What is Climate-Smart Forestry?

Interest in nature-based solutions to climate change has grown dramatically over the past few years, which has also given rise to the idea of climate-smart forestry. With so many people looking to forests to help fight climate change, a natural question arises: What is climate-smart forestry?

While research on the topic is new, there is a substantial body of published work. In "Climate-Smart Forestry: the missing link," P.J. Verkerk, et al note that "climate-smart forestry should increase effectiveness of carbon removals and enhance forest resilience." The European Forest Institute suggests that climate-smart forestry "is a targeted approach or strategy to increase the climate benefits from forests" that "builds on three pillars: 1) reducing and/or removing greenhouse gas emissions to mitigate climate change; 2) adapting forest management to build resilient forests; and 3) active forest management aiming to sustainably increase productivity and provide all benefits that forests can provide."

The Climate Smart Wood Group – in which FSC is a founding steering committee member – defines climate smart forestry as management that advances conservation and restoration of forest ecosystems, removes and stores more atmospheric carbon than conventional practices, and increases resilience in the face of climate change.

Embedded in these definitions are a few critical concepts:

- Additionality: Many forests, particularly managed forests, can sequester additional carbon if key ecological values are protected and enhanced. To call forestry climate smart, the level of carbon storage should exceed what would be stored under legal conventional practices alone (i.e., baseline practices).
- Adaptation: Climate change is already impacting forests by changing the frequency and intensity of disturbances, particularly wildfires. In addition, habitats are shifting along with site conditions, changing the form of many forests. Climate-smart forestry protects all forest values, including biodiversity, social and cultural values. Applying the precautionary principle is a key part of making forests more resilient and adapted to climate change.

In 2021, FSC submitted comments to the U.S. Department of Agriculture as it works to develop its own definition of climate-smart forestry. In addition to the points above, we also highlighted the need for climate-smart forestry to respect the rights of Indigenous Peoples by requiring Free, Prior and Informed Consent before management activities take place on lands where they have formal or customary rights. Not only is this the responsible thing to do, but there is also clear and growing evidence that Indigenous guardianship leads to better outcomes for carbon storage and biodiversity conservation.

Since all forests grow and sequester carbon, is all forestry "climate smart"? This is a critical question to address as pressure on forests increases, both from a changing climate and market demand. While climate-smart forestry can be defined and achieved in different ways, FSC certification allows forest managers to achieve market-recognized climate-smart forestry, as peer-reviewed recent research by Ecotrust demonstrates.

For the Climate Smart Wood Group, the following "guardrails" identify forestry that is not climate smart:

- Illegal harvesting and trade
- Destruction of High Conservation Values, including rare old growth and primary forest
- Conversion of natural forests to plantations or non-forest uses
- Forestry that violates human rights

Questions to Ask When Sourcing Wood

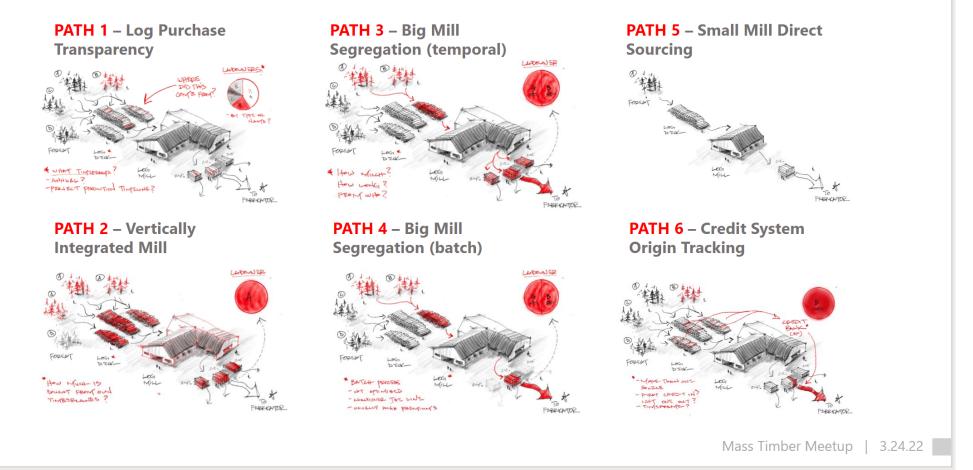
Demand for transparency into forest supply chains is growing, particularly for mass timber buildings where a significant portion of the total materials budget relates to forest products. When wood use is justified as a climate solution, the need to dig into sourcing increases further.

One strategy to collect better information and evaluate wood options is to submit a questionnaire to companies offering bids for a wood package. This process would typically be managed by the general contractor, although the architect or owner/developer could also play a role. The questions are designed to assist in a comparative and competitive bid evaluation of the climate smart and ecological impact characteristics of the sourced timber.

- 1. Is the timber being proposed for use on the project from a reclaimed or salvage logging operation, and/or is the material certified through a chain-of custody to the source forest?
- 2. If source forest material certification is being provided, please specify which certification is used and provide back-up details of this certification for review.
- 3. Is there a source forest specific study/report documenting the carbon stock change on the forest landscape divided by the timber output over time, for the timber material being provided? If not, as an alternative bid additional expense, would you consider creating one and what would be the time and cost commitment, if any, to complete this study? (Reporting that is an annualized and averaged yearly data for the source forest would be desired.)
- 4. If a source forest specific carbon stock change report as noted above is not available, please provide written answers and documentation for the following additional questions:
 - a. Confirm that no rare old-growth or forest conversion is included within the sourced material (unless such sourcing is from an ecologically restorative forest management plan that is removing diseased or fire-damaged materials). Please share documentation of the material sourcing control, and the forest management plan details for the source forest, if available.
 - b. Has the source forest been used to generate independently verified forest carbon credits? If so, please describe and provide documentation of the credit restrictions.
 - c. Please share satellite photo images less than 5 years old along with geo-located GIS polygons for the source forest showing the forest management unit(s) where timber has been harvested for the project, and the year when harvesting has occurred.
 - d. Please characterize the silviculture used on the source forest. What practices does the forest manager use to mitigate the impacts of climate change and increase resiliency for the forest ecosystem? If available, include the forest management plans stream buffers, the controls to protect soils and biodiversity, the controls to protect the habitat for any rare, threatened, or endangered plant or animal species that occur on the source forestland, and the controls to prevent excessive soil erosion.
 - e. What are the rotation lengths between final harvests at the source forests? Does the forest manager use pre-commercial or commercial thinning to enhance forest quality?
 - f. What other characteristics does this source forest land include that makes its management climate smart and why?

WOOD SUPPLY CHAIN TRANSPARENCY

The 6 Pathways



Credit: Jacob Dunn, ZGF

Hyla Woods

Hyla Woods is a family-owned business caring for three, working, experimental forests in the northern Oregon Coast Range. Using positive impact forestry methods, we aim to grow ecologically complex, economically viable, responsibly operated forests. Our wood is sold in both log form and as finished products, milled in the forest and dried in our solar dry kiln.

Since 1986 we've owned three working forests, totaling 1,000 acres and located roughly one hour's drive west of Portland, Oregon. Our involvement depends on two generations of the family, builds on the experiences of six generations, and spans all aspects of forest work from tree planting, forest restoration, control of invasive plants, and forest health monitoring, to harvesting, processing, and selling finished products.

In working to develop approaches that work as well in the long run as they do in the short run, we continue to be active learners who approach our work with humility, restraint, respect, and good humor. To learn more, visit: <u>www.hylawoods.com</u>

Human interaction with forests may lead to a wide range of consequences for both the forests and the people. History shows us that these consequences range from desirable to highly undesirable. While many forests in our region are managed to maximize the single value of short term, financial return, the Hyla Woods forests provide additional benefits related to the following eight categories.

A Forest For.....

....Water

Because we

- Leave large buffers along creeks, water bodies, and springs,
- Focus restoration along waterways,
- Maximize the forest's age,
- Design, build, and maintain roads to minimize impacts on water,
- And leave large, downed wood to retain water

Our Forests....

- Retain water and buffer the seasonal flows by mitigating flooding and providing crucial cold, clean water when it's most needed
- Help recharge groundwater
- Provide useful data on the relationships between forest stewardship and water
- Provide valuable habitat for a variety of water-dependent species, including federally listed Coho salmon

<u>.....Air</u>

Because we.....

- Work to maintain and increase high levels of both forest carbon and rates of carbon sequestration, through harvesting a small percentage of forest growth and maintaining intact forest stands
- Log in ways that minimize the rates at which carbon is released into the atmosphere,
- And continue to work to better understand the carbon dynamics and thermal impacts of our forests

Our Forests...

- Store and sequester carbon, moderate temperatures, and clean air at higher rates than other forests in our region

....Life

Because we....

- Actively work to maintain, and enhance habitat for the full suite of native, forest life, from micro to macro

- Study and measure the habitat and the range of life forms
- And log in ways that improve habitats including leaving snags and large, downed wood

Our Forests....

- Provide valuable safe haven for a wide range of both common and at risk species at a higher level than other forests in our region
- And provide a working and practical example of ways that forest biodiversity may be measured and tracked

....Soils

Because we....

- Operate in ways that maintain and enhance soil quality and minimize damage to soils
- Are unwilling to accept the potential risks to soils that are common to plantation silvaculture
- And encourage a forest food web that continuously feeds healthy soils Our Forests....
- Are nurtured by soils that are good and constantly improving

.....Fire

- Because we....
- Grow forests that are older, larger, wetter, and more diverse that most forests in our region
- Our Forests....
 - Present a lower risk of damaging wildfire to both us and our neighbors

....Wood

Because we....

- Focus on growing trees that provide high quality wood (large and slow growing)
- Grow, mill and sell a variety of native species suited to a wide range of uses
- And offer consumers the option to buy wood from well cared for forests Our forests....
- Contribute to the emergence of wood markets that will incentivize improved levels of stewardship and regenerative forestry

...Jobs and Community Health

Because we...

- Hire and rely on a range of contractors and local vendors
- Work in ways that prioritize investment in people over investment in labor saving machinery
- Make every effort to develop and maintain working relationships with nearby businesses

Our forests...

Help build the local economy and the health of nearby communities

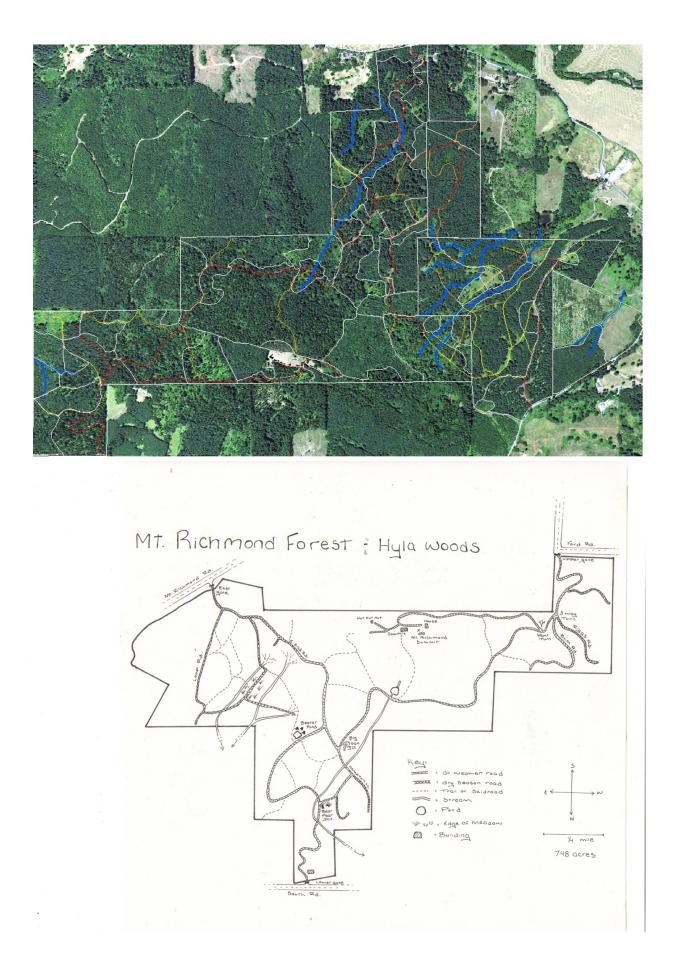
....Learning and Knowledge

Because we....

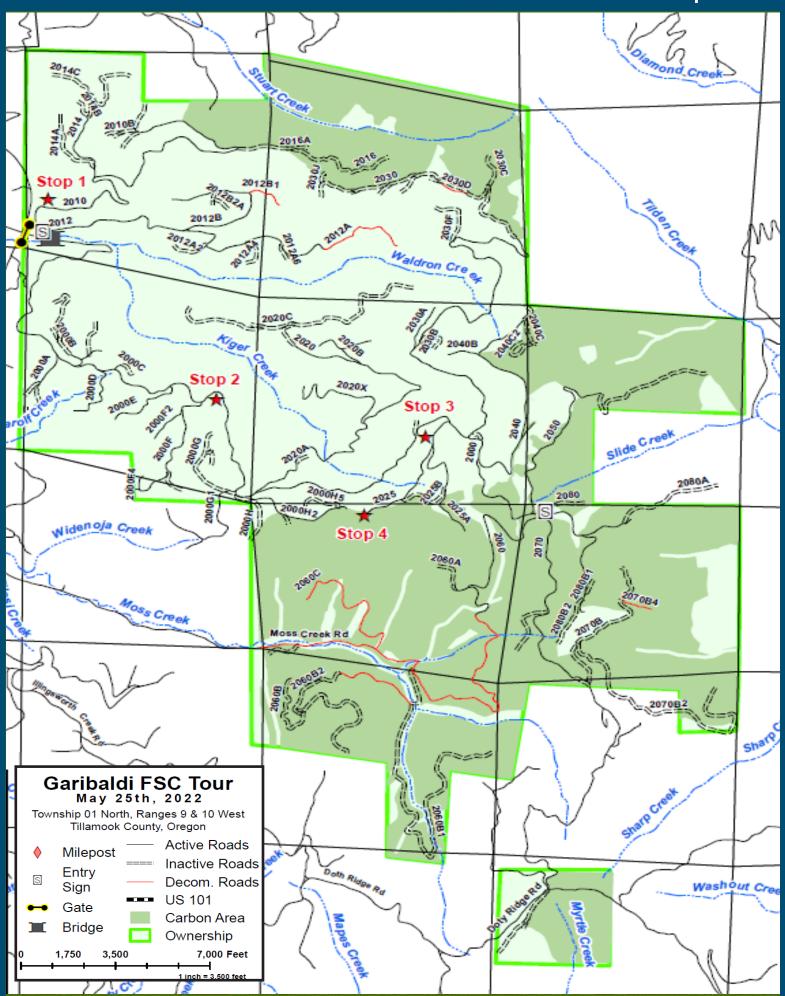
- Invite, encourage and support a wide range of investigation and learning in our forests, through partnerships with universities, schools, organizations and agencies
- And develop and share essays that stimulate reflection on and discussion of the future of local forests

Our forests...

- Boost student learning, support educators, and help connect schools to nearby forests and related businesses
- Provide a platform for creating and applying new forest knowledge



Garibaldi Access Map



Itinerary Garibaldi Forest Tour _{May 25th, 2022}

1:30pm – STOP 1 – 2017 Variable retention harvest and riparian walk along Waldron Cr.

Introductions, EFM Profile, Garibaldi History, EFM Management Approach, Harvest Objectives and Rx, Regeneration.

Walk up Waldron Creek, discussion of riparian and road management.

2:30pm – STOP 2 – Variable Retention Harvest

Discuss various retention approaches.

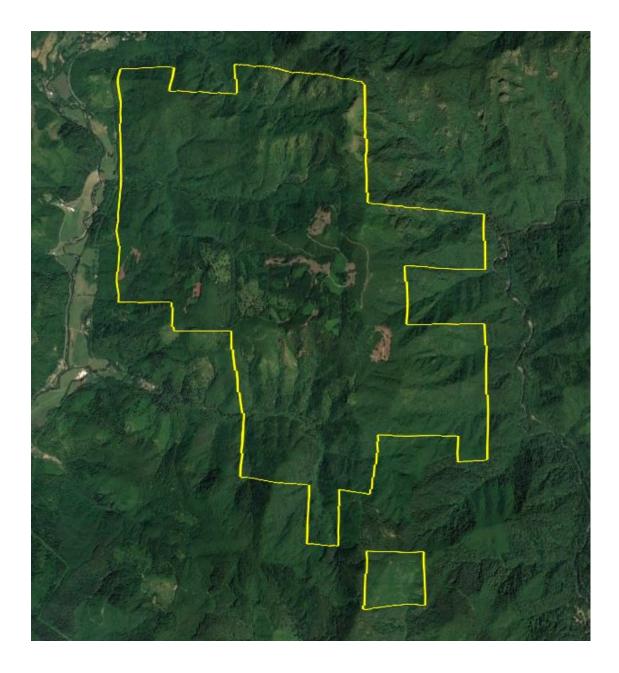
3:00pm – STOP 3 – Garibaldi Ridge Variable Density Thin

Discussion of thinning objectives, Rx, and outcomes.

3:30pm – STOP 4 – Moss Creek Overlook

Carbon projects on Garibaldi

4:00pm - Depart EFM forest



GARIBALDI PROPERTY MANAGEMENT PLAN JULY 2018



Property Summary Information

Deter	hub. 2010
Date:	July 2018
Property Name:	Garibaldi
Planning Cycle	Five years
Blocks:	North Block, South Block
Planning Period:	2018-2022
Legal Description:	T1N, R9W, in Sections 6, 7, 8, 17, 18, 19, 20, 21 T1N, R10W, in Sections 1, 12, 13, Tillamook County, OR.
Acreage:	4,823
Date Purchased:	December 29, 2006
Prior Owner(s):	Purchased from LaMinora Properties LLC in 2006. Previous owner was Boise NW Oregon Land and Timber LLC and Boise Cascade Corporation.
Adjacent Lands:	<i>North Block:</i> Oregon State Lands along north and south lines and part of east and west lines. West line joins non-industrial lands, part of east line borders Stimson. <i>South Block:</i> State Lands on all sides.
Conservation Partners And Nearby Lands:	Tillamook State Forest, other state forestland.
Fire Protection Entity:	Northwest Oregon, Oregon Department of Forestry
Topography/Elevation:	Mostly moderately and steeply sloped coastal montane topography with prominent east-west ridges and drainages. Elevation ranges from 60 to 2,450 feet.
Geology & Soils:	Coast Range Physiographic Province. Gravelly and sandy loams. Silt and gravelly loams from colluvium and residuum derived from igneous rock and tuff.
Water Resources:	106 miles of total creek. 6.2 miles of Fish Use classified streams including Moss, South Fork Moss, Kiger, Waldron and several unnamed tributaries. Parts of Waldron and Moss are ODF classified as "Large" streams. The Property supports coho salmon, steelhead, and cutthroat trout and other native species.
	Approximately 58 acres of riverine wetland per National Wetland Inventory.
Vegetation Types:	Mid/Late Rotation Conifer Forest (3,502 acres), Early Rotation Conifer (1,221 acres). Stand composition in both young and older stands is predominantly Western hemlock & Sitka spruce, while Douglas-fir, Western redcedar & red alder are minor species.

Property Summary Information (Continued)

HCVF/RSA:	Fish bearing riparian habitats are designated as High Conservation Value Forest (HCVF).
Site Index:	Primarily site class 2.
Operability:	Ground-based: (15%), Cable-based: (85%), Helicopter (1%).
Road System:	47 miles of mapped road (4.6 miles of mainline, 42.3 miles of secondary/spur). Network includes some USFS easement and maintained roads. Good access throughout and roads generally in good condition overall. Some stream crossing and ditch relief upgrades needed.
Known Rare Plants and Habitats:	None.
Focal/At-Risk Fish & Wildlife Species	35 species including 11 bird, 12 mammal, six amphibian, and six fish species confirmed or potentially occurring.
Recreation:	Past use (prior to EFM ownership) unknown. Since acquisition use has been walk-in recreation.
Management Strategies:	Vegetation : Implement 10-year harvest plan. Manage recent harvest units for high quality early seral, develop/maintain mature forest structural features in retention areas including riparian buffers to voluntary FSC standard. Reduce risk of Swiss Needle Cast infected stands by shifting tree composition to resistant species. Increase composition of Western redcedar.
	Water Resources: Minimize sediment delivery by buffering streams and applying best management practices for roads. Identify fish passage issues and resolve.
	Roads: Maintain road network for efficient management operations and fire control. Open road network where roads are currently closed to address stability/erosion issues and facilitate harvests. Implement best management practices to minimize sediment delivery.
	Fish & Wildlife: Develop mature, diverse forest habitats including early-seral, restrict vehicle access by the public, and apply road strategy to reduce impacts to salmonid and other native fish.
	Recreation: Non-motorized access on majority of road system. Allowable uses include hiking and non-electric biking, hunting and horseback riding. Patrol property frequently to reduce dumping and other illegal activities.
	Non-timber forest products: To be determined.

EFM NW 9th Avenue, Suite 200 Portland, Oregon 97209

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Table 2. Goals and Objectives

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Table 4. Soil Types and Management Characteristics (Appendix F)

Table 5. State-listed Noxious Weeds

Table 6. State/Federal/Oregon Conservation Strategy Classified Fish & Wildlife Species

Table 7. Limiting Factors, Opportunities and Information Needs

Table 8. Management Strategies

Table 9. Management Actions Schedule

MAPS

Map 1. Garibaldi Property and Vicinity

Map 2. Tax Parcels on the Garibaldi Property

Map 3. Topography of the Garibaldi Property

Map 4. Soil Types on the Garibaldi Property (Appendix F)

Map 5. Creeks and Wetlands on the Garibaldi Property

Map 6. Stand Age Classes on the Garibaldi Property

Map 7. HCVF and RSA on the Garibaldi Property (Appendix G)

Map 8. Roads and Trails on the Garibaldi Property

Introduction

This Property Management Plan (PMP) was developed for the Garibaldi Property, situated in Tillamook County in Northwest Oregon (see Map 1). The Property includes two distinct areas; the North Block (4,685 acres) and the South Block (138 acres) (see Map 2).

Significance and Need

The Garibaldi Property contains productive coastal timberlands adjacent to state forest, and salmonid runs on three creeks. Water from the Property feeds the productive Tillamook Estuary. Actively managed by EFM since 2006, the Property has had a wide range of progressive forest management practices implemented, and thus provides an outstanding demonstration area for innovative silviculture including the regeneration of coastal forest after harvest without herbicides.

This management document identifies opportunities for continued implementation of high quality forestry that will enhance the ecological and financial values of the Property.

Plan Structure

This plan is organized into two main sections. The first assesses the current condition of natural resources, infrastructure, and human uses. The condition of natural resources including soils, water, rare plants, noxious weeds, and fish and wildlife is described. Infrastructure on the ownership (roads and bridges) and community resources are documented. A summary of limiting factors/issues and data needs for each resource is provided in Table 7 at the end of this section. In the Strategy/Implementation section that follows, Table 8 lists management strategies tiered to goals and objectives. Table 9 outlines actions in support of each strategy over the five year planning window. The Appendices provides supplemental information in support of the main document. Overarching policies governing the stewardship of this Property are documented in the EFM Forest Management Plan.

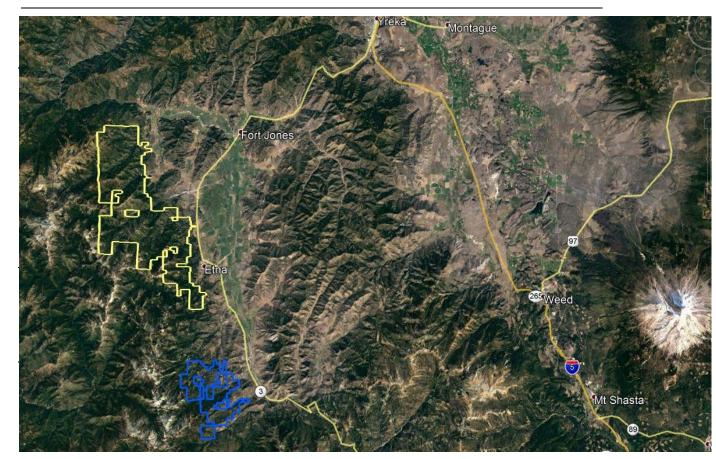
Location, Landscape, and Access

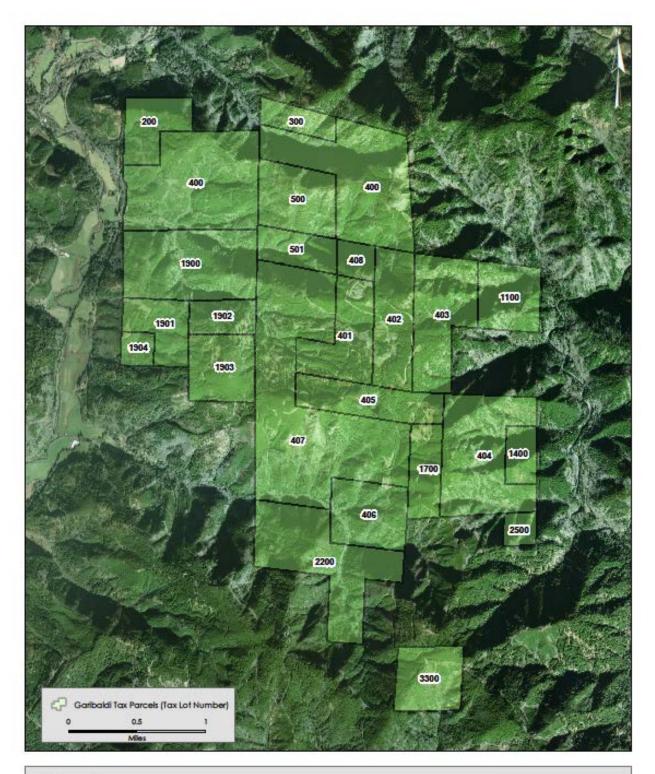
The Garibaldi Property is located two miles south of the coastal community of Garibaldi and about 80 miles west of Portland. The property is bound to the north, south, most of the east, and part of the west by state lands. Stimson borders the Property along part of the east line. Most of the west boundary borders non-industrial timberlands. The greater landscape contains a mix of industrial (to the west, north, and south) and state forestlands to the north, east, and south.

The main North Block Property access is from the New Miami River Road which connects to Highway 101 just south of Garibaldi via Miami Foley Road (see Table 1 – Appendix D). Though not passable, there is also a road that follows Moss Creek onto the Property. The South block can is accessed from Doty Ridge Road, off Patterson Creek Road, which initiates in the town of Bay City, just south of Garibaldi.



Map 1. Garibaldi Property (yellow boundary) and vicinity.





Map 2. Tax Parcels on the Garibaldi Property



the "Tillamook Burn." Four fires comprised the Tillamook Burn and took place during 1933, 1939, 1945, and 1951, impacting a total of 355,000 acres. It is unclear if any of the Property actually was burned. Harvests of the original old growth likely occurred in the early- to mid-1900s.

Desired Future Conditions

Desired Future Conditions (DFC) are based on the underlying goal of EFM to rebuild ecological, community, and financial capital in its forest holdings. The Property provides a unique opportunity to serve this goal while benefiting the larger landscape.

Desired Future Conditions for the Property include:

1- Mix of mature and younger forests with a native tree species and understory composition, minimal noxious/invasive species, and appropriate levels of dead wood to maintain associated fish and wildlife species. Mature forests are concentrated in riparian zones, steep, rocky slopes and other retention areas.

2- A road system that is maintained to minimize sediment delivery.

3- Forest conditions that maintain the aesthetic qualities of the viewshed and low-impact recreation values.

4- A forest that provides a wide range of products including high value wood and ecosystem services.

Goals and Objectives

The Property is managed according to the core principals of Ecotrust Forest Management, which seek to build both conservation and social values, while providing adequate risk-adjusted financial returns to its investors. Property goals and objectives are provided in Table 2. Core goals and objectives include maintaining roads and protecting the property from risks. Habitat related goals and objectives will be enacted as external funding allows.

#	Goal	#	Objective
	Achieve financial targets while meeting	1.1	Diversify income sources by combining harvesting with alternative
			revenue sources.
		1.2	Build standing volume with extended rotations for premium log
1 certification standards and	1.2	markets where financially viable.	
	1.3	Manage Property consistent with FSC standards.	
	protecting the investment.	1.4	Protect the Property from fires and other major disturbance agents
			and increase resilience in the face of climate change.
2	Improve habitat		Develop/maintain older forest characteristics across Property where financially viable and/or conservation funding is available.
	for native wildlife 2.1 including focal	2.1	
	including jocal		

Table 2. Property Goals and Objectives

#	Goal	#	Objective
	management and at-risk species. –	2.2	Maintain/Increase diversity of minor tree species including Western red cedar and native hardwoods.
		2.3	Encourage high quality early-seral habitat in existing harvest units.
		2.4	Enhance riparian habitats for anadromous and native resident aquatic species.
		2.5	Protect special/unique habitats including old forest, wetlands, and other riparian areas, and known rare plant populations where funding is available.
		2.6	Reduce noxious and invasive weeds.
Maintain road infrastructure 3 while minimizina		3.1	Maintain road network necessary to facilitate management access for fire and weed control, tours, inspections, planning, harvests and other silvicultural treatments.
Ū	environmental impacts.	3.2	Reduce sediment delivery from roads and drainage structures.
		3.3	Reduce road impacts to wildlife.
4 cor	Contribute to local	4.1	Employ local contractors and suppliers wherever practicable for harvests, road work, research, monitoring, habitat enhancement, and other activities.
	conservation economy.	4.2	Identify opportunities to enhance the benefits the property provides to local residents by allowing non-predator hunting and hiking.
5	Engage – community in collaborative management. –	5.1	Seek public input and involvement in management activities by key stakeholders, such as tribes, resource agencies, and neighboring landowners.
		5.2	Consult periodically with community members, indigenous peoples, forest researchers, neighboring landowners, and wood production facilities.
		5.3	Provide opportunities for public involvement and collaboration.
		5.4	Consult with tribes with interests in the property and co-develop access or monitoring programs where indicated.
	Encourage non-	6.1	Provide signage explaining access policy.
6	vehicular public access	6.2	Work with locals to foster better understanding of allowable uses.