicants may add new forest lands acquired within the “land addition boundary” identified in Exhibit 1 of the IA that are occupied if the USFWS determines that the inclusion of the lands would provide a net benefit to the species

and would be consistent with the ESP and not increase the take authorized in the ESP. This action will not require an amendment or modification of the IA or the Plan.

7.6 Safe Harbor Agreement Termination

In accordance with Section 13 of the IA, the Applicants can relinquish this SHA by providing FWS with 30 days written notice. The Applicants acknowledge that terminating the SHA will result in a corresponding termination of the Permit and the Applicants' loss of the regulatory assurances provided by the Permit for the covered species. If only one Applicant terminates then the special set aside areas will remain in place for the other Applicant until the term of the SHA expires or the other Applicant terminates.

8 References

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9 Signatures

By our signatures below each Party agrees to abide by and uphold the provisions of this Safe Harbor Agreement, the Implementation Agreement attached in Appendix D, and any conditions of the Enhancement of Survival Permit associated with this Safe Harbor Agreement.

Field Office Manager U.S. Fish and Wildlife Service	Date
President SDS Co. LLC	Date

Appendix A

Legal Description of the Covered Lands

Appendix A

Stevenson Land Company ownership locations

Township / Range	Section
02S12E	15,16,17,28,29,30,21,32
01S10E	30
01S11E	1,2,3,4,9,10,11,12,16
01S12E	6
01N10E	15,22,36
01N11E	1,2,3,10,11,12,13,14,15,22,23,24,27,31,31,34,35,36
01N12E	6,7,8,18,31,32,
02N9E	36
02N10E	7,33
02N11E	4,8,9,13,16,17,20,21,22,25,26,27,28,29,32,33,34,35,36
03N06E	11
03N07E	19,20,21,22,24,26,27,34,35
03N07.5E	1,12,24,25
03N08E	6,19,20,26,29,30
03N09E	10,11,12,15,16,23
03N10E	1,2,3,4,5,6,7,8,9,10,11,12,16,17,18,22,19,20
03N11E	1,2,3,4,5,6,7,8,9,10,15,16,17,18,20,21,22,23,27,28,29,32,33
03N12E	1,4,9,10,12,15,20
04N07E	36
04N07.5E	36
04N09E	15

Township Range	Section
04N10E	1,2,11,13,14,23,24,25,26,33,34,35,36
04N11E	1,2,3,9,10,11,12,16,18,19,21,22,23,24,25,26,27,28,29,30,31,33,34 35,36
04N12E	2,3,4,9,10,11,12,13,14,15,19,20,21,28,29,30
04N13E	1,2,4,5,6,8,9,10,11,15,19,20,21,28,29,30
05N10E	1,5,6,8,9,12,13,23,24,25,26,35
05N11E	2,3,4,5,6,8,9,10,11,15,16,17,18,19,20,21,25,28,34,35
05N12E	18,20,21,28,29,30,31,34
05N13E	29,30,31,32,35
06N10E	5,6,7,8,9,10,18,19,20,21,25,26,28,29,30,31,32,33,34,35
06N11E	20,33,34
07N12E	34

Appendix A

Broughton Lumber Company ownership locations

Township / Range	Section
03N09E	1,2,3,4,5,6,8,9,10,11,12,13,14,15,21,22,23,24
03N10E	4,6,7,18,19
03N11E	9
04N09E	2,3,10,14,15,22,23,24,25,26,34,35,36
04N11E	25
04N12E	17,19,20,29,30,32
05N09E	35
05N11E	2

Appendix B

Forest Practices Eastside Dispersal and Young Forest Marginal Habitat Definitions

(ii) Eastern Washington Spotted Owl Sub-Mature and Young Forest Marginal Habitat Characteristics.

Characteristic	Habitat Type		
	Sub-Mature	Young Forest Marginal (closed canopy)	Young Forest Marginal **(open** canopy)
Forest Community	greater than or equal to 40% fir	greater than or equal to 40% fir	greater than or equal to 40% fir
Tree Density and Height	110-260 trees/acre (greater than or equal to 4 inches dbh) with dominants/co-dominants greater than or equal to 90 feet high OR dominants/co-dominants greater than or equal to 90 feet high with 2 or more layers and 25 - 50% intermediate trees	100- 300 trees/acre (greater than or equal to 4 inches dbh)	100- 300 trees/acre (greater than or equal to 4 inches dbh)
Vertical Diversity		dominants/co-dominants equal to or greater than 70 feet high	dominants/co-dominants equal to or greater than 70 feet high
		2 or more layers	2 or more layers
		25 - 50% intermediate trees	25 - 50% intermediate trees
Canopy Closure	greater than or equal to 70% canopy closure greater	greater than or equal to 70% canopy closure greater	greater than or equal to 50% canopy closure
Snags/Cavity Trees	greater than or equal to 3/acre (greater than or equal to 20 inches dbh 16 feet in height) OR high or moderate infection	N/A	2/acre or more (greater than or equal to 20 inches dbh 16 feet in height)
Mistletoe		N/A	high or moderate infection
Dead, Down Wood	greater than or equal to 5% of the ground covered with 4 inch diameter or larger wood	N/A	N/A

The values indicated for canopy closure and tree density may be replaced with the following:

(A) For sub-mature a quadratic mean diameter of greater than 13 inches and a relative density of greater than 44;

(B) For young forest marginal a quadratic mean diameter of greater than 13 inches and a relative density of greater than 28.

(2) **Spotted owl dispersal habitat** means habitat stands that provide the characteristics needed by northern spotted owls for dispersal. Such habitat provides protection from the weather and predation, roosting opportunities, and clear space below the forest canopy for flying. Timber stands that provide for spotted owl dispersal have the following characteristics:

(a) **For western Washington,** timber stands 5 acres in size or larger with:

(i) 70% or more canopy cover; and

(ii) 70% or more of the stand in conifer species greater than 6 inches dbh; and

(iii) A minimum of 130 trees per acre with a dbh of at least 10 inches or a basal area of 100 square feet of 10 inch dbh or larger trees; and

(iv) A total tree density of 300 trees per acre or less; and

(v) A minimum of 20 feet between the top of the understory vegetation and the bottom of the live canopy, with the lower boles relatively clear of dead limbs.

(b) **For eastern Washington,** timber stands 5 acres in size or larger with:

(i) 50% or more canopy closure; and

(ii) A minimum of 50 conifer trees per acre, with a dbh of 6 inches or more in even-aged stands or 4 inches or more in uneven-aged stands, and an average tree height of 65 feet or more; and

(iii) Total tree density of 200 trees per acre or less; and

(iv) A minimum of 20 feet between the top of the understory vegetation and the bottom of the live canopy, with the lower boles relatively clear of dead limbs; or

(v) Conifer stands with a quadratic mean diameter of 9 inches or more and a relative density of 33 or more or a canopy closure of 55% or more.

(c) Suitable spotted owl habitat provides all of the required characteristics needed by spotted owls for dispersal.

(d) Landowners may submit information to support an alternate definition of dispersal habitat for review and approval by the department in consultation with the department of fish and wildlife.

WAC 222-16-086 Northern spotted owl special emphasis areas and goals "Spotted owl special emphasis areas (SOSEA)" means the following geographic areas and the associated goals as mapped. Detailed maps of the SOSEAs indicating the boundaries and goals are available from the department at its regional offices.

Appendix C

Technical Memorandum to U.S. Fish and Wildlife Service by Raedeke Associates, Inc.

Raedeke Associates, Inc.

Wetland Science
Wildlife Ecology
Landscape Architecture

TECHNICAL MEMORANDUM

March 26, 2012

To:	Mr. Mark Ostwald, U.S. Fish & Wildlife Service Mr. Mark Miller, U.S. Fish & Wildlife Service
From:	Dale Herter, Raedeke Associates, Inc.
RE:	Safe Harbor Efforts on SDS Timber Company Lands and Field Review of Moderately-aged Forest Stands (R.A.I. No. 2011-045-002)

From 28 February to 1 March, and again from 13 to 15 March, 2012, two Raedeke Associates technical staff and I conducted transects and survey plots within two sets of forest stands on SDS Lumber Company lands in western Klickitat County, WA. One set of 16 stands ranged in age from 28 to 61 years old, and the second set of 12 stands were older than 65 years. This memorandum constitutes my evaluation regarding spotted owl habitat quality in these stands. I also comment on on-going proposals for habitat protection for the Safe Harbor Agreement (SHA) as gleaned from SDS personnel and their consultants.

28-61 Year-old Stands

We conducted habitat plots at 16 stands within this age category (14 stands within the White Salmon SOSEA and 2 stands outside the SOSEA). Of the 16 stands within the SOSEA, at least 5 stands met the technical definitions for Young Forest Marginal-Closed (YFM-C) habitat (see Table 1 for a breakdown by age). By definition, and in my experience, these stands should be useful to spotted owls as foraging and dispersal habitat because they contain all the required structural elements known to be beneficial to spotted owls. In addition, it is my opinion that 5 additional stands (1 at 38 years old, 1 at 42 years, 2 at 45 years, 1 at 50 years), would also be useful for spotted owls as foraging and dispersal habitat, though they are unlikely to meet technical DNR definitions as such (described below). This is based on my knowledge of what types of stands spotted owls will use for foraging and dispersal, as revealed by several years of radio-telemetry studies in eastern and western Cascade Range forests.

Table 1. Moderately-aged forest stands sampled on SDS lands.

Stand ID	Age	YFM?	Herter habitat call
30608	28	no	No, still too young, low dense canopy
31957	28	no	No, too young, but part could be dispersal
31832	29	no	No, still too young, low dense canopy
30564	32	no	No, still too young, low dense canopy
30500	38	no	Yes, few intermed. trees, but functional habitat
30630	38	yes	Yes, good YFM-C habitat
31941	42	no	Yes, decent YFM-C habitat
30750	45	no	Yes, useable YFM-O habitat
30868	45	no	No, stand never established well, too open
31004	45	yes	Yes, small stand, but useable foraging habitat
31382	45	yes	Yes, few layers but functional foraging habitat
31373	45	no	Yes, few layers but functional foraging habitat
30477	50	no	No, too dense, higher elev., needed thinning
31608	50	no	Yes, lack of intermediate trees but functional
31315	58	yes	Yes, functional habitat
31368	61	yes	Yes, good YFM-C habitat

This second group of 5 stands did not meet the technical DNR definitions for YFM habitat, primarily because of a lack of intermediate trees, however they still provide functional habitat. Spotted owls will use a variety of stands for nocturnal foraging, including stands with few intermediate trees, in which they probably forage primarily on ground-based prey. The dense canopy and general lack of undergrowth can aid owls in capturing prey on the open forest floor. Provided that the entire landscape does not consist of these medium-aged, dense-canopied stands, but instead consists of a mosaic of younger (DNR, SDS, other private lands) and older stands (adjacent DNR reserves and USFS lands) that provide hiding cover for prey, these medium-aged, dense-canopied stands can function as specific hunting habitat for owls. The owls are probably choosing these types of stands for access to rodent prey that must cross the open forest floor when dispersing or foraging away from denser habitats. I have located radio-tagged owls foraging and even roosting in this habitat frequently. Owls may also be capturing flying squirrels while they are foraging on the ground for truffles in these types of stands.

Of the 6 remaining stands that did not meet technical DNR habitat definitions and also did not appear to be potentially useful for owls, 4 were 28 to 32 years of age, and were generally still too young to be considered functional habitat. One 45-year old stand had never established correctly and is now an open willow/cherry dominated stand and another 50-year old stand was at the upper limits of elevation for SDS lands within the SOSEA. Both of these stands are somewhat unusual, however if the 50 year old stand had been thinned in previous decades, it would likely have met the DNR definitions of habitat today.

In summary, it appears that on average, stands aged 40-60 years old on SDS lands in the SOSEA should be considered functional spotted owl habitat both now and in the future. A few stands may become dispersal or better habitat as young as age 30, and a few stands may not become functional habitat until age 50. But on average, using an age of 40 as a surrogate for owl habitat appears to be useful and appropriate in this area.

Older Stands

We investigated an additional 12 stands both within and outside of the SOSEA. Stands ranged in age from 67-92 years old. Most of these stands met the definition of YFM habitat, with only 2 stands not typing out as habitat (Table 2). These 2 stands lacked enough layering and intermediate trees to meet the technical definition of YFM habitat, but both appeared functional to me as potential spotted owl foraging habitat. Some stands that met habitat definitions were excellent habitat and only needed additional snags or a nest tree to be considered nesting/roosting/foraging habitat.

Table 2. Older forest stands sampled on SDS lands.

Stand ID	Age	YFM?	Herter habitat call
31661	67	yes	
30506	75	yes	
31538	79	no	Yes, lack of interm. trees but functional habitat
31438	81	no	Yes, lack of interm. trees but functional habitat
30736	81	yes	
31785	81	yes	
32907	82	yes	
30414	82	yes	
31124	82	yes	
32026	82	yes	
30464	88	yes	
31582	92	yes	

If the SHA results in the retention of 40-60 year-old stands across a large landscape, both within and outside of the SOSEA, longer than would otherwise occur under normal forest management, it would provide additional benefits to spotted owls that are not achievable in fixed radius site center approaches to habitat protection. These benefits may include a greater distribution of habitat for the spotted owl prey base and spotted owl foraging.

Some of the features that limit these stands from becoming higher value spotted owl habitat are features that will be left in stands in the future. For example, leaving green recruitment trees in future harvests will enhance future stands as the recruitment trees age, become densely branched, and incur wind or ice damage. Some of these trees, as well as reserved snags, will provide future snags, and some will become malformed older trees useful as roosting or even as nest trees. Other factors that limit habitat, such as lack

of layering and intermediate trees, will be enhanced through retention of hardwoods and as a result of thinning operations.

Habitat Retention and Deferral within 0.7 mile of Known Spotted Owl Sites:

In an attempt to defer take until later in the life of the SHA, the proponents propose to provide a nesting habitat reserve at 1 spotted owl site and habitat deferrals at 3 additional spotted owl sites within the White Salmon SOSEA. This process is designed to:

- Ensure that take of an owl site, should it occur, would happen later in the life of the SHA rather than earlier,
- Provide a transition from owl circle management to landscape planning, and,
- Enhance and supplement habitat reserves on neighboring U.S. Forest Service and Washington DNR lands.

Within the Columbia Gorge and White Salmon SOSEAs, SDS and Broughton lands are within 1.82 miles of 18 spotted owl site centers. Within the Columbia Gorge SOSEA, the proponents own no acreage within 0.7 mile of any of the 4 site centers for which they are involved. Within the White Salmon SOSEA, the proponents are minor landowners (<15%) within 0.7 mile of 10 spotted owl site centers. On the remaining 4 sites, SDS or Broughton own from 17-30% of the acreage within the inner circle (0.7 mile) of a spotted owl pair site. With the exception of 1 site center, DNR or USFS own all of the nest sites. USFS site centers have large, contiguous areas of forested habitat around each site and DNR site centers have large, contiguous nesting set-aside areas as negotiated under the DNR HCP.

For the 1 pair site in which SDS owns a major portion of habitat within the inner circle, including the most recent nest site (WDFW Site # 753; Gilmer Creek-South, a.k.a. Twin Mountain), SDS proposes to establish a 240-acre habitat reserve around the site center. This reserve would remain unharvested for the life of the SHA. The size of the reserve mimics the reserve system established for the White Salmon SOSEA by DNR, in their HCP Agreement, i.e. a contiguous polygon of high quality habitat. No core reserve had been established by DNR at Site 753 because of lack of ownership by DNR within the inner circle.

For the 3 additional pair sites in which SDS or Broughton are significant landowners within the inner circle (Sites 734-Dry Creek, 1003-Moss Creek Campground, 1116-Weiberg Creek), harvest of spotted owl habitat on SDS or Broughton lands within 0.7 mile of the site center will be deferred for 10 years after completion of the SHA Agreement, to allow a gradual transition from circle management to landscape management.

With extension of the overall rotation age (from 40-45 to 60 years) on SDS and BLC lands within and outside the SOSEA, assurance that 1/3 of all SDS and BLC SHA lands within the White Salmon SOSEA will be in spotted owl habitat (i.e., > 40 years old), and the presence of DNR, USFS, or SDS habitat reserves in core zones, spotted owl habitat in

the SOSEAs will be provided across a large landscape in a manner preferential to circle-by-circle habitat protection. This proposal goes a long way in providing for the overall goals of a combination of "Dispersal and Demographic Support", as designated by the Forest Practices Board for these SOSEAs.

Oak Habitat and Owls

As you look more into the proposed habitat reserve at Site 753, you will notice this reserve contains approximately 90 acres of mature conifer forest, and approximately 150 acres of mixed oak/conifer stands. The spotted owls at this site have been observed (during daylight) within the oak/conifer habitat patch (making this stand habitat according to DNR definitions), and are expected to use this area for foraging. This habitat patch is also expected to support prey production.

Recently I canvassed several spotted owl biologists with experience in Oregon white oak habitat. This habitat type overlaps spotted owl distribution in Washington only in a limited area, mostly in western Klickitat and Yakima Counties. Dennis Rock and Tracy Fleming (NCASI) have worked in this area for many years and both stated that they have found spotted owls in oak habitat at night, have located owls within conifer patches among oak forest, and believe the oak habitat probably produces prey (e.g., woodrats and other rodents) important for spotted owls. Mark Nuetzmann (Yakama Indian Nation) has also radio-tracked spotted owls into areas directly adjacent to, or in, conifer patches among oak stands, and agrees that it is probably an important habitat for spotted owls in this area. He stated that oak stands should not be discounted when considering habitat needs for the species. We included this habitat patch into the reserve around Site 753 because of the spotted owl sightings there, the proximity to the site center, and the importance this habitat likely plays in prey production.

I look forward to discussing our findings and the above proposals at your office. If you have any questions regarding this memo please feel free to call me at our office: (206) 525-8122, or contact me by email (drherter@raedeke.com).

Sincerely,

RAEDEKE ASSOCIATES, INC.

Dale R. Herter, M.S.

Appendix D

Implementation Agreement

IMPLEMENTING AGREEMENT

by and between

SDS Co. LLC and Broughton Lumber Company

and the

U.S. FISH AND WILDLIFE SERVICE

This IMPLEMENTING AGREEMENT ("IA") is entered into as of the date of issuance of Enhancement of Survival Permits by the UNITED STATES FISH AND WILDLIFE SERVICE, an agency of the Department of the Interior of the United States of America ("FWS"), to SDS Co. LLC and its registered business name Stevenson Land Company (together "SDS"), and to Broughton Lumber Company ("BLC") hereinafter collectively called the "Parties."

1.0 RECITALS

The Parties have entered into this IA in consideration of the following facts:

1.1 SDS owns approximately 72,000 acres of commercial forest land and BLC owns approximately 13,000 acres of commercial forest land in Skamania and Klickitat Counties in Washington and Hood River and Wasco Counties in Oregon, and as more fully described in Appendix C.

1.2 SDS and BLC, with technical assistance from the FWS, have prepared a Safe Harbor Agreement ("SHA") and related conservation plan ("Plan") covering certain listed species under the jurisdiction of FWS;

1.3 SDS and BLC have developed a series of enhancement and management measures to conserve the northern spotted owl and to meet other applicable requirements of the Endangered Species Act ("ESA") to support issuance of an enhancement of survival permit ("ESP") by FWS pursuant to Section 10(a)(1)(A) of the ESA;

1.4 SDS and BLC have developed a conservation plan that provides immediate and long-term benefits to local and regional populations of the covered species, causing SDS and BLC to, among other things, (a) set aside conservation areas, (b) adjust timber harvest rates to provide dispersal habitat as well as potential nesting, roosting, and foraging habitat for northern spotted owls; (c) engage in certain silvicultural activities designed to develop stands of timber which will serve as suitable habitat for certain covered species and (d) provide information on the use of managed timber stands by the covered species if they are discovered; and,

THEREFORE, the Parties hereby agree as follows:

2.0 DEFINITIONS

The following terms shall have the following meanings for all purposes of this IA:

2.1 “Agency” means the FWS.

2.2 “IA” means this Implementing Agreement as the same may be amended from time to time.

2.3 “.Baseline Conditions” means the forest conditions on Covered Lands that would result from application of existing rules governing forestry practices under Oregon and Washington Forest Practices Acts. These conditions are described in Section 3.3.1 of the SHA.

2.4 “Covered Lands” means the “SDS Block” and the “BLC Block” as that term is defined herein.

2.5 “Covered Species” means northern spotted owl (*Strix occidentalis caurina*).

2.6 “Covered Activities” means the following activities, provided that the conduct of these activities is otherwise lawful: all aspects of forest management under the Oregon and Washington Forest Practices Acts, including but not limited to timber harvest, pre-commercial thinning, log transportation, road construction, road maintenance and decommissioning, small rock pits, site preparation and slash abatement, tree planting, fertilization, silvicultural thinning, experimental silviculture, snag creation, wildfire suppression, monitoring pursuant to Section 4.3 of the SHA, the management, harvest, and sale of minor forest products provided however, that the application of pesticides is not a "Covered Activity." Notwithstanding the foregoing to the contrary, until completion of all required consultation under the National Historic Preservation Act, 16 U.S.C. § 470(f), "Covered Activities" shall not include any activity that, but for the ITP, would constitute unlawful take of a Covered Species and that would adversely affect a Designated Historic Resource. As used in this definition, "Designated Historic Resource" means any site, building, structure, or object located within the Plan Area (a) that is included in the National Register of Historic Places or (b) that is (i) specifically identified in a writing received by SDS or BLC prior to the conduct of its activity from either Service or from any Interested Party and (ii) is eligible for inclusion in the National Register of Historic Places. As used herein, "Interested Party" means the Washington State Historic Preservation Officer or the Oregon State Historic Preservation Officer, each Indian Tribe that attaches religious and cultural significance to sites, buildings, structures, or objects that may be affected by the activity and each other "consulting party" under 36 CFR §800.2. The Covered Activities are described in greater detail in Section 4 of the SHA.

2.7 “ESA” means the Endangered Species Act, 16 U.S.C. § 1531, et seq., as the same may be amended or reauthorized from time to time and any successor statute or statutes.

2.8 “ESP” means the enhancement of survival permit to be issued by the FWS to SDS and BLC as provided in this IA as the same may be amended from time to time in accordance with the terms hereof.

2.9 "Plan" means the certain SHA prepared by SDS and BLC, described in Section 1.2.

2.10 "SDS Block" means the property owned by SDS in Washington and Oregon as generally described in Appendix A, as it may be modified from time to time in accordance with the terms of this Implementation Agreement.

2.11 "BLC Block" means the property owned by BLC in Washington as generally described in Appendix A, as it may be modified from time to time in accordance with the terms of this Implementation Agreement.

2.12 "Set Asides" means the 400 acre Little White Salmon Special Set Aside and the 240 acre Gilmer Creek Special Set Aside.

2.13 "Unoccupied", with reference to land additions under Section 11.2 of this Agreement, means that the best survey data available at the time of such addition do not indicate that the lands being included have a northern spotted owl pair nest site or the 70 acres of best available habitat around the site.

2.14 "Occupied", with reference to land additions under Section 11.2 of this Agreement, means that the best survey data available at the time of such addition indicates that the lands being included have a northern spotted owl pair nest site and a portion of the 70 acres of best available habitat around the site.

2.15 "Elevated Baseline," are the forest conditions that will be produced by implementation of the agreed-upon forest management strategies defined in, and resulting from, the SHA. These conditions, as shown in Table 4-1 of the SHA, result in a third of the Applicants' commercial forest ownership in spotted owl habitat which is currently 9424 acres.

3.0 INCORPORATION OF THE PLAN

The provisions of Sections 4 and 5 of the Plan are intended to be, and by this reference are, incorporated into this IA. In the event of any direct contradiction between the terms of this IA and the Plan, the terms of this IA shall control. In all other cases, the terms of this IA and the terms of the Plan shall be interpreted to be supplementary to each other.

4.0 TERMS USED

Terms defined and used in the Plan and the ESA shall have the same meaning when used in this IA, except as specifically noted.

5.0 PURPOSES

The purposes of this IA are:

5.1 To ensure implementation of the terms of the Plan;

5.2 To describe remedies and recourse should any Party fail to perform its obligations, responsibilities, and tasks as set forth in this IA; and

5.3 Provide assurances to SDS and BLC that, as long as the terms of the Plan and the ESPs issued pursuant to the Plan and this IA are fully and faithfully performed, no additional mitigation will be required with respect to covered species except as provided for in this IA, 50 C.F.R. § 17.22(c)(5), or as required by law.

6.0 TERM

6.1 Duration. The ESP, Plan, and this IA will remain in effect for sixty (60) years from the date FWS issues the ESP unless earlier relinquished or terminated as herein provided.

6.2 Extension. Upon the mutual written agreement of the Parties, and compliance with all laws then applicable, the FWS may extend the ESP, Plan and this IA beyond its initial term. In furtherance of this provision, the Parties shall meet on or about September 1 of the thirtieth (30th), fortieth (40th), and fiftieth (50th) anniversaries of the effective date of the ESPs to discuss potential extension of the ESP, Plan, and IA.

7.0 FUNDING

SDS and BLC warrant that they have, and shall expend, such funds as may be necessary to fulfill their respective obligations under the ESP, the Plan, and this IA. SDS and BLC shall promptly notify FWS of any material change in either SDS's or BLC's financial ability to fulfill their respective obligations.

8.0 RESPONSIBILITIES OF THE PARTIES

8.1 SDS's Responsibilities. In consideration of the issuance of the ESP authorizing any incidental take which may result from activities conducted in accordance with the Plan, and in consideration of the assurances provided by this IA, SDS agrees to:

(a) Perform its obligations in this IA, the ESP and all obligations in the SDS Block; and

(b) Fully fund all costs needed to perform its affirmative obligations under the ESP and the Plan.

8.2 BLC's Responsibilities. In consideration of the issuance of the ESP authorizing any incidental take which may result from activities conducted in accordance with the Plan, and in consideration of the assurances provided by this IA, BLC agrees to:

(a) Perform its obligations in this IA, the ESP and all obligations in the BLC Block; and

(b) Fully fund all costs needed to perform its affirmative obligations under the ESP and the Plan.

8.3 FWS' Responsibilities. FWS agrees pursuant to its authorities to:

(a) Issue an ESP to SDS and BLC upon execution of this IA authorizing, for a period of 60 years, any incidental take of Covered Species which may result from activities conducted in accordance with the Plan. The ESP will include the assurances set forth in 50 C.F.R. § 17.22(c)(5).

(b) Cooperate with and provide technical assistance to SDS and BLC as well as to attend meetings requested by SDS and BLC to consider matters relevant to the SDS Block and the BLC Block, the Plan, and the ESP, or any of the operations or other activities contemplated there-under.

9.0 OCCUPATION BY NON-COVERED OR NEWLY LISTED SPECIES

After the ESP is issued, a listed species not addressed in the Plan may occupy Covered Lands. Should this occur, SDS and BLC may request that FWS add the species to the ESP. If, after compliance with all applicable laws, FWS concludes that a listed species is present on Covered Lands as a result of SDS's or BLC's conservation actions taken under the Plan, and that addition of the species to the ESP would be consistent with ESA §§ 7(a)(2) and 10(a)(1)(A) the FWS will promptly amend the ESP to include the newly-listed species as a Covered Species under this IA, setting forth the Baseline Condition for that species as it exists on the date of the permit amendment. Assurances in the ESP will not be extended to non-covered or newly-listed species if their presence is the result of activities not attributable to SDS's and BLC's implementation of the Plan. For species that are proposed to be listed, SDS, BLC and FWS may take the actions identified in this paragraph prior to the species' final listing so that the ESP's incidental take coverage becomes effective upon such listing.

10.0 INSPECTIONS AND MONITORING

10.1 Periodic Reports. SDS and BLC will provide FWS with the reports described in Section 4.5 of the Plan at the notice address then in effect for FWS and will provide any available information reasonably requested by FWS to verify the information contained in such reports. All reports will include the following certification from a responsible official of SDS or BLC who supervised or directed preparation of the report: "I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete."

10.2 Other reports. SDA and BLC will provide, within 30 days of being requested by the FWS, any additional information in its possession or control related to implementation of the Plan that is requested by the FWS for the purpose of assessing whether the terms and conditions of the ESP are being fully implemented.

10.3 Inspections. The FWS may inspect Covered Lands in accordance with its applicable regulations. (See 50 C.F.R. § 13.47.)

11.0 LAND TRANSACTIONS

11.1 In General. Nothing in this IA, the ESP, or the Plan shall limit the rights of SDS and BLC to acquire additional lands in and around the SDS Block or the BLC Block or elsewhere. Unless such lands are added to either the SDS Block or the BLC Block in the manner provided below, however, any such lands as may be acquired by purchase, exchange or otherwise will not be covered by the ESP. Nothing in this IA, the ESP or the Plan shall require SDS and BLC to include in the SDS Block or the BLC Block or to add to the ESP any additional lands it may acquire. Any lands which SDS elects to include in the ESP and the Plan in accordance with this IA shall thereafter constitute a portion of the SDS Block and all references to the SDS Block shall be deemed to include a reference to such added lands. Any lands which BLC elects to include in the ESP and the Plan in accordance with this IA shall thereafter constitute a portion of the BLC Block and all references to the BLC Blocks shall be deemed to include a reference to such added lands.

11.2 Inclusion of Additional SDS and BLC Property as Covered Lands. If SDS or BLC add any of the excluded lands that SDS or BLC currently own or acquire any additional non-public lands that are (a) within the "land addition boundary" identified on the attached Exhibit 1; (b) Unoccupied; and (c) of predominately similar forest type, character and use as the Covered Lands, SDS or BLC, whichever is acquiring the additional lands, may in its discretion, elect to include such lands in the ESP, incorporating them into the Plan and managing them under the Plan's conservation program. To propose such election, SDS or BLC, as appropriate, shall provide notice to the FWS of the proposed inclusion of additional lands, along with a specific description of the location, legal description, and Baseline Conditions of such additional property, including all available data bearing on whether such lands are Unoccupied. Unless FWS objects in a writing delivered to SDS or BLC, as appropriate, within 30 days of receipt of the notice of a proposed inclusion, specifying the reasons why in FWS's judgment the proposed addition of lands would materially compromise the package of Net Conservation Benefits of the Plan , it will be conclusively presumed for all purposes that the proposed addition does maintain such a Net Conservation Benefit, and the proposed inclusion will take effect as a minor modification, without additional process, under Section 16.2 of this Agreement. Any objection under the preceding sentence must be made and executed by a decision maker at the state supervisory level within the FWS and must be guided by the best science which is available at the time of the decision, meaning that the absence of data or relevant information shall not result in an objection. If FWS does deliver such a written objection, FWS and SDS or BLC, as appropriate, will confer in good faith and pursue the informal dispute resolution mechanisms set forth in Section 14.5 of this Agreement in an effort to reach agreement. If SDS or BLC advise FWS in a notice of proposed addition that time is of the essence, FWS will make best efforts to respond with its concurrence or objection as soon as is practicable.

11.3 Inclusion of Additional SDS and BLC Property that Includes Occupied Land within the White Salmon SOSEA as Covered Lands. If SDS or BLC add excluded lands that SDS or BLC currently own or acquire any additional non-public lands that are (a) within the White Salmon SOSEA and (b) Occupied, then SDS or BLC, whichever is acquiring the additional lands, will include such lands in the ESP and implement conservation measures for the site similar to those included in the Plan. For the purposes of this ESP, this shall mean a nest core set aside, determined in consultation with FWS, that includes the best available contiguous habitat around the nest owned by BLC or SDS, where removal of habitat will not be allowed for the duration of the Plan, In addition, if SDS and BLC, as a result of the addition or acquisition,

in aggregate own greater than 15% of the then available northern spotted owl habitat within 0.7 mile radius circle of this nest site, any removal of habitat on SDS or BLC lands within a 0.7 mile radius circle of the nest site will be deferred for a period of 10 years to allow conservation benefits to accrue and adequate time for a transition from circle management to landscape management to occur consistent with the ESP and the SHA.

To propose such election, SDS or BLC, as appropriate, shall provide notice to the FWS of the proposed inclusion of additional lands, along with a specific description of the location, legal description, and Baseline Conditions of such additional property, including all available data bearing on the occupied lands. FWS will determine within 30 days whether the inclusion of the proposed lands would provide a net benefit to the species and would be consistent with the ESP and not increase the take authorized in the ESP.

11.4 Inclusion of Additional SDS and BLC Property Occupied but Outside the White Salmon SOSEA as Covered Lands. If SDS or BLC add excluded lands that SDS or BLC currently own or acquire any additional non-public lands that are (a) within the "land addition boundary" identified on the attached Exhibit 1 (b) outside the White Salmon SOSEA and (c) Occupied, then SDS or BLC, whichever is acquiring the additional lands, will include such lands in the ESP and implement conservation measures for the site similar to those included in the Plan. For the purposes of this ESP, this shall mean that SDS or BLC, whichever is appropriate, will protect whatever portion of the 70 acre core is on their lands and no harvest will occur within this 70 acre core for at least three years. After three years, harvest of the 70 acre core and nest cite can occur outside of the nesting and breeding season.

To propose such election, SDS or BLC, as appropriate, shall provide notice to the FWS of the proposed inclusion of additional lands, along with a specific description of the location, legal description, and Baseline Conditions of such additional property, including all available data bearing on the occupied lands. FWS will determine within 30 days whether the inclusion of the proposed lands would provide a net benefit to the species and would be consistent with the ESP and not increase the take authorized in the ESP.

11.5 Removal of Property from Covered Lands. Except as provided in this Section, SDS and BLC may not sell any lands included in the Covered Lands, or exchange any portion thereof with, any other party during the term of this IA unless (a) the ESP and Plan are modified to delete such lands; or (b) the lands are transferred to a third party who has agreed to be bound by the terms of the Plan and otherwise meets the requirements set forth in Section 11.5 below. In any request to remove lands from Covered Lands, SDS and BLC shall demonstrate that the proposed removal would not materially compromise the package of Net Conservation Benefits of the Plan. The FWS shall consent to such proposed removal if it finds that the proposed removal of land would not materially compromise the package of Net Conservation Benefits of the Plan. If the FWS finds that the proposed removal would materially compromise the Net Conservation Benefits of the Plan, the FWS shall notify SDS and BLC in writing of this determination, and the FWS, SDS, and BLC shall promptly meet to discuss potential modifications to the ESP or Plan to address FWS' concerns. If SDS or BLC sell or exchange any of their lands comprising a portion of the Covered Lands and such transfer is permitted by the terms hereof, from and after such transfer, such lands shall not be deemed a portion of the Covered Lands and all references to Covered Lands shall be deemed not to include a reference to such transferred lands.

11.6 Transfers to New Landowner Bound by the Plan. SDS may sell or exchange lands comprising a portion of the SDS Block to a Permitted Transferee. BLC may sell or exchange lands comprising a portion of the BLC Block to a Permitted Transferee. As used herein, a "Permitted Transferee" shall mean a transferee who has elected to be bound by the ESP and Plan as it applies to the transferred lands; who is qualified to hold a permit under 50 C.F.R. § 13.21; who has sufficient financial resources to adequately fund its affirmative obligations under the Plan; and who has entered into an agreement with FWS to implement the terms of the ESP and the Plan. Upon request of the Permitted Transferee and compliance with all applicable laws, the FWS will issue an ESP to the Permitted Transferee covering the transferred lands. SDS and BLC will not be responsible for the performance of the ESP or Plan on lands transferred to a Permitted Transferee.

12.0 SUSPENSION OR REVOCATION OF THE ESP

FWS may suspend or revoke the ESP for cause in accordance with 50 CFR §§ 13.27, 13.28, and 17.22(c)(7). Such suspension or revocation may apply to the entire ESP, or to only one of the Permittees, or to specified Covered Species, Covered Lands, or Covered Activities. Where the cause for suspension or revocation arises from the conduct of only one Permittee and the FWS determines that the Conservation Benefits of the Plan can still be realized by continuation of the ESP, FWS may limit the scope of its suspension or revocation to such Permittee. Prior to suspending or revoking the ESP, FWS shall give notice to SDS and BLC of any proposed suspension or revocation, and shall provide an opportunity for SDS and BLC to cure any circumstance giving rise to the proposed suspension or revocation. In order to resolve any disagreements regarding such suspension or revocation, the Parties may employ dispute resolution as provided in Section 14.5.

13.0 RIGHTS TO TERMINATE AND RELINQUISH THE ESP

13.1 Rights of SDS. SDS reserves the right to relinquish its rights under the ESP prior to its expiration, assuming SDS is in compliance with the SHA and the Covered Lands are at or above the Elevated Baseline, upon either expiration or relinquishment of the ESP. If SDS relinquishes its rights under the ESP, the set asides will remain until the expiration of the ESP or until BLC relinquishes its rights under the ESP. Upon expiration or relinquishment of the ESP, SDS would manage its lands under the existing rules governing forestry practices under Oregon and Washington Forest Practices Acts.

13.2 Rights of BLC. BLC reserves the right to relinquish its rights under the ESP prior to its expiration, assuming BLC is in compliance with the SHA and the Covered Lands are at or above the Elevated Baseline, upon either expiration or relinquishment of the ESP. If BLC relinquishes its rights under the ESP, the set asides will remain until the expiration of the ESP or until SDS relinquishes its rights under the ESP. Upon expiration or relinquishment of the ESP, BLC would manage its lands under the existing rules governing forestry practices under Oregon and Washington Forest Practices Acts.

13.3 Effect of Termination, Relinquishment and Revocation. Any termination, relinquishment, or revocation of the rights of a Permittee under the ESP automatically terminates the Plan and this IA with respect to such Permittee, except that such Permittee's obligation to

preserve set asides shall continue to the extent required in Sections 13.1 and 13.2. Activities thereafter conducted on such Permittee's lands will be subject to all applicable provisions of the ESA and related regulations as if the ESP had never been issued.

13.4 No Post-Termination Mitigation. The Parties acknowledge that SDS's and BLC's compliance with the ESP, the Plan and this IA will result in SDS and BLC having fully mitigated for any incidental take of the Covered Species prior to the occurrence of such take. Therefore, if SDS and BLC are in compliance with the terms of this IA, upon termination, relinquishment, or revocation of the ESP, SDS and BLC shall have no further obligations hereunder or under the ESA with regard to the Covered Species, excepting preservation of set asides as provided in Sections 13.1 and 13.2.

14.0 REMEDIES AND ENFORCEMENT

14.1 In General. Except as set forth below, each Party shall have all remedies otherwise available to enforce the terms of this IA, the ESP, and the Plan.

14.2 No Monetary Damages. No Party shall be liable in damages to any other Party for any breach of this IA, any performance or failure to perform a mandatory or discretionary obligation imposed by this IA or any other cause of action arising from this IA.

14.3 Injunctive and Temporary Relief. The Parties acknowledge that the Covered Species is unique and that its loss as species would result in irreparable damage to the environment, and that therefore injunctive and temporary relief may be appropriate to ensure compliance with the terms of this IA.

14.4 Enforcement Authority of the United States. Nothing contained in this IA is intended to limit the authority of the United States government to seek civil or criminal penalties or otherwise fulfill its enforcement responsibilities under the ESA or other applicable law.

14.5 Dispute Resolution. The Parties recognize that good faith disputes concerning implementation of, or compliance with, or suspension, revocation or termination of this IA, the Plan or the ESPs may arise from time to time. The Parties agree to work together in good faith to resolve such disputes, using the dispute resolution procedures set forth in this Paragraph or such other procedures upon which the Parties may later agree. However, if at any time any Party determines that circumstances so warrant, it may seek any available remedy without waiting to complete dispute resolution.

14.5.1 If FWS has reason to believe that SDS may have violated the ESP, the Plan or this IA with respect to the Covered Species, it will notify SDS in writing of the specific provisions which may have been violated, the reasons the Agency believes SDS may have violated them, and the mitigation the Agency proposes to impose to correct or compensate for the alleged violation. SDS will then have sixty (60) days, or such longer time as may be mutually acceptable, to respond. If any issues cannot be resolved within thirty (30) days, or such longer time as may be mutually acceptable, after SDS's responses are due, the Parties will consider non-binding mediation and other alternative dispute resolution processes. The Parties reserve the right, at any time without completing informal dispute resolution, to use whatever enforcement powers and

remedies are available by law or regulation, including but not limited to, in the case of the FWS, suspension or revocation of the SDS ESP.

14.5.2 If FWS has reason to believe that BLC may have violated the ESP, the Plan or this IA with respect to the Covered Species, it will notify BLC in writing of the specific provisions which may have been violated, the reasons the Agency believes BLC may have violated them, and the mitigation the Agency proposes to impose to correct or compensate for the alleged violation. BLC will then have sixty (60) days, or such longer time as may be mutually acceptable, to respond. If any issues cannot be resolved within thirty (30) days, or such longer time as may be mutually acceptable, after BLC's responses are due, the Parties will consider non-binding mediation and other alternative dispute resolution processes. The Parties reserve the right, at any time without completing informal dispute resolution, to use whatever enforcement powers and remedies are available by law or regulation, including but not limited to, in the case of the FWS, suspension or revocation of the ESP.

14.5.3 FWS shall have no responsibility for resolving any disputes between SDS and BLC regarding their respective rights and obligations under the ESP, the Plan or this IA.

15.0 LIMITATIONS AND EXTENT OF ENFORCEABILITY

15.1 Safe Harbor Assurances. Until revocation, relinquishment, termination, or expiration of the ESP, SDS and BLC may use Covered Lands in any otherwise lawful manner consistent with this IA and the Plan. These assurances remain valid for as long as SDS and BLC comply with the Plan and the ESP. In return for SDS's efforts, the FWS will authorize incidental take of Covered Species under Section 10 (a)(1)(A) of the ESA, and comply with all other No Surprises policies and regulations then in force. The resulting ESP shall permit SDS and BLC to lawfully take Covered Species or to modify habitat of Covered Species on Covered Lands.

15.2 Property Rights and Legal Authorities Unaffected. Except as otherwise specifically provided herein, nothing in this IA shall be deemed to restrict the rights of SDS and BLC to use or develop Covered Lands; provided, that nothing in this IA shall absolve SDS and BLC from such other limitations as may apply to such lands, or interests in land, under other laws of the United States or the State of Washington and Oregon.

16.0 MODIFICATIONS AND AMENDMENTS

16.1 Modifications to this IA. This IA may be amended only with the written consent of SDS, BLC and the FWS.

16.2 Minor Modifications.

(a) Procedures. Any Party may propose minor modifications to the Plan, the Permits or this IA ("Minor Modifications") by providing written notice to the other Parties. Such notice shall include a statement of the reason for the proposed modification and an analysis of its environmental effects, including its effects on operations under the Plan and on Covered Species. The Parties shall use reasonable efforts to respond to proposed

modifications within thirty (30) days of receipt of such notice. Proposed Minor Modifications shall become effective, and the Plan shall be deemed modified accordingly, immediately upon all Parties' written approval. Among other reasons, a Party may object to a proposed minor modification based on a reasonable belief that such modification would result in material change to the Net Conservation Benefits of the SHA that are new or significantly different from those analyzed in connection with the original Plan, or additional take not analyzed in connection with the original Plan. If a Party objects to a proposed Minor Modification, the proposal is not approved as a Minor Modification but may be processed as an amendment of the ESP in accordance with Section 16.3.

(b) Examples. Minor modifications to the Plan, ESP, and this IA include, but are not limited to, the (1) corrections of typographic, grammatical, and similar editing errors that do not change the intended meaning; (2) correction of any maps or exhibits to correct errors in mapping or to reflect previously approved changes in the Permits or the Plan; (3) minor changes to survey, monitoring or reporting protocols; and (4) clarifications to vague or undefined language or phrases; (5) the addition or removal of Covered Lands in accordance with Section 11 of this IA; and (6) the addition of non-covered or newly-listed species in accordance with Section 9.1 of this IA.

16.3 Amendments. Any modifications to the Plan or this IA other than those made pursuant to Section 16.2 of this IA shall be processed as an amendment of the Plan, ESP and IA in accordance with all applicable legal requirements, including but not limited to the ESA, National Environmental Policy Act, and applicable FWS regulations.

17.0 MISCELLANEOUS PROVISIONS

17.1 No Partnership. Neither this IA nor the Plan shall make or deemed to make any Party to this IA the agent or partner of the other Party.

17.2 Severability. If any provision of this IA or the Plan is found invalid or unenforceable, such provision shall be enforced to the maximum extent possible and the other provisions shall remain in effect to the extent they can be reasonably applied in the absence of such invalid or unenforceable provisions.

17.3 Successors and Assigns. This IA and each of its covenants and conditions shall be binding on and shall inure to the benefit of the Parties and their respective successors and assigns. Assignment or other transfer of the ESP shall be governed by the FWS' regulations in force at the time.

17.4 Notice. Any notice permitted or required by this IA shall be in writing, delivered personally to the persons listed below, or shall be deemed to be given five (5) days after deposit in the United States mail, certified and postage prepaid, return receipt requested and addressed as follows, or at such other address as any Party may from time to time specify to the other Parties

in writing. Notices may be delivered by facsimile or other electronic means, provided that they are also delivered personally or by certified mail. Notices shall be transmitted so that they are received within the specified deadlines.

SDS and BLC:	Jason Spadaro PO Box 266 Bingen, WA 98605 Telephone: 509-493-2155 Fax: 509-493-2535
FWS:	Field Office Supervisor U.S. Fish & Wildlife Service Lacey, WA 98503 Telephone: 360-753-9440 Fax: 360-753-9460

17.5 Elected Officials not to Benefit. No member of or delegate to Congress shall be entitled to any share or part of this IA, or to any benefit that may arise from it.

17.6 Availability of Funds. Implementation of this IA and the Plan by the FWS is subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds. Nothing in this IA shall be construed by the Parties to require the obligation, appropriation or expenditure of any money from the U.S. Treasury. The Parties acknowledge that the FWS shall not be required under this IA to expend any federal agency's appropriated funds unless and until an authorized official of that agency affirmatively acts to commit to such expenditures as evidenced in writing.

17.7 No Third Party Beneficiaries. Without limiting the applicability of rights granted to the public pursuant to the ESA or other federal law, this IA shall not create any right or interest in the public, or any member thereof, as a third-party beneficiary hereof, nor shall it authorize anyone not a Party to this IA to maintain a suit for personal injuries or damages pursuant to the provisions of this IA. The duties, obligations, and responsibilities of the Parties to this IA with respect to third parties shall remain as imposed under existing law.

17.8 Relationship to the ESA and Other Authorities. The terms of this IA shall be governed by and construed in accordance with the ESA and applicable federal law. In particular, nothing in this IA is intended to limit the authority of the Services to seek civil or criminal penalties or otherwise fulfill their responsibilities under the ESA. Moreover, nothing in this IA is intended to limit or diminish the legal obligations and responsibilities of the Services as agencies of the federal government. Nothing in this IA shall limit the right or obligation of any federal agency to engage in consultation required under Section 7 of the ESA or other federal law; however, it is intended that the rights and obligations of SDS and BLC under the Plan and this IA shall be considered in any consultation concerning SDS's and BLC's use of the Plan Area.

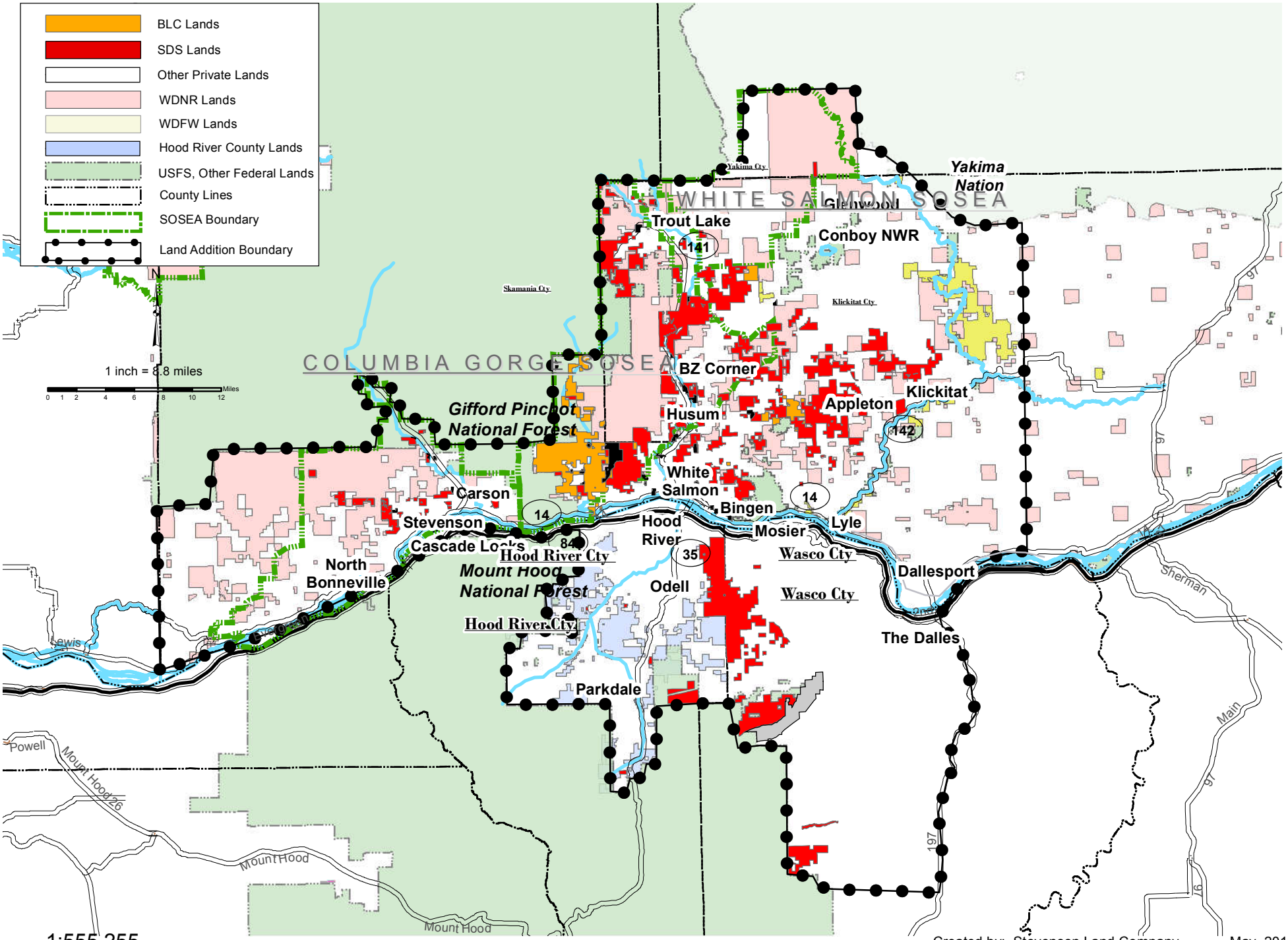
17.9 References to Regulations. Any reference in this IA, the Plan or the ESP to any regulation or rule of the FWS shall be deemed to be a reference to such regulation or rule in existence at the time an action is taken, except that SDS and BLC may rely on state and federal regulations in effect at the time this IA became effective to protect its rights under this IA.

17.10 Applicable Laws. All activities undertaken pursuant to this IA, the Plan or the ESP must be in compliance with all applicable state and federal laws and regulations.

17.11 Terms Do Not Run With the Land. The terms hereof are not intended to run with the land and will not bind subsequent purchasers of timberlands in the SDS Block or the BLC Block.

17.12 Entire Agreement. This IA, together with the Plan and the ESP, constitute the entire agreement among the Parties. The terms contained in this IA supersede any and all other agreements, either oral or in writing, among the Parties with respect to the subject matter hereof and contains all of the covenants and agreements among them with respect to said matters, and each Party acknowledges that no representation, inducement, promise or agreement, oral or otherwise, has been made by any other Party or anyone acting on behalf of any other Party that is not embodied herein. The Parties agree that this IA forms an integral part of the ESP and the Plan, and that execution of the ESP and Plan by the Parties shall constitute full acceptance of the terms of this IA.

Figure 1


BLC Lands
SDS Lands
Other Private Lands
WDNR Lands
WDFW Lands
Hood River County Lands
USFS, Other Federal Lands
County Lines
SOSEA Boundary
Land Addition Boundary
1 inch = 8.8 miles
Miles
0 1 2 4 6 8 10 12
N
WHITE SALMON SOSEA
COLUMBIA GORGE SOSEA
Yakima Nation
Yakima Cty
Glenwood
Trout Lake
141
Conboy NWR
Skamania Cty
Klickitat Cty
BZ Corner
Klickitat
Appleton
142
Husum
Gifford Pinchot National Forest
White Salmon
Bingen
14
Carson
Stevenson
Cascade Locks
84
Hood River
Mosier
Lyle
Hood River Cty
35
Wasco Cty
North Bonneville
Mount Hood National Forest
Odell
Wasco Cty
Dallesport
Hood River Cty
The Dalles
Lewis
Sherman
Parkdale
Main
Powell
Mount Hood 26
Mount Hood
197
97
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Created by: Stevenson Land Company
May 2012