Stewardship Agreement

Between

Oregon Department of Forestry
State Forests Division
As the Landowner

and

Oregon Department of Forestry
As ODF
On behalf of
Oregon Board of Forestry

December 2023

Western Oregon State Forests
Stewardship Agreement

1.0 Purpose

The Oregon Legislature passed legislation authorizing stewardship agreements in their current form in 2003 and added additional provisions in 2007. The concepts of the program are found in Oregon Revised Statute (ORS) 541.973 and Oregon Administrative Rule (OAR) 629-021-0100, Stewardship Agreements.

The program provides incentives for landowners who voluntarily meet and exceed regulatory requirements to improve wildlife habitat and water quality, and a mechanism to recognize other relevant landowner efforts and certifications.

Stewardship Agreements afford the State Forester an adaptive means with which to engage landowners in long term agreements that consider natural resource conservation from a property wide perspective, rather than at the scale of single projects.

This Stewardship Agreement (Agreement), between the ODF's State Forests Division (Landowner) and the Oregon Board of Forestry through the State Forester and his or her designees (ODF) is entered into under the authority of ORS 541.973 and OAR Chapter 629 Division 21. The State Forester may reorganize or rename programs or divisions. For the purposes of this agreement the State Forests Division means the program tasked with managing state forest lands and the Forest Resources Division means the program tasked with regulating forest practices.

The purpose of this Agreement is:

- To afford the Landowner regulatory efficiencies as authorized by ORS 541.973 (6)(a) and OAR 629-021-0600 and described in Section 5 of this Agreement.
- To afford the Landowner an increased level of regulatory certainty as authorized by ORS 541.973 (6)(b) and (7) and described in Section 5 of this Agreement.
- Outline the duties of ODF and the Landowner, and procedures for measuring compliance with the terms of this Agreement.

2.0 Background

State forest lands comprise 3% of Oregon's forested landscape. The Agreement covers approximately 640,000 acres of state forest lands consisting of Board of Forestry Lands (BOFL) and Common School Forest Lands (CSFL), two types of land that were acquired by the state of Oregon in different ways. They are owned by different state government entities. The BOF owns most state forest lands, while the State Land Board owns CSFL. Each land ownership has its own set of legal and policy mandates. The locations of these lands are shown on maps found in the "Western Oregon State Forests Stewardship Agreement Management Plan" included as an

appendix at end of this agreement. Lands are organized into management districts called field districts. These lands are maintained as forest lands and currently have no agricultural uses.

The scope of this Agreement covers state-owned forest lands managed by the State Forests Division in 17 counties in Western Oregon; generally, from north to south they are: Clatsop, Columbia, Tillamook, Washington, Yamhill, Polk, Marion, Clackamas, Lincoln, Benton, Linn, Lane, Douglas, Coos, Curry, Josephine, and Jackson.

3.0 Stewardship Agreement Application Review

3.1 The Landowner submitted a written application and a copy of a written management plan consistent with the requirements of OAR 629-021-0300 (1) and (2) on September 29th, 2023.

3.2 The "Western Oregon State Forests Stewardship Agreement Management Plan" was prepared by the Landowner and includes the elements required by OAR 629-021-0300 (3) and was not marked confidential.

3.3 As required by OAR 629-021-0400, the following actions occurred; the application was provided to the Oregon Department of Agriculture, the Landowner's past record of compliance was reviewed, a site visit was conducted, and the stewardship agreement was drafted in partnership with the Landowner.

3.4 A multi-disciplinary review team consisting of ODF Forest Resources Division subject matter experts relevant to the rule divisions in this Agreement evaluated the management plan against the criteria established in OAR 629-021-0500 (2). The review determined the Landowner is implementing management actions that exceed regulatory requirements for the conservation, restoration, and improvement of fish and wildlife habitat or water quality.

3.5 As required by OAR 629-021-0700 (2), ODF provided public notice and held a public comment period from November 2nd to November 26th, 2023.

4.0 Landowner Commitment

The Landowner will:

4.1 Follow the management plan and comply with applicable forest practice statutes and rules consistent with this Agreement, and consistent with the purpose and intent of a Stewardship Agreement, during the life of this Agreement;

4.2 Meet all applicable standards in the Oregon Forest Practices Act, and forest practice rules unless stated otherwise in this Agreement;

4.3 Maintain exceedance of the forest practice rules captured in Section 5.6 as they appear on the date of this Agreement, by operating in accordance with this Agreement;

4.4 Seek approval from ODF's Forest Resources Division for plans for alternate practices for protection standards different than those specified in administrative rule if not already described within this Agreement;

4.5 Report to ODF's Forest Resources Division immediately any activity that results in damage to resources covered by the FPA, along with a written description of the time of discovery, the cause of the damage, and the repairs made or in progress;

4.6 Allow audits by ODF and assist with audits, as described in Section 6 of this Agreement; and

4.7 Stay informed of changed Forest Practices statutes and rules.

5.0 Department Commitment

The Department:

5.1 As authorized by ORS 541.973 (6)(a) and OAR 629-021-0600 (4)(c), acknowledges the Agreement as including sufficient detail to satisfy the notification requirements under OAR 629-605-0140 and 629-605-0150 with the following exceptions;

- Operations including the application of chemicals, the clearing of forestland for conversion to any non-forest use, or the establishment or termination of wildlife food plots.

5.2 As authorized by ORS 541.973 (6)(a) and OAR 629-021-0600 (4)(b), acknowledges the Agreement as including sufficient detail to satisfy the fifteen-day waiting periods;

5.3 As authorized by ORS 541.973 (6)(a) and OAR 629-021-0600 (4)(a), acknowledges the Agreement as including sufficient detail to satisfy the requirement for non-statutory written plans under ORS 527.670 (3) and plans for an alternate practice under OAR 629-605-0173.

5.4 As authorized by OAR 629-605-0170 (6), acknowledges statutory written plans are not required for operations conducted under a stewardship agreement. Further, as authorized by OAR 629-605-0170 (10), the non-statutory written plan requirements are waived.

5.5 As authorized by OAR 629-021-0600 (3)(a), accepts compliance with this Agreement as demonstrating compliance with the applicable FPA regulations and forest practice rule divisions outlined in Section 5.6 of this Agreement; and

5.6 As authorized by ORS 541.973 (6)(b) and (7), provides the Landowner with regulatory certainty regarding the following rule divisions, in exchange for exceeding current regulatory requirements as documented in the management plan;

- OAR 629 Division 605: Planning Forest Operations
- OAR 629 Division 625: Forest Road Construction and Maintenance

- OAR 629 Division 630: Harvesting
- OAR 629 Division 642: Water Protection Rules: Vegetation Retention Along Streams
- OAR 629 Division 643: Water Protection Rules: Vegetation Retention Along Streams
- OAR 629 Division 645: Water Protection Rules: Riparian Management Areas and Protection Measures for Significant Wetlands
- OAR 629 Division 650: Water Protection Rules: Riparian Management Areas and Protection Measures for Lakes
- OAR 629 Division 655: Water Protection Rules: Protection measures for "Other Wetlands", Seeps and Springs
- OAR 629 Division 660: Water Protection Rules: Specific Rules for Operations Near Waters of the State

6.0 Audits

6.1 OAR 629-021-0800 requires periodic audits to determine whether the management plan is being implemented in compliance with this Agreement and the FPA and whether this Agreement should be continued, revised, or discontinued.

6.2 Audits will at a minimum include the participation of an ODF Forest Resources Division representative and a forester representing a district not subject to the audit.

6.3 Audits will be conducted at least once every three years.

6.4 ODF will provide an audit report to the Landowner, generally within 45 days of the audit. The report will describe the overall assessment of compliance and if applicable, recommendations for improvement or revisions to the Agreement.

7.0 Terms of Agreement

7.1 ODF recognizes that future rulemaking may result in modification of current rules, potentially including minor changes such as renumbering or more significant changes such as an expanded scope. If renumbering occurs, those Divisions will continue to be covered regardless of the new numbering. For this reason, the applicable Divisions within Chapter 629 also have the division title included to maintain relevancy into the future. If the scope of the rule is expanded or another significant modification to the rule is made, ODF will in its sole discretion determine whether the Landowner shall be exempt from the new or modified rule, consistent with this Agreement and the scope of ORS 541.973 (7). This decision is in addition to the requirement that the parties work cooperatively to revise this Agreement should an audit report recommend such a revision.

7.2 Enforcement action may be initiated when ODF becomes aware of any forest practice, unsatisfactory condition, or resource damage, which occurred prior to the audit or from evidence produced from the audit. The Landowner will immediately make repairs and address the elements leading to the unsatisfactory conditions or resource damage.

7.3 Any revisions are subject to the process(es) described in rule at the time of revision.

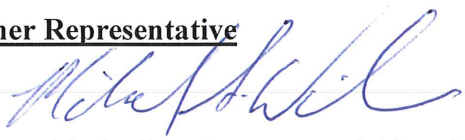
7.4 Termination of this Agreement will be consistent with the process described in rule at the time of termination.

7.5 In alignment with OAR 629-021-0100 (1), Stewardship Agreements are intended to be long-term. This Agreement is effective for 75 years unless terminated by one of the parties.

8.0 Authorizing Signatures

The following parties make and accept this Stewardship Agreement effective December 31, 2023:

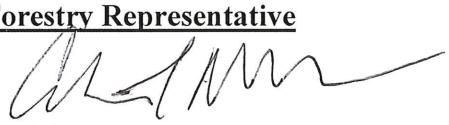
Landowner Representative

Signature: 

Name, Title: Michael Wilson, State Forests Division Chief

Date: 12/7/2023

Board of Forestry Representative

Signature: 

Name, Title: Calvin Mukumoto, Oregon State Forester

Date: 12/7/2023

Western Oregon State Forests Stewardship Agreement Management Plan

Oregon Department of Forestry

State Forests Division

December 2023

Prepared by:

Oregon Department of Forestry

State Forests Division

2600 State Street

Salem, Oregon 97310

503-945-7200

Contents

Purpose

Oregon Revised Statute (ORS) 541.973 establishes a program for landowners to enter into a voluntary agreement – known as a Stewardship Agreement - with the Oregon Board of Forestry (BOF) that sets forth the terms under which the landowner will self-regulate to meet and exceed applicable regulatory requirements and achieve conservation, restoration and improvement of fish and wildlife habitat or water quality. This statute is implemented on forest lands through Oregon Administrative Rule (OAR) 629-021-0100 to 629-021-1100.

A requirement of the program is a land management plan (ORS 541.973(4)(a) and OAR 629-021-0300(2)). The management of State Forests lands is subject to planning requirements established in OAR 629-035-0030, which requires development of an integrated Forest Management Plan (FMP) containing goals, strategies and guidelines for implementation and adaptive management, among other requirements. The content requirements found in the FMP planning rule do not align perfectly with the content requirements for the management plan that must be submitted for a Stewardship Agreement, so this document is intended to serve as an integration of the strategies, policies, and other commitments that guide the management of State Forest lands to meet the content requirements set forth in OAR 629-021-0300.

The strategies and standards articulated in this plan represent the approach the Department of Forestry, State Forests Division will use to self-regulate in a manner that will meet and exceed the regulatory requirements in the Forest Practices Act (FPA) and achieve conservation, restoration and improvement of fish and wildlife habitat or water quality. This approach integrates and summarizes the strategies and standards found in the FMP, State Forests Division Operational Policy, and a draft Habitat Conservation Plan (HCP); additional details may be found in the FMPs and draft HCP, which are attached for reference.

Background

State forest lands comprise 3% of Oregon's forested landscape. The FMP planning area covers approximately 640,000 acres of state forest lands consisting of Board of Forestry Lands (BOFL) and Common School Forest Lands (CSFL), two types of land that were acquired by the state of Oregon in different ways. They are owned by different state government entities. The BOF owns most state forest lands, while the State Land Board owns CSFL. Each land ownership has its own set of legal and policy mandates. The locations of these lands are shown in the map section at the end of this plan. Lands are organized into management districts called field districts. These lands are maintained as forest lands and currently have no agricultural uses.

Board of Forestry Lands

Prior to state ownership, a majority of the acquired state forest lands had been owned and managed by private landowners. Most of these lands had been logged or burned, salvage-logged, and abandoned without the implementation of modern best management practices (BMPs). Tax-delinquent and abandoned lands reverted to county ownership. The counties entered into an agreement with the state that was codified in statute and deeded the lands to the state. Those counties share in all revenues from these lands today (Oregon Revised Statutes [ORS] 530.110, 530.010– 530.040).

Board of Forestry Lands are managed to achieve the Greatest Permanent Value (GPV) to the state (ORS 530.050). This mandate has been interpreted by the Oregon Board of Forestry to mean healthy, productive, and sustainable forest ecosystems that over time and across the landscape provide a full range of social, economic, and environmental benefits to the people of Oregon (OAR 629-035-0020(1)). Benefits include, but are not limited to:

1. Sustainable and predictable production of forest products that generate revenues for the benefit of the state, counties, and local taxing districts;
2. Properly functioning aquatic habitats for salmonids, and other native fish and aquatic life;
3. Habitats for native wildlife;
4. Productive soil, and clean air and water;
5. Protection against floods and erosion; and
6. Recreation.

The Board has directed the State Forester to maintain State Forest lands as forest lands and actively manage them in a sound environmental manner to provide sustainable timber harvest and revenues to the state, counties, and local taxing districts and results in a high probability of maintaining and restoring properly functioning aquatic habitats for salmonids, and other native fish and aquatic life; protects, maintains, and enhances native wildlife habitats; protects soil, air, and water; and provides outdoor recreation opportunities (OAR 629-035-0020(2)).

Common School Forest Lands

The federal government's policy at the time Oregon gained statehood was to grant sections 16 and 36 of every township to the new state for the use of schools. Oregon's grant included 3.5 million acres of grazing and forest lands. Eventually, all but 130,000 acres of the forest lands were either sold for the benefit of schools or lost through fraudulent land deals. Congress stipulated that the grant lands be managed for the use of schools and not for other public needs. Permanent investment trusts were established to protect the financial principal derived when grant lands were disposed. Lands that were retained were to be managed by the state in accordance with the beneficiary trust interest. These obligations are spelled out in the Oregon Constitution and the Admission Act of 1859.

Location

The scope of this management plan covers state-owned forest lands managed by the Department of Forestry in 17 counties in Western Oregon; generally, from north to south they are: Clatsop, Columbia, Tillamook, Washington, Yamhill, Polk, Marion, Clackamas, Lincoln, Benton, Linn, Lane, Douglas, Coos, Curry, Josephine, and Jackson (Table 1). The plan area is not evenly distributed among the 17 counties or in different regions of western Oregon. Approximately 70% of the plan area is found in only two counties: Tillamook and Clatsop. Approximately 81% of the plan area is found in only four counties: Tillamook, Clatsop, Washington, and Lane (Table 1).

Lands in Clatsop, Tillamook and Washington Counties are largely consolidated into large blocks (the Clatsop and Tillamook State Forests), and lands in Clackamas, Marion and Linn Counties are largely consolidated into the Santiam State Forest. Lands in the other counties are more scattered and represent a smaller proportion of the regional forested land base and are not formally named state forests.

Table 1. Habitat Conservation Permit area by County and Ecoregion (approximate acres).

	Ecoregion				
County	**Coast Range**	**West Cascades**	**Klamath Mountains**	**Willamette Valley**	**Total (Percent)**
Tillamook	302,949	--	--	--	302,949 (47.3)
Clatsop	147,064	--	--	--	147,064 (23.0)
Washington	41,408	--	--	5,375	46,783 (7.3)
Lane	23,781	532	--	944	25,257 (3.9)
Linn	--	21,187	--	41	21,228 (3.3)
Lincoln	20,004	--	--	--	20,004 (3.1)
Marion	--	18,985	--	4	18,989 (3.0)
Douglas	2,203	--	8,286	--	10,489 (1.6)
Polk	7,734	--	--	--	7,734 (1.2)
Benton	8,847	--	--	50	8,897 (1.4)
Coos	7,889	--	--	--	7,889 (1.2)
Clackamas	--	7,268	--	--	7,268 (1.1)
Columbia	6,464	--	--	--	6,464(1.0)
Josephine	--	--	6,425	--	6,425 (1.0)
Jackson	--	--	1,616	--	1,616 (0.3)
Curry	189	--	1,161	--	1,350 (0.2)
Yamhill	80	--	--	--	80 (<0.1)
Total (Percent)	**568,614 (89)**	**47,972 (7)**	**17,488 (3)**	**6,413 (1)**	**640,487**

Ecoregions are used as an organizing principle throughout this plan to describe the plan area. Ecoregions are defined by biotic, abiotic, terrestrial, and aquatic ecosystem components, making them a useful tool to understand the physical and biological setting in different parts of the plan area. The geology, soils, vegetation, climate, land use, amount of solar radiation, and precipitation are all factors that influence how forest develops across western Oregon and what species it supports.

The plan area overlaps four ecoregions: Coast Range, West Cascades, Klamath Mountains, and Willamette Valley (Figure 1 and Table 1).

- The Coast Range ecoregion includes the Oregon coastline and extends east through coastal forests to the border of the Willamette Valley and Klamath Mountains ecoregions.
- The West Cascades ecoregion extends from just east of the Cascade Mountains' summit to the foothills of the Willamette, Umpqua, and Rogue Valleys, and spans the entire north–south length of the state of Oregon, from the Columbia River to the California border.
- The Klamath Mountains ecoregion covers much of southwestern Oregon, including the Umpqua Mountains, Siskiyou Mountains, and interior valleys and foothills between these and the Cascade Range.
- The Willamette Valley ecoregion is an alluvial plain with scattered groups of low basalt hills that is bound on the west by the Coast Range and on the east by the Cascade Range (Oregon

Department of Fish and Wildlife 2016). The attributes of the western edge of the Willamette Valley ecoregion are similar to those described for the Coast Range ecoregion.

As shown in Table 1, the majority of the plan area (89%) occurs in the Coast Range ecoregion. Smaller fractions of the plan occur in three other ecoregions: West Cascades (7%), Klamath Mountains (3%), and Willamette Valley (1%).

Additional information related to the location, history, and environmental setting can be found in the draft HCP, the draft Western Oregon State Forests Management Plan (Attachment 1, Chapter 1) and the Northwest Oregon State Forests Management Plan (Attachment 2, Appendix H).

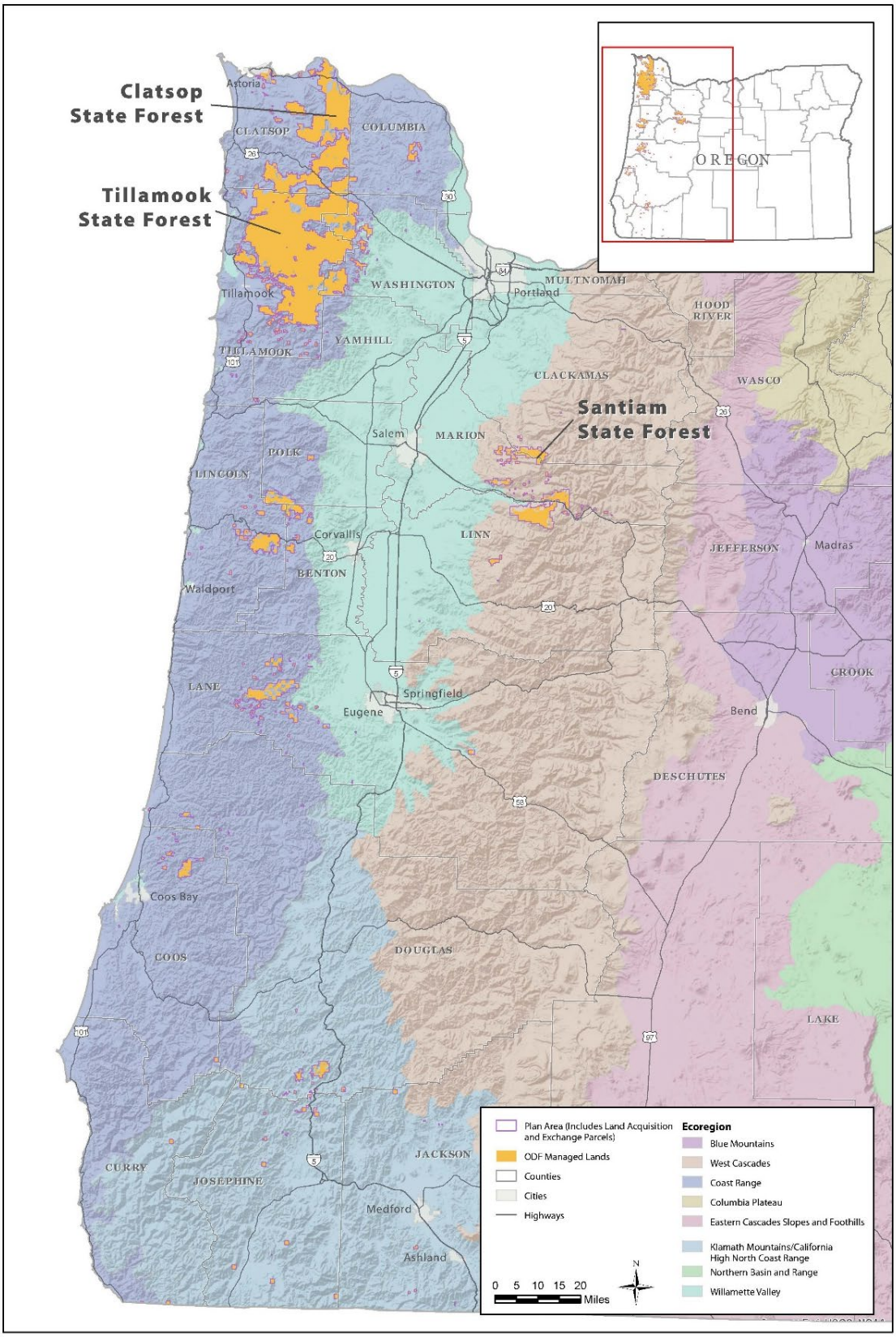


Figure 1. ODF managed lands and ecoregions.

Policy Context

At the time of writing, the Division is in the process of developing a new Forest Management Plan and an associated Habitat Conservation Plan (HCP) and has begun implementing the requirements of the HCP through Implementation Plans (IPs) and Annual Operations Plans (AOPs) approved for operations planned for the 2024 fiscal year (FY[1]). The Division also has active and continuing operations associated with AOPs for FY21-23. These operations are planned in a manner consistent with IPs that implement the FMPs adopted by the Board in 2010 and the FPA rules in place at the time.

As a result of this pending policy shift, the Stewardship Agreement and this management plan codify two approaches: the first for the operations planned for FY21-23, and the second for FY24 and beyond. For simplicity, this management plan refers to the two stages as *phase 1* (for the FY21-23 operations) and *phase 2* (for the FY24+ operations).

Goals and Objectives

This section describes the goals and objectives for State Forest lands. Goals for the management of State Forest lands are required to be included the FMP by the State Forest Management Planning Rule (OAR 629-035-0030). A complete description of the goals and objectives can be found in the Northwest Oregon State Forests Management Plan (2010) for *phase 1,* and the draft HCP (2023) and draft Western Oregon State Forests Management Plan (2023) for *phase 2*.

Phase 1 Goals

The following list contains the forest resource goals for the Northwest Oregon State Forests Management Plan (2010). These goals are defined by the Forest Management Planning Rule (OAR 629-035-0030(2)(c)) as "statements of what the State Forester intends to achieve for each forest resource within the planning area consistent with OAR 629-035-0020."

1. Agriculture and Grazing
    a. Permit agriculture and grazing, to the extent that they are compatible with other resource goals.
2. Air Quality
    a. Contribute to meeting National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration standards (PSDs) established under the federal Clean Air Act (42 USC 7401 et seq.).
    b. Manage prescribed fire to comply with the Oregon Smoke Management Plan. 3. Maintain compatibility with Oregon's Statewide Planning Goal 6 (Air, Water, and Land Resources Quality) direction to maintain and improve the air resource of the state.
3. Cultural Resources
    a. Preserve and protect archaeological sites or archaeological objects in accordance with state law (ORS 97.740 to 97.760; 358.905 to 358.955; and 390.235).

[1] A fiscal year is named for the year in which it ends, beginning with July 1 of the previous calendar year and ending June 30. For example, Fiscal Year 2024 (or FY24) is the period from July 1, 2023 to June 30, 2024.

   b. Conserve historic artifacts and real property of historic significance in accordance with state law, in consultation with the Secretary of State and the State Historic Preservation Office (ORS 358.640 and 358.653).
   c. Protect additional cultural resource sites that are determined by the Department of Forestry to have special educational or interpretive value.
   d. Maintain compatibility with Oregon's Statewide Planning Goal 5 (Open Spaces, Scenic and Historic Areas, and Natural Resources).
4. Energy and Minerals
   a. Manage gas, oil, and mineral resources on Board of Forestry Lands to provide revenues to counties and local taxing districts.
   b. Manage gas, oil, and mineral resources on Common School Forest Lands to maximize long-term revenues to the Common School Fund.
   c. Provide products useful to society, while minimizing impacts to surface resources (e.g., forests, fish, wildlife).
   d. Maintain compatibility with Oregon's Statewide Planning Goal 5 (Open Spaces, Scenic and Historic Areas, and Natural Resources).
5. Fish and Wildlife
   a. In a regional context, provide habitats that contribute to maintaining or enhancing native wildlife populations at self-sustaining levels, and contribute to properly functioning aquatic habitats for salmonids, and other native fish and aquatic life.
   b. Meet the requirements of federal and state endangered species acts.
   c. Contribute to maintaining fish and wildlife populations at levels that allow recreational and commercial opportunities, including fishing, hunting, and wildlife viewing.
   d. Maintain compatibility with Oregon's Statewide Planning Goal 5 (Open Spaces, Scenic and Historic Areas, and Natural Resources).
6. Forest Condition (Health and Biodiversity)
   a. Maintain or restore healthy forest conditions, thereby promoting sustainable, productive, and resilient ecosystems.
   b. Maintain biological diversity across the landscape.
   c. Provide for structural complexity and age diversity within and among stands.
   d. Maintain long-term forest soil productivity.
   e. Protect forest resources from unwanted fire and damaging pests.
7. Land Base
   a. Conserve the state forest land base to maintain resource values.
   b. Maintain compatibility with all Oregon Statewide Planning Goals and the Oregon Coastal Management Program.
   c. Achieve a land ownership pattern that can be efficiently managed.
8. Access System
   a. Develop and maintain an access system adequate for fire protection and management activities.
   b. Minimize potential adverse environmental and biological impacts of roads and other components of the access system.
   c. Allow public access where it is compatible with resource protection, management activities, and where impacts to adjacent landowners can be minimized.

9. Plants
    a. In a regional context, provide habitats that contribute to maintaining or enhancing native plant populations at self-sustaining levels.
    b. Meet the requirements of federal and state Endangered Species Acts.
10. Recreation
    a. Provide diverse forest recreation opportunities that supplement, rather than duplicate, opportunities available in the region.
    b. Provide opportunities for interpretation and outdoor education on state forest lands.
    c. Manage recreational use of the forests to minimize adverse impacts to other resources and adjacent ownerships.
    d. Minimize conflict among user groups.
    e. Maintain compatibility with Oregon's Statewide Planning Goal 8 (Recreational Needs).
11. Scenic Resources
    a. Meet the scenic protection requirements of the Oregon Forest Practices Act for visually sensitive corridors associated with designated scenic highways (ORS 527.755).
    b. Manage the forest to minimize visual effects in areas designated by the Department of Forestry as visually sensitive.
    c. Maintain compatibility with Oregon's Statewide Planning Goal 5 (Open Spaces, Scenic and Historic Areas, and Natural Resources).
12. Social and Economic Resources
    a. On Board of Forestry lands, provide sustainable timber harvest and revenues to the state, counties, and local taxing districts.
    b. On Common School lands, maximize the long-term revenues to the Common School Fund.
    c. Select sound forest management practices that promote sustainable state and local economies.
    d. Provide for a mix of resource outputs and amenity values that promote the long-term social health and economic viability of state and local communities.
    e. Enhance public understanding of forest resources and forest resource management.
    f. Maintain compatibility with Oregon's Statewide Planning Goal 9 (Economic Development).
13. Soils
    a. Maintain long-term forest soil productivity.
14. Special Forest Products
    a. Manage the special forest products resource to provide healthy, productive, and sustainable forest ecosystems that over time and across the landscape provide a full range of social, economic, and environmental benefits to the people of Oregon.
    b. Manage special forest products for sustainability over time.
15. Timber
    a. Manage the timber resource to provide sustainable timber harvest and revenues to the state, counties, and local taxing districts; maximize long-term revenues to the Common School Fund; and contribute to Oregon's timber supply.
    b. Produce a sustained yield of timber harvest from state forest lands.

   c. Promote the maintenance, growth, and development of forest trees and stands through the use of appropriate silvicultural techniques.
16. Water Quality
   a. Maintain a level of water quality sufficient to support beneficial uses of the waters of the state, including propagation of fish and aquatic life, wildlife, domestic, agricultural, industrial, municipal, recreational and other legitimate uses (ORS 468B.015(2)).
   b. Maintain water quality that meets standards established by Oregon under the mandates of the federal Clean Water Act (33 USC et. seq.).
   c. Maintain compatibility with Oregon's Statewide Planning Goal 6 (Air, Water, and Land Resources Quality).
17. Water Supply
   a. Maintain healthy watershed conditions to support the beneficial uses of the waters of the state.
   b. Maintain natural watershed storage capacity processes.
   c. Protect water-related functions of riparian lands.
18. Wetlands
   a. Maintain the natural functions and attributes of wetlands over time.
   b. Ensure that no net loss of wetlands occurs as a result of our management activities.
   c. Maintain compatibility with Oregon's Statewide Planning Goal 5 (Open Spaces, Scenic and Historic Areas, and Natural Resources).

Phase 2 Goals

The following list contains the goals articulated in the draft Western Oregon State Forests Management Plan (2023). These goals are provided in the order in which they appear in the draft Western Oregon State Forests Management Plan. These goals are defined by the Forest Management Planning Rule (OAR 629-035-0030(2)(c)) as "statements of what the State Forester intends to achieve for each forest resource within the planning area consistent with OAR 629-035-0020."

1. Timber Production - Provide a sustainable and predictable supply of timber that provides for economic opportunity, jobs, and availability of forest products.
2. Transportation System - Manage the transportation system in a manner that provides for resource protection, transportation efficiency, safety, and sound fiscal management while meeting forest management objectives
3. Tribal Access and Use of Natural Resources - In coordination with federally recognized Tribal governments of Oregon, the State Forests Division will provide access, availability, and enhancement of cultural resources and natural resources for their membership on state forest lands.
4. Tribal Cultural Resources Protection - Take an inclusive and proactive approach to working with Tribes to identify, record, preserve, protect, and keep confidential culturally significant resources, including but not limited to archaeological and historic sites and objects, considerations for human remains, historic artifacts, and real property.
5. Historic Cultural Resources Protection - Identify and protect historic cultural resources.
6. Recreation, Education, and Interpretation - Provide forest recreation, education, and interpretation opportunities to create meaningful and enjoyable experiences that foster

appreciation and understanding of state forest lands and contribute to community health, sustainable working forests, and economic wellbeing.

7. Visual Resources - Manage forests in ways that value scenery and a range of forested settings to meet emphasis area management objectives.
8. Special Forest Products - Provide opportunities for sustainable harvest of special forest products for recreational, personal, and commercial use.
9. Mining, Agricultural Use, Grazing, and Administrative Sites - Permit mining, agricultural use, administrative sites, and livestock grazing when these uses are compatible with other forest resource goals.
10. Soil - Maintain natural soil processes, protect soils from damage, and increase soil carbon and other nutrients.
11. Carbon Storage - Contribute to carbon sequestration and storage on state forest lands and carbon storage in harvested wood products.
12. Air Quality - Maintain and protect healthy air quality.
13. Aquatic and Riparian Resources - Protect, maintain, and enhance aquatic and riparian resources, that support the life history needs of aquatic and riparian-dependent fish and wildlife species.
14. Drinking Water - Protect, maintain, and enhance forest drinking water sources for private and domestic use.
15. Wildlife - Maintain, protect, and enhance functional and resilient landscapes that provide the variety and quality of habitat types and features necessary for long-term persistence of all native wildlife species.
16. Sensitive Plants - Ensure the long-term persistence of sensitive plant species.

In addition to the sixteen goals in the draft Western Oregon State Forests Management Plan, the draft HCP establishes biological goals and objectives for covered species (Table 2). These are explained in more detail in section 4.6 of the draft HCP.

Table 2. Biological goals and objectives for the Western Oregon State Forests Habitat Conservation Plan (HCP). Table numbers in the table below refer to tables found in the draft HCP.

Fish
Oregon Coast Coho, Oregon Coast Spring Chinook, Lower Columbia River Coho, Lower Columbia Chinook, Columbia River Chum, Upper Willamette River Steelhead, Upper Willamette River Chinook, Southern Oregon/Northern California Coast Coho, and Eulachon
Goal 1: Support the persistence and climate change resilience of Oregon Coast coho, Oregon Coast spring Chinook, Lower Columbia River coho, Lower Columbia Chinook, Columbia River chum, Upper Willamette River steelhead, Upper Willamette River Chinook, Southern Oregon/Northern California Coast coho, and eulachon in the permit area.
Objective 1.1: Conserve, maintain, and enhance riparian conditions that promote long-term wood recruitment in streams as measured by three sets of metrics: a) riparian forest structure, b) wood volume on potentially unstable slopes that have potential to deliver to fish-bearing streams, and c) long-term trends of instream large woody material (key pieces, size, frequency adequate to support the covered species).
Objective 1.2: Conserve, maintain, and enhance overall stream channel complexity through targeted stream enhancement projects to address limiting factors for covered fish.
Objective 1.3: Maintain or enhance water quality and quantity conditions most important to covered fish as measured by current conditions and long-term trends in temperature, fine sediments in riffles, pool temperature and depth, and summer low-flow on ODF-managed lands.
Objective 1.4: Maintain or enhance fish passage to suitable spawning and rearing habitat by removing or modifying artificial barriers during the course of routine construction, emergency road repair, or maintenance work.
Amphibians
Columbia Torrent Salamander
Goal 2: Support the persistence of Columbia torrent salamanders in the Clatsop and Tillamook State Forests.
Objective 2.1: Conserve and maintain riparian habitat along 677 stream miles where Columbia torrent salamanders are likely to persist (high-gradient perennial streams with an adequate supply of downed wood, adequate water temperatures, and access to moist adjacent forests) through implementation of RCAs as shown in the draft HCP Table 4-3 and Table 4-4.
Cascade Torrent Salamander
Goal 3: Support the persistence of Cascade torrent salamanders in the Santiam State Forest.
Objective 3.1: Conserve and maintain riparian habitat along 76 stream miles where Cascade torrent salamanders are likely to persist (high-gradient perennial streams with an adequate supply of downed wood, adequate water temperatures, and access to moist adjacent forests) through implementation of RCAs as shown in the draft HCP Table 4-3 and Table 4-4.
Oregon Slender Salamander
Goal 4: Support the persistence of Oregon slender salamander in the Santiam State Forest.
Objective 4.1: Conserve, maintain, and enhance 16,000 acres of occupied habitat or suitable habitat for Oregon slender salamander and enhance 3,000 acres into suitable habitat during the permit term.
Objective 4.2: Maintain or enhance the abundance of large decayed downed wood in occupied or suitable but unsurveyed habitat to improve habitat quality in all HCAs within the range of Oregon slender salamander, including in locations subject to harvest to retain habitat value for Oregon slender salamander post-harvest.
Birds
Northern Spotted Owl

Goal 5: Support the persistence of northern spotted owl in the permit area.
Objective 5.1: Conserve, maintain, and enhance at least 15,000 acres of existing nesting and roosting habitat and 73,000 acres of foraging habitat.
Objective 5.2: Maintain at least 40% of the permit area outside of HCAs, measured by geography as described in the draft HCP Table 4-12, as dispersal habitat (nesting, roosting, foraging, or dispersal-only habitat) to allow diffuse movement across a permeable landscape.
Objective 5.3: Increase the quantity of nesting and roosting habitat by 69,000 acres, for a total of 84,000 acres by the end of the permit term, while maintaining 50,000 acres of foraging habitat. Total nesting, roosting, and foraging habitat at the end of the permit term shall be 134,000 acres.
Marbled Murrelet
Goal 6: Support the persistence of marbled murrelet in the permit area.
Objective 6.1: Conserve, maintain, and enhance at least 62,000 acres of existing suitable habitat and 1,000 acres of existing highly suitable habitat including locations where occupancy has been previously documented.
Objective 6.2: Increase the amount of habitat by at least 45,000 acres of suitable habitat and 34,000 acres of highly suitable habitat in locations that minimize patch edge : interior habitat ratios. This amounts to a total of 107,000 acres of suitable habitat and 35,000 acres of highly suitable habitat conserved by the end of the permit term.
Mammals
Red Tree Vole (North Oregon Coast Distinct Population Segment)
Goal 7: Support the persistence of red tree vole in the permit area.
Objective 7.1: Conserve, maintain, and enhance at least 48,000 acres of suitable habitat and 5,000 acres of highly suitable habitat, including areas where occupancy has been previously documented.
Objective 7.2: Increase the amount of suitable habitat by 30,000 acres and highly suitable habitat by 34,000 acres, for a total of 78,000 acres of suitable habitat and 39,000 acres of highly suitable habitat by the end of the permit term.
Coastal Marten
Goal 8: Support the persistence of coastal marten in the permit area.
Objective 8.1: Conserve, maintain, and enhance at least 27,000 acres of denning, foraging, and dispersal habitat.
Objective 8.2: Increase the quality of denning, resting, foraging, and dispersal habitat within the 27,000 acres.

Property Description

This section describes the physical characteristics of Western Oregon State Forest lands. Additional information may be found in the draft HCP . A summary table showing the physical characteristics by ecoregion is provided below in Table 3.

Table 3.Summary of the physical setting for each ecoregion in the plan area.

Province	Geology	Soils	Climate	Hydrology
Coast Range	Steep to gentle slopes; periodic slope failures/slides	Sandstone, siltstone, weathered basalts and breccias. Generally potential for highly productive soils. Intense fires have affected productivity in some areas. Reforestation may be difficult on steep slopes.	The wet and mild maritime climate supports highly productive temperate rainforests. Rain dominated with 50–200 inches of precipitation annually.	Drains to Pacific Ocean, Willamette, and Columbia. Steep in headwaters and flat in lower reaches. High stream density (2–3 miles of stream/square mile). 8,220 acres of wetlands (75% riverine, 13% freshwater forest/shrub) and 8,759 miles of streams in the plan area (26% fish bearing, and 96% of Type F streams have perennial flow). Combination of shallow soils and rain dominated precipitation leads to rapid runoff with high flows during winter storms and low flows during the summer dry season.
West Cascades	Steep slopes with volcanic soils. Less dissected slopes than the coast. Less likelihood of slides than the coast, but still subject to slope failures.	Mostly derived from weathering of extrusive igneous rocks.	Snow dominated with 80–300 inches of precipitation annually.	High gradient streams that drain to Willamette, Santiam, Sandy and Clackamas. Stream densities range from 1.5- to 2-mile stream per square mile. Approximately 20% of the 491 miles of streams in the plan area are fish-bearing and 79% of those have perennial flow. 373 acres of wetlands (75% riverine, 13% freshwater forest/shrub). Hydrology strongly influenced by climate and soils. At higher elevations much of the precipitation falls as snow and a significant portion filters into highly permeable soil and rock.
Klamath	Mountainous. Metamorphic mosaic; serpentine bedrock containing heavy metals.	Weathered soils interspersed with peridotite or serpentine which are unproductive for tree growth.	Mediterranean climate with hot dry summers and moderate rainfall in winter; 25–118 inches of precipitation annually.	Rugged terrain with 190 miles of stream in the plan area. Of these, 10% of identified streams are fish-bearing and 99% of type F streams are perennial. 366 acres of wetlands (97% riverine).
Willamette	Broad, lowland valley.	Relatively deep alluvium, colluvium and glaciolacustrine deposits that overlie basalt and sandstone. Soils are productive.	Mediterranean climate with warm dry summers and mild wet winters; 35–63 inches of precipitation annually.	Surface water dominated by large rivers with a wide variety of ecosystems and habitats. 70 miles of streams in plan area with 36% of streams identified as fish-bearing. Virtually 100% of type F streams are perennial. 70 Acres of wetlands (98% riverine).

Watersheds

Coast Range Ecoregion

The Coast Range Ecoregion includes three major basins:

- **North Coast:** The North Coast basin extends from the Columbia River to the southern Tillamook County line and is bound by the Pacific Ocean to the west and the crest of the Coast Range to the east. The basin consists of six watersheds: Necanicum, Nehalem, Tillamook Bay, Nestucca, Netarts/Sand Lake, and Neskowin. The three largest bays in the basin are Tillamook, Nehalem and Netarts. The outflow from rivers with headwaters in the Coast Range form estuaries along the North Coast. The North Coast basin drains to the Pacific Ocean and is within the Coast Range ecoregion.

- **Mid Coast:** The Mid-Coast basin encompasses four subbasins on Oregon's central coast: Alsea, Siletz-Yaquina, Siltcoos, and Siuslaw. The basin encompasses approximately 9,458 square miles. It is bound by the North Coast basin to the north, the crest of the Coast Range to the east, the South Coast basin to the south, and the Pacific Ocean to the west. The Mid Coast drains to the Pacific Ocean and is within the Coast Range ecoregion. The Coast Range ecoregion also includes part of the Umpqua basin, which also includes portions of the West Cascades and Klamath Mountains ecoregions. The basin comprises approximately 5,063 square miles of southwest Oregon. It is bound on the east by the Cascades and extends west to the Pacific Ocean. Three subbasins are contained within the Umpqua Basin: North Umpqua, South Umpqua, and Mainstem Umpqua/Smith. The headwaters of the North Umpqua River are located in the Umpqua National Forest and it flows generally west until it meets the South Umpqua River downstream from Roseburg. The South Umpqua River also has headwaters in the Umpqua National Forest, and generally flows west. It flows north after its confluence with Cow Creek, a major tributary. Downstream from the confluence with the North Umpqua is the Umpqua mainstem, which flows generally west until it meets the Smith River at the Umpqua-Smith estuary before emptying into the Pacific Ocean. The mainstem of the Umpqua River is within the Umpqua subbasin, which receives drainage from the other two subbasins as well as from smaller tributaries. It includes the drainages of the South Umpqua River, North Umpqua River, mainstem Umpqua River, and Smith River.

- **South Coast:** The South Coast basin is located in southwestern Oregon. The basin encompasses over 2,973 square miles and consists of four subbasins—Chetco, Coos, Coquille, and Sixes—as well as a portion of the Smith subbasin. These subbasins are located on the west side of the Siskiyou Mountains. At the northern end of the basin, the Coos and Coquille Rivers headwater in the Coast Range and flow across relatively flat, low gradient, marine terraces to the Pacific Ocean. In the southern portion of the basin, numerous coastal frontal streams headwater primarily in the Klamath Mountain Province and discharge directly to the ocean. The outflow from rivers with headwaters in the Coastal Ranges, which form estuaries along the south coast. The South Coast basin is within the Coast Range ecoregion.

West Cascades Ecoregion

The West Cascades ecoregion is part of the Umpqua basin, which also includes portions of the Coast Range and Klamath Mountains ecoregions. The basin comprises approximately 5,063 square miles of southwest Oregon and is described in more detail in Section 2.3.2.2, West Cascades Ecoregion. The North Santiam River Basin is located on the western slopes of the Cascade Range. The river flows west from Mount Jefferson to the Willamette River, draining 766 square miles. The basin contains the main-stem North Santiam River, its major tributaries: Breitenbush River, Blowout Creek, French Creek, and the Little North Santiam River.

Klamath Mountains Ecoregion

Most state forest lands within the Klamath Mountains ecoregion are located within the Rogue River Basin. The basin contains 5,156 square miles in southwestern Oregon and northern California. The Rogue River Basin includes five subbasins: Lower Rogue River, Middle Rogue River, Upper Rogue River, Illinois, and Applegate. The basin is bound by the Siskiyou Mountains to the south and the Cascade Mountains to the east. The hydrology of the basin is strongly influenced by the climate and the soils. At higher elevations much of the precipitation falls as snowfall and a significant portion infiltrates into the highly permeable soil and rock. As a result, higher flows are seen in May due to snow melt. In contrast, the flow of the Illinois River is more typical of the coast range where most of the precipitation falls as rainfall and shallow soils lead to rapid runoff with high flows during winter storms and low flows during the summer dry period. The Rogue basin is within the Coast Range and Klamath Mountains/California High North Coast Range ecoregions.

Willamette Ecoregion

State forestlands within the Willamette ecoregion are within the Willamette River Basin. Draining an area greater than 11,200 square miles, the Willamette basin is the state's largest. The basin begins south of Cottage Grove and extends approximately 187 miles to the north where the Willamette River flows into the Columbia River. It encompasses 12 subbasins: Lower Willamette, Tualatin, Molalla-Pudding, Yamhill, Clackamas, South Santiam, North Santiam, Middle Willamette, McKenzie, Coast Fork Willamette, Middle Fork Willamette, and Upper Willamette. The basin contains the broad Willamette River valley, which is flanked by the forested slopes of the Coast and Cascade mountain ranges. The Willamette River and its tributaries support a wide variety of ecosystems and habitats. The Willamette River stretches nearly 300 miles from its headwaters at Waldo Lake near Eugene to the confluence with the Columbia River in North Portland. The Willamette basin is within the Willamette Valley ecoregion.

Hydrology and Water Quality

Coast Range Ecoregion

Coast Range ecoregion streams and rivers generally have steep gradients in their headwater sections and very flat gradients in their lower reaches. Stream densities are high in this region, ranging from 2 to 3 miles of stream per square mile of land. Streams originating on the west slopes generally flow into the Pacific Ocean, and streams that drain the east slopes are tributaries to the Willamette River. On the North Coast, several streams drain north directly into the Columbia River. The combination of shallow soils and rain-dominated precipitation leads to flashy, rapid runoff with high flows during winter storms and low flow during the summer dry season.

There are approximately 8,759 miles of streams in the plan area of the Coast Range ecoregion. Of those, approximately 1,338 miles are fish bearing (15%; Type F) streams with 96% of these Type F streams having perennial flow, meaning they contain water throughout of the year, except during infrequent periods of severe drought. There are approximately 3,850 miles of non-fish-bearing streams (Type N) in the plan area. These streams do not meet the physical criteria of Type F streams but still provide downstream salmonid habitat values by contributing large wood, cold water through shading, and food resources, as well as habitat for other aquatic species, including torrent salamanders. The stream type of the remaining 3,571 miles is unknown.

There are approximately 8,220 acres of wetlands that occur in the plan area of the Coast Range ecoregion. Using the National Wetland Inventory (NWI) classifications, the majority acreage is represented by riverine (75%), which includes all wetlands and deepwater habitats contained within a channel and are analogous with the streams described previously. The remaining acreage is composed largely of freshwater forested/shrub (13%) where trees are the dominant life form, with at least 30% overall coverage. This wetland type occurs only in the Palustrine and Estuarine systems and normally possesses an overstory of trees, an understory of young trees or shrubs, and an herbaceous layer. Forested and smaller stream associated wetlands are not as well documented in the NWI, but are identified, and protections established, in the planning phases of management activities.

West Cascades Ecoregion

West Cascades ecoregion streams and rivers usually have high gradients. Stream densities range from 1.5 to 2 miles of stream per square mile of land (Beschta et al. 1995). West Cascades ecoregion streams west of the crest flow westward and eventually join one of the major rivers draining the area (Santiam, Sandy, Willamette, and Clackamas). The hydrology of the West Cascades is strongly influenced by elevation, climate and soils. At higher elevations much of the precipitation falls as snow and a significant portion filters into highly permeable soil and rock.

There are approximately 491 miles of streams in the plan area of the West Cascades ecoregion. Of those, approximately 84 miles are fish bearing (15%; Type F) streams with the majority (79%) having perennial flow, meaning they contain water throughout of the year, except during infrequent periods of severe drought. There are approximately 359 miles of non-fish-bearing streams (Type N) in the plan area. The stream type of the remaining 48 miles is unknown.

There are approximately 373 acres of wetlands that occur in the plan area of the West Cascades ecoregion. Using the NWI classifications, the majority acreage is represented by riverine (75%), which includes all wetlands and deepwater habitats contained within a channel and are analogous with the streams described previously. The remaining acreage is composed largely of freshwater forested/shrub (13%). Forested and smaller stream-associated wetlands are not as well documented in the NWI, but are identified, and protections established, in the planning phases of management activities.

Klamath Mountains Ecoregion

Southwest Oregon state forest lands occur in the Klamath Mountains hydrologic region, which occupies most of southwestern Oregon and extends southward into northern California. They are rugged, have 2,000 to 5,000 feet of relief, and receive more than 120 inches of precipitation annually. The southwest Oregon state forests are in the Rogue and Umpqua drainage basins. The Rogue and Umpqua drainage basins are significant watersheds that are directly influenced by state forestlands in southwest Oregon.

There are approximately 190 miles of streams in the plan area of the Klamath Mountains ecoregion. Of those, approximately 17 miles are fish bearing (8%; Type F) streams with almost all (99%) having perennial flow, meaning they contain water throughout of the year, except during infrequent periods of severe drought. There are approximately 152 miles of non-fish-bearing streams (Type N) in the plan area. These streams do not meet the physical criteria of Type F streams but do provide habitat for other aquatic species including torrent salamanders. The stream type of the remaining 21 miles is unknown.

There are approximately 366 acres of wetlands that occur in the plan area of the Klamath Mountains ecoregion. Using the NWI classifications, almost all the acreage is represented by riverine (97%), which includes all wetlands and deepwater habitats contained within a channel and are analogous with the streams described previously. The remaining acreage is composed of freshwater forested/shrub. Forested and smaller stream-associated wetlands are not as well documented in the NWI, but are identified, and protections established, in the planning phases of management activities.

Willamette Ecoregion

Surface water in the Willamette Valley ecoregion is dominated by large rivers and numerous streams flowing from the adjacent mountainous regions. Large rivers in the ecoregion include the Willamette, McKenzie, Santiam, Sandy, Mollala, Clackamas, Tualatin, Yamhill, Luckiamute, and Long Tom. There are also numerous seasonal wetlands and ponds along with a few reservoirs.

There are approximately 70 miles of streams in the plan area of the Willamette Valley ecoregion. Of those, approximately 14 miles are fish bearing (17%; Type F) streams with almost all (100%) having perennial flow, meaning they contain water throughout of the year, except during infrequent periods of severe drought. There are approximately 25 miles of non-fish-bearing streams (Type N) in the plan area. The stream type of the remaining 43 miles is unknown.

There are approximately 70 acres of wetlands that occur in the plan area of the Willamette Valley ecoregion. Using the NWI classifications, almost all the acreage is represented by riverine (98%), which includes all wetlands and deepwater habitats contained within a channel and are analogous with the streams described previously. The remaining acreage is composed of freshwater forested/shrub and freshwater emergent. Freshwater emergent wetlands maintain the same appearance year after year and are dominated by perennial plants. Forested and smaller stream-associated wetlands are not as well documented in the NWI, but are identified, and protections established, in the planning phases of management activities.

Soils

Soil is a complex material made of decomposed and fragmented mineral rock, water, plant nutrients, organic material, and air and other gases in the spaces between mineral grains. The organic material consists of living, dead, and decomposed plants and animals. Forest site productivity is controlled by the soil depth, porosity, biology, and the availability of nutrients in the soil. All these factors are influenced by soil type.

Dynamic processes such as forest succession, tree and shrub species composition and abundance, wind, and fire affect the accumulation of organic matter in the soil. The amount and composition of organic matter affect soil fertility. Small materials such as needles and twigs have the highest concentration of nitrogen. Large materials such as down trees are important because they influence soil accumulation, nutrient availability, and soil nutrient availability and soil moisture.

Landslides are the dominant erosional process in the mountainous terrain of the northwestern state forests in the Coast Range and Klamath Mountains. Large, deep-seated slides can alter huge expanses over long time periods. Shallow, rapidly moving landslides, known as debris flows, are the most frequent and noticeable type of slide. They can originate in headwalls or elsewhere on mountain slopes when soils on steep slopes become saturated and lose strength. Slides can occur in areas with no forest management activity, although slide frequency can increase due to recent harvest, natural disturbances, or road construction and drainage.

Coast Range Ecoregion

The soils in the Coast Range ecoregion are derived from sandstones, siltstones, weathered basalts, and volcanic breccias. Soils have developed in residual, colluvial, and alluvial materials and range from deep, rock-free materials to shallow, stony soil profiles.

The Coast Range soils vary from highly productive (Site Class I) for Douglas-fir to moderate potential productivity (low Site Class III), depending largely on profile depth, stoniness, topographic position, and to some extent, soil parent material. However, in general, the parent materials of these soils all provide a potential basis for highly productive soils.

In areas where severe fires burned previous forests, as in 70% of the Tillamook State Forest, the productive potentials of some soils are likely degraded due to burning, loss of organically rich forest floors, and extended exposure to erosion. In places where the loss of organic materials and topsoil resulted from fires of 50 to 100 years ago, productive potentials may still be limited because soil-forming processes are not rapid enough to have rebuilt soils to productive states.

West Cascades Ecoregion

Soils of the Santiam State Forest, which is where the bulk of the plan area occurs in the West Cascades ecoregion, are mostly derived from ancient andesites and their alluvial deposits. Other volcanic deposits may cap some soils. The soils are mostly gravelly with clay, clay loam, and sandy loam textures. They vary from shallow and skeletal on some slopes to deep and moderately well developed on gentle terrain. Rock volumes of 40 to 60% are common.

Site quality varies from high Site Class II for Douglas-fir to Site Class V for both Douglas-fir and western hemlock. Forest stands may range from being relatively windfirm to being highly susceptible to windthrow, depending on steepness of slopes and soil depth.

Reforestation may be difficult on some steep slopes. Silvicultural and harvesting systems must be thoughtfully designed and implemented to ensure the long-term productivity of these sites.

Klamath Mountains Region

Upland soils in the western half of the Klamath Mountains ecoregion are moderately deep reddish-brown silt loam or silty clay loam underlain by silty clay. These soils are interspersed with scattered areas of peridotite or serpentine, which are shallow and stony and underproductive for tree growth. There is a variety of valley soils, mostly dark-colored, well-drained silt loam underlain by a silty clay loam subsoil. Poorly drained streamside soils also occur.

In the eastern part of the ecoregion, principal upland soils are dry for most of the year and are generally reddish-brown with bedrock within approximately 3 feet of the surface. The texture tends to be loam underlain by clay loam subsoils. Shallow, gravelly soils of low fertility occur but are less widespread. Soils

on flood plains and alluvial fans in the eastern half of the Klamath Mountains are principally well-drained prairie soils.

Willamette Ecoregion

Soils in the Willamette Valley ecoregion include relatively deep alluvium, colluvium, and glacio-lacustrine deposits that overlie Miocene volcanic basalt and marine sandstone. Soils along the valley floor are productive, have a mesic temperature regime, and have a variety of texture and moisture characteristics (Griffith 2010). Soils associated with the plan area, which is situated in the foothills outside of the valley floor, consist of Ultisols and Alfisols.

Vegetation and Habitats

The State Forests Division's forest inventory data characterize forest composition and structure in the permit area. Inventory data includes site-specific data on trees, snags, downed woody debris, and understory vegetation. These data are based on a field-measured sampling of selected forest stands. The number of stands sampled varies from year to year, depending on budgets and specific needs. Overall, approximately 50% of stands have been measured since 2001. Data from measured stands are used to extrapolate inventory information to stands that do not have field-measured data. The State Forests Division regularly maintains and updates inventory data, which serve as the information source on forest conditions for all lands managed by the State Forests Division. The State Forests Division uses inventory data to inform forest management analyses, assessments, activity planning, and status reporting. Additional information may be found in the draft HCP. A summary table showing vegetation characteristics by ecoregion is provided below in Table 4.

Table 4. Vegetation and habitat summary by ecoregion.

Ecoregion	Forest Type	Forest Age	Forest Structure	Adjacent Ownership
Coast	Dominated by conifers, especially Douglas-fir, along with a variety of hardwoods	Dominated by 50- to 69-year-old trees, with approximately 220,000 acres in this age range. Approximately 70,000 acres under ODF management in this ecoregion are 80 years and older	Mostly mid-seral stands with developing understories. Significant layering of tree crowns has not yet developed but many stands have good potential for increasing structural diversity. Some older stands may already have high structural diversity.	Approximately 1,539 miles of adjoining land ownership perimeter. The primary adjoining landowner type is private.
West Cascades	Almost entirely coniferous and dominated by Douglas-fir	More even spread across age classes compared to the Coast Range ecoregion, with the highest proportion occurring in 60- to 89-year-old trees	Mid-seral stands similar to other ecoregions	Approximately 251 miles of adjoining land ownership perimeter. The primary adjoining landowner type is private
Klamath	Almost entirely coniferous and dominated by Douglas-fir	Generally range between 20- and 119-year-old trees	Mid-seral stands similar to other ecoregions	Approximately 145 miles of adjoining land ownership perimeter. The primary adjoining landowner is the Bureau of Land Management
Willamette	Almost entirely coniferous and dominated by Douglas-fir	Dominated by 60- to 69-year-old trees	Mid-seral stands similar to other ecoregions	Approximately 63 miles of adjoining land ownership. The primary adjoining landowner type is private

Coast Range Ecoregion

Forests in the Coast Range ecoregion are dominated by conifers, especially Douglas-fir, along with a variety of hardwoods (Figure 2). State forest stands are dominated by the 50- to 69-year-old trees (Figure 3). The forest structure is largely composed of mid-seral stands with understory characteristics, such as diverse shrub and herb layers. Tree canopies may range from a single species, single-layered, main canopy with associated dominant, codominant, and suppressed trees, to multiple species canopies. However, significant layering of tree crowns has not yet developed. In these stands, the shrub and herb layers are likely to continue to diversify and maintain or improve their vigor. These stands offer good potential to develop into highly diversified vegetative communities. Depending on the intensity and timing of density-management activities, stands could continue in this condition, grow back into a closed single canopy state, or develop into late seral complex stands. Approximately 70,000 acres under ODF management in this ecoregion is in stands aged 80 years and older. These stands have a range of structural complexity dependent on management history, disturbance, and local growing site conditions.

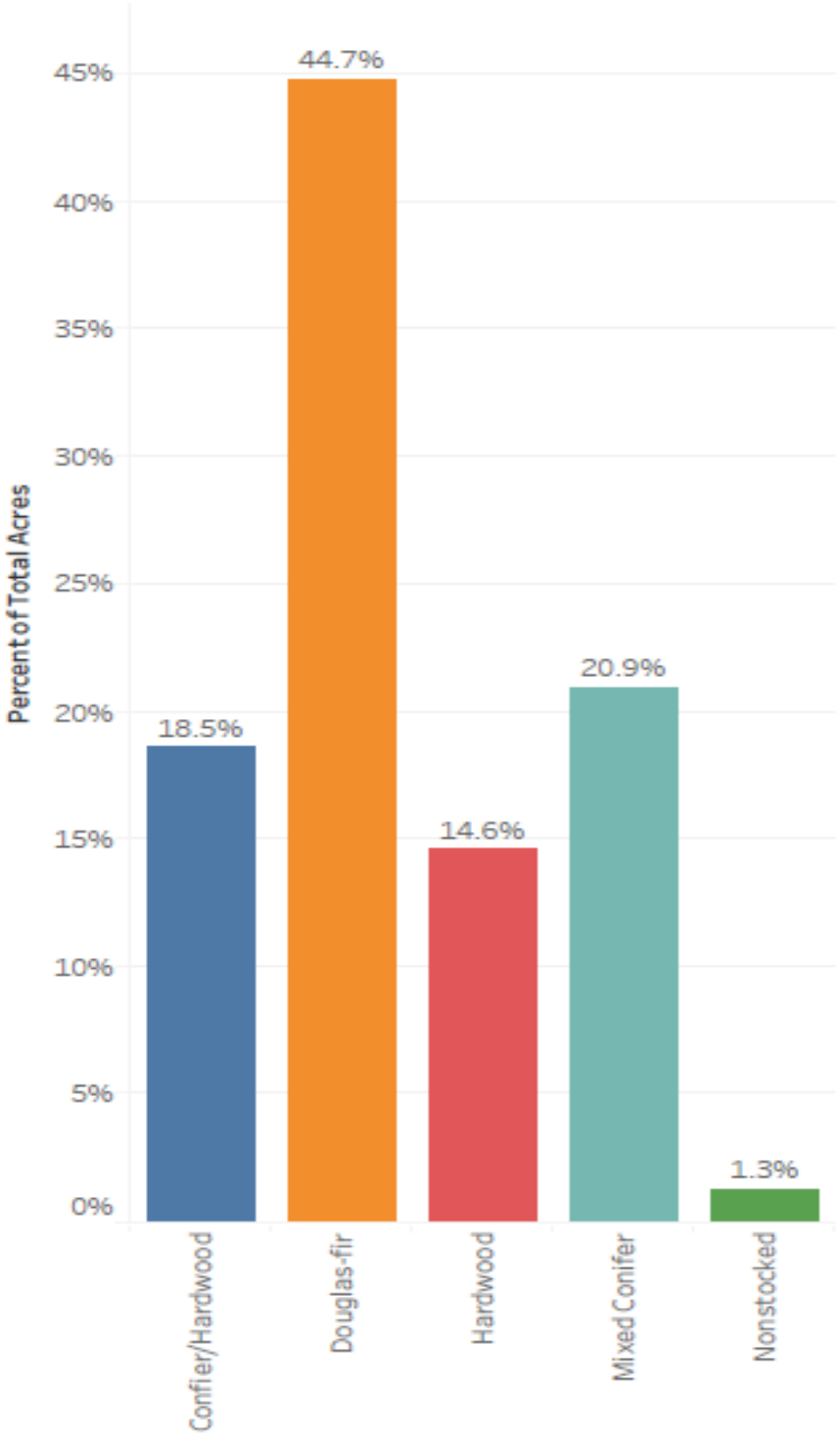


Figure 2. Forest types on State Forest lands in the Coast Range Ecoregion.

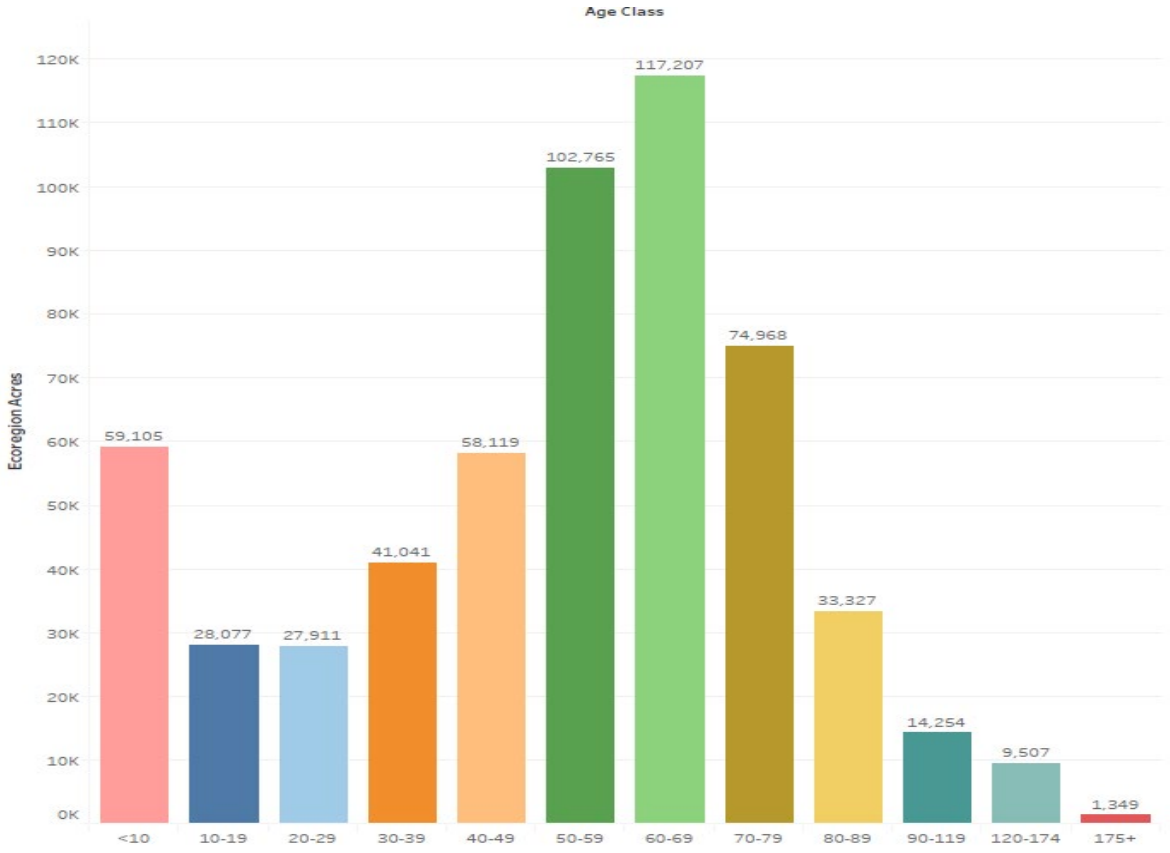


Figure 3. Stand age on State Forest lands in the Coast Range Ecoregion.

West Cascades Ecoregion

State forests in the West Cascades ecoregion[2] are almost entirely coniferous and dominated by Douglas-fir (Figure 4). Forest stands have a more even spread across age classes compared to the Coast Range ecoregion, with the highest proportion occurring in 60- to 89-year-old trees (Figure 5). Forest structure is composed of primarily mid-seral stands with a diverse herb or shrub layer and contains trees larger than sapling size. Tree canopies may range from a single species, single-layered, main canopy with associated dominant, codominant, and suppressed trees, to multiple species canopies. However, significant layering of tree crowns has not yet developed. The shrub and herb layers are likely to continue to diversify and maintain or improve their vigor. These stands offer good potential for developing into highly diversified vegetative communities.

[2] Forest age data are only available for Board of Forestry Lands and Common School Forest Lands (i.e., the permit area). Data are not available for private or federal land in the plan area.

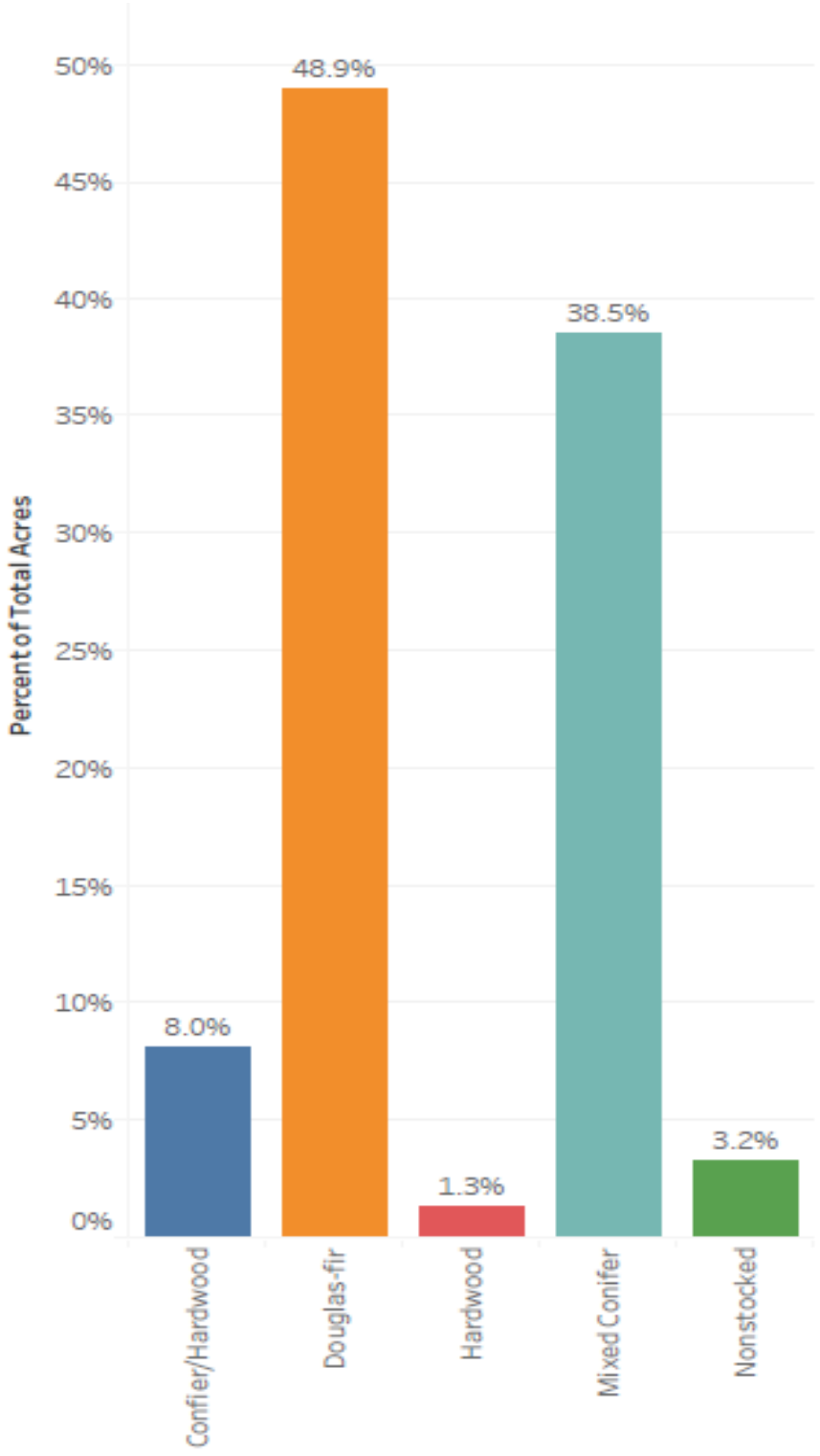


Figure 4. Forest types on State Forest lands in the West Cascades Ecoregion.

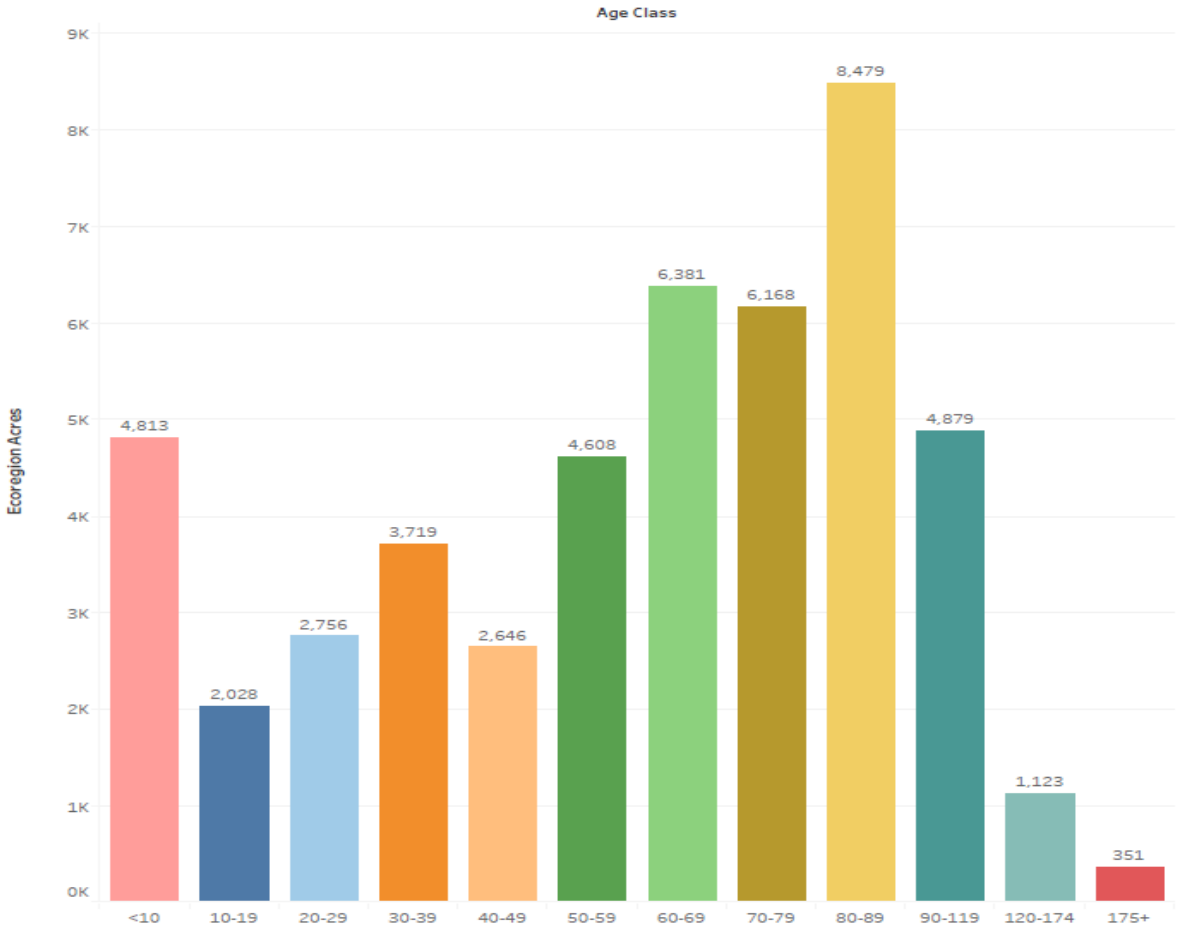


Figure 5. Stand age on State Forest lands in the West Cascades Ecoregion.

Klamath Ecoregion

State forests in the Klamath Mountains ecoregion are dominated almost exclusively by Douglas-fir (Figure 6). Forest stands generally range between 20- and 119-year-old trees (Figure 7). Forest structure is composed primarily of mid-seral stands of closed canopy stand types, with little or no understory development. While these closed canopy stands are the primary stand type on this part of the permit area, overall species diversity is high. Douglas-fir and madrone are usually the dominant tree species, but ponderosa pine, sugar pine, incense cedar, and grand fir are common conifer components. Common hardwood species include canyon live oak, tanoak, and chinquapin on xeric sites, and red alder, black cottonwood, Oregon ash, willow, and Pacific yew in mesic areas. Soil types are diverse, including serpentine outcrops that support a distinctive array of trees and plants.

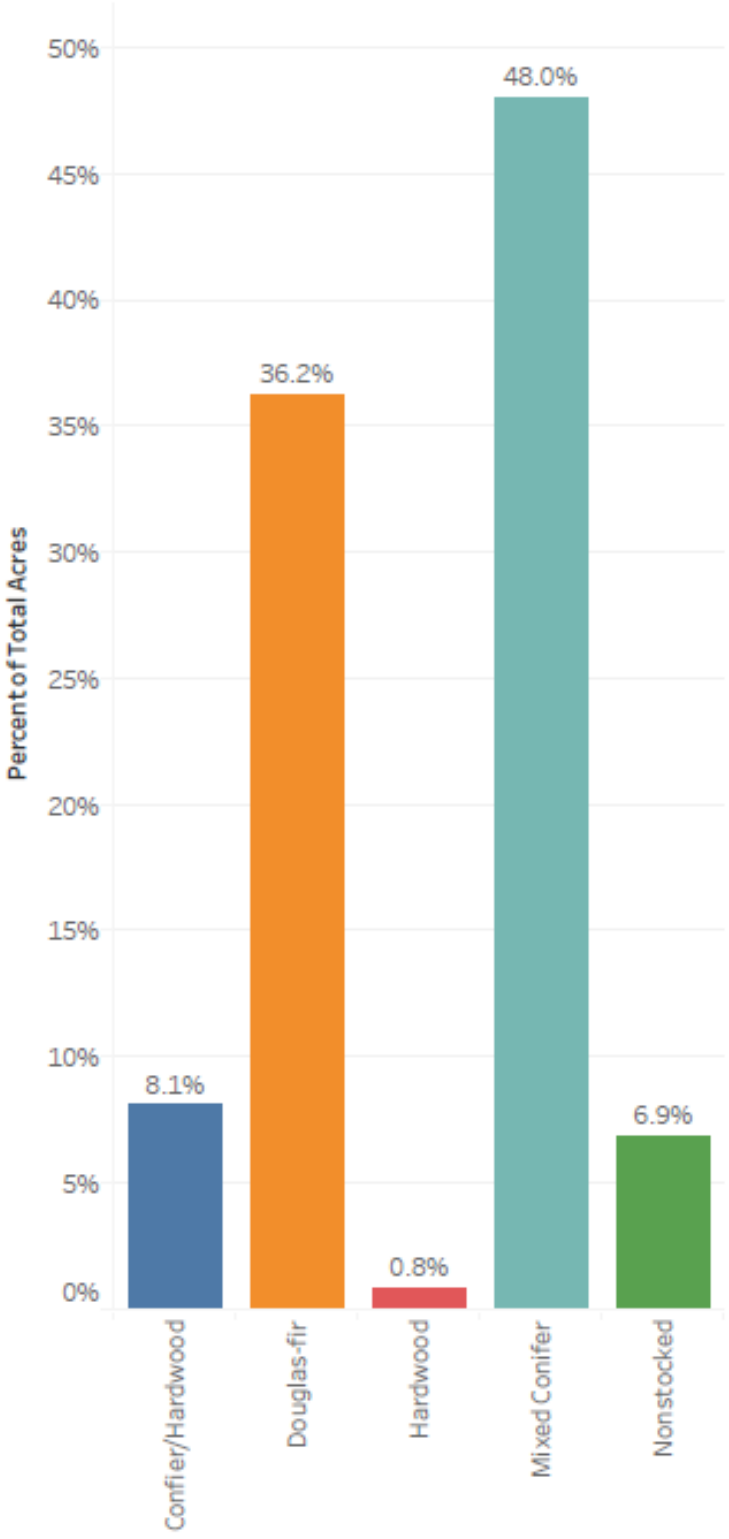


Figure 6. Forest types on State Forest lands in the Klamath Ecoregion.

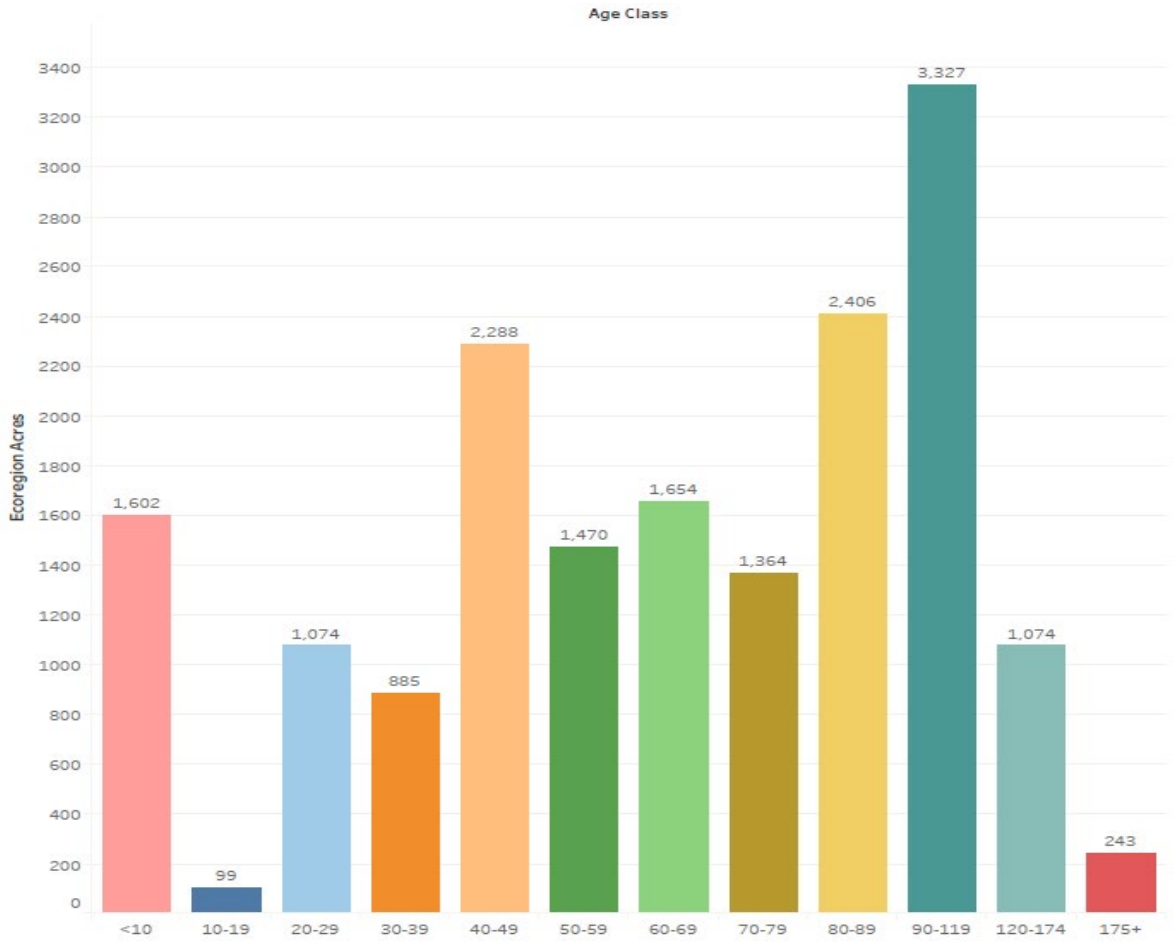


Figure 7. Stand age on State Forest lands in the Klamath Ecoregion.

Willamette Ecoregion

State forests in the Willamette Valley ecoregion are dominated almost exclusively by Douglas-fir (Figure 8). Forest stands are dominated 60- to 69-year-old trees (35%; Figure 9). Forest structure is composed of mid-seral stands with a diverse herb or shrub layer and trees larger than sapling size. Tree canopies may range from a single species, single-layered, main canopy with associated dominant, codominant, and suppressed trees, to multiple species canopies. However, significant layering of tree crowns has not yet developed. The shrub and herb layers are likely to continue to diversify and maintain or improve their vigor. These stands offer good potential for developing into highly diversified vegetative communities.

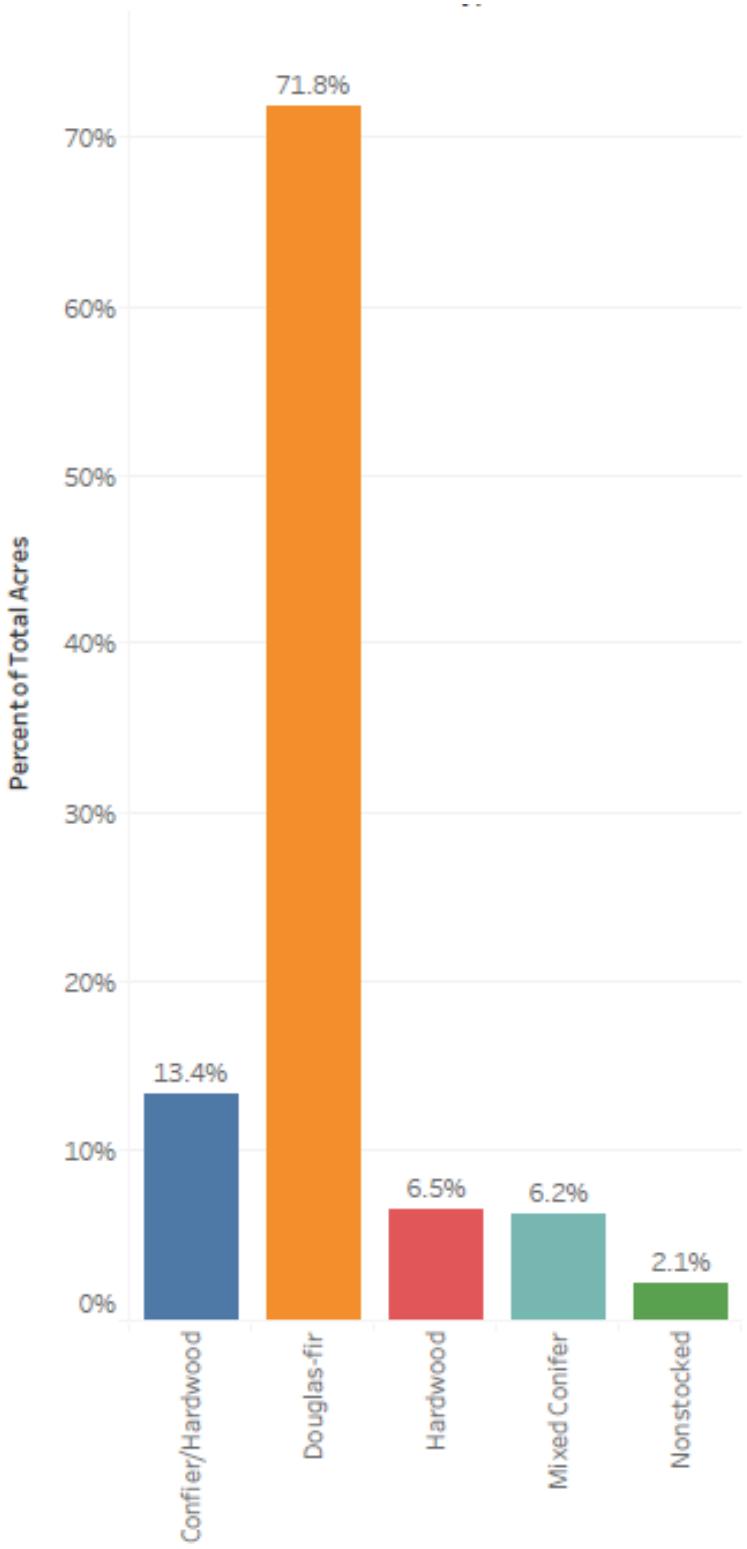


Figure 8. Forest types on State Forest lands in the Willamette Ecoregion.

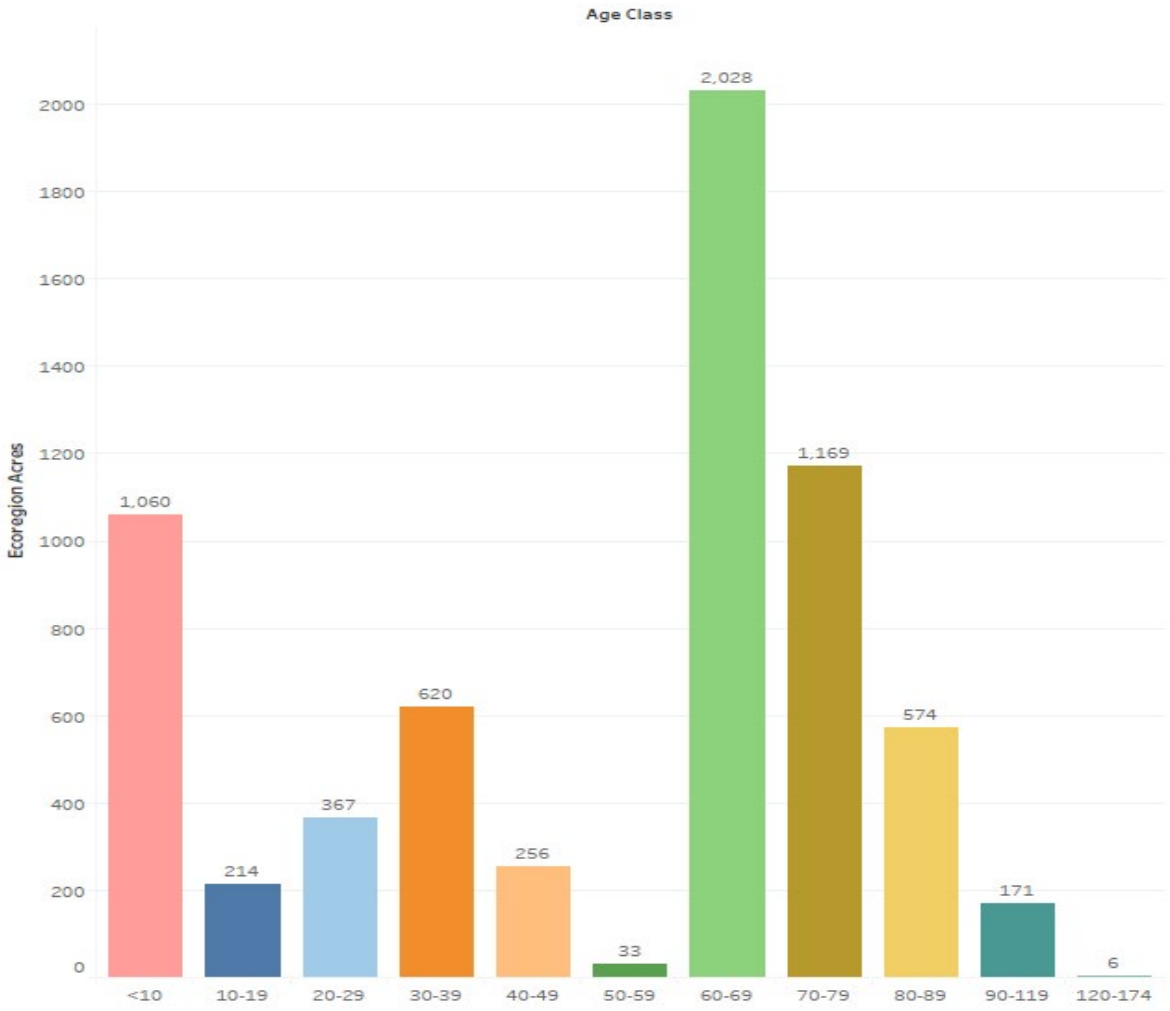


Figure 9. Stand age on State Forest lands in the Willamette Ecoregion.

Resource Management

This section summarizes the approaches the State Forests Division will implement to protect or enhance resources. Full details regarding these approaches are found in the Forest Management Plans and the draft HCP. Every attempt has been made to completely include relevant portions; however, inadvertent omissions may have occurred. Regardless of their inclusion in this document, the State Forests Division will implement all relevant strategies found in the Northwest Oregon State Forests Management Plan for *phase 1* and all relevant strategies found in the draft Western Oregon State Forests Management Plan and draft Habitat Conservation Plan for *phase 2*.

These approaches exceed regulatory requirements and are designed to achieve conservation, restoration, and improvement of fish and wildlife habitats or water quality. In some cases, there may be differences between *phase 1* and *phase 2* approaches described when applicable. For *phase 1*, additional detail may be found in the Northwest Oregon State Forests Management Plan (2010; Attachment 2), and for *phase 2*, additional detail may be found in Chapter 4 of the draft HCP and the draft Western Oregon State Forests Management Plan (2023; Attachment 1).

Voluntary actions described here address FPA rules for forest roads (Division 625), harvesting operations (Division 630), riparian vegetation (Division 643), wetlands (Division 645), lakes (Division 650), other wetlands (Division 655), and operations near waters of the state (Division 660).

Forest Health and Integrated Pest Management

There are several forest health challenges for state forest lands over the planning area. Some forest health concerns are due to past practices and history of the lands, while others are due to an increase of forest visitors. For example, much of the Tillamook Burn was planted or seeded with Douglas-fir from non-local seed sources, with unknown long-term consequences and are considered part of the factors for Swiss needle cast (SNC) impacts on stands.

Increasing popularity of recreational activities in state forest lands of northwest Oregon increases the likelihood of new invasive species being introduced, which in turn, could affect long-term forest health. Increases in the frequency, duration, and magnitude of drought and heat waves may stress the forest ecosystem. Under climate change, hotter and drier summers will provide more favorable conditions for insect outbreaks and will make trees more vulnerable to infestation. Drought-stressed trees are often subsequently attacked by secondary agents, such as pathogens.

Forest health strategies are addressed on a site-specific basis when reforestation prescriptions are developed for planting and other young stand management treatments. Site-specific prescriptions consider target species, aspect, elevation, soil types, SNC risk where applicable, Phellinus weirii (laminated root rot) presence, required stocking guidelines, natural advanced regeneration, and the desired future condition of the stand. Such prescriptions also anticipate drier, hotter future conditions resulting from climate change. This will provide for a diverse, healthy, productive, and sustainable forest ecosystem over time that will be more resilient to change. The Division will follow the integrated pest management process using site-specific management objectives while decreasing non-target impacts of control measures on other forest resources and ecosystem processes. The integrated pest management process will be similar across the landscape designations.

Actual use of pest management will depend on the issue, regional context, Forest Land Management Classification System (FLMCS) designation, existing conditions, and desired outcomes. For example, insect and disease may be treated differently in HCAs than outside of HCAs, where they have wildlife benefits.

Through the Adaptive Management Plan and Structured Decision-making process, ODF will participate in cooperative applied research and monitoring projects with partner agencies, universities, and organizations that enable cross-ownership, adaptive integrated pest management.

Diseases

Swiss Needle Cast. SNC is a native disease of Douglas-fir that has intensified on coastal lands managed by ODF since 2010. It affects trees of all ages and causes premature loss of needles, especially in the upper crown, which reduces tree growth and vigor. The growth reduction, especially if sustained, will not only reduce yields but also will affect ODF's ability to manage stands into desired conditions. While native throughout the range of Douglas-fir, SNC is most prevalent on the west slopes of the northern Coast Range from the coastline to 28 miles inland. The 2018 SNC aerial survey detected over 53,000 acres of moderate to severe SNC infection. Roughly 90% of infected acres were moderately infected. Most of the acres are concentrated on the Astoria and Tillamook Districts, followed by the West Oregon District.

The remaining acres were split evenly between Forest Grove, Western Lane, and North Cascade Districts. Management actions have occurred over 20 years to harvest the most severely affected Douglas-fir stands and replant with other species such as western hemlock or SNC-tolerant Douglas-fir more suited for sites.

Laminated Root Rot. Laminated root rot, a native fungal disease that affects many conifer species, is the most widespread and destructive root disease of Douglas-fir in the Coast Range and western Cascade Range. On average, it affects about 5% of the Douglas-fir forest, but is distributed unevenly. Results from several surveys show that in northwest Oregon state forest lands, at least 10% of the Douglas-fir-dominated stands is affected by this disease. The acres affected in individual stands ranges from 0% to over 75% of the area. The most susceptible host species are Douglas-fir, grand fir (Abies grandis), and mountain hemlock (Tsuga mertensiana). Western hemlock and noble fir (Abies procera) have intermediate susceptibility, pines and cedars are resistant, and hardwoods are immune.

Black Stain Root Disease. Black stain root disease, caused by the fungus Leptographium wageneri, has been detected in many areas but is thought to be more localized in southwest Oregon. In recent years, reports of black stain root disease in young, intensively managed Douglas-fir stands has increased in the northwest part of the state.

Forest Insects

Douglas-fir Bark Beetle. Douglas-fir bark beetle (Dendroctonus pseudotsugae) usually infest trees following windthrow, disease, or drought. When major disturbance occurs, the large supply of high-quality downed Douglas-fir allows beetle populations to erupt. Outbreaks typically last 2 to 4 years, though can be prolonged when conditions are favorable.

Sitka Spruce Weevil. Sitka spruce weevil (Pissodes strobi) commonly kills the current and 1-year-old terminal shoots of Sitka spruce. The weevil typically affects trees between 3 and 20 years old. Foresters have avoided planting Sitka spruce in western Oregon because repeated weevil outbreaks slow tree growth and produce severe stem deformations.

Spruce Aphid. Spruce aphid (Elatobium abietinum) is an invasive species that causes premature loss of older needles in Sitka spruce and eventually kills branches or the entire tree. Much of the spruce decline along the Oregon coast is attributable to the spruce aphid.

Noxious Weeds

Noxious weeds are terrestrial, aquatic, or marine plants designated by the Oregon State Weed Board under ORS 569.615 as representing the greatest public menace and are a top priority for action by weed control programs. Depending on the classification, ODF is responsible for developing and implementing an eradication plan. Currently, roughly 120 species are listed as a noxious weed across Oregon. Many of these species occur on state forest lands. The most common, Scotch broom (Cytisus scoparius), Himalayan blackberry (Rubus armeniacus), Canada thistle (Cirsium arvense), bull thistle (Cirsium vulgare), and Japanese knotweed (Reynoutria japonica) are well established throughout all state forest lands. Other non-native invasive species on the state's noxious weed list expanding on state forest lands include false brome (Brachypodium sylvaticum), English ivy (Hedera helix), garlic mustard (Alliaria petiolata), and non-native geraniums (Geranium spp.).

Native Habitat Enhancement and Restoration

Native habitat will be restored or enhanced by either passive management (allowing the stand to grow unharvested), actively thinning acres with the intent to promote habitat, or in the case where forest health concerns are present either in the form of heavy Swiss needle cast or hardwood dominated stands that will likely not be able to achieve habitat a modified clearcut may be performed wherein native conifer species will be replanted to promote habitat.

State forest lands have hundreds of species of plants. Native plants fill many roles in the forest ecosystem. They provide organic matter to forest soils, influence micro-climate, support native pollinators, contribute to biodiversity, and are used as cover and forage by many animals. In addition to their ecological functions, some plant species are harvested commercially or for cultural uses. This section focuses on threatened, endangered or rare plants (collectively, sensitive plants), as listed under the state of Oregon's ESA and administratively protected by the Oregon Department of Agriculture Native Plant Conservation Program (ORS 564.105; OAR 603-073).

The Oregon Biodiversity Information Center provides a list of sensitive plants that may be found on state forest lands, as well as records of known locations. Most of these species occur in non-forested areas, such as open, high-elevation rocky areas; open meadows; bluffs; and coastal areas. Six sensitive plant species are known to be present on state forest lands: Coast Range fawn lily (Erythronium elegans), Nelson's checkermallow (Sidalcea nelsoniana), Saddle Mountain bittercress (Cardamine pattersonii), cold-water corydalis (Corydalis caseana ssp. Aquae-gelidae), Chambers' paintbrush (Castilleja chambersii), and frigid shootingstar (Dodecatheon austrofrigidum). ODF is not aware of any other state-listed plant species that are likely to occur on state forest lands.

The Division protects listed plant species in accordance with the state and federal ESAs. The Division has identified listed species that occur, or are suspected to occur, on state forest lands and continues to update these lists (listings and occurrences) in consultation with the Native Plant Conservation Program. During operations planning, the districts determine if listed species occur or are likely to occur on lands where management activities are planned. If so, the district will determine whether the proposed management activities are consistent with the conservation program for the listed species and whether specific protection or mitigation measures are warranted.

Forests are complex ecosystems with numerous biotic and abiotic interactions. Trees are the dominant group of plants on state forest lands. Many state forest lands were affected by repeated, large wildfires or were extensively logged prior to acquisition by the state in the first half of the 20th century. Reforestation

and restoration efforts were implemented across state forest lands to replant burned or harvested lands after the State took ownership. The age and species distribution of state forests lands reflects the history of large fires, salvage logging, and reforestation.

The distribution of dominant tree age on state forest lands affects future management, particularly in the development of silvicultural pathways and conservation strategies aimed at improving adaptive capacity and promoting ecosystem processes that deliver high-quality habitat. Compared to simple stands, forests with complex stands will support more biodiversity and will be more resilient to windfall and insect infestations. Currently, approximately 45% of state forest lands in the planning area have a dominant cohort of trees between 50 and 79 years old. These lands include 53% of the merchantable standing volume in the planning area. Stand ages reflect periods of salvage logging prior to State ownership and subsequent reforestation efforts by the Oregon Department of Forestry (ODF) that occurred after a series of wildfires in 1933, 1939, 1945 and 1951, collectively known as the Tillamook Burn. However, dominant cohort age is not the only factor that influences forest functioning condition. Site productivity, past management practices, and disturbance and disease history interact to produce the forests that ODF manages today. Douglas-fir-dominated forests are the most common forest type on state forest lands. Western hemlock (Tsuga heterophylla)-dominated forests and red alder-dominated forests are the next most common forest types.

On average, trees in state forest lands have a quadratic mean diameter (a measure of average tree diameter) between 11 and 20 inches. A relatively small fraction of trees in the planning area have a quadratic mean diameter of more than 20 inches, reflecting the history of fire, regeneration harvesting, and reforestation on state forest lands. Silvicultural prescriptions may help accelerate radial growth in trees and may help achieve silvicultural and habitat management goals for average tree diameter.

Management history and geography strongly influence the dominance of tree species and stand age across space and through time. Douglas-fir-dominated forests comprise the majority of forests. While other multispecies forest patches exist on state forest lands, they cover a minimal proportion of the planning area. In general, each of these forest types will present distinct silvicultural opportunities, offer different economic return, and provide habitat for different species. These differences are particularly relevant habitat development and timber production.

Hardwood Management

Native hardwood trees provide a diversity of ecological functions and resources for wildlife that complement the conifer-dominated forests typical on state forest lands (Ellis and Betts 2011). Maintaining hardwood diversity within stands may involve appropriate silvicultural interventions, including selecting leave trees during harvests or replanting with diverse species. Management actions for hardwoods may depend on the focus of the stand, such as whether it is intended for harvest of conifers, or a habitat conservation area (HCA) intended to grow more complex habitat. In some cases, hardwood-dominated stands may not provide desired values, such as large trees for wildlife habitat or carbon storage, and may be converted, as in the example of anticipated red alder management below. At the time of writing, stands dominated by hardwoods accounted for just under 15% of total acres in the planning area.

Red alder is a native hardwood that is ecologically and commercially important. In Pacific Northwest forests, red alder readily colonizes disturbed areas, particularly when reseeding or planting of conifers does not occur. Alders contribute to soil creation and nutrient cycling, and improve soil nutrients by fixing nitrogen, while supporting regeneration of shade-tolerant conifers. This ecological role is particularly

important where soil has been damaged by disturbance (e.g., high severity wildfire), such as in portions of the Tillamook Burn area that were subject to repeated fire events.

A history of repeated fires and cut-and-run logging practices, prior to the creation of state forest lands, resulted in relatively large areas dominated by alder on the North Coast and on the Tillamook and Clatsop State Forests in particular. There are more than 70,000 acres of alder-dominated stands in the Tillamook District alone. The age of the dominant cohort in red alder-dominated forests primarily ranges between 40 and 80 years old. Red alder rarely live more than 100 years; thus, red alder mortality in the Tillamook District could increase in the next 20 years as these trees approach the end of their life expectancy. Dead and dying alders provide important nesting and denning habitat for diverse wildlife species. As red alder-dominated stands unravel, the regenerating forest can provide diverse and complex early seral habitats.

The relatively large proportion of alder stands in some state forests landscapes provides opportunities for both passive and active management for specific resource values. The pace, scale, and intent of active management will be different in different emphasis areas. In production emphasis areas, conversion of some hardwood stands to conifer forests is an important priority, but ensuring a continued supply of hardwood logs to local mills remains a priority as well. In conservation emphasis areas (including HCAs), conifer restoration treatments will be more limited, and intended to promote development of habitat for the Western Oregon State Forests Habitat Conservation Plan (HCP) covered species. Hardwood stands in the riparian area would be protected under the HCP, which does not allow conifer restoration treatments in riparian conservation areas (RCAs).

There are at least 30,000 acres of hardwood-dominated stands on operationally limited ground across the planning area. Stand development in these areas will continue to occur without active management. Areas that are not actively managed (e.g., operationally limited areas) provide a basis for comparison of strategies intended to promote conifer and habitat development. The intent is not to remove hardwoods from the landscape or ignore their key roles in biodiversity and ecosystem function, but rather to learn from a broad suite of management approaches in an adaptive management framework.

Forest Roads

Division 625 rules of the FPA establish the standards associated with the management of forest roads.

The State Forests Division has identified the following road design measures from the Forest Roads Manual (ODF 2006 or most current version) and Roni et al. (2002) that will be implemented to minimize potential impacts on the covered aquatic species. The intent of these road design measures, which will also be applied to trail development, is to hydrologically disconnect the road and trail system from streams.

1. Temporary and permanent roads, trails, and landings will be located on stable locations, e.g., ridge tops, stable benches, or flats, and gentle to moderate side slopes, and utilize full-bench construction on steep slopes.
2. Waste will be end-hauled and waste disposal areas will be located on stable locations.
3. Roads or trails at risk of failure, that are contributing sediment to streams, or are a safety hazard will be improved, vacated, or relocated consistent with valid existing rights and to eliminate or minimize sediment delivery.
4. Roads and trails will be located away from streams, wetlands, unstable areas, and sensitive resource sites, including sensitive habitats. Equipment Restriction Zones will be maintained between roads and streams. Removal of old growth trees, or trees with structures known to be

important to the covered species (e.g., potential murrelet nesting platforms) will be avoided, where feasible.

5. Road development within the RCA will only occur when other alternatives are not operationally/economically feasible.
6. Road construction in HCAs will occur if economically/operationally feasible options outside HCAs are not present.
7. Where crossings of fish-bearing streams occur, bridges and culverts will be designed and constructed to meet NOAA Fisheries (2022) and ODFW fish-passage laws (Oregon Revised Statute 509.580 through 910 and in OAR 635, Division 412).
8. New roads and trails will use the minimum design standards practical with respect to road width, radius, and gradient. This will minimize road or trail width and the resultant cut-and-fill slopes, minimizing effects on the covered aquatic species from new road or trail construction.
9. Road and trail designs will provide for proper drainage of surface water so as not to introduce runoff into streams. These measures could include the use of grade breaks, out-sloping, in-sloping, ditching, road/trail dips, water bars, and relief culverts.
10. Ditches and cross-drain discharges will be directed onto the forest floor away from streams to limit runoff and fine sediment delivery into the stream.
11. Cross drains will not discharge onto unstable slopes, and full-bench construction (no sidecast fill) will be used on steep slopes to avoid sidecast failure.
12. Armor fill slopes over culverts where needed to reduce the risk of erosion and failure in case culverts become plugged or overtopped.
13. The road/trail runoff to the stream channel will be disconnected by outsloping the road/trail approach. If outsloping is not possible, runoff control, erosion control, and sediment-containment measures will be used. These may include using additional cross drain culverts, ditch lining, and catchment basins. Ditch flow conveyance to the stream will be prevented or reduced through cross-drain placement above the stream crossing at a distance that allows for adequate overland filtering and absorption.
14. Underdrain structures will be installed when roads/trails cross or expose springs, seeps, or wet areas rather than allowing intercepted water to flow downgradient in ditchlines.
15. Surface drainage structures (e.g., broad based dips, leadoff ditches) will be armored to maintain functionality in areas of erosive and low strength soils. Armoring will be applied along sections where evidence of gullying of the grade, ditches, or outfalls is occurring.
16. New rock quarries will not be located in RCAs. If a borrow site is sited in an Equipment Restriction Zone (ERZ), it will be limited to a single use.

In addition, as with all covered activities, specific nesting sites for marbled murrelet or northern spotted owl will be protected as described in the HCP (Conservation Actions 6: Establish Habitat Conservation Areas, 7: Manage Habitat Conservation Areas, and 10: Seasonal Operational Restrictions).

Road Improvement and Vacating

As described in the draft HCP, many of the historic logging roads that remain in the permit area were not built to current design standards and can be improved. In other cases, historic roads were built in unsuitable areas and, therefore, cannot or should not be maintained because they are unstable, unsafe, or subject to chronic erosion. Where operationally or economically feasible these unsuitable roads will be vacated, closed, and stabilized to benefit the covered species. Requirements for road improvement and road vacating in the permit area are described in this conservation action as landscape enhancements.

Road Drainage Repair Projects

Roads will be repaired or improved at sites that have been determined to be high risk for the covered species due to accelerated erosion and sediment loading, changes in channel morphology, or runoff characteristics of watersheds, all of which cause secondary changes in channel morphology and affect fish habitat (Furniss et al. 1991). Objectives associated with road improvements and associated best management practices are aimed at disconnecting the road system hydrologically from stream channels. Identification and prioritization of large hydrologic disconnection projects will be done as part of each IP, and more opportunistic or immediate needs (e.g., unanticipated culvert failure) will be addressed through the AOP process. To determine what road segments pose a risk to the covered species, the State Forests Division will use the best available data (i.e., historic inventories and watershed assessments) as a starting point to review the conditions of the road system in the permit area and conduct field inspections to identify potential erosion and landslide hazards in proposed harvest areas. Methods for identifying potential landslide areas include initial inspection of high-resolution topographic data (i.e., LiDAR), aerial photographs and, where necessary, field survey by a geotechnical specialist to identify sites with a high likelihood of failure and delivery to a stream (Roni et al. 2002). This process will identify existing roads that should be reconstructed or considered for removal, based on factors identified below, to reduce the potential for failure or contributing sediment to the stream channel:

Sidecast Failures/Slope Stability

- Steep slopes.
- Nearby slope failures.
- High cut-slopes, i.e., over 15 feet high.
- Sidecast over 2 feet deep on steep slopes.
- Fills supported by trees and/or organic debris.
- Arc-shaped cracks in the fill or other evidence of fill movement.

Water Quality/Sediment Delivery

- Direct delivery of sediment in runoff water from roads to streams.
- Ditch downcutting.
- Inadequate depth and/or poor-quality road surfacing.
- Damaged, collapsing, and/or inadequate drainage relief structures. Relief culvert shall be placed in the best location possible to allow filtering of sediment from the road ditches or upslope areas.

Eroding Soil on Cut-and-Fill Slopes

- Buried culverts and ditches.
- Fill erosion at culvert outlet.

Current/Planned Uses of Road

- Unsafe conditions are present, i.e., width, alignment, visibility, etc.
- Volume of traffic exceeds road design.
- Road surfacing will not accommodate current/planned uses.

Several factors will affect the final priority ranking of road projects, including the need and timing of the planned uses of the road; costs and biological benefits of the project; amount and type of environmental damage that is occurring or could occur; likelihood that damage will occur; and the risk of impacts to

human life/safety or private property. Factors such as the availability of funds, equipment, staff capacity, the time of the year, and potential impacts on covered species will affect the scheduling of road improvement projects.

Projects may include the following items.

- Re-aligning the horizontal and/or vertical alignment of the road.
- Upgrading stream crossings and culverts to meet ODFW fish-passage criteria or NOAA Fisheries (2022) fish-passage criteria for streams containing anadromous fishes (Conservation Action 4: Remove or Modify Artificial Fish-Passage Barriers).
- Installing additional cross-drainage structures.
- Reshaping the roadbed and/or ditch line for improved surface drainage.
- Upgrading the road surface by adding new rock.
- Removing and/or stabilizing fill slopes that exhibit instability.
- Relocating sections of roads away from sensitive areas, such as streams or springs.
- Repairing washouts, fill or cut slope failures, and severe damage to road surfacing.

The design of road repair projects will follow the general guidelines for road design and construction described in the Forest Roads Manual (ODF 2006 or most current version). However, because of the nature of some road projects, additional engineering and design work may be needed before construction begins.

Road Vacating

Some roads may need to be improved or vacated due to their proximity to a fish-bearing stream, high erosion potential, or landslide hazards that could affect the covered species when these issues cannot be addressed with road projects. The purpose of vacating roads is to disconnect the road system hydrologically from the stream channels. Vacated forest roads will be left in a condition where road-related damage to the waters of the State is unlikely. When a road is to be vacated and taken off the active road network, erosion prevention work will be performed so that continued maintenance is not necessary. Vacated roads will have sidecast material, stream crossings, culverts, cross drains and fills removed; unstable road and landing fills excavated; ditch and road surfaces treated to disperse runoff and prevent surface erosion; and exposed soils revegetated. Segments of a road that have near-natural levels of risk for sediment delivery can be left intact and receive minimal road drainage improvements. During the permit term, the Division will review roads during the IP and AOP processes to identify sections that will be improved, vacated, closed, and/or gated in across the permit area to benefit the covered species.

Harvesting

Division 630 rules of the FPA establish the standards associated with the harvest of timber.

Landslides are the dominant erosional process in the mountainous terrain of the northwest Oregon State forests, with shallow, rapidly moving landslides being a common feature. These landslides have a depth comparable to the rooting depth of vegetation in steep terrain, which is usually constrained by a relatively hard, impermeable bedrock surface. Shallow slides usually only involve the upper weathered bedrock and overlying soil, are almost always less than 5 feet deep, and have been found to average only 2.5 feet deep at the initiation site (Robison et al. 1999). Because of these characteristics, they can be affected by timber harvest, road construction, and related ground-disturbing activities.

Debris flows can initiate in headwalls or elsewhere on mountain slopes. Steep and convergent terrain is more likely to be an initiation site for these landslides. Debris flows are triggered by saturation of soil

causing slope failures. Some slides occur in the absence of forest-management activities, while some may be related to past logging practices or current management activities. Generally, vegetation removal and ground disturbance increase the likelihood of slope failure during triggering weather events. As landslides are initiated, debris moves downslope. In cases where the slide reaches a confined stream channel, it may continue, incorporating water and becoming a more fluid mass known as a channelized debris flow.

Channelized debris flows can gather volume by adding soil, stream sediment, and woody material as they traverse the stream network to lower topographic positions. These flows are events that can shape stream habitat; however, not all debris flows reach the stream network, and not all channelized debris flows travel into fish-bearing streams. When a channelized debris flow enters a fish-bearing stream, increased sedimentation can deteriorate instream habitat and water quality (Ubechu and Okeke 2017). While channelized debris flows can travel to fish-bearing streams and scour or bury habitat (Thompson and Service 2008), they can also deliver large wood material along with gravels, sands, and silt-sized material to streams. These organic and inorganic materials are requirements for long-term aquatic health affecting processes such as food sources, nutrient cycling, sediment routing, channel morphology, and refugia (Bilby and Bisson 2001). The State Forest Division uses geotechnical expertise in planning and carrying out management activities to minimize the increased risk of slope movements that can result from forest-management operations.

The channel network in the plan area will be evaluated on a harvest unit basis to determine which hill slopes and headwater streams are potential sources of debris flows to fish-bearing streams. Other features, such as inner gorges and aquatic adjacent unstable slopes, are also identified during harvest planning and the field assessment. Aquatic resources are protected by standard stream buffers that relate the width of the adjacent buffer to stream size, flow duration (perennial versus seasonal) and fish presence. In the case of identified slope instability features, these will often add additional buffer width, buffer length, or establish harvest modifications upland not directly adjacent to an RCA. There are three types of these additional protections for aquatic resources that are slope stability related: aquatic adjacent unstable slopes, inner gorges, and upland potentially unstable slopes and their associated debris flow tracks (Table 5); these features are described in detail in the draft HCP.

A three-part hazard-based approachwill be taken to determine the applicability of buffers for upland potentially unstable slopes: (1) is the potentially unstable landform present, (2) what is the potential for debris flow initiation (irrespective of forest management), and (3) if the site fails and a debris flow results will it deliver to a fish-bearing stream (typically via channelized debris flow)?

When evaluating this feature, the geotechnical specialist makes a determination of high, medium, or low potential for slide initiation. A high hazard site is a location that has characteristics indicating a relatively high probability of failing. A medium hazard site may have a relatively high probability of failing. Characteristics of low hazard sites indicate a lack of potential slope instability. Relative hazard can be determined by various indicators. However, a smaller set of features that are themselves the net result of multiple factors, namely slope steepness, topographic and timber indications of instability, and slope shape are more commonly used to indicate risk. The best available scientific information will be used for this assessment including various data sources, models, and other analytic products (e.g., the modeled stream network developed for this HCP [Terrainworks 2020]), however, the final determination of hazard level is based on professional experience and field observation.

The determination to apply 35-foot RCA buffers is based on the likelihood of failure and likelihood of delivering debris to a fish-bearing stream. If a potential initiation site is deemed “high hazard” and there is

any likelihood of delivery to a fish-bearing stream, then harvest modifications are required. These modifications include retaining trees on the high hazard potential initiation site, the portion of the debris flow track occupying any non-stream-featured swale above surface water flow, and establishing a 35-foot RCA buffer along both sides of the potential channelized debris flow track where there are indications of surface water flow, where an RCA is not already designated. In the case of “medium hazard” initiation sites, harvest modification is required that establishes a 35-foot RCA buffer along both sides of the potential channelized debris flow track which traverses any indications of surface water flow. Retaining trees on the potential initiation site or below the initiation site and above the upper extent of surface water flow are not required. In the case of a “low hazard” initiation site, no harvest modification or establishment of an RCA buffer is required below the potential slide initiation site. However, the low hazard stream buffers will retain an ERZ (Figure 10).

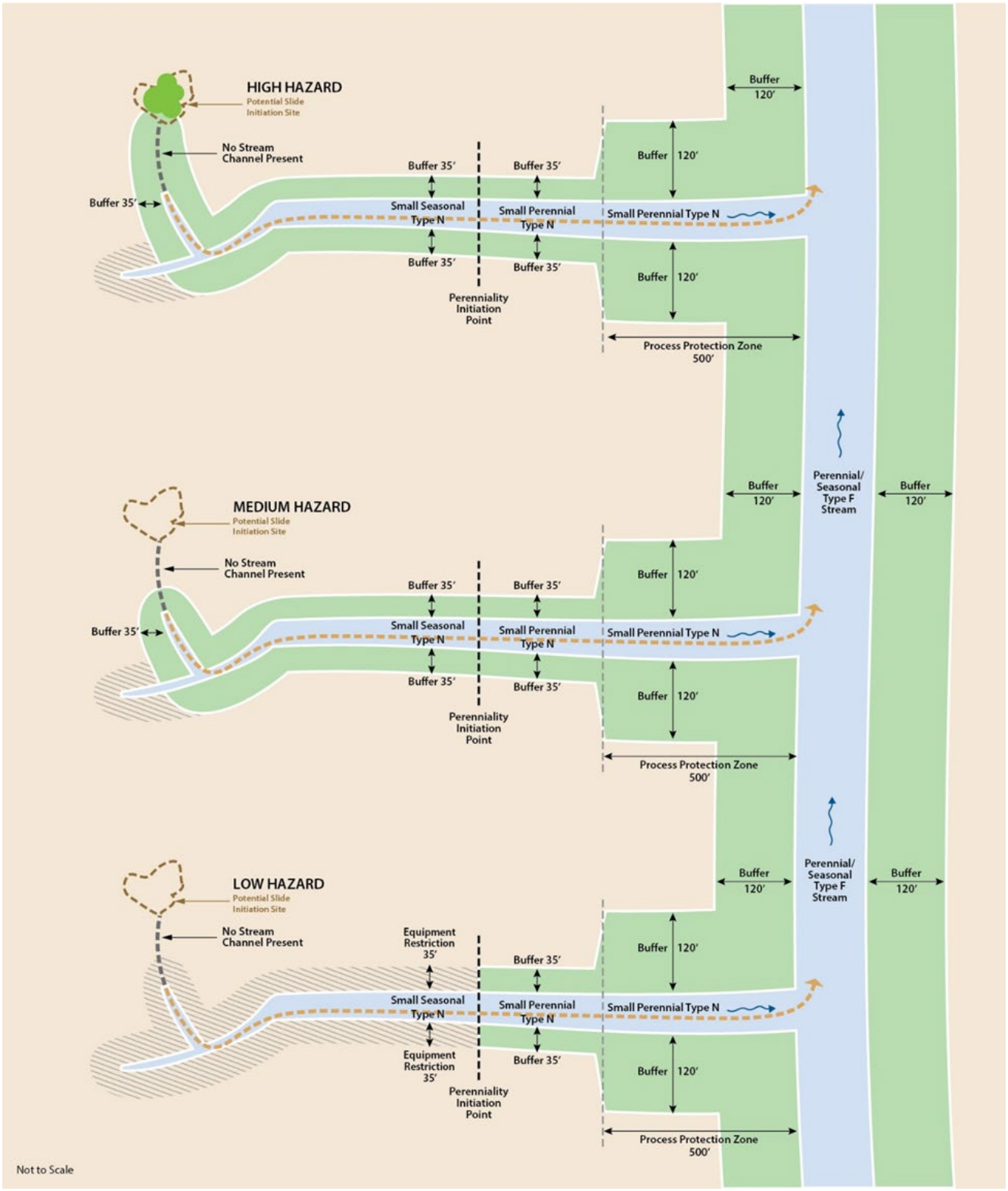


Figure 10. Effects of slide initiation hazard level ratings on Riparian Conservation Areas along seasonal streams.

Table 5. Slope buffers for protection of Type F streams.

Slope Classification	Characteristics	Management Practices	Buffer above Fish Bearing when:
Inner Gorge	Obvious slope breaks of >20% from moderate to steeper slopes of ≥70% and ≥15 feet in height. Not to exceed widths of 170 feet from the edge of the aquatic zone.	No harvest. Leave trees within one canopy width above the slope break, unless at least one conifer of the dominate cohort already occupies the inner gorge, in which case leave trees only within the gorge.	Adjacent to: Type F; Perennial Type N; Seasonal High Energy; Potential Debris Flow Track
Aquatic Adjacent Unstable Slope	Unstable slope immediately adjacent to a channel, where the toe of the unstable slope interacts directly with erosive forces of a stream. Not to exceed widths of 170 feet from water.	No harvest. Retain trees within one canopy width above the unstable slope, unless at least one conifer of the dominate cohort a already occupies the unstable slope in which case leave trees only on the unstable portion of the slope.	Adjacent to: Type F; Perennial Type N; Seasonal High Energy; Potential Debris Flow Track
Upland Potentially Unstable Slopes and Debris Flow Tracks	High Hazard upland slopes: do have relatively high likelihood of slide initiation.	Retain trees within one canopy width above potential slide initiation sites, unless at least one conifer of the dominate cohort a already occupies the site in which case retain trees only on the unstable portion of the slope. Apply 35-foot RCA buffer protections to entire debris flow track including underlying seasonal streams.	Deliverable to Type F stream Debris flow track may traverse other high-energy seasonal and perennial Type N segments between the potential unstable upland site and Type F stream. Applies when large woody debris could become trapped within downstream segments for a time before remobilizing to potentially deliver to fish.
	Medium Hazard upland slopes: *may* have relatively high likelihood of slide initiation.	Apply 35-foot RCA buffer protections to underlying seasonal streams only.	
	Low Hazard upland slopes: do not have a relatively high likelihood of slide initiation.	No harvest modifications required on potential initiation site, debris flow track, or underlying seasonal stream. Retain ERZ on seasonal non-fish stream reach.	N/A

Slope Hazard and Delivery Assessment Process

The assessment of slope hazard and potential delivery involve both a geographic information system (GIS) analysis and field visits, which help in understanding the various factors that could be present at a

particular site that contribute to slope stability hazard. Since to have risk, there must be both a hazard (potentially unstable slope) and a resource at risk (fish-bearing stream), the geotechnical specialist will examine the landscape and consider multiple contributing factors to make a judgment as to the hazard (i.e., risk of slope failure) and the delivery (i.e., risk of debris flow reaching fish-bearing water) for the site.

All planned clearcut harvest units will undergo a GIS screening during the development of operations plans, which may take place 1 to 3 years in advance of harvest activities occurring. Across much of the permit area, there is a low chance of encountering potential sites that require further analysis; however, some areas of generally steeper terrain will require additional analysis and field work to accurately assess specific sites and designate protections. In addition to areas found during screening, field staff may become aware of additional potential slope issues during harvest unit preparation activities such as road design, stream classification and designation, boundary posting, and timber cruising. Any potential slope issues discovered at any point during the planning process or preparation of the harvest unit for auction will be brought to the geotechnical specialist for further review.

A GIS review is conducted on all proposed clearcut harvests and new road alignments using the ODF GIS system. Data reviewed include proposed harvest and buffer locations provided from harvest planners, orthophotographs, stream data (location, size, seasonality, fish presence), underlying geology, and digital elevation models (and associated products) derived from light detection and ranging (lidar). Paramount in the GIS review is the use of LiDAR topographic data, which exists for all lands west of the Cascades. Various renderings of the data are used to evaluate the steepness, shape, and texture of the ground surface, including: analysis of fine-scaled contours[3]; multi-directional hillshade models; slope steepness categories (as percent slope); ODF's HLHL model[4]; and slopeshade (a continuous representation of slope steepness, as percent slope). The modeled stream network, developed for this HCP, showing landslide initiation and delivery risk GIS products, may also be used during this review (Terrainworks 2020). The desktop review often identifies locations of the four landforms described above and associated slope buffers. For upland potentially unstable slope features, delivery to fish-bearing streams can sometimes be determined during this stage of review as well. This review often identifies former landslides and areas of higher hazard that could be affected by harvest activities or that may fail in the future.

The GIS review may necessitate a field review to ground-truth a given site. Various indicators of slope hazard are not fully discernable by the desktop review and can be more fully understood in the field.

After determinations are made from either the GIS review and/or field visit, the landform is identified, and the appropriate vegetative buffer is applied to the harvest area. In the case of road alignments, recommendations often involve special best management practices (BMPs) or complete avoidance of an identified location. Retention of all trees on potentially unstable slopes with a high risk of failure that has any potential to deliver to fish-bearing streams will be mapped and posted, along with additional buffering for downstream debris flow tracks. Additional standing trees may be left adjacent to potentially unstable slopes, due to operational considerations. This tree retention can help reduce the near-term likelihood of landslides due to harvest and associated activities and support the delivery of large woody material to the aquatic environment if they do occur. In addition, trees will be retained within one canopy width above the the identified feature, unless at least one conifer of the dominate cohort already occupies the unstable

[3] Either 5- or 10-foot contours

[4] High Landslide Hazard Location (HLHL) GIS model. Created from Lidar DEM. Slopes longer than 30 feet and ≥ 80% or ≥70% for convergent topography. In forests underlain by the Tyee Formation slope thresholds are 5% less. Thresholds determined from recommendations from ODF's 1996 storm report and issue paper.

slope, in which case trees only need to be left on the unstable portion on the slope. The dominant cohort is being used as a surrogate. It does not imply that only one conifer of this size will be delivered in case of slope failure, but rather, if a conifer of this size is present it is highly likely there will also be other species and conifers on the site to provide adequate large wood to the aquatic system.

While there is no retention requirement for a site with a medium risk of failure that has any potential to deliver to fish-bearing streams, the downstream debris flow track will be mapped and posted, and the site itself will be considered for upland green tree retention.

Aquatic and Riparian Zone Management

Division 643 rules of the FPA establish the standards associated with the management of streamside vegetation. Division 645 rules of the FPA establish the standards associated with the management of significant wetlands. Division 650 rules of the FPA establish the standards associated with the management of lakeside vegetation. Division 655 rules of the FPA establish the standards associated with the management of seeps, springs, and other wetlands. Division 660 rules of the FPA establish the standards associated with operations near waters of the state.

Phase 1 prescriptions follow the Northwest Oregon State Forests Management Plan (see Attachment 2, Appendix J). Phase 2 prescriptions follow the draft Western Oregon State Forests Management Plan (see Attachment 1, Chapter 3) and draft Western Oregon HCP.

Phase 1

Riparian management areas will be established immediately adjacent to waterways for the purpose of protecting aquatic and riparian resources, and maintaining the functions and ecological processes of the waterways. Within these areas, special management considerations and operational restrictions will be applied, and the protection of aquatic resources will be a high priority.

The width of riparian management areas will vary by the type and classification of the water body. These widths were developed by considering the functions and processes to be achieved or maintained by management activities. The width of a riparian management area (RMA) is measured horizontally beginning at the average high-water level of the water body, or the edge of stream-associated wetland, side channel, or channel migration zone (whichever is farthest from the waterway), and extending toward the uplands. The width of these areas will be expanded, if necessary, to fully encompass certain sensitive sites such as inner gorge areas, or other special sites noted in the management prescriptions.

Determination of the applicable management standards for riparian areas is based on a stream classification system. Streams are grouped into two major categories based on the primary beneficial uses of the stream. Streams are further classified according to size, based on average annual flow. Flow pattern (perennial and seasonal) is also considered for small non-fish-bearing waters.

Beneficial Use Classifications

Streams, and other aquatic habitats, are classified into two major groups based on the presence or absence of certain fish species. The following definitions will be applied in classifying streams.

- Fish-bearing (Type F) — Waters that are inhabited at any time of the year by anadromous or game fish species, or by fish species that are listed as threatened or endangered under either federal or state Endangered Species Acts.

- Non-fish-bearing (Type N) — Waters that are not fish-bearing (see previous definition).

Stream Size Classifications
Streams are further classified by size, based on estimated average annual flow. The following definitions apply to these size categories.

- Small — Average annual flow of 2 cfs (cubic feet per second) or less.
- Medium — Average annual flow greater than 2 cfs, but less than 10 cfs.
- Large — Average annual flow of 10 cfs or greater.

Flow Pattern Classifications
Small non-fish-bearing (Type N) streams are also classified according to the flow pattern exhibited in normal water years. For the purposes of this plan, the following definitions will be used.

- Perennial Type N streams — streams that are expected to have summer surface flow after July 15.
- Seasonal Type N streams — streams that only flow during portions of the year; these streams are not expected to have summer surface flow after July 15.

Some seasonal non-fish-bearing streams are further classified as:

- Seasonal high energy streams — Seasonal streams with physical conditions that favor the periodic transport of coarse sediments and woody materials during high flow events. For the purposes of this plan, and in the absence of specific geomorphologic identification, stream reaches with an average gradient exceeding 15 percent, and an active channel width of five (5) feet or more will be defined as seasonal high energy streams.
- Potential debris flow track reaches — Potential debris flow track reaches are reaches on seasonal Type N streams that have been determined to have a high probability of delivering woody debris to a Type F stream.

The applicable management standards are found in Table 6 (Table J-1 in the Northwest Oregon State Forests Management Plan) for Type F streams, Table 7 (Table J-2 in the Northwest Oregon State Forests Management Plan) for large and medium Type N streams, Table 8 (Table J-2 in the Northwest Oregon State Forests Management Plan) for small perennial Type N streams, and Table 9 (Table J-2 in the Northwest Oregon State Forests Management Plan) for small seasonal Type N streams.

Table 6. Management standards for Type F Stream riparian management areas.

Table J-1. Management Standards for Type F Stream RMAs

All Stream Sizes: Large, Medium, and Small	
Stream bank zone 0-25 ft.	• No harvest. • Less than 10% vegetative disturbance. • Full suspension required during cable yarding. • No ground-based equipment operation. • Leave any trees damaged or felled from yarding activities.
Inner RMA zone 25 to 100 ft.	• Manage for mature forest condition.[1] • No management activity where mature forest condition (MFC) exists, or where conditions are suitable for development of MFC in a reasonable time frame without further treatment. • Actively manage where necessary to achieve the desired future condition in a timely manner. • Minimum 15-year interval between harvest entries, and minimum number of entries necessary to achieve the desired future condition. • Partial cutting will maintain a conifer density of at least SDI 25%, and will retain at least 50 TPA. • No more than 10% vegetative disturbance allowed from cable yarding. • Full suspension wherever possible, or one-end suspension on all cable-yarded material. • Ground-based equipment operation limited to area more than 50 ft. from aquatic zone and slopes less than 35%, and allowed on no more than 10% of area. • Leave any trees damaged or felled from yarding activities and additional felled, girdled or topped trees to contribute toward down wood targets.[2] • Retain all dead and down material that was present prior to the operation.
Outer RMA zone 100 to 170 ft.	• Retain at least 10 to 45 [3] conifer trees and snags per acre (15 to 70 trees per 1,000 ft. of RMA). [4] • Retain all snags as safety permits. • Less than 10% ground disturbance from yarding activities. • Retain all dead and down material that was present prior to the operation.

1. Desired mature forest condition consists of a stand dominated by large conifer trees, or where hardwood-dominated conditions are expected to be the natural plant community, a mature hardwood/shrub community. For conifer stands, this equates to a basal area of 220 square feet or more per acre, inclusive of all conifers over 11 inches DBH. At a mature age (80-100 years or greater), this equals 40-45 conifer trees 32 inches in DBH per acre.
2. Up to 10 trees per acre will be retained as felled, girdled, or topped trees during partial cutting, to reach a target of 600-900 cubic feet per acre of hard down wood.
3. Outer zone tree retention target will be increased when less than the target number of conifers is present in the inner zone. The process for calculating the outer zone retention target is described in the section following the RMA prescription tables.
4. All trees retained will be dominant or co-dominant conifer trees (if available). In order to balance the need for short-term and long-term recruitment of large wood to the aquatic zone, preference will be given to retaining trees on adjacent slopes, trees leaning toward the aquatic zone, and trees closest to the channel.

Table 7. Management standards for large and medium Type N streams.

Table J-2. Management Standards for Type N Stream RMAs

	Large and Medium Type N Streams
Stream bank zone 0-25 ft.	• No harvest. • Less than 10% vegetative disturbance from cable yarding. • Full suspension required. • No ground-based equipment operation. • Leave any trees damaged or felled from yarding activities.
Inner RMA zone 25-100 ft.	• Manage for mature forest condition.[1] • No management activity where mature forest condition target already exists. • Actively manage where beneficial to achieve desired future condition. • Minimum 15-year interval between harvest entries, and minimum number of entries necessary to achieve the desired future condition. • Partial cutting will maintain a conifer density of at least SDI 25%, and will retain at least 50 TPA. • No more than 10% vegetative disturbance allowed from cable yarding. • Full suspension wherever possible, or one-end suspension on all cable-yarded material. • Ground-based equipment operation limited to area more than 50 ft. from aquatic zone and slopes less than 35%, and allowed on no more than 10% of area. • Leave any trees damaged or felled from yarding activities and additional felled, girdled or topped trees to contribute to down wood targets.[2] • Retain all dead and down material that was present prior to the operation.
Outer RMA zone 100-170 ft.	• Manage to retain at least 10 conifer trees and snags per acre (15 trees per 1,000 ft. of RMA).[3] • Retain all snags as safety permits.

1. Desired mature forest condition consists of a stand dominated by large conifer trees, or where hardwood-dominated conditions are expected to be the natural plant community, a mature hardwood/shrub community. For conifer stands, this equates to a basal area of 220 square feet or more per acre, inclusive of all conifers over 11 inches DBH. At a mature age (80-100 years or greater), this equals 40-45 conifer trees 32 inches in DBH per acre.
2. Up to 10 trees per acre will be retained as felled, girdled, or topped trees during partial cutting, to reach a target of 600-900 cubic feet per acre of hard down wood.
3. All trees retained will be dominant or co-dominant conifer trees (if available). In order to balance the need for short-term and long-term recruitment of large wood to the aquatic zone, preference will be given to retaining trees on adjacent slopes, trees leaning toward the aquatic zone, and trees closest to the channel.

Table 8. Management standards for small perennial Type N streams.

Table J-2 continued. Management Standards for Type N Stream RMAs

Small Perennial Type N Streams (applied to at least 75% of reach)[1]	
Stream bank zone 0-25 ft.	• No harvest. • No ground-based equipment operation.
Inner RMA zone 25-100 ft.	• Manage to retain at least 15-25 conifer trees and snags per acre (25-40 trees per 1,000 ft. of RMA).[2,3] • Retain all other snags as safety permits. • Within 500 ft. of a confluence with a Type F stream, retain all hardwoods, non-merchantable trees, and other conifers as necessary, to achieve 80% shade over aquatic zone. • Retain all dead and down material that was present prior to the operation.
Outer RMA zone 100-170 ft.	• Manage to retain 0-10 conifer trees and snags per acre (0-15 trees per 1,000 ft. of RMA).[2,3] • Retain all snags as safety permits.

1. Prescription to be applied to at least 75% of perennial stream reach, including the first 500 ft. above the confluence with a Type F, and areas that meet the definition of a Special Emphasis Area (SEA) according to the definitions in the section following these tables.
2. All trees retained will be dominant or co-dominant conifer trees (if available). In order to balance the need for short-term and long-term recruitment of large wood to the aquatic zone, preference will be given to retaining trees on adjacent slopes, trees leaning toward the aquatic zone, and trees closest to the channel.
3. In meeting the tree retention target for the inner and outer zones, preference will be given to retaining trees within the inner zone. Where there are sufficient trees within the inner zone to meet the combined target for the two zones (40 trees per 1,000 ft.), then no additional leave trees are required in the outer zone.

Table 9. Management standards for small seasonal Type N streams.

Table J-2 continued. Management Standards for Type N Stream RMAs

Small Seasonal Type N Streams: High Energy Reaches (applied to at least 75% of reach)[1]	
Stream bank zone 0-25 ft.	• No harvest. • No ground-based equipment operation.
Inner RMA zone 25-100 ft.	• Manage to retain at least 15-25 conifer trees and snags per acre (25-40 trees per 1,000 ft. of RMA).[2,3] • Retain all other snags as safety permits. • Retain all dead and down material that was present prior to the operation.
Outer RMA zone 100-170 ft.	• Manage to retain 0-10 conifer trees and snags per acre (0-15 trees per 1,000 ft. of RMA).[2,3] • Retain all snags as safety permits.
Small Seasonal Type N Streams: Potential Debris Flow Track Reaches (applied to at least 75% of reach)[1]	
Stream bank zone 0-25 ft.	• No harvest. • No ground-based equipment operation.
Inner RMA zone 25-100 ft.	• Manage to retain at least 10 conifer trees and snags per acre (15 trees per 1,000 ft. of RMA).[2,4] • Retain all other snags as safety permits. • Retain all dead and down material that was present prior to the operation.
Outer RMA zone 100-170 ft.	• Retain trees and snags sufficient to meet landscape management strategy targets.
Other Small Seasonal Type N Streams (applied to at least 75% of reach)	
Stream bank zone 0-25 ft.	• Maintain integrity of stream channel. • No ground-based equipment operation.
Inner RMA zone 25-100 ft.	• Manage to retain at least 10 conifer trees and snags per acre where operationally feasible (16 trees per 1,000 ft. of RMA).[2] • Retain all other snags as safety permits. • Retain all dead and down material that was present prior to the operation.
Outer RMA zone 100-170 ft.	• Retain trees and snags sufficient to meet landscape management strategy targets.

1. Prescription to be applied to at least 75% of stream reach, including the first 500 ft. above the confluence with a Type F stream.
2. All trees retained will be dominant or co-dominant conifer trees (if available). In order to balance the need for short-term and long-term recruitment of large wood to the aquatic zone, preference will be given to retaining trees on adjacent slopes, trees leaning toward the aquatic zone, and trees closest to the channel.
3. In meeting the tree retention target for the inner and outer zones, preference will be given to retaining trees within the inner zone. Where there are sufficient trees within the inner zone to meet the combined target for the two zones (40 trees per 1,000 ft.), then no additional leave trees are required in the outer zone.
4. To maximize the influence of retained trees on debris flow processes, preference will be given to retaining these trees as close to the stream channel as operationally feasible, or on adjacent slope features that exhibit a high potential for failure and delivery to the stream.

Phase 2

The State Forests Division will implement a riparian management strategy to ensure important riparian functions are maintained to provide suitable habitat for native fish and torrent salamanders. Riparian functions include large wood and gravel recruitment, stream shading, nutrient input, and streambank integrity, many of which are limiting factors identified. Maintaining intact Riparian Conservation Areas (RCAs) will increase ecosystem resilience by buffering ecological function against changes in streamflow (Beechie et al. 2012). Stand-management activities will not occur in the RCAs.

The width of RCAs will vary based on stream size, stream type, and fish presence (fish versus non-fish) (Table 10 and Table 11; Figure 11). The structure of the RCAs is as follows:

Large and medium non-fish-bearing streams will be treated the same as fish-bearing streams; all will have a 120-foot (horizontal distance) RCA that extends from the aquatic zone.

Seasonal fish-bearing streams will have a 120-foot (horizontal distance) RCA for the entire stream segment (Table 10. Buffer widths (horizontal distance) for all Type F and Large and Medium Type N streams.Table 10).

Small, perennial non-fish-bearing streams will retain a 120-foot RCA (horizontal distance) for the first 500 feet upstream from the end of fish use on perennial fish-bearing streams, to create a process protection zone. The process protection zone will ameliorate the rise of stream temperature to less than 0.3°C above baseline prior to mixing with fish-bearing stream waters. Upstream of the 500-foot process protection zone, the buffer will be 35 feet (horizontal distance) from the aquatic zone.

Seasonal non-fish-bearing streams that are potential debris flow track or high-energy reaches that have the potential to deliver to fish-bearing streams will have RCAs that extend 50 feet (horizontal distance) from the aquatic zone for the first 500 feet upstream of the end of fish use to recruit wood into streams from standing trees. Upstream of the 500-foot process-protection zone, the buffer will be 35 feet (horizontal distance) from the aquatic zone to the potential initiation site in potential debris flow track or high-energy reaches (Table 11; Figure 12). This length and width combination is sufficient to contain 98% and 93% of all debris flow impact widths, respectively, based on unpublished debris flow track data collected from two 1996 storms (Robison et al. 1999.). As a result, existing standing trees and downed wood within reaches identified as likely debris flow tracks will be available as large wood inputs to the aquatic system, mimicking the natural mass wasting regime.

Seasonal non-fish reaches that are not potential debris flow tracks or high energy as described above will not have an RCA, but they will have a 35-foot equipment restriction zone (ERZ). Ground-based operations will be limited to only conservation actions, those actions required for felling and removal of trees, and road and trail building and maintenance. Disconnected sections of seasonal streams (e.g., no stream channel or evidence of surface flow) will not have RCAs except ground-based equipment restrictions. The ERZ is further described in Conservation Action 2: Riparian Equipment Restriction Zones. The differing buffer strategies for the three seasonal stream types are depicted in Figure 13.

Table 10. Buffer widths (horizontal distance) for all Type F and Large and Medium Type N streams.

	Management Area Width (feet)[a]	
Stream Type	**Type F**	**Type N**
Large	120	120
Medium	120	120
Small	120	See Table 11
Seasonal[b]	120	See Table 11

[a] Distance will be measured horizontally, which results in the implementation of larger buffers in steeper terrain (see Figure 15).

[b] Seasonal: A stream that does not have surface flow after July 15.

Table 11. Riparian Conservation Area widths (horizontal distance) for Small Perennial and Season Type N streams.

	Management Area Width (feet)[a]	
Stream Type	**Within 500-foot Process Zone**	**Upstream of 500-foot Process Zone**
Perennial small Type N	120	35
Potential debris flow track (Seasonal Type N)[b]	50	35
High energy (Seasonal Type N)[c]	50	35
Seasonal other (Type N)[d]	0[e]	0[e]

[a] Distance will be measured horizontally, which results in the implementation of larger buffers in steeper terrain (see Figure 15).

[b] Potential debris flow tracks: Reaches on seasonal Type N streams with potential to deliver wood to a Type F stream.

[c] High Energy: Reaches on seasonal Type N streams with the potential to deliver wood and sediment to a Type F stream during a high-flow event.

[d] Seasonal: A stream that does not have surface flow after July 15.

[e] A 35-foot equipment restriction zone will apply to these streams.

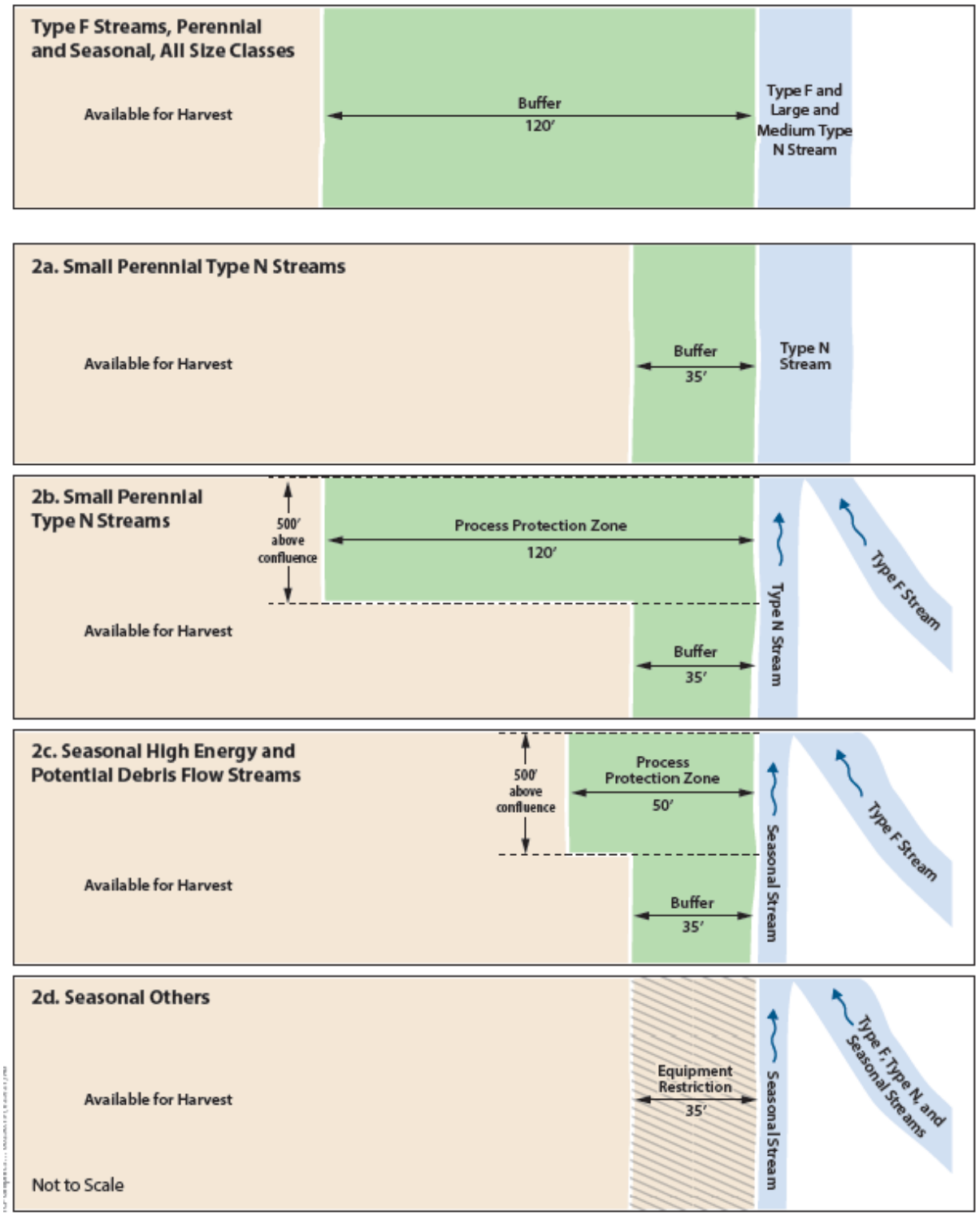


Figure 11. Riparian Conservation Areas on Type F and N Streams, Perennial and Seasonal, All Size Classes.

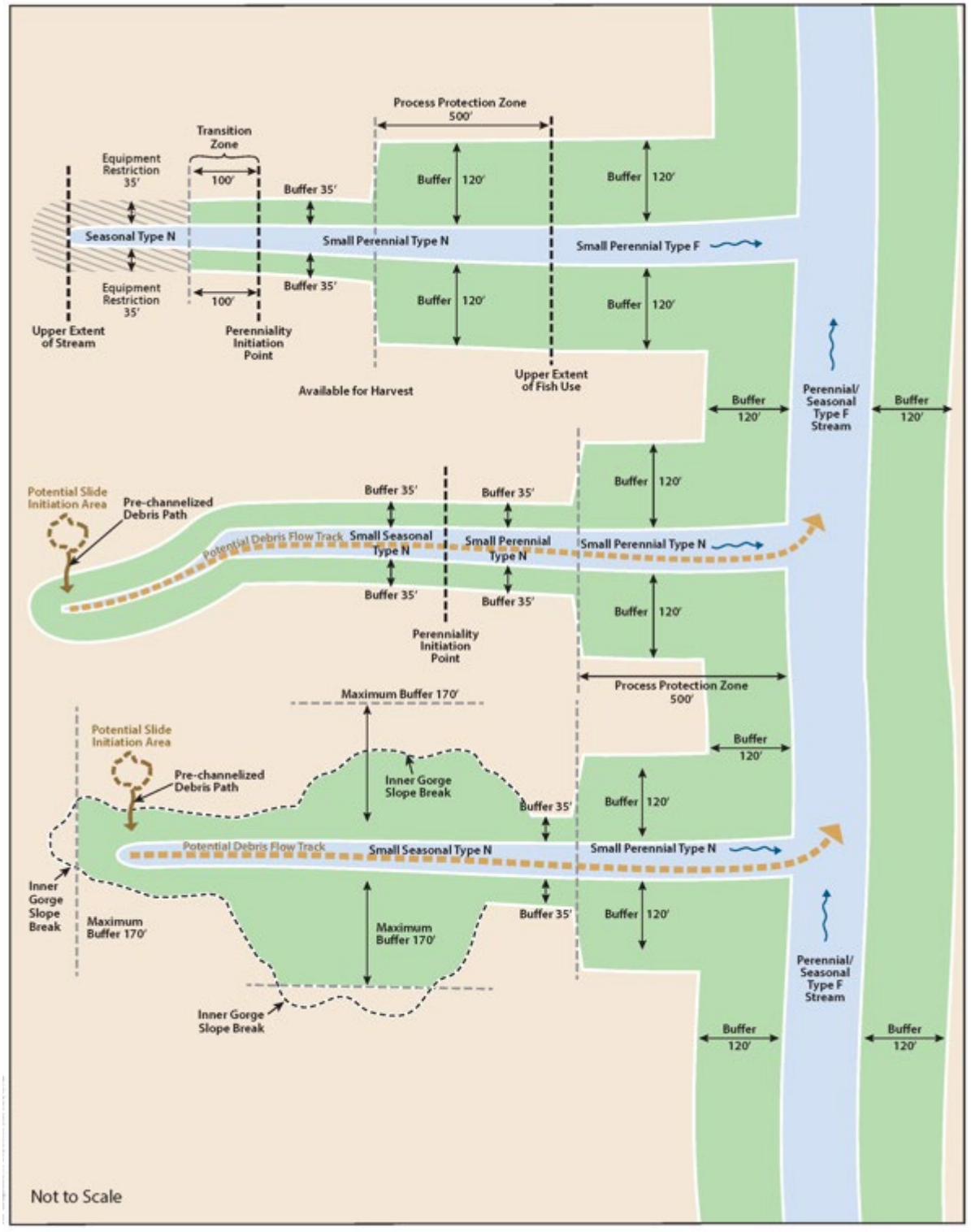


Figure 12. Riparian Conservation Areas in Process Protection Zones.

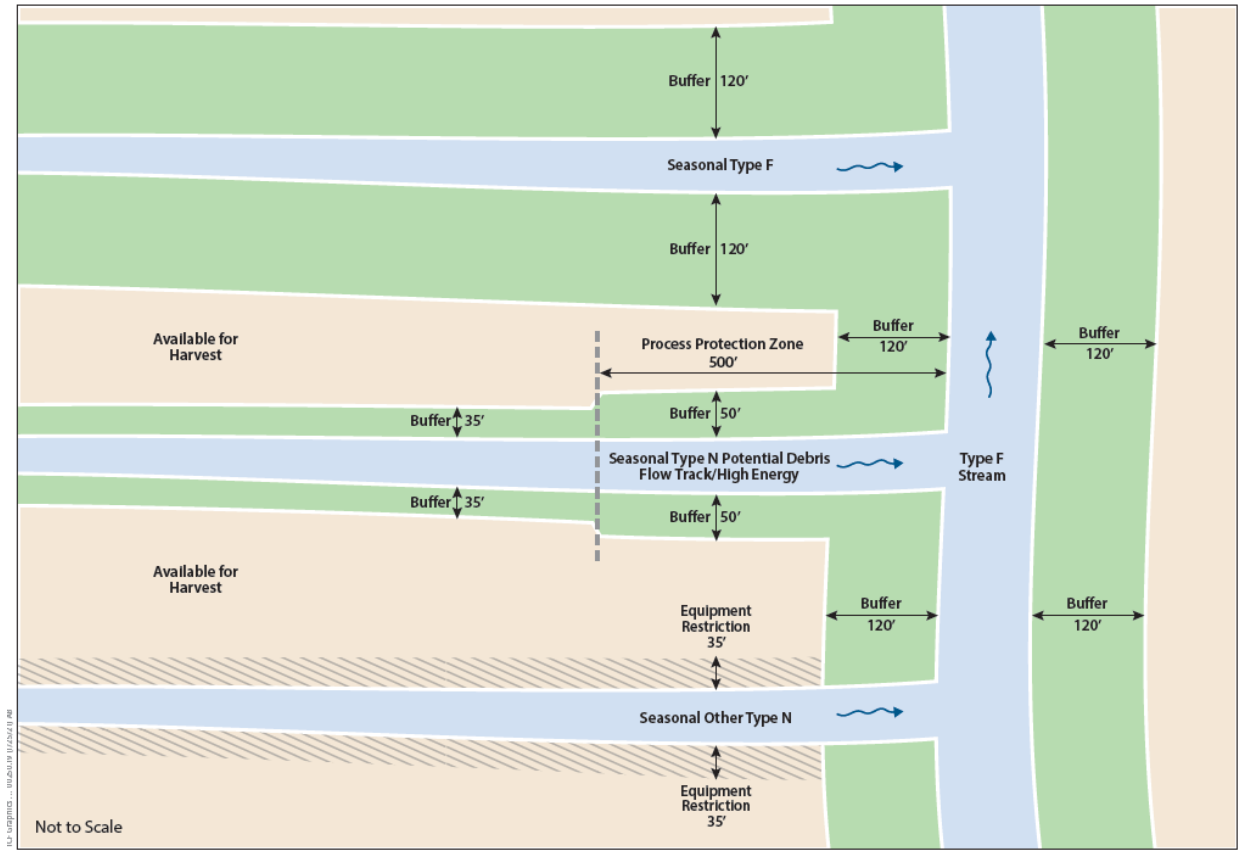


Figure 13. Riparian Conservation Areas along seasonal streams.

If stream-associated seeps and springs occur in a harvest unit, their extent will be evaluated when determining the RCA. Where a seep or spring is connected to a perennial stream, as determined by either surface flow or the presence of wetland plants or hydric soils, it will be included in the RCA buffer for that stream. Where the seep or spring is not fully encompassed by the RCA for the associated stream, the RCA will be extended to encompass it with a 35-foot buffer (Figure 14).

The width of the RCA will be expanded to a maximum of 170 feet, to more fully encompass nearby inner gorges and aquatic adjacent unstable areas, as described in the draft HCP (Section 4.7.1.4, *Special Considerations for Potentially Unstable Slopes)*. Where either of these slope features are identified, the RCA will be extended. The extension will go to the inner gorge slope break or the top of the adjacent unstable slope, up to a maximum of 170 feet (horizontal distance) from the edge of the aquatic zone, whichever occurs first (Figure 14). The additional RCA width in these areas will ensure that potentially negative impacts from landslides and other soil movement (i.e., sloughing) will be minimized and the RCAs will function to the benefit of the aquatic system through wood delivery and nutrient cycling, and provide additional shade to streams where slope aspect is favorable.

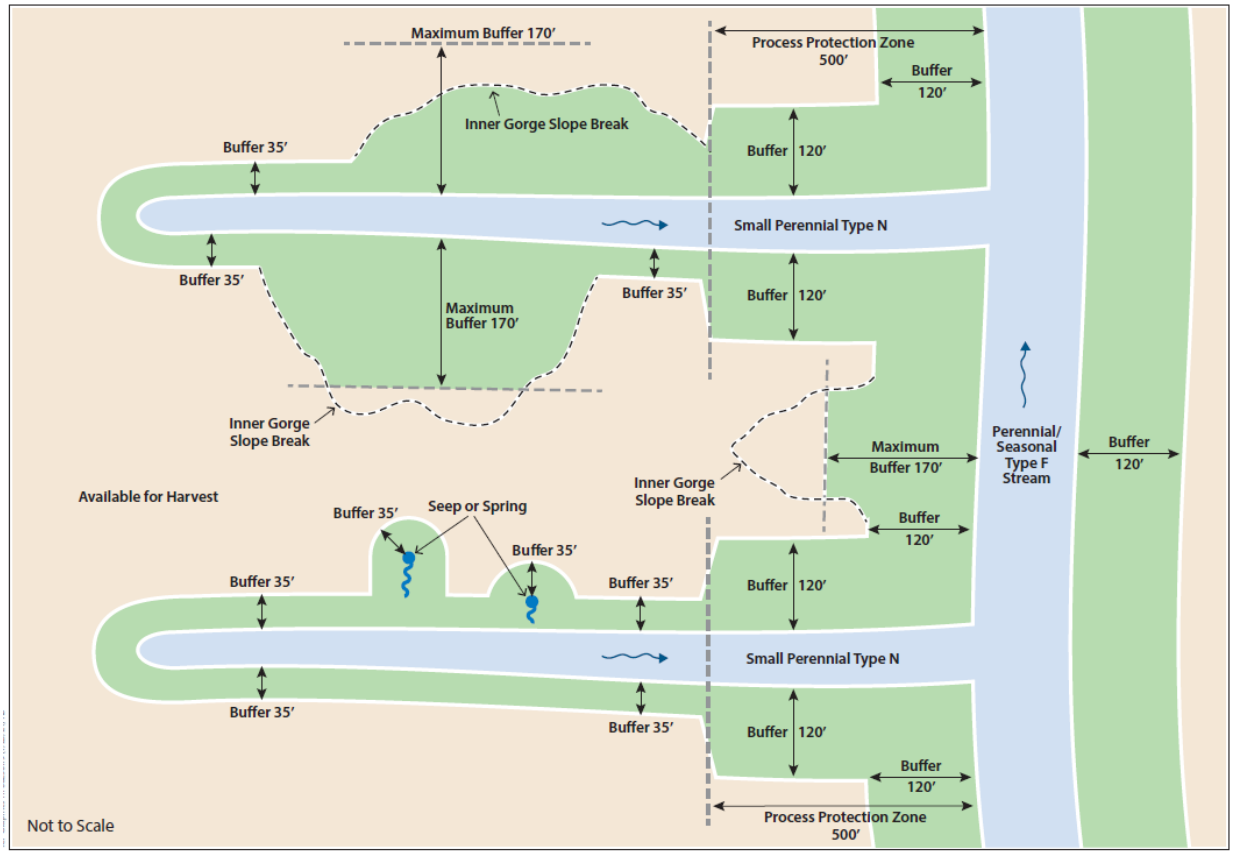


Figure 14. Effects of seeps, springs, and inner gorges on Riparian Conservation Areas.

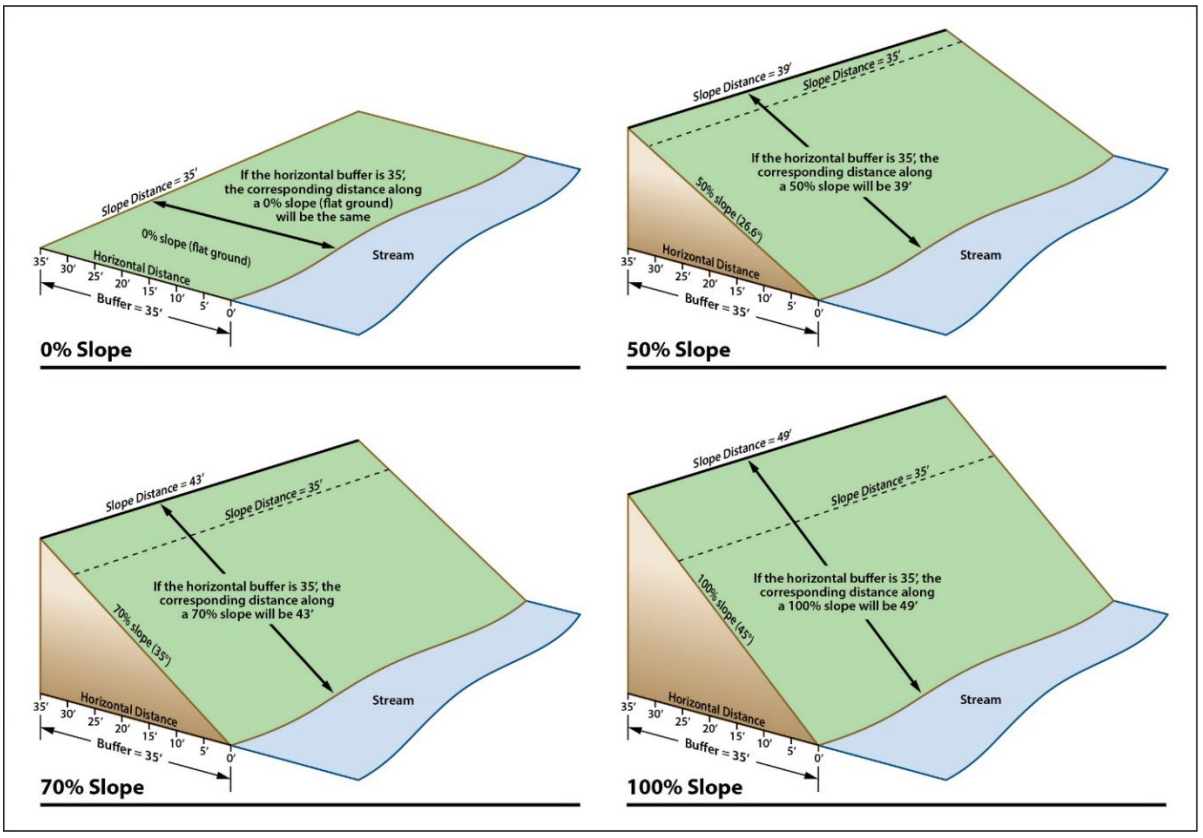


Figure 15. Examples of the horizontal distance measurement of a 35-foot Riparian Conservation Area.

Equipment Restriction Zones

Management directions for how to operate inside of ERZs (0 to 35 feet) are listed below for each stream type.

All Type F Streams, All Sizes (Large, Medium, and Small)

Road, trail, temporary stream crossings, culvert, and restoration activities:

- Limit work location and activities to access, excavation, and other earth work needed for construction/removal of stream crossings, general road/trail maintenance, culvert installation/replacement, and instream restoration projects.
- Minimize construction and project footprint, and limit tree and vegetation removal to not extend beyond what is necessary to accomplish the activity.
- Follow best management practices identified in Conservation Action 11: Road and Trail Construction and Management Measures.

Yarding activities:

- No tree felling beyond what is necessary for safe, operational accommodation of the activity.
- Full suspension required during cable yarding.
- No ground-based equipment operation.
- Leave any trees damaged or felled in RCAs from yarding activities, unless designated for in-water placement in other areas.
- Where possible, fall trees toward the stream.

- Average yarding corridors to be 15 to 20 feet wide, with a maximum of 35 feet (up to 10% of corridors on a given reach within a harvest unit), and be spaced no closer than 100 to 150 feet apart.

Large and Medium Type N Streams

Road, trail, temporary stream crossings, culvert, and restoration activities:

- Limit work to only those actions required for construction/removal of stream crossings, general road/trail maintenance, culvert installation/replacement, and instream restoration projects.
- Minimize construction and project footprint, and limit tree and vegetation removal to not extend beyond what is necessary to accomplish the activity.
- Follow best management practices identified in Conservation Action 11: Road and Trail Construction and Management Measures.

Yarding activities:

- No tree felling beyond what is necessary for safe, operational accommodation of the activity.
- Full suspension required during cable yarding.
- Average yarding corridors to be 15 to 20 feet wide, with a maximum of 35 feet (up to 10% of corridors on a given reach within a harvest unit), and be spaced no closer than 100 to 150 feet apart.
- No ground-based equipment operation.
- Leave trees damaged or felled from yarding activities.
- Where possible, fall trees toward the stream (consistent with slash removal specifications outlined in OAR 629-630-0600).

Small Perennial Type N, Small Seasonal Type N: High-Energy and Potential Debris Flow Track Streams

Road, trail, temporary stream crossing, culvert, and restoration activities:

- Limit work to only those actions required for construction/removal of stream crossings, general road/trail maintenance, culvert installation/replacement, and instream restoration projects.
- Minimize construction and project footprint, and limit tree and vegetation removal to not extend beyond what is necessary to accomplish the activity.
- Follow best management activities identified in Conservation Action 11: Road and Trail Construction and Management Measures.

Yarding activities:

- No tree felling beyond what is necessary for safe, operational accommodation of the activity.
- No ground-based equipment operation.
- Full Suspension required during cable yarding.
- Leave trees damaged or felled from yarding activities.
- Average yarding corridors to be 15 to 20 feet wide, with a maximum of 35 feet, and be spaced no closer than 100 to 150 feet apart.
- Where possible, fall trees toward the stream and leave in the RCA

Other Seasonal Type N Streams

Road, trail, temporary stream crossings, culvert, and restoration activities:

- Limit work to only those actions required for construction/removal of stream crossings, general road/trail maintenance, culvert installation/replacement, instream restoration projects, and timber harvest.
- Minimize construction and project footprint, and limit tree and vegetation removal to not extend beyond what is necessary to accomplish the activity.
- Follow BMPs identified in Conservation Action 11: Road and Trail Construction and Management Measures.
- Follow BMPs with the identified biological connections for the covered aquatic species detailed in draft HCP, including:
    - Maintain integrity of stream channel and limit skid trail and stream crossing damage.
    - Limit soil disturbance to 10% of ERZ in harvest unit.
    - Ground based operations and one end suspension cable operations will occur when there is no flowing or ponded water within the seasonal stream.
    - Limit damage to non-merchantable vegetation and retain existing down wood and stumps.
    - Avoid slash accumulation in stream channels and ERZ.

Yarding activities:

- Limit ground-based equipment operation to only conservation actions and those actions required for felling and removal of trees.

Stream Enhancement

Stream enhancement projects will focus on restoring natural processes to create habitats that improve overall conditions for the covered species and other aquatic organisms in the permit area, allowing for immediate improvements to instream complexity, while the adjacent riparian forests are developing to provide long-term benefits.

The State Forests Division will support restoration projects through a multitude of options including the development of a Conservation Fund for the Division to execute restoration projects. For aquatics, the fund will focus on improvements that address limiting factors of the fish species covered by the HCP. Stream enhancement projects can range from installation of large woody material to more complex floodplain reconnections or channel restoration projects.

Project planning and design will consider basin, watershed, species action plans and assessments, local knowledge and expertise of current habitat conditions, intrinsic potential, stream processes, and the disturbance regime at the watershed and basin scale to identify areas best suited for enhancement. Projects will be designed and implemented consistent with the natural dynamics and geomorphology of the site and with the recognition that introduction of materials will cause changes to the stream channel. Projects will be selected that contribute to the timely improvement of desired aquatic conditions for the covered species within the permit area, described in the biological objectives. Depending on available resources, projects will be designed to create conditions and introduce materials sufficient to enhance or reestablish natural physical and biological processes.

Over the course of the permit term the State Forests Division will complete 440 instream improvement projects, with an average of 60 projects being constructed per decade. Projects are expected to be located in areas where covered activities are occurring, with most work being focused in the northwest portion of

the permit area (i.e., Clatsop and Tillamook State Forests). Ten-year restoration targets will be identified as part of the Aquatic Inventory Program (AIP) process using the identification of high-intrinsic-potential stream reaches in the permit area so restoration projects target key areas that will produce the most beneficial response for the covered aquatic species (Burnett et al. 2007). Stream enhancement targets will be tied to and commensurate with the level of harvest expected in any one evolutionarily significant unit (ESU) during that 10-year implementation planning cycle. Chapter 6 of the draft HCP describes how aquatic enhancement activities will be tracked during the HCP permit term, including how Conservation Fund monies are expended on stream enhancement projects. Targeting specific limiting factors such as large woody material and overwinter habitat will achieve immediate benefits to salmon, steelhead, or other aquatic species. Long-term benefits will be achieved through a focus on restoring habitat-forming processes, riparian vegetation, and connectivity in line with the reach's natural potential.

Beaver Management

Beaver (*Castor canadensis*) create ponds and other slow-water aquatic areas that provide important habitat for salmonids. Widespread commercial trapping in the 1800s resulted in declines in the beaver population. Today, beaver populations have rebounded, with populations occupying most of their former range (Naiman et al. 1998). The presence of beavers can strongly influence salmon populations in the side channels of large alluvial rivers by building dams that create pond complexes (Malison et al. 2016). Beaver ponds and slow-water habitat created by beaver provide important summer rearing and overwintering habitat (Castro et al. 2015). Pollock et al. (2004) found that smolt production increases significantly in systems where beavers are present. In coastal Oregon streams, reaches with beaver ponds and alcoves account for 9% of the habitat, but support 88% of the coho that were found in the system (Nickelson et al. 1992).

While beavers can occur in a variety of habitats, within the permit area they are likely to construct dams on small- to medium-sized, low-gradient streams that flow through unconfined valleys with a preference toward the lower gradient areas with *Populus* and *Salix* species (e.g., cottonwood and willows; Castro et al. 2015 and Suzuki and McComb 1998). Recent restoration work tends to rely on large wood to create salmon rearing habitat. Alternative management measures that would create the same types of pool habitat required by juvenile coho would be to promote natural recolonization of unoccupied dam habitat (Epps et al. 2021) or augment existing populations of beaver through relocation (Petro et al. 2015). Increasing the number of beaver dams in key areas could create high-quality rearing habitat that promotes stream complexity and increases smolt capacity (ODFW 2009).

ODF will support the natural colonization and expansion of beavers in the permit area to promote watershed restoration and improvement of salmon and steelhead rearing habitat. ODF identified areas in the permit area with the potential to provide suitable beaver dam habitat based on predictive intrinsic habitat characteristics identified by Suzuki and McComb (1998) and Petro et al. (2020). Quality beaver habitat can occur in all portions of the permit area; however, the majority of modeled suitable beaver dam habitat is located in the Clatsop State Forest and eastern portion of the Tillamook State Forest. These areas will be used to inform future stream enhancement project locations and potential relocation sites where dam structures will benefit salmon rearing habitat or other aquatic species.

When human-beaver conflict occurs, non-lethal management actions will be pursued and documented. If a beaver is found to continually dam a particular culvert, ODF will determine if that road crossing may be modified to reduce potential safety hazards that may be associated with beaver dam construction and other obstacles to water flow and debris movement. Increasing the size of culverts and/or suspending roads to eliminate culverts will increase road safety, reduce road maintenance costs, and reduce the frequency of responding to beaver-related flooding of roads. Installation of a flexible pond leveler or beaver deceiver will be considered. If device

installation is unfeasible, beaver(s) will be live-trapped and relocated to suitable habitat identified within the appropriate watershed level (Epps et al. 2021) in the permit area based on guidance from ODFW staff. If ODF and ODFW determine beaver relocation is warranted to address a conflict issue, an additional 2,000 feet will be surveyed for existing beaver activity both upstream and downstream of a modeled dam habitat to encompass the average home range for a beaver family unit. To prevent potential conflict with extant beavers, relocation will not occur if evidence of active occupation is found within the surveyed areas (Petro et al. 2015).

Over the course of implementation, it may be decided that a beaver restoration project (e.g., installation of a beaver dam analog, beaver habitat enhancement) should be implemented to benefit the covered species. If such a project were proposed it would follow *The Beaver Restoration Guidebook: Working with Beaver to Restore Streams, Wetlands, and Floodplains* (Castro et al. 2015), or other relevant scientific literature, to develop achievable goals, strategies, and objectives that are in line with the HCPs Biological Goals and Objectives. Promoting the occurrence of beaver in the permit area, through both passive and active management will contribute to meeting Objective 1.2, *Stream Enhancement,* by improving floodplain connectivity, stream complexity, and slow-moving rearing habitat that would benefit the covered salmon and steelhead. ODF will coordinate this work with regional partners, ODFW, USFWS, and NOAA Fisheries to ensure beaver management actions fit into the larger context of salmonid recovery and statewide beaver management principles.

Wetlands and Lakes

Wetlands and lakes are classified according to OAR 629-635-0200(16) and (17). Stream-associated wetlands are addressed through the standards described above for streams.

Significant Wetlands

Significant wetlands include wetlands larger than 8 acres, estuaries, and bogs.

In significant wetlands and their riparian management areas (extending 100 feet slope distance from the wetland), the State Forests Division shall retain approximately 50 percent of the original live trees, by species, in each of the following diameter classes (DBH):

- 6 to 10 inches;
- 11 to 20 inches;
- 21 to 30 inches; and
- larger than 30 inches.

As part of the live tree retention described above, the Division shall retain trees bordering significant wetlands.

For estuaries and the adjacent riparian management areas, the Division shall protect live trees that are:

- Perch and nest trees for predatory birds and colonial nesting birds;
- Likely to provide for future large woody debris to the estuaries' perimeters; and
- Contributing to bank stability.

In significant wetlands and their riparian management areas, the Division shall protect soil from disturbances that result in impaired water quality, hydrologic functions, or soil productivity. The Division shall protect hydrologic functions by minimizing disturbances and shall prevent accelerating the natural conversion of the wetland to uplands.

The Division may not drain significant wetlands; however, minor drainage for reforestation is allowed. Any drainage for reforestation must be designed so the significant wetland is not converted to an upland.

The Division shall limit disturbance of understory vegetation within significant wetlands and their riparian management areas to the minimum necessary to remove timber harvested from the area and achieve successful reforestation.

The Division shall retain all snags and downed trees within the wetlands and the applicable riparian management areas; however, any snag defined to be a safety hazard under the safety requirements found in OAR 437, division 7, Forest Activities, or determined to be a fire hazard by the State Forester, may be felled. Any snag felled because of a safety or fire hazard shall be left unyarded.

These retention requirements may be modified for reasons of forest health for trees that are dying or recently dead because of fire, insect or disease epidemics, or other catastrophic events.

Other Wetlands

When operating in or along other wetlands greater than one-quarter acre, the Division shall:

- Protect soil and understory vegetation from disturbance that results in reduced water quality, hydrologic function or soil productivity. The Division shall protect hydrologic functions by minimizing disturbances to soils during forest operations and shall prevent accelerating the natural conversions of wetlands to uplands;
- Leave snags and downed trees in the wetlands, except for any snags determined by the State Forester to be fire hazards, or any snags that must be felled to achieve compliance with the safety requirements found in OAR 437, division 007, Forest Activities.
    - Any snags felled because of safety or fire hazards shall be left unyarded.
    - Snags and downed wood left within other wetlands, seeps or springs apply toward the requirements of ORS 527.676.

When conducting operations along other wetlands less than quarter acre, springs or seeps, the Division shall protect soil and vegetation from disturbances which would cause adverse effects on water quality, hydrologic function, and wildlife and aquatic habitat.

Identification of other wetlands is sometimes difficult, especially when the wetland has no standing water. This is particularly true when the other wetland is forested or very small. In recognition of these facts, the State Forester shall apply appropriate discretion when determining compliance with this rule.

Lakes

A lake is a body of year-round standing open water.

The Division shall protect riparian management areas extending:

- 100 feet slope distance from the high-water level of large lakes; and
- 50 feet slope distance from the high-water level of other lakes that have fish use or other lakes that are equal to or greater than one-half acre in size.
- No riparian management area is required for other lakes that do not have fish and that are less than one-half acre.

For all lakes not having riparian management areas, the lakes shall be protected as other wetlands.

The Division shall retain in the riparian management areas of lakes approximately 50 percent of the original live trees, by species, in each of the following diameter classes (DBH):

- 6 to 10 inches;
- 11 to 20 inches;
- 21 to 30 inches; and
- larger than 30 inches.

Trees on the edge of lakes shall be retained.

The Division shall protect soil within the riparian management areas of lakes from disturbances that result in impaired water quality, hydrologic functions, or soil productivity. The Division shall protect hydrologic functions by minimizing disturbances and shall prevent accelerating the natural conversions of lakes to uplands.

The Division shall not drain lakes except for lakes formed by plugged culverts or beaver dams and as allowed for road maintenance.

The Division shall limit disturbance of understory vegetation within riparian management areas of lakes to the minimum necessary to remove timber harvested from the areas and to achieve successful reforestation.

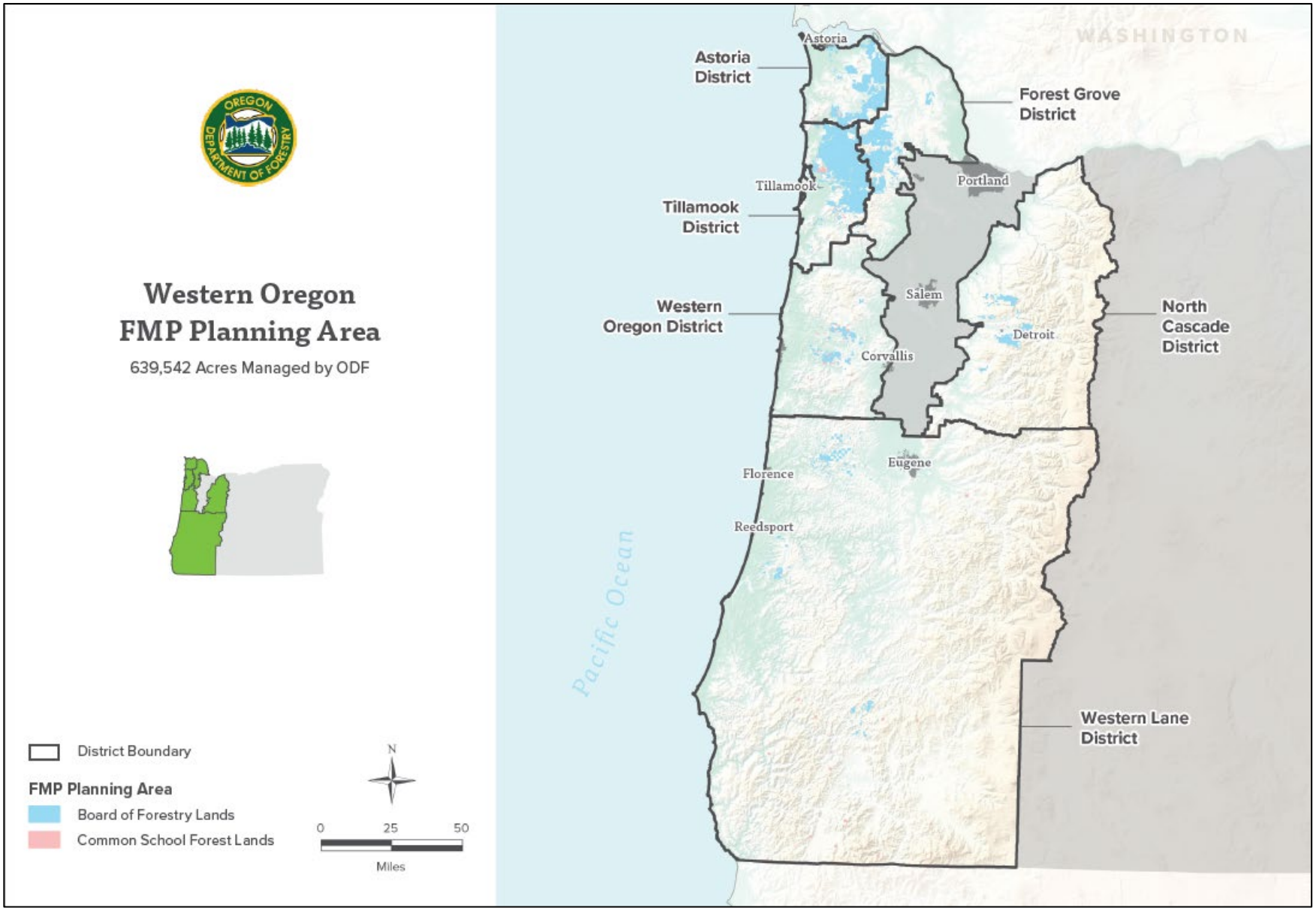
The Division shall retain all snags and downed trees within the lakes and the applicable riparian management areas; however, any snag defined to be a safety hazard under the safety requirements found in OAR 437, division 7, Forest Activities, or determined to be a fire hazard by the State Forester, may be felled. Any snag felled because of a safety or fire hazard shall be unyarded.

These retention requirements may be modified for reasons of forest health for trees that are dying or recently dead because of fire, insect or disease epidemics, or other catastrophic events.

Resource Sites

Specific sites or resource sites that are inventoried and protected under ORS 527.710(3)(a) and OAR 629-665-0000 to 0300, or that are listed under 629-605-0170(1) are submitted confidentially as GIS data and are not listed in this management plan. These sites are exempt from public disclosure under Oregon's Public Records law (ORS 192.345(13)(a)).

Maps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639,542 Acres Managed by ODF
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Board of Forestry Lands
Common School Forest Lands
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Miles
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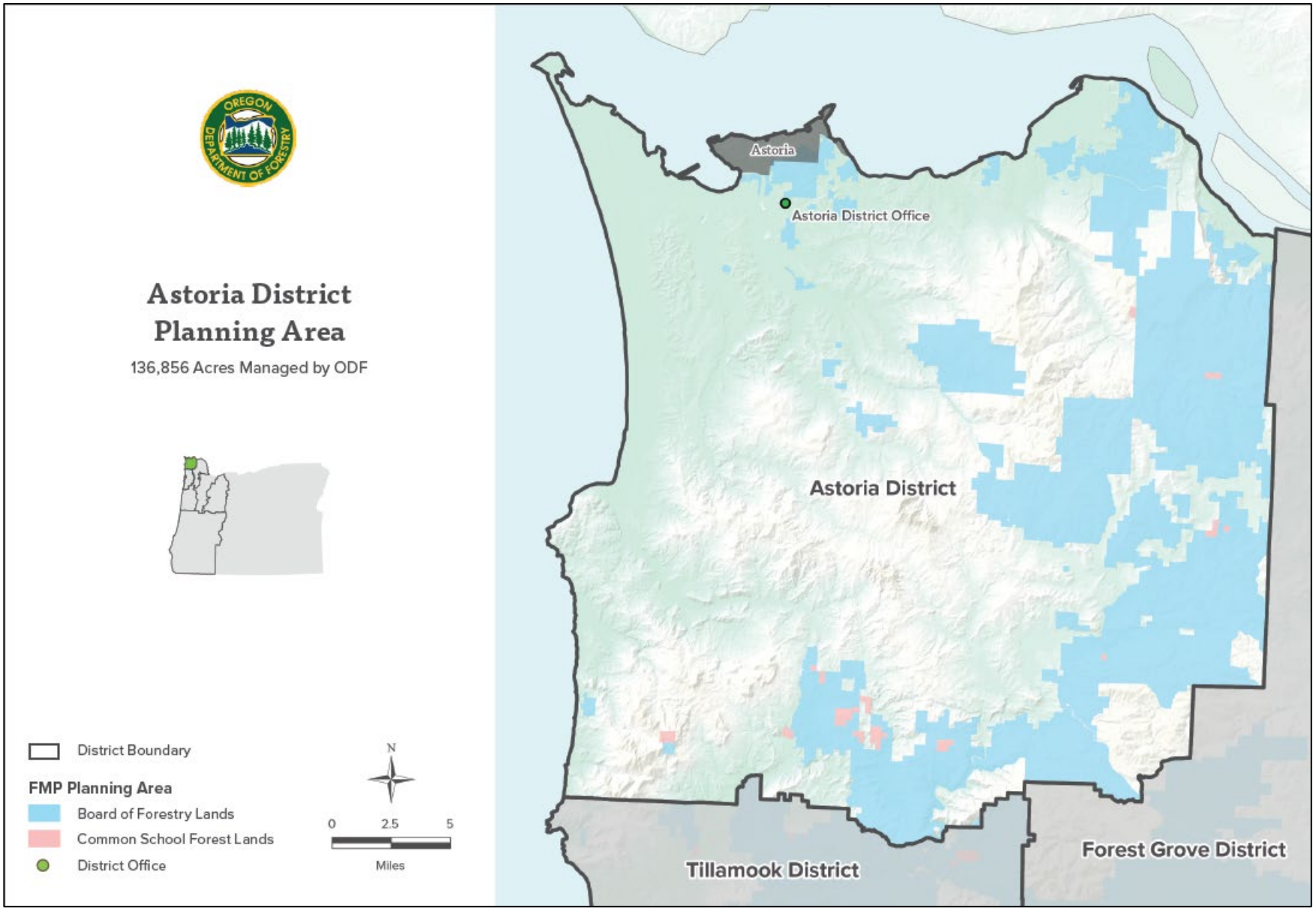
Astoria District
Forest Grove District
Tillamook
Tillamook District
Portland
Salem
Western Oregon District
North Cascade District
Detroit
Corvallis
Florence
Eugene
Reedsport
Pacific Ocean
Western Lane District
WASHINGTON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136,856 Acres Managed by ODF
District Boundary
FMP Planning Area
Board of Forestry Lands
Common School Forest Lands
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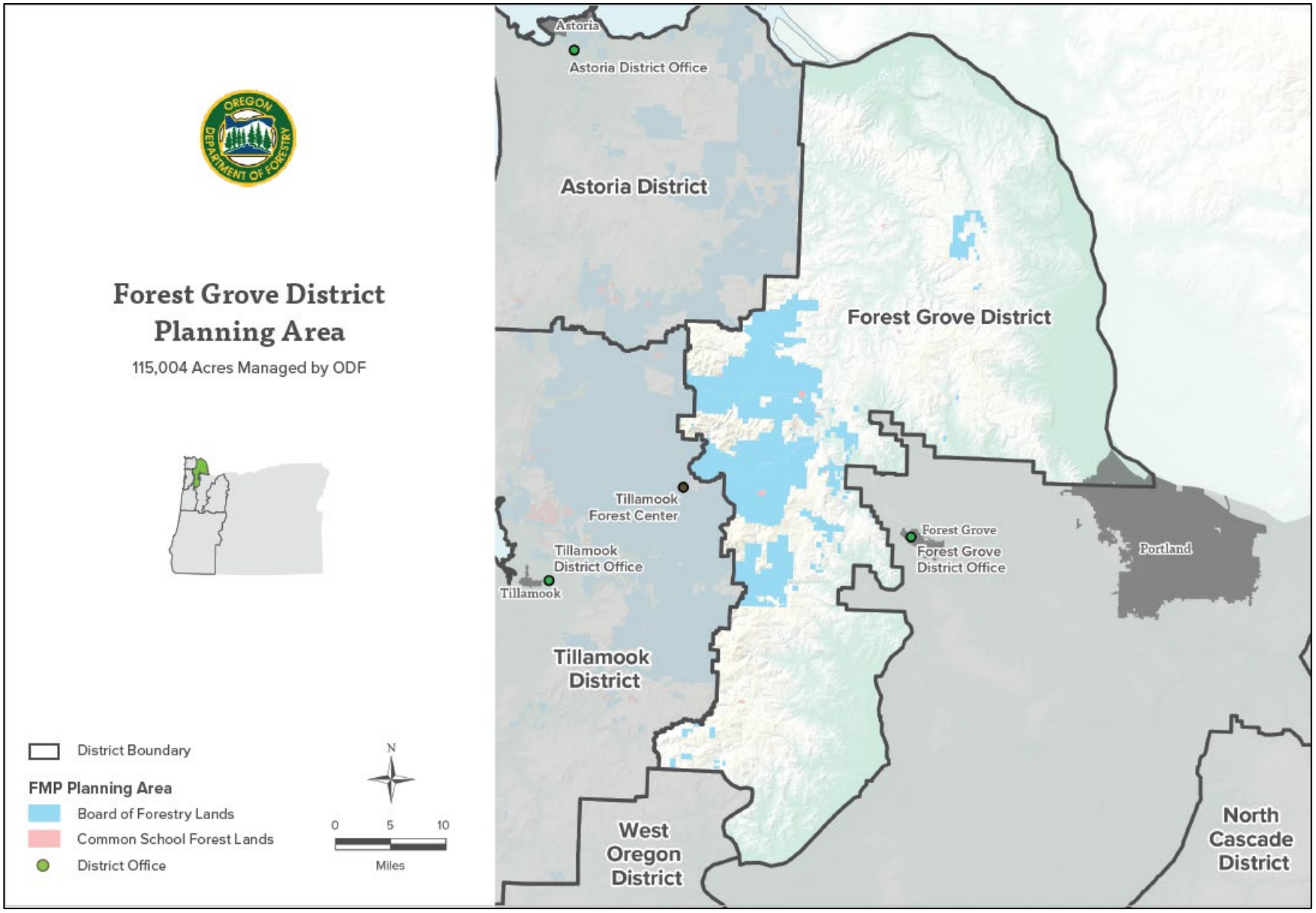
Astoria
Astoria District Office
Astoria District
Tillamook District
Forest Grove District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District Boundary
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Board of Forestry Lands
Common School Forest Lands
District Office
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Miles
Astoria
Astoria District Office
Astoria District
Forest Grove District
Tillamook
Forest Center
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District
Forest Grove
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Portland
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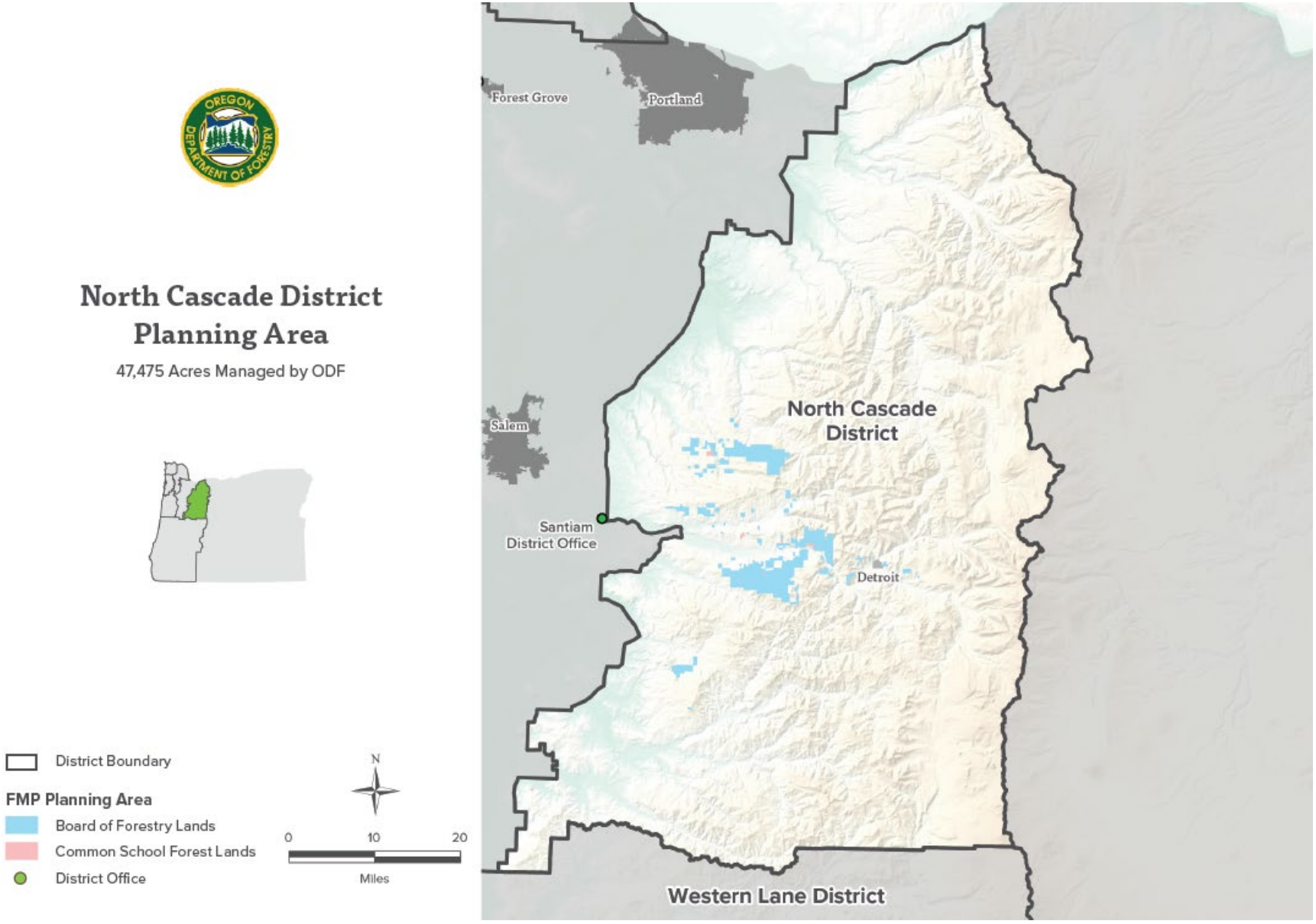
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Salem
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North Cascade District
Detroit
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District Office
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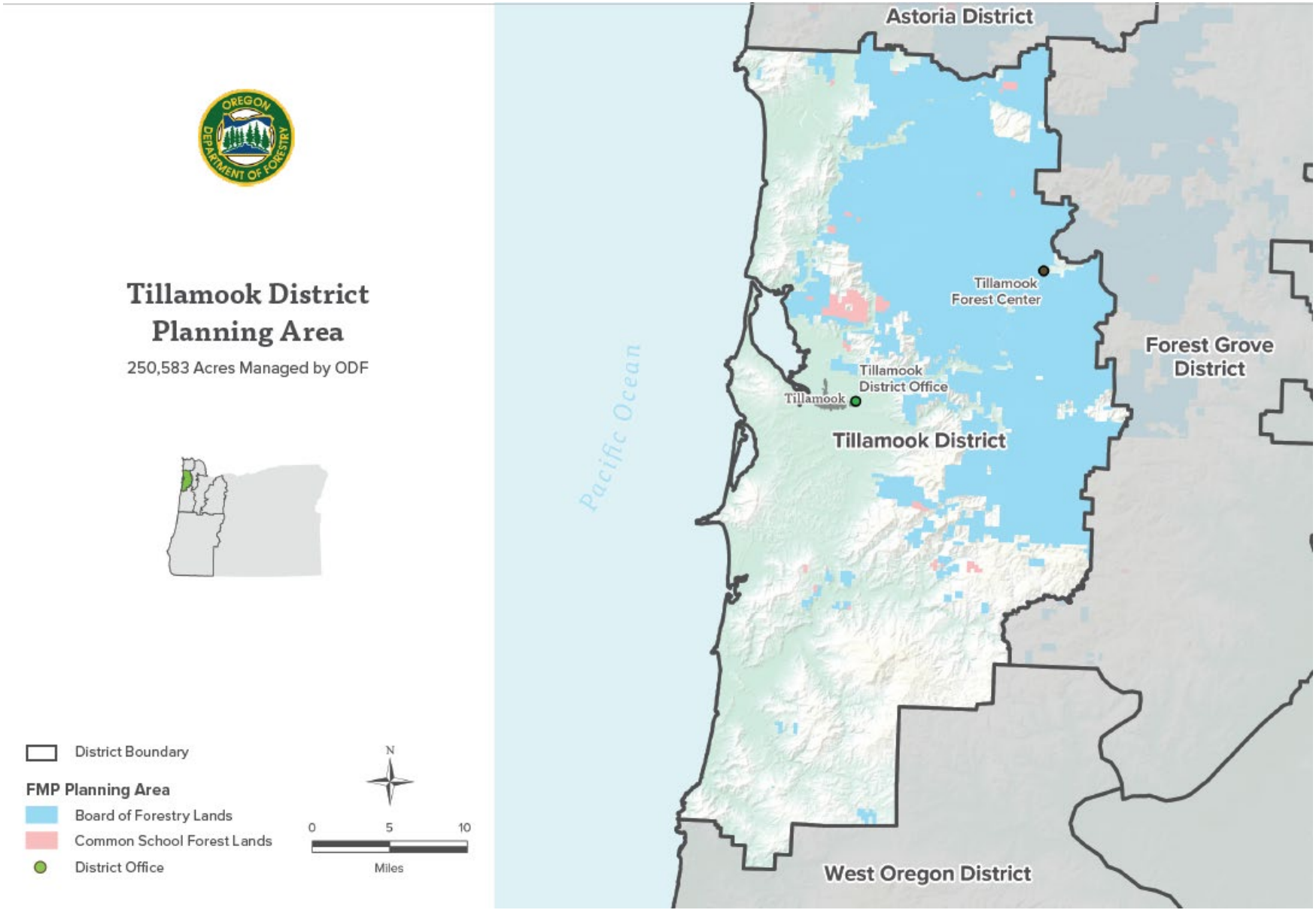
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Planning Area
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District Boundary
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Board of Forestry Lands
Common School Forest Lands
District Office
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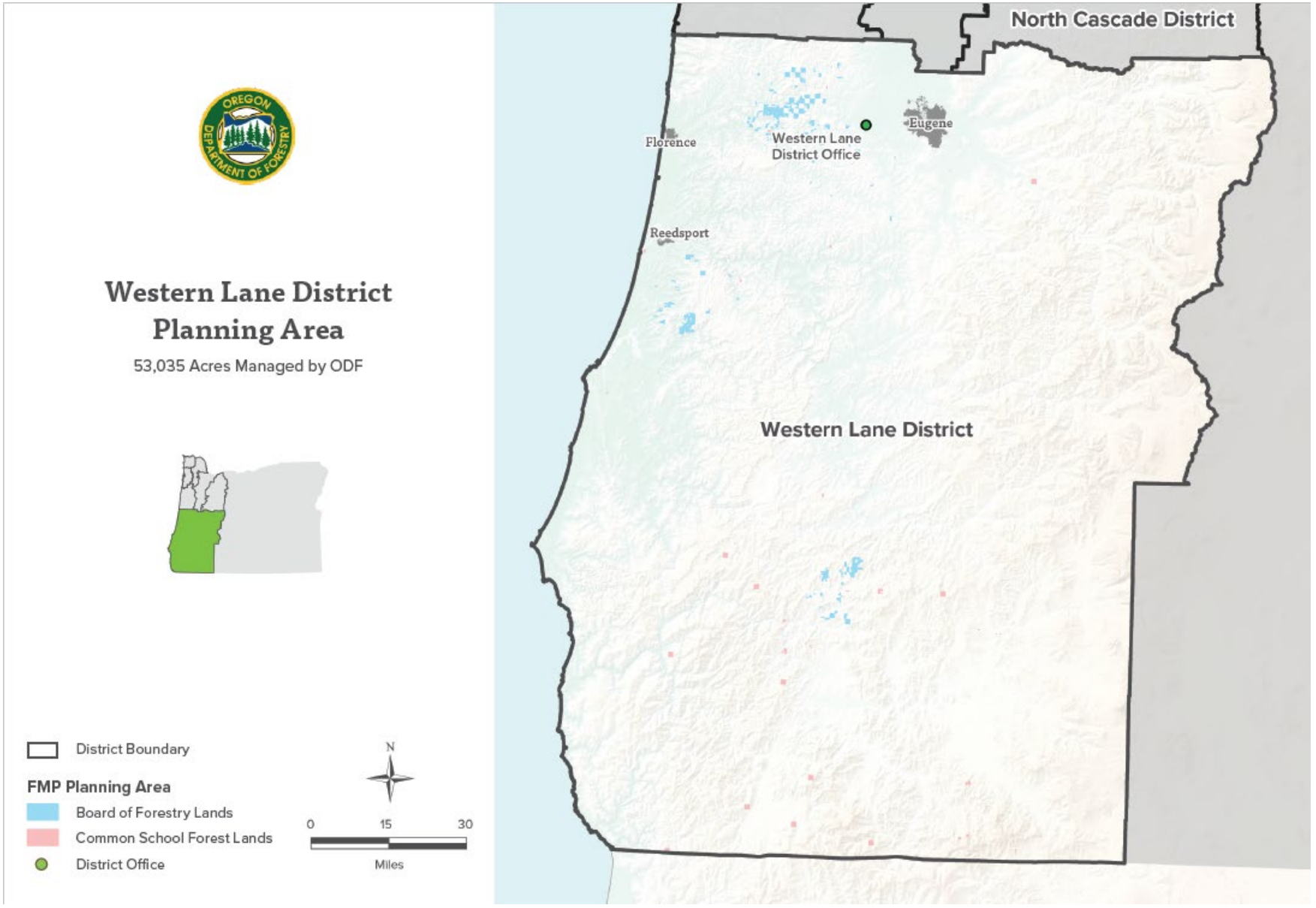
Pacific Ocean
West Oregon District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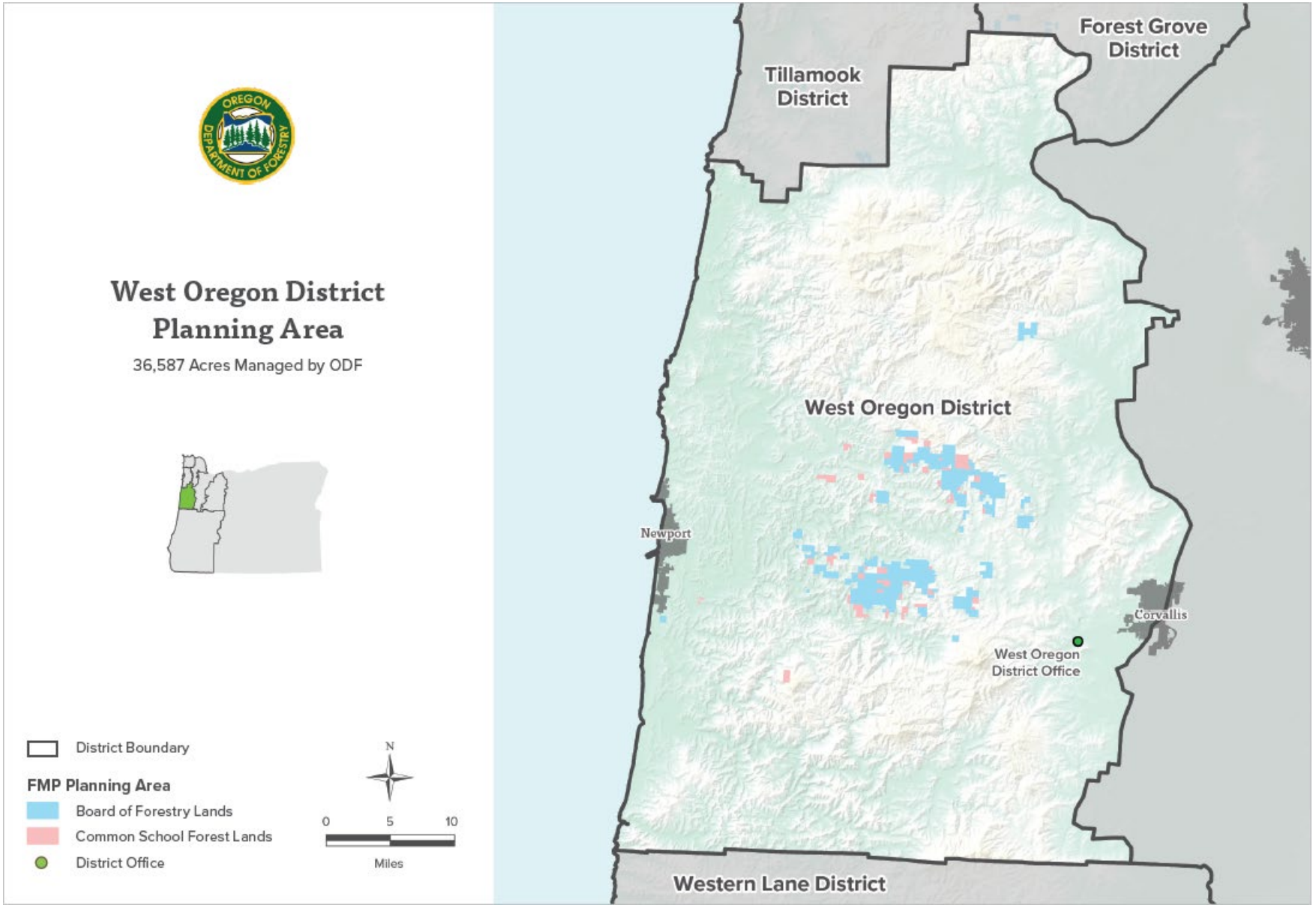
District Office
Eugene
Reedsport
Western Lane District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Western Lane District