Rayonier Operating Company, LLC Safe Harbor Agreement

for the

Marbled Murrelet (*Brachyramphus marmoratus*)

in Washington

Contents

1.0 INTRODUCTION AND PURPOSE

1.1 Purpose of SHA

This document is a Safe Harbor Agreement ("SHA") for the marbled murrelet (*Brachyramphus marmoratus*) in Washington developed by and between the U.S. Fish and Wildlife Service ("USFWS") and Rayonier Operating Company, LLC, on behalf of its affiliates and subsidiaries ("Applicant") in support of Applicant's application for an enhancement of survival permit ("Permit") submitted to USFWS under Section 10(a)(1)(A) of the Federal Endangered Species Act, 16 U.S.C. 1531 et seq. ("ESA"). An SHA is a voluntary arrangement between USFWS and a cooperating landowner, like Applicant, that describes conservation efforts and associated management activities that a landowner will perform that are intended to benefit a species listed under the ESA. In return, the landowner receives incidental take coverage under the Permit and assurances that USFWS will not require additional or different conservation efforts or associated management activities by the landowner. In this case, this SHA is intended to provide a net conservation benefit for marbled murrelet above and beyond the benefits of implementation of the Forest Practices Habitat Conservation Plan (WDNR 2005) ("Forest Practices HCP"), which separately provides conservation benefits to the marbled murrelet.

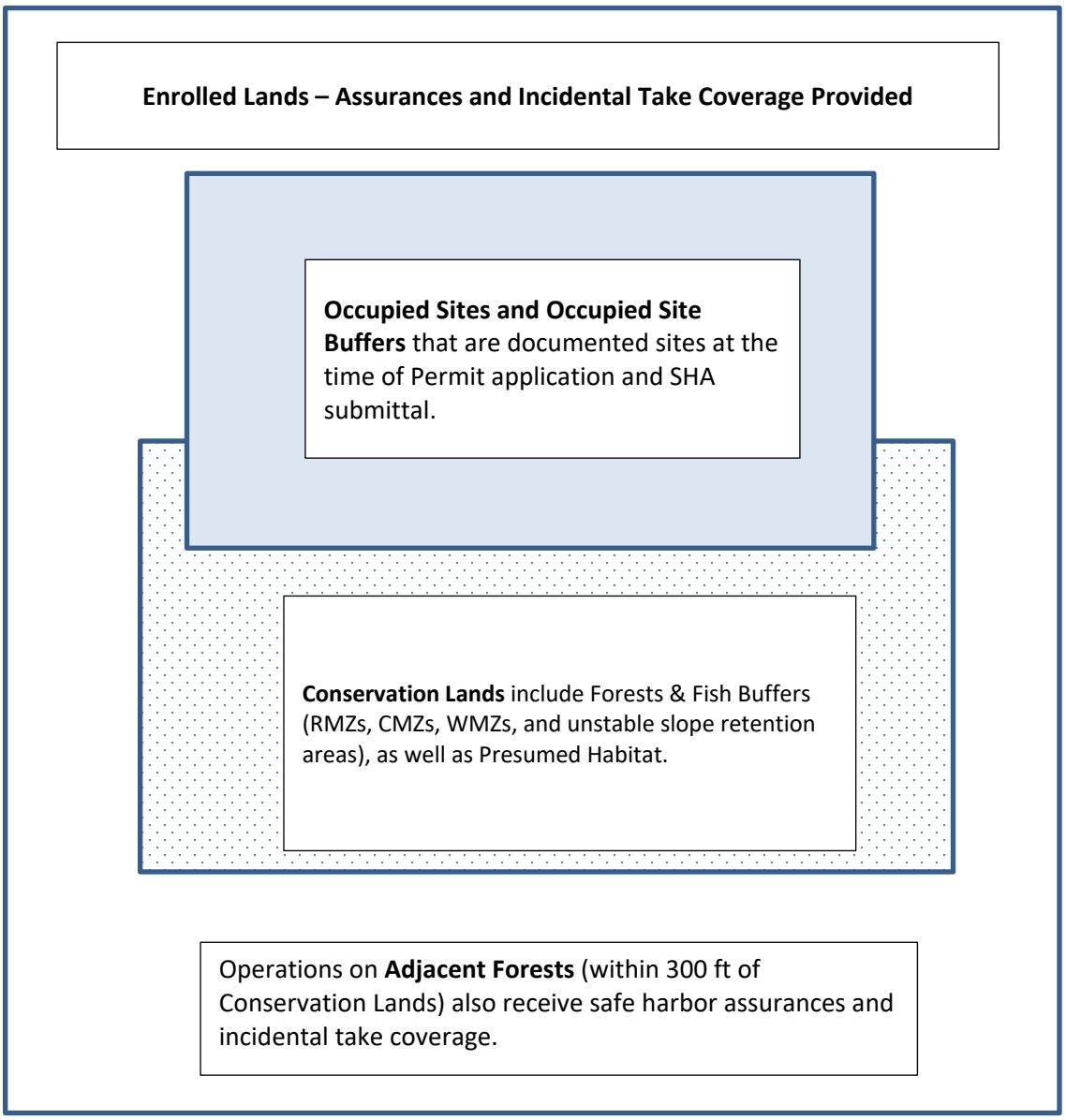
This SHA provides background biological information on the marbled murrelet, management responsibilities for Applicant, conservation benefits expected from implementation of this SHA, and the types of land use activities and properties covered by this SHA. This SHA also contains all information specific to Applicant that is necessary for USFWS to issue the Permit, including: details on Enrolled Lands, known Occupied Sites and Occupied Site Buffers, Presumed Habitat, any anticipated incidental take, and the anticipated net conservation benefit as defined in regulations.

This SHA will serve as the basis to issue the Permit to Applicant pursuant to section 10(a)(1)(A) of the ESA (16 U.S.C. §1539(a)(1)(A)). This SHA recognizes conservation benefits for the marbled murrelet that accrue through growing, protecting, and restoring mature and complex forest stands that are retained in Riparian Management Zones ("RMZs"), Channel Migration Zones ("CMZs"), Wetland Management Zones ("WMZs"), and unstable slopes within Forests & Fish Buffers through compliance with Washington's Forest Practices Program during the term of this SHA. However, for purposes of the net conservation benefit analysis required under the ESA for this SHA, those existing, non-voluntary conservation benefits cannot be considered by USFWS. Applicant is providing conservation benefits for marbled murrelets by committing to no harvest in Presumed Habitat or in Occupied Sites (defined below) within the scope of Applicant's Enrolled Lands. Any change in existing management restrictions that result from this SHA and the subsequent Permit issuance, and that impact marbled murrelet (negatively or positively), will also be considered in the net conservation benefit analysis.

Upon termination, Applicant may return the Enrolled Lands to baseline conditions (subject to and in compliance with then-applicable laws and regulations) that existed at the commencement of this SHA and receive federal take assurances for such return to baseline. However, Applicant will not have incidental take protection under this SHA for any return to baseline condition of Presumed

Habitat. Return to baseline means continued protection of Occupied Sites and Forests & Fish Buffers (i.e., RMZs, CMZs, WMZs, and unstable slopes) to the same extent required by Washington Forest Practices Rules (Title 222 WAC) and other applicable regulations and continued protection of forested areas as required under the Forest Practices Rules as of the date of SHA approval.

Figure 1. Schematic view of Enrolled Lands



1.2 Applicant Information

Applicant Name: Rayonier Operating Company, LLC

Contact Information: ATTN: Bill Monahan
Bill.monahan@rayonier.com
360-538-4568
19950 7th **Avenue NE, Suite 200**
Poulsbo, WA 98370

1.3 Regulatory Framework

The marbled murrelet was federally listed as threatened in 1992. The marbled murrelet was state-listed as threatened in 1993 and was subsequently uplisted to endangered in Washington by the Washington Fish and Wildlife Commission in 2016.

In 1999, multiple stakeholders signed the seminal "Forests & Fish Report," which proposed a collaborative approach to management of Washington timberlands for the benefit of aquatic and riparian-dependent species (USFWS et al., 1999). The Forests & Fish Report led to the passage of the Salmon Recovery Act (Revised Code of Washington ("RCW") 77.85), substantial revisions to the Forest Practices Act (RCW 76.09), and sweeping changes to the Forest Practices Rules (WAC Title 222). These included the additions of buffers on rivers, streams, unstable slopes, and other sensitive features for the maintenance and restoration of aquatic and riparian habitat. The collaborative management approach and protection of aquatic species and riparian habitat set forth in the Forests & Fish Report were later incorporated into the Forest Practices HCP, which governs commercial timber harvest operations in the State of Washington (WDNR 2005). *See also* RCW 76.09.370.

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, App. 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 Forest Practices HCP and the desire to attempt to find and provide assurances in the future, if possible and necessary:

> 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.

USFWS *et al.* 1999, App. M.2(e) at 85.

In 1996, USFWS designated 3,887,800 acres as critical habitat for the marbled murrelet in Washington, Oregon, and California (61 FR 26256). In 2011, USFWS revised the designated critical habitat by removing acres in California and Oregon (76 FR 61599). In 2016, the USFWS issued a final rule which confirmed that critical habitat for the marbled murrelet as designated in 1996 and revised in 2011, meets the statutory definition of critical habitat under the ESA (81 FR 51348). The designation in Washington includes 2,500 acres of private lands, including federally designated critical habitat lands located on or adjacent to Applicant's lands

Landowners must comply with the Forest Practices Act (RCW 76.09) and its implementing Forest Practices Rules (WAC Title 222), and the State of Washington must fully implement the Forest Practices HCP and the terms and conditions in their incidental take permit to continue to receive ESA assurances under the Forest Practices HCP. This regulatory structure provides for long-term conservation of listed species, supports an economically viable timber industry, and creates regulatory stability for landowners:

> [F]orestland resources are among the most valuable of all resources in the state; … a viable forest products industry is of prime importance to the state's economy; … it is in the public interest for public and private commercial forestlands to be managed consistent with sound policies of natural resource protection; … coincident with maintenance of a viable forest products industry, it is important to afford protection to forest soils, fisheries, wildlife, water quantity and quality, air quality, recreation, and scenic beauty.

RCW 76.09.010(1).

This SHA recognizes Applicant's continued compliance with the Forest Practices Program (defined herein below) as they relate to the set aside of lands, also referred to as Forests & Fish Buffers (defined herein below) that may provide Potential Nesting Habitat for the marbled murrelet. Potential Nesting Habitat is likely to be associated with the minimum required set asides located in CMZs, RMZs, WMZs, and unstable slopes as required through compliance with the Washington Forest Practices Rules (Title 222 WAC).

1.4 Definitions

As used in this SHA, the following terms have the following meanings:

"Adjacent Forests" are all commercial forest lands that are located within 300 feet of Conservation Lands. Adjacent Forests do not include Presumed Habitat and Occupied Sites. Some

areas of Presumed Habitat or Occupied Sites may be physically located within 300 ft of Conservation Lands, but these areas are not classified as Adjacent Forest because they are protected under the terms of the SHA as Conservation Lands. The Adjacent Forests are identified in the maps attached as **Exhibit B** and total 149,573 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 and are identified in the maps attached as **Exhibit B**. The total acreage of Conservation Lands in the Enrolled Lands is 61,255.

"Enrolled Lands" are all lands proposed for coverage by Applicant, including Conservation Lands and Adjacent Forests that are within 50 miles of marine waters that Applicant includes in this SHA application, as well as Occupied Sites that are within the project boundary. The Enrolled Lands cover 212,443 acres and are identified in **Exhibit A** and **Exhibit B**, which displays a legal description of those lands. The acreage total above and the boundaries shown in Exhibits A and B are not precise, and they may change as more information becomes available, such as a more precise delineation of Forests & Fish Buffers. When more accurate information becomes available, including new designations of Forests & Fish Buffers, this SHA will be applied to the land using the additional information. See Section 10.2.

"Forests & Fish Buffers" are areas that meet the Forest Practices Program requirements for RMZs, CMZs, WMZs (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). See **Exhibit C**. The total acreage of Forests & Fish Buffers in the Enrolled Lands total 60,802 and are identified in the map attached as **Exhibit B**.

"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 (Forest Practices HCP 2006, p. 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, and documents incorporated by reference, including the Forests & Fish Report and the Timber Fish Wildlife ("TFW") Agreement ("TFW Agreement").

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

"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 SHA.

"More-Likely-Than-Not Habitat" is a threshold adopted for purposes of this 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 percent likely to contain Suitable Marbled Murrelet Habitat, and Douglas Fir-dominant stands 220 years or older are around 50 percent 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 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 Washington Department of Natural Resources ("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 Washington Department of Natural Resources, *Marbled Murrelet Long-Term Conservation Strategy – Final Environmental Impact Statement (FEIS) Appendix E* (2019), available at https://www.dnr.wa.gov/mmltcs.

"Occupied Site" or "Occupied Marbled Murrelet Site" is defined as a Forest Stand within or partially within Enrolled Lands, on which Applicant, USFWS, or the Washington Department of Fish and Wildlife ("WDFW") has documented murrelet occupancy with a site identified in an agency database on the date Applicant's SHA is finalized. An Occupied Site must contain a minimum of seven (7) contiguous acres (which could include lands in other ownerships) and must meet at least one of the following conditions:

- Applicant, USFWS, or WDFW has located a marbled murrelet nest, chicks, eggs, or egg shells within the boundaries of the Occupied Site; or
- Applicant, USFWS, or WDFW has detected a marbled murrelet within the boundaries of the Occupied Site:
    - 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(4), (5). There are 44 Occupied Marbled Murrelet Sites included in this SHA, which are identified in the maps attached as **Exhibit B.** The total acreage of the Occupied Sites in the Enrolled Lands is 2,068. Under current Forest Practices Rules, Occupied Sites are buffered with 300-foot managed buffers (WAC 222-16-080(1)(h)(v)), and for the purpose of this SHA, these managed buffers are part of the baseline.

"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)).

"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 SHA, "Potential Nesting Habitat" includes "Presumed Habitat", "More-Likely-Than-Not Habitat" and "Marginal Nesting Habitat."

"Presumed Habitat" or "Presumed Marbled Murrelet Habitat" is defined as 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). The total acreage of Presumed Habitat on the Enrolled Lands is 453. 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 Applicant elects to extend the Presumed Habitat boundary further.

"RMZs" are the Riparian Management Zones identified in **Exhibit C** and/or required under the Forest Practices Program. The boundaries of an RMZ for purposes of this SHA are defined to be the outer edge of the inner zone of the RMZ.

"SHA Occupied Site" is a Forest Stand that is discovered to be occupied by marbled murrelet on Enrolled Lands after the date Applicant's SHA and Permit application are finalized, which otherwise meets the definition of "Occupied Site."

"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 USFWS agrees that forest stands that meet the above definition are suitable habitat, and for the purposes of this SHA, the above definition is relevant because this is the definition that currently applies to the Applicant's Forest Practices on the Enrolled Lands. The USFWS also acknowledges that marbled murrelets have (1) been detected further inland than 50 miles from marine waters in Washington, (2), have been documented using nesting platforms that are less than 7 inches in diameter and less than 50 ft above ground level, (3), marbled murrelet nests have been documented in trees less than 32 inches dbh, and (4), marbled murrelet nests have been documented in stands less than 7 acres in size. We note these exceptions to the definition presented above, but have previously determined that the exclusion of these broader conditions from the regulatory definition of Suitable Marbled Murrelet Habitat in the Washington Forest Practices Rules represents a relatively low risk for this species (USFWS 2006).

References to "Western Hemlock" in this SHA 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.

1.5 SHA Authority

Sections 2, 7, and 10 of the ESA allow USFWS to approve SHAs. Section 10(a)(1)(A) of the ESA allows USFWS to issue Permits for listed species, such as the marbled murrelet. This SHA is prepared pursuant to USFWS regulations for issuance of enhancement of survival permits through Safe Harbor Agreements (50 C.F.R. § 17.22 (c)(1); and the USFWS's Final Safe Harbor Policy, 64 FR 32717.

Applicant developed this SHA with technical assistance from the USFWS to address the conservation benefit to marbled murrelets that is the result of implementing the Forest Practices Program in Washington in addition to the net conservation benefit derived from setting aside "Presumed Habitat". This SHA is intended to comply with the requirements of 50 C.F.R. § 17.22(c)(1)(i)–(iii).

Issuance of a SHA requires that USFWS comply with Federal regulatory requirements. Issuance of a SHA is a "federal action" subject to compliance with the National Environmental Policy Act ("NEPA"). Permit issuance requires a determination that criteria for issuance of a SHA in 50 C.F.R. §17.22(c)(2) have been satisfied.

2.0 MARBLED MURRELET STATUS AND ECOLOGY

The marbled murrelet was listed as a threatened species in Washington, Oregon, and California in 1992 under the federal ESA. The primary reasons for listing included extensive loss and fragmentation of old-growth forests that serve as nesting habitat for marbled murrelets and mortality in the marine environment caused by gillnets and oil spills (57 FR 45328 [Oct. 1, 1992]). In 1993, the Washington State Fish and Wildlife Commission listed the marbled murrelet as a threatened species in Washington. In 1997, Washington enacted State Forest Practices Rules to address impacts to marbled murrelets from timber management on non-federal lands. Due to ongoing population and habitat declines in Washington, the marbled murrelet was listed as an endangered species by the Washington State Fish and Wildlife Commission in 2017 (Desimone 2016). Although threats such as gillnet mortality and loss of nesting habitat on federal lands have been reduced since 1992, the species continues to be classified as a threatened species in Washington, Oregon, and California under the federal ESA due to ongoing threats associated with nesting habitat loss and degradation of marine foraging habitat (USFWS 2019).

2.1 Life History

The marbled murrelet is a small, fast-flying seabird in the Alcidae family that occurs along the Pacific coast of North America. Marbled murrelets spend most of their lives at sea where they forage for small schooling fish or invertebrates in nearshore marine waters. Marbled murrelets fly inland to nest in mature or old-growth forests. In the terrestrial environment, the presence of platforms (large branches or deformities) used for nesting is the most important characteristic of their nesting habitat. Marbled murrelet habitat use during breeding season is positively associated with presence and abundance of mature and old-growth forests, large core areas of old-growth, low amounts of edge habitat, reduced habitat fragmentation, and proximity to the marine waters.

The marbled murrelet lifespan is unknown, but is expected to be in the range of 10 to 20 years based on information from similar species (De Santo and Nelson 1995). Marbled murrelets typically nest in large conifer trees that support one or more suitable nest platforms with horizontal and vertical canopy cover. A platform is a relatively flat surface on a branch, an area where a limb branches, a surface created by a deformity such as a dwarf mistletoe broom, a debris/moss platform equal to or greater than four inches in diameter including associated moss, lichen, or duff if present (Evans Mack et al. 2003). Any forested area with a residual tree component, small patches of residual trees, or one or more platforms is potential marbled murrelet nesting habitat (Evans Mack et al. 2003).

Marbled murrelet nesting is asynchronous and spread over a prolonged season. In Washington, the murrelet breeding season extends from April 1 to September 23. Egg laying and incubation occur from April to early August, and chick rearing occurs between late May and September, with all chicks fledging by late September (USFWS 2012).

Marbled murrelets lay a single-egg, which may be replaced if egg failure occurs early in the nesting cycle, but this is rare (Nelson 1997). During incubation, one adult sits on the nest while the other forages at sea. Adults typically incubate for a 24-hour period, then exchange duties with their mate at dawn. Chicks hatch between May and August after 30 days of incubation. Hatchlings appear to be brooded by an adult for several days (Nelson 1997). Once the chick attains thermoregulatory independence, both adults leave the chick alone at the nest for the remainder of the rearing period, except during feedings. Both parents feed the chick, which receives one to eight meals per day (Nelson 1997). Most meals are delivered early in the morning while about a third of the food deliveries occur at dusk and intermittently throughout the day (Nelson and Hamer 1995). The nestling stage of marbled murrelet development can vary from 27 to 40 days before fledging depending on food availability (De Santo and Nelson 1995).

Marbled murrelets are believed to be sexually mature at two to four years of age (Nelson 1997). Adult birds may not nest every year, especially when food resources are limited. Recent monitoring efforts in Washington indicated that only 20 percent of monitored marbled murrelet nesting attempts were successful, and only a small portion of the 158 tagged adult birds actually

attempted to nest (13 percent) (Lorenz et al. 2017, p. 312). The low number of adults attempting to nest is not unique to Washington. Recent telemetry studies conducted in Oregon have also documented low breeding rates and low nesting success for marbled murrelets (Adrean et al. 2019, p. 2).

2.2 Status of Populations and Habitat

The estimate for the listed marbled murrelet population in Washington, Oregon, and California in 2018 was 22,500 murrelets (95 percent confidence interval [CI]: 17,500 to 27,600 birds) (McIver et. al 2020). The long-term population trend derived from marine surveys for the period from 2001 to 2018 indicate that the marbled murrelet population across the three-state area has increased at a rate of 0.5 percent per year (McIver et. al 2020). While the overall trend estimate across this time period is slightly positive, the evidence of a detectable trend is not conclusive because the confidence intervals for the estimated trend overlap zero (95 percent -0.6 to 1.6 percent) (McIver et. al 2020, p. 4).

Marbled murrelet population size and marine distribution during the summer breeding season is strongly correlated with the amount and pattern (large contiguous patches) of suitable nesting habitat in adjacent terrestrial landscapes (Raphael et al. 2016). The loss of nesting habitat was a major cause of marbled murrelet decline over the past century and may still be contributing as nesting habitat continues to be lost to fires, logging, and wind storms. Monitoring of Potential Nesting Habitat within the three-state area indicates nesting habitat declined from an estimated 2.53 million acres in 1993 to an estimated 2.22 million acres in 2012, a total decline of about 12.1 percent (Raphael et al. 2016). About 60 percent of the estimated habitat is located within federal reserves (e.g., National Parks, Wilderness, etc.), while about 34 percent of habitat is located on state or private ownerships.

The largest and most stable marbled murrelet subpopulations now occur off the Oregon and northern California coasts, where population trends are positive, while subpopulations in Washington declined at a rate of approximately -3.9 percent per year for the period from 2001 to 2017 (McIver et al. 2020). Rates of nesting habitat loss have also been highest in Washington, primarily due to timber harvest on non-federal lands (Raphael et al. 2016), which suggests that the loss of nesting habitat continues to be an important limiting factor for the recovery of marbled murrelets.

Factors affecting marbled murrelet fitness and survival in the marine environment include: reductions in the quality and abundance of murrelet forage fish species, harmful algal blooms, toxic contaminants, marbled murrelet by-catch in net fisheries, murrelet entanglement in derelict fishing gear, oil spills, and human disturbance in marine foraging areas (USFWS 2019). While these factors are recognized as stressors to murrelets in the marine environment, the extent that these stressors affect marbled murrelet populations is unknown. As with nesting habitat loss, marine habitat degradation is most prevalent in the Puget Sound area where anthropogenic activities (e.g., shipping lanes, boat traffic, shoreline development) are an important factor

influencing the distribution and abundance of marbled murrelets in nearshore marine waters (Raphael et al. 2016).

Detailed accounts of marbled murrelet biology, life history, threats, demography, and conservation needs are presented in the *Recovery Plan for the Marbled Murrelet* (USFWS 1997), *Northwest Forest Plan—The first 20 years (1994–2013): Status and Trend of Marbled Murrelet Populations and Nesting Habitat* (Falxa and Raphael 2016), and *Marbled Murrelet (Brachyramphus marmoratus) 5-Year Status Review* (USFWS 2019).

3.0 LANDS ELIGIBLE FOR ENROLLMENT

Lands eligible for enrollment to be covered by the Permit (Enrolled Lands) include Conservation Lands and Adjacent Forests within 50 miles of marine waters that are regulated by the Forest Practices Program, as well as Occupied Sites that are within the project boundary.

4.0 COVERED ACTIVITIES

For the purposes of this SHA, "covered activities" include Forest Practices occurring on Enrolled Lands within 50 miles of marine waters within the State of Washington that are not prohibited under this SHA, are subject to the Forest Practices Act (RCW 76.09), and are consistent with the covered activities included in the Forest Practices HCP.

The following activities are "covered activities:"

a. Within Occupied Sites, Presumed Habitat, and SHA Occupied Sites: biological surveys, recreation, and other monitoring and conservation measures that do not negatively affect habitat values, as well as continued use and maintenance of existing roads, selection harvest in SHA Occupied Sites as described below and in **Exhibit D**, and activities necessary to accomplish such selection harvest. Salvage of downed, dead, dying, or wind-thrown timber within Occupied Sites, Presumed Habitat, 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.

b. 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 harm marbled murrelets within Enrolled Lands.

c. Within Adjacent Forests: all Forest Practices that may result in incidental take, including forest practices that could incidentally have the effect of harming marbled murrelets within Conservation Lands, SHA Occupied Sites, or Occupied Sites, and Occupied Site Buffers; including timber harvest and other Forest Practices that are allowed under the Forest

Practices HCP; rock pit development transport of timber and rock; fire suppression (includes all activities related to controlling wildfire); road building; and use and establishment of yarding corridors. This is a non-exclusive list of covered activities that will receive incidental take coverage and assurances.

d. Within lands that are not listed in a.–c. above, no take assurances are provided for what would otherwise be covered activities on 204,400 acres of Applicant lands located within 50 miles of marine waters in Washington.

Covered activities may be conducted by Applicant, its employees, contractors, agents, or other assigns.

Nothing in this SHA shall be construed to prevent Applicant from taking advantage of exemptions in the Forest Practices Program that may be applicable based on this SHA.

5.0 CONSERVATION GOALS AND MEASURES

5.1 Conservation Goals of this SHA

The conservation goals of this SHA are to provide greater conservation and contribution to marbled murrelet populations in Washington. Since the execution of the Forests & Fish Report and the resulting changes to the Forest Practices Act and its implementing rules, landowners, including Applicant, have been protecting and/or growing Potential Nesting Habitat that may be used by marbled murrelets where such habitat occurs within minimum required set-asides associated with RMZs, CMZs, WMZs, and unstable slopes as covered by the Forest Practices HCP and associated incidental take permit.

Applicant's goals are to contribute to the conservation of marbled murrelets while continuing long-term forest management activities without risk that ESA "take" prohibitions will impact private property should a marbled murrelet occupy the Enrolled Lands during the term of this SHA. This SHA's provisions are intended to maintain existing Occupied Sites as habitat for the life of this SHA and protect Presumed Habitat and/or grow Potential Nesting Habitat for marbled murrelets in the Conservation Lands. This SHA will allow USFWS and Applicant to:

- Participate, coordinate, and collaborate with marbled murrelet distribution surveys, assessment, and monitoring efforts.
- Provide a net conservation benefit to marbled murrelets during the term of this SHA.
- Encourage participation in voluntary conservation programs that may otherwise subject Applicant to legal consequences.

5.2 Conservation Measures

Conservation Measures resulting from Forests & Fish Report, Forest Practices HCP, and Forest Practices Program

Forest Stands that provide conservation value to the marbled murrelet either currently exist and/or have the potential to develop over the term of this SHA on the Enrolled Lands when Applicant follows the Forest Practices Program, including minimum forest set-asides retained in the CMZs, RMZs, WMZs, and unstable slope buffers, referred to in this document as Conservation Lands. Conservation Lands may contribute to marbled murrelet habitat. These practices will continue over the term of this SHA. Conservation Lands enhance habitat values for multiple species across the landscape.

Conservation Measures Under this SHA

No harvest will occur for the life of this SHA within "Occupied Marbled Murrelet Sites." This extends existing protections under the Forest Practices Program, which would potentially allow harvest following classification of an Occupied Site as a Class-IV Special Forest Practice and review under the State Environmental Policy Act ("SEPA"). Applicant thus agrees to not seek a Class IV-Special Forest Practice within Occupied Marbled Murrelet Sites for the life of this SHA. Existing Forest Practices Rules and protections associated with Occupied Site Buffers that are in effect at the time the Permit issues will remain in effect under this SHA.

No harvest will occur for the life of this SHA within Presumed Habitat. This extends existing protections under the Forest Practices Program, which would potentially allow for harvest in these areas. The designation of Presumed Habitat is based on current inventory information. The designation of Presumed Habitat can be changed if new information indicates the area designated is not Suitable Marbled Murrelet Habitat. Any proposed change in the designation of Presumed Habitat will require notification and approval from USFWS.

Where "SHA Occupied Sites" are identified during the term of this SHA, Applicant will implement the following land management practices for the benefit of marbled murrelets:

- Applicant will cooperate with USFWS to verify the status and location of any SHA Occupied Site.
- Once verified, Applicant will minimize noise disturbance and avoid habitat modification during the Marbled Murrelet Nesting Season.
- Applicant will conduct any timber harvest otherwise permitted under Washington Forest Practice Rules subject to retention of nest trees and other key habitat elements (as described in **Exhibit D**) with the goal of increasing complex canopy growth relative to no-harvest. Any harvest must substantially conform to the parameters set forth in **Exhibit D**, with adjustments made as necessary to account for location-specific characteristics and habitat features that are uniquely suited to marbled murrelets.

These actions will further the effectiveness of the Enrolled Lands to support marbled murrelet populations. Over the term of this SHA, Conservation Lands have the highest probability of occupancy because they have the highest likelihood of containing existing Potential Nesting Habitat and/or developing Potential Nesting Habitat characteristics within the Enrolled Lands. These commitments will improve habitat conditions and result in conservation benefits for the marbled murrelet.

6.0 CONSERVATION BENEFITS

Applicant's objective for this SHA is to manage Enrolled Lands to contribute to marbled murrelet populations while continuing to conduct forest practices on private property. Forests & Fish Buffers can benefit listed species. As envisioned when the Forests & Fish Report was adopted in 1999, this SHA acknowledges that conservation benefits have and will accrue from the growth and maintenance of mature forest habitat in Forests & Fish Buffers on private property. For the purposes of the SHA, an additional net conservation benefit comes from setting aside Presumed Habitat, protecting Occupied Marbled Murrelet Sites, and managing SHA Occupied Sites to promote complex canopy growth.

SHA assurances encourage participation in these voluntary conservation efforts in the future, contribute to the long-term success of the Forests & Fish Report, and provide Applicant with legal protection for the term of this SHA.

This SHA is unique in that the landowners involved in the Forests & Fish Agreement committed to many (though not all) of the management activities contained in this SHA two decades ago, at the time of the Forests & Fish Report. The Forests & Fish Report was a landmark cooperative agreement to protect key forest elements for the benefit of listed and unlisted salmonids, native fishes, and stream-associated amphibians. It is a programmatic agreement that is now incorporated into state law, but it was at its core a voluntary conservation effort undertaken on a broad scale with the goal of protecting critical species and making the timber industry sustainable in Washington over the long term. A detailed history follows, but it is important at the outset to note the following sequence of events:

1. Landowners and stakeholders agreed to new conservation measures that at the time were not required by law, then adopted them into the Forests & Fish Report;

2. By agreement and with consent of all stakeholders, those conservation measures were adopted by the legislature and enacted into law through the promulgation of new Forest Practices Rules and the adoption of the Forest Practices HCP; and

3. Compliance with the Forest Practices Rules then became the basis for take assurances for aquatic species under the Forest Practices HCP, which were provided to all landowners.

Thus, it was through voluntary agreement to adopt new conservation measures into law that landowners became subject to the current Forest Practices Rules. Understanding the history of the Forests & Fish Report is critical to understanding the conservation approach of this SHA.

6.1 Voluntary Cooperative Conservation: Historical Context for Forests & Fish Report

In 1986, as an alternative to competitive lobbying and court cases, four caucuses in Washington State (the Tribes, the timber industry, the state, and the environmental community) decided to try to resolve contentious forest practices problems through negotiations. This resulted in the first TFW Agreement in February 1987. Caucus members have continued to voluntarily work cooperatively on policy, local, and technical levels to implement the agreement. The authors remain committed to the original TFW Agreement.

In the mid to late 1990s, two issues arose that caused the TFW caucuses to once again come together at the policy level to address a new round of issues. First, a growing number of streams were not meeting water quality standards as defined in the Federal Clean Water Act. Over 660 Washington streams had been included on a 303(d) list identifying stream segments with water quality problems under the Clean Water Act. With the decline in fish populations, tribal and other fishers had been forced into unemployment. Constantly changing regulations or other potential restrictions had increased the cost and uncertainty attendant upon investments in timber acquisitions and harvest activities.

Second, there was a pending listing of several species of salmonids in Washington as threatened or endangered under the ESA. The WDNR Forest Practices Board's ("Board") policy has been to use its authority under the Forest Practices Act to regulate forest practices activities in ways designed to help achieve ESA objectives. In response to the listings, the Board adopted emergency salmonid rules to ensure forest practices on state and private forestlands complied with the ESA. The rules made all forest practices activities within 100 feet of a stream or river that served as habitat for a listed species subject to review under SEPA.

Concerns began to grow over the need to modify the Forest Practices Rules to better protect riparian habitat and aquatic resources. There was some indication that riparian buffer widths and leave-tree requirements might be inadequate to ensure healthy, functioning riparian systems. Watershed analysis results also indicated that in many areas, forest roads were an ongoing contributor of sediment to water bodies and adversely impacted water quality.

6.2 Development of Forests & Fish Report

As a result, the Forests & Fish Report was developed voluntarily in collaboration with federal, state, tribal, and county governments and private forest landowners in anticipation of threatened salmon and impaired water quality listings under the Endangered Species and Clean Water acts.

In November 1996, the TFW caucuses—now expanded from the original four to six with the addition of federal and local governments—voluntarily decided to work together to develop joint solutions to these problems. The process of creating a solution and devising a set of recommendations was slow and deliberate, allowing time for different caucuses to better understand one another's

concerns and to build relationships to strengthen implementation of the Report. Near the end of this process, the environmental caucus withdrew from the discussions. As a result, no TFW consensus was reached. Others continued with the discussions, however, and the Forests & Fish Report now reflects the consensus recommendations of the five remaining caucuses.

The authors of the Forests & Fish Report include representatives from Federal agencies (National Oceanic and Atmospheric Administration ("NOAA") Fisheries, USFWS, Environmental Protection Agency and the United States Department of Agriculture Forest Service) and state natural resource agencies (WDNR, Ecology, WDFW), the office of the governor, Native American Treaty Tribes, county representatives, large industrial forest landowners, and small forest landowners jointly produced a science-based plan—the Forests & Fish Report—for protecting water quality and aquatic and riparian-dependent species on state and private forestland in Washington State. More than 140 individuals, including scientists, policy makers, and regulators from federal, state, tribal, and county governments as well as private forest landowners, worked together for 18 months (1997–1999) to develop biologically sound and economically practical changes to forest practices rules to protect riparian habitat on non-federal forest lands in the State of Washington.

The goals identified by the Board in September 1998 and achieved through the negotiated effort of the Forests & Fish Report and subsequent changes in the Forest Practices Rules were: 1) provide compliance with the ESA for aquatic and riparian-dependent species on covered forestlands; 2) restore and maintain riparian habitat on covered forestlands to support a harvestable supply of fish; 3) meet the requirements of the Clean Water Act for water quality on covered forestlands; and 4) keep the timber industry economically viable in the state of Washington.

Specifically, the Forests & Fish Report recommended that rules be adopted to:

- protect stream banks from erosion;
- limit the amount of sediment entering streams;
- ensure fish passage to upstream habitat;
- minimize the construction of new roads;
- require landowners to prepare and implement Road Maintenance and Abandonment Plans designed to address road-related cumulative impacts by 2015;
- establish mature, conifer-dominated riparian forests to provide adequate shade to streams and, over time, recruit wood to streams; and
- establish an adaptive management and monitoring program.

As part of Washington's statewide salmon recovery strategy, forestry became the first industry sector to develop a plan for protecting fish habitat and water quality.

6.3 Voluntary Nature of the Forests & Fish Report

The final jointly produced document was a set of recommendations for adopting new Forest Practices Rules that would accomplish these goals and create healthy ecosystems for fish and wildlife in Washington's forests.

The final Forests & Fish Report was voluntarily agreed to by the stakeholders, including landowners. It was landowners who, in many cases, would be following the Forest Practices Rules that were adopted pursuant to the Forests & Fish Report, so landowners' voluntarily participation with, and in support of, the new measures was significant. Landowners were under no legal obligation at the time to adopt the conservation measures contained in the new Forest Practices Rules. There were other avenues and options available to deal with the concerns of the day that landowners elected to forego in favor of the Forests & Fish Report's collaborative conservation approach.

Thus, at the time it was adopted, the Forests & Fish Report and its resulting rule changes were voluntary conservation measures adopted with broad consensus among stakeholders. The fact that these conservation measures were ultimately enacted into Washington law, and are now mandatory, does not change the fact that they were voluntary at the time they were taken in 1999.

6.4 Adoption of New Forest Practices Rules and Forest Practices HCP

The Forests & Fish Report was adopted by the legislature in 1999 and, in May 2001, the Board enacted the new consensus conservation measures contained in the Forests & Fish Report into rule. The Forest Practices Program has largely guided timber management activities in the State of Washington since then, and the timber industry has invested substantially in implementing the conservation practices identified therein.

The Forests & Fish Report also required the State to seek federal assurances or a guarantee from the federal government that state forest practices met the requirements of federal law under the Clean Water Act and the ESA. The 1999 Salmon Recovery Act (ESHB 2091) was enacted "on the assumption that the Federal assurances described in the forests and fish report . . . will be obtained" by June 30, 2005 (Revised Code of Washington ("RCW") Chapter 77.85.190(1)). The primary component of these federal assurances is relief from any claim that forest practices would constitute an impermissible "take" of threatened or endangered aquatic species (FEIS 2006, pp. 1–18).

The Washington Forest Practices Rules pertaining to upland wildlife habitat became effective in July 1996 and were not part of the rules resulting from the Forests & Fish Report. The Washington Forest Practice Rules include special provisions for 1) critical habitats (state-defined) of threatened and endangered species (WAC 222-16-080); 2) northern spotted owl habitats (WAC 222-16-085 and 086); 3) the marbled murrelet special landscape (WAC 222-16-087); 4) planning options for the northern spotted owl (WAC 222-16-100); and 5) cooperative habitat enhancement agreements (WAC 222-16-105). These rules would remain the same under each of the [Forests and Fish] Environmental Impact Statement alternatives (USFWS and NMFS 2006, pp. 2–7). The Washington Forest Practices Rules for marbled murrelets were enacted in 1996, prior to enactment of the Forests & Fish Report, which were recommended in 1999, and became effective in 2001. Because

the existing rules for murrelets are intended to minimize risk of incidental take, the State (Washington Department of Natural Resources) did not request a Forest Practices HCP take exemption for marbled murrelets under the Washington Forest Practices Rules or the Forest Practices HCP.

On February 9, 2005, the State of Washington submitted an application to the Federal Fisheries Agencies for adoption of a 50-year contract, called the Forest Practices HCP.

On June 5, 2006, the U.S. Fish & Wildlife Service and NOAA Fisheries issued incidental take permits to the State of Washington for the Forest Practices HCP. The Forest Practices HCP is a statewide, programmatic Habitat Conservation Plan ("HCP") protecting 60,000 miles of streams on 9.3 million acres of non-federal forestland, set in motion by the Forests & Fish Report. It ensures landowners that practicing forestry in Washington State meets the requirements for aquatic species designated by the federal ESA. The Forests Practices HCP is a 50-year agreement with the federal government to increase protection of Washington's streams and forests.

To address evolving scientific information, the Forest Practices Program and Forest Practices HCP contain adaptive management processes that are implemented by the Forest Practices Board and WDNR) in conjunction with stakeholder groups. These processes are intended to be scientific in nature and to help ensure that the goals of the Forests & Fish Report are achieved consistently with commitments contained in the Plan.

6.5 Ongoing Investment and Benefit from the Forests & Fish Report

Although it has been two decades since landowners voluntarily adopted the Forests & Fish Report, they continue to invest heavily in the conservation measures required under the Forest Practices Program. Likewise, benefits to marbled murrelets continue to accrue with each year that passes. As trees in Forests & Fish buffers grow and mature, they may develop Potential Nesting Habitat and develop the structural features used by marbled murrelets. During the term of this SHA (35 years), this transformation will continue to take place across the landscape, meaning Potential Nesting Habitat for marbled murrelets is expected to increase in the Forests & Fish Buffers as a result of the conservation measures required by Applicant under the Forest Practices Program.

Specifically, the continued growth of trees on Conservation Lands during the life of this SHA will provide a conservation benefit by transforming portions of landscape into Potential Nesting Habitat or occupied habitat. Over the life of this SHA, the forest stands within the Conservation Lands will increase in habitat quality and in likelihood of occupancy; deferred and limited harvest of the Conservation Lands will allow the conifer trees to increase in size and develop large limbs and other nesting structures that could potentially serve as marbled murrelet nesting platforms. The continued growth along and within Forests & Fish Buffers during the term of this SHA will maintain and enhance habitat within the Conservation Lands.

There is also research showing that commercial thinning practices in RMZs and on other Conservation Lands can enhance the development of Potential Nesting Habitat by providing release

for larger retained trees with more complex canopy, including features utilized by marbled murrelets. As stated in Port Blakely's Morton Block SHA (2009), pp. 4-4 through 4-7:

> Investigations in western Washington suggest that mid-rotation thinning, in combination with cavity-tree retention and/or creation can accelerate development of late successional habitat features in young forests (Garman et al. 2003, Beggs 2004, Lindh and Muir 2004)… Thinning of Douglas-fir/western hemlock forests allows for competitive release of canopy dominants and shade-tolerant understory trees, resulting in multiple canopy layers, increases in canopy depth, and enlargement of tree crowns (Oliver et al. 1991); these enhancements are associated with owl habitat and tend to increase niche availability for breeding birds.

Thus, a conservation benefit to marbled murrelets can accrue from selection harvest practices throughout the life of this SHA combined with retention of habitat elements.

Finally, private landowner investment in the Forest Practices Program will continue throughout the life of this SHA. Based on calculations made by landowners, the estimated incremental annualized financial impact of the Forest Practices Program to landowners is $113.6 million per year. Of this, approximately 58 percent is attributable to lands within the range of the marbled murrelet, according to Part 3 of the Biological Opinion for the Forest Practices HCP, page 445. Over the 35 year period of this SHA, this means a very rough estimate of ongoing private investment in the Forest Practices Program is 0.58 x $113.6 million x 35 = $2.3 billion. This is not a precise estimate, and the actual number may be higher or lower; however, it is beyond question that private forest landowners, including Applicant, will invest significant amounts of money in the program over the term of this SHA.

6.6 Anticipated Benefits to Marbled Murrelets from Forests & Fish Buffers

Continued implementation of conservation measures required by Applicant under the Forest Practices Program will result in the following conservation benefits:

Applicant has estimated 60,802 acres of Forests & Fish buffers on their ownership. Currently, about 5 percent (3,180 acres) of the Forests & Fish Buffers contain Potential Nesting Habitat. Potential Nesting Habitat in the buffers is projected to increase to about 45 percent (27,100 acres) over the term of the SHA (35 years). The Forests & Fish Buffers occur in relatively narrow stands that are not ideal for marbled murrelet nesting habitat when considered in isolation. However, some areas of Potential Nesting Habitat within Forests & Fish Buffers will be surrounded by mid-successional aged stands, and taken in this context could be expected to provide potential marbled murrelet nesting opportunities. The anticipated increase in Potential Nesting Habitat in Forests & Fish Buffers is likely to occur with or without the SHA, because the SHA would not change any existing regulations as they pertain to the requirements associated with Forests & Fish Buffers.

Specific to the growth of future Potential Nesting habitat in Forests & Fish Buffers, the following conservation benefits are anticipated:

a. **Western Hemlock.** There are an estimated 3,180 acres of Western Hemlock stands that are currently Potential Nesting Habitat in Forests & Fish Buffers: 258 acres of Presumed Habitat, 636 acres of More-Likely-Than-Not Habitat, and 2,286 acres of Marginal Nesting Habitat (94 – 129 years old) (**Exhibit F**). These acres are expected to remain on the landscape with only minor harvest impacts. The 2,286 acres of Marginal Nesting Habitat (94–129 years old) will therefore "age into" More-Likely-Than-Not habitat during the 35-year life of this SHA. This will result in greater habitat opportunities for marbled murrelets within the Enrolled Lands. In addition, there are 23,931 acres of Western Hemlock stands in Forests & Fish Buffers that currently have an age class of 44–93 years and therefore have the potential to "age into" mature forest 80 years old or older, much of which would transition into Marginal Nesting Habitat over 35 years, resulting in a total increase of Potential Nesting Habitat from 3,180 acres (5 percent) to 27,111 acres (45 percent) over 35 years. These acres would be likely to transition to More-Likely-Than-Not Habitat if this SHA were extended by 50 years coextensive with a theoretical 50-year extension of the Forest Practices HCP. Regardless of whether such an extension actually occurs, a conservation benefit will accrue within these 23,931 acres because the Western Hemlock that stands on them will be 35 years closer to being More-Likely-Than-Not Habitat.

b. **Douglas Fir.** All 16,254 acres of Douglas Fir in Forests & Fish Buffers have an age class of below 134 years. Habitat could occur or develop on these Douglas Fir stands, although none of these stands are classified as Marginal Nesting Habitat or More-Likely-Than-Not Habitat or will age into those classifications during the life of the SHA. These acres may provide habitat for marbled murrelets during the life of this SHA, and in any case, they will age during the life of the SHA and may take on habitat characteristics that are favorable to marbled murrelets even if they do not pass the More-Likely-Than-Not Habitat threshold.

c. Large Contiguous Stands Created by Forests & Fish Buffers. 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. As noted above, many of these narrow stands will be surrounded by mid-successional aged stands for much of the life of this SHA and will therefore provide habitat opportunities for murrelet. In many instances, however, 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. These areas warrant special consideration with respect to added conservation benefit from Forests & Fish Buffers. Representative examples are shown in **Exhibit E.**

These conservation measures and benefits are important and noteworthy because they are directly consistent with the following objectives in USFWS's 1997 Recovery Plan and therefore will maximize potential conservation benefit through coordination with a larger recovery strategy:

- Identify and protect terrestrial habitat within Marbled Murrelet Conservation Zones
- Maintain and increase terrestrial habitat
- Monitor populations and habitat
- Identify and protect habitat closest to Puget Sound in Zone 1
- Increase the size and distribution of habitat in Zone 2
- Develop new habitat over 50–100 years (as previously discussed above)
- Protect non-federal lands using similar methods to HCPs
- Protect occupied sites in Washington
- Maintain nesting habitat in larger contiguous blocks
- Maintain and enhance buffer habitat surrounding occupied habitat
- Increase the amount and quality of suitable nesting habitat
- Decrease fragmentation by increasing the size of suitable stands to provide a larger area of interior forest conditions
- Protect "recruitment" nesting habitat to buffer and enlarge existing stands, reduce fragmentation, and provide replacement habitat for current suitable nesting habitat lost to disturbance events
- Improve and develop north/south and east/west distribution of nesting habitat (at some sites).

6.7 Net Conservation Benefits

"Net conservation benefit" is defined in USFWS's Safe Harbor Policy:

> "Net conservation benefit" means the cumulative benefits of the management activities identified in a Safe Harbor Agreement that provide for an increase in a species' population and/or the enhancement, restoration, or maintenance of covered species' habitat within the enrolled property, taking into account the length of the Agreement and any off-setting adverse effects attributable to the incidental taking allowed by the enhancement of survival permit. Net conservation benefits must be sufficient to contribute, either directly or indirectly, to the recovery of the covered species.
> . . .

> Net conservation benefits must contribute, directly or indirectly, to the recovery of the covered species. This contribution toward recovery will vary and may not be permanent. … A Safe Harbor Agreement does not have to provide permanent conservation for enrolled property; however, Agreements must be sufficient to provide a net conservation benefit to all covered listed species, thereby contributing to the recovery of such species over time.
>
> Conservation benefits from Safe Harbor Agreements include, but are not limited to, reduction of habitat fragmentation rates; the maintenance, restoration, or enhancement of habitats; increase in habitat connectivity; maintenance or increase of population numbers or distribution; reduction of the effects of catastrophic events; establishment of buffers for protected areas; and establishment of areas to test and develop new and innovative conservation strategies.

64 FR 32717, 32722-23 (June 17, 1999).

Importantly, "management activities" that contribute to the net conservation benefit must be voluntary as opposed to required by pre-existing law or other legal obligation (e.g., binding settlement, consent decree, state laws, or contract). Thus, while recognizing the benefits of the ongoing management actions described above, the USFWS must narrowly define net conservation benefits for the purposes of this SHA as those that result from implementation of this SHA, including:

1. Setting aside Presumed Habitat

2. Protecting existing Occupied Sites, and

3. Managing any future SHA Occupied Sites to promote complex canopy growth.

Applicant's actions under this SHA will create the following conservation benefits over and above those accruing from the conservation measures associated with the Forests and Fish Report and commitments of the Forest Practices HCP:

Conservation Measure/Benefit	Status Quo with no SHA	With SHA
Protection of currently Occupied Sites and Occupied Site Buffers	Known Occupied Sites are eligible for Forest Practices under state law but only pursuant to a Class-IV Special Forest Practices application that requires SEPA review pursuant to WAC 222-16-050. There may also be federal law requirements potentially including an incidental take permit and coincident NEPA review. If future de-listing occurs or if Forest Practices Rules change, current regulatory restrictions may disappear.	Known Occupied Sites totaling 2,068 acres are classified as no-harvest zones for the life of this SHA regardless of any future de-listing or changes in the Forest Practices Program. Existing provisions to maintain a managed buffer (average width of 300 ft) around the perimeter of the known Occupied Sites is maintained with the SHA, and ESA take assurances associated with Forest Practices in managed buffers is provided. The potential for Forest Practices within the occupied sites following review of a Class-IV Special Forest Practices application is removed. A conservation benefit may also accrue due to the fact that Occupied Sites protected under this SHA will lose any opportunity that may exist to be reclassified as unoccupied based on occupancy surveys conducted under existing or future law.
Protection of Presumed Habitat	Presumed Habitat (210+ year old Western-Hemlock-dominant stands and 250+ year old Douglas Fir-dominant stands) are potentially available for timber harvest. If a Presumed Habitat stand was reviewed on the ground and did not meet the definition of Suitable Marbled Murrelet Habitat the stand would be available for harvest under existing Forest Practices Rules. If a Presumed Habitat stand was identified as Suitable Marbled Murrelet Habitat Applicant has the option to conduct a protocol survey for marbled murrelets. If the surveys do not detect marbled murrelet occupancy, the Presumed Habitat may be harvested.	453 acres of Presumed Habitat will not be harvested during the life of this SHA and will not receive take assurances for return to baseline. During the life of this SHA, this Presumed Habitat will continue to provide Potential Nesting Habitat for marbled murrelets. It will also grow 35 years older during the life of this SHA, increasing the likelihood that it will take on the complex canopy and platform characteristics that provide nesting spaces for marbled murrelets. Presumed Habitat is some of the highest quality Potential Nesting Habitat on the landscape. The Presumed Habitat is identified in the maps attached as **Exhibit B**. Applicant maintains Forest Stand age data in the regular course of business and used that data to identify Presumed Habitat. Forest Stand age data by its nature is not precise and represents only the

Conservation Measure/Benefit	Status Quo with no SHA	With SHA
		best information Applicant has available. Trees within a given Forest Stand will have many different ages, and stand age is only an estimate.
Selection harvest combined with habitat element retention in SHA Occupied Sites	Newly discovered Occupied Sites are eligible for Forest Practices under state law but only pursuant to a Class-IV Special Forest Practices application that requires SEPA review pursuant to WAC 222-16-050. There may also be federal law requirements potentially including an incidental take permit and coincident NEPA review. If future de-listing occurs or if Forest Practices Rules change, current regulatory restrictions may disappear.	Lands will be managed in accordance with practices designed to maximize complex canopy growth that combine selection harvest with retention of habitat elements. New data will become available allowing for comparison of land managed under a no-harvest model (Occupied Sites) and land managed with selection harvest and retention of habitat elements (SHA Occupied Sites). This will allow for a reasonably direct "control group" comparison between the two different management techniques to determine which results in better outcomes for the species, adding to the existing body of knowledge about murrelet conservation strategies.

6.8 Other Benefits Associated with the SHA

Other ancillary benefits not directly related to the conservation of marbled murrelets are described below:

Benefit	Status Quo with no SHA	With SHA
Increased Data and Information provided to USFWS	No requirement for landowners to provide data to USFWS regarding quantity, location, or distribution of known Occupied Sites or Conservation Lands, or of newly discovered Occupied Sites.	During application process, Applicant will provide maps and data on known Occupied Sites and Conservation Lands that are likely to form Potential Nesting Habitat for marbled murrelets during the life of this SHA. Every ten years, Applicant will provide a report showing the latest information about the quantity, location, and distribution of Potential Nesting Habitat being grown on Conservation Lands. New SHA Occupied Sites will be identified and reported. This data will aid conservation planning and fill in data gaps that currently exist. Increased data will allow decisions to be more reliably grounded in complete and up-to-date scientific understandings.
Increased Record-Keeping by Applicant	No requirement to track Conservation Lands or examine their potential conservation benefit to marbled murrelets. Some landowners may keep detailed records regarding Conservation Lands, but others may not. USFWS does not have access to information about who keeps records and who does not, or to the records themselves.	Applicant will keep detailed records of Conservation Lands and their potential to benefit marbled murrelets. USFWS will know where these records are kept and how/when new data can be obtained, as well as the exact landscapes for which records are kept. This potentially facilitates long-term longitudinal research efforts that otherwise would not be possible. It also increases USFWS's store of information to use in conservation planning, critical habitat designations, and future listing decisions.
Potential for increased participation in studies and research efforts	Disincentives exist for landowners to participate in studies conducted by USFWS, WDFW, or private/academic groups because doing so could expose landowners to ESA take liability or new harvest restrictions. Collaboration with USFWS or others	Shared conservation partnership and regulatory assurances associated with ongoing take protection provide strong incentive to collaborate with USFWS, WDFW, and private/academic groups on studies or other efforts. Take protection is provided to Applicant for studies and research efforts, and

Benefit	Status Quo with no SHA	With SHA
	to learn more about the presence, habits, survival rates, or reproductive success of marbled murrelets on private land is unlikely.	no-harvest zones are fixed such that discovery of new sites during research will not have prohibitive consequences. This provides regulatory flexibility for willing collaboration with USFWS studies and granting of land access without unnecessary legal exposure.
Contributes to the long term success of Forests & Fish	Lack of agreement on take assurances would undermine a key supporting aspect of Forests & Fish Report and subsequent laws based on it, which is that landowners would not be "punished" for their voluntary conservation actions to protect listed aquatic species when new habitat also benefits terrestrial species. This increases the likelihood of program failure, of the Forest Practices HCP not being renewed, and of this landmark collaborative conservation effort disappearing, which would jeopardize measures that protect both aquatic and terrestrial species. Also erodes trust between stakeholders based on mutual assurances at time of original negotiations, further damaging a program that relies on trust and cooperation.	Spirit of trust and cooperation that is foundational to Forests & Fish Report is strengthened by USFWS following through on prior understandings. As a result, the likelihood of long-term program success is increased. Renewal of Forest Practices HCP becomes more likely with longstanding issue resolved and uncertainty regarding potential marbled murrelet take liability removed. Applicant retains key habitat elements and grows old forests under Forest Practices Program for years to come, benefitting both aquatic and terrestrial species, including marbled murrelets.

7.0 CATASTROPHIC EVENTS

It is likely that over the term of this SHA and associated Permit, catastrophic events such as fires, ice storms, and windstorms will occur. If Occupied Sites, SHA Occupied Sites, or Presumed Habitat are destroyed or degraded, Applicant will notify USFWS of such events if they affect Presumed Habitat or Occupied Sites. Applicant may salvage timber that no longer meets the criteria for an Occupied or SHA Occupied Site or Presumed Habitat. This salvage may be conducted to the same extent as would otherwise be permitted for a destroyed or degraded Occupied Site under the Forest Practices Program. Applicant will notify USFWS of any planned salvage harvest in Occupied Sites, SHA Occupied Sites, or Presumed Habitat at least 30 days prior to taking such action.

8.0 USFWS RESPONSIBILITIES

USFWS, at its individual discretion and with Applicant's permission, may provide technical, financial, and other assistance to Applicant in order to facilitate compliance with the Forest Practices HCP or that otherwise facilitates the provisions and intent of this SHA. Nothing in this SHA will limit the abilities of USFWS to perform its lawful duties or conduct investigations as authorized by statute, administrative rule, or court guidance and direction.

USFWS will meet with Applicant at its request to discuss any concerns regarding this SHA.

USFWS and its representatives will coordinate with Applicant, through a mutually agreeable notification process, prior to entering Enrolled Lands for any purpose relating to this SHA. For example, USFWS and Applicant may agree that USFWS can conduct studies on known Occupied Sites or examine the extent to which marbled murrelets are utilizing (or returning to) nesting sites. Or, in the future, there may be conservation actions that USFWS or Applicant wish to take that benefit the species and can be completed within Conservation Lands or Adjacent Forests. This SHA may facilitate cooperative efforts of this nature by providing take coverage for established activities and providing a framework for collaborative conservation. This, in conjunction with Applicant-provided maps and reports, could fill in some of the knowledge gaps that currently exist and that hinder long term conservation planning for the marbled murrelet.

In addition to the responsibilities above, USFWS agrees to the following:

1. Upon execution of this SHA, submission of a Permit application, and satisfaction of all other applicable legal requirements, USFWS will issue a Permit to Applicant providing assurances and authorizing incidental take of marbled murrelets as a result of lawful activities that occur on Enrolled Lands for a term not to exceed the Permit term of the Forest Practices HCP.

2. If Applicant is found to be in non-compliance with this SHA, USFWS will initiate suspension or revocation procedures (50 C.F.R. §§ 13.27–13.28), which will include issuance of a letter of non-compliance to Applicant.

3. Through the monitoring and reporting requirements of this SHA (*see* Section 11.0) and USFWS's other program responsibilities under the ESA, USFWS will ensure that the terms and conditions of this SHA will not be in conflict with other ongoing conservation or recovery programs for the marbled murrelet.

9.0 APPLICANT RESPONSIBILITIES

Applicant will carry out all responsibilities associated with implementation of this SHA. 50 C.F.R. § 13.48. With regard to conservation benefits to the marbled murrelet, at a minimum, Applicant will be responsible for implementing the conservation measures identified in Section 5 and providing a report summarizing the age and distribution of Conservation Lands and trends in habitat development on a decadal basis. *See* § 5.2.

Applicant will provide a report to the USFWS, at least every ten years, detailing the age and distribution of Conservation Lands and any SHA Occupied Sites and trends in habitat development thereon.

10.0 SHA MANAGEMENT

Applicant's Application for a Permit (including this SHA) includes the following:

- Applicant's name, point of contact, and principal mailing address;
- Legal Description, by township, range, and section of Enrolled Lands displayed in map form, see Exhibit B;
- Certification of proof of adequate funds to implement the conditions of this SHA;
- Notification whether there are documented Occupied Sites or Presumed Habitat within the Enrolled Lands; and
- Estimate of location and size of Conservation Lands.

10.1 Baseline Stand Data

Baseline conditions under USFWS's Safe Harbor policy are defined as "population estimates and distribution and/or habitat characteristics and determined area of the enrolled property that sustain seasonal or permanent use by the covered species at the time the Safe Harbor Agreement is executed." For purposes of this SHA, documented Occupied Sites at the time of application are the baseline condition, because these are the only locations on Applicant lands where marbled murrelet occupancy behaviors have been documented through surveys. Other categories of Potential Nesting Habitat have been described in this SHA, including Presumed Habitat, which Applicant has voluntarily agreed to protect for the term of the SHA. Presumed Habitat is not considered to be part of the baseline, because it is not known to be occupied by the species. However, Presumed Habitat will not be provided with incidental take coverage for return to baseline at the end of this SHA term.

Applicant herein submits the following information:

a. Map and total acreage of Occupied Sites and Presumed Habitat within Enrolled Lands: 2,068 acres of Occupied Sites and 453 acres of Presumed Habitat, as illustrated in **Exhibit B**. Applicant will not be required to conduct new, prospective surveys for marbled murrelet presence or occupancy for approval of this SHA.

b. Map and estimated total acreage of Conservation Lands based on Applicant's most recent land record data: 61,255 acres of Conservation Lands (Forests & Fish Buffers + Presumed Habitat), as illustrated in **Exhibit B**. Applicant will not be required to conduct surveys for habitat characteristics for approval of this SHA.

c. Map and estimated total acreage of Adjacent Forests based on Applicant's most recent land record data: 149,573 acres of Adjacent Forests, as illustrated in **Exhibit B**. Applicant will not be required to conduct data collection activities for approval of this SHA.

d. A summary table of the current conditions for the Enrolled Lands is provided in **Exhibit F.**

10.2 Provisional Nature of Land Designations Under SHA

With respect to all land categories designated under this SHA (e.g., Forests & Fish Buffers, Presumed Habitat, Occupied Marbled Murrelet Sites, and Adjacent Forests) and delineated on Applicant's maps (attached as **Exhibit B**), many boundaries will not be precise and are subject to change. Applicant does not typically delineate Forests & Fish Buffers or Occupied Marbled Murrelet Sites until a Forest Practices Application/Notification is submitted to WDNR. Nor does Applicant necessarily calculate timber age class with precision unless it becomes necessary to do so. As a result, many of the delineations made under this SHA, and in particular in the maps in **Exhibit B** are provisional in nature and may change when more thorough delineations are made or better information becomes available. Applicant may provide ongoing updates to its maps to reflect new designations and delineations of covered and/or protected areas.

This SHA is submitted on the basis of the best information available to Applicant at the time of submission. It is submitted with the understanding that more precise boundaries may need to be drawn for any of the land categories designated herein or delineated on Applicant's maps if and when better information becomes available, or if a situation arises (such as in the event of take of a marbled murrelet) in which it is necessary to understand the exact boundaries of the land categories identified under this SHA. If this occurs, the more precise boundaries and land category designations made at such later time shall control over the provisional designations made in this SHA. In light of this, it is understood that all acreage totals included in this SHA are best estimates only based on the best information available.

To reflect the provisional nature of these delineations and designations, Applicant's maps bear the following label:

These maps are provisional in nature and reflect only the best information available to Applicant at the time of submission. These maps should not be relied upon for any purpose other than implementing this SHA, and in the event more accurate information becomes available, that information shall control over the designations and delineations made in these maps.

10.3 Modification

Applicant may seek modification of the SHA by submitting a written request to the USFWS. USFWS may approve minor modifications and will inform Applicant of such, in writing, within 30 days of receiving a request. Under some circumstances, USFWS may give written notice that a proposed modification must be processed as a major amendment because USFWS has determined that, pursuant to its federal regulatory responsibilities, such modification would result in outcomes that

are significantly different. Modifications that necessitate formal amendment of a SHA will require further review and analysis, including public notification in the Federal Register, public comment period, and any other administrative compliance actions as required by applicable federal laws, regulations, policies, and directives. If Applicant's proposed modification constitutes a major amendment, USFWS shall immediately begin review and processing of the request and notify Applicant of such action.

The designations identified in this SHA, such as "Presumed Habitat," "Occupied Sites," "Forests & Fish Buffers," "Conservation Lands," and "Adjacent Forests" may be changed on a site-specific basis in accordance with the processes outlined above to reflect on-ground realities with the consent of both Applicant and USFWS, so long as no such change in designation results in an appreciable impact on net conservation benefits or the long term success of the SHA.

10.4 Renewal

Renewal of this SHA may be requested by the Landowner for a term coextensive with any renewal of the Forest Practices HCP. If Applicant requests renewal, USFWS will reevaluate this SHA to determine whether it will continue to provide a net conservation benefit for the marbled murrelet. If so, and with written concurrence of Applicant, USFWS will renew this SHA. Any renewal must be consistent with the regulations governing renewal that are applicable at the time of the proposed renewal.

10.5 Transfer and Succession

Applicant may remove any portion of the Enrolled Lands from this SHA with written notice to USFWS. Applicant must notify USFWS of any sale, transfer, or conveyance of Enrolled Lands to a third party by either (1) providing written notice within 30 days or (2) providing USFWS a yearly summary of land transfers. Any sale, transfer, or conveyance of land that includes Occupied Marbled Murrelet Sites and/or Presumed Habitat requires written notice within 30 days, and best practice would be to contact USFWS in advance of any such sale, transfer, or conveyance to ensure that transfer of protected lands will not jeopardize Permit status. Unless otherwise agreed by the USFWS and thirty-party acquirer of such lands, the transferred lands shall no longer be subject to or benefited by this SHA. In the event that all or part of Enrolled Lands are sold, or all or part of the management authority of Applicant is surrendered prior to the full term of this SHA, USFWS may transfer this SHA to the new owner. Any transfer must be consistent with the regulations governing transfer that are applicable at the time of the proposed transfer.

10.6 Termination

If Applicant terminates its SHA prior to the end of the term, Applicant must give USFWS written notice by certified letter of its intent to terminate. Any termination must be consistent with the regulations governing termination that are applicable at the time of the proposed termination.

At termination, Applicant may return Enrolled Lands to baseline conditions. Baseline Occupied Sites will continue to be protected pursuant to the Forest Practices Program. Presumed Habitat may not be harvested and will not be provided with incidental take coverage for return to baseline at the end of this SHA term. All other Enrolled Land covered by this SHA may be harvested at Applicant's discretion consistent with the existing Forest Practices laws for protection of forests with RMZs, CMZs, and other set-asides.

10.7 Duration

This SHA will be issued on a term coextensive with the remaining term of the Forest Practices HCP, which expires on June 5, 2056. Applicants may apply for renewal for a term coextensive with any renewal of the Forest Practices HCP. *See* § 10.3.

10.8 Newly Acquired Lands

Applicant may enroll any newly acquired lands into the SHA without further need for notice, comment, or a formal approval process. All newly enrolled lands will be subject to the terms, conditions, and designations set forth in this SHA, including the set-aside of Presumed Habitat, Occupied Sites, and related designations. Applicant may enroll newly acquired lands by submitting to USFWS a map of the newly acquired lands that designates any Presumed Habitat, Occupied Sites, Forests & Fish Buffers, and Adjacent Forests. Applicant will also provide acreage totals of the designations listed above for the newly acquired lands. USFWS will concur or indicate any objections within 30 days, and if Applicant does not receive a response within 30 days, the lands will be considered enrolled.

11.0 MONITORING/REPORTING

USFWS will monitor Occupied Sites and Conservation Lands through the periodic submission from Applicant, at least every ten years, of a report discussing the age and distribution of Conservation Lands and trends in habitat development on the Conservation Lands.

12.0 APPLICANT ASSURANCES AND INCIDENTAL TAKE

1.6 12.1 Assurances

Although marbled murrelet occupancy of Enrolled Lands is anticipated to be low, through Applicant's efforts, Occupied Sites and Presumed Habitat will be protected over the term of this SHA, and SHA Occupied Sites will be managed to promote habitat characteristics used by marbled murrelets. Occupied Site Buffers will also remain in place over the term of the SHA. Older forest stands within Conservation Lands may begin to develop habitat characteristics during this SHA term.

Potential Nesting Habitat may develop during the term of this SHA, particularly in riparian areas and in dispersed patches where buffers are required under the Forest Practices Program. These stands are expected to grow into large trees with branches that may contain nesting platforms.

Occupancy would be considered a successful implementation of this SHA and proof of net conservation benefit. However, occupancy may result in incidental take. Incidental take in the form of harassment by disturbance that harms a marbled murrelet could occur anywhere in the Enrolled Lands.

During the term of this SHA, Applicant will not return the Enrolled Lands to the baseline condition. Occupied Sites, Presumed Habitat, and Forests & Fish Buffers will not be subject to regeneration harvest during the term of this SHA. Conservation Lands may develop and improve habitat characteristics over the term of this SHA. During the term of this SHA, more habitat will be available for marbled murrelets than under current conditions.

USFWS will provide Applicant with assurances that no additional or different management activities will be required to be undertaken for conservation of the marbled murrelet on Enrolled Lands without the consent of Applicant. These assurances will be included in the Permit issued to Applicant. These assurances allow Applicant to alter or modify Enrolled Lands, even if such action results in the incidental take of the marbled murrelet, to the extent that Enrolled Lands are returned to the baseline conditions at the termination of this SHA.

This SHA provides Applicant with incidental take coverage for its activities on Enrolled Lands during this SHA's term and when the Enrolled Lands are returned to baseline conditions at the termination of this SHA.

1.7 12.2 Anticipated Take

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." *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).

Intentional lethal take of individual marbled murrelets is not subject to take assurances. There is not anticipated to be any intentional, direct lethal take of individual marbled murrelets (e.g., hunt, shoot, kill, trap, capture, or collect) as a result of this SHA or any Forest Practices conducted in accordance with this SHA. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Forest Practices conducted on the Enrolled Lands have the potential to result in incidental take of marbled murrelets. Timber harvesting can result in both direct and indirect effects to marbled murrelets. These effects can include the direct loss and fragmentation of nesting 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 murrelet eggs or chicks if an active nest tree is felled (USFWS 1997).

Anticipated take on Applicant's Enrolled Lands is expected to be extremely low, if any occurs at all. However, if incidental take does occur in the Enrolled Lands, it will be subject to take assurances. The potential for incidental take is anticipated during the course of Forest Practices or other covered activities, including timber harvesting that results in modification or removal of Potential Nesting Habitat, disturbance, or harassment.

In the following assessment, estimated impacts to Potential Nesting Habitat is used as an indicator for potential incidental take, as explained in further detail below:

a. **Forest Practices in Forests & Fish Buffers.** Under this SHA, Applicant may continue conducting Forest Practices in Forests & Fish Buffers that are allowed under the Forest Practices Act—for example, commercial thinning in RMZs, limited harvest in outer areas of RMZs, and Forest Practices on unstable slopes following completion of a Class IV-special Forest Practices Application. If these activities result in "take" in the form of habitat modification, they will be subject to take assurances. <u>This form of take is expected to be very low on Applicant's Enrolled Lands</u>. Applicant does not always conduct the Forest Practices allowed in Forests & Fish Buffers because it is not always economically viable to do so. There are 60,802 acres of Forests & Fish Buffers estimated within the Enrolled Lands. The Forests & Fish Buffers as mapped by 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 buffers. Presumed Habitat (258 acres), More-Likely-Than-Not Habitat (636 acres), and Marginal Nesting Habitat (2,286 acres) is currently estimated at 3,180 acres within the Forests & Fish Buffers (**Exhibit F**). 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 distribute stand requirement trees in such a way as to shorten the time required to meet large wood, fish habitat and water quality needs (WAC 222-30-021). This is achieved by increasing the potential for leave trees to grow larger than they otherwise would without thinning. In other words, thinning from below encourages growth of large trees that could benefit marbled murrelets. When these practices are conducted, they 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 road crossings are other activities that can occur within Forests & Fish Buffers and potentially modify habitat, but the impacts of these types of activities are limited in scope, and for this assessment, are included within the 5 percent estimated by Applicant. Based on 5 percent for selective thinning or yarding corridors, about 146 acres of the 3,180 acres of baseline habitat within Forests & Fish Buffers could be affected. Under the SHA, Presumed Habitat within Forests & Fish Buffers (258 acres) is protected from Forest Practices, resulting in less habitat impacts than what would likely occur under existing Forest Practices. As noted in Section 6.6, Marginal Nesting Habitat in Forests & Fish Buffers is expected to increase over the term of the SHA; 23,931 acres of Western Hemlock (44-96 years) stands have the potential to transition into mature forest or Marginal Nesting Habitat. Assuming 5 percent of these acres are managed, up to 1,197 acres of this "future" Marginal Nesting Habitat could be subject to Forest Practices allowed in the Forests & Fish Buffers.

b. **Forest Practices in Adjacent Forests**.

i. Under this SHA, Applicant can conduct Forest Practices in Adjacent Forests. Forest Practices—including harvesting—may result in take in the form of habitat modification and/or the direct removal of Potential Nesting Habitat. Marbled murrelets may derive a benefit from Forest Stands that adjoin Potential Nesting Habitat areas, which can reduce edge effects. Thus, harvest of Adjacent Forests could impact the quality of Potential Nesting Habitat in Forests & Fish Buffers, Presumed Habitat, Occupied Sites, Occupied Site Buffers, and SHA Occupied Sites. However, this form of "take" would occur absent this SHA as well and would not be expected to materially differ in amount or geographic scope.

ii. Take in the form of direct habitat removal is expected to be very low on Applicant's Enrolled Lands. One method of estimating potential take of this kind is to identify the number of stands currently in Adjacent Forests that are Potential Nesting Habitat. There are 195 acres of Presumed Habitat within Adjacent Forests. Without the SHA, most of these acres would likely be available for harvest and likely would be harvested under the existing Forest Practices Rules. There are currently 251 acres in Adjacent Forests on Applicant's Enrolled Lands that surpass the More-Likely-Than-Not Habitat threshold of 130+ years old for Western Hemlock or 220+ years old for Douglas Fir. Of those, 11 acres are in eagle or owl areas (and so are unlikely to be harvested), and 220 acres are in non-commercial or non-operable forest. Only 20 acres of More-Likely-Than-Not Habitat are in commercial forest areas and would be available for harvest under the SHA. Other mature stands in the Adjacent Forests include 194 acres of Marginal Nesting Habitat that would be available for harvest. In total, there is an estimated 639 acres of Potential Nesting Habitat in the Adjacent Forests (**Exhibit F**). Of this,

approximately 210 acres is likely to be harvested under the SHA, and most of these (194 acres) are in the Marginal Nesting Habitat category. Without the SHA, most Presumed Habitat acres (up to 195 acres) would also likely be harvested under existing rules. It is highly unlikely that Applicant would allow any Forest Stands in Adjacent Forests that are currently younger than those identified above to "age into" Potential Nesting Habitat given Applicant's typical approximate harvest rotation of 35 to 45 years. This same outcome would occur in the absence of this SHA, meaning there is no difference relating to future growth of marbled murrelet habitat in the Adjacent Forests compared to the status quo.

c. **Forest Practices on Enrolled Lands adjoining non-owned marbled murrelet protected lands.** Take could theoretically occur due to Forest Practices on Applicant's Enrolled Lands that adjoin non-owned protected habitat and have a managed buffer that extends onto Applicant's Enrolled Land. If the managed buffer falls within Enrolled Lands, it is possible that Applicant could conduct Forest Practices on that land that are allowed under the Forest Practices Program and this SHA. These could theoretically result in habitat modification. It is unknown whether these Forest Practices will actually occur.

d. **Selection Harvest in SHA Occupied Sites.** If any *new* occupied sites are discovered during the life of this SHA (called "SHA Occupied Sites"), this SHA allows selection harvest with the goal of increasing complex canopy growth within SHA Occupied Sites. However, this selection harvest is intended to improve (or, at a minimum, maintain) habitat values preferred by marbled murrelets and will be coupled with retention of key habitat elements. Thus, no habitat modification take is expected to occur as a result of this selection harvest. However, if non-intentional take does occur as a result of this selection harvest in SHA Occupied Sites, it will be subject to take assurances.

e. **Disturbance or Harassment in Occupied Sites or SHA Occupied Sites.** As a result of any timber harvest actions or other covered activities practices described above, take in the form of disturbance or harassment may occur when Applicant conducts Forest Practices near or next to Occupied Sites or SHA Occupied Sites that disturb or harass marbled murrelets on those Occupied Sites or SHA Occupied Sites. Under this SHA, Applicant may conduct Forest Practices in Adjacent Forests up to the edge of Occupied Sites and within Occupied Site Buffers, Forests & Fish Buffers, Presumed Habitat, and SHA Occupied Sites and will receive take assurances for any take of marbled murrelets that occurs as the result of such harvest. This could result in non-intentional, non-lethal, non-habitat modifying take by disturbance or harassment.

f. **Presumed Habitat and Occupied Sites.** Presumed Habitat and Occupied Sites are designated as no-harvest zones for the life of this SHA. As a result, no take is expected to occur due to Forest Practices conducted on these lands.

g. **Return to Baseline.** Occupied Marbled Murrelet Sites and managed Occupied Site Buffers are part of the baseline established by this SHA and will not receive take assurances for return to baseline. Likewise, no take assurances will be provided for returning Presumed Habitat to baseline. Therefore, the only take anticipated as a result of return to baseline would be associated with:

i. *Forest Practices in Adjacent Forests.* As discussed above, this kind of take is expected to be non-existent or very low on Applicant's Enrolled Lands, and the same will be true of any potential return to baseline activities for the same reasons articulated above, namely the low amount of existing More-Likely-Than-Not Habitat and the approximate harvest rotation of 35 to 45 years.

ii. *Forest Practices in Forests & Fish Buffers*. No take is anticipated as a result of return to baseline in Forests & Fish Buffers because all Forest Practices currently allowed under the Forest Practices Program are allowed to continue with take assurances through the life of this SHA and, as discussed above, will result in little to no take because Forest Practices allowed on these Forests & Fish Buffers lands are minimally invasive and are unlikely to cause significant deterioration of marbled murrelet habitat values.

iii. *Forest Practices in SHA Occupied Sites*. Return of SHA Occupied Sites to baseline conditions, if any occurs, would result in take in the form of habitat modification. However, this take is expected to be minimal or non-existent on Applicant Enrolled Lands. SHA Occupied Sites may occur in:

1. *Forests & Fish Buffers*, in which case any return-to-baseline take would be minimal or non-existent because return to baseline would be subject to all then-applicable laws and regulations, and the Forest Practices allowed in Forests & Fish Buffers are minimally invasive and unlikely to cause significant deterioration of marbled murrelet habitat values.

2. *Adjacent Forests*, which are highly unlikely to become SHA Occupied Sites for the reasons discussed above, namely the approximate harvest rotation of 35 to 45 years, which means harvest will likely occur before Adjacent Forests become Potential Nesting Habitat such that it becomes designated as a SHA Occupied Site. Thus, this form of take is highly unlikely to occur.

3. *Presumed Habitat*, which provides no take assurances for return to baseline.

13.0 REMEDIES

USFWS and Applicant shall have all remedies available to enforce the terms of this SHA, except that neither USFWS nor Applicant shall be liable in damages for any breach, any performance of or failure to perform an obligation, or any other cause of action arising from this SHA.

14.0 DISPUTE RESOLUTION

USFWS recognizes that disputes concerning implementation of, compliance with, or termination of this SHA may arise from time to time. USFWS agrees to work with Applicant in good faith to resolve such disputes, using such informal dispute resolution procedures as the parties may agree upon. However, if at any time any party determines that circumstances warrant, it may seek any available legal remedy without completing informal dispute resolution.

15.0 AVAILABILITY OF FUNDS

Approval of this SHA is subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds. Nothing in this SHA will be construed to require the obligation, appropriation, or expenditure of any funds from the U.S. Department of the Treasury. USFWS will not be required under this SHA to expend any federal agency's appropriated funds unless and until an authorized official affirmatively acts to commit to such expenditures in writing.

Applicant is committed to the success of this SHA and pledges to provide the necessary funding to carry out its responsibilities under this SHA, as more fully described in Section 5 (Conservation Goals and Measures), Section 6 (Conservation Benefits), Section 9 (Applicant's Responsibilities), and Section 11 (Monitoring and Reporting) of this SHA. Applicant understands the resources needed to implement this SHA and has (and will continue to have) adequate funds to undertake these measures. Where Applicant's required actions under this SHA depend on, or necessitate, third-party funding, Applicant commits to active and good faith pursuit to secure such funding.

16.0 OTHER CONSERVATION AGREEMENTS

Northwest Forest Plan: The U.S. Forest Service and the Bureau of Land Management ("BLM") administer forest management practices within the range of federally threatened and endangered species that protect late-successional forests and foster the development of late-successional forests. This plan is referred to as the Northwest Forest Plan and its provisions apply to the National Forests and BLM Districts in Washington. The marbled murrelet is a monitored species under the Northwest Forest Plan.

Washington HCPs and SHAs: The marbled murrelet is covered by WDNR's Trust Lands Habitat Conservation Plan (812521), Cedar River Watershed HCP (TE020907-0), City of Tacoma, Tacoma Water HCP (TE044757-0), Plum Creek Timber Central Cascades HCP (TE808398-0), Port Blakely RB Eddy Tree Farm HCP (813744), Simpson Timber NW Operations HCP (TE032463-0), WDNR Low-effect HCP for Commercial Geoduck Fishery (187810-0), City of Everett Lake Chaplain Tract SHA (TE67854B-0), Port Blakely (Morton Block) SHA (TE212229-0), and Tagshinny Tree Farm SHA (TE078319-0).

17.0 NO THIRD-PARTY BENEFICIARIES

This SHA does not create any new right or interest in any member of the public as a third-party beneficiary, nor shall it authorize anyone to maintain a suit for personal injuries or damages pursuant to the provisions of this SHA.

18.0 SEVERABILITY, JURISDICTION, AND VENUE

This SHA shall be implemented in conformance with all applicable laws and regulations of the United States and consistent with all laws and regulations of the State of Washington. If any provision of this SHA is held unlawful, it may be severed and the remaining provisions will continue in force, consistent with the overall conservation purpose for the marbled murrelet.

Any legal action to enforce this SHA shall be in the United States District Court for the Western District of Washington.

19.0 SIGNATURES

This SHA is effective as of the latest date of signature below.

RAYONIER OPERATING COMPANY, LLC, ON BEHALF OF ITS AFFILIATES AND SUBSIDIARIES:

Signature: Douglas M Long

Name: Douglas M Long

Title: SVP Forest Resources

Date: 01/20/21

UNITED STATES FISH & WILDLIFE SERVICE:

Signature: Hugh Morrison Digitally signed by Hugh Morrison Date: 2021.02.02 17:17:54 -08'00'

Name: Hugh Morrison

Title: Deputy Regional Director

Date: 2/2/21

20.0 LITERATURE CITED

Adrean, L.J., S.K. Nelson, M.S. Garcia-Heras, D.D. Roby, M.G. Betts, and J.W. Rivers. 2019. Factors associated with marbled murrelet (Brachyramphus marmoratus) nesting success in western Oregon. 2019 Pacific Seabird Group 46th Annual Meeting – Scientific Program Full Abstracts. 96 pp.

Beggs, L.R. 2004. Vegetation response following thinning in young Douglas-fir forests of western Oregon: Can thinning accelerate development of late-successional structure and composition? M.S. Thesis. Oregon State University. Corvallis, OR

Desimone, S.M. 2016. Periodic status review for the Marbled Murrelet in Washington. Washington Department of Fish and Wildlife, Olympia, Washington. 28+iii pp.

De Santo, T.L. and S.K. Nelson. 1995. Comparative reproductive ecology of the Auks (Family Alcidae) with emphasis on the marbled murrelet. Pages 33-47 in C.J. Ralph, G.L. Hunt, M.G. Raphael, and J.F. Piatt (eds.). Ecology and conservation of the marbled murrelet. General Technical Report. PSW-GTW-152. Pacific Southwest Experimental Station, U.S. Forest Service, Albany, California. 420 pp.

Evans Mack, D., W.P. Ritchie, S.K. Nelson, E. Kuo-Harrison, P. Harrison, and T.E. Hamer. 2003. Methods for surveying marbled murrelets in forests: a revised protocol for land management and research. Pacific Seabird Group Technical Publication Number 2. January 6, 2003. 76 pp.

Garman, S.L., J.H. Cissel, and J.R. Mayo. 2003. Accelerating development of late-successional conditions in young managed Douglas-fir stands: a simulation study. Gen. Tech. Rep. PNW-GTR-557. Portland, OR U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 57pp.

Lindh, B.C., and P.S. Muir. 2004. Understory vegetation in young Douglas-fir forests: does thinning help restore old-growth composition? Forest Ecology and Management 192:285-296.

Lorenz, T.J., M.G. Raphael, T.D. Bloxton, and P.G. Cunningham. 2017. Low breeding propensity and wide-ranging movements by marbled murrelets in Washington. Journal of Wildlife Management 81(2):306–321.

McIver, W., J. Baldwin, M.M. Lance, S.F. Pearson, C. Strong, D. Lynch, M.G. Raphael, R. Young, and N. Johnson. 2020. Marbled murrelet effectiveness monitoring, Northwest Forest Plan: At-sea monitoring - 2019 summary report. 23 p.

Oliver, C.D., C. Harrington, M. Bickford, L. Hicks, S. Martin, T. Raettig, G. Hoyer, B. Gara, W. Knapp, G. Lightner, and J. Tappeiner II. 1991. Northern spotted owl habitat in

previously managed forests in western and eastern Washington with and without further management. Unpubl. Rep. to J. Tappeiner, Silviculture Subcommitee, Spotted Owl Recovery Team. USDI Fish & Wildlife Service. December 9. 72 pp.

Nelson, S.K. 1997. The Birds of North America, No. 276 - marbled murrelet (*Brachyramphus marmoratus*). Pages 1–32 In A. Poole and F. Gill, eds. The birds of North America: Life histories for the 21st century, The Academy of Natural Sciences & The American Ornithologists' Union, Philadelphia, PA; Washington, D.C.

Port Blakely Tree Farms. 2009. Safe Harbor Agreement, Landowner Option Plan, and Cooperative Habitat Enhancement Agreement: Port Blakely Tree Farms, Morton Block. February 2009. 114 pp.

Ralph, C.J., G.L. Hunt, Jr., M.G. Raphael, and J.F. Piatt. 1995. Ecology and Conservation of the Marbled Murrelet in North America: an Overview. Gen. Tech. Rep. PSW-GTR-152. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture.

Raphael, M.G., G.A. Falxa, D. Lynch, S.K. Nelson, S.F. Pearson, A.J. Shirk, and R.D. Young. 2016. Status and trend of nesting habitat for the marbled murrelet under the Northwest Forest Plan. Chapter 2 *in*: Falxa, G.A.; Raphael, M.G., technical editors. 2016. Northwest Forest Plan—The first 20 years (1994–2013): status and trend of marbled murrelet populations and nesting habitat. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. Gen. Tech. Rep. PNW-GTR-933., Portland, OR. 132 pp.

WDNR. 2005. Final Forest Practices Habitat Conservation Plan. Washington Department of Natural Resources, Olympia, Washington. December, 2005. 274 pp. + appendices.

WDNR and USFWS. 2019. Final Environmental Impact Statement for the Marbled Murrelet Long-Term Conservation Strategy. September, 2019. Washington Department of Natural Resources and U.S. Fish and Wildlife Service. Olympia, WA. https://www.dnr.wa.gov/mmltcs

USFWS. 1997. Recovery Plan for the Threatened Marbled Murrelet (*Brachyramphus marmoratus*) in Washington, Oregon, and California. U.S. Fish and Wildlife Service, Region 1, Portland, OR.

USFWS et al. 1999. Forests & Fish Report. 177 pp. Appendix B *in:* WDNR. 2005. Final Forest Practices Habitat Conservation Plan. Washington Department of Natural Resources, Olympia, Washington. December, 2005. 274 pp. + appendices.

USFWS and NMFS. 2006. Final Environmental Impact Statement for the Proposed Issuance of Multiple Species Incidental Take Permits or 4(d) Rules for the Washington State Forest

Practices Habitat Conservation Plan. U.S. Department of Commerce, National Marine Fisheries Service; U.S. Department of the Interior, Fish and Wildlife Service.

USFWS. 2006. Biological opinion for the issuance of an incidental take permit (PRT-TE121202-0) to the State of Washington for the implementation of the Washington Forest Practices Habitat Conservation Plan. 1-3-06-FWF-0301. U.S. Fish and Wildlife Service, Western Washington Fish and Wildlife Office, Lacey, WA, May 16, 2006, 1152 pp.

USFWS. 2012. Marbled murrelet nesting season and analytical framework for section 7 consultation in Washington. June 20, 2012. U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, Lacey, Washington. 8 pp.

USFWS. 2019. Marbled Murrelet (*Brachyramphus marmoratus*): 5-year Status Review. U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, Lacey, Washington.

Exhibit A: Enrolled Lands Overview

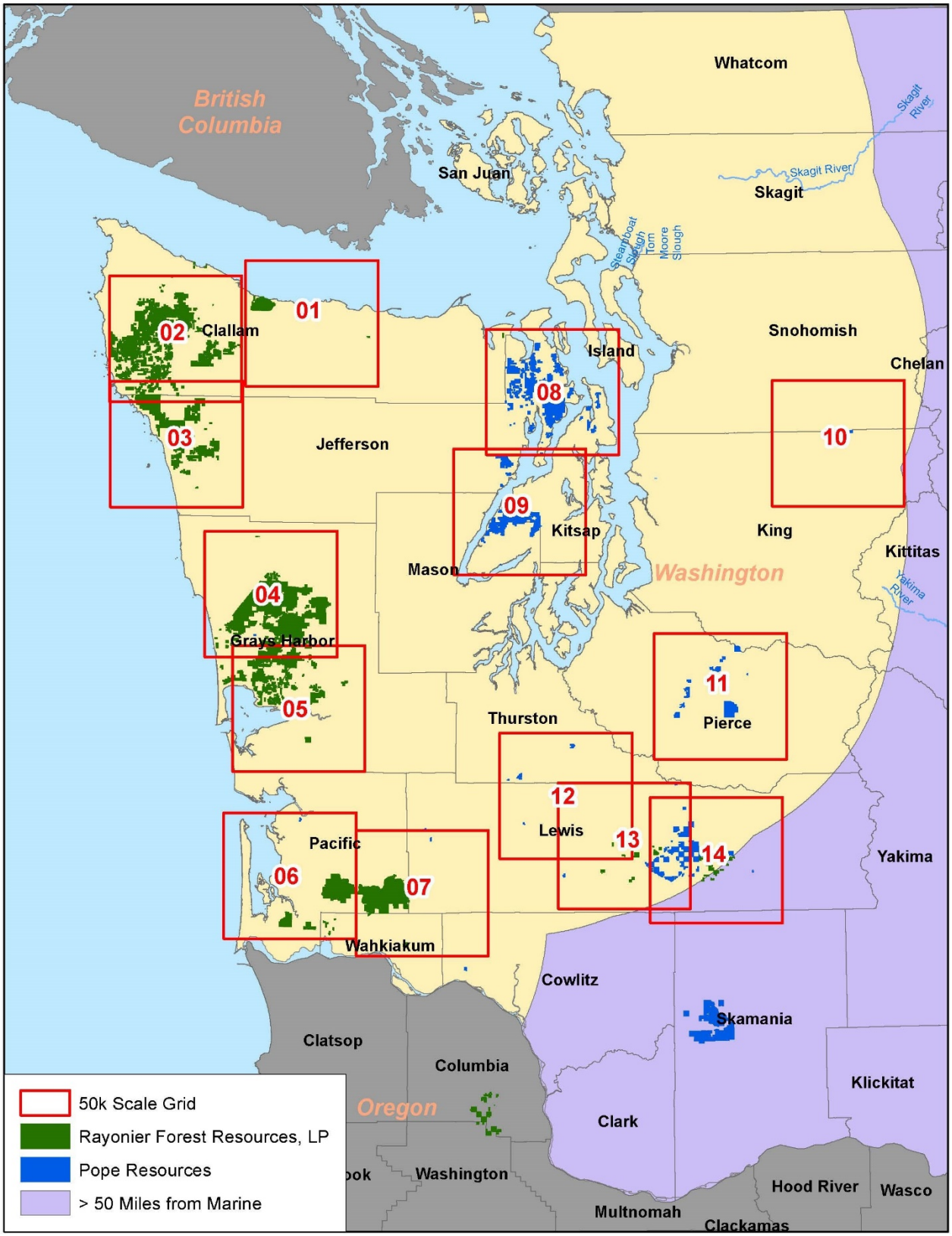
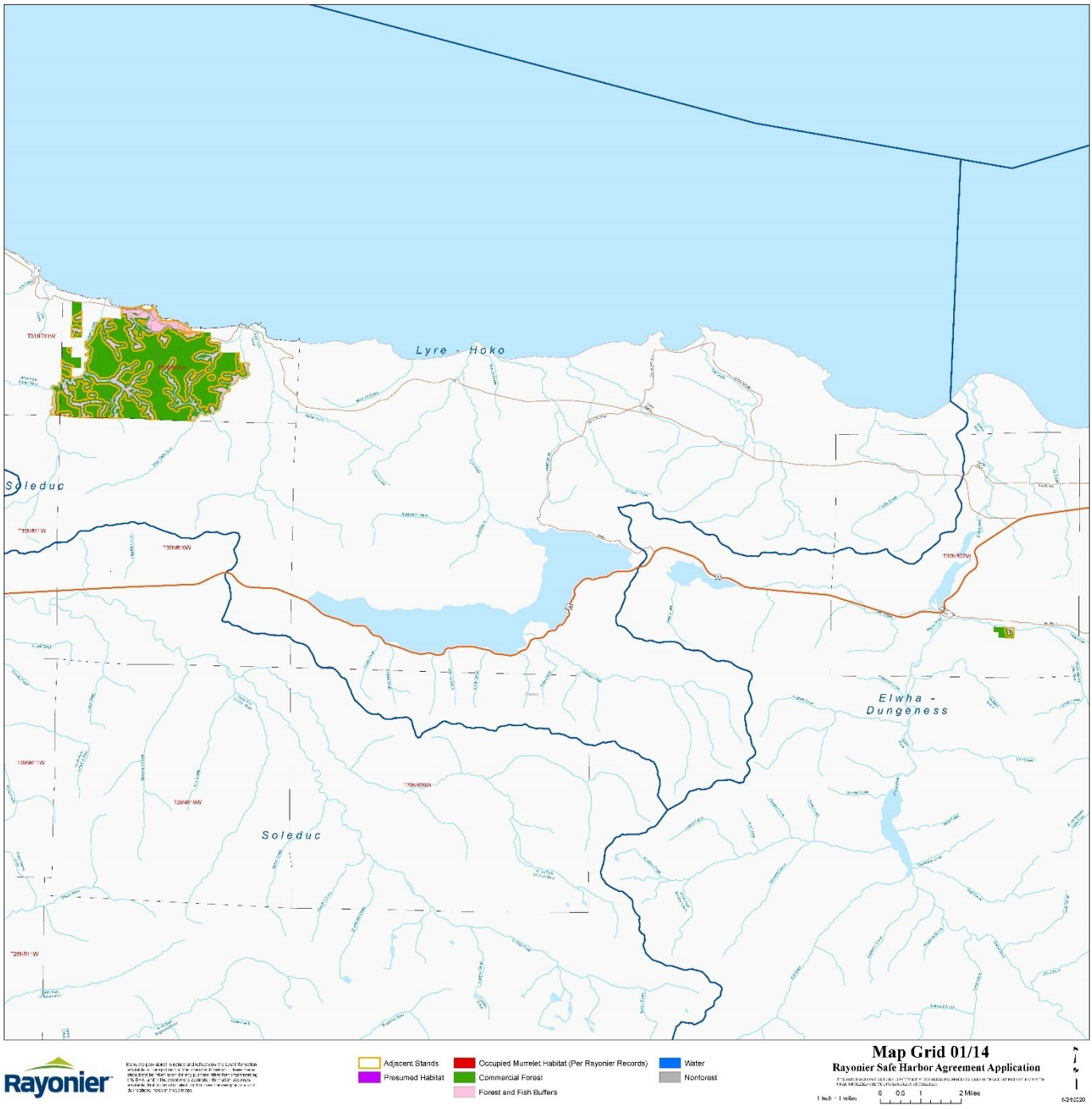
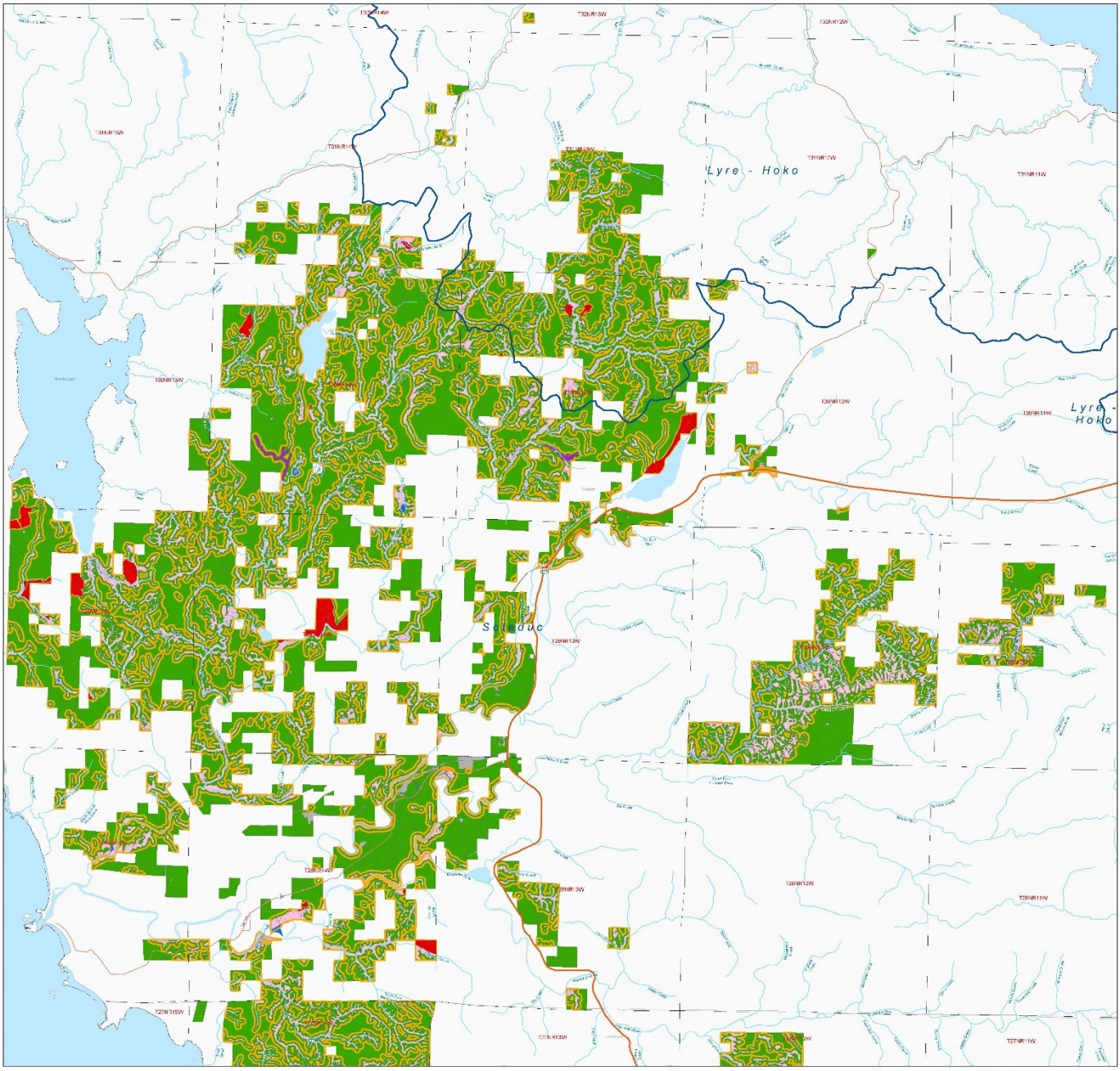


Exhibit B: Enrolled Lands Maps





Rayonier

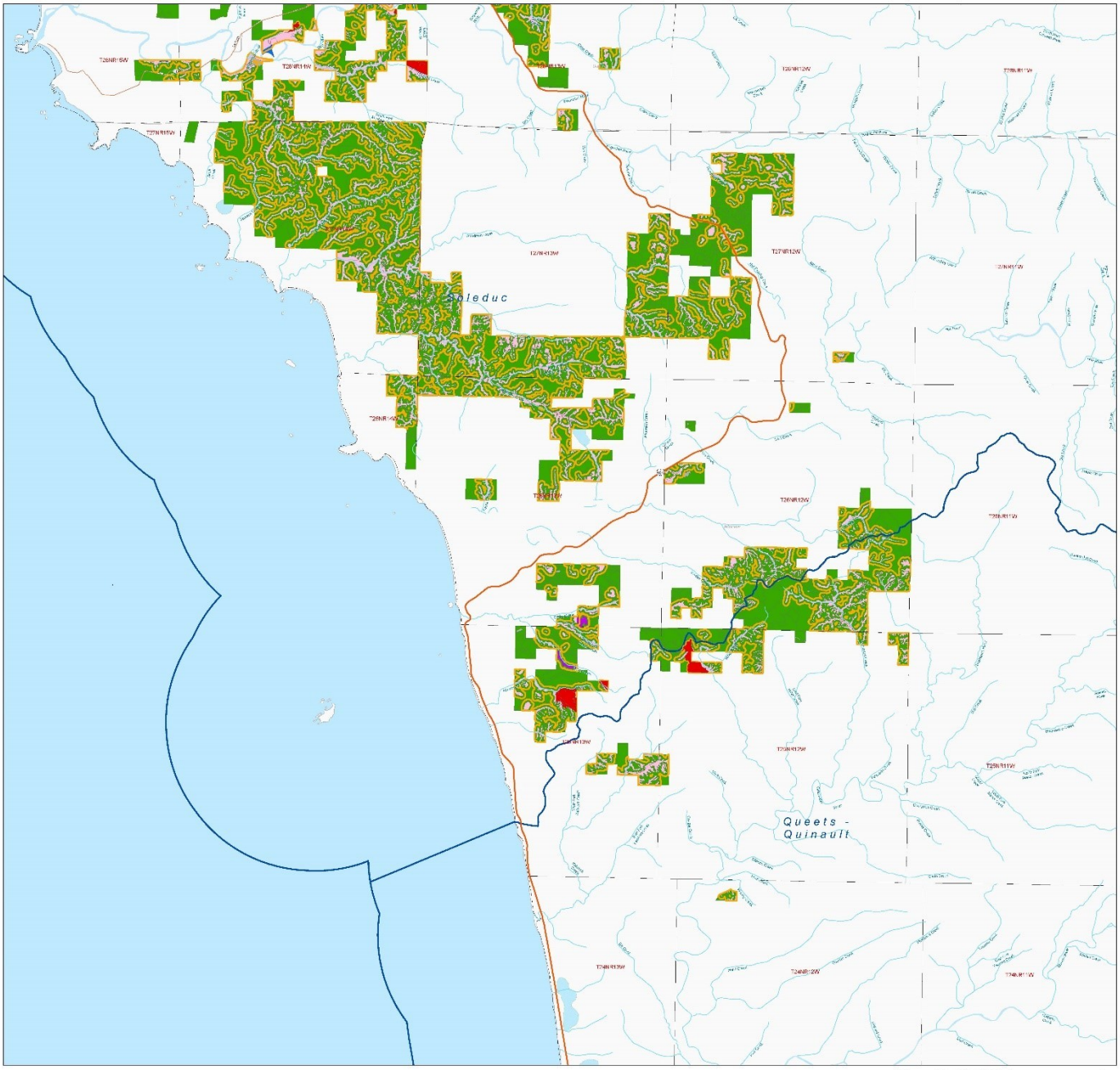
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest

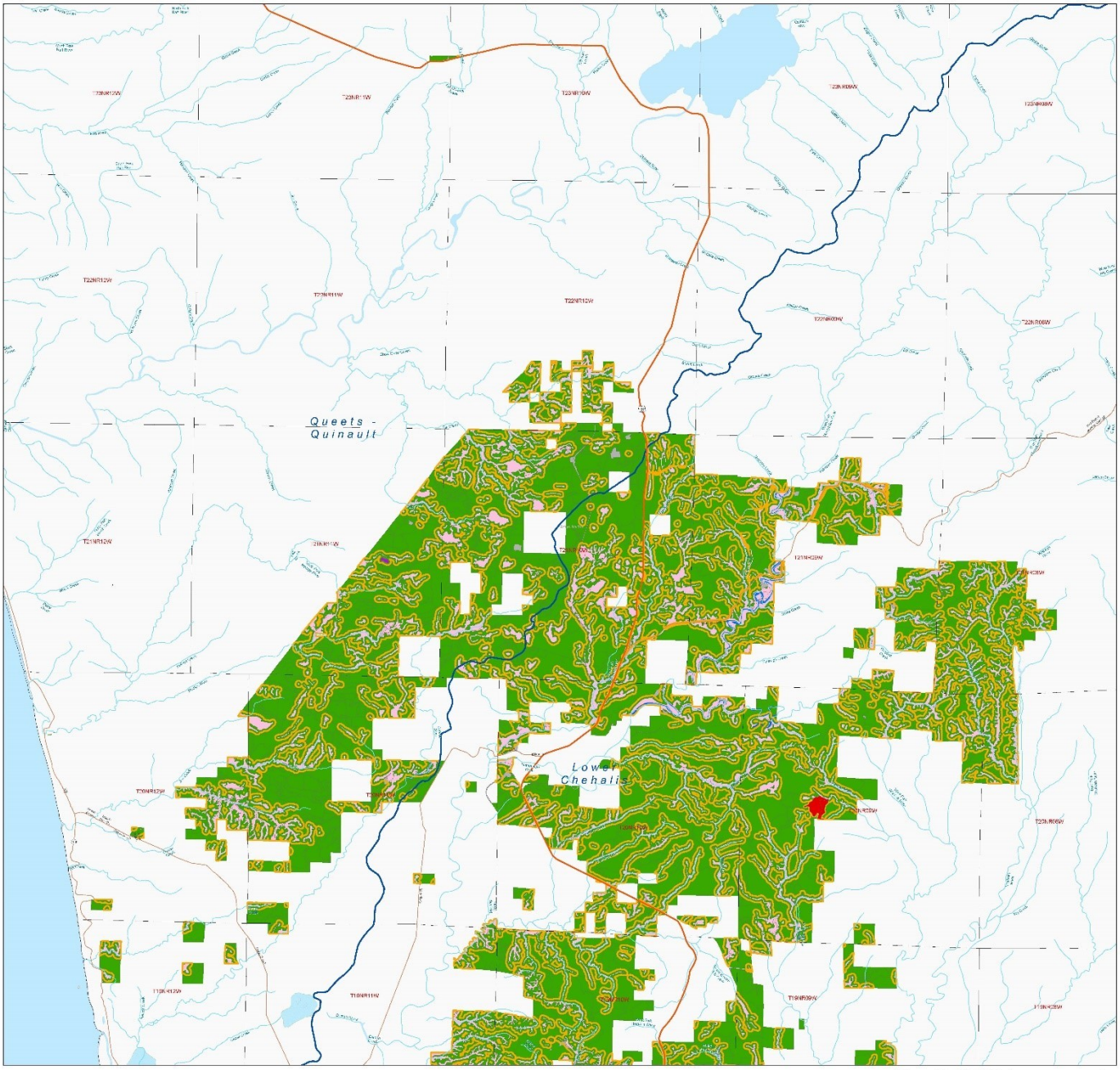
Map Grid 02/14

Rayonier Safe Harbor Agreement Application

1 Inch = 1 miles
0 0.5 1 2 Miles

6/24/2020


Taholah
Queets - Quinault
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest
Map Grid 03/14
Rayonier Safe Harbor Agreement Application
1 Inch = 1 miles
0 0.5 1 2 Miles
6/24/2020



Rayonier

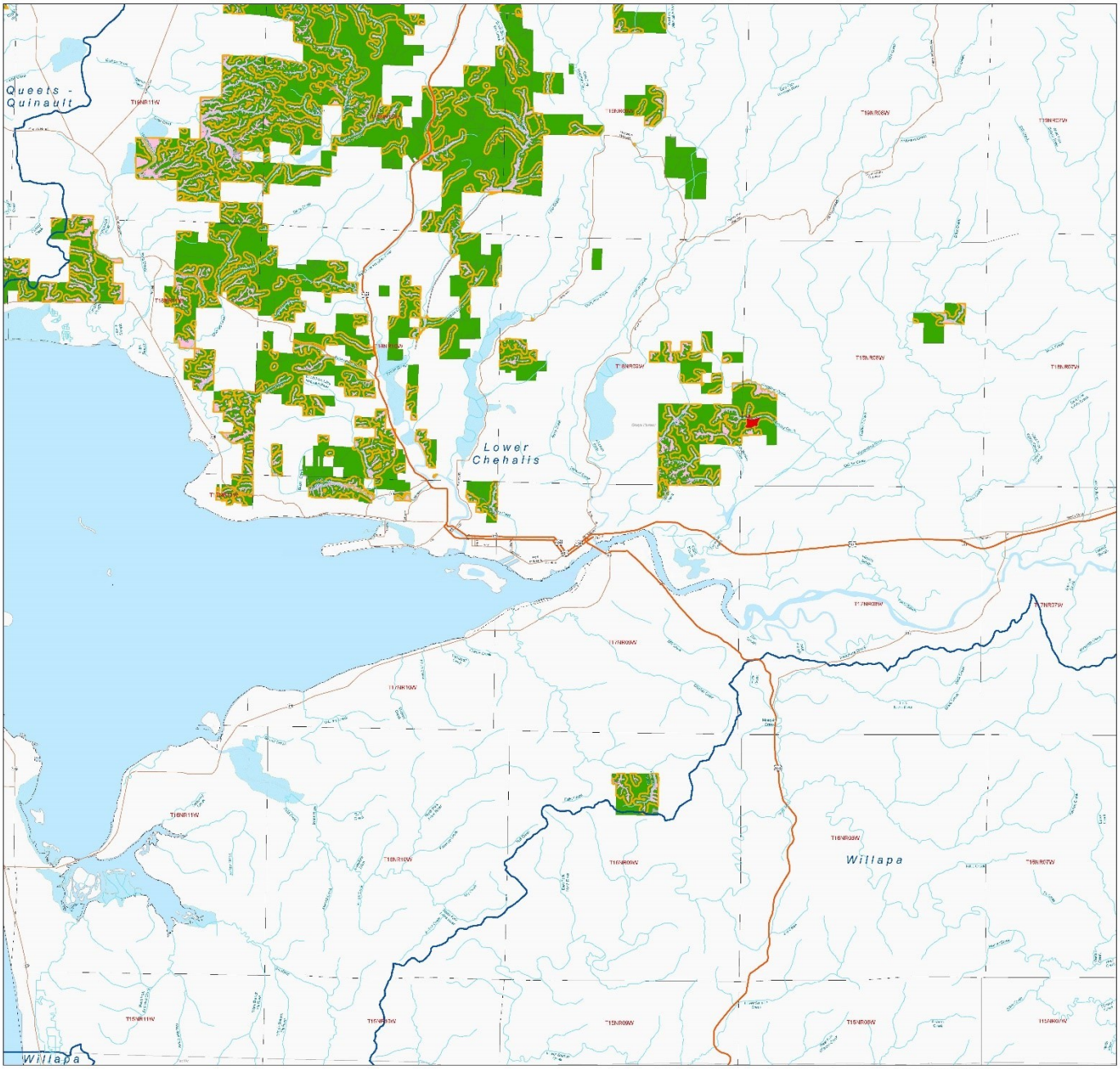
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest

Map Grid 04/14

Rayonier Safe Harbor Agreement Application

1 Inch = 1 miles 0 0.5 1 2 Miles

6/24/2020



Rayonier

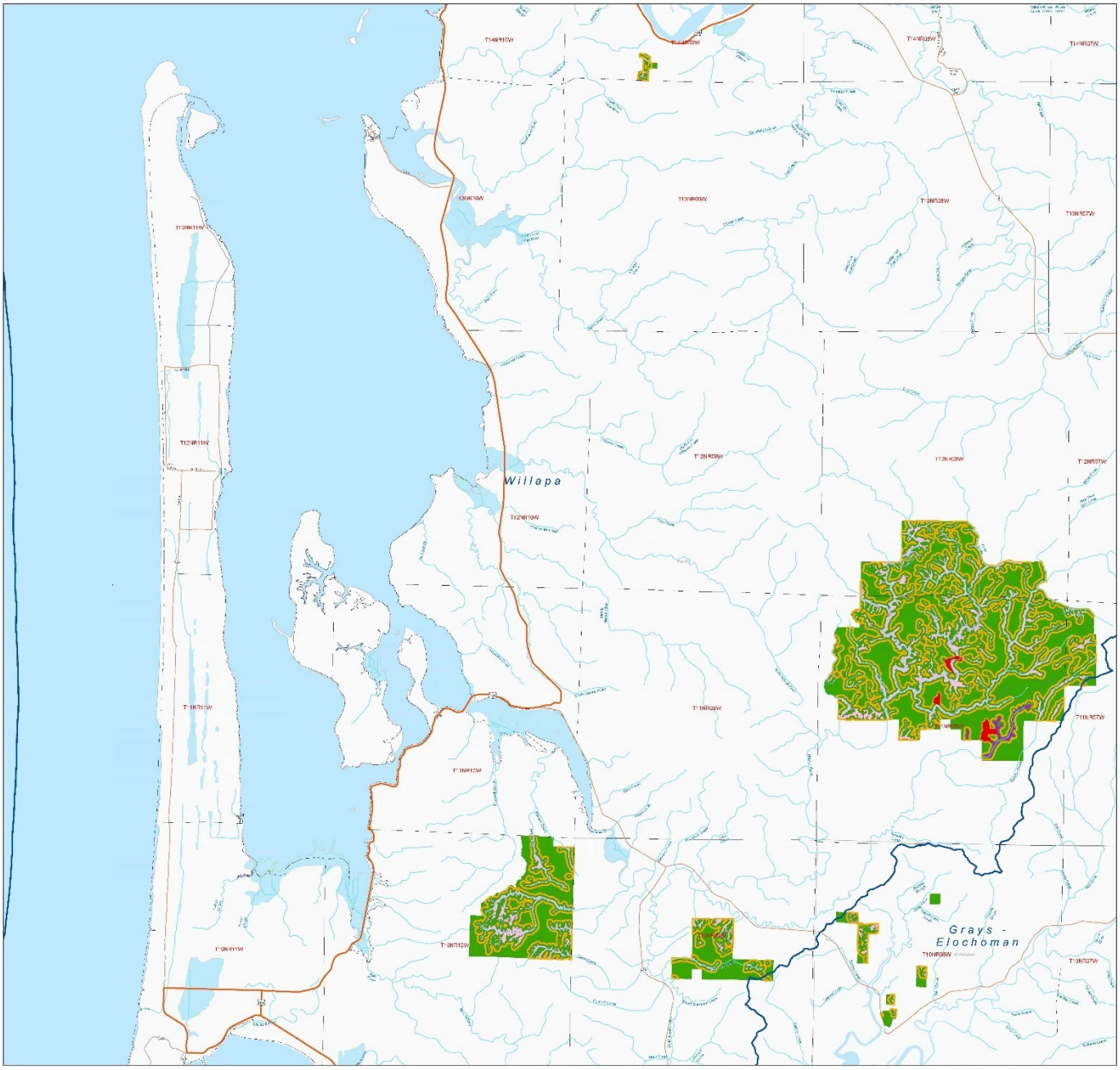
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest

Map Grid 05/14

Rayonier Safe Harbor Agreement Application

1 Inch = 1 miles 0 0.5 1 2 Miles

6/24/2020



Rayonier

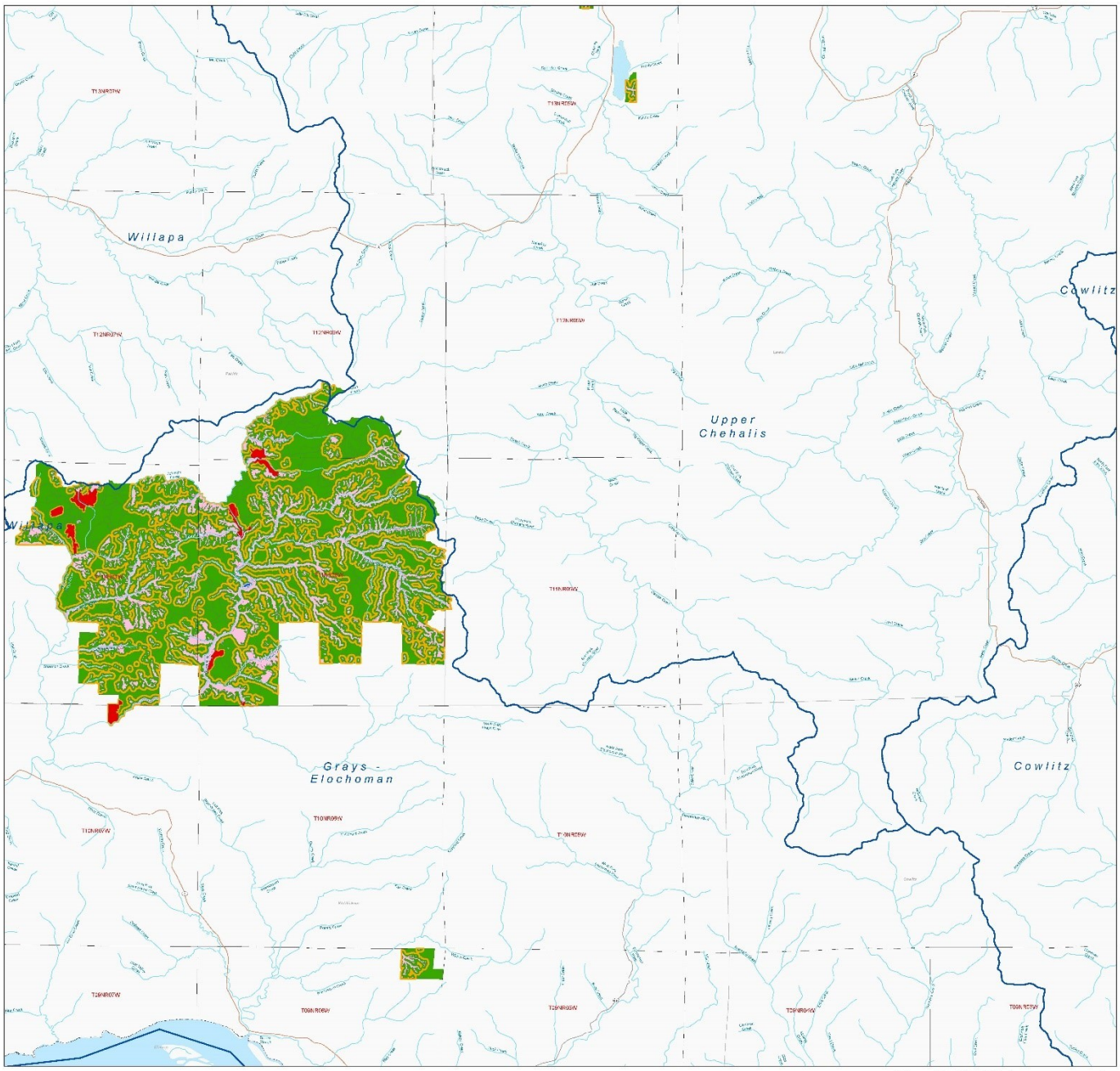
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest

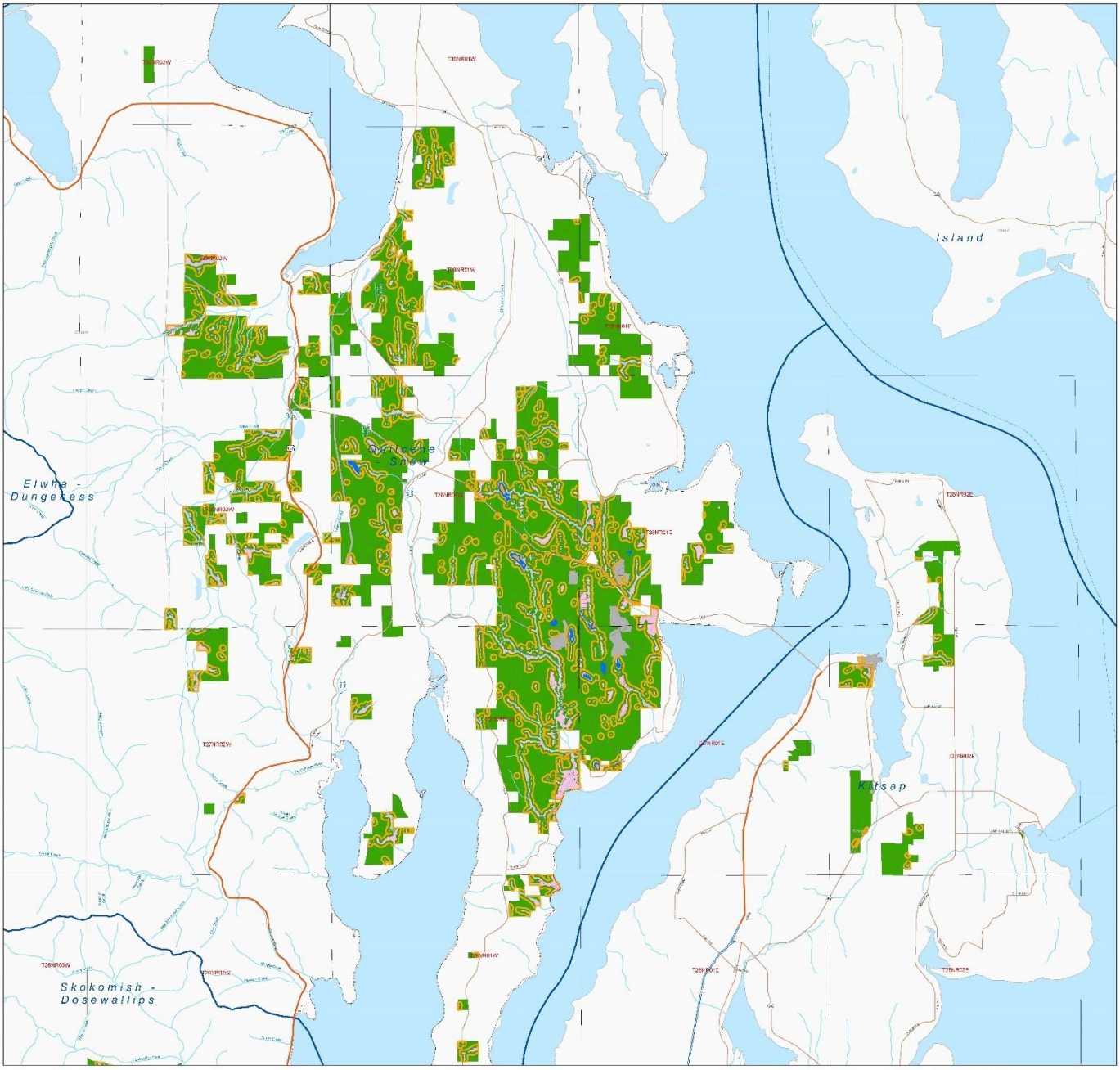
Map Grid 06/14

Rayonier Safe Harbor Agreement Application

1 Inch = 1 miles
0 0.5 1 2 Miles

6/24/2020


Willapa
Upper Chehalis
Cowlitz
Grays - Elochoman
Cowlitz
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest
Map Grid 07/14
Rayonier Safe Harbor Agreement Application
0 0.5 1 2 Miles
6/24/2020



Rayonier

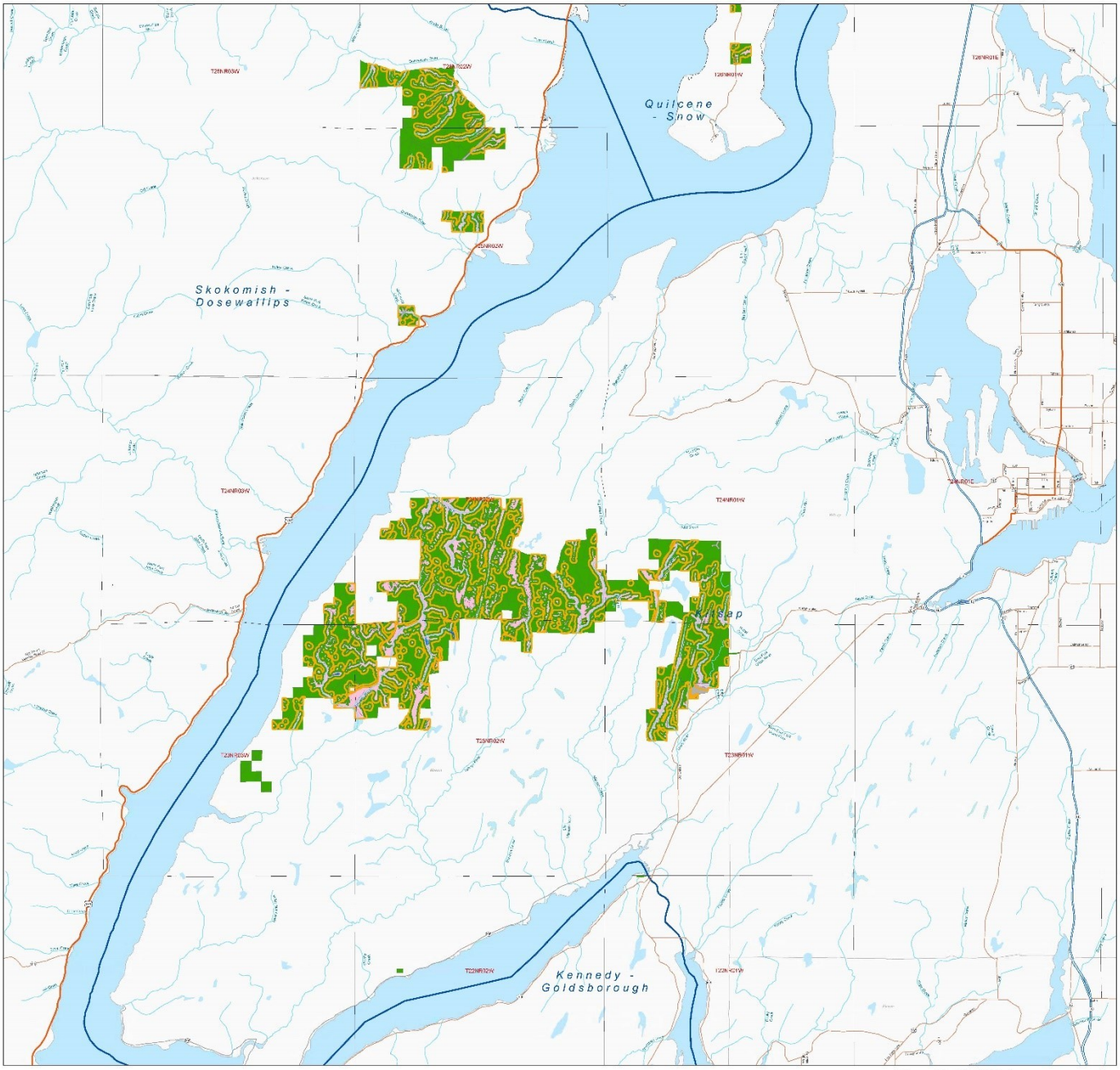
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest

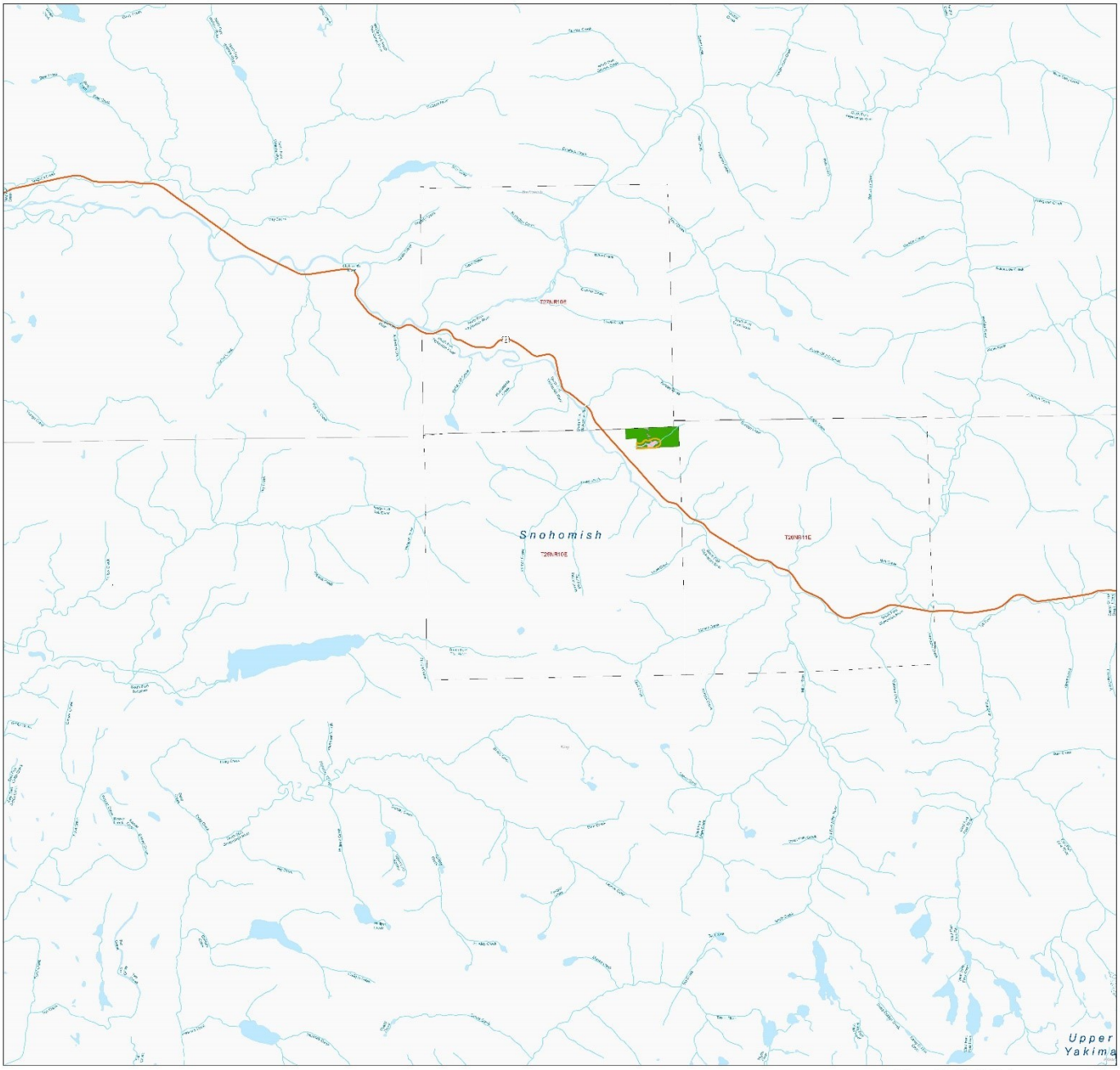
Map Grid 08/14

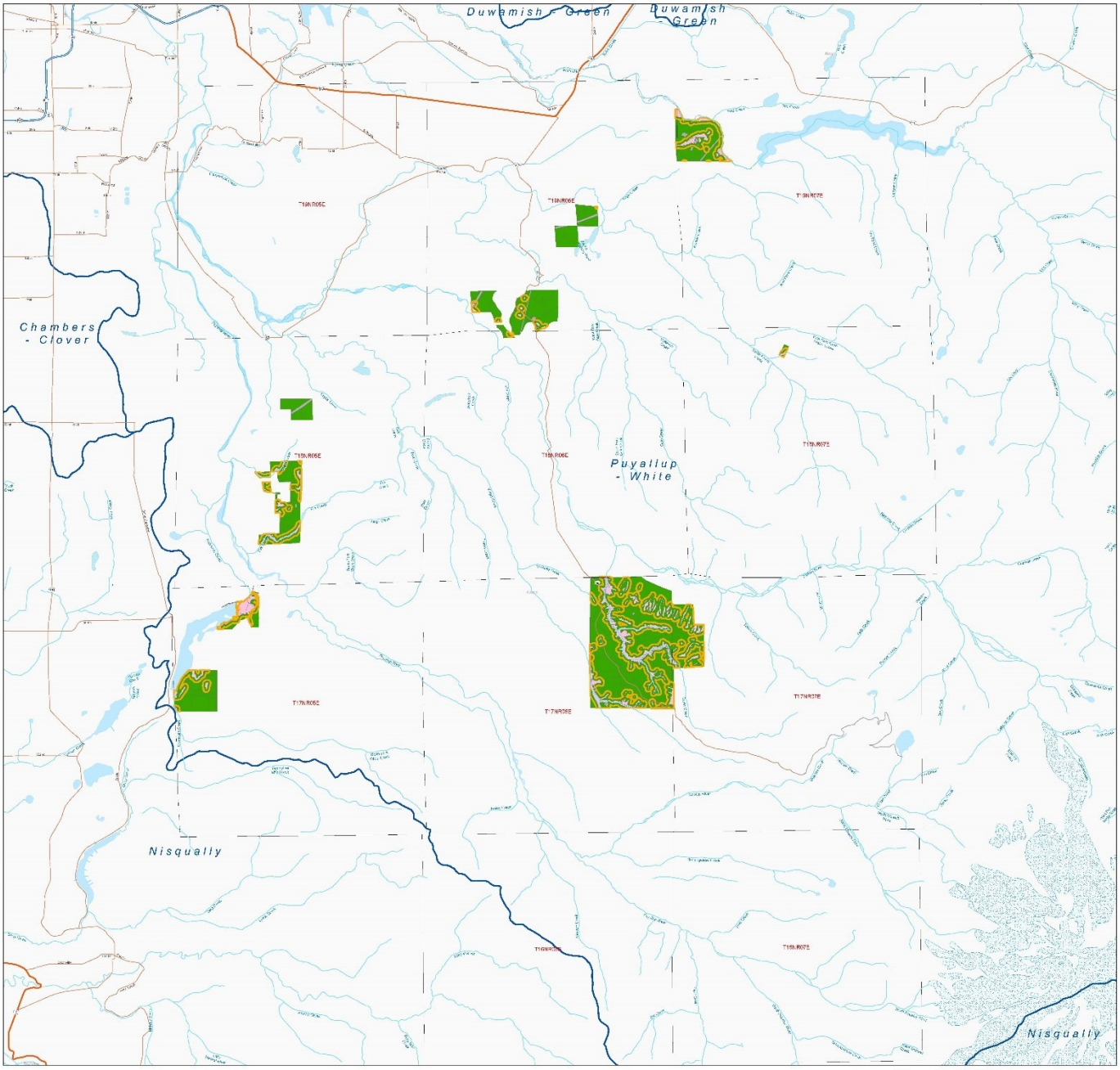
Rayonier Safe Harbor Agreement Application

1 Inch = 1 miles 0 0.5 1 2 Miles

6/24/2020


Quilcene - Snow
Skokomish - Dosewallips
Kitsap
Kennedy - Goldsborough
T28NR03W
T28NR02W
T28NR01W
T28NR01E
T25NR03W
T25NR02W
T24NR03W
T24NR02W
T24NR01W
T24NR01E
T23NR03W
T23NR02W
T23NR01W
T22NR02W
T22NR01W
Rayonier
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest
Map Grid 09/14
Rayonier Safe Harbor Agreement Application
1 Inch = 1 miles
0 0.5 1 2 Miles
6/24/2020


Snohomish
T29N R10E
T29N R11E
Upper Yakima
Rayonier
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest
Map Grid 10/14
Rayonier Safe Harbor Agreement Application
0 0.5 1 2 Miles
1 inch = 1 miles
6/24/2020



Rayonier

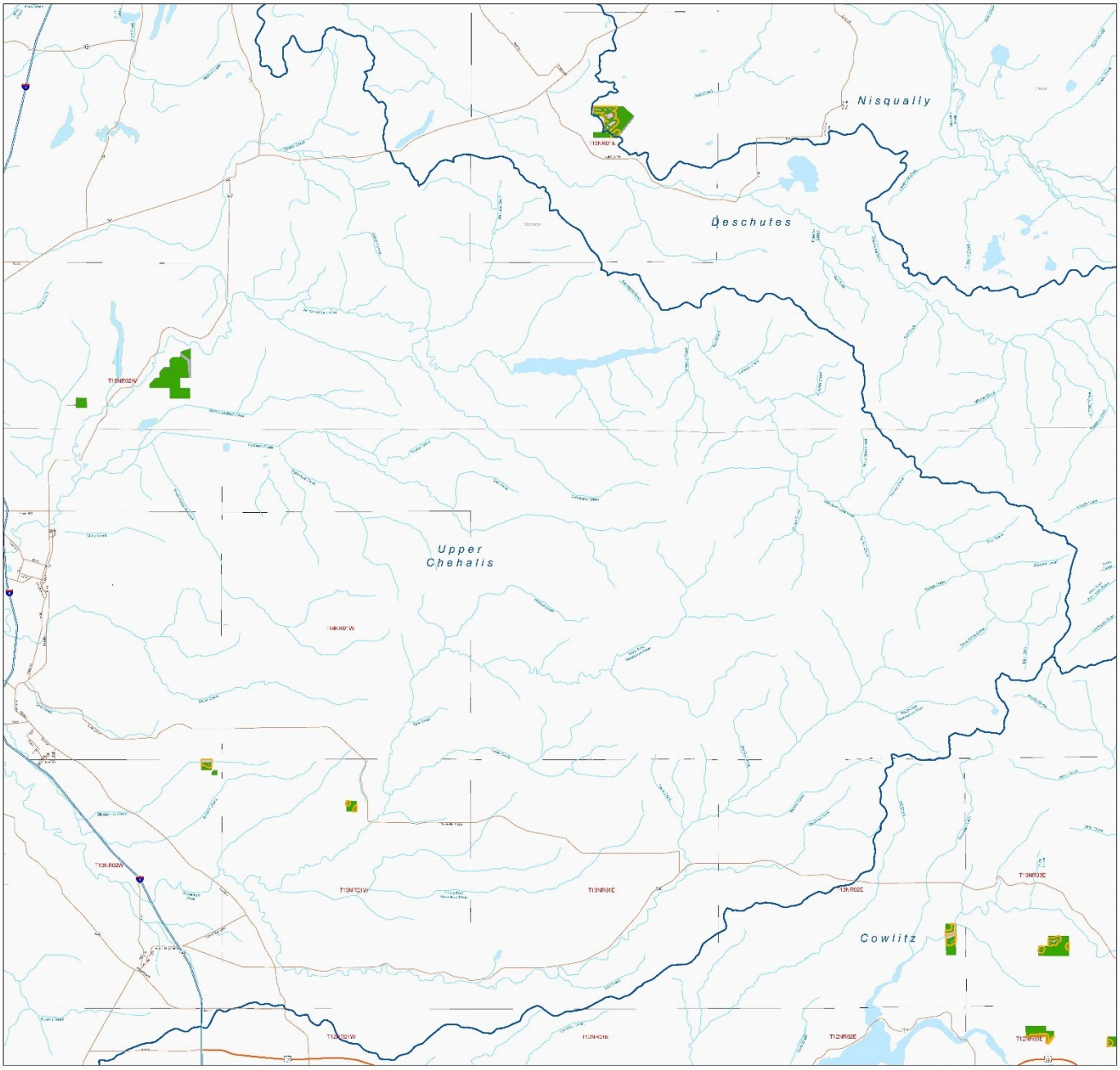
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest

Map Grid 11/14

Rayonier Safe Harbor Agreement Application

1 Inch = 1 miles 0 0.5 1 2 Miles

6/24/2020



Rayonier

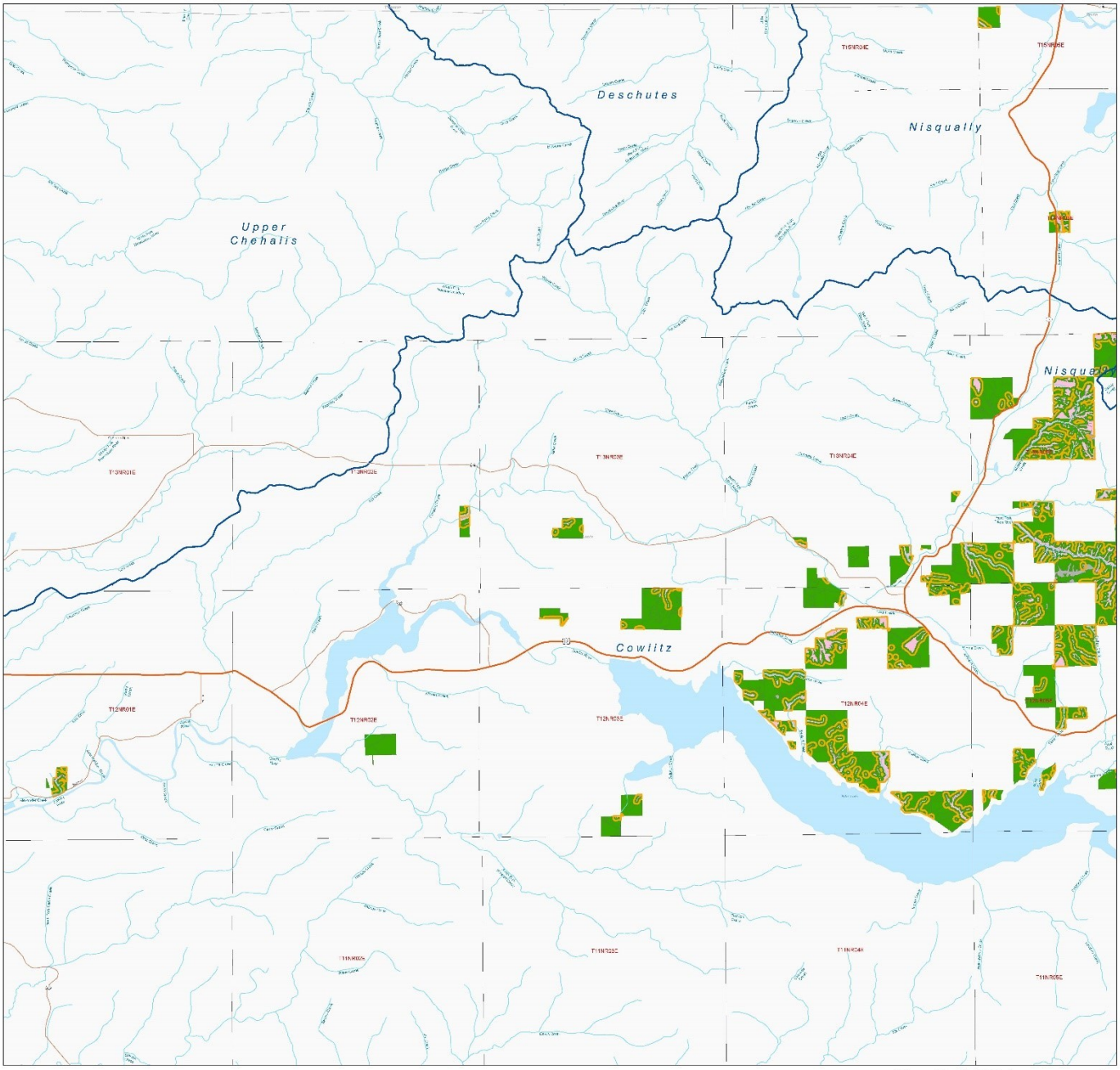
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest

Map Grid 12/14

Rayonier Safe Harbor Agreement Application

1 inch = 1 miles 0 0.5 1 2 Miles

6/24/2020


Deschutes
Nisqually
Upper
Chehalis
Cowlitz
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest
Map Grid 13/14
Rayonier Safe Harbor Agreement Application
0 0.5 1 2 Miles
6/24/2020

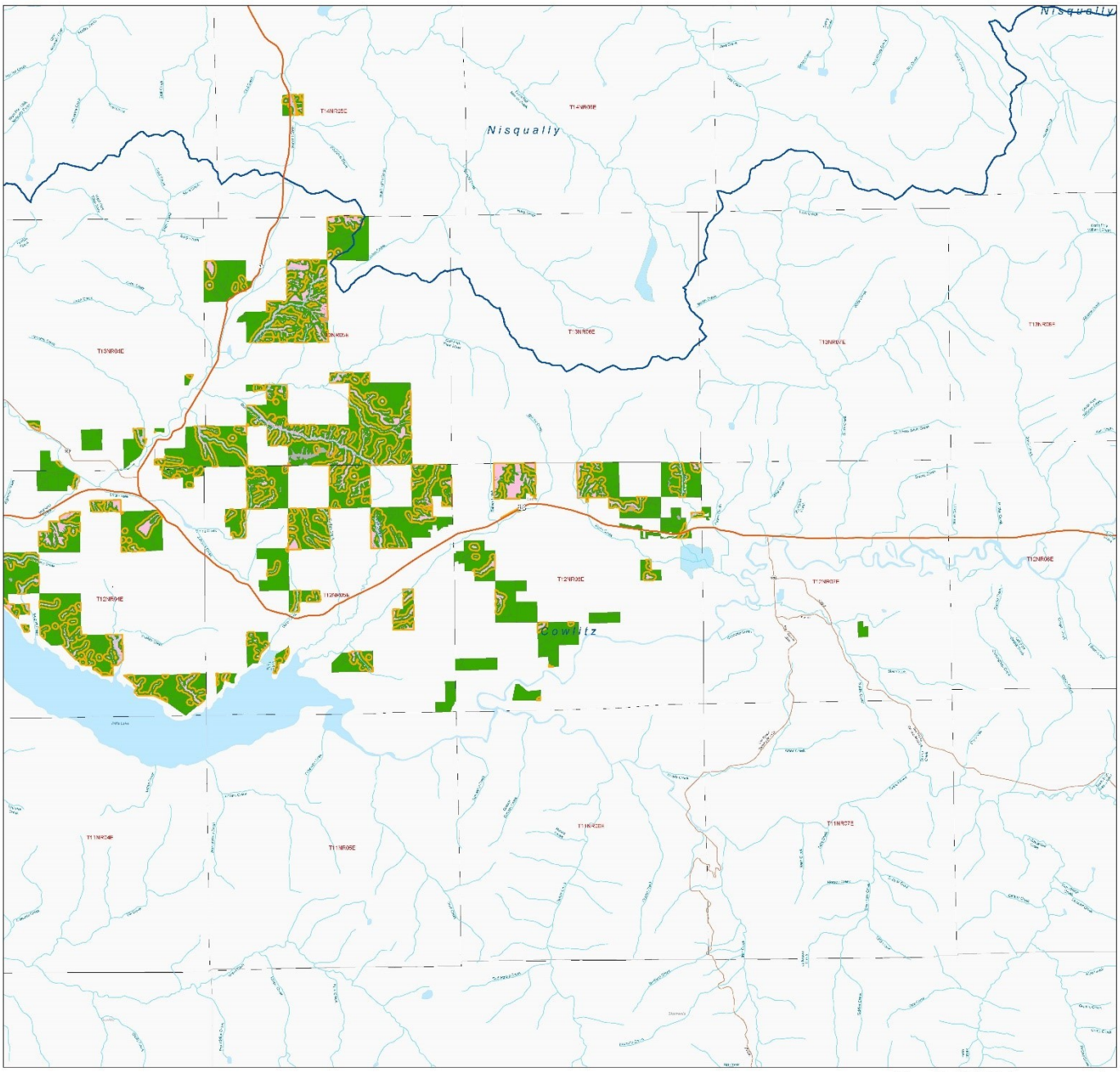

Nisqually
Nisqually
Cowlitz
Adjacent Stands
Presumed Habitat
Occupied Murrelet Habitat (Per Rayonier Records)
Commercial Forest
Forest and Fish Buffers
Water
Nonforest
Map Grid 14/14
Rayonier Safe Harbor Agreement Application
1 Inch = 1 miles
0 0.5 1 2 Miles
6/24/2020

Exhibit C: Forests & Fish Buffers

WAC 222-030-020 (13) Channel Migration Zones: No harvest or salvage; only road construction permitted.
WAC 222-30-021 (1) Western Washington RMZs: Type S and F and F Riparian management zone widths depend on 2 factors; Bank Full Width and Site Class. The following table identifies buffer widths:

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
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) (BM 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) (BM 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 1st 75’ must be retained. Leave tree requirements are as follows:

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
IZ Harvest Option 1: Thinning from Below*†	No Harvest	• Residual must meet DFC target (140 yr) • Harvest smallest DBH 1st • Maintain proportion of conifer • Minimum of 57’ conifer/ac	Same
IZ 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

*Shade requirements must be met (222-030-040); BM section 7
†Harvest within 1st 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.

222-030-021 (2)(b) RMZs for Type Np streams: 50' no harvest buffer on both sides of stream for 1st 300' from confluence with Type F/S stream and then 50% of stream length upstream from that point. Required retention on sensitives sites are as follows:

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).

222-030-020 (7) Forested Wetlands: Within forested wetlands on any size, 30-70% of wildlife recruitment trees for associated harvest area should be using a clumped strategy representative of the overstory.

222-030-020 (8) Wetland Management Zones: WMZ have variable widths (not to exceed the maximum or minimums) based upon the size and type of wetland as follows:

Wetland Type	Acres of Non-forested Wetland	Maximum WMZ Width	Average WMZ Width	Minimum WMZ Width
A (including bogs)	Greater than 5	200 ft	100 ft	50 ft
A (including bogs)	0.5 to 5	100 ft	50 ft	25 ft
A (bogs only)	0.25 to 0.5	100 ft	50 ft	25 ft
B	Greater than 5	100 ft	50 ft	25 ft
B	0.5 to 5			25 ft
B	0.25 to 0.5	No WMZ required	No WMZ required	

Within WMZ, a total of 75 tpa representative of the species found in the WMZ > 6" dbh are required to be left; 25 of which shall be > 12"dbh including 5 > 20" dbh, where they exist.

Exhibit D: Selection Harvest Guidelines for SHA Occupied Sites

SHA Occupied Sites that are not Presumed Habitat can be selectively harvested outside the Marbled Murrelet Nesting Season to promote complex canopy growth. The purpose of selective harvest within an SHA occupied site is to enhance the suitability of the SHA occupied site to support nesting opportunities for marbled murrelets. Generally, the USFWS does not recommend selective harvest within occupied stands but recognizes that there may be certain situations where selective harvest could be used to enhance the structural diversity of a forest stand. Landowners who choose to implement selective harvest in an SHA occupied site will provide notification to USFWS by providing a copy of the Washington Forest Practices Application/Notification (FPA/N) at the time the FPA/N is submitted to the Washington Department of Natural Resources for approval.

A review of studies that measured tree sizes, tree density, and canopy cover at marbled murrelet nesting sites have found that in general, stands used for nesting have lower tree densities and lower overstory canopy cover than random sites. We reviewed stand metrics collected at marbled murrelet nest sites to inform these non-binding recommendations and guidelines for selective harvest treatments in SHA occupied stands (Table 1).

Table 1. Summary of average tree density (trees per acre) measured at marbled murrelet nest sites.

Tree sizes (inches dbh)	All trees ≥ 4 in dbh	All trees ≥ 18 in dbh	All trees ≥ 32 in dbh	Source/notes
Average tree density (trees per acre)	55 (±11)	38	-	Hamer and Nelson 1995. Nest sites in WA (n = 5).
	49 (±29)	38	-	Hamer and Nelson 1995. Nest sites in OR (n = 10)
	117 (±13)	37	21	Hamer and Meekins 1999. Nest sites in WA (n =21)
	46 (±11)	-	16	Wilks et al. 2016. Nest sites in WA and S. Vancouver Is. (n = 18)
Basal area (ft^2/ acre)	140 (±56)	-	-	Wilks et al. 2016.
Canopy cover (%)	60 (±13)	-	-	Wilks et al. 2016.

Notes: dbh = diameter at breast height. Values in this table have been rounded to the nearest whole number.

Landowners conducting selective harvest within SHA Occupied Sites should consider the following guidelines that may help increase complex canopy growth and/or benefit marbled murrelets:

- Retain all live conifer trees ≥18 inches dbh, including all trees with platforms and any identified marbled murrelet nest trees, regardless of height or dbh;
- Selectively remove suppressed, smaller co-dominant and dead or dying trees, although spacing may result in retention of some smaller, co-dominant trees;
- Retain a minimum density of 50 trees per acre ≥ 4 inches dbh, and retain a minimum post-thinning overstory canopy cover of dominant and codominant trees of ≥ 50 percent;
- Some smaller sub-merchantable trees, especially shade-tolerant species, should be retained to accelerate habitat conditions by contributing to the development of a second story, and all efforts should be made to allow shade-tolerant saplings (e.g., western red cedar and western hemlock) to remain undisturbed; and
- Forest Practices Rules must be followed during thinning, with the exception of those rules for which an exemption is appropriate because of this SHA.

Although these guidelines are not strictly mandatory, key habitat elements are to be left undisturbed and selective harvest should be conducted with the goal of increasing habitat values for the marbled murrelet.

References

Hamer, T.E., and S.K. Nelson. 1995. Characteristics of marbled murrelet nest trees and nesting stands. Pages 69-82 In: C.J. Ralph, G.L. Hunt, M.G. Raphael, and J.F. Piatt, eds. Ecology and conservation of the marbled murrelet. General Technical Report. PSW-GTW-152, 420th. Pacific Southwest Experimental Station, U.S. Forest Service, Albany, California.

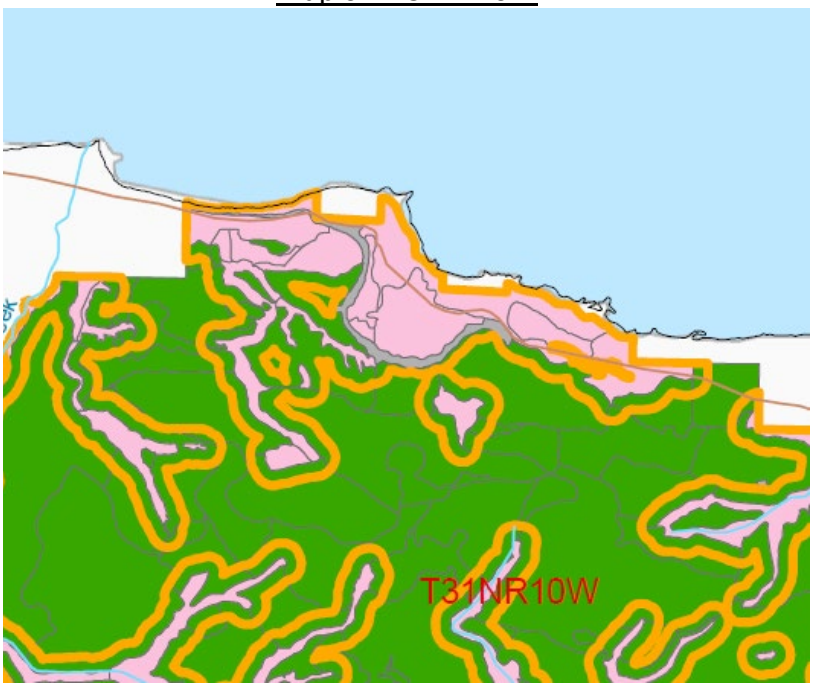
Hamer, T.E., and D.J. Meekins. 1999. Marbled murrelet nest site selection in relation to habitat characteristics in western Washington. An unpublished report prepared for U.S. Fish and Wildlife Service, the Washington Department of Natural Resources, and Rayonier Inc. January 1999. Hamer Environmental, Mount Vernon, Washington. 26 pp + appendices.

Wilk, R.J., M.G. Raphael, and T.D. Bloxton, Jr. 2016. Nesting habitat characteristics of marbled murrelets occurring in near-shore waters of the Olympic Peninsula, Washington. J. Field Ornithol. 87(2):162–175, 2016.

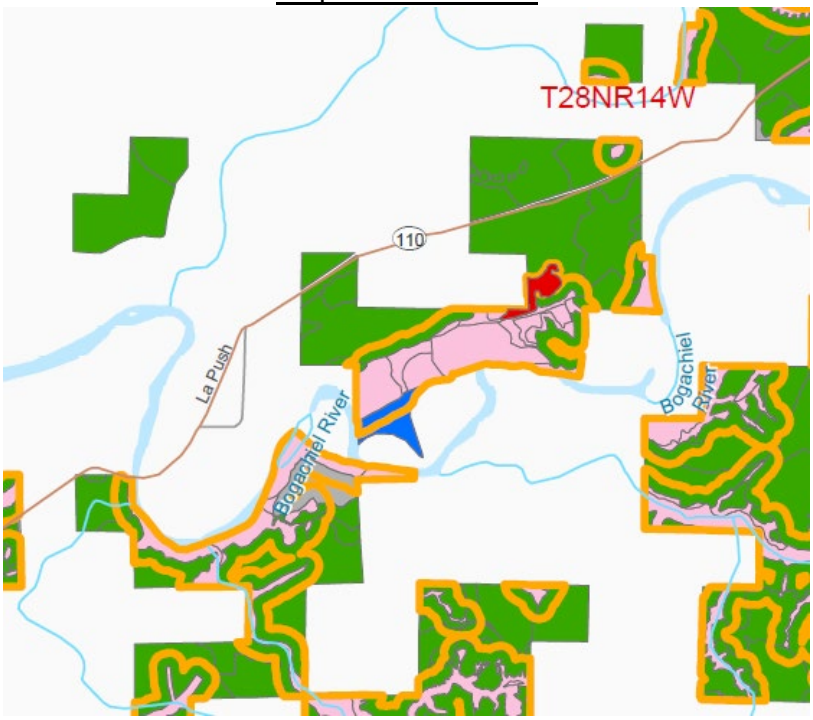
<u>Exhibit E:</u> -Large Contiguous Stands Created by Forests & Fish Buffers.

The following figures are examples of locations where Forests & Fish Buffers create large patches of conserved forest. This typically occurs at junctions of RMZs and/or areas where unstable slopes intersect with RMZs. These areas warrant special consideration with respect to conservation benefit from Forests & Fish Buffers. Representative examples are shown below:

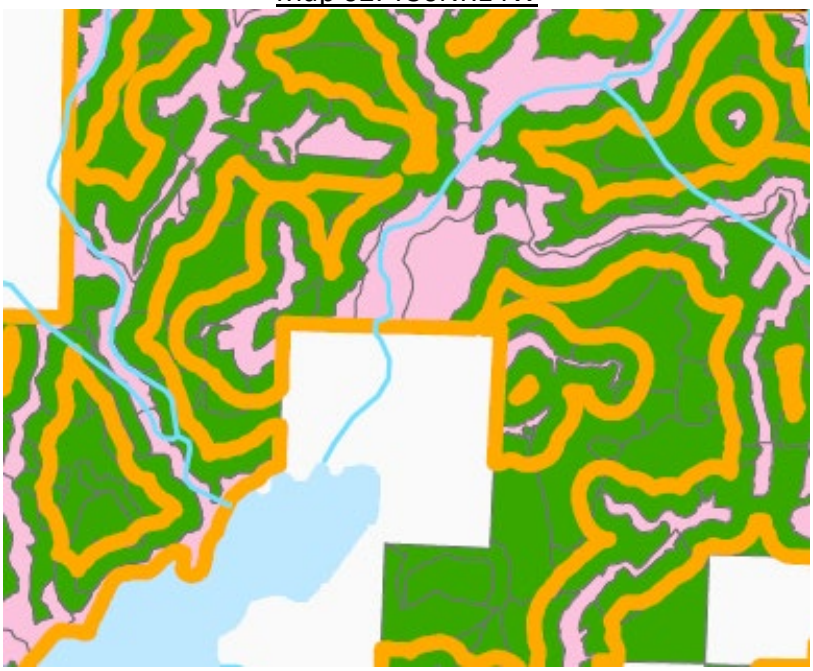
<u>Map 01: T31NR10W</u>



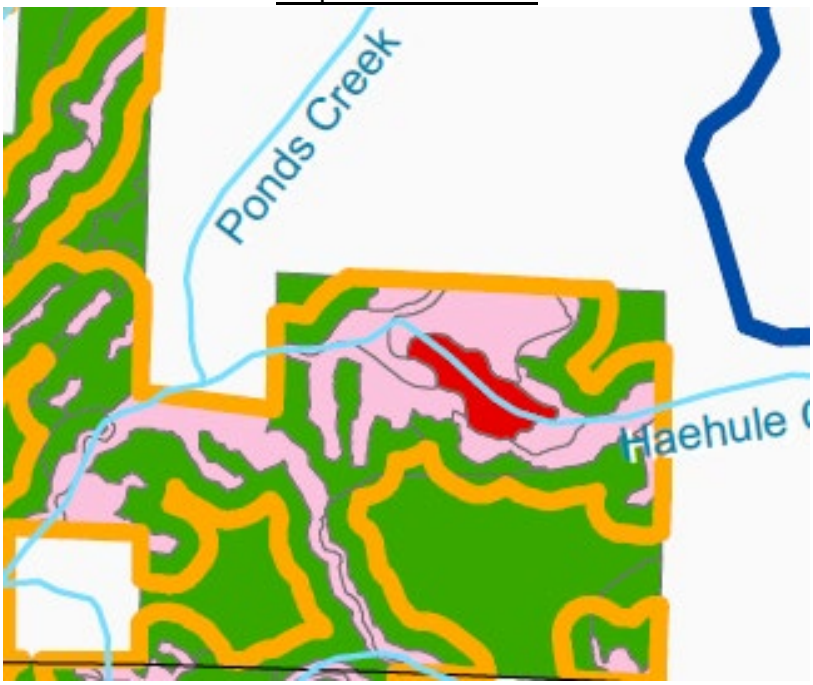
Map 02: T28NR14W



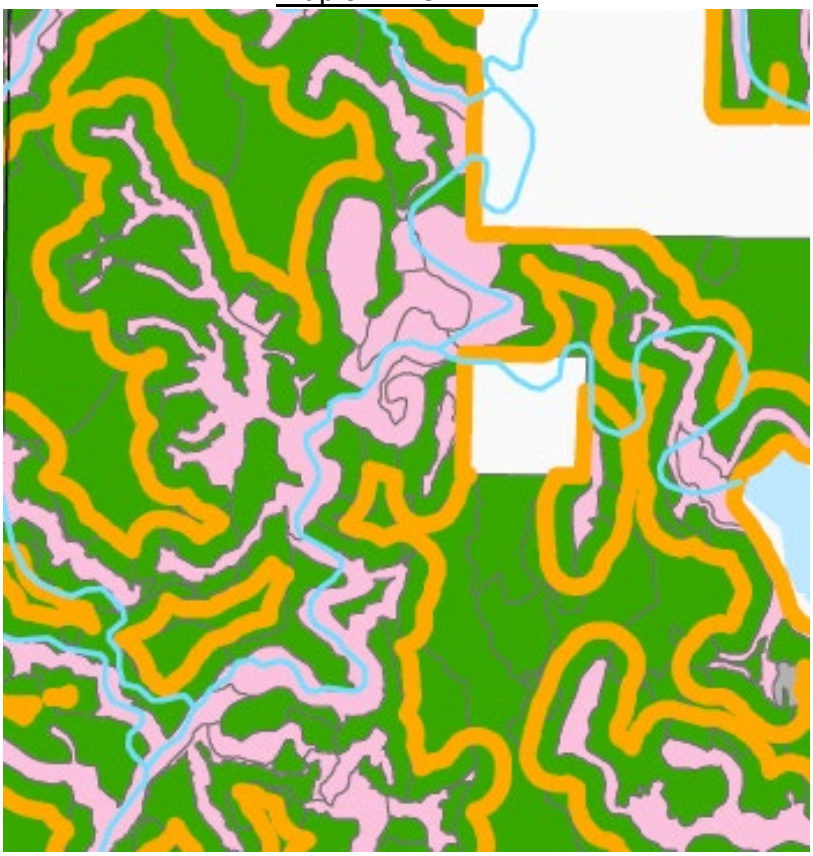
Map 02: T30NR14W



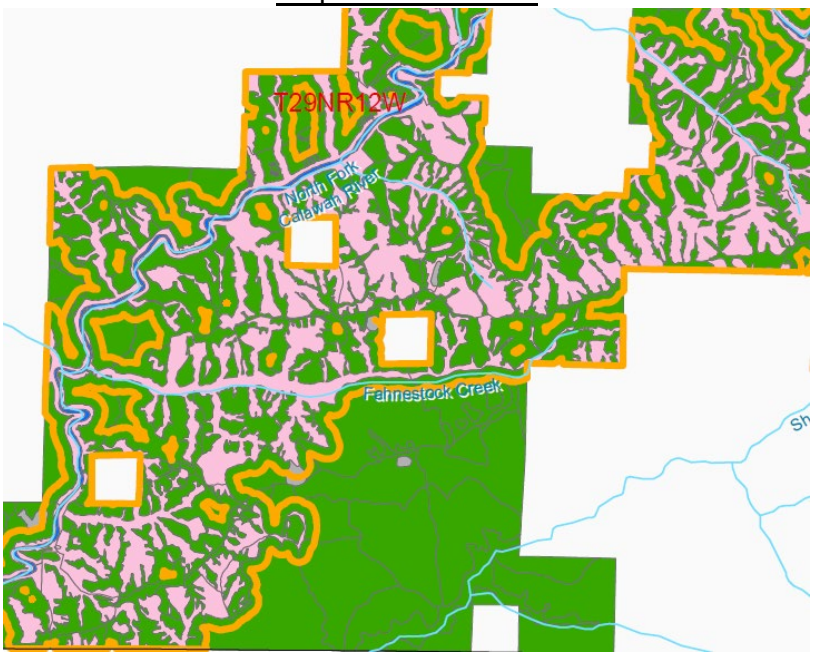
Map 02: T31NR14W



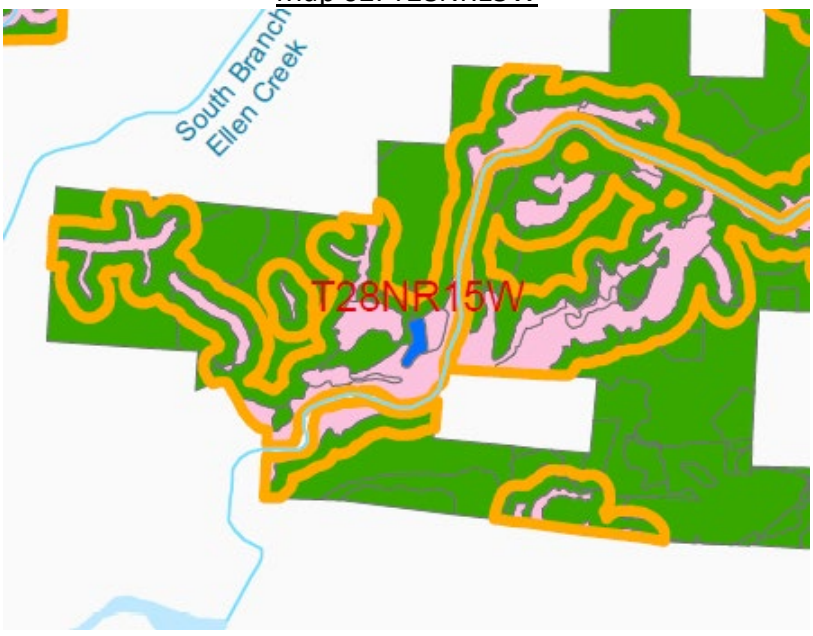
Map 02: T29NR14W



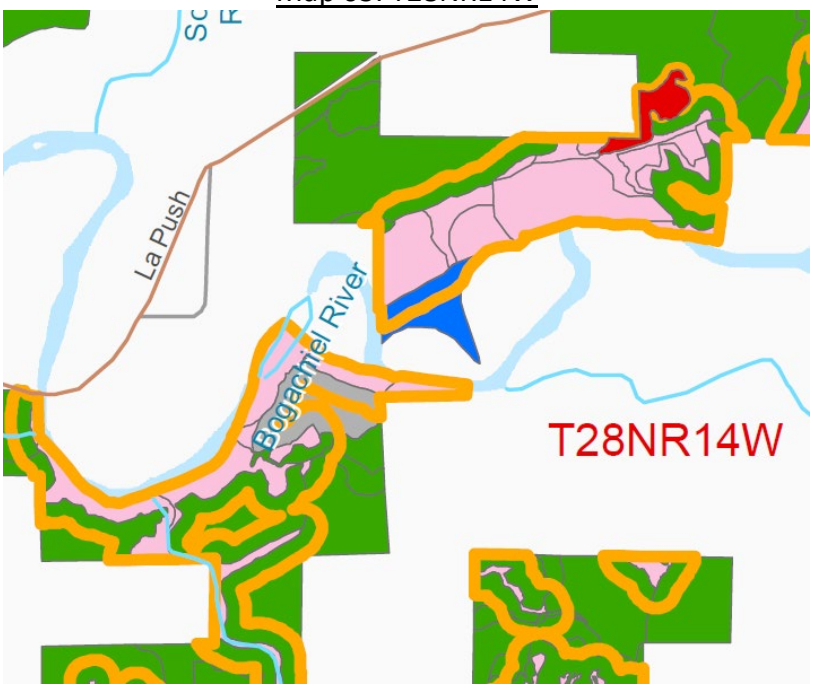
Map 02: T29NR12W



Map 02: T28NR15W

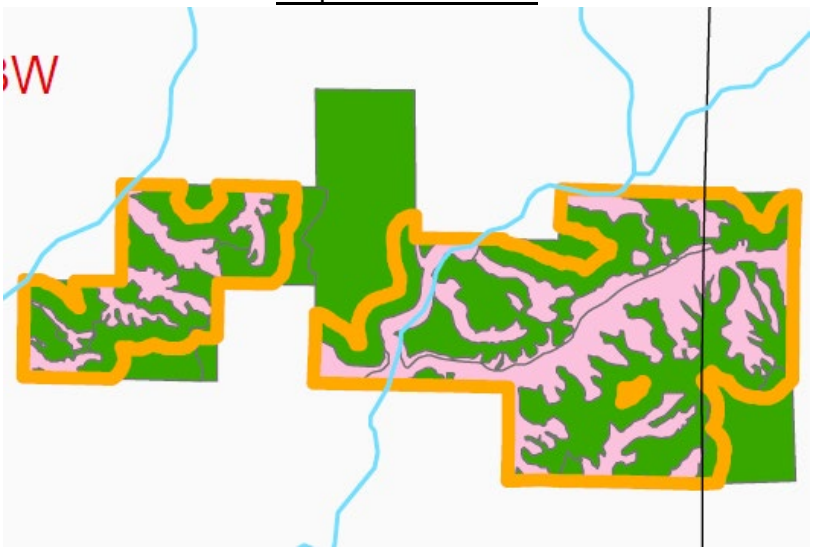


Map 03: T28NR14W

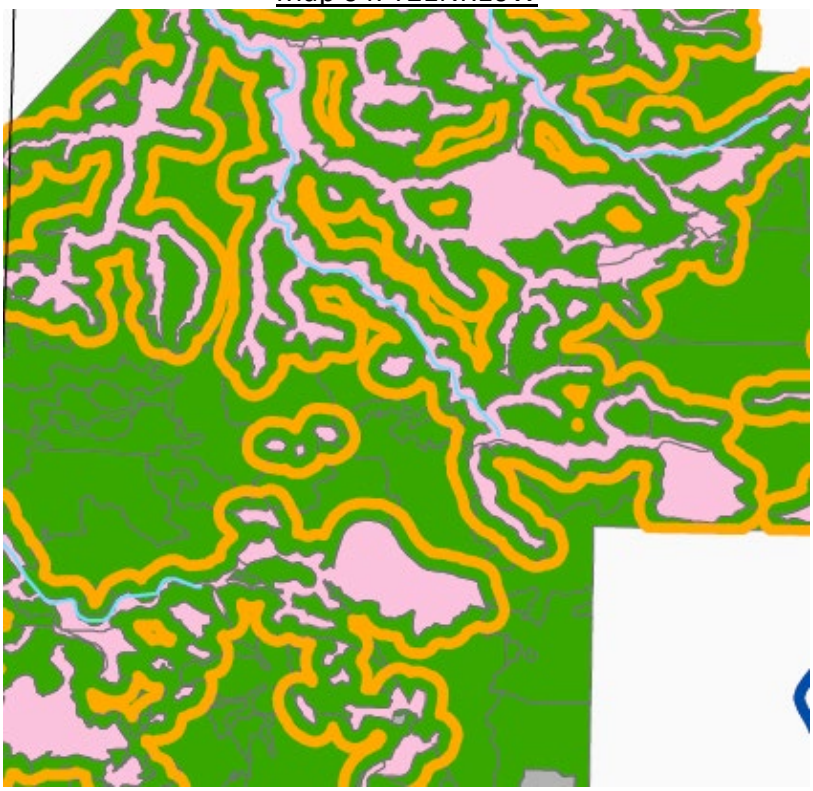


Map 03: T27NR14W

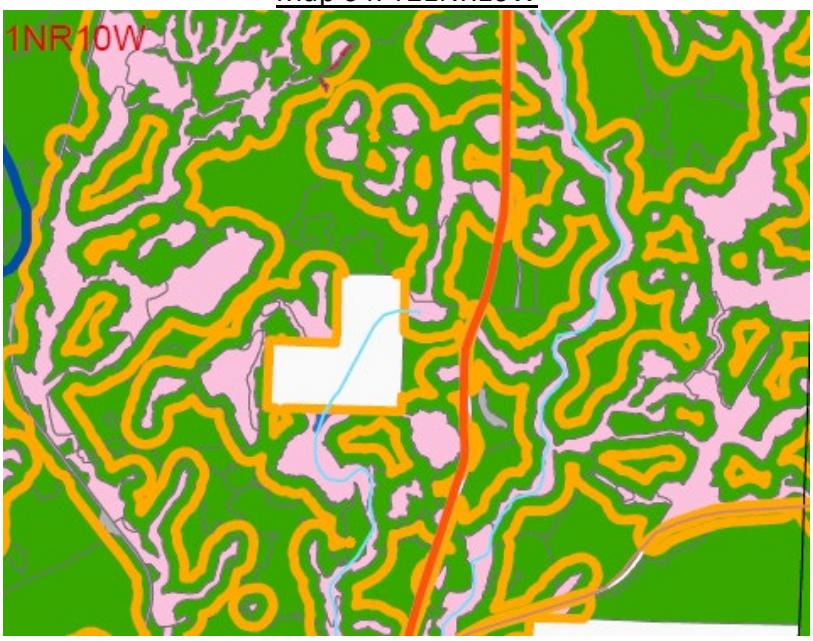
Map 03: T25NR13W



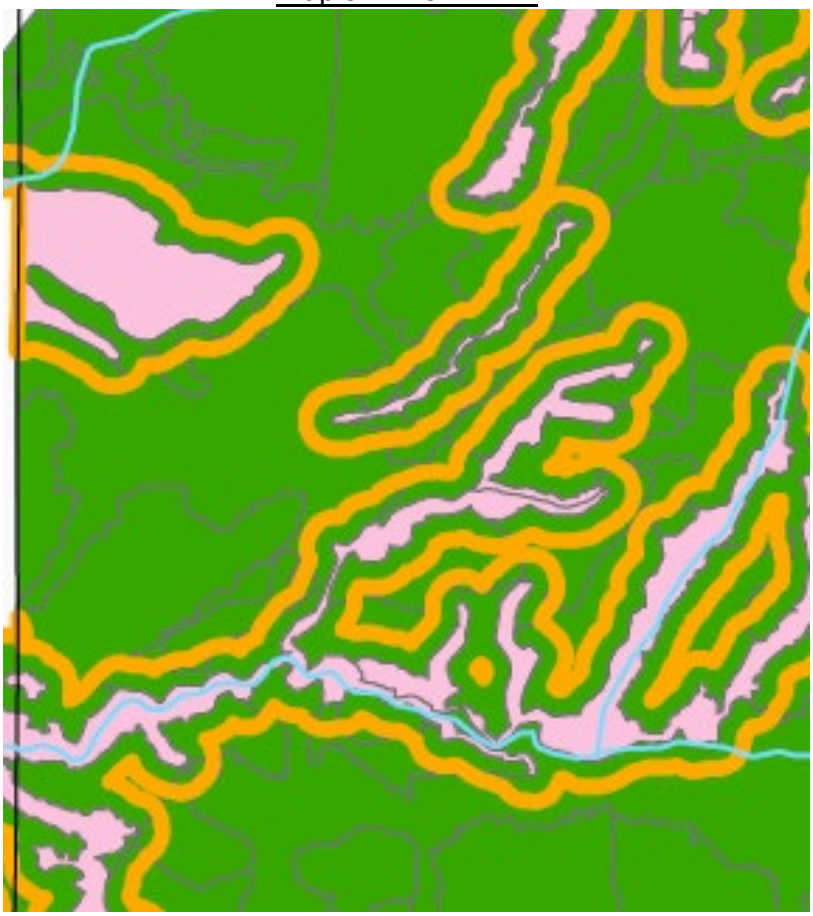
Map 04: T21NR10W



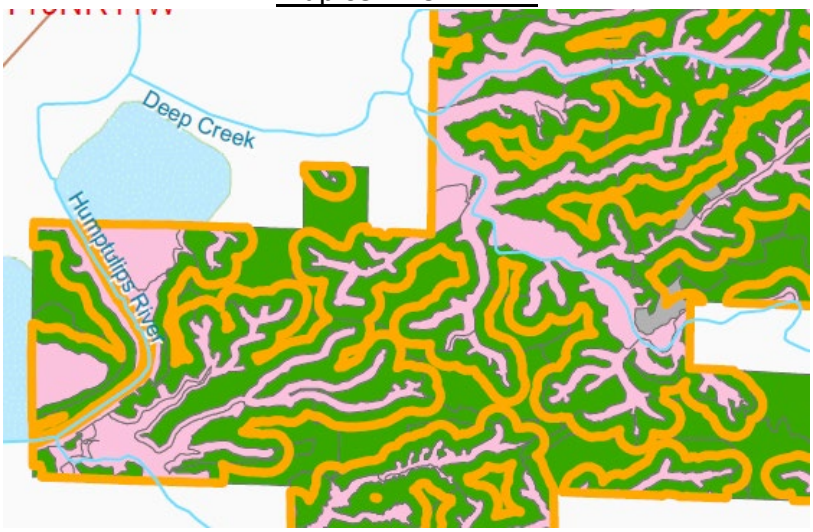
Map 04: T21NR10W



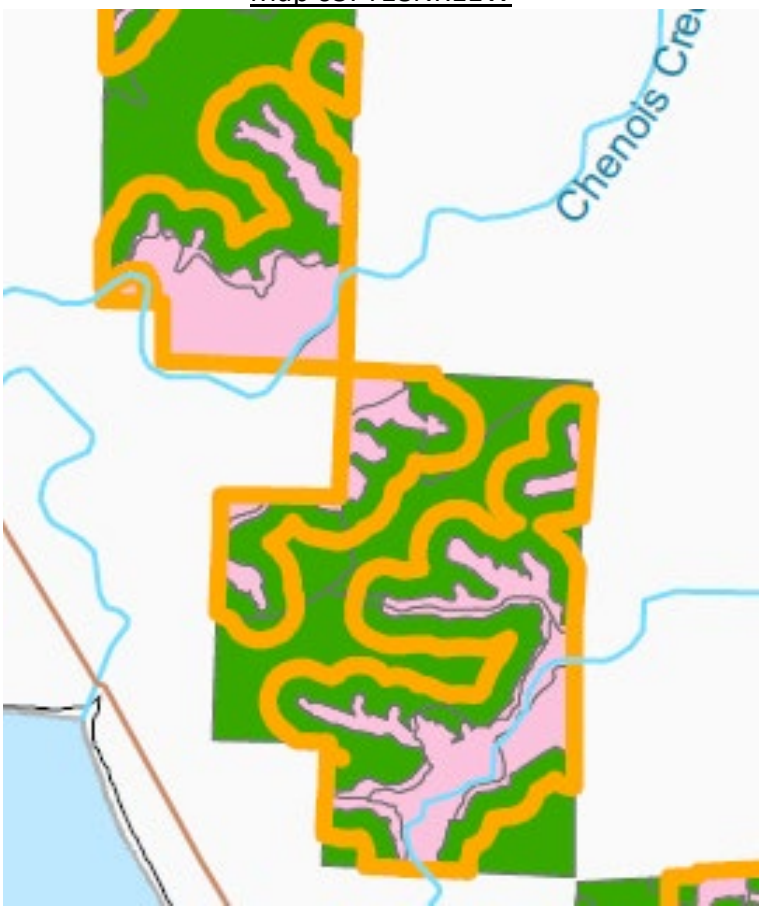
Map 04: T20NR11W



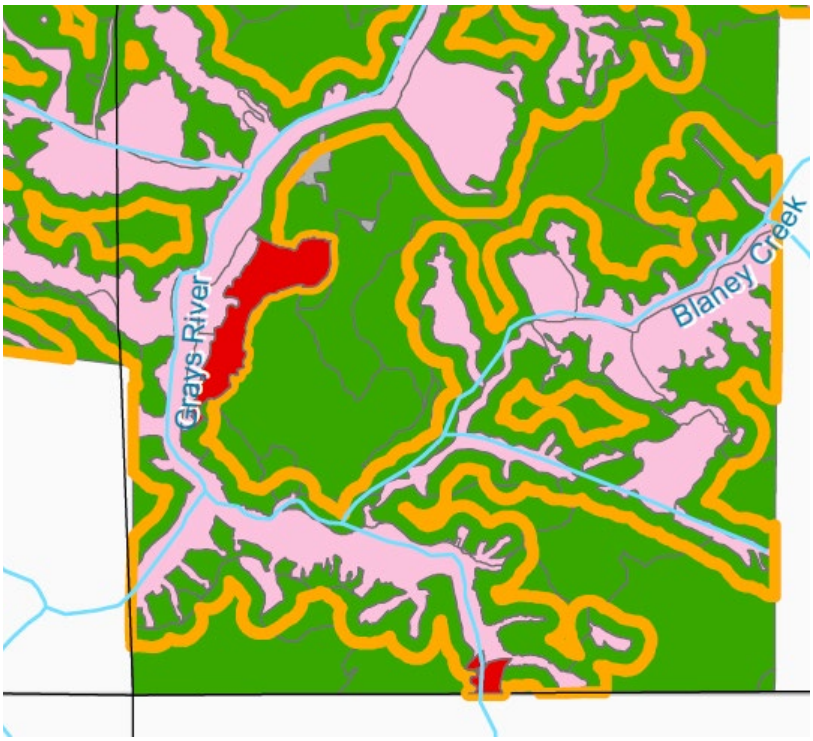
Map 05: T19NR11W



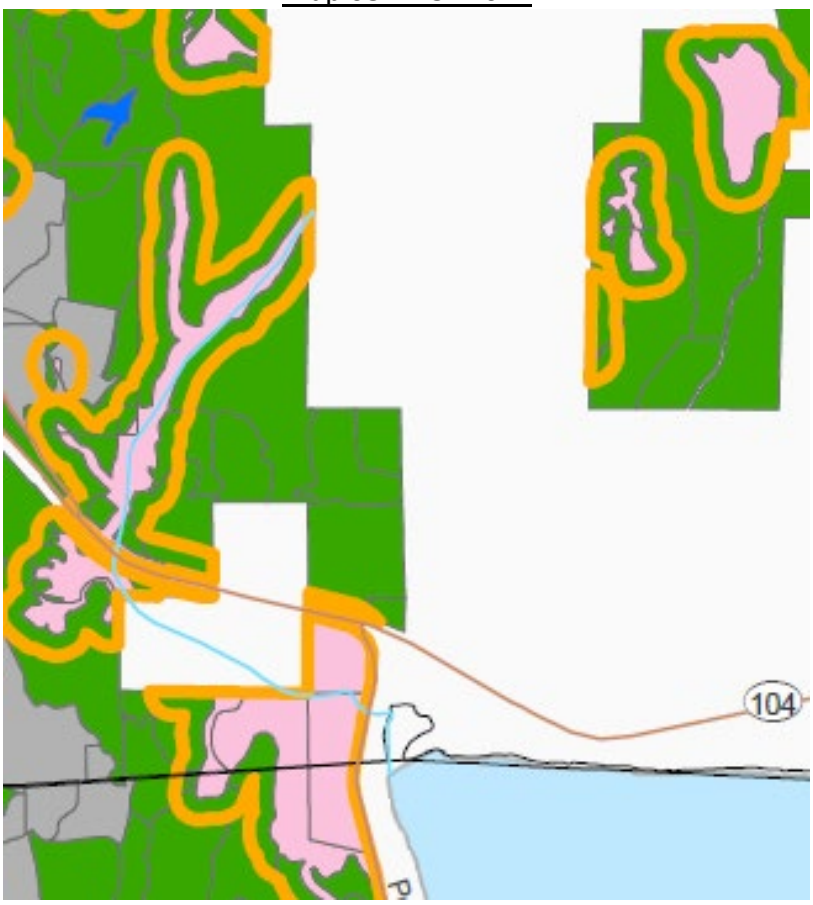
Map 05: T18NR11W



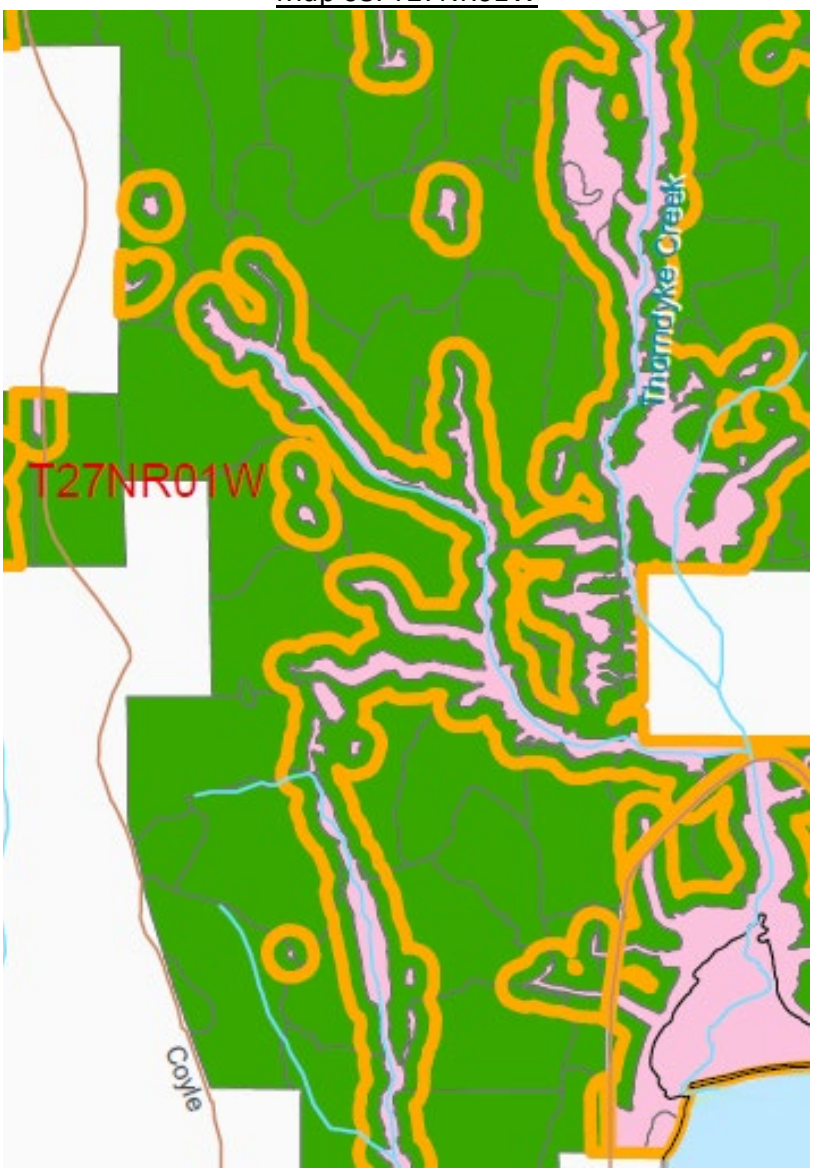
Map 07: T11NR06W



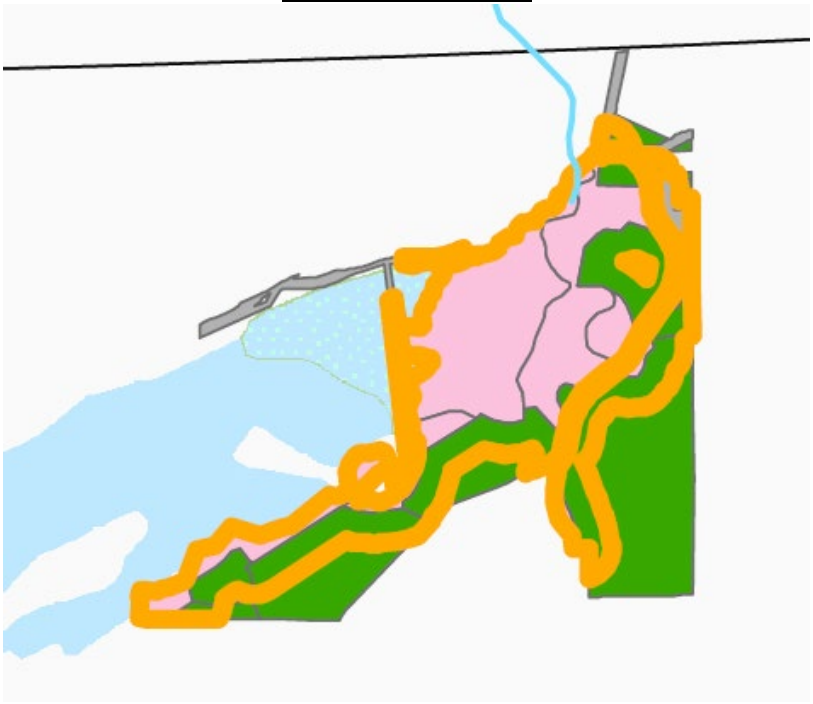
Map 08: T28NR01E



Map 08: T27NR01W

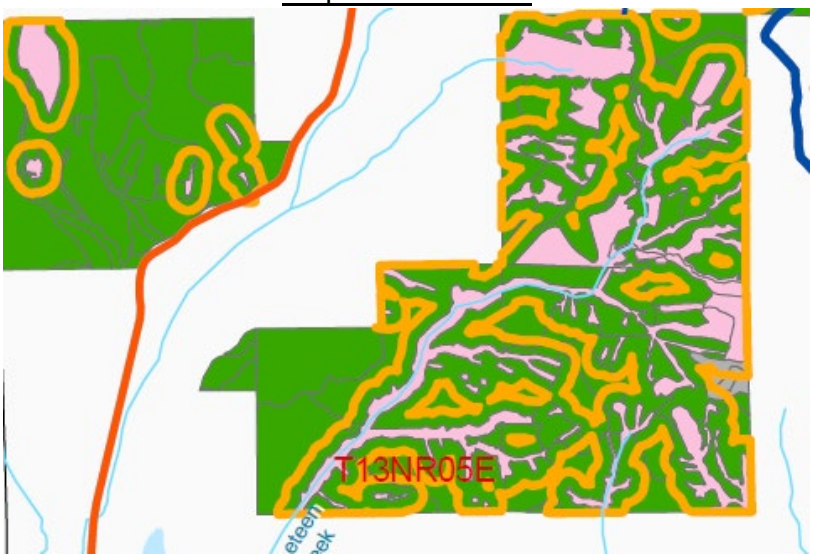


Map 11: T17NR05E



Map 12: T16NR01E

Map 13: T13NR05E



Map 13: T12NR04E

Map 14: T12NR06E

Exhibit F – Summary of Current Conditions on the Enrolled Lands.

Forest Categories	Forests & Fish Buffers	Adjacent Forests	Total Acres
Occupied Sites	na	na	2,068
Presumed Habitat (WH, SS, WRC >210 yrs, or DF >250 yrs)	258	195	453
More-Likely-Than-Not Habitat (WH, SS, WRC 130 - 209 yrs)	636	250	886
Marginal Nesting Habitat (DF 184 - 219 yrs)	0	11	11
Marginal Nesting Habitat (WH, SS, WRC 94 - 129 yrs)	2,286	183	2,469
Occupied and Potential Nesting Murrelet Habitat Subtotals	**3,180**	**639**	**5,887**
WH, SS, WRC forest (44 - 93 yrs)	23,931	2,668	26,599
WH, SS, WRC forest (less than 44 yrs)	2,611	33,550	36,161
DF forest (134 - 183 yrs)	0	6	6
DF forest (DF less than 134 yrs old)	16,254	105,058	121,312
Other forest (not WH, DF, SS, WRC)	1,974	1,274	3,248
Other forest (no species or age class data)	7,989	5,692	13,681
Other unclassified areas	2,889	0	2,889
Non-forested (wetlands, marshes)	1,974	686	2,660
Other Forest Subtotals	**57,622**	**148,934**	**206,556**
Totals for All Enrolled Lands	**60,802**	**149,573**	**212,443**

WH = Western Hemlock, SS = Sitka Spruce, WRC = Western Red Cedar, DF = Douglas-fir

The information presented in this table represents estimates submitted on the basis of the best information available to Applicant at the time of submission.