DRAFT ENVIRONMENTAL ASSESSMENT

WEYERHAEUSER TIMBER HOLDINGS, INC. SAFE HARBOR AGREEMENT

U.S. Fish and Wildlife Service
Washington Fish and Wildlife Office
510 Desmond Drive SE
Lacey, WA 98503

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ACRONYMS AND ABBREVIATIONS

BFW	Bank Full Width
BGEPA	Bald and Golden Eagle Protection Act
CFR	Code of federal Regulations
CMZ	Channel Migration Zone
DAHP	Department of Archaeology and Historic Preservation
Dbh	Diameter at breast height
DPS	Distinct Population Segment
EA	Environmental Assessment
ECOS	Environmental Conservation Online System
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973, as amended
FEIS	Final Environmental Impact Statement
FPA	Forest Practices Application
FPBM	Forest Practices Board Manual
FPHCP	Forest Practices Habitat Conservation Plan
GHG	Green House Gases
IPaC	Information for Planning and Consultation
LTCS	Long-term Conservation Strategy
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act of 1969
NHL	National Historic Landmarks
NHPA	National Historic Preservation Act
NLCD	USGA National Land Cover Database
NMFS	National Marine Fisheries Services
NRHP	National Register of Historic Places
NSO	Northern Spotted Owl
RCW	Revised Code of Washington
RMZ	Riparian Management Zone
SEPA	State Environmental Policy Act
SHA	Safe Harbor Agreement
SSAs	Special Set-aside Areas
TPA	Trees per acre
U.S.C.	United States Code
USBLS	U.S. Bureau of Labor Statistics
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WAU	Watershed Administrative Units
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WDOE	Washington Department of Ecology
WMZ	Wetland Management Zone
WRIA	Water Resources Inventory Area

EXECUTIVE SUMMARY

Weyerhaeuser Timber Holdings, Inc., (Applicant), on behalf of its affiliates and subsidiaries, has submitted an application for an enhancement of survival permit (Permit) under Section 10(a)(1)(A) of the Endangered Species Act (ESA) as well as a Safe Harbor Agreement (SHA) proposing conservation efforts that the Applicant will undertake if the U.S. Fish and Wildlife Service (USFWS) grants the Permit and provides the associated incidental take assurances (Proposed Action). The proposed SHA is intended to provide a net conservation benefit for marbled murrelet (*Brachyramphus marmoratus*) and to last until June 2056, at which time the Applicant could return its lands to baseline conditions. This Environmental Assessment (EA) analyzes the environmental impacts of the proposed SHA and evaluates the Proposed Action against two other alternatives: No Action, in which neither the Proposed Action nor any other is taken; and Alternative 3, which contemplates conservation activities other than or in addition to those outlined in the Proposed Action.

The Proposed Action would provide the Applicant with incidental take coverage through a Section 10(a)(1)(A) enhancement of survival permit to conduct forest practices activities related to commercial timber harvest in accordance with state law while yielding a net conservation benefit for the marbled murrelet under an approved SHA.

This EA analyzes the impact of these alternatives on various dimensions of the human and natural environment where the Applicant's lands are located, including geology and soils, vegetation, and recreation. Similarly, various types of regulated aquatic resources exist, as to which the Applicant must comply with requirements for forest management activities that affect the quality and availability of water. Numerous species of animals also may occur on the Enrolled Lands, including various species and subspecies of bears, cervids, birds, fish, rodents, as well as canine, feline, and mustelid predators. Some of these animals are legally protected, most notably for the proposed SHA, the marbled murrelet and northern spotted owl. The Enrolled Lands are situated in 11 counties in Washington State in which forest lands predominate, as do land use designations and zoning categories related to forest practices. These counties have economies that are largely focused on, among other things, timber harvest, agriculture, industrial, resort residential, and utilities.

Most impacts to the environment resulting from the two Action Alternatives are expected to be minimal or beneficial, including on vegetation and wildlife. All three alternatives are similar in terms of their expected impact on water conditions and risks to aquatic resources. No significant difference in impact on wildlife other than marbled murrelets is expected among the three alternatives. The Action Alternatives do not differ significantly in how they impact land use, or cultural resources. However, take assurances associated with the Action Alternatives provide a degree of long-term predictability for the Applicant that could enhance employment, continuity of land use and planning policy goals, and voluntary protection for areas significant to cultural heritage. Reasonably foreseeable cumulative effects of the action (effects added to the effects of other past, present, and reasonably foreseeable actions) also are analyzed.

1.1 INTRODUCTION

1.2 PURPOSE AND NEED

The United States Fish and Wildlife Service (USFWS) received an application for an Enhancement of Survival Permit (Permit), pursuant to the provisions of section 10(a)(1)(A) of the Endangered Species Act of 1973, as amended (ESA) (16 United States Code [U.S.C.] 1531, et seq., 1539(a)(1)(A)) from Weyerhaeuser Timber Holdings, Inc. on behalf of its affiliates and subsidiaries on February 17, 2022, regarding its forestland management activities. In accordance with applicable agency regulations, the Applicant also submitted a Safe Harbor Agreement (SHA) outlining proposed conservation measures that could provide a net conservation benefit to the marbled murrelet (*Brachyramphus marmoratus*), federally listed as threatened on September 28, 1992 (57 FR 45328-45337). Implementation of the proposed individual SHA is intended to provide a net conservation benefit for the marbled murrelet (covered species) over and above those benefits that are accruing through the Applicant's growing, protecting, and restoring mature and complex forest stands that are retained in riparian buffers, channel migration zones, and on unstable slopes through compliance with Washington's Forest Practices Program. The Applicant's proposed SHA identifies and commits to protect "Presumed Marbled Murrelet Habitat" or "Presumed Habitat" as part of the conservation commitment contributing to providing a net conservation benefit for the species.

If the Permit is issued, in exchange for committing to the terms of the proposed SHA, the Applicant would obtain incidental take assurances under the ESA that would apply to the Enrolled Lands for a period of approximately 34 years, through June 5, 2056, giving the proposed SHA the same expiration date as the Washington Forest Practices Habitat Conservation Plan (FPHCP). Renewal of the SHA may be requested by the Applicant for a term coextensive with any renewal of the FPHCP. The Applicant owns and manages approximately 1,125,555 acres within Washington (see Figure 1-1). Proposed SHA-Enrolled Lands are 637,021 acres located in Whatcom, Skagit, Snohomish, King, Pierce, Thurston, Lewis, Cowlitz, Wahkiakum, Pacific, and Grays Harbor counties. The Enrolled Lands are comprised of 134,757 acres of Forest & Fish Buffers, 502,264 acres of Adjacent Forests, totaling 637,021 acres. Included within the Enrolled Lands is 1,240 acres of Occupied Marbled Murrelet Sites, as well as 494 acres of Presumed Habitat and 64 acres of Murrelet Habitat Development Area that would voluntarily be protected under the terms of the proposed SHA. Other lands owned by the Applicant (approximately 488,00 acres) located outside of Forests & Fish Buffers and Adjacent Forests are not included in the Enrolled Lands covered by the proposed SHA.

The USFWS's purpose for the Proposed Action is to fulfill our conservation obligations under Section 10(a)(1)(A) of the ESA and 50 C.F.R. § 17.32. The USFWS's need is to respond to and process the Applicant's request for a Permit and determine whether the application is consistent with the net conservation benefit standard and all other issuance criteria required for Permit issuance. USFWS must respond to the Applicant's application for a Permit by approving, approving with conditions, or denying the application. The proposed issuance of a Permit by the USFWS is a federal action that may affect the human environment and therefore is subject to

review under the National Environmental Policy Act of 1969 (NEPA). In accordance with NEPA, this EA assesses the effects associated with implementing the proposed SHA for marbled murrelet (Proposed Action) compared to the No Action Alternative and a third Alternative.

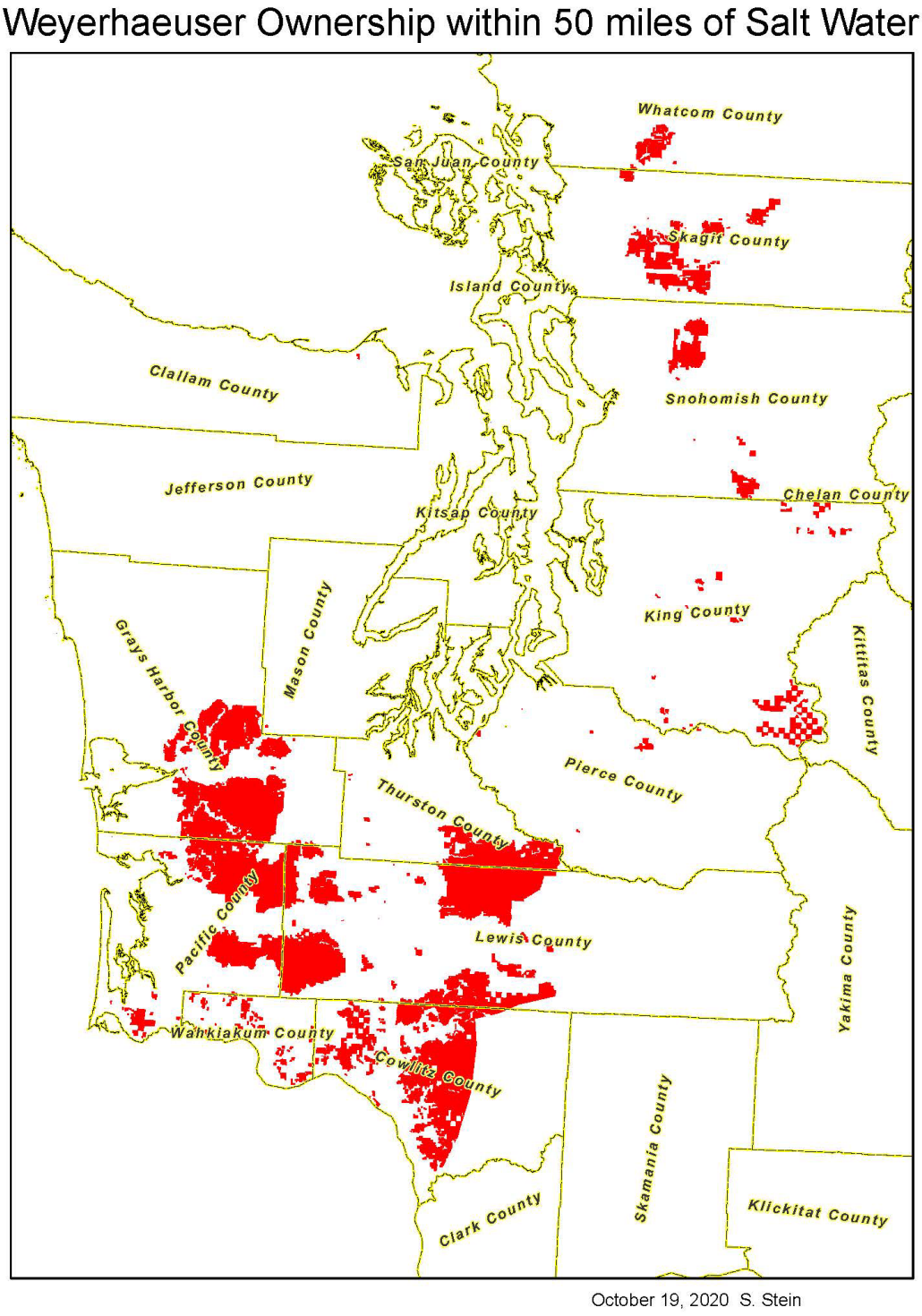

Figure 1-1. Project location.

1.3 STATUTORY AND REGULATORY REQUIREMENTS

Federal Endangered Species Act

Section 9 of the ESA prohibits the "take" of any fish or wildlife species federally listed as endangered unless authorized under the provisions of Section 1, 4(d), or 10(a) of the ESA. 16 U.S.C. § 1538(a)(1). Section 4 of the ESA allows USFWS to issue regulations which prohibit the take of any fish and wildlife species listed as threatened as well. 16 U.S.C. § 1533(d). The take prohibition was extended to the marbled murrelet when it was listed as threatened under the ESA on September 28, 1992. 57 FR 45328. "Take," as defined by the ESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect [a listed species], or attempt to engage in any such conduct" 16 U.S.C. § 1532(19). The 1982 amendments to the ESA established a provision in Section 10 of the ESA that allows the Secretary to permit "incidental take" of threatened and endangered species of wildlife by non-federal entities. 16 U.S.C. § 1539(a). Incidental take is defined by the ESA regulations as take that is "incidental to, but are not the purpose of, carrying out an otherwise lawful activity." 50 Code of federal Regulations (CFR) § 402.02.

Sections 2, 7, and 10 of the ESA allow USFWS to approve SHAs. Section 2 of the ESA states that "encouraging the States and other interested parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs which meet national and international standards is a key to meeting the Nation's international commitments and to better safeguarding, for the benefit of all citizens, the Nation's heritage in fish, wildlife, and plants." 16 U.S.C. § 1531(a)5). Section 7(a)(2) of the ESA requires all federal agencies, in consultation with USFWS, to ensure that any action "authorized, funded, or carried out" by any such agency "is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification" of critical habitat. 16 U.S.C. § 1536(a)(2). Actions of federal agencies that are not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of their designated critical habitat, but that could adversely affect the species, or result in a take, must be addressed under Section 7 of the ESA.

By entering into the SHA, USFWS is using the Safe Harbor Program to further the conservation of the nation's wildlife. Finally, section 10(a)(1)(A) of the ESA authorizes the issuance of enhancement of survival permits to allow for "incidental take" of a listed species while conducting otherwise lawful activities. 16 U.S.C. § 1539(a)(1)(A). Specifically, SHAs provide regulatory assurances for nonfederal landowners who voluntarily aid in the recovery of listed species through a net conservation benefit by improving or maintaining wildlife habitat and allow such landowners to return the property to an agreed-upon baseline condition at the end of the Agreement, even if this means incidentally taking the species.

Under the conditions of a Section 10 Permit issued for an approved SHA, if voluntary conservation measures conducted in accordance with the SHA increase the occupied area or numbers of a listed species, the landowner would be relieved of their liability under the ESA and be authorized to incidentally take the covered species (*i.e.*, marbled murrelets), while conducting covered activities, above an established baseline without penalty should the covered species occur on the enrolled lands at some point in the future.

Federal National Environmental Policy Act

Section 102(2)(C) of the National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4347, requires federal agencies to evaluate and disclose the effects of their proposed actions on the natural and human environment. The purpose of the NEPA process is to ensure that the potential environmental impacts of any proposed federal action are fully considered and made available for public review. The issuance of a Section 10 Permit by USFWS constitutes a federal action subject to NEPA compliance and review. To comply with NEPA, USFWS must conduct and publish an environmental review. This may consist of preparing an Environmental Impact Statement (EIS) or EA, 40 C.F.R. § 1501.3, that includes a detailed analysis of all direct, indirect and cumulative effects to the human environment resulting from issuance of the section 10 Permit. In circumstances in which issuance of a Permit falls under a Categorical Exclusion (CatEx), a category of actions which do not individually or cumulatively have a significant effect on the human environment, NEPA review may be concluded with a CatEx determination rather than preparation of an EIS or EA. 40 C.F.R. § 1501.4.

In 2020, the CEQ issued a final rule updating NEPA implementing regulations (the "2020 Rule;" 85 Federal Register [FR] 43304, July 16, 2020). The 2020 Rule went into effect on September 14, 2020, and it applied to any NEPA process begun after September 14, 2020 (40 CFR § 1506.13). On April 20, 2022, CEQ published a final rule including a narrow set of changes to the 2020 NEPA regulations, including reinstating the definition of cumulative effects (the "2022 Rule;" 87 FR 23453).

To the fullest extent possible, USFWS interprets government policies, regulations, and public laws to require the generation of NEPA analysis that is appropriate in both scope and depth for use in informing agency decision-making. This EA was written consistent with the 2022 Rule as well as the purpose and goals of NEPA; longstanding federal judicial and regulatory interpretations; the Department of the Interior's NEPA regulations (43 C.F.R. Part 46); and Administration priorities and polices including Secretary's Order No. 3399.

National Historical Preservation Act

The National Historical Preservation Act of 1966 (16 U.S.C. 470 et seq., as amended), is the primary federal law governing the preservation of cultural and historic resources in the United States.

Section 106 of the NHPA requires that federal agencies consider the effects of their undertakings (including funding, licensing, or permitting the undertakings of other entities) on historic properties and stipulates that affected American Indian tribes must be consulted.

Issuance of ESA permits can be a federal undertaking requiring review under the NHPA. The National Register of Historic Places (NRHP) is the federal list of historic, archaeological, and other cultural resources deemed worthy of preservation. In Washington State, the NRHP is administered by the Washington Department of Archaeology and Historic Preservation (DAHP). Resources listed, or determined eligible for listing, are considered historic properties.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act protects migratory birds and their parts (including eggs, nests, feathers). 16 U.S.C. § 703 *et seq.* The Act is a Federal law that affirms, or implements, the United States' commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource, and makes it illegal to pursue, hunt, take, capture, kill, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to federal regulations. A list of all migratory bird species subject to the regulations of the Act is listed in 50 C.F.R. § 10.13. The Service has developed and shared general measures that should be employed nationwide with the goal of reducing impacts to birds and their habitats, available online at https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds.

State Environmental Policy Act

The Washington State Environmental Policy Act (SEPA) is intended to ensure that environmental values are considered during decision-making by state and local agencies by allowing agencies, applicants, and the public to consider all aspects of a proposal at the same time. The environmental review process involves identifying and evaluating probable impacts of the action on all elements of the environment and developing alternatives and mitigation measures that will reduce adverse environmental impacts, similar to NEPA. The environmental information, along with other considerations, is used by state agency decision makers to decide whether to approve, approve with conditions, or deny a proposal.

Class IV-Special Forest Practices (Class IV-Special) are subject to SEPA review (Washington Administrative Code [WAC] 222-16-050(1)); however, WAC 222-10-040, Class IV-Special threatened and endangered species SEPA policies states:

> The SEPA policies in this section and the species specific SEPA policies for threatened and endangered species do not apply to forest practices that are consistent with a wildlife conservation agreement listed in WAC 222-16-080(6) for species covered by these agreements, that has received environmental review with an opportunity for public comment under the National Environmental Policy Act, 42 U.S.C. section 4321 et seq., or the State Environmental Policy Act, chapter 43.21C RCW.

SHAs are included under WAC 222-16-080(6)(a)(iii) as a "conservation agreement entered into with a federal agency pursuant to its statutory authority for fish and wildlife protection that addresses the needs of the affected species." Therefore, this NEPA review satisfies SEPA requirements, and SEPA policies relating to Class IV-Special (and specifically to marbled murrelets) do not apply to forest practices that are consistent with the Proposed Action when conducted on Enrolled Lands.

Forest Practices Program

The Forest Practices Program, administered by the Washington Department of Natural Resources (WDNR), is the management framework for forest practices in Washington State. The framework

includes the Forest Practices Act (Revised Code of Washington [RCW] Ch. 76.09), the Forest Practices Rules (WAC Title 222), and the Forest Practices Habitat Conservation Plan (FPHCP; WDNR 2005) and all associated appendices, including the Forests & Fish Report (USFWS et al. 1999), and the Final Environmental Impact Statement (USFWS and NMFS 2006).

Forest Practices Act

The State Legislature passed the Forest Practices Act in 1974. The Forest Practices Act (RCW Ch. 76.09) was designed to provide protection to forest soils, fisheries, wildlife, water quality and quantity, air quality, recreation, and scenic beauty by regulating forest practices such as harvesting, salvage, thinning, brush control, road construction and maintenance, reforestation, and the use of fertilizers or pesticides, while at the same time maintaining a viable forest products industry.

Washington Forest Practices Rules

The Washington Forest Practices Rules, embodied in WAC Title 222, were first adopted in 1976 to give direction on how to implement the Forest Practices Act. They apply to nonfederal and nontribal forest lands in the state and require all forest landowners to conduct their forest management activities according to the Forest Practices Rules. Landowners that cut more than 5,000 board feet per year, or when certain environmental conditions are present, are required to submit a Forest Practices Application/Notification. However, the Forest Practices Rules provide for exceptions to operating under standard rules, including conducting forest management operations under a SHA and/or a federal conservation plan authorized under Section 10 of the ESA.

Forests & Fish Report

The "Forests & Fish Report," signed in 1999 by multiple stakeholders, recommended a collaborative approach to management and restoration of riparian habitat on nonfederal forest lands in Washington. It recommended, initially through emergency rules and then through passage of the Salmon Recovery Act of 1999, adding buffers to streams, rivers, unstable slopes, and other sensitive features, which then led to the revision of forest practice laws in the state, including changes to the Forest Practices Act and Forest Practices Rules that adopted the goals of the Forests & Fish Report as state law. The recommended protections detailed in the Forests & Fish Report were also then incorporated into the 2005 FPHCP.

Interaction between the Forests & Fish Report and the ESA

As stated in the proposed SHA, at the time of its execution, the signatories to the Forests & Fish Report, including USFWS, recognized that the buffers on streams, rivers, unstable slopes, and other sensitive features could lead to the development of habitat for other listed species, including the marbled murrelet (USFWS et al. 1999, Appendix M.1(g), M.2(e) at 83-85). USFWS and the other signatory parties acknowledged the potential issue related to forest landowners who "grow" habitat for ESA-listed species that are not covered under the FPHCP (USFWS *et al.* 1999, Appendix M.2(e) at 85):

> The authors agree to seek to develop and secure federal assurances under the Endangered Species Act so that forest landowners who adopt the recommendations

> of this Report and thereby "grow" habitat for threatened or endangered species other than covered resources will not be subject to claims of take from the conduct of forest practices permitted under the recommendations of this Report or to other restrictions or regulations which would not otherwise apply. At this time, however it is unclear whether such assurances will be available, what the appropriate process for securing such assurances will be and when, if at all, such assurances can be provided.

As stated above, at the time of the Forests & Fish Report, it was unclear whether such ESA assurances would be available, what the appropriate process for securing such assurances would be and when, if at all, such assurances could be provided. The proposed SHA and associated Permit is the way by which USFWS is proposing to provide federal assurances recognized in the Forests & Fish Report as they relate to the set aside of lands that may provide habitat for the marbled murrelet and other conservation measures to achieve a net conservation benefit as defined in USFWS's Safe Harbor Policy.

Washington Forest Practices HCP

Following the Forests & Fish Report's adoption into state law through the passage of the Salmon Recovery Act of 1999, the WDNR, on behalf of the State of Washington, prepared the FPHCP covering forest practices on forestlands within the Stateof Washington that are subject to the Forest Practices Act (*i.e.*, nonfederal and nontribal land in Washington). Therefore, all activities conducted under the Forest Practices Act must also follow the FPHCP. The FPHCP provided measures to minimize and mitigate the incidental take of 17 aggregations of anadromous and native fish species and also conserves habitat for unlisted aggregations of these same species, and for 48 other fish and 7 amphibian species found in Washington for which the State sought unlisted species coverage (WDNR 2005). USFWS and the NMFS approved the FPHCP and issued incidental take permits to WDNR under Section 10 of the ESA in 2006. The take authorizations for aquatic species apply to all landowners that apply for forest practices permits and conduct their forest management activities according to the Forest Practices Rules (WAC 222).

The forest management activities that are covered by the incidental take permits are primarily related to those activities conducted in the riparian areas adjacent to surface waters and wetlands and on unstable slopes, along with road construction and maintenance activities. The Applicant's forest management activities, as they relate to impacts on aquatic species, are covered under the FPHCP and associated incidental take permits, and were analyzed under the associated environmental impact statement, and will not be analyzed in this EA. The FPHCP and associated FEIS are available online at https://www.dnr.wa.gov/programs-and-services/forest-practices/forest-practices-habitat-conservation-plan.

The Washington Forest Practices Rules pertaining to upland wildlife habitat became effective in July 1996 and were not part of the Forest Practices Rules for aquatic species resulting from the Forests & Fish Report. Federally-listed wildlife species, including northern spotted owl (spotted owl) and marbled murrelet are not "covered" species under the FPHCP. The specific prescriptions in the Washington Forest Practices Rules (WAC 222-16-080) for the marbled murrelet and spotted

owl were not changed by the FPHCP. Because the existing rules for these species did not change as a result of the FPHCP, the State (WDNR) did not request ESA incidental take authorization for marbled murrelets or spotted owls under the FPHCP. Therefore, landowners implementing the Forest Practices Rules for aquatic species in compliance with the FPHCP must also follow Forest Practices Rules that pertain to marbled murrelets unless they have developed an approved alternative conservation plan. As noted above (section 1.2.5), SHAs are considered one of these alternative conservation plans, which are defined under WAC 222-16-080(6)(a)(iii) as a "conservation agreement entered into with a federal agency pursuant to its statutory authority for fish and wildlife protection that addresses the needs of the affected species." If approved, the conservation terms specified in the proposed SHA would exempt the Applicant from compliance with the existing Forest Practices Rules for marbled murrelets specified in WAC 222-10-042 (marbled murrelets) and WAC 222-16-080 (critical habitats (State) of threatened and endangered species).

1.4 APPLICANT INFORMATION AND DEFINITIONS

Definitions and Descriptions of Enrolled Lands

"**Adjacent Forests**" are all commercial forest lands that are located within 300 feet of Conservation Lands. Adjacent Forests cover 502,264 acres.

"**Class IV-Special**" means specific forest practices that require an environmental checklist in compliance with the State Environmental Policy Act (SEPA), and SEPA guidelines, as they have been determined to have potential for a substantial impact on the environment. Class IV-Special threatened and endangered species SEPA policies specific to marbled murrelets are defined in WAC 222-10-042, and specific forest practices that are designated as Class IV-Special that pertain to marbled murrelets are listed in WAC 222-16-080. For example, timber harvesting, other than removal of down trees outside of the critical nesting season, or road construction within an Occupied Marbled Murrelet Site is designated as a Class IV-Special forest practice (WAC 222-16-080 (1)(h)(i).

"**Conservation Lands"** means Forests & Fish Buffers and Presumed Habitat. The total acreage of Conservation Lands in the Enrolled Lands is 135,200 (134,757 of Forests & Fish Buffers, plus 494 of Presumed Habitat, less 51 acres of Presumed Habitat in Forests & Fish Buffers).

"**Critical nesting season**" means for marbled murrelets April 1 to August 31.

"**Daily peak activity**" means for marbled murrelets – one hour before official sunrise to two hours after official sunrise and one hour before official sunset to one hour after official sunset.

The "**Enrolled Lands**" are all lands included for coverage under the proposed SHA by the Applicant, including Conservation Lands and Adjacent Forests that are within 50 miles of marine waters as well as Occupied Sites that are within the project boundary. The Enrolled Lands cover 637,021 acres spanning 154 townships and 11 counties throughout North Puget Sound, eastern Puget Sound, and southwestern Washington.

"**Forests & Fish Buffers**" are areas that meet the Forest Practices Program requirements for riparian, wetland, and channel migration zone (CMZ) buffers (WAC 222-30-021, 222-30-040; Board Manual Sections 1, 2, 7, 8, and 9), or buffers or set-asides on unstable or potentially unstable slopes (WAC 222-30-021(2)(b); Board Manual Section 16). The Forests & Fish Buffers total 134,757 acres.

"**Forest Practice"** or **"Forest Practices**" shall have the same meaning as the definitions in RCW 76.09.020 and WAC 222-16-010 but shall not include activities that are not covered by the Washington Forest Practices HCP (e.g., application of forest chemicals). The Forest Practices Act and rules define forest practices as "any activity conducted on or directly pertaining to forestland and related to growing, harvesting, or processing timber." WAC 222-16-010. Activities include, for example, road construction, road maintenance and abandonment, final and intermediate harvesting, pre-commercial thinning, reforestation, salvage of trees, and brush control (WDNR 2005, pp. 14-15).

The "**Forest Practices Program**" is the management framework for forest practices in Washington. The framework includes the Forest Practices Act, RCW Ch. 76.09, the Forest Practices Rules, WAC Title 222, and the 2006 Forest Practices HCP, Implementing Agreements, Incidental Take Permits under section 10(a)(1)(B) of the ESA.

A "**Forest Stand**" is a contiguous community of trees sufficiently uniform in composition, structure, age and size class distribution, spatial arrangement, site quality, condition, or location to distinguish it from adjacent communities.

"**Marbled Murrelet Detection Area**" means an area of land associated with a visual or audible detection of a marbled murrelet, made by a qualified surveyor which is documented and recorded in the Washington Department of Fish and Wildlife (WDFW) database. The marbled murrelet detection area shall be comprised of the section of land in which the marbled murrelet detection was made and the eight sections of land immediately adjacent to that section.

"**Marbled Murrelet Nesting Platform**" has the same meaning as defined in WAC 222-16-010 and means any horizontal tree structure such as a limb, an area where a limb branches, a surface created by multiple leaders, a deformity, or a debris/moss platform or stick nest equal to or greater than 7 inches in diameter including associated moss if present, that is 50 feet or more above the ground in trees 32 inches diameter at breast height (dbh) and greater (generally over 90 years of age) and is capable of supporting nesting by marbled murrelets.

"**Marbled Murrelet Nesting Season**" has the same meaning as "Critical Nesting Season" as defined in WAC 222-16-010 (April 1 – August 31).

"**Marginal Nesting Habitat**" or "**Marginal Marbled Murrelet Nesting Habitat**" is defined as forest stands where western hemlock, Sitka spruce, or western red cedar trees that are 90-years old or greater in age are the predominant species, and/or forest stands where Douglas-fir trees that are 180 years old or greater are the predominant species. Stands in this age class are considered to be at least 25 percent likely to contain Suitable Marbled Murrelet Habitat now, and have the potential to transition into "More-Likely-Than-Not" habitat over the term of the proposed SHA.

"**Murrelet Habitat Development Areas**" means Potential Nesting Habitat areas set aside as no harvest under this SHA for the protection of Marbled Murrelets that have younger stand age than Presumed Habitat. Murrelet Habitat Development Areas cover 64 acres, 30 acres of which are outside Forests & Fish Buffers. Murrelet Habitat Development Areas will receive no take assurances for return to baseline.

"**More-Likely-Than-Not Habitat**" is a threshold adopted for purposes of this proposed SHA at which a Forest Stand is considered more likely than not to contain Suitable Marbled Murrelet Habitat. Roughly speaking, Western Hemlock-dominant stands aged 130 years or older are around 50% likely to contain Suitable Marbled Murrelet Habitat, and Douglas Fir-dominant stands 220 years or older are around 50% likely to contain Suitable Marbled Murrelet Habitat. This estimation is not precise. However, for purposes of articulating both anticipated conservation benefits and anticipated take in this proposed SHA, these "More-Likely-Than-Not" habitat thresholds of 130+ year old Western Hemlock and 220+ year old Douglas Fir serve a useful purpose and are adopted herein. These thresholds are loosely based on science cited in the WDNR Long Term Conservation Strategy for Marbled Murrelets, but the concepts discussed in that document are not explicitly adopted or relied upon here. For more detail regarding the scientific basis for these thresholds, see WDNR, *Marbled Murrelet Long-Term Conservation Strategy - Final Environmental Impact Statement (FEIS) Appendix E* (WDNR and USFWS 2019).

"**Occupied Marbled Murrelet Site**" or "**Occupied Site**" is a Forest Stand within or partially within Conservation Lands or Adjacent Forests on which the Applicant, USFWS, or WDFW has documented marbled murrelet occupancy with a site identified in an agency database on the date of the Applicant's SHA application. An Occupied Site must contain a minimum of seven (7) contiguous acres and must meet at least one of the following conditions:

> The Applicant, USFWS, or WDFW locate a nest, chicks, eggs, or egg shells; and/or
>
> The Applicant, USFWS, or WDFW detects a marbled murrelet flying below, through, into, or out of the forest canopy; calling from a stationary location; or circling above a stand within one tree height or the top of the canopy (WAC 222-16-10).

The criteria for determining the extent of an Occupied Site are defined in WAC-222-16-10. Occupied Sites are not defined as "Conservation Lands," although protection of Occupied Sites for the life of the proposed SHA contributes to the overall conservation benefit. There are currently 1,240 acres of Occupied Sites on the Applicant's Enrolled Lands.

"**Occupied Site Buffer**" means a 300-foot managed buffer zone adjacent to an Occupied Marbled Murrelet Site that maintains a residual stand stem density of 75 trees per acre greater than 6 inches in dbh; provided that 25 of which shall be greater than 12 inches dbh including 5 trees greater than 20 inches in dbh, where they exist. The primary consideration for the design of managed buffer zone widths and leave tree retention patterns shall be to mediate edge effects. The width of the buffer zone may be reduced in some areas to a minimum of 200 feet and extended to a maximum of 400 feet as long as the average of 300 feet is maintained (WAC 222-16-080(1)(h)(v)). The

standards provided above may be updated as appropriate if there are changes to the Washington Forest Practices (WAC 222-16-080(1)(h)(v)).

"**Potential Nesting Habitat**" or "**Potential Marbled Murrelet Nesting Habitat**" is defined as forested areas that may provide the structural attributes required by marbled murrelets for nesting (e.g., large conifer trees with suitable nesting platforms), but the area has not been field-verified to confirm habitat conditions, and actual use or occupancy by the species has not been documented or confirmed. In the context of this EA, "Potential Nesting Habitat" includes "Presumed Habitat", "More-Likely-Than-Not Habitat", and "Marginal Nesting Habitat."

"**Presumed Habitat**" or "**Presumed Marbled Murrelet Habitat**" means Forest Stands within Enrolled Lands that have an estimated age class of 210 years old or greater for Western Hemlock-dominant stands or 250 years old or greater for Douglas Fir-dominant stands (calculated at the time an individual application is submitted). If a Forest Stand of Presumed Habitat extends more than 300 feet beyond the nearest Forests & Fish Buffer, the boundary of Presumed Habitat will end 300 feet from the Forests & Fish Buffer unless the Applicant elects to extend the Presumed Habitat boundary further. There are 494 acres of Presumed Habitat on the Applicant's Enrolled Lands.

"**SHA Occupied Site**" is a Forest Stand that is discovered to be occupied on Enrolled Lands after the date of the Applicant's individual SHA application, which otherwise meets the definition of "Occupied Site." While no lands will be considered a SHA Occupied Site at the beginning of the SHA term, lands may become SHA Occupied Sites throughout the SHA term.

"**Suitable Marbled Murrelet Habitat**" is defined in the Washington Forest Practice Rules general definitions **(**WAC 222-16-010), means a contiguous forested area containing trees capable of providing nesting opportunities: (a) within 50 miles of marine waters; (b) at least forty percent of the dominant and codominant trees are Douglas-fir, western hemlock, western red cedar or Sitka spruce; (c) two or more nesting platforms per acre; (d) at least 7 acres in size, including the contiguous forested area within 300 feet of nesting platforms, with similar forest stand characteristics (age, species composition, forest structure) to the forested area in which the nesting platforms occur.

The **study area** of this EA includes all the Applicant lands within 50 miles of marine waters, including those that qualify as Conservation Lands, Occupied Sites, Presumed Habitat, and Adjacent Forests for which the Applicant is seeking take coverage under the proposed SHA (*i.e.*, Enrolled Lands) and any lands within the Applicant's ownership that otherwise fall outside of the Enrolled Lands. Therefore, the study area is all the Applicant owned lands, including the Enrolled Lands (*i.e.*, those lands which will receive take coverage), which vary by alternative (see Section 2.0).

References to "**Western Hemlock**" in this EA are inclusive of Western Red Cedar and Sitka Spruce, two species with similar ecological associations to Western Hemlock that are expected to have habitat values for marbled murrelets similar to Western Hemlock.

Covered Activities

Covered activities are those activities for which the Applicant is seeking take coverage. Covered activities include forest practices activities occurring on Enrolled Lands that are subject to the Forest Practices Act (RCW Ch. 76.09) and are consistent with the covered activities included in the FPHCP for aquatic species. The Forest Practices Act and Rules define forest practices as "any activity conducted on or directly pertaining to forestland and related to growing, harvesting, or processing timber" (WAC 222-16-010). Activities include, for example, road construction, road maintenance and abandonment, final and intermediate harvesting, pre-commercial thinning, reforestation, salvage of trees, and brush control (WDNR 2005).

The following activities are covered activities:

> Within Occupied Sites, Presumed Habitat, Murrelet Habitat Development Areas and SHA Occupied Sites: biological surveys, recreation, other monitoring and conservation measures that do not negatively affect habitat values, and continued use and maintenance of existing roads. Salvage of downed, dead, dying, or wind-thrown timber within Occupied Sites, Presumed Habitat, Murrelet Habitat Development Areas and SHA Occupied Sites may also be conducted to the extent allowed under current rules within Occupied Sites (and subject to any necessary approvals) as long as it is completed in accordance with the disturbance avoidance measures contained in WAC 222-24-030, WAC 222-30-050, -060, -065, -070, and -100 and no roads are constructed in Occupied Sites, Presumed Habitat, or SHA Occupied Sites for this purpose.
>
> Within Conservation Lands that are not Presumed Habitat (i.e. Forests & Fish Buffers): all forest practices that are allowed on Conservation Lands under the Forest Practices Program, including forest practices that do not take place on Occupied Sites or SHA Occupied Sites but that could incidentally harass or harm marbled murrelets within Enrolled Lands.
>
> Within Adjacent Forests: all forest practices that may result in incidental take, including forest practices that could incidentally have the effect of harassing or harming marbled murrelets within Conservation Lands, SHA Occupied Sites, or Occupied Sites; installation and operation of utilities or communication sites; rock pit development; transport of timber and rock; fire suppression (includes all activities related to controlling wildfire); road and stream crossing construction, improvement, maintenance, and use; timber harvesting, bucking, use and establishment of yarding corridors, loading and other landing operations; mechanical site preparation and burning; planting and thinning; gathering of secondary forest products; recreation; and habitat and species surveys, monitoring, and restoration.

Within lands that are not listed in a-c above (488,534 acres outside of covered lands), no take assurances are provided. Forest Practices Rules for marbled murrelets would continue to be implemented per WAC 222-10-040 and 222-10-042.

Covered activities may be conducted by the Applicant, their employees, contractors, agents, or other assigns. "Forest practices" shall have the same meaning as the definitions in RCW 76.09.020 and WAC 222-16-010.

2.0 ALTERNATIVES

NEPA requires that the environmental documents prepared for a proposed action discuss alternatives. Therefore, this chapter describes the development of alternatives and then describes the alternatives considered in this EA relevant to the Proposed Action (*i.e.*, issuance of an Enhancement of Survival Permit by the USFWS pursuant to the provisions of section 10(a)(1)(A) of the ESA). Each alternative was evaluated for its ability to meet the purpose and need requirements of the project and potential environmental impacts.

The USFWS developed three alternatives, including the No Action, the Proposed Action, and Action Alternative 3. Under any alternative, the Applicant's forest practices would continue to be conducted in compliance with the current Forest Practices Rules. The Forest Practices Rules (WAC Title 222) and the FPHCP (WDNR 2005) are hereby incorporated by reference and are not described in detail except when a specific action occurring under an Alternative would differ from the minimum requirement of the Forest Practices Rules. The alternatives are described below and summarized in Table 2-1.

Table 2-1. Comparison of Alternatives

	Alternative 1 No Action	**Alternative 2 Proposed Action**	**Alternative 3 SHA with Additional Set-Asides**
General Forest Practices	The Applicant continues to conduct forest practices under Forest Practices Program, including all rules associated with the protection of marbled murrelet. (Section 2.1)	The Applicant conducts forest practices according to the Applicant's proposed SHA, which includes adherence to all aspects of the Forest Practices Program except, in some instances, those that relate specifically to marbled murrelets. (Section 2.2)	Same as Alternative 2 (Section 2.3)
Marbled Murrelet Take Coverage?	No ESA take coverage for marbled murrelet. Compliance with the existing Washington Forest Practices rules specific to marbled murrelet is intended to avoid and/or minimize	Yes, ESA take coverage provided for covered activities on Enrolled Lands.	Yes, for covered activities on all the Applicant Lands.

	incidental take of marbled murrelets.		
Protected Areas	Forests & Fish Buffers: 134,757 acres	Conservation Lands: 135,200 acres.	Forests & Fish Buffers, Presumed Habitat, and other Potential Nesting Habitat as Set-Asides: 138,512 acres
Occupied Sites	Timber harvest, road construction, and other activities within marbled murrelet occupied sites are defined as "Class IV Special" which require environmental review under SEPA (WAC 222-10-042 and WAC 222-16-080(1)(h)), and could also trigger the federal take prohibition under section 9 of the ESA, requiring the development of an HCP. While it is theoretically possible that harvest within an Occupied Site could occur, such activities have rarely occurred.	Protected for SHA term as no-harvest zones, with the exception of salvage of down trees outside the marbled murrelet nesting season.	Same as Alternative 2.
Protection of Suitable Marbled Murrelet Habitat (does not include Occupied Sites)	Individual Forest Practices are reviewed for the presence of "Suitable Marbled Murrelet Habitat" on a case by case basis. Suitable Marbled Murrelet Habitat that has been surveyed according to protocol and is not determined to be occupied by marbled murrelets may be harvested.	Presumed Habitat and Murrelet Habitat Development Areas are deferred from harvest for the term of the proposed SHA. Individual Forest Practices are not reviewed for the presence "Suitable Marbled Murrelet Habitat" and surveys for marbled murrelets are not required.	Presumed Habitat and other areas identified as Potential Nesting Habitat at the time of SHA authorization is deferred from harvest for the term of the proposed SHA. Individual Forest Practices are not reviewed for the presence of "Suitable Marbled Murrelet Habitat" and surveys for marbled murrelets are not required.

2.1 ALTERNATIVE 1: NO ACTION ALTERNATIVE

The No Action Alternative is the baseline from which to compare the Proposed Action and Alternative 3 that are assessed in the EA. Under the No Action Alternative, the Applicant would continue to conduct forest practices in compliance with the current Forest Practices Rules (*i.e.*, marbled murrelet rules), the proposed SHA would not be implemented, and the USFWS would not issue a Permit to the Applicant. An approximate 40-year timber-harvest rotation (range of 35 to 70 years) would be implemented. When forest stands, or appropriately sized polygons of forest, reached 35-70 years of age and stand conditions are suitable for harvesting, the stands would be harvested for regeneration, although some stands may be much older before harvesting occurs due to site conditions.

Marbled Murrelet Habitat Management under the Washington Forest Practices Rules

Marbled murrelets in Washington are protected under both State and Federal regulations. The Washington Fish and Wildlife Commission listed the marbled murrelet as a State threatened species in 1993 and State endangered in 2016. The marbled murrelet was federally-listed as a threatened species in 1992. The Washington Forest Practice regulations require that both State and federally listed species be considered for designation of "critical habitat state" – a designation that serves as a trigger for State Environmental Policy Act (SEPA) review (WAC 222-16-050(1)(b)). In addition, Section 9 of the ESA prohibits "take" of listed species. Together, the State and federal regulations provide a framework for marbled murrelet management guidelines in Washington.

Timber harvest on the private lands is subject to the provisions of the Washington Forest Practices Rules for marbled murrelets that were adopted by the Forest Practices Board in 1996 and became effective in 1997. The Washington Forest Practices Rules for murrelets were adopted by the Forest Practices Board because the Board recognized that the protection of occupied marbled murrelet habitat on State and private lands would contribute to the overall conservation of marbled murrelets in Washington. Generally, the Washington Forest Practices Rules are designed to identify and protect occupied marbled murrelet habitat on nonfederal lands through habitat assessments, survey requirements and the SEPA review process.

Class IV-Special Forest Practices Activities Affecting Marbled Murrelets

Timber harvesting and road construction within an Occupied Marbled Murrelet Site, or timber harvesting or road construction in "Suitable Marbled Murrelet Habitat" (i.e., 2 nesting platforms per acre) within a marbled murrelet detection area are considered "likely to have a probable significant adverse impact on the environment." Such activities are considered "Class-IV-Special" and therefore require the development of an Environmental Impact Statement under SEPA regulations (WAC 222-10-042). Under the "Class-IV-Special" regulations, the Washington Department of Natural Resources (WDNR) makes a decision to approve individual Forest Practices Applications based upon a significance determination. If a determination of significance is made, preparation of a State Environmental Policy Act - Environmental Impact Statement 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.

Other "Class-IV Special" activities include harvesting Suitable Marbled Murrelet Habitat outside of marbled murrelet detection areas with at least a 60 percent probability of occupancy (i.e., 7 nesting platforms per acre); or, harvesting of Suitable Marbled Murrelet Habitat outside murrelet detection areas with at least a 50 percent probability of occupancy (i.e., 5 nesting platforms per acre) within the Southwest Washington marbled murrelet special landscape (WAC 222-16-087).

The Forest Practices Application/Notification process requires landowners to identify if individual timber harvest units, salvage units, or proposed road construction (and the surrounding areas within 300 ft on their ownership) (1) are located in an area where a protocol survey for marbled murrelets has been completed, (2) whether or not the activity will occur within a distance of 0.25 miles of an Occupied Site, (3) whether or not there are marbled murrelet nesting platforms present, and (4) whether or not there are trees that are at least 32 inches dbh present. This assessment is used to identify those Forest Practices that may affect Occupied Sites, or Suitable Marbled Murrelet Habitat. Under the provisions of WAC 222-10-42, if a proposed forest practice is located in an area that contains Suitable Marbled Murrelet Habitat, and the area has not been surveyed for marbled murrelets to determine occupancy, the harvest of the unsurveyed habitat would trigger a Class IV-Special review, because "*without survey information*, *forest practices that will adversely impact this habitat may have a probable significant adverse impact on the environment*" (WAC 222-10-42). In this scenario, the landowner has three options: (1) withdraw the Forest Practices application and defer the proposed harvest, (2) conduct a protocol survey for marbled murrelets and, if the area is determined to be unoccupied, the area may be harvested; or (3) apply for a Class IV-Special forest practices permit by going through a SEPA environmental review process with WDNR as described above.

Generally, once an Occupied Site is documented, Suitable Marbled Murrelet Habitat within a delineated Occupied Site is protected from timber harvesting, other than salvage of down materials outside of the marbled murrelet nesting season. Occupied Sites are further protected with a 300-foot managed buffer zone adjacent to the Occupied Site. This rule protects Occupied Sites by prohibiting clearcut timber harvest within 300 feet of the outer boundary of the Occupied Site (WAC 222-16-080 (j)(v)). Under the Occupied Site Buffer rules, trees within an Occupied Site Buffer may be thinned to a density of 75 trees per acre. The primary consideration for the design of the Occupied Site Buffer is to mediate edge effects to Occupied Sites.

Occupied marbled murrelet habitat is further protected from noise and visual disturbance associated with forest practice activities. Restricted activities include road construction, operation of heavy equipment, blasting, timber felling, yarding, helicopter operations, slash disposal, or prescribed burning. These activities are prohibited within 0.25 miles of an Occupied Site during the daily peak activity periods (one hour before sunrise to two hours after sunrise and one hour before sunset to one hour after sunset) within the critical nesting season (April 1 through August 31) (WAC-222-30-050, -060, -065, -070, -100).

Exemptions to the "Class IV Special" Rules for Marbled Murrelets

Suitable Marbled Murrelet Habitat on private lands that is located outside of Occupied Sites may be harvested where a protocol survey has been conducted and no murrelets were detected (WAC

222-12-090(14)). Currently, the Washington Forest Practices Rules refer to the Pacific Seabird Group survey protocol in effect January 6, 2003 (Evans Mack et al. 2003). Other exemptions to the Class IV-Special marbled murrelet rules include areas that are managed under a Habitat Conservation Plan or Safe Harbor Agreement for marbled murrelets approved by the USFWS, or a special wildlife management plan that has gone through SEPA review (WAC 22-16-080 (6)). The proposed SHA, if approved, would provide the Applicant with an exemption to the "Class IV-Special" rules for marbled murrelets for future forest practices on the Enrolled Lands.

2.2 ALTERNATIVE 2: PROPOSED ACTION ALTERNATIVE

Under the Proposed Action Alternative, the proposed SHA would be implemented over approximately 637,021 acres and USFWS would issue a Permit to the Applicant that would expire June 5, 2056. An approximate 40-year timber-harvest rotation (range of 35 to 70 years) would be implemented. When forest stands, or appropriately sized polygons of forest, reached 35-70 years of age and stand conditions are suitable for harvesting, the stands would be harvested for regeneration.

For USFWS to issue the Permit, the SHA must contain voluntary conservation measures that provide a net conservation benefit to covered species. The SHA must identify the baseline that will be maintained over the term of the agreement. The USFWS's SHA policy is available at https://www.fws.gov/endangered/laws-policies/policy-safe-harbors.html. The following section briefly describes conservation measures outlined in the Applicant's SHA. For a detailed discussion of these elements, please refer to the SHA.

Marbled Murrelet Habitat Management under the Proposed SHA

Under the proposed SHA, existing Occupied Sites will continue to be managed in a manner that is consistent with the existing regulations, including no timber harvest or road construction within Occupied Sites (except as permitted for salvage purposes), application of 300-ft managed Occupied Site Buffers around Occupied Sites that can be harvested in compliance with the prescriptions set forth in the definition of Occupied Site Buffers, and the application of daily timing restrictions to avoid forest practices during marbled murrelet daily peak activity periods during the marbled murrelet nesting season. In addition, Occupied Sites would be protected for the term of the SHA, including in the event of species downlisting or removal from the list of threatened and endangered species protected under the ESA. In addition to the protection of Occupied Sites, the Applicant would voluntarily agree to protect forest stands classified as Presumed Habitat (494 acres) and Murrelet Habitat Development Areas (64 acres) for the term of the proposed SHA.

The Applicant will not be required to survey for marbled murrelet presence or occupancy during the term of the proposed SHA on Enrolled Lands only. Any Potential Nesting Habitat that occurs within portions of Forests & Fish Buffers that are subject to selective timber harvesting or Adjacent Forests that is not identified as Presumed Habitat would be available for timber harvest without a survey. USFWS may request permission from the Applicant to conduct surveys on Enrolled Lands, at USFWS's sole expense. USFWS will not conduct surveys on the Applicant's Enrolled Lands without express written approval of the Applicant.

Any Occupied Sites that are documented after the date of the authorization of the proposed SHA would be classified as "SHA Occupied Sites." the Applicant will cooperate with USFWS to verify the status and location of any SHA Occupied Site. Once verified, the Applicant will minimize noise disturbance and avoid habitat modification during the nesting season (April 1 to August 31) and will not conduct any timber harvest otherwise permitted under Washington Forest Practice Rules within SHA Occupied Sites. The Applicant may permit USFWS to collect information regarding the surrounding habitat and use of the SHA Occupied Site to help inform development of conservation and recovery strategies.

Once every five years, the Applicant will provide a report to USFWS on the age and distribution of forest stands in Conservation Lands, the identification and persistence of any SHA Occupied Sites, and trends in habitat development on Conservation Lands and SHA Occupied Sites.

At the termination of the proposed SHA and subject to any requirements of the Forest Practices Program and other applicable state and federal laws, the Applicant may return Enrolled Lands to baseline conditions (*i.e.*, continued protection of Occupied Sites, RMZs, CMZs, Wetland Maintenance Zones (WMZ), and Unstable Slopes to the same extent required by state forest practices rules and other applicable regulations). Upon termination, the Applicant may harvest any forest stands that are not identified as a baseline condition that existed at the commencement of the SHA, including SHA Occupied Sites and Presumed Habitat, but no take assurances are provided for harvest of Presumed Habitat or Murrelet Habitat Development Areas. In other words, SHA Occupied Sites, Presumed Habitat, and Murrelet Habitat Development Areas that occur in Conservation Lands or Adjacent Forests may be harvested, but only in compliance with existing Forest Practices Rules that are in place at the end of the proposed SHA term.

2.3 ALTERNATIVE 3: SHA WITH ADDITIONAL SET-ASIDES

Under Alternative 3, an SHA similar to the Proposed Action would be developed and implemented with additional set-asides. The primary silvicultural management regime would include several options for mid-rotation management that are primarily determined by factors including steepness of slopes and the feasibility of using ground-based logging equipment, as well as ecological considerations and desired future condition.

The specific marbled murrelet conservation measures include establishing Special Set-Aside (SSA) areas.

SSAs total 2,515 acres and are unique sites, both forested and non-forested, with perceived high conservation value that would provide a greater amount of older forest habitat within the Enrolled Lands than would occur under current Forest Practices Rules. SSAs are assumed to include Presumed Habitat (totaling 494 acres), Murrelet Habitat Development Areas (totaling 64 acres), More-Likely-Than-Not habitat (433 acres of Western Hemlock, 68 acres of Douglas Fir), and Marginal Nesting Habitat which are defined as forests that will "age into" More-Likely-Than-Not habitat during the life of the Permit (1,340 acres of Western Hemlock with an age class of 94-129 years and 116 acres of Douglas Fir with an age class of 184-219 years). These areas would be retained for the life of the SHA, producing older trees that could provide nesting opportunities to marbled murrelets by the end of the Permit term.

Existing Occupied Sites would not be harvested during the life of the SHA and would be subject to a 300-foot managed Occupied Site Buffer that could be harvested only in compliance with the restrictions set forth in the definition of Occupied Site Buffer, above. SHA Occupied sites would be managed under the same terms as described for Alternative 2.

Components of Alternative 3 that would not be included in the No Action Alternative are deferment of harvest within SSAs for the term of the Permit and provisions for protecting new Occupied Sites discovered in the Enrolled Lands during the term of the Permit that differ from the protections required under the Forest Practices Rules (No Action). In exchange for providing additional retention of some or all existing Potential Nesting Habitat (within SSAs), the Applicant would be provided take coverage for all of the Applicant's owned lands in Washington.

3.0 AFFECTED ENVIRONMENT

The affected environment is the area and its resources (*i.e.*, biological, physical, human) potentially impacted by the Proposed Action and Alternatives. The purpose of describing the affected environment is to define the context in which the impacts would occur. To make an informed decision about which alternative to select, it is necessary to first understand which resources would be affected and to what extent. The affected environment section of this document provides the basis for this understanding.

Relative to the Applicant's proposal for a Section 10 Permit, the affected environment includes those settings where any covered activities would occur. This includes the Enrolled Lands spanning 637,021 acres of land across Whatcom, Skagit, Snohomish, King, Pierce, Thurston, Lewis, Cowlitz, Wahkiakum, Pacific, and Grays Harbor counties. The Section 10 Permit would cover all Enrolled Lands and covered activities.

In defining potentially affected resources, the USFWS considered the potential impacts associated with the Proposed Action, namely potential issuance of a section 10 Permit to the Applicant for incidental take of marbled murrelets and implementation of the proposed SHA. Consistent with NEPA, the USFWS also considered a No Action Alternative, where the Applicant would continue to conduct forest management activities under the Forest Practices Rules without incidental take coverage, and one other action alternative.

Elements of the natural and human environment included in this analysis are those with the potential for significant differences between the alternatives. Elements of the natural and human environment not specifically addressed are those that would not be affected by the Proposed Action (*e.g.*, recreation) and those for which there would be no significant difference between alternatives (*e.g.*, transportation, energy consumption, air quality, noise, and scenic resources/aesthetics).

The Enrolled Lands are commercial timberlands. The Applicant's Enrolled Lands also provide access to a variety of recreational sites and activities. These include hunting, fishing, kayaking, camping, hiking, cycling, and berry picking. Access is given to "Open Lands," as well as other parts of Enrolled Lands pursuant to applicable leases and/or permits. "Open Lands" are free

recreational use areas that typically do not include vehicular access and have shared access roads, are closely intermingled with public land or are enrolled in government-sponsored access programs such as Wildlife Management Areas. Applicable permits for recreation on the the Applicant's Enrolled Lands are split between motorized and non-motorized permits. The permit areas include year-round vehicle access to large blocks of the Applicant's ownership for recreation use including gathering firewood, wild berries, and mushrooms. The leased areas of Applicant's Enrolled Lands include annual exclusive recreational access to a specific property. Certain policies are in place to prevent vandalism, fire, theft, and dumping when recreational access is granted. These include a requirement for permittees to sign and agree to comply with laws, terms, rules, and regulations. Gates also exist at all access points, including permitted areas, with forest patrol.

There is not expected to be any significant variation between alternatives with respect to recreation because the proposed SHA does not impact recreational values and the Applicant does not anticipate changing its recreation policies in any meaningful way based on the proposed SHA.

Transportation elements, such as vehicular traffic and energy consumption, would not differ significantly between alternatives over the analysis period. Although the type of forest management activity may differ per decade, the difference in the level of activity is not significant and is difficult to anticipate between different alternatives.

There would be no differences between the alternatives in effects on scenic resources or aesthetics. The Enrolled Lands have historically been managed as commercial timberlands and will continue to be managed as such under any alternative. As a result, they will continue to present a mosaic of forest age classes on the landscape, and scenic viewpoints will come and go with harvest cycles.

In summary, the following descriptions of resources are limited to those affected by the alternatives under consideration, described in Section 2.0. The alternatives under consideration include the No Action, Proposed Action and Alternative 3. Our detailed analysis includes the biological environment (vegetation; wildlife), physical environment (geology and soils; aquatic resources; land use; climate change), and human environment (economics and environmental justice; cultural resources).

3.1 GEOLOGY AND SOILS

The following section summarizes the geology and soils on the Applicant's Enrolled Lands, starting with broad regional geological context and proceeding to soil types and geological considerations on the Applicant's specific Enrolled Lands.

Geological Context North Cascade Range (Whatcom, Skagit, Snohomish Counties)

Cascade Mountains bisect Western and Eastern Washington. The proto-Cascades, an earlier folded mountain belt, eroded during the Miocene era, approximately 25 million years ago. On the west side of the proto-Cascades, the sedimentary deposits formed a band of coalescing alluvial fans

called a strand plain. The principal of these formations is called the Puget Group – mixed sedimentary rocks including conglomerates, sandstones, siltstones, and interbedded coal deposits. These materials were newly folded by tectonic forces into the modern Cascade Mountains. Geographically coincident with the folded mountain belt are the continental arc volcanoes, including Mt. Rainier and Mt. St. Helens. The initiation of volcanism is triggered in the mantle above the subducting Pacific and Farallon plates when they reach a depth of 150 kilometers and dewater. Initial melt chemistries are primitive basalts; magma nearing or reaching the surface has evolved into higher silica chemistries that cool into granodiorite underground and erupt as andesite flows and pyroclastics such as ash and breccia. Today, glaciers exist on the Cascadia volcanoes. During eras of alpine glaciation, these extended long distances down many of the larger river valleys and left deposits of glacial till and outwash.

The Enrolled Lands include ownership within the North Cascades Range and bordering Puget Sound Lowlands in Whatcom, Skagit, and Snohomish counties. The geologic history of the North Cascade Range is a complicated puzzle that records over 400 million years of various terranes reflecting tectonic, volcanic, and glacial forces. The North Cascades Range is generally steep and rugged punctuated by glacially modified valleys. Major rock types of the Enrolled Lands include Darrington phyllite, Mesozoic-age metasedimentary marine deposits, middle Eocene continental sedimentary rocks, and Quaternary continental and alpine glacial deposits (Dragovich and others, 2002). The Puget Sound Lowlands are characterized by Quaternary sediments and glacial deposits, though locally, underlying bedrock is exposed at the surface. Puget Sound Lowlands primarily consist of gentle valley bottoms and foothills.

Southern Washington Coast Range (Lewis, Cowlitz, Grays Harbor, Wahkiakum and Pacific Counties)

The Applicant's Enrolled Lands include ownership located within the southern Washington Coast Range in Lewis, Cowlitz, Grays Harbor, Wahkiakum, and Pacific counties. The southwestern portion of the Washington Coast Range is a subdued range of forested hills and low mountains known as the Willapa Hills. They are composed mainly of Tertiary-age submarine volcanic and marine sedimentary rocks, overlain in places by younger continental sediments and intrusive volcanic and plutonic rocks (Walsh and others, 1987). Although not as rugged as the Olympics, the Willapas were similarly uplifted because of tectonic convergence and subduction along the Cascadia margin of North America.

These lands are underlain by an extensive siltstone province with similar age intrusive sills and dikes of basalt. These are also broadly Eocene in age, although not directly related to the Olympic Mountains. Extensive erosion, without glaciation, has created high hills and ridges of the hard, intrusive basalt, which outcrops along the watershed divide between Grays River and the Willapa River. Siltstone is more prevalent on lower elevations, but the two materials can be interbedded on the scale of tens of meters so both may be present at any elevation. Soils derived from the

intrusive basalt tend to be silt loams with variable cobble abundance. These have variable depth and can be quite thin on steep slopes near ridge lines; cliffs and potentially unstable slopes are common. Where submarine basalts and peperites (basalt that explosively erupted into wet silt deposits) occur, soils are quite deep sandy loams. Siltstone forms silt loam soils – many are moderately drained and quite deep.

South Central Puget Lowland (King, Pierce, and Thurston Counties)

Vashon Drift covers most of the southern Puget Lowland. Vashon Drift is a Pleistocene formation of till and glacio-fluvial and glaciolacustrine sediments that was deposited in close proximity to, or in contact with, the last major coastal Cordilleran ice lobe originating in the mountains of southwestern British Columbia. Other layers may include Olympia beds, pre-Olympia drift, and second nonglaical unit.

Soil

Detailed information about individual soil types, including the standard description and characteristics can be accessed at: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/class/data/?cid=nrcs142p2_053587.

Unstable Slopes

Certain landforms are regarded as susceptible to slope instability or indicate past slope instability. Enumerated forest practices on potentially unstable slopes or landforms may be classified Class IV-Special and receive additional environmental review under SEPA. These landforms include inner gorges, convergent headwalls, or bedrock hollows with slopes steeper than thirty-five degrees (70%); toes of deep-seated landslides, with slopes steeper than thirty-three degrees (65%); groundwater recharge areas for glacial deep-seated landslides; outer edges of meander bends along valley walls or high terraces of an unconfined meandering stream; or any areas containing features indicating the presence of potential slope instability which cumulatively indicate the presence of unstable slopes (WAC 222-16-050(d)(i)).

Potentially unstable slopes and landforms are known to occur in various locations throughout the covered properties. A comprehensive inventory of such features on or near the covered properties is not available. All sites considered for forest practices are screened for the presence of potentially unstable slopes and landforms at the project level as part of the forest practices permit field layout and review process. Typically, these features are reserved from active management practices, such as timber harvest or road construction. Timber harvest may occur where a significant adverse environmental impact is deemed unlikely, and where management practices may be performed in accordance with any applicable Forest Practices permit conditions. Unstable slopes areas, whether within or adjacent to the project area, are approximately mapped and disclosed as part of the Forest Practices permit process.

Commonly, such features are intermingled with or directly proximate to other areas reserved from active management practices for reasons unrelated to potential slope instability. This includes not only such areas as RMZs, WMZs, and wildlife protection zones, but also areas reserved from active management practices due to operational constraints, timber quality, and worker safety concerns (*e.g.*, cliffs). The Applicant maintains a database of forest stands previously reserved from active forest management or that have other constraints. One such constraint is the presence of potentially unstable slopes or landforms, but such a classification does not mean that the entire area of that forest stand is unstable or potentially unstable; conversely, forest stands not so classified may include smaller areas of instability or potential instability. The Applicant's database also includes forest stands classified as constrained by potential instability, which determination has not been field verified nor reviewed for accuracy by any regulatory agency. At the time of this writing, approximately 6,426 acres of the Enrolled Lands have been classified as constrained by the presence of potentially unstable slopes or landforms. The future identification and mapping of such features would be an independent action of the Applicant, not a result of the Proposed Action, and could occur equally under any alternative.

3.2 VEGETATION

There are 6 dominant land cover types that make up the Enrolled Lands, as summarized in the below Table 3-1.

Table 3-1. Land cover types, acres, and percent of total within Weyerhaeuser lands in western WA

Land Cover Type[1]	General Description	Total Acres	Percent of Total
Deciduous Forest	Deciduous forests are marked by their seasonal change of losing leaves in the fall and growing leaves in the spring. Located in more temperate zones. Wildlife that inhabit this environment know how to cope with changes to heat, moisture and food. Forest canopy is moderately dense and allows light to penetrate, providing rich and diverse vegetation below in the understory of shrubs and bushes. When deciduous trees lose their leaves, a layer of decay that forms on the forest floor enriches the soil to provide a great habitat for fungi and bacteria that creates a breeding ground for birds and mammals.	29,506	4.52
Evergreen Forest	Evergreen forests are areas dominated by trees where 75% or more of the tree species maintain their leaves all year, and the canopy is never without green foliage.	615,116	94.23
Pasture/Hay	Pasture and hayfields are often open expansive areas covered with grass or hay.	65	0.01

Land Cover Type[1]	General Description	Total Acres	Percent of Total
Mixed Forest	Mixed forest is a vegetational transition between coniferous forest and broad-leaved deciduous forests, especially in the Northern Hemisphere.	6,724	1.03
Shrub/Scrub	Shrub/scrub habitats are areas where the vegetation is dominated by small woody plants such as shrubs and young trees. Shrubs grow less than one-and-a-half meters high with an open canopy.	718	0.11
Grassland/Herbaceous	Grasslands are an area where vegetation is dominated by grasses and other herbaceous/non-woody plants. This area carries few or little trees.	652	0.10
Total		637,021	100

[1]Land cover types described in USGS National Land Cover Database 2016 (NLCD 2016) Legend.

Based on the WDNR Natural Heritage Program list of rare plant species in Washington, 86 plant species have the potential to exist on Enrolled Lands based on habitat availability, range, and elevation profiles. Only species with the potential to occur in forested habitats, at elevations similar to those in the Enrolled Lands (between sea level and 6,400 feet, depending on the county), were included in this analysis. The list of special status plant species with the potential to occur on the Enrolled Lands, their habitat associations, and the counties they potentially occur in is provided in Appendix A in Table A-1. A table of current and historical locations of certain ones of these rare plant species on Enrolled Lands, totaling 18 species, is summarized in Table A-2.

3.3 AQUATIC RESOURCES

The Applicant has approximately 134,757 acres of Forests & Fish Buffers comprising RMZs, WMZs, and CMZs delineated or modeled on the Enrolled Lands. The locations of these Buffers are shown on the Applicant's Enrolled Lands maps where delineated and modeled (see the SHA). These stands are shown on the Enrolled Lands maps interspersed with unstable slope buffers, but the majority of the lands identified as Forests & Fish Buffers are RMZs, WMZs, and CMZs. Location of streams and rivers are also shown, which indicate the location of typed waters when viewed in conjunction with locations of Forests & Fish Buffers.

Western Washington RMZs (WAC 222-30-021): Type S and F and F RMZ widths depend on two factors; Bank Full Width (BFW) and Site Class. Table 3-2 identifies buffer widths for the five Site Classes and the BFW.

Table 3-2. Western Washington Riparian Management Zone buffer widths for Site Classes I through V and Bank Full Width (BFW).

Site Class	Total RMZ Width	Core Zone Width*	Inner Zone BFW ≤ 10 ft	Inner Zone BFW > 10 ft	Outer Zone BFW ≤ 10 ft	Outer Zone BFW > 10 ft
Site I	200’	50’	83’	100’	67’	50’
Site II	170’	50’	63’	78’	57’	42’
Site III	140’	50’	43’	55’	47’	35’
Site IV	110’	50’	23’	33’	37’	27’
Site V	90’	50’	20’	18’	30’	22’

*No harvest is allowed in the core zone

Furthermore, under WAC 222-30-021 (1)(b)(i) Limited Hardwood Conversion (to conifer) is allowed in inner zone if a number of criteria are met:

> If shade requirements (222-030-040) (FPBM (Forest Practices Board Manual) Section 1) cannot be met in core and inner zone, then No Inner Zone Harvest is permitted (2220-030-020 (1)(b)(ii)(A).
> If shade requirements (222-30-040) (FPBM Section 1) are met and the core and inner zone inventory will achieve the target 325 sq. ft. of basal area by 140 yrs of age (Desired Future Condition), landowners have 2 options for harvest operations in the RMZ’s: 222-030-021 (1)(b)(ii)(B)(I) Inner zone option 1 (Thinning from below), 222-030-021 (1)(b)(ii)(B)(II) Inner Zone option 2 (leave trees closest to water). Within Bull Trout Overlay, all available shade within the first 75’ must be retained. Leave tree requirements are shown in Table 3-3.

Table 3-3. Western Washington Riparian Management Zone leave tree requirements for Inner Zone harvest options.

Harvest Option	Core Zone	Inner Zone	Outer Zone †† (222-030-020 (1)(c))
No Inner Zone Harvest	No harvest	No harvest	Dispersed: Minimum of 20 conifer/ac ≥ 12” dbh**
			Clumped: Minimum of 20 conifer/ac ≥ 12” dbh***
			Clumped Associated with Sensitive Sites: Minimum of 20 tpa (conifer/hardwood) ≥ 8”dbh representative of overstory
Inner Zone Harvest Option 1:	No Harvest	Residual must meet DFC target (140 yr) Harvest smallest DBH 1st Maintain proportion of conifer Minimum of 57’ conifer/ac	Same as above

Thinning from Below*†			
Inner Zone Harvest Option 2: Closest to Stream*‡	No Harvest	No harvest on 1st 30' on streams with BFW ≤ 10 ft No harvest on 1st 50' on streams with BFW > 10 ft Residual must meet DFC target (140 yr.) Min of 20 conifer/ac ≥ 12"dbh Harvest from outer edge towards stream	Same as above

*Shade requirements must be met (222-030-040); FPBM section 7

†Harvest within first 25' must still maintain shade requirements

‡Only permitted on Site Class I, II, & III on streams with BFW ≤ 10 ft and Site Class I & II on streams with BFW > 10 ft.

**Must be left in perpetuity; If conifer ≥ 12'dbh not present, next largest must be left; If conifer not present, must use clumped retention.

***Clumped retention must be evenly distributed.

††Outer Zone may be reduced to minimum of 10 tpa with a Large Woody Debris in-channel Placement Strategy (222-030-021 (1)(c)(iii)/BM Section 5 & 26.

RMZs for Type Np streams (222-030-021): 50' no harvest buffer on both sides of stream for the first 300' from confluence with Type F/S stream and then 50% of stream length upstream from that point. Required retention on sensitive sites are shown in Table 3-4.

Table 3-4. Required retention on Riparian Management Zone sensitive sites

Sensitive site*	Buffer
Perennially saturated area associated with headwall seep	50' from outer perimeter
Perennially saturated area associated with side-slope seep	50' from outer perimeter
Point of intersection of two or more Type Np waters	56' from center point of intersection
Headwater Spring or Uppermost Point of Perennial Flow	56' from center point of feature
Alluvial Fan	No harvest permitted

*If sensitive sites do not exist priority must be given to low-gradient areas, perennial reaches of non-sedimentary rock with gradients > 20% in the tailed frog habitat range, hyporheic and ground water influence zones, and areas downstream of other buffered areas. (222-030-021 (2)(b)(vii)(A-D).

The Enrolled Lands are located in the following Water Resources Inventory Areas (WRIAs): , WRISE 1 (Nooksak), WRIA 3 (Lower Skagit – Samish), WRIA 4 (Upper Skagit), WRIA 5 (Stillaguamish), WRIA 7 (Snohomish), , WRIA 8 (Cedar – Sammamish), WRIA 9 (Duwamish – Green), WRIA 10 (Puyallup – White), WRIA 11 (Nisqually), WRIA 12 (Chambers – Clover),

WRIA 13 (Deschutes), WRIA 22 (Lower Chehalis), WRIA 23 (Upper Chehalis), WRIA 24 (Willapa), WRIA 25 (Grays – Elochoman), WRIA 26 (Cowlitz), WRIA 27 (Lewis). See Appendix A for a breakdown of water basins and Watershed Administrative Units (WAU) that overlap with the aforementioned WRIAs, shown in Table A-3.

Waters In and Around the Enrolled Lands

The Enrolled Lands in the northwestern part of the Puget Sound Region are near some lakes and rivers that provide boundaries to the locations in this area. In Whatcom County, the Enrolled Lands are not near any major water bodies, but the nearest ones are Baker Lake to the east and Lake Whatcom to the west. In Skagit County, a large bulk of the Enrolled Lands sit just south of Skagit River and northwest of Lake Cavanaugh, with a smaller portion farther east sitting north of the Skagit River and east of Lake Shannon. In Snohomish County, a majority of the Enrolled Lands can be located in between the South Fork Stillaguamish River and the North Fork Stillaguamish River, with the smallest amount peppered south of Spada Lake and then a moderate acreage of Enrolled Lands near the southern county border just south of Skykomish River.

The Enrolled Lands in the central part of the Puget Sound region and western part of the Olympic Peninsula do have some proximity to the coastline, particularly in Grays Harbor County. There, the Enrolled Lands hug the north and south side of the Chehalis River headwaters coming from the North Bay and South Bay, covering many small creeks in the area. In Thurston County, much of the Enrolled Lands are immediately west of Alder Lake, and in Pierce County, most of the Enrolled Lands in that county fall just south of South Prairie Creek. And in King County, a majority of the Enrolled Lands can be found east of Howard A Hanson Reservoir and northeast of that area on the north and south side of the South Fork Skykomish River.

The Enrolled Lands in the southwestern part of Washington have some proximity to coastline and the Columbia River that separates the western part of the state from Oregon. In Pacific County, most of the Enrolled Lands are located northeast of the Willapa River covering many creeks that stretch to the northern county border, along with another substantial portion in the southeastern part of the county that also cover a number of creeks. There are some Enrolled Lands located just before the Long Beach handle in between Willapa Bay and the mouth of the Columbia River. The Enrolled Lands within Wahkiakum County are dispersed loosely from Grays River and Elochoman River. In Cowlitz County, a majority of the Enrolled Landsd fall on the east side of Cowlitz River and South of Silver Lake. And finally, in Lewis County two large swaths of the Enrolled Lands are located south of Riffe Lake and Mayfield Lake and then south of Alder Lake, while a third cluster of Enrolled Lands acreage exists in the southwestern corner of the county covering a number of small creeks.

Wetlands

The wetlands within the Enrolled Lands in the northwestern part of the Puget Sound Region include Palustrine Emergent wetlands, palustrine forested wetlands, palustrine scrub/shrub wetlands, as well as unconsolidated shore and potentially disturbed wetlands. The wetlands within the Enrolled Lands in the central part of the Puget Sound region and western part of the Olympic Peninsula include Palustrine scrub/Shrub wetlands, palustrine forested wetlands, unconsolidated

shore, potentially disturbed wetland, palustrine emergent wetlands, palustrine aquatic beds, and estuarine emergent wetlands. The wetlands within the Enrolled Lands in the southwestern part of tWashington include palustrine forested wetlands, palustrine emergent wetlands, palustrine scrub/shrub wetlands, potentially disturbed wetlands, unconsolidated shore, and palustrine aquatic beds.

Generally speaking, wetlands may be categorized by landscape position (tidal, riverine, lacustrine, and palustrine), by cover type (*e.g.*, open water, submerged aquatic bed, persistent emergent vegetation, shrub wetlands, and forested wetlands), and/or by hydrologic regime (ranging from saturated or temporarily-flooded to permanently flooded). The functions performed by an individual wetland depend on its location, surrounding topography, subsurface geology, amount and duration of water, and the types of plants present. While each wetland may not perform all functions, the cumulative value of all wetlands in a watershed makes each important. A comprehensive inventory of wetland features on or near the Enrolled Lands is not available. Individual wetlands are identified during project planning, and protected in accordance with applicable State and federal regulations. Most or all wetland types are present in the Applicant's Enrolled Lands, particularly in the western part of the Olympic Peninsula. Within the various wetland types (Table 3-5) a total of 75 trees per acre of wetland management zone (WMZ) greater than 6-inches dbh must be left. Of the 75 trees, 25 shall be greater than 12 inches dbh including 5 trees greater than 20 inches dbh, where they exist. Leave trees shall be representative of the species found within the WMZ. Retention of wildlife reserve trees is encouraged where possible. Partial cutting or removal of groups of trees is acceptable; however, openings created by harvesting in the WMZ must not exceed 100 feet, measured parallel to the wetland edge. Ground-based harvesting systems must not be used within the minimum WMZ width, unless specifically approved by WDNR. Other than bogs, forested wetlands may be subjected to regeneration harvest.

Table 3-5. Wetland Management Zones

Wetland Type	Acres of non-forested Wetland[1]	Maximum WMZ Width	Average WMZ Width	Minimum WMZ Width
A (including bogs)	Greater than 5	200 feet	100 feet	50 feet
A (including bogs)	0.5 to 5	100 feet	50 feet	25 feet
A (bogs only)	0.25 to 0.5	100 feet	50 feet	25 feet
B	Greater than 5	100 feet	50 feet	25 feet
B	0.5 to 5	n/a	n/a	25 feet
B	0.25 to 0.5	No WMZ required	No WMZ required	n/a

[1]For bogs, both forested and non-forested acres are included

Forested Wetlands (WAC 222-030-020): Within forested wetlands of any size, 30-70% of wildlife recruitment trees for associated harvest area should be retained using a clumped strategy representative of the overstory.

Water Quality

The State of Washington has established standards for surface-water quality as required under Chapters 90.48 (Water Pollution Control Act) of the Revised Code of Washington (RCW). Water-quality standards are specified in WAC 173-201A. As specified in the Forest Practices Rules, RMZs of specified widths must be maintained along all WDNR Type S, F, Np, and Ns waters during timber harvest for the protection of water quality (WAC 222-16-30).

Monitoring Stations.

Water quality data is collected via water samples at river and stream monitoring stations. The list below shows monitoring stations within the relevant WRIAs (i.e., that contain Enrolled Lands). However, not all of the monitoring stations listed below are actually on the Enrolled Lands.

3 active monitoring stations currently in WRIA 1 (Nooksak)
3 active monitoring stations currently in WRIA 3 (Lower Skagit – Samish)
5 active monitoring stations currently in WRIA 5 (Stillaguamish)
2 active monitoring stations currently in WRIA 7 (Snohomish)
1 active monitoring station currently in WRIA 8 (Cedar – Sammamish)
1 active monitoring station currently in WRIA 22 (Lower Chehalis)
12 active monitoring stations currently in WRIA 23 (Upper Chehalis)
2 active monitoring stations currently in WRIA 24 (Willapa)
5 active monitoring stations currently in WRIA 25 (Grays Elochoman)
3 active monitoring stations currently in WRIA 26 (Cowlitz)
1 active monitoring station currently in WRIA 27 (Lewis)

There are no active monitoring stations in WRIA 4 (Upper Skagit), WRIA 9 (Duwamish-Green), WRIA 10 (Puyallup – White), WRIA 11 (Nisqually), WRIA 12 (Chambers – Clover), WRIA 13 (Deschutes).

Impaired Waters.

Depending on the water quality of certain surface-waters, some waters are placed on the Washington Department of Ecology (WDOE) list of impaired waters (per section 303(d) of the federal Water Pollution Control Act).[i] The following water bodies on the Enrolled Lands are on the 303(d) list, which identifies those waters that fail to attain an applicable water-quality standard for one or more pollutants (*e.g.*, temperature, fecal coliform, or dissolved oxygen) (WDOE 2020).

Whatcom County - South Fork Nooksack River and Edfro Creek, in the Enrolled Lands within WhatcomCounty are on the 303(d) list.

Skagit County - Little Deer Creek, Davanaugh Creekin the Enrolled Lands within Skagit County are on the 303(d) list.

Snohomish County – Canyon Creek in the Enrolled Lands within Snohomish County is on the 303(d) list.

King County – Snoqualmie River in the Enrolled Lands within King County is on the 303(d) list.

Thurston County – Deschutes River and Lake Lawrence in the Enrolled Lands within Thurston County are on the 303(d) list.

Cowlitz County – Cowameen River, Coal Creek, Baird Creek, North Fork Goble Creek, Goble Creek, and Mulholland Creek, in the Enrolled Lands within Cowlitz County are on the 303(d) list.

Wahkiakum County - Elochoman River and Spruce Creek, in the Enrolled Lands within Wahkiakum County are on the 303(d) list.

Pacific County - Willapa River and Smith Creek, in the Enrolled Lands within Pacific County are on the 303(d) list.

Grays Harbor County - North River, Black Creek, and Joe Creek, in the Enrolled Lands within Grays Harbor County are on the 303(d) list.

There are no impaired waters within the Enrolled Lands that are in Pierce and Lewis counties.

Riparian Management Zones.

RMZs for fish-bearing streams impact water quality. As discussed above, RMZs have three zones: the core zone nearest the water, the inner zone in the middle, and the outer zone furthest from the water. Table 3-6 shows the widths of RMZs required for each site class, and the width of each of the zones. See WAC 222 and/or the WDNR FPHCP (WDNR 2005) for a detailed explanation of the riparian rules for forest practices.

Table 3-6. Riparian Management Zones for Fish-Bearing Streams

Site Class	RMZ Width (feet)	Core Zone Width (feet)	Inner Zone Width (feet)		Outer Zone Width (feet)	
			Stream Width </= 10 feet	Stream Width >10 feet	Stream Width </= 10 feet	Stream Width > 10 feet
I	200	50	30-84	50-100	66-67	50-66
II	170	50	30-64	50-78	56-57	42-50
III	140	50	30-43	55	46-47	35
IV	110	50	23	33	37	27
V	90	50	10	18	30	22

The Applicant complies with all Forest Practices rules, including those that pertain to aquatic resources, so the lists above serve as a reasonable description of the vegetation management zones around streams and other water bodies on the Applicant's lands. More detail may be found on the Applicant's Enrolled Lands maps, as provided with the SHA.

Listed Fish Species and Designated Critical Habitat for Fish

The Applicant's forest management activities, as they relate to impacts on aquatic species, are covered under the Washington FPHCP and associated incidental take permits, and were analyzed under the associated environmental impact statement, and will not be analyzed in this EA. The Washington FPHCP and associated FEIS are available online at https://www.dnr.wa.gov/programs-and-services/forest-practices/forest-practices-habitat-conservation-plan.

3.4 WILDLIFE

This introductory section describes non-listed and non-covered (*i.e.*, species not covered in the Applicant's proposed SHA) wildlife (*e.g.*, game animals, bird species, amphibians, reptiles) and aquatic species (fisheries). Threatened and endangered wildlife species, as well as the marbled murrelet, are discussed below in Section 3.4.1.

The Enrolled Lands provide habitat for a variety of wildlife, both resident and migratory species. Many species are economically valuable as game animals, including: elk, deer, bear, cougar, mountain goat, band-tailed pigeon, pheasant, quail, forest grouse, Eurasian collared dove, mourning dove, turkey, waterfowl (dabbling ducks, sea ducks, black brant, Canada geese, lesser snow geese), and cottontail rabbit. Other wildlife species that may occur on the Enrolled Lands include common species typical of low- to mid-elevation managed forests in western Washington, such as:

> Several species of bats that inhabit very young forest stands.
>
> Townsend's warbler (*Setophaga townsendi*), brown creeper (*Certhia Americana*), northern flying squirrel (Glaucomys sabrinus), and Vaux's swift (*Chaetura vauxi*), pygmy owl (*glaucidium noma*) and black bear and northern goshawk which live in older structurally complex forests with multiple tree and shrub canopy cover layers, dead and downed logs, and well-developed understory.
>
> Red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), Cascades fox (*Vulpes vulpes cascadensis*), and mountain lions (*Puma concolor*), which occupy forest edges.
>
> Pygmy owl that can reside in older structurally complex forests; songbirds that can reside in very young forests, and both of which can reside in large blocks of interior forests.

Threatened and Endangered Species

The below Table 3-7 summarizes all special status species with the potential to occur on the Enrolled Lands along with their habitat associations and critical habitat on Enrolled Lands.

Table 3-7. Special-Status Wildlife Species Potentially Occurring on/or adjacent to the Enrolled Lands

Species Name	Scientific	Federal	State	Habitat Association	Federal Critical
Marbled	*Brachyramphus marmoratus*	Threatened	Endangered	Bay/sound, River mouth/tidal river, Deep water, Pelagic, Near shore, Alpine, Forest - Conifer, Tundra	Yes.[ii] Critical habitat may exist on Enrolled Lands in the following counties: King, Lewis and Pacific.
Northern	*Strix occidentalis*	Threatened	Endangered	Forest - Hardwood,Woodland - Hardwood, Woodland - Mixed, Forest - Mixed, Cliff, Woodland - Conifer, Forest - Conifer	No.[iii] Critical habitat for this species in Washington is limited to federal lands.
Gray Wolf	*Canis Lupus*	Endangered	Endangered	Forest – Hardwood, Tundra, Desert, Shrubland/chaparral, Savanna, Woodland – Hardwood, Forest – Confier, Forest – Mixed, Woodland – Conifer, Woodland –Mixed, Alpine, Grassland/herbaceous.	No critical habitat designated for this species.
Grizzly Bear	*Ursus arctos horribilis*	Threatened	Endangered	Riparian, Creek, Medium River, Moderate Gradient, Low gradient, Tundra, Woodland – Hardwood, Woodland – Mixed, Forest – Mixed, Shrubland, Chaparral, Forest – Conifer, Forest – Hardwood, Woodland – Conifer, Alpine, Grassland/herbaceous	No critical habitat designated for this species.
Streaked	*Eremophila alpestris strigata*	Threatened	Endangered	Terrestrial, Sand/dune, cropland/hedgerow, grassland/herbaceous	No[iv]
Yellow-billed	*Coccyzus americanus*	Threatened	Endangered	Scrub-shrub wetland, riparian, forest – Mixed, Woodland - Mixed, Old field, Forest - Hardwood, Shrubland/chaparral,	No[v]

Species Name	Scientific	Federal	State	Habitat Association	Federal Critical
				Woodland - Hardwood, Suburban/orchard	
Oregon	*Rana pretiosa*	Threatened	Endangered	Freshwater, deep water, shallow water, temporary pool, herbaceous wetland, riparian, spring/spring brook, pool, medium river, creek, low gradient.	No[vi]
Bull Trout	*Salvelinus confluentus*	Threatened	State Candidate Species	Freshwater, shallow water, deep water, Big river, creek, high gradient, low gradient, moderate gradient, riffle, pool, medium river.	No.[vii] Critical habitat for bull trout is excluded from lands managed under the Washington Forest Practices Rules.
Dolly Varden	*Salvelinus malma*	Proposed for listing as threatened due to similarity of appearance to Bull Trout	N/A	Freshwater, river mouth, tidal river, bay/sound, deep water, near shore, creek, low gradient, riffle, Medium river, big river, moderate gradient, pool.	No critical habitat designated for this species.
Olympia	*Thomomys mazama; pugetensis*	Threatened	Threatened	Savanna, grassland/herbaceous; found only in Thurston County	No.[viii]
Roy Prairie	*Thomomys mazama glacialis*	Threatened	Threatened	Glacial outwash prairies in Western Washington.	No.[ix]
Tenino	*Thomomys mazama; tumuli*	Threatened	Threatened	Prairies; grasslands; meadows; relatively open areas with short-statured vegetation and few woody plants; found only in Thurston County	No.[x]
Yelm Pocket	*Thomomys mazama; yelmensis*	Threatened	Threatened	Savanna, old field, grassland/herbaceous; only found only in Thurston County	No.[xi]

Species Name	Scientific	Federal	State	Habitat Association	Federal Critical
Columbian	*Odocoileus virginianus leucurus*	Threatened	Endangered	Riparian, Forest – Mixed, Grassland/herbaceous, Woodland – Mixed	No critical habitat designated for this species.
Short Tailed	*Phoebastria albatrus*	Endangered	State Candidate Species	Marine, Pelagic, Grassland/herbaceous	No critical habitat designated for this species.
Western	*Charadrius alexandrinus nivosus*	Threatened	Endangered	Tidal flat/shore, riparian, playa/salt falt, sand dune	No.[xii]
North	*Gulo gulo luscus*	Proposed Threatened	Candidate Species	Remote mountainous areas of the Cascades and in northeastern Washington	No critical habitat designated for this species.
Western Pond	*Actinemys marmorata*	Species of Concern	Endangered	Utilizes a variety of flowing and still water habitats in other parts of their range, but in Washington they are only known from ponds and lakes. They nest in grasslands and open woodland around ponds.	No critical habitat designated for this species.
Townsend's	*Corynorhinus townsendii*	Species of Concern	Endangered	Occupies a broad range of arid and moist habitats and can be found in various conifer and evergreen forests.	No critical habitat designated for this species.
Lynx	*Lynx Canadensis*	Threatened	Threatened	Occupy subalpine and boreal coniferous forests that have substantial accumulations of snow during the late fall, winter, and early spring.	No.[xiii]
Cascade	*Rhyacotriton cascadae*	N/A	Candidate Species	The salamander is commonly found in the region spanning from the Columbia River Gorge to just north of Mount Saint Helens.	No critical habitat designated for this species.
Common	*Gavia immer*	N/A	Sensitive Species	In winter and during migration, common loons use inland lakes and rivers and marine and estuarine coastal waters. Nest sites are on small islands, quiet	No critical habitat designated for this species.

Species Name	Scientific	Federal	State	Habitat Association	Federal Critical
				backwaters, or mainland shores.	
Dunn's	*Plethodon dunni*	N/A	Candidate Species	Southwestern Washington	No critical habitat designated for this species.
Golden Eagle	*Aquila chrysaetos*	N/A	Candidate Species	Nests mostly in mountainous areas on large cliffs but also in areas dominated by conifer forests.	No critical habitat designated for this species.
Northern	*Accipiter gentilis*	N/A	Candidate Species	Its range occupies a variety of woodland areas,	No critical habitat designated for this species.
Van Dyke's	*Plethodon vandykei*	N/A	Candidate Species	Found in the Olympic Mountains, southern Cascade Mountains, and Willapa Hills area.	No critical habitat designated for this species.
Western Toad	*Anaxyrus boreas*	N/A	Candidate Species	Western toads occur in a wide variety of habitats ranging from desert springs to mountain wetlands. They range into various upland habitats around ponds, lakes, reservoirs, and slow-moving rivers and streams.	No critical habitat designated for this species.
Taylor's	*Euphydryas editha taylori*	Endangered	Endangered	Terrestrial, Grassland/herbaceous, Woodland – Hardwood	Yes.[xiv] critical habitat may exist on Enrolled Lands in Thurston County.

Marbled Murrelet

The marbled murrelet was listed as a threatened species under the ESA in Washington, Oregon, and California in 1992 (57 FR 45328), and critical habitat was initially designated in 1996 (61 FR 26257) and then revised in 2011 (76 FR 61599). The marbled murrelet is a small diving seabird that forges in near-shore marine waters but nests inland in mature conifers (USFWS 1997). One of the primary reasons for the listing was the loss of nesting habitat - predominantly mature and old-growth forests.

The total marbled murrelet population in Washington, Oregon, and California was estimated at 19,700 birds in 2020 (McIver et. al 2022, p. 10). Monitoring from 2001 to 2020 indicates that the marbled murrelet population across the three-state area has increased at an average rate of +0.3 percent per year. The largest and most stable marbled murrelet subpopulations now occur off the

Oregon and northern California coasts, where the population trends are positive, while subpopulations in Washington have declined at an average rate of approximately -4.1 percent per year since 2001. The marbled murrelet population in Washington was estimated to at approximately 5,151 birds in 2020 (McIver et al 2022).

Habitat models developed for monitoring the federal *Northwest Forest Plan* estimated approximately 1.3 million acres of Potential Nesting Habitat in Washington in 2012 (Lorenz et al. 2021). Most of the estimated Potential Nesting Habitat in Washington occurs on federal or state-managed lands (1.09 million acres) (82 %) while approximately 18 percent of the estimated habitat was located on other ownerships (private, tribal, county, etc.) (Raphael et al. 2018). It is important to note that the models used to estimate Potential Nesting Habitat for the *Northwest Forest Plan* were developed from remote-sensing data intended to estimate habitat across the entire tri-state area. The model is not intended for site-specific analysis and is not reliable for identifying areas that would meet the regulatory definition of "Suitable Marbled Murrelet Habitat" under the Washington Forest Practices Rules. With Potential Nesting Habitat estimated at over 1.3 million acres, and a population of approximately 5,151 marbled murrelets, Washington has the lowest average density of marbled murrelets to available habitat area within the range of the species (Lorenz et al. 2021).

The general biology and ecology of the marbled murrelet is well described in the following documents: Recovery Plan for the Marbled Murrelet (USFWS 1997); Evaluation Report for the 5-Year Status Review of the Marbled Murrelets in Washington, Oregon, and California (McShane et al. 2004); and the Final Environmental Impact Statement (FEIS) for a Long-term Conservation Strategy for the Marbled Murrelet (WDNR and USFWS 2019).

Marbled Murrelet Habitat on the Enrolled Lands

Marbled murrelets nest in mature and old-growth conifer forests, sometimes as far as 50 miles or more from marine waters. These structurally complex forests provide the large limbs with moss, mistletoe, or other deformities, that provide suitable nesting platforms. For purposes of determining forest stands that may require marbled murrelet surveys prior to forest management activities, the Washington Forest Practices Board (WAC 222-16-010) defines "Suitable Marbled Murrelet Habitat" as a contiguous forested area containing trees capable of providing nesting opportunities with all of the following indicators:

> Within 50 miles of marine waters;
> At least 40 percent of the dominant and co-dominant trees are Douglas-Fir, Western Hemlock, Western Red Cedar, or Sitka Spruce;
> Two or more nesting platforms per acre;
> At least 7 acres in size; including the contiguous forested area within 300 feet of nesting platforms, with similar forest stand characteristics to the forested area in which the nesting platforms occur.

"Marbled Murrelet Nesting Platform" means any horizontal tree structure such as a limb, an area where limb branches, a surface created by multiple leaders, a deformity, or a debris/moss platform or stick nest equal to or greater than 7 inches in diameter including associated moss if present, that

is 50 feet or more above the ground in trees 32 inches dbh and greater (generally over 90 years of age) and is capable of supporting nesting by marbled murrelets.

The amount of "Suitable Marbled Murrelet Habitat" as defined in WAC 222-16-060 on the Applicant's Enrolled Lands is unknown, because the delineation of "suitable habitat" is determined on site-specific basis. To estimate areas of Potential Nesting Habitat, the proposed SHA uses the Applicant's existing inventory data for forest stand age and predominant stand type (e.g., western hemlock or Douglas-fir forest) to classify stands into generalized habitat categories including "Presumed Habitat", "More-Likely-Than Not-Habitat" and "Marginal Habitat" (Table 3-8). These habitat categories are based on science cited in the WDNR Long-Term Conservation Strategy for Marbled Murrelets, However, the youngest forest categories used to identify potential Marbled Murrelet habitat were not incorporated due to the uncertainty of younger forest stands to provide suitable habitat. For more detail regarding the scientific basis for these habitat categories, see (WDNR and USFWS 2019, Appendix E).

We use the term "Potential Nesting Habitat" generally to indicate forest areas that have the potential of providing nesting opportunities for marbled murrelets but have not been field-verified to confirm habitat conditions, and actual use or occupancy by the species has not been documented. The term "Suitable Marbled Murrelet Habitat" refers to the regulatory definition under the Washington Forest Practices Rules as defined in WAC 222-16-060.

Table 3-8. Summary of Potential Nesting Habitat categories used in this assessment.

Potential Marbled	**Dominant trees species**		**Notes**
	WH, SS,	**DF**	
Presumed Habitat	210 +	250 +	Old-growth forest stands that are presumed to contain at least 95 percent "Suitable Marbled Murrelet Habitat".
More-Likely-Than-Not Habitat	130 - 209	220 - 249	Stands in this age class are considered to be at least 50 percent likely to contain "Suitable Marbled Murrelet Habitat".
Marginal Nesting Habitat	94 - 129	184 - 219	Stands in this age class are considered to be at least 25 percent likely to contain "Suitable Marbled Murrelet Habitat" now, and have the potential to transition into "More-Likely-Than-Not" Habitat over the term of the SHA.
WH = western hemlock, SS = Sitka spruce, WRC = western redcedar, DF = Douglas-fir			

The Potential Nesting Habitat categories used in this EA represent a spectrum of habitat conditions on the Enrolled Lands, from Marginal Nesting Habitat that is likely to have few trees with nesting platforms, and a low probability of murrelet occupancy relative to mature forest stands identified as "More-Likely-Than-Not Habitat", or old-forest stands in the "Presumed Habitat" category. The Potential Nesting Habitat categories used in the SHA do not correlate to different marbled murrelet nesting platform densities described in the Washington Forest Practice rules (e.g., 2 nesting platforms per acre, etc.), or to an estimated probability of marbled murrelet occupancy based on marbled murrelet nesting platform density as defined in WAC 222-10-042.

Occupied Marbled Murrelet Sites

There are 24 Occupied Sites on the Enrolled Lands comprising 1,240 acres. For the purposes of this EA, Occupied Sites are delineation based on available information. The actual perimeter of an Occupied Marbled Murrelet Site is defined in WAC 222-16-010 (4 and 5) and requires observation of on-site vegetative characteristics and review and concurrence by WDNR in consultation with WDFW. These agencies typically review such delineation at the time of project review. These Occupied Sites are part of the baseline condition to which, after the term of the proposed SHA, the Applicant is allowed to return.

Presumed Marbled Murrelet Habitat

"Presumed Habitat" means Forest Stands within Enrolled Lands that have an estimated age class of 210 years old or greater for western hemlock-dominant stands or 250 years old or greater for Douglas fir-dominant stands. These areas are classified as Presumed Habitat because due to forest type and stand age, they would likely meet the definition of "Suitable Marbled Murrelet Nesting Habitat" provided above. Based on their available inventory, the Applicant has identified 494 acres of forest that is Presumed Habitat.

Other Potential Marbled Murrelet Nesting Habitat

Other Potential Nesting Habitat has been identified based the Applicant's existing inventory of forest type and stand age. These stands are identified in the SHA as "Marginal Nesting Habitat" (1,340 acres of Western Hemlock with an age class of 94-129 years, and 116 acres of Douglas Fir with an age class of 184-219 years) or "More-Likely-Than-Not" habitat (433 acres of Western Hemlock with an age class of 130-209 years, and 68 acres of Douglas Fir with an age class of 220-249 years) based on age and forest type. The proposed SHA Enrolled Lands include three major categories: Occupied Sites, Forests & Fish Buffers, and Adjacent Forests. The estimated Potential Nesting Habitat in each of these SHA categories is listed in Table 3-9.

The total estimated Potential Nesting Habitat in all categories including Occupied Sites is 3,755 acres, representing less than 1 percent of the 637,021 acres of proposed Enrolled lands. Much of the Potential Nesting Habitat that is not identified as Occupied Sites occurs within areas identified as Forests & Fish Buffers and occurs in relatively narrow riparian zone buffers or as small, fragmented patches that are widely dispersed across the Applicant's ownership in western Washington. While marbled murrelet nest sites are most commonly associated with large tracts of mature and old-growth forest, there are a number of examples in Washington where Occupied

Sites have been associated with riparian forests. Given the limited amount of Potential Nesting Habitat estimated for the proposed Enrolled Lands, relative to large areas of habitat estimated to be present on federal and state lands in Washington, it is likely that few, if any marbled murrelets occur outside of existing Occupied Sites on the proposed Enrolled Lands. Note that 624,062 acres of the Enrolled Lands have designated age classes to determine (a) Potential Nesting Habitat and (b) those with age classes both within and below the threshold to "age into" Potential Nesting Habitat during the life of the SHA, leaving 12,959 out of 637,021 acres with uncategorized age classes.

Table 3-9. Estimates of Potential Nesting Habitat (acres) on the Enrolled Lands.

Marbled Murrelet Habitat Categories	Location within		
	Forests &	Adjacent	
Occupied Sites	310	930	1,240
Presumed Habitat	51	443	494
More-Likely-Than-Not Habitat	280	221	501
Marginal Nesting Habitat	891	565	1,456
Totals	**1,567**	**2,188**	**3,755**

Potential for Murrelet Habitat Development in Forests & Fish Buffers

Potential Nesting Habitat is projected to increase within Forests & Fish Buffers based on stand age and stand types:

Western Hemlock. There are 15,082 acres of Western Hemlock stands in Forests & Fish Buffers that currently have an age class of 44-93 years. The stands have the potential to mature into forest stands and/or "age into" Marginal Nesting Habitat over the 34-year term of the proposed SHA.

Douglas Fir. There are 239 acres of Douglas Fir stands in Forests & Fish Buffers that currently have an age class of 134-183 years. The stands have the potential to mature into forest stands and/or "age into" Marginal Nesting Habitat over the 34-year term of the proposed SHA.

Large Contiguous Stands Created by Forests & Fish Buffers. Forests & Fish Buffers have the potential to create large contiguous stands in some areas. As indicated above, relatively narrow stands of timber created by RMZs and other Forests & Fish buffers do not always create ideal habitat conditions for marbled murrelets. Much of the Forests & Fish Buffers will be surrounded

by mid-successional aged stands for much of the life of the proposed SHA and will therefore provide potential marbled murrelet nesting opportunities. In many instances the Forests & Fish Buffers themselves are large enough to support marbled murrelet habitat standing alone. This typically occurs at junctions of RMZs and/or areas where unstable slopes intersect with RMZs. Representative examples are shown in Exhibit C to the SHA.

Designated Marbled Murrelet Critical Habitat

Over 1,631,000 acres are designated as critical habitat for marbled murrelets in Washington (USFWS 1996). Of this amount, 2,500 total acres are on private landholdings, including 49 acres within the Applicant's lands while the remainder is on federal or state lands. Federally-designated critical habitat is located on National Forest lands adjacent to the Enrolled Lands in Southwestern Washington and in Snohomish and Skagit Counties.

Northern Spotted Owl

The northern spotted owl (*Strix occidentalis caurina*) (spotted owl) was listed as endangered by the State of Washington in 1988 and as threatened under the ESA in 1990 (55 FR 26114). The spotted owl inhabits mid and late seral coniferous forests with high canopy closure, complex canopy structure, large decaying trees and/or snags, and a high volume of downed wood (WDNR 2019) and may occur on Enrolled Lands.

A spotted owl revised recovery plan was released in 2011, and in 2012, the USFWS designated 9,577,969 acres in 11 units and 60 subunits of California, Oregon, and Washington as critical habitat for the spotted owl (50 CFR Part 17 2012-28714) in addition to areas of critical habitat that were designated on federal lands in 1992 and 2008. Also in 2012, a petition to uplist the spotted owl to endangered was filed, and the status is currently under review after a positive 90-day finding in 2015 (80 FR 19259-19263). Full details related to spotted owl life history, habitat characteristics, and species survey information are available through the Environmental Conservation Online System (ECOS) webpage, Periodic Status Review for The Northern Spotted Owl in Washington (Buchanan 2016), and the Final Briefing Report to the Washington State Forest Practices Board Regarding Spotted Owl Status and Forest Practices Rules (Buchanan and Swedeen 2005).

Spotted Owl Habitat on Enrolled Lands

The Applicant manages its lands for spotted owl in Washington in accordance with the Washington Forest Practices Act. Forest Practice Rules (WAC 222-16-086) establish Spotted Owl Special Emphasis Areas (SOSEAs) which are intended to provide demographic or dispersal support as necessary to complement spotted owl protection strategies on nearby federal lands. There are several areas on the Enrolled Lands that are covered by SOSEAs, including the Finney Block, I-90 West, and Mineral Block/Mineral Link SOSEAs. Spotted owl surveys have been conducted on the Applicant's property as recently as during the 2020 survey season.

Forest Practices Rules (WAC 222-16-085(1)) define suitable spotted owl habitat to include forest stands which meet the description of old forest habitat, sub-mature habitat, or young forest

marginal habitat. Generally, old forest habitat is the highest quality, followed in descending order by sub-mature habitat, and young forest marginal habitat. Although provisional mapping of suitable spotted owl habitat types based on aerial photo interpretation by WDNR and/or WDFW may exist, identification of habitat is contingent on confirmation of vegetative parameters which can only be measured in the field. A comprehensive inventory of confirmed suitable spotted owl habitat on or near the covered properties is not available. Individual forest stands meeting the definition of suitable spotted owl habitat are identified during project planning and protected in accordance with applicable state and federal regulations. The spotted owl is not a covered species under the proposed SHA.

Forest Practices Rules (WAC 222-16-085(2)(a)) define dispersal habitat in terms of the minimal conditions that are believed to allow for spotted owls to move through a landscape. These conditions include patches at least 5 acres in size that have the following characteristics:

- at least 70 percent canopy cover;
- at least 70 percent of the stand in conifer species greater than 6-inches dbh;
- 130 to 300 tpa with a dbh of at least 10 inches, or a basal area of 100 square feet of 10-inch dbh or larger trees; and
- 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.

The spotted owl has federally designated critical habitat near the Enrolled Lands in the North Puget Area and in central Puget Sound northwest of Riffe Lake.

Occurrence of Spotted Owl on Enrolled Lands

The Applicant has information indicating 19 regulatorily active Occupied Sites where the Applicant owns land within 1.8 miles of the region. These are located in, near or west of Mount Baker in Whatcom County, east and south of Lake Shannon in Skagit County, in the vicinity of Blue Mountain and Olo Mountain in Snohomish County, in and around the Wild Sky Wilderness in King County, near Alder Lake in Thurston County, southwest and northwest of Riffe Lake in Lewis County, northeast and southwest of Pande Ridge in Pacfiic County, and south of Chehalis River in Grays Harbor County. See Appendix A for a list of these locations, summarized in Table A-A4 See Appendix C for a map of the locations.

Other federally listed Species

Gray Wolf

The Gray Wolf (*Canis Lupis*) was listed as federally endangered in 1978 and endangered by the state of Washington in 1973. The Gray Wolf does not have a particular habitat preference, and its habitat is generally characterized as mountainous, forested habitat that contains abundant year-round prey. The Gray Wolf may occur on Enrolled Lands.

Grizzly Bear

The Grizzly Bear (*Ursus arctos*) was listed as federally threatened in 1975 and endangered by the State of Washington in 1980. It is found mostly in arctic tundra, alpine tundra, and subalpine mountain forests. Most populations require large areas of suitable habitat, and habitats commonly include salmon runs and caribou calving grounds. The bears typically dig hibernation dens on steep northern slopes where snow accumulates. The Grizzly Bear may occur on Enrolled Lands.

Streaked Horned Lark

The Streak Horned Lark (*Eremophila alpastris strigata*) was listed as threatened under the ESA in 2013 and listed by Washington State as endangered in 2006. Its habitat consists of large expanses of bare or thinly vegetated land, including fields, prairies, dunes, upper beaches, airports, and similar areas with low/sparse grassy vegetation. The Streak Horned Lark may occur on Enrolled Lands.

Yellow Billed Cuckoo

The Western Yellow Billed Cuckoo (*Coccyzus americanus occidentalis Ridgway*) was listed as threatened under the ESA in 2014 and listed by Washington State as endangered in 2013. Its habitat is generally deciduous riparian woodland that includes dense stands of cottonwood and willow as well as mesquite and salt-cedar in some areas. The Yellow Billed Cuckoo may occur on Enrolled Lands.

Oregon Spotted Frog

The Oregon Spotted Frog (*Rana pretiosa*) was listed as threatened under the ESA in 2014 and listed by the state of Washington as endangered in 2014. The frog is very aquatic in quiet water and typically avoids dry uplands. It generally inhabits vegetated shallows or lives among grasses or sedges along the margins of streams, lakes, ponds, oxbows, springs, and marshes. In the dry season, it uses deeper permanent pools, and in the cold season it buries itself at the base of dense vegetation within shallow water. The Oregon Spotted Frog may occur on Enrolled Lands.

Bull Trout

The Bull Trout (*Salvelinus confluentus)* was listed as federally threatened in 1998 and was listed as a state candidate species at some other point. Bull trout are rarely found in waters warmer than 59 to 64 degrees Farenheit. Bull trout require stable stream channels, clean spawning gravel, complex and mix cover, and unblocked migration routes. Bull Trout may occur on Enrolled Lands.

Dolly Varden

The Dolly Varden (*Salvelinus malma*) was proposed as threatened because of its similarity in appearance to bull trout in 2001 and the fact that the two fish species appear together only in the coastal/Puget Sound distinct population segment of bull trout (encompassing west of the Cascades and the Olympic Peninsula).[xv] The Dolly Varden occurs in coastal seas and in deep runs and pools of creeks and small to large rivers. Most spend their lives in rivers and streams, and some landlocked populations inhabit lakes and tributary streams. The Dolly Varden may occur on Enrolled Lands.

Roy Prairie Pocket Gopher

The Roy Prairie Pocket Gopher (Thomomys mazama glacialis) was listed as federally threatened in 2014 and listed as state threatened at some other point. It is found in glacial outwash prairies in Washington. The Roy Prairie Pocket Gopher is not known to occur on the Enrolled Lands.

Olympia Pocket Gopher

The Olympia Pocket Gopher (*Thomomys mazama pugetensis*) was listed as federally threatened in 2014 and listed as state threatened in 2006. This pocket gopher inhabits alpine/subalpine meadows, openings in subalphine forest, and open subalpine areas with scattered small trees. The Olympia Pocket Gopher is not known to occur on Enrolled Lands.

Tenino Pocket Gopher

The Tenino Pocket Gopher (*Thomomys mazama tumuli*) was listed as federally threatened in 2014 and listed as state threatened in 2006. These gophers require grasses and forbs for food and well-drained soil for burrowing. This type of habitat includes prairie soils and earth that is relatively open with short-statured vegetation and few woody plants. The Tenino Pocket Gopher not known to occur on Enrolled Lands.

Yelm Pocket Gopher

The Yelm Pocket Gopher (*Thomomys mazama yelmensis*) was listed as federally threatened in 2014 and listed as state threatened in 2006. This rodent inhabits open grassy areas, including pastures, glacial outwash prairies, savannas, and open early seral woodlands and forests. The Yelm Pocket Gopher may occur on Enrolled Lands.

Columbian White Tailed Deer

Columbian White Tailed Deer (*Odocoileus virginianus leucurus*) was federally listed threatened in 1967 and listed by the state as endangered in 1980. It prefers wet prairie and lightly wooded

bottomlands or tidelands along streams and rivers, as well as woodlands that are interspersed with grasslands and pastures. The Columbian White Tailed Deer may occur on Enrolled Lands.

Short-Tailed Albatross

The Short-Tailed Albatross (*phoebastria albatrus*) was listed as federally endangered in 1970 and is listed by Washington State as a candidate species. This bird inhabits regions of high marine productivity, nesting on the ground on small oceanic islands or on volcanic ash slopes with sparse vegetation. The Short Tailed Albatross may occur on Enrolled Lands.

Western Snowy Plover

The Western Snowy Plover (*Charadrius nivosus nivosus*) was listed as federally threatened in 1993 and listed as state endangered in 1995. This species tends to inhabit beaches, dry mud or salt flats, and sandy shores of rivers, lakes, and ponds. The Western Snowy Plover will nest on the ground in broad open beaches or salt or mud flats where vegetation is sparse or absent. The Western Snowy Plover has critical habitat in the western-central part of the Olympic Peninsula on the Enrolled Lands, and may occur on Enrolled Lands.

Lynx

Lynx (*Lynx canadensis*) is a threatened species under the federal ESA amd Washington state law. Lynx occupy subalpine and boreal coniferous forests that have substantial accumulations of snow during the late fall, winter, and early spring. In Washington, lynx habitat includes Engelmann spruce and subalpine forests higher than 4600 feet in elevation. Lynx may occur on Enrolled Lands.

Other Priority Species

North American Wolverine

North American Wolverine (*Gulo gulo luscus*) is proprosed for listing as a threatened species under the federal ESA. Wolverines occur in the remote mountainous areas of the Cascades and in northeastern Washington. North American Wolverines may occur on Enrolled Lands.

Western Pond Turtle

Western pond turtle (*Actinemys marmorata*) is a Species of Concern under the federal ESA and is classified as an endangered species under Washington state law. The turtles utilize a variety of flowing and still water habitats in other parts of their range, but in Washington they are only known from ponds and lakes. They nest in grasslands and open woodland around ponds. Western pond turtles may occur on Enrolled Lands.

Townsend's Big Eared Bat

Townsend's Big Eared Bat (*Corynorhinus townsendii*) is a Species of Concern under the federal Endangered Species Act and was classified as a state candidate species in 1993. The bat occupies a broad range of arid and moist habitats and can be found in various conifer and evergreen forests. The Townsend's Big Eared Bat may occur on Enrolled Lands.

Migratory Birds

A Migratory bird is defined in 50 CFR 10.12 to be "any bird, whatever its origin and whether or not raised in captivity, which belongs to a species listed in §10.13, or which is a mutation or a hybrid of any such species, including any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof." The list of protected birds is maintained in regulation at 50 CFR 10.13 and includes over 1,000 species. Birds are protected based on whether their species, family, or taxonomic group is covered under at least one of the four bilateral migratory bird treaties. Birds are protected even if they do not migrate, no matter their origin, and whether or not they are raised in captivity (50 CFR 10.12).

Other State-listed Species

Cascade Torrent Salamander

Cascade torrent salamander (*Rhyacotriton cascadae*) is classified as a state candidate species in Washington. The salamander is commonly found in the region spanning from the Columbia River Gorge to just north of Mount Saint Helens. They rely heavily on water and prefer slow moving streams. Cascade torrent salamander may occur on Enrolled Lands.

Common Loon

Common loon (*Gavia immer*) is listed as a sensitive species per Washington law. In winter and during migration, common loons use inland lakes and rivers and marine and estuarine coastal waters. Breeding habitat includes usually clear lakes containing both shallow and deep water areas. Nest sites are on small islands, quiet backwaters, or mainland shores. Common loons may occur on Enrolled Lands.

Dunn's Salamander

Dunn's salamander (*Plethodon dunni*) is classified as a state candidate species in Washington. The salamanders are found in southwestern Washington. Dunn's salamanders may occur on Enrolled Lands.

Golden Eagle

Golden Eagle (*Aquila chrysaetos)* was classified as a state candidate species in 1991. The eagle nests mostly in mountainous areas on large cliffs but also in areas dominated by conifer forests. The Golden Eagle may occur on Enrolled Lands. The golden eagle is also protected by the Bald and Golden Eagle Protection Act (BGEPA).

Northern Goshawk

Northern Goshawk (*Accipiter gentilis*) was classified as a state candidate species prior to 2015. The goshawk range occupies a variety of woodland areas, and the distinct population segment in nearby British Columbia is listed as threatened in British Columbia. The Species in western America was proposed for listing in 1998, and USFWS found listing to be unwarranted. The Northern Goshawk may occur on Enrolled Lands.

Van Dyke's Salamander

Van Dyke's salamander (*Plethodon vandykei*) is classified as a state candidate species in Washington. In Washington, the salamanders are only found in the Olympic Mountains, southern Cascade Mountains, and Willapa Hills area. Van Dyke's salamanders may occur on Enrolled Lands.

Western Toad

Western Toad (*Anaxyrus boreas*) was given state candidate species status in 2001. Western toads occur in a wide variety of habitats ranging from desert springs to mountain wetlands. They range into various upland habitats around ponds, lakes, reservoirs, and slow-moving rivers and streams; sometimes they move up to a few kilometers through uplands. The Western Toad may occur on Enrolled Lands.

3.5 LAND USE AND OWNERSHIP

The Applicant's Enrolled Lands are situated in western Washington State. The largest portion of Enrolled Lands are clustered in four zones on the southwest portion of Washington State spanning the central portion of Grays Harbor and Pacific County and the northwest corner of Lewis County; the southeast corner of Pacific County across to the southwest corner of Lewis County; the western half of Cowlitz County and crossing into Lewis County to the north; and the central northern portion of Lewis County crossing into the southeastern portion of Thurston County. Additional Enrolled Lands are clustered on the southeast corner of King County; the central portion of Skagit County, the northwest portion of Snohomish County, and the southwest portion of Whatcom County. Finally, a scattering of Enrolled Lands are located in southern Snohomish County; across King County and Wahkiakum County; in northern Pierce County; and along the southern coast in Pacific County. The most common land cover types found within the Enrolled Lands are Evergreen

Forest (94.23%) and Deciduous Forest (4.52%) (Table 3-1). See Appendix A for a county-specific discussion of land use and ownership on the Enrolled Lands.

3.6 CULTURAL RESOURCES

This section describes known cultural and historic resources (*i.e.*, archaeological, historic, prehistoric, and Native American resources) within the Enrolled Lands. Information comes from publicly available sources, such as Washington State's Department of Archaeology and Historic Preservation (DAHP) WISSAARD online database which shows properties listed in the Heritage Barn Register, Washington Heritage Register (State Register), and the National Register of Historic Places (NRHP) and the list of National Historic Landmarks (NHL).

The Heritage Barn Register, created with the passage of Substitute HB 2115, honors the significance of barns as representing the agricultural, economic, and cultural development of the State of Washington. To be eligible for listing, barns must be over 50 years old and retain a significant degree of historic and architectural integrity. The State Register includes districts, sites, buildings, structures, and objects that have been identified and documented as being significant in local or state history, architecture, archaeology, engineering, or culture. Under the National Historic Preservation Act, "historic property" and "historic resource" is defined as any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion on the NRHP, including artifacts, records, and material remains related to such a property or resource. The NHL list was also reviewed. These are places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States.

Proposed sites for timber harvest or road construction are screened for registered historic sites and cultural resources concerns at the project level as part of the forest practice permit field layout and review process by WDNR and representatives of affected tribes. If an area of concern is identified during this process, affected parties are contacted in an effort to alleviate those concerns and protect the site.

The Enrolled Lands include 228 registered properties, of which 198 are unnamed. These properties include Baring Bridge in King County, and Askew, Parker and Sons Barn in Greys Harbor County listed in the Washington Heritage Barn Register. In addition, 33 other named landmarks also reside on Enrolled Lands: Tacoma Northern Pacific Crossing Tower (Whatcom County), Enumclaw Northern Pacific Speeder Shed (Whatcom County), Middle Fork Nooksack Diversion Dam (Whatcom County), Baring Suspension Bridge, King County #509 A (King County), Burlington Northern Railroad Bridge #1741.1 (King County; Snohomish County), Unnamed Residence (King County), Unnamed Residence (King County), Cloverdale Farm (Grays Harbor County), Unnamed Residence (Grays Harbor County), 814 Middle Satsop Road (Grays Harbor County), Barn (Grays Harbor County), Independence School (Lewis County), Spruce Cottage (Grays Harbor County), Vesta Bridge (Grays Harbor County), Control House, BPA Cosmopolis Substation (Grays Harbor County), Switchyard, BPA Cosmopolis Substation (Grays Harbor County), Deschutes Falls Park (Thurston County), Shoestring Valley School (Lewis County),

Alder Dam (Pierce County), Unnamed Residence (Thurston County), Unnamed Residence (Thurston County), Unnamed road (Pierce County), Unnamed road (Pierce County), Frank Finkas Pioneer Home (Lewis County), Wynoochee Road (Grays Harbor County), County Bridge (Whitman County), Margie Vallier (Grays Harbor County), Haggard house (Lewis County), Diana Byrd (Thurston County), Perry Buholm (Lewis County), County Bridge (Whitman County), Oakville Barn (Grays Harbor County). 195 properties have been listed and registered as having historical importance in the state's digital repository for architectural and archaeological resources and reports, but are not named in the registry.

The Applicant evaluates cultural resources through a data share Memorandum of Understanding with the Department of Archeology & Historic Preservation (DAHP). DAHP cultural locations are embedded in the Applicant's GIS automated planning warning system. Policies to protect sites include Sustainable Forestry Initiative, state and internal protocols. The Applicant works directly with tribal representatives when appropriate to ensure certain historical or cultural sites on the Enrolled Lands stay protected. Sensitive sites include pre-Columbian, post-Contact, and homestead era sites, pioneer cemeteries and 1930s logging railroad structures.

3.7 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Executive Order 12898, federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, states that "each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations."

This section describes socioeconomics and environmental justice, including population, housing, labor force, output and earnings, and minority and low-income populations. Information comes from publicly available sources, such as the United States Census Bureau (USCB), United States Bureau of Labor Statistics (USBLS), Bureau of Economic Analysis, Department of Energy, National Renewable Energy Laboratory, and the State of Washington.

County-specific details on socioeconomics and environmental justice are provided in Appendix A and summarized below in Table 3-10.

Table 3-10. Population demographics within counties and census tracts that intersect the Enrolled Lands

County	Census Tract	2019 Population Estimate	2015 Median Income	2019 Minority Population (%)	2018 County Female Population (%)	2019 Poverty Rate (%)	2018 County Unemployment Rate (%)
Statewide		7,546,410	$63,439	32.20%	50.00%	12.20%	4.50%
Cowlitz	0012.00	4,056	$53,438	13.39%	50.00%	11.26%	5.70%
Cowlitz	0016.00	6,901	$56,875	8.04%	50.00%	9.56%	5.70%

County	Census Tract	2019 Population Estimate	2015 Median Income	2019 Minority Population (%)	2018 County Female Population (%)	2019 Poverty Rate (%)	2018 County Unemployment Rate (%)
Statewide		7,546,410	$63,439	32.20%	50.00%	12.20%	4.50%
Cowlitz	0017.00	5,019	$69,750	10.66%	50.00%	7.39%	5.70%
Cowlitz	0018.00	1,894	$55,667	14.10%	50.00%	8.71%	5.70%
Cowlitz	0019.00	5,144	$64,228	5.07%	50.00%	13.36%	5.70%
Cowlitz	0020.01	3,948	$63,458	4.31%	50.00%	7.78%	5.70%
Cowlitz	0020.02	6,266	$56,070	9.96%	50.00%	7.19%	5.70%
Grays Harbor	0003.00	3,309	$53,125	13.39%	50.00%	10.09%	6.70%
Grays Harbor	0004.00	6,532	$59,188	14.70%	50.00%	4.01%	6.70%
Grays Harbor	0005.00	6,192	$47,008	9.12%	50.00%	17.47%	6.70%
Grays Harbor	0006.00	3,719	$50,682	11.13%	50.00%	16.15%	6.70%
Grays Harbor	0007.00	4,834	$48,147	19.20%	50.00%	18.72%	6.70%
Grays Harbor	0013.00	3,434	$39,375	14.91%	50.00%	22.08%	6.70%
King	0312.02	6,151	$76,932	27.02%	50.00%	15.12%	3.50%
King	0313.01	2,781	$74,632	21.18%	50.00%	13.00%	3.50%
King	0315.02	4,287	$74,306	11.20%	50.00%	7.88%	3.50%
King	0326.02	12,602	$132,072	19.76%	50.00%	1.98%	3.50%
King	0327.02	6,775	$100,309	10.97%	50.00%	4.98%	3.50%
King	0328.00	2,352	$86,121	5.23%	50.00%	4.44%	3.50%
Lewis	9701.00	3,446	$62,821	4.35%	50.00%	10.59%	6.30%
Lewis	9702.00	3,300	$38,795	13.36%	50.00%	26.08%	6.30%
Lewis	9704.00	6,092	$45,389	27.48%	50.00%	15.04%	6.30%
Lewis	9707.00	4,371	$41,315	28.09%	50.00%	26.67%	6.30%
Lewis	9711.00	3,860	$57,961	12.90%	50.00%	12.85%	6.30%
Lewis	9715.00	7,244	$47,054	12.48%	50.00%	12.87%	6.30%
Lewis	9716.00	3,636	$45,341	12.65%	50.00%	16.49%	6.30%
Lewis	9717.00	4,740	$49,214	15.44%	50.00%	11.78%	6.30%
Lewis	9719.00	2,928	$34,423	7.14%	50.00%	21.88%	6.30%
Mason	9602.00	5,749	$32,047	16.23%	49.00%	28.04%	6.30%
Pacific	9502.00	4,438	$36,575	21.95%	50.00%	23.50%	6.90%
Pacific	9504.00	3,819	$46,964	13.54%	50.00%	13.24%	6.90%
Pierce	0701.00	3,808	$74,808	13.58%	50.00%	14.01%	5.20%
Pierce	0702.03	5,678	$82,083	21.57%	50.00%	4.74%	5.20%
Pierce	0704.01	2,294	$67,656	15.69%	50.00%	13.01%	5.20%
Pierce	0728.00	9,192	$76,080	34.44%	50.00%	6.20%	5.20%
Pierce	0732.00	5,855	$51,942	8.10%	50.00%	11.53%	5.20%
Skagit	9509.00	4,366	$62,961	19.26%	51.00%	17.37%	6.10%
Skagit	9510.00	2,721	$50,833	7.50%	51.00%	14.39%	6.10%

County	Census Tract	2019 Population Estimate	2015 Median Income	2019 Minority Population (%)	2018 County Female Population (%)	2019 Poverty Rate (%)	2018 County Unemployment Rate (%)
Statewide		7,546,410	$63,439	32.20%	50.00%	12.20%	4.50%
Skagit	9511.00	4,990	$42,692	13.27%	51.00%	22.59%	6.10%
Skagit	9512.00	3,065	$76,454	10.02%	51.00%	4.14%	6.10%
Snohomish	0535.06	5,637	$74,063	7.81%	50.00%	8.09%	3.50%
Snohomish	0537.00	3,139	$50,764	7.33%	50.00%	16.26%	3.50%
Snohomish	0538.01	3,430	$60,625	12.13%	50.00%	11.67%	3.50%
Thurston	0125.10	3,172	$61,827	20.30%	51.00%	10.91%	4.80%
Thurston	0125.20	6,854	$55,011	18.79%	51.00%	10.21%	4.80%
Thurston	0126.20	4,517	$48,194	12.57%	51.00%	26.10%	4.80%
Thurston	0127.20	7,301	$53,242	33.28%	51.00%	19.44%	4.80%
Thurston	0127.30	6,355	$54,389	10.95%	51.00%	5.61%	4.80%
Wahkiakum	9501.00	4,035	$44,485	10.66%	52.00%	17.08%	6.50%
Whatcom	0101.00	8,308	$48,010	14.99%	51.00%	20.65%	4.70%

3.8 CLIMATE CHANGE

The climate in the Enrolled Lands is generally representative of Western Washington and varies depending on elevation and distance inland from the ocean. The climate pattern generally consists of cool, comparatively dry summers and mild, wet winters. Most precipitation falls in the form of rain, although snowfall occurs at higher elevations (NOAA WRCC 2020).

Green House Gases (GHGs) are gases that warm the Earth's atmosphere by absorbing solar radiation reflected from the Earth's surface. The most common GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Most of these gases are produced by the burning of fossil fuels for electricity, heat, and transportation (USEPA 2018). The Intergovernmental Panel on Climate Change (IPCC) has predicted that the increase of global mean surface temperature by the end of 2100 relative to 1850–1900 could range anywhere from approximately 1.3°C to 4.4°C, which could have substantial adverse impacts on the natural and human environments (IPCC 2021:19). This buildup of GHGs in the atmosphere is changing Earth's energy balance and causing the planet to warm, which in turn affects sea levels, precipitation patterns, cloud cover, ocean temperatures and currents, ocean acidification, polar snow and ice accumulation, and other climatic conditions.

A carbon pool (or storage) is a system that has the capacity to accumulate or release carbon. Transfer of carbon from the atmosphere to any other carbon pool is called carbon sequestration. Sequestration occurs in forests when plants absorb CO2 through photosynthesis and convert it to carbon in plant biomass and soil. Live vegetation (e.g., trees, foliage, live roots, and understory vegetation) and the forest floor/soils typically accumulate carbon while dead vegetation (e.g.,

standing dead trees, dead roots, and downed wood) emits carbon into the atmosphere through cellular respiration and decomposition. The absolute quantity of carbon that has been sequestered from the atmosphere and stored within the forest ecosystem at a specified time is called forest carbon stock. A carbon pool is deemed a carbon sink if, during a given time interval, more atmospheric carbon flows into it than flows out of it. With climate change, increased frequency of disturbance events will cause increased drought and wildfires, contributing to forest mortality. Increased forest mortality will reduce the amount of carbon stored in forest stands, affecting overall carbon sequestration.

House Bill 2528, passed on March 9, 2020, recognizes the contributions of the state's forest products sector as sequesters of carbon and contributors to the state's global climate response. The Washington legislature found that "Washington should continue its leadership on climate change policy by… maintaining and enhancing the state's ability to continue to sequester carbon through natural and working lands and forest products…" (RCW 70.235.005). Despite carbon sequestration and the use of renewable energy sources, average annual temperature increases are predicted throughout the state, with increases varying between regions. Warming in the Pacific Northwest region is projected to continue throughout the 21st century. By the 2080s, average annual air temperature is projected to increase by 5.5°F, on average (Climate Impacts Group 2009).

4.0 ENVIRONMENTAL CONSEQUENCES

The environmental consequences sections analyze the environmental impacts of each of the alternatives in Chapter 2 on the resources described in Chapter 3. The alternatives differ from each other with respect to timber harvest operations and, specifically, with respect to land set aside for conservation purposes. The direct and indirect effects of each alternative (if applicable - some impacts are the same under multiple alternatives) are described below for each resource. Direct effects are those effects that are caused by the action and occur at the same time and place. Indirect effects are those effects caused by the action and are later in time or farther removed geographically but are still reasonably foreseeable.

4.1 GEOLOGY AND SOILS

Under all three alternatives, timber harvest and management activities are expected to continue to occur throughout the Applicant's lands, resulting in potential erosion effects to geology and soils. Potential impacts on erodible soils are minimized through compliance with Forest Practices Rules for road construction and maintenance (WAC 222-24) and timber harvest (WAC 222-30), particularly those that relate to steep and unstable slopes and rule-identified landforms. Therefore, impacts to geology and soils would be the same under the No Action Alternative, as analyzed in Section 4.4 of the FPHCP FEIS (USFWS and NMFS 2006), and the Proposed Action Alternative, except that additional forest land (Presumed Habitat, Occupied Sites, and Murrelet Habitat Development Areas) will be designated as no-harvest under either of the Action Alternatives, which might result in incremental benefits related to geology and soils, particularly limiting erosion and potential earth movement on steep and unstable slopes that occur in tree retention areas. However, under the No Action Alternative, forested wetlands would still be subject to all protections afforded to them under the Forest Practices Program. Under all Alternatives, impacts

on geology and soils are expected to be minimal. The most important geology and soils issues in the regulated landscape relate to steep and unstable slopes, and in particular rule-identified landforms, road construction, landslide prevention, delivery of sediment to typed waters, and related issues. The Forest Practices Rules that are key to addressing these issues apply equally under all three Alternatives, including the No Action Alternative. Based on a slight increase in areas deferred from timber harvesting, the two Action Alternatives are expected to have slightly less or no measurable difference in impact to geology and soils as compared to the No Action Alternative.

4.2 VEGETATION

4.2.1 Vegetation other than Trees

The focus of this analysis on potentially impacted vegetation (other than trees, which are discussed below) in the Enrolled Lands are rare or protected plant species which are listed in Table 3-1. These are rare or protected plant species have the potential to occur on the Enrolled Lands. Further analysis appears below for these species with respect to each of the alternatives. However, under all alternatives, the vast majority of the potential habitat for these species will consist of either (1) Forests & Fish Buffers, which will remain virtually the same under all alternatives; or (2) commercial tree farm; which under any alternative will include a diverse mix of largely even-aged timber stands harvested on an approximately to 35 to 70 year rotation schedule. Neither the number of acres harvested nor the harvest rotation is expected to change significantly under any alternative. The principal difference between the alternatives with respect to vegetation will occur in the land types set aside for conservation purposes (*e.g.*, Occupied Sites, Presumed Habitat, other SSAs). Generally speaking, the No Action Alternative will provide the least amount of habitat for rare or protected species because no land is specifically set aside under that alternative for conservation purposes beyond what is required under the Forest Practices Program. Under the two Action Alternatives, additional land (of varying amounts and types depending on the alternative) will be set aside that could potentially provide habitat for rare or protected species. The only impacts on plant species (positive or negative) from additional conservation set-asides will be on species that thrive in the habitat types that are set aside under each alternative. Those impacts are analyzed below for each alternative.

Alternative 1 – No Action

Under the status quo No Action Alternative, no land would be set aside specifically for conservation purposes other than the 134,757 acres in Forests & Fish Buffers which would be protected under all alternatives, and are therefore, not analyzed further since they do not differ between alternatives. Plants that thrive in riparian habitat would receive some protection within RMZs, CMZs, and WMZs, but that protection would be the same under all alternatives. Plants that benefit from a consistent long-term forest presence without ground disturbance (*i.e.*, no regular regeneration harvest) would receive protection in Forests & Fish Buffers of all kinds, whereas the growth cycles for these plants within regeneration forest may be impacted each time there is regeneration harvest. Again, however, this impact would occur under all studied alternatives.

As discussed above, impacts to vegetation in both Forests & Fish Buffers and commercial regeneration forest would be virtually the same under all alternatives and would differ between alternatives only with respect to land (other than Forests & Fish Buffers) set aside for conservation purposes. No lands would be set aside for conservation purposes under the No Action Alternative, so vegetation impacts are explored primarily below rather than in this subsection.

Sensitive plants that occur in disturbed areas, if any exist on Enrolled Lands, may benefit from the No Action Alternative if that alternative results in a shorter regeneration harvest rotation; the frequency of ground disturbance within a given area would be greater under the No Action Alternative in that circumstance. Conversely, such a frequency and amount of ground disturbance could make it less likely that special-status plant species that do poorly in disturbed sites would persist if they currently inhabit the Enrolled Lands. However, the impacts relating to harvest rotation would likely be minimal given that the term of the proposed SHA is less than a single harvest rotation and the differences in harvest rotation (if any) for the No Action Alternative compared to other alternatives is relatively minor.

Alternative 2 – Proposed Action

Under the Proposed Action Alternative, 494 acres of old-growth forest (210+ years old Western Hemlock, 250+ years old Douglas Fir) would be set aside as Presumed Habitat for the term of the permit, as well as Murrelet Habitat Development Areas (64 acres, 30 of which are outside the Forest & Fish Buffers) that would be set aside for no harvest. These set-asides could have reasonably foreseeable positive impacts on Special Status Plant Species that prefer old-growth forests and have the potential to occur on Enrolled Lands, like *Coptis asplenifolia* or *Oxalis suksdorfii*. Most of the Special Status Plant Species that have the potential to occur on the Applicant's lands are plants that are associated with wetlands or non-forest habitats. Federally-listed plant species, such as *Howellia aquatilis, or Sidalcea nelsoniana*, are both species that are associated with uncommon habitats (remnant lowland prairies and/or wetlands), and would not be affected in any way by the issuance of the proposed SHA from what would occur under the No Action Alternative. The alternatives do not differ in their impacts to Federally-listed or Special Status Plant Species. In addition, 1,240 acres of Occupied Sites would become no harvest zones whereas, under the No Action Alternative, they potentially could be harvested under a Class IV-Special Forest Practice application (and possibly a federal HCP). These Sites are broadly distributed across the Enrolled Lands and so could result in reasonably foreseeable impacts to plant species that have the potential to occur within those lands. A beneficial impact, due to no disturbance, would occur for any plants present in these protected areas when compared to the No Action Alternative.

Likely impacts to rare and threatened plant species in Forests & Fish Buffers and commercial forests will be the same under all alternatives, including the No Action Alternative, as discussed above.

Alternative 3 – SHA with Additional Set-Asides

Under Alternative 3, the Applicant would set aside an estimated 2,515 acres in SSAs. These acreage set-asides could result in positive impacts to vegetation that exist in the SSAs, which would

likely include potentially unstable slopes (many of which are likely protected under the Forest Practices Program under all alternatives), forested wetlands (many of which are likely protected under the Forest Practices Program under all alternatives), cliffs, talus slopes, rock outcrops, caves, shrubs, and meadows. Special Status Plant Species that thrive in forested areas may benefit from less ground-disturbing activity and from habitat consistency throughout the life of the SHA.

SSAs total 2,515 acres and are unique sites, both forested, with conservation value that would likely provide a greater amount of older forest habitat within the Enrolled Lands than would occur under current Forest Practices Rules. These areas will be retained for the life of the SHA, producing older trees and mature forest stands that could may benefit Special Status Plant Species that are associated with mature and old-growth forest.

In addition, 1,240 acres of Occupied Sites would not be harvested for the term of the SHA and will be subject to a 300-foot buffer. Likely impact to rare and threatened plant species in Forests & Fish Buffers will be the same under all alternatives, including the No Action Alternative, as discussed above.

4.2.2 Trees

Timber harvest is not expected to increase significantly under any of the proposed alternatives, although timber harvest would slightly decrease under the Proposed Alternative and Alternative 3 due to the additional lands set aside for conservation purposes. Under all alternatives, timber harvest and management activities are expected to occur throughout the Applicant's Lands and would continue to impact vegetation. Impacts to timber resources would vary by alternative, although the variability would not significantly differ between alternatives. Under all alternatives, timber harvest would follow applicable rules and regulations (*i.e.*, Forest Practices Rules and FPHCP) regarding minimum forest set-asides in RMZs, CMZs, WMZs, and Unstable Slopes. These protections predominate over other variables in the landscape and in comparisons between alternatives due to the size and scale of the lands set aside under the Forest Practices Program. Within RMZs, CMZs, WMZs, and Unstable Slopes, timber resources and ecological values are expected to remain the same under all alternatives because all alternatives (including the No Action Alternative) follow the Forest Practices Program and its adherence to current management regimes within these areas. The differences between the other three alternatives with respect to trees are largely the result of differences in the amount and type of land set aside for conservation purposes. These differences are explored for each alternative below. For a breakdown of acres of protected land by alternative, see Table 4-1. It should be noted that all alternatives include protection of approximately 134,757 acres in Forests & Fish Buffers.

Table 4-1. Amount of Protected Land (in acres) by Alternative

Alternative	Amount of Protected Land (acres)
Alternative 1: No Action	Approximately 134,757 acres in Forests & Fish Buffers; and 1,240 acres in Occupied Sites (may be harvested pursuant to SEPA Class IV-Special determination of non-significance and/or Section 10(a)(2)(B) of the ESA [HCP]).

Alternative	Amount of Protected Land (acres)
	Total = 135,997 acres
Alternative 2: Proposed Action	Approximately 134,757 acres in Forests & Fish Buffers; 494 acres in high quality Presumed Habitat (392 of which are in Adjacent Forests and outside Forests & Fish Buffers (no harvest); and 1,240 acres in Occupied Sites (no harvest permitted except salvage). Total = 136,491 acres
Alternative 3: SHA with Additional Set-Asides	Approximately 134,757 acres in Forests & Fish Buffers; An estimated 2,515 acres in SSAs (1,258 of which are in Adjacent Forests and outside Forests & Fish Buffers), and 1,240 acres in Occupied Sites (no harvest permitted except salvage). Total = 138,512 acres

Alternative 1 - No Action

Under the No Action Alternative, no forest land is set aside for additional conservation purposes other than those created under Forests & Fish Buffers. The impact to trees under the No Action Alternative is expected to be largely similar to impact under the Action Alternatives. Timber harvest will continue in compliance with the Forest Practices Program under all alternatives, including the No Action Alternative. There would be no expected decrease in timber harvest under the No Action Alternative, and is expected to be slightly higher for the No Action Alternative (relative to the other alternatives) because no lands are set aside for additional conservation purposes other than Forests & Fish Buffers (which are set aside under every alternative).

Alternative 2 - Proposed Action

Under the Proposed Action Alternative, timber harvest operations in commercial forests and in Forests & Fish Buffers are expected to be similar to under the other alternatives, including the No Action Alternative. Under the Proposed Action Alternative, 494 acres of old-growth forest will be set aside as no-harvest Presumed Habitat, potentially resulting in an additional acres of trees in the Enrolled Lands. In addition, Murrelet Habitat Development Areas totalling 64 acres would also be protected from harvest during the life of the SHA. Under the Preferred Alternative, timber harvest that could otherwise occur in Occupied Sites pursuant to a Class IV-Special Forest Practices Application will not be undertaken over the duration of the Permit, resulting in potentially more trees on the landscape where those sites are present (1,240 acres).

With respect to Forests & Fish Buffers, the Applicant will grow, protect, and restore mature Conservation Lands totaling 134,757 acres through compliance with the Forest Practices Program.

Alternative 3 - SHA with Additional Set-Asides

Under Alternative 3, timber harvest operations in commercial forests and in Forests & Fish Buffers are expected to be similar to what would occur under other alternatives, including the No Action Alternative. No harvest will take place on the 1,240 acres of Occupied Sites for the term of the SHA. In addition, all of the Applicant's lands would receive take assurances, which could have

impacts on timber harvest levels that are not reasonably foreseeable as of this time and are unknown because there has been no assessment of conditions across the Applicant's entire ownership. There would be additional retention of trees under this alternative in 2,515 acres of SSAs (which include Murrelet Habitat Development Areas). More trees would likely be present in areas designated as SSAs under this alternative. Tree retention in Forests & Fish Buffers will be the same under all alternatives, including the No Action Alternative, as discussed above.

4.3 AQUATIC RESOURCES

Under all alternatives, timber harvest and management activities are expected to occur throughout the Enrolled Lands, resulting in potential effects to aquatic resources. Timber harvest and management activities may vary between certain alternatives, but such variations are not expected to be highly significant. Under all alternatives, the Applicant will continue to follow the Forest Practices Program and its elaborate prescriptions to protect riparian health, stream temperatures, and water quality for federally-listed fish species. Specifically, all activities would follow applicable rules and regulations (i.e., Forest Practices Rules and FPHCP) regarding RMZs, CMZs, and Unstable Slopes; therefore, impacts to aquatic resources would be the same under all alternatives, as analyzed in sections 4.5 and 4.7 of the FPHCP FEIS (USFWS and NMFS 2006). Following the criteria for implementation of buffers around RMZs, WMZs, Equipment Limitation Zones, CMZs, sensitive sites, and unstable slopes outlined in the Forest Practices Rules and FPHCP results in increased shade protection, reduced sediment delivery to streams, greater protection from pesticide contamination, reduced effects of timber-harvest induced peak flows, reduced likelihood of contaminated surface water reaching and contaminating groundwater, and lower likelihood for adverse hyporheic zone impacts.

There may be marginal differences in impacts to aquatic resources under each of the three alternatives relating to the lands set aside for conservation purposes. For example, Alternative 3 would result in additional set-asides near wetland areas and the Proposed Alternative would set aside Presumed Habitat, Occupied Sites, and Murrelet Habitat Development Areasas no-harvest areas that are also near aquatic resources, which could positively impact riparian forest, stream temperatures, and/or water quality at a site-specific scale. However, none of these differences in impacts to aquatic resources are expected to be measurable given the fact that the same Forest Practices Program regarding aquatic resources will apply under all alternatives.

Impacts to Federally-listed Fish Species and Designated Critical Habitat

Under the No Action Alternative, Proposed Action Alternative and Alternative 3, continued operations are not expected to alter existing fish habitat conditions or otherwise result in effects to ESA-listed fish species other than as already described in the FPHCP (WDNR 2005), the FPHCP EIS (USFWS and NMFS 2006), and the Biological Opinions of USFWS (2006) and NMFS (2006) because there would be no changes to Forests & Fish Buffers, road construction, maintenance, and abandonment, or other forest management activities that may affect fish resources. The elements that affect fish resources will continue to be managed under the Forest Practices Program under all alternatives. Therefore, the Alternatives considered are not expected to significantly impact federally-listed fish species and/or federally-designated critical habitats for fish in a manner or to an extent that has not been previously considered or described.

4.4 WILDLIFE

Under all alternatives, timber harvest and management activities are expected to occur throughout the Enrolled Lands, resulting in potential effects to wildlife resources. Direct and indirect effects to non-ESA listed wildlife are anticipated to be similar under all alternatives, although the location and degree of the impacts may vary. The differences will arise primarily with respect to land set aside for conservation purposes. The land management regime in Forests & Fish Buffers is the same under all three alternatives in all ways that would be meaningful to wildlife. The same is true with respect to the land operated as commercial forest, *i.e.*, Adjacent Forests. The minor differences between management in these areas under the different alternatives (to the extent there are any at all) would have impacts that would be speculative and likely insignificant at the landscape scale. There will, however, be differences with respect to the lands set aside for conservation purposes that may be meaningful for wildlife. These differences are discussed in the subsections below.

Direct effects to wildlife may include habitat removal or damage from timber harvest or related activities; indirect effects may include habitat fragmentation, edge effects, decreased survivorship, displacement and/or decreased breeding success. While timber harvest activities have the potential to negatively affect wildlife both directly and indirectly, these effects are not expected to be significant under any of the alternatives under consideration. As stated in the FPHCP FEIS, over 85 percent of Washington's native fauna use riparian areas for some portion of their life cycles (USFWS and NMFS 2006). These riparian areas would continue to be protected under the Forest Practices Rules under all alternatives and provide habitat to a variety of wildlife species.

Under all alternatives, all activities would follow the Forest Practices Rules and FPHCP with regard to RMZs, WMZs, Equipment Limitation Zones, CMZs, and Unstable Slopes; therefore, impacts to amphibian species would be the same under all alternatives, as analyzed in the FPHCP FEIS sections 4.8 and 4.9 (USFWS and NMFS 2006).

Threatened and Endangered Species

Marbled Murrelet

Under the ESA, "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532(19). *Harm* is further defined by the USFWS as "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering." (50 CFR 17.3)

Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. 50 C.F.R. § 17.3. Forest Practices (timber harvesting, road construction, etc.) can result in both direct and indirect "take" of marbled murrelets. These effects can include the direct loss and fragmentation of habitat, increased risk of nest predation near harvest edges, habitat degradation associated with harvest edges, disruption of nesting behaviors

associated with noise and visual disturbance, and the potential for direct mortality of marbled murrelet eggs or nestlings if a tree with an active nest is felled (USFWS 1997).

The Alternatives considered in this EA are likely to maintain and/or increase potential marbled murrelet nesting habitat located in Forests & Fish Buffers and result in some limited loss of existing potential marbled murrelet nesting habitat in areas classified as "Adjacent Forests." In the following assessment, estimated impacts to potential marbled murrelet nesting habitat is used as an indicator for potential incidental take. Under all Alternatives, the likelihood of incidental take of individual marbled murrelets is expected to be very low given the limited amount of potential marbled murrelet nesting habitat estimated for the proposed Enrolled Lands. Considering the large areas of marbled murrelet habitat estimated to be present on federal and state lands in Washington (~1.09 million acres) (Lorenz et al 2021), it is likely that few, if any, marbled murrelets occur outside of existing Occupied Sites on the proposed Enrolled Lands.

Alternative 1 - No Action

Under the No Action Alternative, the Applicant would not have a federal permit authorizing incidental take of marbled murrelets pursuant to section 10 of the ESA. The potential for incidental take of marbled murrelet is largely avoided through compliance with Forest Practices regulations that require an evaluation of marbled murrelet habitat for each Forest Practice Application/Notification. The habitat standard for triggering a Class IV-Special review for marbled murrelets varies depending upon whether or not the individual forest practice is within a marbled murrelet detection area or within the Southwest Washington marbled murrelet special landscape, or within 0.25 miles of an Occupied Site. For this assessment, we did not estimate the area of the Applicant's lands that occur within these different categories. For the purpose of this assessment, we assume that if the Applicant located "Suitable Marbled Murrelet Habitat" within a planned timber harvest unit, they would pursue the option to conduct a protocol survey for marbled murrelets, and harvest any areas that are not determined to be occupied. If a new nest site or occupied stand were discovered on or adjacent to the Enrolled Lands in the future, timber harvest, road construction, and other activities within these sites would be deferred from harvest, and a 300-foot managed Occupied Site Buffer would be applied around the perimeter of the Occupied Site, with harvest permissible within the Occupied Site Buffer only as prescribed in the definition of "Occupied Site Buffer." Given the fragmented nature of the existing Potential Nesting Habitat on the Enrolled Lands and the low likelihood of detecting marbled murrelet occupancy outside of existing Occupied Sites, we assume that most (95 percent) of any areas identified as "Potential Nesting Habitat" in this assessment would either: (1) not meet the specific habitat criteria to trigger a survey for marbled murrelets; or, (2) areas surveyed for marbled murrelets would not be found to be occupied and would likely be released for harvest under the existing rules. This rate of harvest applies only to areas that are not otherwise protected by other existing rules (e.g, no-harvest portions of Forests and Fish Buffers). The assumption that 95 percent of "Potential Nesting Habitat" would be harvested under the No Action Alternative is based on the history of low rates of murrelet occupancy for surveyed areas (approximately 10 percent) (Betts et al. 2020), and many areas of Potential Nesting Habitat do not meet the specific criteria (e.g., patch size, platform density) to trigger a survey. This assumption is supported by high rates of "Potential Nesting

Habitat" loss on private lands in Washington (Lorenz et al. 2021), and less than 10 "new" occupied sites documented on private lands in Washington over the past 10 years.

Management in Forests & Fish Buffers - There are 134,757 acres of Forests & Fish Buffers estimated within the Enrolled Lands. The Forests & Fish Buffers as mapped by the Applicant along fish-bearing streams include core zones and inner zones only, outer zones (where more intensive harvest can occur) are not included in the mapped buffers. Currently, about 1 percent (1,256 acres) of the Forests & Fish Buffers contain Potential Nesting Habitat, not including Occupied Sites. Potential Nesting Habitat in the buffers is projected to increase to more than 12 percent (16,577 acres) over the term of the proposed SHA (34 years).

The Applicant estimates that selective thinning occurs on approximately five percent of its Forests & Fish Buffers, and where thinning occurs, it is "thinning from below," for which the objective is to shorten the time required to meet large wood, fish habitat, and water quality needs in the RMZs. When these practices are conducted, they generally represent a minor habitat modification that does not result in total removal of habitat or a significant deterioration of marbled murrelet habitat values. Yarding corridors and stream-road crossings are other activities that can occur within Forests & Fish Buffers that can modify habitat, but the impacts of these types of activities are limited in scope, and for this assessment, are included within the five percent where selective thinning occurs estimated by the Applicant. Based on the five percent for selective thinning or yarding corridors, about 62.8 acres of the 1,256 acres of Potential Nesting Habitat within Forests & Fish Buffers could be affected.

Marginal Nesting Habitat in Forests & Fish Buffers is expected to increase over time with 15,082 acres of Western Hemlock (44-93 years) stands and 239 acres of Douglas Fir (134-183 years) stands that have the potential to transition into mature forest or Marginal Nesting Habitat over the next 34 years. Assuming five percent of these acres are managed for selective thinning, up to 829 acres out of 16,577 acres of this "future" Marginal Nesting Habitat could be subject to Forest Practices allowed in the Forests & Fish Buffers. Potentially, some small portion of these acres could trigger a survey for marbled murrelets and otherwise be deferred from selective harvest, but the likelihood of this is considered to be low. As stated above, these are assumptions used for analysis purposes. The actual number of acres that would be selectively harvested in Forests & Fish Buffers is unknown.

Management of Adjacent Forests – The Adjacent Forest category represents commercial forest lands that are located within 300 ft of the Forests & Fish Buffers. Under the existing Forest Practice rules for marbled murrelets, landowners in western Washington are required to determine if Suitable Marbled Murrelet Habitat is located within a distance of 300 ft of any proposed Forest Practices on their ownership. For the purpose of this assessment, we assume that all areas within the Adjacent Forest category are available for regeneration timber harvesting unless otherwise deferred (e.g., if presumed habitat is present, it would likely trigger a survey for murrelets, and could be deffered from harvest if found to be occupied). There is no anticipated ingrowth of future Potential Nesting Habitat in Adjacent Forests, because these areas will be managed under a rotational harvest schedule that would preclude future habitat development.

Management of Occupied Sites - The Forest Practices Application/Notification process requires landowners to identify if individual timber harvest units, salvage units, or proposed road construction (and the surrounding areas within 300 ft on their ownership) are located in an area where a protocol survey for marbled murrelets has been completed, and whether or not the activity will occur within a distance of 0.25 miles of an Occupied Site. Generally, once an Occupied Site is documented, Suitable Marbled Murrelet Habitat within delineated boundary of the Occupied Site is protected from timber harvesting, other than salvage of down materials outside of the marbled murrelet nesting season. Occupied murrelet sites are further protected with a 300-foot managed Occupied Site Buffer adjacent to the Occupied Site. This rule protects Occupied Sites by prohibiting clearcut timber harvest within 300 feet of the occupied stand (WAC 222-16-080 (j)(v)). Under the Occupied Site Buffer rules, trees within the managed buffer may be thinned to a density of 75 trees per acre. The primary consideration for the design of the Occupied Site Buffer is to mediate edge effects to Occupied Sites.

Occupied Sites are further protected from noise and visual disturbance associated with forest practice activities. Restricted activities include road construction, operation of heavy equipment, blasting, timber felling, yarding, helicopter operations, slash disposal, or prescribed burning. These activities are prohibited within 0.25 miles of an Occupied Site during the daily peak activity periods within the critical nesting season (April 1 through August 31) (WAC-222-30-050, -060, -065, -070, -100).

The Applicant has estimated a total of 1,240 acres of Occupied Sites on the proposed Enrolled Lands. These sites would continue to be managed as Occupied Sites under the existing Forest Practices Rules. However, under existing rules, the Applicant has an option to conduct harvest within Occupied Sites pursuant to a Class IV-Special SEPA review process, although ESA take prohibitions may apply and restrict harvest further. In the event of marbled murrelet downlisting or removal from the list of threatened and endangered species, ESA take prohibitions would no longer apply at Occupied Sites.

Summary of No Action – Most (i.e.. greater than 90 percent) Potential Nesting Habitat that is not currently associated with Occupied Sites, Forests & Fish Buffers, or other deferred areas is likely to be harvested over the next 34 years, including Presumed Habitat in Adjacent Forests.

Alternative 2 - Proposed Action

Under the Proposed Action Alternative, the Applicant would agree to voluntarily protect (*i.e.*, not harvest) known Occupied Sites (1,240 acres),Presumed Habitat (494 acres), and Murrelet Habitat Development Areas (64 acres) for the life of the proposed SHA, and the USFWS would issue an Enhancement of Survival Permit under section 10(a)(1)(A) of the ESA that would authorize "incidental take" of marbled murrelets while conducting otherwise lawful forest practices on the Enrolled Lands. The proposed SHA, if approved, would provide the Applicant with an exemption to the "Class IV-Special" rules for marbled murrelets for future forest practices on the Enrolled Lands. The Applicant would not be required to survey for marbled murrelet presence or occupancy during the term of the SHA on Enrolled Lands only. Any Potential Nesting Habitat that occurs

within portions of Forests & Fish Buffers that are subject to selective timber harvesting or Adjacent Forests that is not currently identified as Presumed Habitat or Murrelet Habitat Development Areas would be available for timber harvest. The Applicant would no longer be required to survey for marbled murrelets, which has the potential to result in incidental take if an area that is occupied by marbled murrelets is harvested without the benefit of a pre-harvest survey.

Management within Forests & Fish Buffers: The effects of the Proposed Action are the same as those described under the No Action Alternative, except there would be no selective harvest within areas identified as Presumed Habitat (494 acres) or Murrelet Habitat Development Areas (64 acres). Presumed Habitat would be protected from selective thinning, yarding corridors, or road-stream crossings within Forests & Fish Buffers. Under the No Action Alternative, approximately 5 percent (2.4 acres) of Presumed Habitat would be subject to management within Forests & Fish Buffers. The projected increase in Potential Nesting Habitat is about the same as the No Action Alternative.

Management in Adjacent Forests: The effects of the Proposed Action are similar to the No Action, except that all Presumed Habitat (494 acres) would be protected from harvest. Under the No Action Alternative, we assume 90 percent (445 acres) of the Presumed Habitat would be harvested, and only 10 percent would be protected by existing rules. Compared to the No Action Alternative, the voluntary protection of Presumed Habitat is likely to result in greater protection of Potential Nesting Habitat in Adjacent Forest than would otherwise occur.

Management of Occupied Sites – Occupied Sites (1,240 acres) would be protected from harvest for the term of the proposed SHA. The application of managed Occupied Site Buffers would be the same as that described under the No Action Alternative, i.e., Occupied Site Buffers can be harvested only to the degree indicated under the definition of Occupied Site Buffers, above.

Management of SHA Occupied Sites - Under the Proposed Alternative, any Occupied Sites discovered during the SHA term (*i.e.*, SHA Occupied Sites) within Enrolled Lands will not be harvested during the term of the SHA. The likelihood of detecting SHA Occupied Sites is low, because the Applicant will not be conducting surveys for marbled murrelets on the Enrolled Lands.

Summary of Alternative 2 – The primary difference between the No Action Alternative and the Proposed SHA is the voluntary protection of 494 acres of Presumed Habitat and 64 acres of Murrelet Habtiat Development Areas on the Applicant's lands. These are forest stands with a high likelihood of containing Suitable Marbled Murrelet Habitat. In most cases, these stands will either be in or near Forests & Fish Buffers or mature tree stands that will continue to provide potential nesting opportunities for marbled murrelets for the term of the proposed SHA. The Applicant would no longer be required to survey for marbled murrelets, which has the potential to result in incidental take if an area that is occupied by murrelet is harvested without the benefit of a survey. However, the risk of incidental take is considered to be low, given the low amount of Potential Nesting Habitat that could be harvested on Enrolled Lands.

Alternative 3 - SHA with Additional Set-Asides

Under Alternative 3, the Applicant would agree to voluntarily protect (*i.e.*, not harvest) known Occupied Sites (1,240 acres), and Murrelet Habitat Development Areas (64 acres), and other areas of Potential Nesting Habitat (2,515 acres) as Special Set-Asides (SSAs), for the life of the proposed SHA, and the USFWS would issue an Enhancement of Survival Permit under section 10(a)(1)(A) of the ESA that would authorize "incidental take" of marbled murrelets while conducting otherwise lawful forest practices on the Enrolled Lands.

Management within Forests & Fish Buffers: The effects of Alternative 3 are similar to those described under Alternative 2, except there would be no selective management within areas identified as SSAs (2,515 acres). The projected increase in Potential Nesting Habitat in the Forests & Fish Buffers is the same as the No Action Alternative. Potential for incidental take would be limited to noise and visual disturbance, and habitat degradation associated with small areas subject to road construction or selective harvest in Forests and Fish Buffers.

Management in Adjacent Forests: The effects are similar to those described under Alternative 2, except that all Potential Nesting Habitat in Adjacent Forests (1,258 acres) would be protected from harvest as SSAs. Potential for incidental take would be limited to noise and visual disturbance, and habitat degradation associated with edge effects from harvesting adjacent to SSAs and Forests & Fish Buffers.

Management of Occupied Sites –Under Alternative 3, the Applicant would not harvest Occupied Sites. Alternative. SHA Occupied sites would be managed under the same terms as described for Alternative 2. The likelihood of detecting additional Occupied Sites is very low, because the Applicant would not be conducting surveys for marbled murrelets on the Enrolled Lands.

Summary of Alternative 3 - Alternative 3 provides more protection for existing Potential Nesting Habitat compared to the No Action Alternative or the Proposed Action. Occupied Sites are given the same protection as under the Proposed Action.

Designated Marbled Murrelet Critical Habitat

Timber harvesting on private lands that occurs along the boundary of designated marbled murrelet critical habitat can result in the degradation and/or loss of marbled murrelet habitat features (e.g., trees with nesting platforms) from windthrow and edge effects. There are 49 acres of critical habitat on the Applicant's lands, which overlap with Occupied Sites. Harvest of critical habiat outside of the Occupied Sites would not trigger any review under Forest Practice rules or trigger an ESA Section 7 consultation because it is not a federal action. The USFWS evaluated the effects of the Washington Forest Practices HCP in 2006 and anticipated that windthrow from adjacent private timber harvest "may affect, and is likely to adversely affect" designated marbled murrelet critical habitat. However, due to the widely dispersed nature of these effects relative to the total area of designated critical habitat in Washington (over 1.2 million acres on federal lands) the USFWS concluded that these effects are not likely to destroy or adversely modify marbled murrelet critical habitat (USFWS 2006). None of the Alternatives considered in this EA would result in new or

different effects to designated critical habitat that have not been previously considered for the Forest Practice HCP (USFWS 2006).

Spotted Owl

The spotted owl is not a "covered species" with federal ESA take assurances under any Alternative. Under the No Action Alternative, Proposed Action Alternative, and Alternative 3, continued implementation of existing Forest Practice rules for spotted owls is not expected to alter existing spotted owl habitat conditions or otherwise result in incidental take of spotted owl within SOSEAs, as described in the FPHCP EIS (USFWS and NMFS 2006), because the elements that affect spotted owl resources will continue to be managed under the Forest Practices Program as it relates to avoiding incidental take of the spotted owl in SOSEAs.

Protected areas identified under the Forest Practices Program and those specifically identified for marbled murrelets under the two Action Alternatives would also provide conservation benefit to the spotted owls and their prey, should they occur on the Applicant's lands, by contributing to the development of larger blocks of older forest habitat and facilitating dispersal. Therefore, neither the Proposed Action or Alternative 3 are expected to significantly impact the spotted owl.

Other Threatened and Endangered Species

For the reasons discussed above, the USFWS's issuance of a Permit for the marbled murrelet will not result in any significant adverse effect to the listed threatened or endangered species. The primary differences in effects to other threatened and endangered species between the various alternatives associated with the Permit issuance will be tied primarily to lands set aside for conservation purposes other than Forests & Fish Buffers.

Alternative 1 - No Action

No land would be set aside for conservation purposes under the No Action Alternative, and old forest stands located in Occupied Sites could potentially be harvested pursuant to a Class IV-Special FPA, which may impact threatened and endangered species utilizing these areas.

Alternative 2 - Proposed Action

Under the Proposed Action Alternative, 494 acres of old growth forest (210+ years old Western Hemlock or 250+ years old Douglas Fir) would be set aside as Presumed Habitat and become a no harvest area for the life of the proposed SHA. In addition, 64 acres of forest that has a younger stand age than Presumed Habitat would become a no harvest area for the life of the proposed SHA.These set-asides could have reasonably foreseeable positive impacts on species that prefer mature and old growth forests. The old-growth forest being set aside for conservation purposes could be associated with reduced levels of habitat fragmentation, and/or edge effects. While timber harvest activities have the potential to negatively affect wildlife both directly and indirectly, these effects are not expected to be significantly different under any of the alternatives under consideration.

In addition, there may be reasonably foreseeable (although likely small) positive impacts to endangered and threatened wildlife associated with making Occupied Sites no-harvest zones for

the life of the proposed SHA. Other threatened and endangered species which utilize these areas may benefit from this conservation measure.

Alternative 3 - SHA with Additional Set-Asides

Under Alternative 3, the Applicant would set aside an estimated 2,515 acres in SSAs. These SSAs would have reasonably foreseeable positive impacts on species that prefer the habitat types set aside in SSAs, such as old growth forests, potentially unstable slopes (many of which are likely protected under the Forest Practices Program under all alternatives), and forested wetlands (many of which are also likely protected under the Forest Practices Program under all alternatives). While timber harvest activities have the potential to negatively affect wildlife both directly and indirectly, these effects are not expected to be significantly different under any of the alternatives under consideration.

Other Priority Species

For the reasons discussed above, the USFWS's issuance of a Permit for the marbled murrelet will not result in any significant adverse effect to the other priority species. The primary differences in effects to other priority species between the various alternatives associated with the Permit issuance will be tied primarily to lands set aside for conservation purposes other than Forests & Fish Buffers.

Alternative 1 - No Action

No land would be set aside for conservation purposes under the No Action Alternative, and old forest stands located in Occupied Sites could potentially be harvested pursuant to a Class IV-Special FPA, which may impact other priority species utilizing these areas.

Alternative 2 - Proposed Action

Under the Proposed Action Alternative, 494 acres of old growth forest (210+ years old Western Hemlock or 250+ years old Douglas Fir) would be set aside as Presumed Habitat and 64 acres of Murrelet Habitat Development Areas would become a no harvest area for the life of the proposed SHA. These set-asides could have reasonably foreseeable positive impacts on species that prefer mature and old growth forests. The old-growth forest being set aside for conservation purposes could be associated with reduced levels of habitat fragmentation, and/or edge effects. While timber harvest activities have the potential to negatively affect wildlife both directly and indirectly, these effects are not expected to be significantly different under any of the alternatives under consideration.

In addition, there may be reasonably foreseeable (although likely small) positive impacts to other priority species associated with making Occupied Sites no-harvest zones for the life of the proposed SHA. Other priority species which utilize these areas may benefit from this conservation measure.

Alternative 3 - SHA with Additional Set-Asides

Under Alternative 3, the Applicant would set aside an estimated 2,515 acres in SSAs (which includes Murrelet Habitat Development Areas). These SSAs would have reasonably foreseeable positive impacts on species that prefer the habitat types set aside in SSAs, such as old growth forests, potentially unstable slopes (many of which are likely protected under the Forest Practices

Program under all alternatives), and forested wetlands (many of which are also likely protected under the Forest Practices Program under all alternatives). While timber harvest activities have the potential to negatively affect wildlife both directly and indirectly, these effects are not expected to be significantly different under any of the alternatives under consideration.

Migratory Birds

The primary concern for migratory birds from actions authorized by this EA is in regard to the loss or disturbance of occupied nests and of individual birds. Timber harvest has the potential to affect migratory birds during the breeding and nesting season (May 15 to July 15) through disturbance and resource alteration. Disturbance to nesting birds includes physical ground changing disturbance, presence of humans, auditory disturbance, nest destruction, any action that results in nest abandonment, direct injuring or death of a bird. While timber harvest activities have the potential to affect migratory birds both directly and indirectly, there are no significant differences in these effects under any of the alternatives under consideration. Implementation of The Service's Nationwide Standard Conservation Measures (Appendix D; available online at https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds) can reduce or minimize potential impacts to migratory birds, but implementation of these measures is voluntary.

Other State-listed Species

Alternative 1 - No Action

No land would be set aside for conservation purposes under the No Action Alternative, and old forest stands located in Occupied Sites could potentially be harvested pursuant to a Class IV-Special FPA, which may impact other State-listed species utilizing these areas.

Alternative 2 - Proposed Action

Under the Proposed Action Alternative, 494 acres of old growth forest (210+ years old Western Hemlock or 250+ years old Douglas Fir) would be set aside as Presumed Habitat and Murrelet Habitat Development Areas and become a no harvest area for the life of the proposed SHA. These set-asides could have reasonably foreseeable positive impacts on species that prefer mature and old growth forests. The old-growth forest being set aside for conservation purposes could be associated with reduced levels of habitat fragmentation, and/or edge effects. While timber harvest activities have the potential to negatively affect other State-listed species both directly and indirectly, these effects are not expected to be significantly different under any of the alternatives under consideration.

In addition, there may be reasonably foreseeable (although likely small) positive impacts to other State-listed species associated with making Occupied Sites no-harvest zones for the life of the proposed SHA. Other State-listed species which utilize these areas may benefit from this conservation measure.

Alternative 3 - SHA with Additional Set-Asides

Under Alternative 3, the Applicant would set aside an estimated 2,515 acres in SSAs (which includes Murrlet Habtiat Development Areas). These SSAs would have reasonably foreseeable positive impacts on species that prefer the habitat types set aside in SSAs, such as old growth forests, potentially unstable slopes (many of which are likely protected under the Forest Practices Program under all alternatives), and forested wetlands (many of which are also likely protected under the Forest Practices Program under all alternatives). While timber harvest activities have the potential to negatively affect wildlife both directly and indirectly, these effects are not expected to be significantly different under any of the alternatives under consideration.

4.5 LAND USE AND OWNERSHIP

Under both Action Alternatives, land use and land-ownership patterns would not change relative to current conditions. Because there would be no change to existing conditions, and because managed timberland is an encouraged use in many of the counties that contain Enrolled Lands, the Action Alternatives are not anticipated to have any major negative or positive impacts on land-use patterns, land ownership, or nearby communities. However, under the No Action Alternative, no provisions for incidental take would be available, and the Applicant could potentially become subject to land-use restrictions imposed by the ESA regarding marbled murrelets. As stated in the FPHCP FEIS Section 4.2 (USFWS and NMFS 2006), long-term regulatory certainty and stability are key factors in retaining forestlands. Under the two Action Alternatives, the Applicant would receive regulatory protection with respect to the ESA and marbled murrelets, encouraging the retention of forest lands and the stability of land use in the area. Therefore, the Action Alternatives may provide slightly greater protection to land use by providing take assurances and increasing the likelihood of forestland retention; however, no significant differences in the effect to land use is expected between any of the alternatives under consideration. See FPHCP FEIS Section 4.2 for an in-depth analysis of the effects on land ownership and use.

4.6 CULTURAL RESOURCES

Under all alternatives, timber harvest and management activities are expected to occur throughout the Applicant's lands and will follow all applicable regulations (i.e., Forest Practices Rules, RCW Chapters 27.44 and 27.33). Under the Washington Forest Practices rules, each individual Forest Practices Application/Notification is reviewed by WDNR to determine whether or not the proposed harvesting, road construction, site preparation, etc., occurs on lands that contain cultural, historic, or archaeological resources. If historic or cultural resources are identified during this review process, WDNR consults with the Office of Archaeology and Historic Preservation to determine the appropriate classification of the individual application/notification. If the application is determined as likely to impact a cultural resource, WDNR is required to consult with affected Tribes in identifying Class IV-Special sites of concern. The Forest Practices Application/Notification process also provides a venue for Washington Tribes to comment on individual Forest Practices Applications and their impact on archaeological and cultural resources, and develop a plan with the forest landowner to protect the archaeological or cultural resource of concern.

The two Action Alternatives may provide slightly greater protection to cultural resources when compared to No Action through the protection of Presumed Habitat, Marbled Murrlet Habitat Development Areas, Occupied Sites, and other Set-Asides (Alternative 3) for the term of the proposed SHA. However, no adverse effects to cultural resources are expected under any of the Alternatives considered due to the required review process for individual Forest Practices Application/Notifications. The proposed issuance of a Federal Permit under the ESA for a Safe Harbor Agreement would have no effect on the State's required review process for cultural resources.

National Historical Preservation Act

Under the NHPA, the issuance of the permit is an USFWS undertaking. As defined by the ESA, the Permit only authorizes take of species that is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." While the otherwise lawful activity (forest practice activities conducted in accordance with state law) is described in the Applicant's proposed SHA, the Permit does not authorize the otherwise lawful activity. Rather, the Permit is granted if the Applicant's proposed SHA demonstrates that their proposed conservation measures result in a net conservation benefit to the marbled murrelet. The proposed SHA conservation measures do not mandate or prescribe any activities that might impact cultural resources.

As required by Section 106 of the NHPA, the USFWS has considered the effect of its issuance of a proposed permit on historic properties. Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register including artifacts, records, and remains which are related to such district, site, building, structure, or object, 16 U.S.C. Section 470(w)(5). Species, including the marbled murrelet, do not meet the definition of historic properties. Given the foregoing, the USFWS has determined that the issuance of the subject permit and the Applicant's proposed SHA will have no effects on historic properties under any of the alternatives under consideration (36CFR800.3.a.1). The conservation measures described in the Applicant's proposed SHA do not prescribe specific activities that alter the ground or structures; therefore the proposed SHA is an undertaking with no potential to cause effects to historic properties.

4.7 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Timber harvest and management activities are expected to continue to occur under any of the three alternatives under consideration. Under all alternatives, timber harvest and management activities are expected to occur throughout the Enrolled Lands and will follow applicable regulations (*i.e.*, Forest Practices Rules and FPHCP). Direct effects of timber harvest would include the direct employment for timber harvesting activities and direct taxes paid to local governments. Indirectly, timber harvest activities could increase other employment in the area (*e.g.*, local hotels, restaurants, *etc.*) and could lead to population growth and housing development in the area due to increased jobs.

The chance of marbled murrelets nesting on other ownerships with their assumed 50-year rotation is very low outside RMZs and rule-protected areas. Thus, the enhanced management strategies

associated with the Action Alternatives, would be unlikely to increase species occupancy on other private and industrial lands, and therefore would be unlikely to cause hardships for other landowners. While low-income populations are likely to occur in the vicinity of the Enrolled Lands, none would be directly affected by the issuance of the Permit, as the amount and number of forest management activities on Enrolled Lands will remain relatively unchanged because of the increased level of thinning activities under the Proposed Action and Alternative 3. Therefore, effects on socioeconomics and environmental justice are expected to be the same under all alternatives and no direct or indirect effects would be expected. The Applicant would continue to employ approximately 67 people in forestry operations in Washington. Local tax revenues and yield taxes would be expected to remain similar to present conditions.

4.8 CLIMATE CHANGE

Current trends in greenhouse gas emissions would be expected to continue under all alternatives, and the effects of climate change on marbled murrelets and other resources would not vary between alternatives.

The amount of carbon sequestered and stored in trees, vegetation, and soils would vary slightly under the proposed action and alternatives depending on the amount of timber harvest, vegetation removal, and soil disturbance, with the level of timber harvest being the primary driver. However, timber harvest and management activities are expected to occur throughout the Enrolled Lands under all alternatives, and the amount and number of forest management activities will remain relatively unchanged from the No Action Alternative because of the increased level of thinning activities under the two Action Alternatives. Similarly, forests would continue to sequester carbon at approximately similar rates. Therefore, the alternatives would not substantially differ in their contributions to greenhouse gas emissions.

5.0 CUMULATIVE EFFECTS

Cumulative effects are defined under NEPA as "effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or nonfederal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 1508.1)

The cumulative effects of the various activities within the scope of this EA vary little between the three alternatives. The differences between the three alternatives are related to the amount of voluntary habitat enhancement and protection measures that will occur under each Alternative. This cumulative-effect analysis focuses on the marbled murrelet conservation provisions and on forest management activities, because these are the focus of the proposed SHA and the basis for the federal action.

The direct and indirect effects of the Proposed Action on the marbled murrelet, the habitat upon which they rely, and other elements of the affected environment were described in Section 4.0. The effects of the Applicant's activities are expected to result in a net conservation benefit to the

marbled murrelet while no measurable effects on other elements of the affected environment are expected. Nevertheless, cumulative effects to all resources are discussed in Section 5.2 below.

The geographic area of concern to be examined includes all areas of Washington within 50-55 miles from marine waters. The 55-mile radius was selected as the appropriate geographic scope for analysis because it represents the range of the marbled murrelet in Washington State. Marbled murrelets are seabirds that often fly inland to nest in old growth forests. The farthest they are known to typically fly inland to nest is 50-55 miles. It is not common for marbled murrelets to fly farther than 55 miles from marine waters, so there would be no utility in analyzing impacts to marbled murrelets further inland. Limiting geographic scope to location, range, and movement patterns of marbled murrelets is sufficiently analogous to similar wildlife assessments upheld by regional federal courts. By analyzing such factors, an agency may determine the scope of an adequate cumulative effects analysis for wildlife species.[xvixvii] Here, an analysis of the typical movement patterns of the species, the location of marbled murrelet habitat, and portions of the range therein lead to a reasonable restriction of analysis to a 55-mile radius from marine waters. The analysis is restricted to Washington because the agreement applies to lands in Washington and its effects will be felt primarily in Washington. All covered activities and conservation measures will take place entirely in Washington, so the analysis is restricted to Washington.

5.1 FOREST OWNERSHIP CONTEXT

Vital to the understanding of the impact of cumulative effects of the alternatives are the mix of land ownerships within the geographical boundaries in which impacts will be felt. Within the approximately 11-million-acre geographical area, 35% of forested lands are federally owned, 12% are owned or managed by the state, 2% by counties and municipalities, and 51% are privately owned.

Based on a 2004 survey, in seven of the eleven counties containing Enrolled Lands (Pierce, Thurston, Lewis, Cowlitz, Wahkiakum, Pacific, and Grays Harbor Counties) private lands encompass more than half of the forested area. In King, Whatcom, Skagit, and Snohomish Counties, private lands account for 23-48% of the forested land. Figure 5-1 illustrates forest coverage as a percentage of total forested land for each Washington County with forested lands within 55 miles of marine waters.[xviii]

5.2 CUMULATIVE EFFECTS ON THE MARBLED MURRELET

In the past, multiple natural and manmade events have impacted the habitat of the marbled murrelet. Please refer to the most recent marbled murrelet status report to see discussion on the various trends in marbled murrelet population in Washington (Desimone 2016). Regional trends and various other impacts from past actions from outside the Enrolled Lands and the scope of the Proposed Action are summarized in this section.

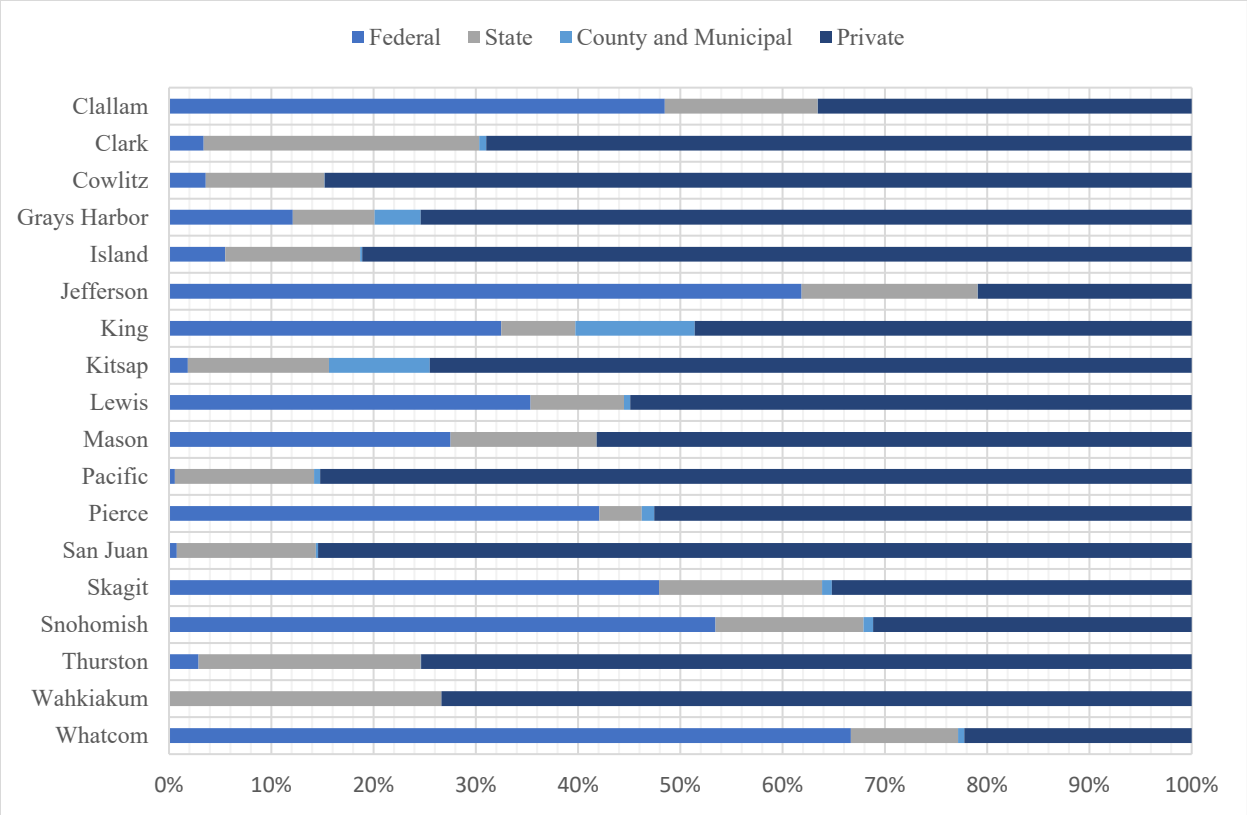

Figure 5-1. Forest land acreage by ownership in Washington Counties

5.2.1 Marbled Murrelet Range Lost

Monitoring for the *Northwest Forest Plan* indicates potential marbled murrelet nesting habitat has declined in Washington from an estimated 1.51 million acres in 1993 to an estimated 1.49 million acres in 2017, a total decline of about 1.4 percent (Lorenz et al. 2021). Most of this estimated habitat loss was attributed to timber harvest on nonfederal lands. Currently, only about 12 percent of habitat-capable lands in Washington contain potential nesting habitat for the marbled murrelet (Falxa and Raphael 2016). The distribution of nesting habitat in Washington is disjunct, with a major gap in the distribution of habitat and Occupied Sites occurring along the southwest Washington coast from roughly Grays Harbor south to the Columbia River. This area is currently identified under the Forest Practices Rules as the "marbled murrelet special landscape" (WAC-222-16-087). Additionally, historic loss of low-elevation coastal old-growth forest in Washington has greatly reduced available nesting habitat for murrelets that is in closest proximity to marine waters.

USFWS anticipates that habitat loss will continue to occur and will remain a leading factor in the current decline in marbled murrelet populations.[xix] Fires, logging, and windstorms all contribute to the ongoing habitat loss.[xx] Marbled murrelet populations are highly sensitive to the suitability of their habitats.[xxi] Other factors contributing to changes in marbled murrelet populations include

variations in ocean temperatures, decline in marine forage fish abundance, and by-catch associated with net fisheries in marine waters.

5.2.2 Past, Present, and Reasonably Foreseeable Actions

This section provides a review of past, present, and reasonably foreseeable actions with potential to affect the resources affected by the proposed action and alternatives, including trends and planned actions occurring in and adjacent to the plan area, focusing primarily on impacts to the marbled murrelet.

Conservation Agreements Covering the Marbled Murrelet on private lands

In the past 20 years, several public and private owners of forest lands have individually entered into SHAs and other conservation agreements with USFWS and NMFS to protect the marbled murrelet. These conservation agreements give a better comprehensive perspective of the combined impacts of multiple landowners working in concert to protect the marbled murrelet. In addition, federal and state governments have developed plans and strategies that will serve as a multiplier to the efforts of the actions on Enrolled Lands. The most impactful SHAs and conservation agreements relating to marbled murrelets are discussed in this section.

Port Blakely Tree Farm

In 2009, Port Blakely Tree Farms entered into an SHA with USFWS for the marbled murrelet in its "Morton Block." The SHA gave USFWS the enforceable right to mandate that Port Blakely maintain certain conservation measures on its 45,306 acre Morton Block (in Lewis and Skamania counties) for 60 years.[xxii] Conservation measures include: improving landscape-level spotted owl dispersal habitat to eventually become 50 percent to 100 percent greater than the Baseline (8,360 acres); certain areas with predicted potential of being or becoming marbled murrelet habitat (based on stand inventory data) would be retained for the term of the SHA; rotation age for regeneration harvest would be extended from an average of 45 years (40 to 50) to an average of 60 years (50 to 70) with mid-rotation thinning to promote habitat characteristics favored by marbled murrelets; stands would be retained for an average of 15 years longer under the SHA than without the SHA, among others; set aside of Special Management Areas, which consist mostly of non-forested areas that may have some ecological value for marbled murrelets or spotted owls. The net result of this agreement is a conservation benefit to marbled murrelets.

Green Diamond Habitat Conservation Plan

In 2000, Green Diamond submitted a Habitat Conservation Plan (HCP) to USFWS for multiple species, including marbled murrelets.[xxiii] The agreement includes land set-asides to promote old-growth habitat including for marbled murrelets. The HCP and corresponding implementation agreement has a term of 50 years and covers watershed management for more than 261,000 acres of commercial forest land in the southwest Puget Sound area of Washington.

City of Everett

In 2015, the City of Everett entered into an SHA with USFWS to protect the marbled murrelet and the spotted owl.[xxiv] In the SHA, the City agrees for a 50 year term, on 3,729 acres in Snohomish County, to increase the habitat quality and quantity for the species, extended harvest rotation of

trees, special set-asides, and baseline habitat deferral in addition to other conservation measures. The net result of this agreement is a conservation benefit to marbled murrelets.

Tagshinney Tree Farm
In 2004, Tagshinny Tree Farm entered into an SHA with USFWS to protect the marbled murrelet and the spotted owl for 144 acres in Lewis County.[xxv] The SHA results in extended harvest rotations, increased tree species diversity, substantial understory growth, steep slope protection, and protection of nest trees for a term of 80 years.

Skookumchuck Wind Energy Project
In 2019, the USFWS completed an HCP for the Skookumchuck Wind Energy Project located in Thurston and Lewis Counties, and issued a record of decision authorizing USFWS to issue an incidental take permit for project operations. The HCP covers the operation of up to 38 wind turbine generators over a period of 30 years. The wind turbine generators pose a collision risk for marbled murrelets flying through the project area, and the HCP estimates that the project could directly kill an average of 2.5 murrelets per year. Mitigation measures are anticipated to offset the impacts of the take associated with this project. These measures include the acquisition of conservation lands for marbled murrelet habitat and removal of derelict fishing gear in Puget Sound.

Rayonier and Sierra Pacific Industries Safe Harbor Agreements
In 2021, the USFWS completed two Safe Harbor Agreements (and associated incidental take permits) for the protection of marbled murrelets for Rayonier, Inc. and Sierra Pacific Industries across their landholdings in Washington, covering 212,443 and 184,380 acres of commercial forest lands, respectively. These Safe Harbor Agreements were broadly similar to the Safe Harbor Agreement under consideration here. The USFWS determined that these agreements provided a net conservation benefit to marbled murrelets.

Large Scale Government Strategies
Federal and State managed forest lands encompass 47% of the forested areas of concern for the marbled murrelet. The span of control exerted by governments results in a comprehensive conservation strategy already being in place to enhance the recovery of the marbled murrelet and act as a catalyst for multiplier effects for conservation efforts like this SHA.

Washington State Department of Natural Resources Marbled Murrelet Long-Term Conservation Strategy
In 1997, the WDNR established the State Trust Lands Habitat Conservation Plan (1997 HCP) to support endangered species conservation on state trust lands. In September 2019, WDNR issued an FEIS for a long-term conservation strategy to protect the marbled murrelet.[xxvi] The Long-Term Strategy was formally adopted by the Board of Natural Resources in December 2019. Under the long-term strategy, marbled murrelet conservation is concentrated in 20 "special habitat areas" that encompass over 46,000 acres on DNR-managed lands. In addition, the long-term strategy includes conservation measures to protect all existing Occupied Sites, and most existing marbled

murrelet habitat on WDNR managed lands. The long-term strategy applies to over 1.34 million acres of WDNR-managed lands within 55 nautical miles of marine waters in western Washington. This affected area includes all or a portion of 20 Washington counties. The long-term strategy released approximately 38,000 acres of marbled murrelet habitat for harvest over a period of two decades. However, habitat is projected to increase on WDNR-managed lands from approximately 207,000 acres (2019) to over 272,000 acres (2067). State lands make up 12% of the geographic area of concern, meaning this conservation effort would have meaningful impacts at a landscape scale.[xxvii]

Northwest Forest Plan

The Northwest Forest Plan (NWFP) is a holistic approach to federal land management designed to "protect threatened and endangered species while also contributing to social and economic sustainability in the region."[xxviii] The plan encompasses 24.5 million acres of federal lands in northwest California, Oregon, and Washington. Federal lands make up 35% of the timberlands in the geographic area of concern for the marbled murrelet.

One of the strategies of the NWFP is the implementation of Late Successional Reserves. The NWFP sets aside 30% or 7.4 million acres of federal land to protect current old-growth forests and wildlife habitat and develop future old-growth habitat. This habitat is particularly advantageous to the recovery of the spotted owl and is anticipated to serve as nesting habitat for marbled murrelets.

Cumulative Impacts from Climate Change

The most recent 5-year status review for the murrelet provides a detailed analysis of how climate change is likely to influence murrelet habitat conditions in both the marine and terrestrial environments (USFWS 2019a, pp. 23-29; pp. 36-40; pp. 94-104). Below is a brief summary of the climate change analysis from the 5-year review:

The climate in the coastal areas of the Pacific Northwest where murrelets nest has been changing and is projected to continue to change through the 21st century. Climate change is predicted to alter the terrestrial environment within the range of the murrelet by changing precipitation (amount, type, and timing) and temperatures (timing and location). Anthropogenic climate change is likely to extend the fire season and increase fire severity, resulting in greater amount of area burned. There is likely to be an increased prevalence of disease and insect infestations/outbreaks that reduce tree vigor, or worse, increase tree mortality. Tree stress is likely to increase and existing tree species will shift upward in elevation to the extent possible, while forest types in the southern end of the murrelets range and in lower elevations will be lost and replaced with different forest types. Hotter droughts will exacerbate all of these impacts (USFWS 2019a, p. 29).

Climate change is likely to continue to exacerbate the existing threats posed by continued nesting habitat loss and fragmentation. Climate change is also projected to result in changes throughout the marine food web, likely reducing prey quality and quantity. Reduced quality and quantity of prey can have physiological consequences to adults and/or chicks and result in reduced murrelet breeding success. Murrelets may be constrained in their ability to respond to shifts in prey distribution and abundance, in particular during the breeding season, because of the reduced

distribution of nesting habitat (USFWS 2019, p. 40). Overall, we expect that climate change will have a negative effect on murrelet nesting habitat, marine foraging habitat, and murrelet reproduction in the coming decades.

Other Reasonably Foreseeable Actions

In addition to the proposed SHA considered in this draft Environmental Assessment, the USFWS expects to receive applications for proposed SHAs for marbled murrelet from other companies in Washington. These proposed SHAs are expected to be similar to the Applicant's proposed SHA.

Various factors may influence the successful restoration of marbled murrelets in Washington. In particular, USFWS noted in addition to loss of habitat and predation, the following potential effects (USFWS 2012) may contribute to the decline of the marbled murrelet population:

> Changes in marine foraging conditions may affect the abundance, distribution, and quality of marbled murrelet prey;
>
> Post-fledging mortality from oil spills, fisheries bycatch, derelict fishing gear, and wind energy projects; and
>
> Combined and interactive effects of factors on individuals, populations, and the species (includes human development close to foraging areas that forces marbled murrelets to commute further to find suitable habitat; in other words, urbanization in the Puget Sound lowlands).

Under the Alternatives analyzed in this EA, the cumulative effects of the studied alternatives on the marbled murrelet are likely to be positive compared to the No Action Alternative and, in any event, are not expected to be significant, even after considering the reasonably foreseeable environmental trends and planned actions in the area.

5.2 CUMULATIVE EFFECTS ON OTHER RESOURCES

This section describes the elements of the environment within the analysis area and how they might be impacted by the cumulative effect of the Proposed Action when added to the effects of other past, present, and reasonably foreseeable actions described above. The analysis area includes all lands that may be affected by the practices engaged by the Applicant within 55 miles of marine waters within Washington. Many of the following elements are discussed in Section 3 and 4 of this document.

Geology and Soils

As discussed in Section 4.1, within the analysis area, the implementation of any alternative could theoretically result in minimal erosion effects to geology and soils. However, employment of responsible timber harvesting practices in accordance with WAC 222 and compliance with steep and unstable slopes rules will minimize not only the cumulative effects on soil within the Enrolled Lands but in surrounding areas as well. The cumulative effect on geology and soils within the affected area and within the context of the above actions is expected to be minimal under any of the alternatives considered.

Climate
As discussed above, the contributions to global climate change are likely to be minimal, and virtually identical, under any of the alternatives considered.

Vegetation
The majority of the impacts on vegetation will be the same under any alternative, including the No Action alternative, and there will therefore be little variation in cumulative effects between the alternatives. Under each of the Action Alternatives, more trees and more habitat for plant species will be available. Combined with the other past and likely future agreements and conservation measures detailed above, this could have a cascading effect for rare plant species. However, the impact to the non-tree vegetation with potential to occur on the Enrolled Lands is not expected to be significant.

Aquatic Resources
Timber harvest will continue to affect aquatic resources in the area. Under all alternatives, the Applicant would continue to follow guidance and regulations regarding the implementation of buffers around RMZs, WMZs, CMZs, sensitive sites, and unstable slopes. Adherence to such guidance will minimize the impact on Enrolled Lands and the aggregated impact when combined with other private timber operations and the conservation agreements and strategies outlined above. Because the agreements above are largely predicated on compliance with the Forest Practices Rules that are designed to benefit aquatic resources including fish, the cumulative effect of the proposed alternatives will be minimal.

Wildlife and Biodiversity
The potential impacts to marbled murrelets are discussed above; it is expected that the proposed SHA Alternatives would provide a benefit for the species compared to the No Action Alternative that may have a multiplier effect when considered in conjunction with WDNR's LTCS, other conservation agreements, and the potential for other landowners to take advantage of a SHA.

There may also be some direct impact to wildlife other than marbled murrelets in the area of concern. In particular, other species that utilize old growth forests as habitat, such as fishers and spotted owls and others listed above, could see a benefit from set-asides under the Action Alternatives, and this benefit could be compounded by the presence of multiple conservation agreements and set-asides acting on the environment in concert. Yet the impact of establishing a conservation benefit for the marbled murrelet for an extended period will increase the potential for recovery of the species, and thus increase biodiversity and help maintain connected ecosystems that rely on all species to maintain population balances necessary for long-term survival.

Socioeconomics and Environmental Justice
The Enrolled Lands span several Washington counties and will impact multiple communities. The most direct impact will be the gainful employment that results from timber harvests. The impact of gainful employment accrued over the term of this Agreement will boost the local economies of all communities near the Enrolled Lands. There is nothing to suggest that the cumulative effect of

the proposed SHA combined with other actions and projects acting on the landscape will disproportionately affect low-income or minority populations.

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APPENDIX A:
County-Specific Affected Environment

County-Specific Vegetation (Section 3.2 in EA)

The tables that follow describe sensitive plant species that have the possibility to occur in each particular county that contains Enrolled Lands. Following each county-wide plant list is a refined list describing sensitive plant species that are expected to occur on the Enrolled Lands themselves based on habitat availability, range, and elevation profiles.

Legend:

BS: BLM Sensitive
FS: Forest Service Sensitive
T: Threatened
S: Sensitive (State)
E: Endangered
P: Present
H: Historical
?: Unsubstantiated report
F: Falsely Reported
X: Presumed Extirpated
LocEnd = Local Endemic; global range of taxon is about the size of an average county
RegEnd = Regional Endemic; global range of taxon is about the size of Washington
Disjunct = Disjunct; globally widespread but Washington population is isolated from the main population by 500+ km
Periph = Peripheral; globally widespread but Washington population is at the margin of the main contiguous range of the taxon
Sparse = Sparse; widely distributed across the state but with relatively few populations (less than 20)
Widesp = Widespread; widely distributed globally and in Washington, with more than 20 populations in the state.
Intro = Introduced.

Table A-1. Special-Status Plant Species with Potential to Occur on the Enrolled Lands

Species Name	State Status[1]	Fed. Status[2]	County	Habitat Association	Elevation
Actaea elata var. elata	S		Whatcom, King, Pierce, Thurston, Lewis, Cowlitz, Grays Harbor	Moist woods, along creeks, swamps	100 - 2,800 feet
Actaea laciniata	S		Lewis	Meadows, prairie, open woods, low elevations to timberline	1640-5900 ft

Agoseris elata	S		Whatcom, Snohomish, Pierce, Thurston, Cowlitz	Arctic-alpine species of moist areas, riverbanks, gravel bars, grasslands, and rocky mountain slopes and cliffs, often near or above timberline.	500-7,800 ft
Agrostis mertensii	S	BS, FS	Skagit, Snohomish	Alpine above tree line	unknown
Aphyllon californicum ssp. grayanum	E		Whatcom, Pacific	Vernally moist meadows; parasitic on aster, erigeron, and related to Asteraceae species. Most common in lower montane meadows but occasionally found at or near sea level	unknown
Arcteranthis cooleyae	T	BS, FS	Snohomish	Montane gravelly alluvial slopes, talus slopes, stream outlets, lake edges, and the edges of receding snowfields generally on north facing slopes.	2,500 - 6,000 ft
Arenaria paludicola	X	E	Snohomish, King, Pierce, Pacific, Grays Harbor	Swamp, wetland, freshwater marsh.	unstated
Botrychium ascendens	S	BS, FS	Whatcom, King	Coniferous forests, wet and dry meadows, stream banks, pastures, roadsides, ravines, moist decayed litter, organic and rocky soil.	2,100-6,400 ft
Botrychium hesperium	S	BS, FS	Snohomish, King	Sagebrush shrubland, moist and dry meadows, forest edges, in dry gravelly or sandy loams.	unstated
Botrychium pedunculosum	S	BS, FS	Whatcom, Snohomish, King	Moist or dry meadows, springs, coniferous forests, and forest edges	1,640-4,340 ft
Brodiaea rosea var. rosea	X		Pierce	Serpentine clay and gravel in open areas along drainages in chaparral and closed-cone conifer forests	Sea level to 5249 ft
Campanula lasiocarpa	S	BS, FS	Snohomish, King	alpine heaths, wet subalpine elevations	unkonwn
Carex densa	S	BS, FS	Pierce, Thurston, Lewis	Wet meadows, intertidal marshland	unknown
Carex heteroneura	S	FS	Whatcom	it grows in moist mountain habitat such as forests and meadows.	6,561-9,842

Carex macrochaeta	T	BS, FS	Whatcom, Pierce, Pacfiic, Grays Harbor	In moist open places, including seeps, wet meadows, and around streams, lakes and waterfalls, often near coast	1200-3200 ft
Carex pauciflora	S	BS, FS	Whatcom, Skagit, Snohomish, King	Acidic environments at low and middle elevations; bogs; also in partial shade; acidic peat and on open mats usually (associates include western hemlock, lodgepole pine, alpine laurel)	250-4,550 ft
Carex pluriflora	S		Whatcom, Snohomish	wetlands, boggy lake margins, prairies, stream banks, and coastal inland areas; associated species include western hemlock and cedar	160-3,160 ft
Carex stylosa	S	BS, FS	Whatcom, Snohomish, King	Pond, bog, fens, shallow marsh, moist meadow, peat soil, wetlands; associated with mountain hemlock, alpine laurel..	2,760-5,200 ft
Cassiope lycopodioides	T		Snohomish, King	rock faces or balds, usually at high elevations, often near waterfalls, streams, or generally moist areas.	1,900-2,200 ft
Castilleja chambersii	S		Pacific	Forest openings, embankments, and rock outcroppings typically where moist.	1,000 - 3,100 ft
Castilleja cryptantha	S	BS, FS	Pierce	Parklands in upper grassy subalpine meadows, near stream channels; shrubby cover; in subalpine fir-Sitka valerian.	unknown
Chrysolepis chrysophylla var. chrysophylla	S	BS, FS	King	Dry open sites to fairly thick woodlands	50-3,600 ft
Cicuta bulbifera	S	BS, FS	Whatcom, Thurston	an obligate wetland species found at edges of marshes, slwo moving streams, lake margins, bogs, wet meadows, and shallow standing water. Grows on hummocks, floating mats, partially submerged rotting logs, and beaver dams	240 - 3,700 ft
Cirsium remotifolium	S	FS	King, Pierce, Thurston, Grays Harbor	Grasslands, meadows, stream banks, brushy slopes, open	82 - 6,650 ft

				coniferous or mixed conifer-hardwood forests.	
Claytonia multiscapa ssp. pacifica	E	FS	Grays Harbor	Wet subalpine to alpine meadows	unstated
Coptis asplenifolia	S	BS, FS	Snohomish, King, Cowlitz, Grays Harbor	Moist cool old forests with well-developed litter layer; in coastal WA, occurs adjacent to wetlands, rivers, streams, or lakes, or on higher ground in areas with high precipitation and low evaporative stress; gentle low slopes with northerly aspects; old growth forests in n cascades	100-3,040 ft
Corydalis aquae-gelidae	T	BS, FS	Cowlitz	in or near cold, flowing water, including seeps and small streams; often occuring in stream channels. Moist shady woods, primarily in the western hemlock zones.	1,250-4,200 ft
Dendrolycopodium dendroideum	S	BS, FS	Whatcom, Snohomish, King, Thurston	Rock outcrops, talus, or boulder fields; often with a significant moss and organic debris layer. Some sites are in the ecotone between a meadow or wetland and adjacent forest	800-3650 ft
Dodecatheon austrofrigidum	E	BS, FS	Pacific, Grays Harbor	Open or shaded, in rock crevices, under overhanging cliffs, on steep basalt slopes and rock outcrops along rivers and ridges.	unstated
Epilobium mirabile	S		Whatcom	Moist scree slopes in the montane and subalpine zones	5000-6233 ft
Erigeron aliceae	S	BS	Lewis	Open places in moist to dry montane forested zones	2,600-5,474 ft
Erigeron oreganus	T	BS, FS	Wahkiakum	Wet environments on basalt outcroppings, and moist and shady basalt cliffs, ledges, often beneath overhangs or near waterfalls.	50-1700 ft
Erigeron peregrinus var. thompsonii	T	BS, FS	Grays Harbor	Moist sphagnum bogs and swamps under cedar and pine forests	200-600 ft
Eryngium petiolatum	T	BS, FS	Lewis	An obligate wetland species of wet prairies, swales, shallow	180-1850 ft

				ditches, and low ground, especially in places submerged in the spring and drier in the summer.	
Erythronium quinaultense	T	FS	Grays Harbor	Openings, road edges and rock ledges in coniferous forests	960-2,900 ft
Erythronium revolutum	S		Lewis, Cowlitz, Wahkiakum, Pacific, Grays Harbor	High precipitation area within 100 km of coast, in moist soil or moderatly shaded forests but requires full li`ght at ground level.	100-600 ft
Euonymus occidentalis var. occidentalis	S		Lewis, Cowlitz, Pacific	Moist woods and forested areas on the west side of the cascade Mts, often in shaded draws, riparian areas, and ravines.	20-600 ft
Eutrochium maculatum var. bruneri	X		Whatcom	Swamps, wet meadows, bogs, stream banks, and other moist open places often associated with limestone	unknown
Filipendula occidentalis	S		Pacific	Bedrock crevices with water seeping over the rock surface much of the year, occurring in open habitats too steep for soil to develop.	100-1800ft
Fritillaria camschatcensis	T	BS, FS	Skagit, Snohomish, King	Moist open meadows, grows in coniferous forest wetlands, deciduous lowland and valley forest	0 -3,000 ft
Githopsis specularioides	S	BS, FS	Pierce, Thurston, Lewis	dry, open places at lower elevations, such as thin soils over bedrock outcrops, grassy balds, talus slopes, and gravelly prairies, microsits and are seasonally moist. Habitats are open but within or adjacent to forest. Associated species includes Douglas Fir.	200-2,500 ft
Heterotheca oregona	S	BS, FS	King, Lewis	On sand and gravel bars along rivers and streams, often along riverbank at the edge of mixed Douglas fir and ponderosa pine forest.	2,600 ft
Howellia aquatilis	T	T	Pierce, Thurston	Low elevation wetland within forested channeled scablands	10-2,400 ft
Impatiens noli-tangere	T	BS, FS	Whatcom, Skagit	Moist woods, lowlands	low to mid elevations

Isoetes nuttallii	S	BS, FS	Pierce, Lewis	Terrestrial in seasonally wet ground, seepages, temporary streams, and mud near vernal pools	200-345 ft
Lathyrus holochlorus	E		Lewis	Remnant prairies, roadsides, fencerows, grasslands, partially cleared land, or climbing in low scrubby vegetation. Grows in the prairie-oak woodland ecotone.	300-340 ft
Lathyrus torreyi	T		Pierce, Lewis	Open areas, trail edges, and open woods, usually at low elevation sites dominated by Douglas fir but reported from montane areas dominated by black cottonwood and willow.	320 - 2,025 ft
Lathyrus vestitus var. ochropetalus	E		Lewis, Cowlitz	Dry, open to wooded areas, forest edges near Douglas fir	250-565 ft
Leptosiphon minimus	S		Skagit, Thurston	Open areas at lower elevations	Sea level to 1700 ft
Lobelia dortmanna	S		Snohomish	Generally in shallow water at margins of lakes and ponds	5-1000 ft
Lupinus oreganus var. kincaidii	E	T	Lewis	Native upland prairies and open oak woodlands	240-300 ft
Lycopodiella inundata	S	BS, FS	Whatcom, King, Pierce, Thurston, Pacific	Bogs, wet sandy places, wetlands adjacent to lakes, marshes, and swampy ground.	0-6,500 ft
Lycopodium lagopus	S		Whatcom, Snohomish, King, Pierce	More or less exposed, grassy fields and openings in second-growth woods	150 – 5000 ft
Meconella oregana	E	BS, FS	Pierce	Sometimes in a mosaic of forest and grassland on slopes	60-620 ft
Montia diffusa	S	BS, FS	Skagit, Snohomish, King, Pierce, Lewis	Moist forests and open fir woodlandsd in the lowland and lower montane zones	850-2,900 ft
Nymphaea tetragona	X		Whatcom	Open water in ponds; swamps; lakes; quiet streams in lowland montane zones	unknown
Oenothera flava ssp. flava	X		Skagit	Found along Yakima river, found in hard packed soil, in swales, riparian areas, moist meadows, around vernal pools, and other seasonally moist sites in sagebrush grasslands and low elevation woodlands; may	unknown

				occur in both wetlands and non-wetlands.	
Orthocarpus bracteosus	T	BS, FS	Whatcom	Dominant in moist meadows with no shrub or tree cover; adjacent forested lands are mostly ponderosa pine and Douglas fir	1,800 - 3,000 ft
Oxalis suksdorfii	T		Whatcom	Meadows and moist forests	not stated
Oxytropis campestris var. gracilis	S	BS, FS	Whatcom	Prairie, alpine meadow; open woodlands; deciduous woodland; open pine forest	1,870-7,600 ft
Packera bolanderi var. harfordii	S	FS	Wahkiakum	Rocky stream banks, well-shaded woodlands	1,640 - 4,921 ft
Packera macounii	T		Whatcom, King, Lewis	Open woods and dry, open places.	2500-6502 ft
Parnassia cirrata var. intermedia	T		Whatcom	Rocky serpentine soil.	2559-6200 ft
Parnassia palustris	S	BS, FS	Pacific, Grays Harbor	Arctic tundra to moist, shaded areas in the mountains, where usually long streams or around springs.	360 - 3,300 ft
Pityopus californica	T		Snohomish	Low elevation mixed coniferous forest including second growth	480 ft
Plantago macrocarpa	S		Grays Harbor	Lakeshores, wetlands, bogs, and seasonally flooded sites near the coast; scattered in clubs in wet peaty soil among moss; usually open with very few trees or shrubs.	10-1,000 ft
Platanthera chorisiana	T	BS, FS	Snohomish, King	In the wettest regions of bogs, along streams, seeps, wet meadows, gravel outwashes, moist areas with fine soils, on moss covered rocks; associated species include mountain hemlock, yellow cedar.	2,540-4,300 ft
Plectritis brachystemon	S		Grays Harbor	Grows in coastal bluffs or partly shaded spring-wet slopes from coastline to mid elevations. Often forms large showy patches	300 – 700 ft
Poa laxiflora	S		Lewis, Cowlitz, Wahkiakum, Pacific	In moss covered rocks and logs, along streams and rivers, and on edges of wet meadows in moist, shady woods	50 - 3,700 ft

Polemonium carneum	T	BS, FS	Thurston, Lewis, Cowlitz, Pacific, Grays Harbor	Woody thickets, moist open forests	150-2,000 ft
Polystichum californicum	T	BS, FS	Pierce	throughout its range, this fern grows in a wide variety of habitats, including slopes, dry rocky terrain, stream banks, vertical cliffs, rock crevices, moist sites, shaded sites, partial shade, or open areas. Commonly found in lowlandsfromt eh coast to middle elevations n mountains.	800-1,000 ft
Sabulina sororia	E		Whatcom	Open areas at lower elevations	Sea level to 1700 ft
Salix sessilifolia	S	BS, FS	Whatcom, Skagit, Cowlitz, Wahkiakum	Wet lowland habitats; riparian forests;	not stated
Samolus parviflorus	T		Wahkiakum	Moist soils along streams, in marshes, around lakes, and in seepages, intertidal beaches near Columbia river;	below 5000 feet
Sidalcea nelsoniana	E	T	Lewis, Cowlitz	Low elevation meadows, prairie or grassland along streams, roadsides, drainage swales, edges of wooded areas	not stated
Sidalcea virgata	T		Thurston	Open meadows, prairies, grassy hillsides, fencerows, roadsides, and in low mountain areas.	unknown
Silene scouleri ssp. scouleri	S	BS, FS	Pierce	Rocky slopes, coastal bluffs	Sea level to 1000 ft
Sisyrinchium sarmentosum	T	BS, FS	Whatcom	Moist grass/sedge meadows and small openings; conifer and shrubs	365-5700 ft
Spiranthes diluvialis	E	T	Thurston	Low elevation wetland complexes and moist meadows.	unstated
Swertia perennis	T	BS, FS	Snohomish	Mountainous subalpine areas in moist meadowland, bogs, stream banks, and other moist places	unstated
Symphyotrichum boreale	T		Pierce	Lakeside marshes, bogs, fens, including calcareous bogs; occurs from lowlands to subalpine	250-2500 ft
Synthyris schizantha	S		Lewis, Grays Harbor	Moist ground at mid-elevations in the mountains.	700-5200 ft

Trillium albidum ssp. parviflorum	S	BS, FS	Pierce, Lewis	Dominated by hardwoods	25-700 ft
Utricularia intermedia	S	BS, FS	Snohomish, King	Shallow ponds, slow moving streams, wet sedge or rush meadows	unkonwn
Whipplea modesta	T		Thurston	Coniferous forest	less than 1500 feet
Woodwardia fimbriata	S		Pierce	stream banks, shaded wet road banks, edges of bogs, and moist bluffs; among conifer and mixed confier hardwood forests, and usually near salt water.	3-100 ft

Table A-2. Current and Historical Locations of Documented Rare Plant Species on Enrolled Lands

Scientific Name
Actaea elata var. elata
Agoseris elata
Arenaria paludicola
Brodiaea rosea
Brotherella roellii
Carex macrochaeta
Cirsium remotifolium var. remotifolium
Erythronium revolutum
Euonymus occidentalis var. occidentalis
Githopsis specularioides
Lathyrus torreyi
Nuttallanthus texanus
Polemonium carneum
Sericocarpus rigidus
Sidalcea hirtipes
Silene scouleri ssp. scouleri
Trillium parviflorum
Usnea longissima

County-Specific Aquatic Resources (Section 3.3 in EA)

Table A-3. Water Basins and Watershed Administrative Units (WAU) within each Water Basin

WAU	Basin capturing the WAU	WRIA capturing the WAU

LAKE SHANNON	BAKER	LAKE SHANNON
WADDEL CREEK	BLACK	WADDEL CREEK
CUMBERLAND	BLACK DIAMOND	GREEN RIVER/COAL CREEK
NEWAUKUM	BLACK DIAMOND	GREEN RIVER/NEWAUKUM CREEK
CHEHALIS HEADWATERS	BOISTFORT	CHEHALIS RIVER HEADWATERS
ELK CREEK	BOISTFORT	ELK CREEK
LAKE CREEK	BOISTFORT	LAKE CREEK
SF CHEHALIS	BOISTFORT	SOUTH FORK CHEHALIS RIVER
STILLMAN CREEK	BOISTFORT	STILLMAN CREEK
HOPE CREEK	BOISTFORT	UPPER CHEHALIS RIVER/HOPE CREEK
ROCK-JONES	BOISTFORT	UPPER CHEHALIS RIVER/ROCK-JONES
SOUTH PRAIRIE	CARBON	SOUTH PRAIRIE CREEK
WILKESON	CARBON	WILKESON CREEK
CHESTER MORSE	CEDAR RIVER	CHESTER MORSE LAKE
CHAMBERS-CLOVER	CHAMBERS-CLOVER	CHAMBERS-CLOVER CREEKS
CLOQUALLUM	CLOQUALLUM	CLOQUALLUM CREEK
DELEZENE CREEK	CLOQUALLUM	LOWER CHEHALIS RIVER/DELEZENE CR
LOWER COWEEMAN	COWEEMAN	LOWER COWEEMAN RIVER
UPPER COWEEMAN	COWEEMAN	UPPER COWEEMAN RIVER
DUNGENESS VALLEY	DUNGENESS	LOWER DUNGENESS RIVER
OLEQUA	EAST WILLAPA	OLEQUA CREEK
STILLWATER	EAST WILLAPA	STILLWATER CREEK
ABERNATHY	GERMANY-ABERNATHY	ABERNATHY CREEK
COAL CREEK	GERMANY-ABERNATHY	COAL CREEK
LONGVIEW	GERMANY-ABERNATHY	COLUMBIA RIVER/COAL CREEK SLOUGH
GERMANY	GERMANY-ABERNATHY	GERMANY CREEK
LITTLE NISQUALLY RIVER	GLACIER	LITTLE NISQUALLY RIVER
FINNEY	GRANDY-FINNEY-ILLABOT	FINNEY CREEK
JACKMAN CREEK	GRANDY-FINNEY-ILLABOT	JACKMAN CREEK
GRANDY	GRANDY-FINNEY-ILLABOT	UPPER SKAGIT RIVER/GRANDY CREEK
CORKINDALE	GRANDY-FINNEY-ILLABOT	UPPER SKAGIT RIVER/ROCKY CREEK
GRAYS BAY	GRAYS BAY	GRAYS BAY

MITCHELL CREEK	GRAYS BAY	GRAYS RIVER
SF GRAYS RIVER	GRAYS BAY	SOUTH FORK GRAYS RIVER
WF GRAYS RIVER	GRAYS BAY	WEST FORK GRAYS RIVER
CLEARWATER	GREEN WATERS	CLEARWATER RIVER
GREENWATER	GREEN WATERS	GREENWATER RIVER
MIDDLE WHITE	GREEN WATERS	MIDDLE WHITE RIVER
MUD MTN	GREEN WATERS	WHITE RIVER/MUD MOUNTAIN LAKE
LESTER	HEADWATERS	LESTER
SMAY CREEK	HEADWATERS	SMAY CREEK
SUNDAY CREEK	HEADWATERS	SUNDAY CREEK
UPPER GREEN RIVER	HEADWATERS	UPPER GREEN RIVER
EF HOQUIAM	HOQUIAM-WISHKAH	EAST FORK HOQUIAM RIVER
LOWER WISHKAH	HOQUIAM-WISHKAH	LOWER WISHKAH RIVER
WISHKAH HEADWATERS	HOQUIAM-WISHKAH	WISHKAH HEADWATERS
WHIDBEY ISLAND	ISLAND	WHIDBEY ISLAND
CEDAR CREEK	JACKSON PRAIRIE	CEDAR CREEK
LACAMAS	JACKSON PRAIRIE	COWLITZ RIVER/LACAMAS CREEK
COWLITZ RIVER/MILL CREEK	JACKSON PRAIRIE	COWLITZ RIVER/MILL CREEK
SALMON CREEK	JACKSON PRAIRIE	SALMON CREEK
LOWER KALAMA	KALAMA	LOWER KALAMA RIVER
MIDDLE KALAMA	KALAMA	MIDDLE KALAMA RIVER
GARRARD CREEK	LINCOLN	GARRARD CREEK
INDEPENDENCE CREEK	LINCOLN	INDEPENDENCE CREEK
LINCOLN CREEK	LINCOLN	LINCOLN CREEK
UPPER CHEHALIS/ROCK CREEK	LINCOLN	UPPER CHEHALIS RIVER/ROCK CREEK
DELAMETER	LOWER COWLITZ	DELAMETER CREEK
LOWER COWLITZ	LOWER COWLITZ	LOWER COWLITZ RIVER
OSTRANDER	LOWER COWLITZ	OSTRANDER CREEK
LOWER GREEN-DUWAMISH	LOWER GREEN-DUWAMISH	LOWER GREEN-DUWAMISH RIVERS
LOWER PUYALLUP	LOWER PUYALLUP	LOWER PUYALLUP RIVER
OLNEY CREEK	LOWER SKYKOMISH-PILCHUCK	LOWER WALLACE RIVER
SKYKOMISH RIVER	LOWER SKYKOMISH-PILCHUCK	SKYKOMISH RIVER
UPPER WALLACE RIVER	LOWER SKYKOMISH-PILCHUCK	UPPER WALLACE RIVER
RAGING RIVER	LOWER SNOQUALMIE	RAGING RIVER
TATE	LOWER SNOQUALMIE	SNOQUALMIE RIVER

TOKUL CREEK	LOWER SNOQUALMIE	TOKUL CREEK
TOLT	LOWER SNOQUALMIE	TOLT RIVER
DAY CREEK	LYMAN-CULTUS	DAY CREEK
GILLIGAN	LYMAN-CULTUS	GILLIGAN CREEK
ALDER	LYMAN-CULTUS	LOWER SKAGIT RIVER/ALDER CREEK
NOOKACHAMPS	LYMAN-CULTUS	NOOKACHAMPS CREEK
MASHEL	MASHEL-OHOP	MASHEL RIVER
OHOP CREEK	MASHEL-OHOP	OHOP CREEK
POWELL CREEK	MASHEL-OHOP	POWELL CREEK
CATHLAPOTL	MERWIN	CATHLAPOTL
HOWARD CREEK	MIDDLE-SOUTH FORKS	HOWARD CREEK
HUTCHINSON CREEK	MIDDLE-SOUTH FORKS	HUTCHINSON CREEK
MARMOT RIDGE	MIDDLE-SOUTH FORKS	MIDDLE FORK NOOKSACK RIVER
PORTER CANYON	MIDDLE-SOUTH FORKS	PORTER CANYON
SKOOKUM CREEK	MIDDLE-SOUTH FORKS	SKOOKUM CREEK
BEAR RIVER	NASELLE	BEAR RIVER
CHINOOK	NASELLE	CHINOOK RIVER
LOWER NASELLE	NASELLE	LOWER NASELLE RIVER
NASELLE HEADWATERS	NASELLE	NASELLE HEADWATERS
CEDAR RIVER	NORTH	CEDAR RIVER
FALL RIVER	NORTH	FALL RIVER
LOWER NORTH RIVER	NORTH	LOWER NORTH RIVER
NORTH HEADWATERS	NORTH	NORTH RIVER HEADWATERS
SMITH CREEK	NORTH	SMITH CREEK
VESTA-LITTLE NORTH	NORTH	VESTA CREEK/LITTLE NORTH RIVER
DEER CREEK	NORTH FORK	DEER CREEK
FRENCH-BOULDER	NORTH FORK	FRENCH CREEK/BOULDER RIVER
HAZEL	NORTH FORK	HAZEL
LOWER NF STILLAGUAMISH	NORTH FORK	LOWER NORTH FORK STILLAGUAMISH R
LAKE CAVANAUGH	PILCHUCK	LAKE CAVANAUGH
PILCHUCK MTN	PILCHUCK	UPPER PILCHUCK RIVER
LOWER DESCHUTES	PRAIRIE	LOWER DESCHUTES RIVER
SAMISH RIVER	SAMISH	SAMISH RIVER
LOWER CHEHALIS/ELIZABETH CREEK	SATSOP	LOWER CHEHALIS RIVER/ELIZABETH C
MF SATSOP	SATSOP	MIDDLE FORK SATSOP RIVER
SATSOP	SATSOP	SATSOP RIVER

WF SATSOP	SATSOP	WEST FORK SATSOP RIVER
LOWER ELOCHOMAN	SKAMOKAWA-ELOCHOMAN	LOWER ELOCHOMAN RIVER
N ELOCHOMAN	SKAMOKAWA-ELOCHOMAN	NORTH ELOCHOMAN RIVER
SKAMOKAWA	SKAMOKAWA-ELOCHOMAN	SKAMOKAWA CREEK
HANAFORD	SKOOKUMCHUCK	HANAFORD CREEK
LOWER SKOOKUMCHUCK	SKOOKUMCHUCK	LOWER SKOOKUMCHUCK RIVER
SCATTER CREEK	SKOOKUMCHUCK	SCATTER CREEK
UPPER SKOOKUMCHUCK	SKOOKUMCHUCK	UPPER SKOOKUMCHUCK RIVER
LOWER MIDDLE SNOQUALMIE	SNOQUALMIE FORKS	LOWER MIDDLE FORK SNOQUALMIE RIV
NF SNOQUALMIE RIVER	SNOQUALMIE FORKS	NORTH FORK SNOQUALMIE RIVER
SF SNOQUALMIE RIVER	SNOQUALMIE FORKS	SOUTH FORK SNOQUALMIE RIVER
CANYON CREEK	SOUTH FORK	CANYON CREEK
JIM CREEK	SOUTH FORK	JIM CREEK
JORDAN	SOUTH FORK	LOWER SOUTH FORK STILLAGUAMISH R
VERLOT	SOUTH FORK	MIDDLE SOUTH FORK STILLAGUAMISH
JOHNS RIVER	SOUTH HARBOR	JOHNS RIVER
TIGER	SQUAK	ISSAQUAH CREEK
LOWER RIFFE LAKE	TILTON-KIONA	LOWER RIFFE LAKE
BREMER	TILTON-KIONA	LOWER TILTON RIVER
HARMONY	TILTON-KIONA	MAYFIELD LAKE
NF TILTON	TILTON-KIONA	NORTH FORK TILTON RIVER
MORTON	TILTON-KIONA	TILTON RIVER/LAKE CREEK
WINSTON	TILTON-KIONA	WINSTON CREEK
GREEN RIVER	TOUTLE	GREEN RIVER
NF TOUTLE	TOUTLE	NORTH FORK TOUTLE RIVER
SILVER LAKE	TOUTLE	SILVER LAKE
SF TOUTLE	TOUTLE	SOUTH FORK TOUTLE RIVER
TOUTLE RIVER	TOUTLE	TOUTLE RIVER
MIDDLE DESCHUTES	UPPER	MIDDLE DESCHUTES RIVER
UPPER DESCHUTES	UPPER	UPPER DESCHUTES RIVER
CHEHALIS	UPPER CHEHALIS/NEWAUKUM	CHEHALIS
LOWER NEWAUKUM	UPPER CHEHALIS/NEWAUKUM	LOWER NEWAUKUM RIVER

NF NEWAUKUM	UPPER CHEHALIS/NEWAUKUM	NORTH FORK NEWAUKUM RIVER
SF NEWAUKUM	UPPER CHEHALIS/NEWAUKUM	SOUTH FORK NEWAUKUM RIVER
BUNKER CREEK	UPPER CHEHALIS/NEWAUKUM	UPPER CHEHALIS RIVER/BUNKER CREE
PORTER CREEK	UPPER CHEHALIS/PORTER-CEDAR	PORTER CREEK
UPPER CHEHALIS/CEDAR CREEK	UPPER CHEHALIS/PORTER-CEDAR	UPPER CHEHALIS RIVER/CEDAR CREEK
BECKLER RIVER	UPPER SKYKOMISH	BECKLER RIVER
FOSS RIVER	UPPER SKYKOMISH	FOSS RIVER
MILLER RIVER	UPPER SKYKOMISH	MILLER RIVER
SF SKYKOMISH RIVER	UPPER SKYKOMISH	SOUTH FORK SKYKOMISH RIVER
DECEPTION	UPPER SKYKOMISH	TYE RIVER
LOWER WILLAPA	WILLAPA RIVER	LOWER WILLAPA RIVER
MILL CREEK	WILLAPA RIVER	MILL CREEK
SF WILLAPA	WILLAPA RIVER	SOUTH FORK WILLAPA RIVER
WILLAPA HEADWATERS	WILLAPA RIVER	WILLAPA HEADWATERS
WILSON CREEK	WILLAPA RIVER	WILSON CREEK
CHEHALIS SLOUGHS	WYNOOCHEE	CHEHALIS SLOUGHS
WYNOOCHEE RIVER S	WYNOOCHEE	WYNOOCHEE RIVER SOUTH

County-Specific Wildlife (Section 3.4 in EA)

Table A-4. Possible current or historical northern spotted owl presence on the Enrolled Lands

County	Lewis	Pacific	Thurston	Grays Harbor	King	Snohonish	Skagit	Whatcom
Township and range of northern spotted owl locations	T11N R1E	T11N R8W	T15N R4E	T16N R6W	T26N R10E	T31N R7E	T34N R7E	T38N R6E
	T11N R2E	T12N R7W		T16N R8W	T26N R11E		T34N R8E	
	T13N R3E	T13N R6W			T26N R12E		T35N R7E	
	T13N R5W	T14N R6W					T35N R9E	
	T14N R3E							

Cititcial habitat for federally-listed fish species are discussed below by WRIA:

WRIA 1 (Nooksack) - Within WRIA 1 (Nooksack) watershed, the Applicant's Enrolled Lands are within the designated Evolutionarily Significant Units of ESA-listed threatened Chinook and Steelhead species. There are 3 hatcheries within the WRIA for ESA-listed Fall Pink Salmon, Winter Steelhead, and Spring Chinook. There is documented rearing, spawning and/or present Spring Chinook, Coho, Fall Chum, Winter and Summer Steelhead, Sockeye, Pink Salmon, and Bull Trout streams on the Enrolled Lands within this WRIA. Critical habitat for Puget Sound Chinook, Puget Sound Steelhead and Bull Trout may be present on Enrolled Lands within this WRIA.

WRIA 3 (Lower Skagit-Samish) - Within WRIA 3 (Lower Skagit-Samish) watershed, the Applicant's Enrolled Lands are within the designated Evolutionarily Significant Units of ESA-listed threatened Bull Trout, Chinook, and Steelhead species. There is one hatchery within the WRIA for ESA-listed Fall Chinook. There is documented rearing, spawning and/or present Summer and Fall Chinook, Coho, Fall Chum, Winter and Summer Steelhead, Sockeye, Pink Salmon, Bull Trout and Kockanee streams on the Enrolled Lands within this WRIA. Critical habitat for Puget Sound Steelhead and Bull Trout may be present on Enrolled Lands within this WRIA.

WRIA 4 (Upper Skagit) - Within WRIA 3 (Upper Skagit) watershed, the Applicant's Enrolled Lands are within the designated Evolutionarily Significant Units of ESA-listed threatened Chinook and Steelhead species. There are 4 hatcheries within the WRIA for ESA-listed Sockeye, Coho, Summer Chinook and Spring Chinook. There is documented rearing, spawning and/or present Fall Chinook, Coho, Fall Chum, Winter and Summer Steelhead, Sockeye, Pink Salmon, and Bull Trout streams on the Enrolled Lands within this WRIA. Critical habitat for Puget Sound Chinook, Puget Sound Steelhead, and Bull Trout may be present on Enrolled Lands within this WRIA.

WRIA 5 (Stillaguamish) - Within WRIA 5 (Stillaguamish) watershed, the Applicant's Enrolled Lands are within the designated Evolutionarily Significant Units of ESA-listed threatened Chinook and Steelhead species. There are two hatcheries within the WRIA for ESA-listed Winter and Summer Steelhead. There is documented rearing, spawning and/or present Fall Chinook, Coho, Fall Chum, Winter and Summer Steelhead, Pink Salmon, and Bull Trout streams on the Enrolled Lands within this WRIA. Critical habitat for Puget Sound Chinook, Puget Sound Steelhead and Bull Trout may be present on Enrolled Lands within this WRIA.

WRIA 7 (Snohomish) - within the WRIA 7 (Snohomish) watershed, the Applicant's Enrolled Lands are within the designated Evolutionarily Significant Units of ESA-listed threatened Chinook, Bull Trout, and Steelhead species. There are 3 hatcheries within the WRIA for ESA-listed Winter and Summer Steelhead, Coho, and Summer Chinook. There is no documented rearing, spawning and/or present fish streams on the Enrolled Lands within this WRIA. Critical habitat for Puget Sound Chinook Salmon, Puget Sound Steelhead and Bull Trout may be present on Enrolled Lands within this WRIA.

WRIA 8 (Cedar - Sammish) – within WRIA 8 (Cedar – Sammish) watershed, the Applicant's Enrolled Landsd are within the designated Evolutionary Significant Unites of ESA-listed Winter and Summer Steelhead, Coho, and Spring, Summer and Fall Chinook. There are two hatcheries within the WRIA for ESA-listed Coho, Sockeye, and Fall Chinook. There is no documented rearing, spawning, and/or present fish streams on the Enrolled Landsd within this WRIA. No critical habitat for fish appeaers to exist on the Enrolled Landsd within this WRIA within this WRIA.

WRIA 9 (Duwamish – Green) – within WRIA 9 (Duwamish – Green) watershed, the Applicant's Enrolled Landsd are within the designated Evolutionary Significant Unites of ESA-listed Winter and Summer Steelhead, Coho, and Spring, Summer and Fall Chinook. There are three hatcheries within the WRIA for ESA-listed Coho, Fall Chinook, Winter and Summer Steelhead. There is documented gradient accessible and/or potential but blocked Fall Chinook, Coho, Fall Chum, and Winter Steelhead streams on the Enrolled Landsd within this WRIA. Critical habitat for Puget Sound Chinook Salmon and Puget Sound Steelhead may be present on Enrolled Lands within this WRIA.

WRIA 10 (Puyallup –White) - Within the WRIA 10 (Puyallup – White) watershed, the Applicant's Enrolled Lands are within the designated Evolutionarily Significant Units of ESA-listed threatened Chinook, Bull Trout, and Steelhead species. There are two hatcheries within the WRIA for Coho and Fall Chinook. There is documented rearing, spawning, gradient accessible and/or the presence of Fall Chinook, Coho, Fall Chum, Winter Steelhead, Pink Salmon streams on the Enrolled Lands within this WRIA. Critical habitat for Puget Sound Chinook Salmon, Puget Sound Steelhead and Bull Trout may be present on Enrolled Lands within this WRIA.

WRIA 11 (Nisqually) - Within the WRIA 11 (Nisqually) watershed, the Applicant's Enrolled Lands are within the designated Evolutionarily Significant Units of ESA-listed threatened Chinook and Steelhead species. There are no hatcheries within the WRIA. There is documented rearing, spawning, and/or the presence of Fall Chinook, Coho, Winter Chum, Winter Steelhead, Sockeye, Pink Salmon, and Bull Trout streams on the Enrolled Lands within this WRIA. Critical habitat for Puget Sound Chinook Salmon and Puget Sound Steelhead may be present on Enrolled Lands within this WRIA.

WRIA 12 (Chambers – Clover) – within WRIA 12 (Chambers - Clover) watershed, the Applicant's Enrolled Landsd are within the designated Evolutionary Significant Unites of ESA-listed Coho, Winter and Summer Steelhead. There are three hatcheries within the WRIA for ESA-listed Fall Chinook. There is documented rearing, spawning, and/or present Coho streams on the Enrolled Landsd within this WRIA. Critical habitat for Bull Trout and Puget Sound Chinook may be present on Enrolled Lands within this WRIA.

WRIA 13 (Deschutes) - Within WRIA 13 (Deschutes) watershed, the Applicant's Enrolled Lands are within the designated Evolutionarily Significant Units of ESA-listed threatened Steelhead species. There is one hatchery within the WRIA for Fall Chinook. There is documented rearing, spawning, gradient accessible and/or the presence of Fall Chinook, Coho, Fall Chum, and Winter Steelhead streams on the Enrolled Landsd within this WRIA. Critical habitat for Puget Sound Steelhead may be present on Enrolled Lands within this WRIA.

WRIA 22 (Lower Chehalis) - Within the WRIA 22 (Snohomish) watershed, the Applicant's Enrolled Lands are within the designated Evolutionarily Significant Units of ESA-listed threatened and species of concern for Chinook, Coho, and Steelhead. There are 4 hatcheries for Winter and Summer Steelhead, Summer and Late Coho, and Fall Chinook. There is documented rearing, spawning and/or present Summer and Fall Chinook, Coho, Fall Chum, Winter Steelhead, and Bull Trout streams on the Enrolled Lands within this WRIA. Critical habitat for Bull Trout may be present on Enrolled Lands within this WRIA.

WRIA 23 (Upper Chehalis) - Within the WRIA 23 (Upper Chehalis) watershed, the Applicant's Enrolled Lands are within no designated Evolutionarily Significant Units of ESA-listed threatened species. There is 1 hachery within the WRIA for ESA-listed Winter Steelhead and Late Coho. There is documented rearing, spawning and/or present Spring and Fall Chinook, Coho and Winter Steelhead streams on the Enrolled Lands within this WRIA. No critical habitat for fish exists on Enrolled Lands within this WRIA.

WRIA 24 (Willapa) - Within the WRIA 24 (Willapa) watershed, the Applicant's Enrolled Lands are within no designated Evolutionarily Significant Units of ESA-listed threatened species. There are three hatcheries within the WRIA for Winter Steelhead, Late Coho, Fall Chum, and Fall Chinook. There is documented rearing, spawning and/or present Fall Chinook, Coho, Fall Chum, Winter Steelhead, and Bull Trout streams on the Enrolled Lands within this WRIA. Critical habitat for Lower Columbia River Coho, Columbia River Chum, and Lower Columbia River Chinook may be present on Enrolled Lands within this WRIA.

WRIA 25 (Grays-Elochoman) - Within the WRIA 25 (Grays-Elochoman) watershed, the Applicant's Enrolled Lands are within the designated Evolutionarily Significant Units of ESA-listed threatened Chinook, Chum and Coho species. There are four hatcheries within the WRIA for ESA-listed Summer and Winter Steelhead, Fall Chum, Coho, and Fall and Spring Chinook. There is documented rearing, spawning and/or present Fall Chinook, Coho, Fall Chum, and Winter Steelhead streams on the Enrolled Lands within this WRIA. Critical habitat for Lower Columbia River Chinook, Columbia River Chum, and Lower Columbia River Coho may be present on Enrolled Lands within this WRIA.

WRIA 26 (Cowlitz) - Within the WRIA 26 (Cowlitz) watershed, the Applicant's Enrolled Lands are within the designated Evolutionarily Significant Units of ESA-listed threatened Chinook, Chum, Coho, and Steelhead species. There are four hatcheries within the WRIA

for ESA-listed Winter and Summer Steelhead, Sea-Run Cutthroat, Coho, and Fall and Spring Chinook. There is documented rearing, spawning and/or present Spring and Fall Chinook, Coho, Fall Chum, and Winter and Summer Steelhead streams on the Enrolled Lands within this WRIA. Critical habitat for Lower Columbia River Steelhead, Lower Columbia River Coho, Columbia River Chum, Bull Trout and Lower Columbia River Chinook may be present on Enrolled Lands within this WRIA.

WRIA 27 (Lewis) - Within the WRIA 27 (Lewis) watershed, the Applicant's Enrolled Lands are within the designated Evolutionarily Significant Units of ESA-listed threatened Chinook, Chum, Coho, Bull Trout and Steelhead species. There are seven hatcheries within the WRIA for ESA-listed Winter and Summer Steelhead, Coho, and Spring Chinook. There is documented rearing, spawning and/or present Spring and Fall Chinook, Coho, Winter and Summer Steelhead streams on the Enrolled Lands within this WRIA. Critical habitat for Lower Columbia River Chinook, Columbia River Chum, Lower Columbia River Coho, and Lower Columbia River Steelhead may be present on Enrolled Lands within this WRIA.

County-specific Land Use (Section 3.5 of EA)

The Applicant's Enrolled Lands Cowlitz County: Cowlitz County covers 729,600 acres, 123,447 acres of which (16.9%) are the Applicant's Enrolled Lands. Nearby lands are owned by private, state, and federal owners, including portions of the Mount St. Helens National Volcanic Monument. Per Cowlitz County planning documents, "[a]s of 2014, only about 10% of Cowlitz County is classified and subject to the land use requirements of the County's Land Use Ordinance."[xxix] "[A]pproximately 32 square miles are within city boundaries and approximately another 200 square miles are federal or state owned lands, resulting in approximately 900 square miles under the County's jurisdiction. In 2010, over 80% of the County's land base was dedicated to timber and open space."[xxx] The Enrolled Lands in Cowlitz County are situated in the northwest corner of the county, encircling census-designated Ryderwood and extending north into Lewis County at intervals of approximately five to eight miles west of Interstate 5.

The Applicant's Enrolled Lands in Grays Harbor County: Grays Harbor County covers 1,217,472 acres, 147,732 of which (12.1%) are the Applicant's Enrolled Lands. Nearby lands are under private, state, federal, and tribal ownership; in particular, Grays Harbor County includes large portions of the Quinault Indian Reservation and Olympic National Forest, neither of which is under County jurisdiction. Of areas that are under County jurisdiction, the dominant zoning designation is "General Development Five,"[xxxi] which "permit[s] a wide range of uses appropriate for rural areas at densities consistent with the level of available public facilities, public services and the physical characteristics of the areas included within the district."[xxxii] Other prevalent zoning categories in Grays Harbor County include the Lake Quinault zoning district, Agricultural Use, and Resort Residential; a more diverse array of land use designations is clustered in the relatively more populous regions along the Chehalis River.[xxxiii] The Enrolled Lands in Grays Harbor County begin at Washington's coastline and stretch east approximately 20-25 miles along the northern

bank of Grays Harbor and the Chehalis River; the Enrolled Lands also extend north approximately 20-25 miles, stopping five to seven miles south of Lake Quinault.

The Applicant's Enrolled Lands in King County: King County covers 1,365,760 acres, 15,414 of which (1.13%) are the Applicant's Enrolled Lands. Nearby lands are owned by private, state, and federal landowners. Forested lands make up a majority of King County, comprising 876,630 acres (64% of the county's territory) as of 2007.[xxxiv] King County also contains 49,285 acres of farm land as of 2007,[xxxv] and 25,162 acres of urban parks and open space as of 2006. [xxxvi] A significant portion of King County is made up of incorporated cities, with Bellevue, Federal Way, Kent, Sammamish, and Seattle being the largest, by area.[xxxvii] The Applicant's Enrolled Lands in King County are located along the King-Snohomish County border near CDP Baring along U.S. Highway 2.

The Applicant's Enrolled Lands in Lewis County: Lewis County covers 1,569,280 acres, 192,595 acres of which (12.3 %) are the Applicant's Enrolled Lands. Nearby lands are owned by private owners and by the state and federal government, including national forest lands and southern portions of Mount Rainier National Park. In Lewis County, the predominant land use designation is Forest (72%, or 1.13 million acres); national forest lands comprise approximately one-third of Lewis County. The other major land use designations include Rural (19%, or 298,163 acres) and Agricultural (6%, or 94,156.8 acres).[xxxviii] The Applicant's Enrolled Lands in Lewis County are situated along the northern shores of Riffe Lake, extending northeast in the span between State Route 7 and U.S. Highway 12. Additionally, small stands of Enrolled Lands are scattered throughout central and western Lewis County, including southeast of the city of Chehalis and south of unincorporated Doty.

The Applicant's Enrolled Lands in Mason County: Mason County covers 620,060 acres, 57,600 of which are water,[xxxix] and 10 of which (0.002%) are the Applicant's Enrolled Lands. Additional lands are owned by private parties, municipalities, tribal nations, and the federal government. 63% of Mason County's land area comprises Rural Lands (387,300 acres), and the next largest category of lands is the Olympic National Forest, which covers 25% of the county (154,080 acres). Tribal lands, incorporated cities, and urban growth areas comprise the remainder of Mason County's territory.[xl] The Applicant's Enrolled Lands in Mason County are situated along the portion of Mason County's northern border that lies east of the Hood Canal. These Enrolled Lands straddle the Mason-Kitsap County Border and are contiguous with the Enrolled Lands situated in Kitsap County.

The Applicant's Enrolled Lands in Pacific County: Pacific County covers 595,200 acres, 119,487 of which (20.1%) are the Applicant's Enrolled Lands. Nearby lands are owned by private parties, municipalities, tribal nations, and the federal government. Government lands include the Willapa National Wildlife Refuge and multiple state parks. Pacific County is primarily rural in nature, with unincorporated areas occupying 587,544 acres, and four incorporated cities and their associated

Urban Growth Areas occupying approximately 7,316 acres; over 70 percent of the land area is forested.[xli] The Enrolled Lands in Pacific County start at Pacific County's eastern border and stretch west approximately 18 miles to a point due north of the northwest corner of Wahkiakum County, Pacific's neighbor to the south. Two additional tracts of Enrolled Lands are situated south of the Naselle River, west of the north-south-oriented border of Wahkiakum County, to the southeast.

The Applicant's Enrolled Lands in Pierce County: Pierce County covers 1,068,486.4 acres,[xlii] 1,092 of which (0.1%) are the Applicant's Enrolled Lands. Nearby lands are owned by private, state, and federal landowners, in particular Joint Base Lewis-McChord, a U.S. military installation, and Mt. Rainier National Park. Approximately 588,117 acres of Pierce County are unincorporated; of that area, 439,460 acres (74.72%) is classified as "Unbuilt Environment," the largest component of which is Resource Lands (287,597 acres). "Built Environment" contains Commercial, Industrial, Transportation/Communication/Utilities, Education, and Public and Quasi-Public Facilities, which together cover 15,303 acres. Residential lands cover 133,354 acres of unincorporated Pierce County.[xliii] The Applicant's Enrolled Lands in Pierce County begin five to eight miles northeast of Eatonville and stretch north along the eastern bank of the Puyallup River. Additional Enrolled Lands are situated in the rough center of Pierce County and also southeast of the City of Buckley.

The Applicant's Enrolled Lands in Thurston County: Thurston County covers 471,713 acres, 37,475 of which (7.9%) are the Applicant's Enrolled Lands. Of that area, 440,545 acres (93%) lies in unincorporated Thurston County, and the remaining 7% is contained in seven incorporated cities and towns (Olympia, Lacey, Tumwater, Bucoda, Rainier, Tenino, and Yelm). Major landowners in the unincorporated county include the State, (e.g., Capitol State Forest), the federal government (e.g., portions of Joint Base Lewis-McChord and the Nisqually Wildlife Refuge), tribal nations (e.g., the Nisqually Indian Community), and private timber companies. Timber harvest and other natural resource uses dominate land use across rural parts, and residential uses concentrate in urban areas, along transportation routes, up the Puget Sound peninsulas in northern Thurston County, and around lakes.[xliv] Most of Thurston County is designated for Rural use (393,283 acres); of this area 156,685 acres are designated for resource use, 18,404 acres for Military Reservation, and 176,943 acres for Rural Resource and Residential.[xlv] The Applicant's Enrolled Lands in Thurston County are situated near the town of Bucoda and between the City of Rainier, to the northwest, and unincorporated Vail, to the south.

The Applicant's Enrolled Lands in Skagit County: Skagit County covers approximately 1.1 million acres, 121.5 acres of which (.01%) are Enrolled Lands owned by the Applicant. Nearby lands are owned by state, municipal, federal, and private landowners. Within Skagit County, a plurality of lands are designated as Industrial Forest (319,623 acres) a sub-category within the Natural Resource Lands designation (total 473,779 acres). However, the dominant land use designation in Skagit County is for Public Open Space of Regional/Statewide Importance (ORSI) (519,342

acres), which includes National Forest (282,812 acres), National Park & Recreation Areas (130,848 acres), Wilderness (5,425 acres), State Parks and Recreation Areas (5,425 acres) as well as unclassified lands (16,727 acres). The Applicant's Enrolled Lands in Skagit County are situated north of State Route 20 beginning east of the city of Sedro-Woolley and stretching east past the town of Concrete and past Lake Shannon. Additional Enrolled Lands are located south of State Route 20 beginning south of Concrete and continuing along the southern edge of State Route 20, south along State Route 530, and southwest of Corkindale and Marblemount.

The Applicant's Enrolled Lands in Snohomish County: Snohomish County covers 1,348,458 acres,[xlvi] 2,141 acres of which (0.15%) are the Applicant's Enrolled Lands. Nearby lands are owned by state and federal landowners, as well as tribal landowners. The Tulalip Indian Reservation comprises 22,000 acres of Snohomish County,[xlvii] and state and privately owned forest lands make up over 18% of Snohomish County's total area.[xlviii] That portion, however, does not include another 663,000 acres of federally owned forest land that are within the Mount Baker-Snoqualmie National Forest area.[xlix] Including the federally administered forests, forest lands comprise over 60% of Snohomish County's total area. The Enrolled Lands in Snohomish County are situated primarily north and south of east-west-running U.S. Highway 2 between the cities of Sultan, to the west, and Gold Bar, to the east. Additional Enrolled Lands are located just south of the county line with Skagit County, a continuation of the southernmost reaches of the Skagit County Enrolled Lands described above.

The Applicant's Enrolled Lands in Wahkiakum County: Wahkiakum County covers 172,160 acres, 13,713 of which (8%) are the Applicant's Enrolled Lands. Commercial forest land is far and away the largest land use in Wahkiakum County, comprising approximately 149,000 acres, or 88% of the unincorporated territory as of 1981. Agriculture is the second largest use (approximately 16,000 acres). Other uses in Wahkiakum include Rural Residential, Industrial & Commercial (1,126 acres) and Waterways and Roads (1,170 acres).[l] The Applicant's Enrolled Lands in Wahkiakum County are distributed among three areas: along the banks of the Deep River, which runs north-south; in central Wahkiakum County, northeast of unincorporated Skamokawa; and at a point along the Wahkiakum-Pacific County Border where Enrolled Lands situated in Pacific County extend across the border into Wahkiakum County.

The Applicant's Enrolled Lands in Whatcom County: Whatcom County covers approximately 1,601,920 acres, 8,661 acres of which (0.5%) are Enrolled Lands owned by the Applicant. Nearby lands are owned by governmental and private landowners. Forest lands predominate in Whatcom County. The State of Washington administers over 88,000 acres of land in Whatcom County, including two Natural Resource Conservation Areas. In eastern Whatcom County, the United States Forest Service and the North Cascades National Park manage over 800,000 acres for timber, recreation, wildlife habitat, fisheries production, and wilderness.[li] In addition to forest land, approximately 84,211 acres of Whatcom County are zoned for agricultural use.[lii] The Enrolled

Lands in Whatcom County are situated approximately five miles northwest of Mount Baker and stretch northward to the U.S.-Canada border.

County-specific Socioeconomics (Section 3.7 of the EA)

Cowlitz County - The Enrolled Lands are located in Cowlitz County, a county in which 1/8 of the work force is employed in manufacturing. The county is near Portland, Oregon. The Enrolled Lands lie within Cowlitz County Census Tracts 0012.00, 0016.00, 0017.00, 0018.00, 0019.00, 0020.01, and 0020.02, which had a combined population of 33,228 as of the 2019 American Community Survey (U.S. Census Bureau 2019). Survey data for these tracts indicate that the population in the area is 91.11 percent white (compared to 67.8 percent of the statewide population). The survey data also indicate that the median household income in the area is below the State median (Tract 0012.00 is 15.76 percent below the State median, Tract 0016.00 is 10.35 percent below the State median, Tract 0017.00 is 9.95 percent percent above the State median, Tract 0018.00 is 12.25 percent below the Staste median, Tract 0019.00 is 1.24 percent above the State median, Tract 0020.01 is 0.03 percent above the State median, and Tract 0020.02 is 11.62 percent below the State median). In 2015, approximately 9.32 percent of the population in these seven tracts was earning an income below poverty level, compared to 12.2 percent statewide. See Table 3-6 for a breakdown of the population demographics in the 0012.00, 0016.00, 0017.00, 0018.00, 0019.00, 0020.01, and 0020.02 Census tracts.

Grays Harbor County*:* The Enrolled Lands are located in western Grays Harbor County, a community that relies heavily on timber harvest as an economic driver. The county is bounded by the Pacific Ocean to the west and the Olympic National Forest to the east. The Enrolled Lands lie within Grays Harbor County Census Tracts 0003.00, 0004.00, 0005.00, 0006.00, 0007.00, and 0013.00, which had a combined population of 28,020 as of the 2019 American Community Survey (U.S. Census Bureau 2019). Survey data for these tracts indicate that the population in the area is 86.36 percent white (compared to 67.8 percent of the statewide population). The survey data also indicate that the median household income in the area is below the State median (Table 3-9). In 2019, approximately 14.75 percent of the population in these six tracts was earning an income below poverty level, compared to 12.2 percent statewide. See Table 3-9 for a breakdown of the population demographics in the 0003.00, 0004.00, 0005.00, 0006.00, 0007.00, and 0013.00 Census tracts.

King County*:* The Enrolled Lands are located in northeast King County, a mostly urban county home to the Seattle metro area. Nearby communities include Tacoma and Everett. The Enrolled Lands lie within King County Census Tracts 0312.02, 0313.01, 0315.02, 0326.02, 0327.02, and 0328.00, which had a combined population of 34,948 as of the 2019 American Community Survey (U.S. Census Bureau 2019). Survey data for this tract indicates that the population in the area is 82.58 percent white (compared to 67.8 percent of the statewide population). The survey data also indicate that the median household income in the area is significantly above the State median, averaging 143.02% of the State median. In 2019, approximately 7.90 percent of the population in these six tracts was

earning an income below poverty level, compared to 12.2 percent statewide. See Table 3-9 for a breakdown of the population demographics in the 0312.02, 0313.01, 0315.02, 0326.02, 0327.02, and 0328.00 Census tracts.

Lewis County*:* The Enrolled Lands are located in central Lewis County, largely a rural community with a majority of labor work in agriculture, logging, and mining. Nearby communities include Olympia and Vancouver, Washington. The Enrolled Lands lie within Lewis County Census Tracts 9701.00, 9702.00, 9704.00, 9707.00, 9711.00, 9715.00, 9716.00, 9716.00, 9717.00, and 9719.00, which had a combined population of 39,617 as of the 2019 American Community Survey (U.S. Census Bureau 2019). Survey data for these ten tracts indicate that the population in the area is 84.11 percent white (compared to 67.8 percent of the statewide population). The survey data also indicate that the median household income in the area is below the State median (Table 3-9). In 2019, approximately 17.14 percent of the population in these ten tracts was earning an income below poverty level, compared to 12.2 percent statewide. See Table 3-9 for a breakdown of the population demographics in the 9701.00, 9702.00, 9704.00, 9707.00, 9711.00, 9715.00, 9716.00, 9716.00, 9717.00, and 9719.00Census tracts.

Mason County*:* The Enrolled Lands are located in northeast Mason County, a community that relies heavily on timber harvest as an economic driver. Nearby communities include Bremerton and Port Orchard. The Enrolled Lands lie within Mason County Census Tract 9602.00, which had a population of 5,749 as of the 2019 American Community Survey (U.S. Census Bureau 2019). Survey data for these two tracts indicate that the population in the area is 83.77 percent white (compared to 67.8 percent of the statewide population). The survey data also indicate that the median household income in the area is below the State median (Table 3-9). In 2019, approximately 28.04 percent of the population in this tract was earning an income below poverty level, compared to 12.2 percent statewide. See Table 3-9 for a breakdown of the population demographics in the9602.00 Census tract.

Pacific County: The Enrolled Lands are located in south Pacific County, a community that relies heavily on timber harvest as an economic driver. The county is bounded by the Pacific Ocean to the west and Oregon to the south. The Enrolled Lands lie within Pacific County Census Tracts 9502.00 and 9504.00, which had a combined population of 8,257 as of the 2019 American Community Survey (U.S. Census Bureau 2019). Survey data for these two tracts indicate that the population in the area is 81.94 percent white (compared to 67.8 percent of the statewide population). The survey data also indicate that the median household income in the area is below the State median (Table 3-9). In 2019, approximately 18.37 percent of the population in these two tracts was earning an income below poverty level, compared to 12.2 percent statewide. See Table 3-9 for a breakdown of the population demographics in the 9502.00 and 9504.00 Census tracts.

Pierce County: The Enrolled Lands are located in central Pierce County, a mostly industrial county. Nearby communities include Olympia, Seattle, and Port Orchard. The Enrolled

Lands lie within Pierce County Census Tracts 0701.00, 0702.03/0704.01, 0728.00, and 0732.00, which had a combined population of 21,149/23,019 as of the 2019 American Community Survey (U.S. Census Bureau 2019). Survey data for these four tracts indicate that the population in the area is 78.64/77.30 percent white (compared to 67.8 percent of the statewide population). The survey data also indicate that the median household income in the area is above the State median (Table 3-9). In 2019, approximately 11.19/8.87 percent of the population in these four tracts was earning an income below poverty level, compared to 12.2 percent statewide. See Table 3-9 for a breakdown of the population demographics in the0701.00, 0702.03/0704.01, 0728.00, and 0732.00 Census tracts.

Skagit County - The Enrolled Lands are located in central Skagit County, a rural county. The county's economy is centered around agriculture and manufacturing. Nearby communities include Whatcom County to the north, the Salish Sea to the west, and Chelan and Okanogan Counties to the east. The Enrolled Lands lie within Skagit County Census Tracts 9509.00, 9510.00, 9511.00, and 9512.00, which had a combined population of 15,142 as of the 2019 American Community Survey (U.S. Census Bureau 2019). Survey data for these tracts indicate that the population in the area is 86.7 percent white (compared to 67.8 percent of the statewide population). The survey data also indicate that the median household income in the area is below the State median (Tract 9509.00 is 99.25 percent of the State median, Tract 9510.00 is 80.13 percent of the State median, Tract 9511.00 is 67.30 percent of the State median, and Tract 9512.00 is 120.52 percent of the State median). In 2015, approximately 14.62 percent of the population in these four tracts was earning an income below poverty level, compared to 12.2 percent statewide. See Table 3-6 for a breakdown of the population demographics in the 9509.00, 9510.00, 9511.00, and 9512.00 Census tracts.

Snohomish County - The Enrolled Lands are located in central Snohomish County, a county with a significant industrial economy that is part of the Seattle-Tacoma-Bellevue metropolitan statistical area. The Enrolled Lands lie within Snohomish County Census Tracts 0535.06, 0537.00, and 0538.01, which had a combined population of 12,206 as of the 2019 American Community Survey (U.S. Census Bureau 2019). Survey data for these tracts indicate that the population in the area is 88.68 percent white (compared to 67.8 percent of the statewide population). The survey data also indicate that the median household income in the area is below the State median (Tract 0537.00 is 80.02 percent of the State median, Tract 0538.01 is 95.56 percent of the State median, and Tract 0538.01 is 95.56 percent of the State median). In 2015, approximately 12.08 percent of the population in these three tracts was earning an income below poverty level, compared to 12.2 percent statewide. See Table 3-6 for a breakdown of the population demographics in the 0535.06, 0537.00, and 0538.01 Census tracts.

Thurston County*:* The Enrolled Lands are located in south Thurston County, a rural county. Nearby communities outside the county include Chehalis, Washington and Portland, Oregon. The Enrolled Lands lie within Thurston County Census Tracts 0125.10,

0125.20, 0126.20, 0127.20, 0127.30, which had a combined population of 28,199 as of the 2019 American Community Survey (U.S. Census Bureau 2019). Survey data for these tracts indicate that the population in the area is 80.05 percent white (compared to 67.8 percent of the statewide population). The survey data also indicate that the median household income in the area is below the State median (Table 3-9). In 2019, approximately 14.45 percent of the population in these five tracts was earning an income below poverty level, compared to 12.2 percent statewide. See Table 3-9 for a breakdown of the population demographics in the 0125.10, 0125.20, 0126.20, 0127.20, 0127.30 Census tracts.

Wahkiakum County*:* The Enrolled Lands are located in northwest Wahkiakum County, a rural county in southern Washington. The county is near the west coast of Washington and is bordered by Oregon to the south. The Enrolled Lands lie within Wahkiakum County Census Tract 9501.00, which had a combined population of 3,605 as of the 2019 American Community Survey (U.S. Census Bureau 2019). Survey data for this tract indicates that the population in the area is 89.34 percent white (compared to 67.8 percent of the statewide population). The survey data also indicate that the median household income in the area is below the State median (Tract 9501.00 is 70.12 percent of the State median). In 2019, approximately 17.08 percent of the population in this tract was earning an income below poverty level, compared to 12.2 percent statewide. See Table 3-9 for a breakdown of the population demographics in the 9501.00 Census tract.

Whatcom County - The Enrolled Lands are located in central and northern Whatcom County, a county with a mostly agricultural workforce. Whatcom County's labor force is comprised 39.9 percent farm jobs and a large percentage of a manufacturing work. British Columbia, Canada borders the county to the north, the Cascade mountain range borders to the east, and the Salish Sea lies to the west of Whatcom County. The Enrolled Lands lie within Whatcom County Census Tract 0101.00, which had a combined population of 8,308 as of the 2019 American Community Survey (U.S. Census Bureau 2019). Survey data for this tract indicates that the population in the area is 85.01 percent white (compared to 67.8 percent of the statewide population). The survey data also indicate that the median household income in the area is below the State median (Tract 0101.00 is 90.18 percent of the State median). In 2015, approximately 20.65 percent of the population in Tract 0101.00 was earning an income below poverty level, compared to 12.2 percent statewide. See Table 3-6 for a breakdown of the population demographics in the 0101.00 Census tract.

APPENDIX B

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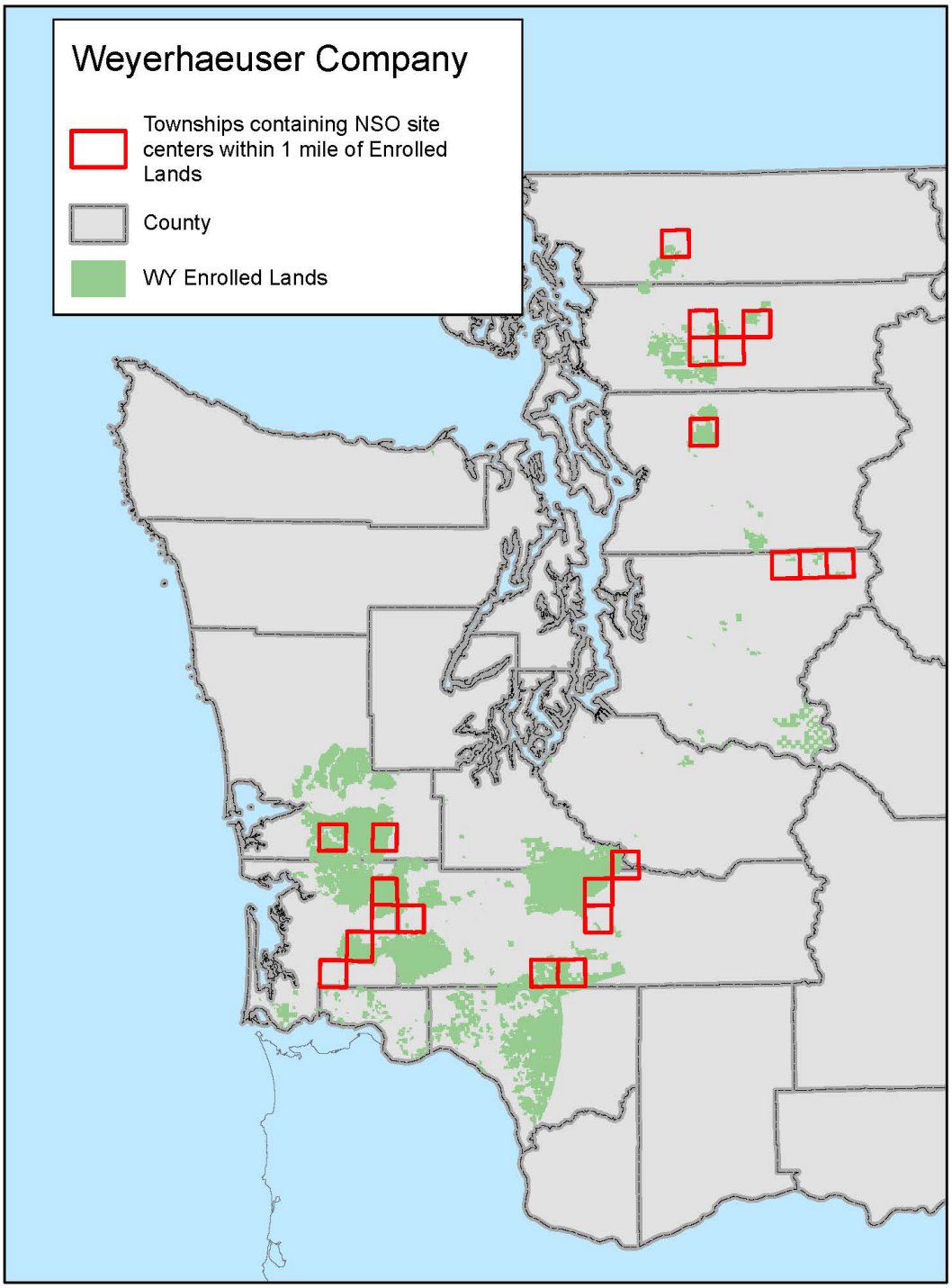
APPENDIX C:

Mapped locations of spotted owls documented on or near Enrolled Lands



APPENDIX D
RECOMMENDED NATIONWIDE STANDARD CONSERVATION MEASURES

Avoiding and Minimizing Incidental Take of Migratory Birds

Listed below are effective measures that should be employed at all project development sites nationwide with the goal of reducing impacts to birds and their habitats. These measures are grouped into three categories: General, Habitat Protection, and Stressor Management. These measures may be updated through time. We recommend checking the Conservation Measures website regularly for the most up-to-date list (https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds).

General Measures

Educate all employees, contractors, and/or site visitors of relevant rules and regulations that protect wildlife. See the Service webpage on Regulations and Policies for more information on regulations that protect migratory birds.
Prior to removal of an inactive nest, ensure that the nest is not protected under the Endangered Species Act (ESA) or the Bald and Golden Eagle Protection Act (BGEPA). Nests protected under ESA or BGEPA cannot be removed without a valid permit.
See the Service Nest Destruction Policy
Do not collect birds (live or dead) or their parts (e.g., feathers) or nests without a valid permit. Please visit the Service permits page for more information on permits and permit applications.
Provide enclosed solid waste receptacles at all project areas. Non-hazardous solid waste (trash) would be collected and deposited in the on-site receptacles. Solid waste would be collected and disposed of by a local waste disposal contractor. For more information about solid waste and how to properly dispose of it, see the EPA Non-Hazardous Waste website.
Report any incidental take of a migratory bird, to the local Service Office of Law Enforcement.
Consult and follow applicable Service industry guidance.

Habitat Protection

Minimize project creep by clearly delineating and maintaining project boundaries (including staging areas).
Consult all local, State, and Federal regulations for the development of an appropriate buffer distance between development site and any wetland or waterway. For more information on wetland protection regulations see the Clean Water Act sections 401 and 404.
Maximize use of disturbed land for all project activities (i.e., siting, lay-down areas, and construction).
Implement standard soil erosion and dust control measures. For example:
Establish vegetation cover to stabilize soil
Use erosion blankets to prevent soil loss
Water bare soil to prevent wind erosion and dust issues

Stressor Management

Stressor: Vegetation Removal
Conservation Goal: Avoid direct take of adults, chicks, or eggs.

Conservation Measure 1: Schedule all vegetation removal, trimming, and grading of vegetated areas outside of the peak bird breeding season to the maximum extent practicable. Use available resources, such as internet-based tools (e.g., the FWS's Information, Planning and Conservation system and Avian Knowledge Network) to identify peak breeding months for local bird species; or, contact local Service Migratory Bird Program Office for breeding bird information.

Conservation Measure 2: When project activities cannot occur outside the bird nesting season, conduct surveys prior to scheduled activity to determine if active nests are present within the area of impact and buffer any nesting locations found during surveys.
Generally, the surveys should be conducted no more than five days prior to scheduled activity. Timing and dimensions of the area to be surveyed vary and will depend on the nature of the project, location, and expected level of vegetation disturbance.
If active nests or breeding behavior (e.g., courtship, nest building, territorial defense, etc.) are detected during these surveys, no vegetation removal activities should be conducted until nestlings have fledged or the nest fails or breeding behaviors are no longer observed. If the activity must occur, establish a buffer zone around the nest and no activities will occur within that zone until nestlings have fledged and left the nest area. The dimension of the buffer zone will depend on the proposed activity, habitat type, and species present and should be coordinated with the local or regional Service office.
When establishing a buffer zone, construct a barrier (e.g., plastic fencing) to protect the area. If the fence is knocked down or destroyed, work will suspend wholly, or in part, until the fence is satisfactorily repaired.
When establishing a buffer zone, a qualified biologist will be present onsite to serve as a biological monitor during vegetation clearing and grading activities to ensure no take of migratory birds occurs. Prior to vegetation clearing, the monitor will ensure that the limits of construction have been properly staked and are readily identifiable. Any associated project activities that are inconsistent with the applicable conservation measures, and activities that may result in the take of migratory birds will be immediately halted and reported to the appropriate Service office within 24 hours.
If establishing a buffer zone is not feasible, contact the Service for guidance to minimize impacts to migratory birds associated with the proposed project or removal of an active nest. Active nests may only be removed if you receive a permit from your local Migratory Bird Permit Office. A permit may authorize active nest removal by a qualified biologist with bird handling experience or by a permitted bird rehabilitator.

Conservation Measure 3: Prepare a vegetation maintenance plan that outlines vegetation maintenance activities and schedules so that direct bird impacts do not occur.

Stressor: Invasive Species Introduction

Conservation Goal: Prevent the introduction of invasive plants.

Conservation Measure 1: Prepare a weed abatement plan that outlines the areas where weed abatement is required and the schedule and method of activities to ensure bird impacts are avoided.

Conservation Measure 2: For temporary and permanent habitat restoration/enhancement, use only native and local (when possible) seed and plant stock.

Conservation Measure 3: Consider creating vehicle wash stations prior to entering sensitive habitat areas to prevent accidental introduction of non-native plants.

Conservation Measure 4: Remove invasive/exotic species that pose an attractive nuisance to migratory birds.

Stressor: Artificial Lighting

Conservation Goal: Prevent increase in lighting of native habitats during the bird breeding season.

Conservation Measure 1: To the maximum extent practicable, limit construction activities to the time between dawn and dusk to avoid the illumination of adjacent habitat areas.

Conservation Measure 2: If construction activity time restrictions are not possible, use down shielding or directional lighting to avoid light trespass into bird habitat (i.e., use a 'Cobra' style light rather than an omnidirectional light system to direct light down to the roadbed). To the maximum extent practicable, while allowing for public safety, low intensity energy saving lighting (e.g. low pressure sodium lamps) will be used.

Conservation Measure 3: Minimize illumination of lighting on associated construction or operation structures by using motion sensors or heat sensors.

Conservation Measure 5: Bright white light, such as metal halide, halogen, fluorescent, mercury vapor and incandescent lamps should *not* be used.

Stressor: Human Disturbance

Conservation Goal: Minimize prolonged human presence near nesting birds during construction and maintenance actions.

Conservation Measure 1: Restrict unauthorized access to natural areas adjacent to the project site by erecting a barrier and/or avoidance buffers (e.g., gate, fence, wall) to minimize foot traffic and off-road vehicle uses.

Stressor: Collision

Conservation Goal: Minimize collision risk with project infrastructure and vehicles.

Conservation Measure 1: Minimize collision risk with project infrastructure (e.g., temporary and permanent) by increasing visibility through appropriate marking and design features (e.g., lighting, wire marking, etc.).

Conservation Measure 2: On bridge crossing areas with adjacent riparian, beach, estuary, or other bird habitat, use fencing or metal bridge poles (Sebastian Poles) that extend to the height of the tallest vehicles that will use the structure.

Conservation Measure 3: Install wildlife friendly culverts so rodents and small mammals can travel under any new roadways instead of over them. This may help reduce raptor deaths associated with being struck while tracking prey or scavenging road kill on the roadway.

Conservation Measure 4: Remove road-kill carcasses regularly to prevent scavenging and bird congregations along roadways.

Conservation Measure 5: Avoid planting "desirable" fruited or preferred nesting vegetation in medians or Rights of Way.

Conservation Measure 6: Eliminate use of steady burning lights on tall structures (e.g., >200 ft).

Stressor: Entrapment

Conservation Goal: Prevent birds from becoming trapped in project structures or perching and nesting in project areas that may endanger them.

Conservation Measure 1: Minimize entrapment and entanglement hazards through project design measures that may include:
Installing anti-perching devices on facilities/equipment where birds may commonly nest or perch
Covering or enclosing all potential nesting surfaces on the structure with mesh netting, chicken wire fencing, or other suitable exclusion material prior to the nesting season to prevent birds from establishing new nests. The netting, fencing, or other material must have no opening or mesh size greater than 19 mm and must be maintained until the structure is removed.
Cap pipes and cover/seal all small dark spaces where birds may enter and become trapped.

Conservation Measure 2: Use the appropriate deterrents to prevent birds from nesting on structures where they cause conflicts, may endanger themselves, or create a human health and safety hazard.

1. During the time that the birds are trying to build or occupy their nests (generally , between April and August, depending on the geographic location), potential nesting

surfaces should be monitored at least once every three days for any nesting activity, especially where bird use of structures is likely to cause take. It is permissible to remove non-active nests (without birds or eggs), partially completed nests, or new nests as they are built (prior to occupation). If birds have started to build any nests, the nests shall be removed before they are completed. Water shall not be used to remove the nests if nests are located within 50 feet of any surface waters.

2. If an active nest becomes established (i.e., there are eggs or young in the nest), all work that could result in abandonment or destruction of the nest shall be avoided until the young have fledged or the nest is unoccupied. Construction activities that may displace birds after they have laid their eggs and before the young have fledged should not be permitted. If the project continues into the following spring, this cycle shall be repeated. When work on the structure is complete, all netting shall be removed and properly disposed of.

Stressor: Noise

Conservation Goal: Prevent the increase in noise above ambient levels during the nesting bird breeding season.

Conservation Measure 1: Minimize an increase in noise above ambient levels during project construction by installing temporary structural barriers such as sand bags

Conservation Measure 2: Avoid permanent additions to ambient noise levels from the proposed project by using baffle boxes or sound walls.

Stressor: Chemical Contamination

Conservation Goal: Prevent the introduction of chemicals contaminants into the environment.

Conservation Measure 1: Avoid chemical contamination of the project area by implementing a Hazardous Materials Plan. For more information on hazardous waste and how to properly manage hazardous waste, see the EPA Hazardous Waste website.

Conservation Measure 2: Avoid soil contamination by using drip pans underneath equipment and containment zones at construction sites and when refueling vehicles or equipment.

Conservation Measure 3: Avoid contaminating natural aquatic and wetland systems with runoff by limiting all equipment maintenance, staging laydown, and dispensing of fuel, oil, etc., to designated upland areas.

Conservation Measure 4: Any use of pesticides or rodenticides shall comply with the applicable Federal and State laws.

1. Choose non-chemical alternatives when appropriate
2. Pesticides shall be used only in accordance with their registered uses and in accordance with the manufacturer's instructions to limit access to non-target species.

3. For general measures to reducing wildlife exposure to pesticides, see EPA's Pesticides: Environmental Effects website.

Stressor: Fire

Conservation Goal: Minimize fire potential from project-related activities.

Conservation Measure 1: Reduce fire hazards from vehicles and human activities (e.g., use spark arrestors on power equipment, avoid driving vehicles off road).

Conservation Measure 2: Consider fire potential when developing vegetation management plans by planting temporary impact areas with a palate of low-growing, sparse, fire resistant native species that meet with the approval of the County Fire Department and local FWS Office.

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[iii] *See* 77 Fed. Reg. 71,876 (Dec. 4, 2012).
[iv] *See* 78 Fed. Reg. 61,506 (Oct. 3, 2013).
[v] *See* 85 Fed. Reg. 11,458 (Feb. 27, 2020).
[vi] *See* 81 Fed. Reg. 29,335 (May 11, 2016).
[vii] *See* 75 Fed. Reg. 63,898 (Oct. 18, 2010).
[viii] *See* 79 Fed. Reg. 19,711 (Apr. 9, 2014).
[ix] *Id*.
[x] *Id*.
[xi] *Id*.
[xii] *See* 77 Fed. Reg. 36,728 (June 19, 2012).
[xiii] *See* 79 Fed. Reg. 54,782 (Sep. 12, 2014).
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[xxvi] Washington Department of Natural Resources, Marbled Murrelet Long-Term Conservation Strategy - Final Environmental Impact Statement (FEIS) (Oct. 2019), available at https://www.dnr.wa.gov/mmltcs.

[xxvii] Daniels (2004)

[xxviii] US Forest Service, Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (Apr. 1994), available at https://www.fs.fed.us/r6/reo/library/docs/NWFP-ROD-1994.pdf

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