



January 8, 2018

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Ivan Camacho
Oregon 319 Grants Administrator
Department of Environmental Quality
700 NE Multnomah Street
Suite 600 Portland, OR 97232
camacho.ivan@deq.state.or.us

Dear Ivan Camacho,

Thank you for the opportunity to submit a grant application to the Section 319 program for the year 2018. This project continues the 2017 Section 319 Grant "Arch Cape Community Drinking Watershed Protection" and is submitted in collaboration with the Arch Cape Domestic Water Supply District manager Phil Chick.

Sincerely,

Ben Dair

Senior Manager of Conservation Finance
Sustainable Northwest

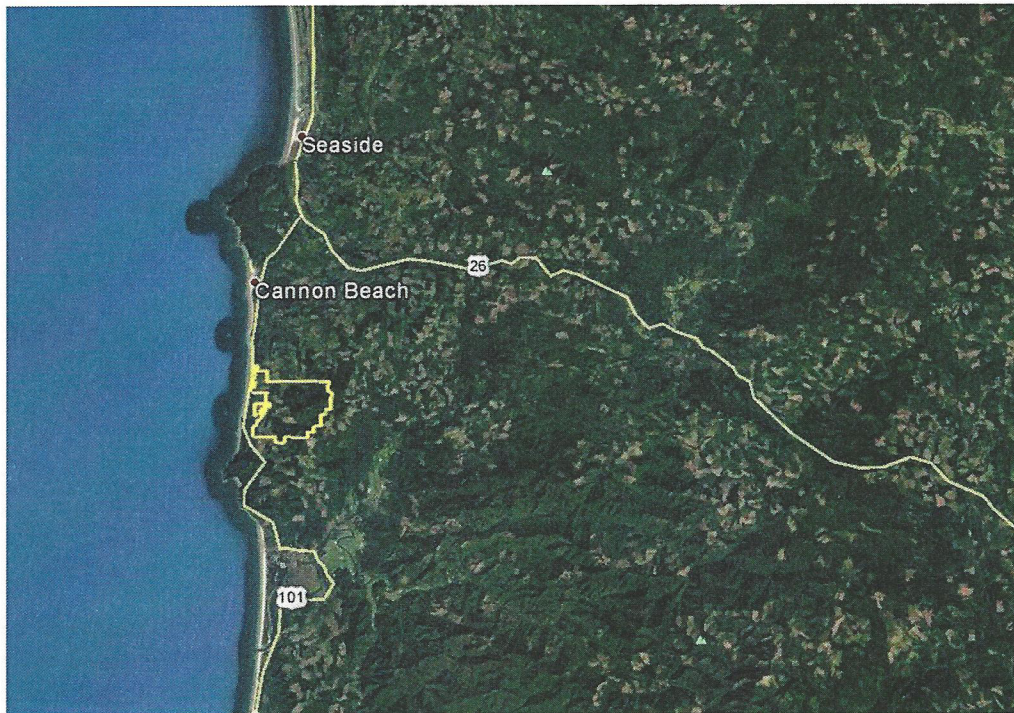


Figure 1. Arch Cape drinking watershed regional context. Source: Onion Peak Holdings Property Management Plan



Figure 2. Topography of the Arch Cape drinking watershed. Source: Property Management Plan

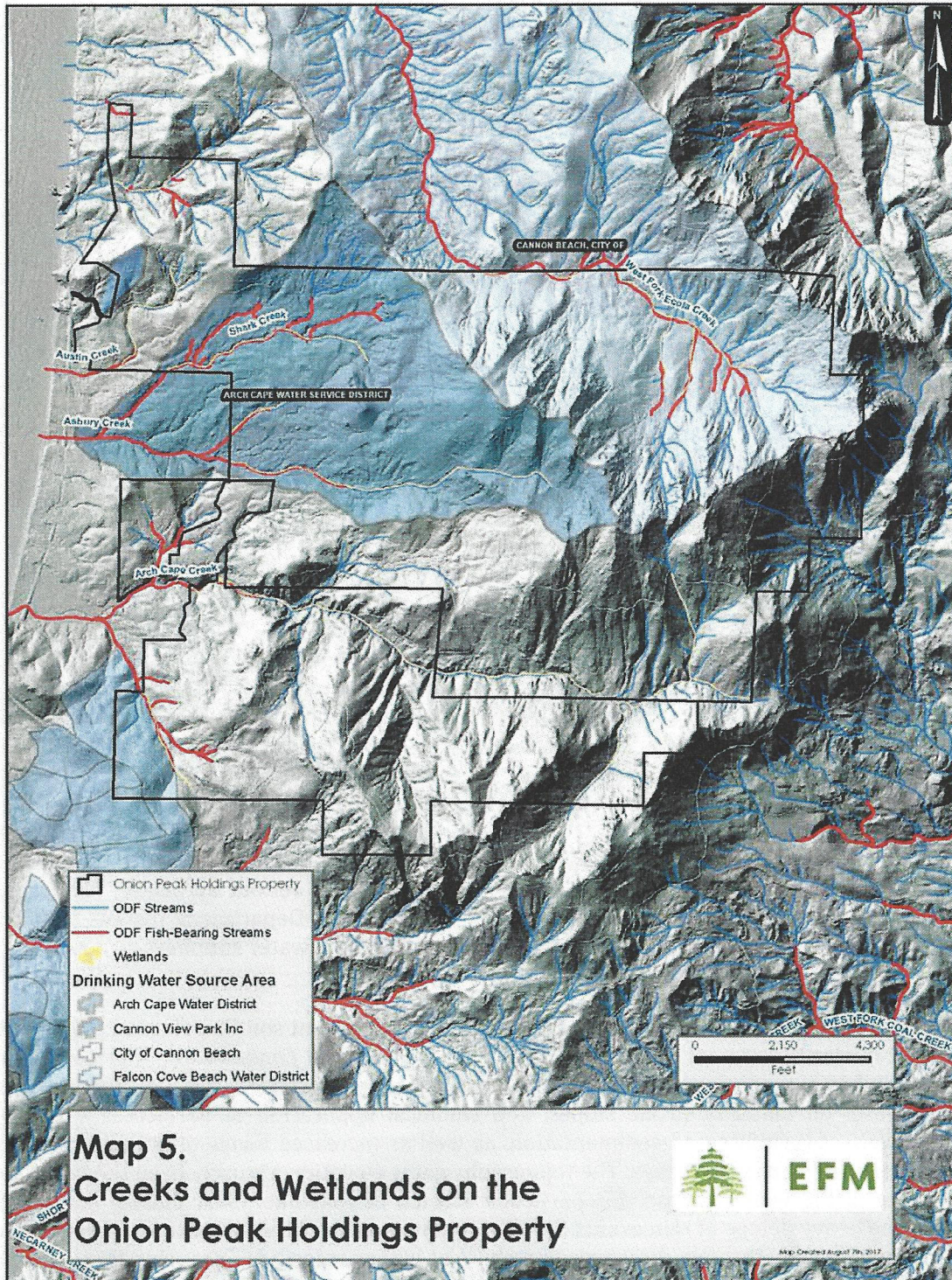


Figure 3. Source: Onion Peak Holdings Property Management Plan

I. Proposal Title

Arch Cape Community Drinking Watershed Protection 2018 (Phase II)

II. Contact Information

Primary contact person: Ben Dair
Organization/position: Sustainable Northwest / Senior Manager
Street address: 1130 SW Morrison Suite 520
City, State, ZIP: Portland, Oregon, 97205
Day phone: (503) 221-6911
Email: bdair@sustainablenorthwest.org

III. Project Location

Town(s), County: Arch Cape, Clatsop County
Basin or watershed name: Shark Creek and Asbury Creek; HUC 17100202; Stream
Is this project part of a Total Maximum Daily Load (TMDL), Drinking Water Source Protection (DWSP) or Groundwater Management Area (GWMA) effort? : Drinking Water Source Protection Area (DWSP)
Map and spatial location information: Map of project attached in this document

IV. Project Summary

General Location, Municipalities, and Drinking Water Source Area

The Arch Cape Domestic Water Supply District ("the District") obtains water from Shark Creek and Asbury Creek, which are fed by a combination of springs and smaller spring-fed tributaries within the drinking water source area. The majority of the drinking watershed is contained within industrial timberlands owned by Onion Peak Holdings, an investment vehicle of Ecotrust Forest Management (EFM). The District manages a water treatment plant and storage facility for the benefit of 150 permanent and more than 900 seasonal residents of the unincorporated town of Arch Cape in Clatsop County. The District delivered an average of 28,472 gallons per day in 2017 to customers while maintaining streamflows for fish and wildlife as set out by ODFW. This year, the District received an award from the Oregon Water Resources Department for the best water management and conservation plan submitted by small municipal water suppliers.

Water Quality Impairment

The District faces ongoing challenges from logging-related nonpoint source pollution. The District's 2002 *Sourcewater Assessment* and 2015 *Water Management and Conservation Plan* both identify industrial timber management as a high risk to water quality. Of concern are clearcuts in riparian areas, harvests on landslide-prone slopes, and chemical application of herbicides - leading to elevated levels of turbidity and sedimentation, as well as increased levels of organic compounds from pesticide and herbicide sprays. The topography gains elevation abruptly from the beach to the upper range of the watershed on this particular stretch of coastline. Clear cutting has left little buffer for the heavy deluge of rain events that are common on the Oregon Coast. As a result, rainfall tends to travel quickly through drainages in a chute at higher velocities - scouring these drainages and collecting sediment along the way. Maintaining adequate tree cover would aid in the health of the watershed by delaying this hydraulic flow. This may also reduce the frequency of sanitary sewer overflows (SSOs) that the Arch Cape Sanitary District experiences during heavy rain events.

Proposed Management Activities

The District has a unique and timely opportunity to protect the 2,121-acre headlands watershed that serve as the sole drinking water source for Arch Cape. Over the years, residents and members of the District board have discussed pursuing a memorandum of understanding with the landowners or purchasing the timberlands outright. These fir-hemlock-cedar timberlands were recently acquired by Ecotrust Forest Management (EFM) from Stimson Lumber and are managed on behalf of investors in the investment vehicle Onion Peak Holdings. Onion Peak Holdings has a limited ownership horizon and is legally required to sell the property in the near-term, making acquisition of this parcel within the next five years a time-limited opportunity. Although EFM is in practice already acting as a bridge owner, the District has yet to secure an option on the property that would give it an advantage over a less conservation-motivated buyer. Without this, the property could easily be sold and immediately logged by another timber investment management organization (TIMO). Of the full 2,121 acres, the District proposes to acquire 1,500 acres through fee title acquisition and protect 600+ acres at the headwaters of the streams through conservation easements in partnership with the North Coast Land Conservancy (NCLC).

It is expected that the Arch Cape Community Forest could produce Forest Stewardship Council (FSC) certified timber to offset management and stewardship costs, while permanently protecting the integrity and health of the watershed for wildlife and public enjoyment. FSC standard requires a 50-foot buffer, whereas Oregon's Forest Practices Act (OFPA) only requires a 20-foot buffer on fish-bearing streams. As a result, OFPA standards only protect 8% of a typical coastal watershed. In addition, FSC standards limit the types of activities allowed in inner and outer buffer zones to a greater degree than do both Washington and Oregon law. FSC standards strongly limit the synthetic chemicals that can be applied, ensuring that no pesticide drift would enter riparian areas. Retention is also increased for FSC compared to Oregon standards. For operations on more than 6 acres, FSC standards require: 3-10 snags per acre (wildlife reserve trees), at least 4 down logs per acre and retention of 10-30% of pre-harvest basal area, not including riparian buffers. Project partner Sustainable Northwest also manages a Forest Stewardship Council (FSC) group certificate and can support the community's efforts to manage the property to the highest standards.

With this opportunity in view, the next two years are critical to engaging the community, stakeholder organizations, and the broader public in a process to first understand the impact, have a voice in decision-making, and ultimately, genuinely support the concept of a sustainably-managed and effectively-governed community forest. Other community forests across the Pacific Northwest and Northeastern United States have multi-layered governance structures depending on whether the underlying land ownership is held by local government, private corporation, or tribal corporation - but all share the common element of the Community Advisory Committee. This Community Advisory Committee ensures that local people have a voice in critical decisions such as revenue and benefit sharing, logging intensity, and public access. The Advisory Committee also helps set 'conservation sideboards' that describe forest management objectives such as permanent protection from development and trading off timber revenues for increased riparian buffer width.

The first phase of the project (March 2017 through December 2017) has resulted in foundational visioning and strategic planning milestones. In August 2017, the District Board began an internal process of drafting its vision, mission, and goals statement for the community forest. The public engagement strategy was developed through public meetings held in conjunction with the Arch Cape Sanitary District Board. Public meetings occurred in Arch Cape on August 7, August 18, September 15, and October 20, 2017. Through the fall and winter 2017-2018, the District will continue to refine its outreach and public engagement strategy, preparing the community for a possible award of Federal Forest Legacy Program (FFLP) funds for the fiscal year 2019. In

December 2017, Onion Peak Holdings shared their draft Forest Management Plan and, in the coming year, the District will begin reviewing past management practices and outlining desired future conditions.

The District has limited resources to divert from its core responsibility of treating and supplying drinking water. Beginning in 2017/2018, the District has budgeted \$5,000 towards watershed sourcewater protection activities. The District Manager is a full-time employee with primary responsibilities for supervising technical activities and overseeing the management and operations of the water district. Without additional grant support, the District will be unable to form a Community Advisory Committee (CAC), educate the community, and engage with pushback or opposition that could ultimately result in the failure of the project. In fact, without public engagement, the District may be unable to raise sufficient funds to purchase the land in the first place. Funding to pursue open and thoughtful outreach is essential to the success of this project.

Goals and Measures of Success

As written in the 2017 (Phase I) application for the Arch Cape Community Drinking Watershed Protection Project

The goal of this DEQ Section 319 Grant-funded project is to enable the Arch Cape Domestic Water Supply District to permanently protect its drinking watershed from nonpoint source pollution caused by industrial forest management practices. The activities supported by this request will include technical assistance, public awareness and education, and training. Success will be measured by the delivery of an actionable plan for the District to take a direct ownership stake in the watershed. The plan will include assessments of the geography, standing timber stock, baseline environmental conditions, and required ecological restoration.

Since project begin, the Board has since refined its vision and strategy. The District Board's vision statement, adopted in December 2017, adds:

Our vision is to provide clean, safe, and affordable drinking water to residents and visitors of Arch Cape through the creation of a working, community-owned forest, to sustain the rich character and beauty of Oregon's coastal rainforest for generations.

Furthermore, in discussing the District's objectives for exploring the opportunity for establishing a community forest, the Board aims to:

- Engage local citizens and community partners in acquisition and management planning;
- Identify economically and ecologically sustainable management practices that ensure affordable water rates and adequate watershed protections;
- Develop responsible and reliable governance and oversight mechanisms for the watershed.
- Explore additional value-producing opportunities such as timber production, carbon sequestration, wildlife habitat, and local recreation; and
- Preserve the quality of life and character of Arch Cape.

Activities

The activities proposed to accomplish these goals include:

- Host at least three (3) community workshops on community forests and sustainable forest management;

- Lead at least one (1) annual field tours through the drinking watershed and engage local citizens, partners, and scientific experts in exploring forest management, wildlife habitat, and water quality implications;
- Leading learning exchanges with municipal officials and foresters from the towns of Cannon Beach and Astoria through in-person meetings and field tours in order to build on their demonstrated leadership in protecting drinking water source areas through direct ownership;
- Establishing trust with local residents, visitors, homeowner and rental associations, and other citizens groups through clear and timely communications including social media, community meetings, District board meetings, and direct outreach to core community members and user groups;
- Establishing a Community Advisory Committee that includes diverse representation of local community members, partner organizations and neighboring landowners, and other experts

V. Watershed Plan / Area Wide Strategy

The District has a strong local land trust partner. The North Coast Land Conservancy's "Rainforest Reserve Legacy Campaign" is underway to conserve the adjacent 2,900 acres through a combination of conservation easement and fee-title acquisition. Together, the North Coast Land Conservancy's Rainforest Reserve Legacy Campaign area will form the backdrop to Arch Cape, a 29 square mile conservation corridor—from the crest of the Coast Range summit at Onion Peak, down to Oswald West State Park and into the sea at the Cape Falcon marine reserve—benefiting Oregonians and visitors from around the world. The property is part of the privately held 5,000-acre Onion Peak Holdings tract that adjoins Oswald West State Park, which attracts 750,000 visitors annually and has become one of Oregon's most popular parks.

The community forest movement continues to grow across the Oregon Coast. In collaboration with Sustainable Northwest and other members of the Northwest Community Forest Coalition (NWCFC), the District has the opportunity to pilot a model of forest management that could improve water quality for the 49 other coastal communities that rely on drinking water source areas on industrial timberlands. Sustainable Northwest, Ecotrust, the Pinchot Institute, and other regional partners, recently received a two-year Meyer Memorial Trust grant (2018-2020) that will enable the organizations to continue building regional capacity, while conducting specific outreach such as drinking watershed vulnerability mapping and user story mapping.

VI. Desired Environmental Outcomes

Desired outcomes include measurable reductions in post-harvest sedimentation and pesticide/herbicide runoff at the drinking water plant intake. An additional outcome this project will expect to achieve is the retention of water within the watershed.

Suggested monitoring plan includes:

- Developing a tracking plan to monitor pre and post property acquisition sedimentation effects;
- Existing and ongoing District monitoring, which includes:
 - Arsenic, Inorganic Compound, Nitrite, Radionuclides: Every 9 years
 - Lead/Copper: Every 3 Years
 - Synthetic Organic Compound: Every 3 Years
 - Volatile Organic Compound: Annually
 - Disinfection Byproducts: Annually
 - Nitrate: Annually

- Increasing outreach and education in the form of:
 - Identifying key indicators and measures that support the forest health objectives identified by the District Board and to be further discussed by the Advisory Committee during the forest management planning process;
 - Exploring the use of 'Citizen Science' approaches, including volunteer-based watershed health monitoring.

VI. Phasing Considerations

Due to the extensive lead-time required to secure funding for land acquisition, this **2018 application** will contribute towards Phase 2 (Year 2) project activities.

- The first phase *was* to establish the enabling conditions for securing local ownership of the drinking watershed (Year 1).
- The second phase (Years 2-4, including and going beyond the scope of this grant) **will be** to carry out the due diligence, public engagement and acquisition strategies, and to develop a watershed management plan.
- The third phase (Years 4-6, +) will be to implement sustainable forest management practices. The expected benefits from this project will continue for future generations and for at least 100 years.

VII. Project Partners, Sources of Matching Funds, and Estimated Total Project Cost Please provide an estimate of your proposed funding requirements.

Sustainable Northwest will administer the grant and the District will subcontract such activities as required.

Project Partners include

- Local residents
- Arch Cape Domestic Water Supply District
- Arch Cape Sanitary District
- Sustainable Northwest
- North Coast Land Conservancy
- Ecotrust
- Northwest Community Forest Coalition

Stakeholders include timberland owners

- Ecotrust Forest Management (EFM)
- GreenWood Resources
- LynScot Ventures
- David Price
- Gus Harb

Other regional stakeholders include

- Rockaway Beach Citizens for Drinking Watershed Protection
- The Climate Trust
- The Pinchot Institute
- City of Astoria

The Year 1, 2017 Section 319 Grant focused on the following budget items

1. Providing technical assistance to the District Board (\$6,000)
 - o Drafting of vision, mission, and strategy statements for the District Board.
 - o Meeting with Society of American Foresters certified forester to discuss management planning and asset management process;
 - o Workshop with The Climate Trust about options for carbon credit revenues;
2. Facilitating a community advisory committee to inform community forest planning (\$3,000)
 - o Monthly meetings for twelve months;
 - o Travel costs listed below include per diem mileage and lodging.

The Year 2, 2018 Section 319 Grant (this application) focuses on additional tasks:

3. Continue facilitating a community advisory committee to inform planning (\$3,000)
4. Review of forest management practices undertaken by current and past owners, in order to make recommendations for future practices that will improve water quality (\$1,500)
5. Engage local residents through a volunteer watershed monitoring group, develop a watershed health priority plan, begin watershed health monitoring (\$5,000)
6. Hold a Beach kickoff Event at Leech Street Beach during the summer (In-kind)
7. GIS mapping of riparian areas, roads, landslide risk areas, high conservation value areas, and restoration needs (In-kind)
8. Legal review of acquisition strategy and ownership options (In-kind)
9. Purchase price comparable listings research in support of land appraisal (In-kind)
10. Access to educational resources about the benefits and costs of watershed protection (In-kind)

Suggested non-federal match includes

- In-kind: Arch Cape Domestic-Water Supply District Manager staff time. This is funded by ratepayer cash payments to the District.
- In-kind: Sustainable Northwest staff time

Type of expense reimbursement	NPS Funds	Match Funding (non-federal)	Total
Personal Services		6,630	6,630
Supplies and services			
Equipment			
Travel	1,000		1,000
Subcontracts	9,500		9,500
10% of MTDC	1,050	737	1,787
Total	11,550	7,367	18,917

References

1. Arch Cape Domestic Water Supply District Water Management and Conservation Plan. December 2015.
2. Source Water Assessment Report. Arch Cape Service District. State of Oregon Department of Environmental Quality. January 2002.

		Oregon Forest Practices Act	Forest Stewardship Council (USA)																																																						
1.	Stream Definitions	<ul style="list-style-type: none"> Stream Type F: Has fish, may also be used for domestic water. Stream Type SSBT:* Salmon, steelhead and bull trout streams in Western Oregon. Stream Type D: Used for domestic water, no fish. Stream Type N: All other streams Specific protections for small and medium SSBT streams introduced in 2016 	<ul style="list-style-type: none"> Category A Stream: A stream that supports or can support populations of native fish and/or provides a domestic water supply. Category B Stream: Perennial streams that do not support native fish and are not used as a domestic water supply. Category C Stream: An intermittent stream that never the less has sufficient water to host populations of non-fish aquatic species Category D Stream: A stream that flows only after rainstorms or melting snow and does not support populations of aquatic species 																																																						
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					<p>equipment, except to cross streams at designated places, or where the use of such equipment is the lowest impact alternative</p> <ul style="list-style-type: none"> -avoid disturbance of mineral soil; where disturbance is unavoidable, mulch and seed are applied before the rainy season -avoid the spread of pathogens and noxious weeds -avoid road construction and reconstruction.
				Outer Buffer	<p>Extends from the outer edge of the inner buffer zone to a distance of at least 150' from the edge of the active high water mark (slope distance, on both sides) of the stream channel.</p>
				Outer Buffer Management Activities	<p>single-tree or group selection silviculture</p> <ul style="list-style-type: none"> -post harvest canopy cover maintains shading sufficient to moderate fluctuations in water temperature, provide habitat for the full complement of aquatic and terrestrial species native to the site, and maintain or restore riparian functions -new road construction is avoided and reconstruction enhances riparian functions and reduces sedimentation;

					-disturbance of mineral soil is avoided; where disturbance is unavoidable, mulch and seed are applied before the rainy season
			Category B Streams	Inner Buffer	25'
				Inner Buffer Management Activities	Managed according to provisions for inner buffers for Category A
				Outer Buffer	75'
				Outer Buffer Management Activities	Managed according to provisions for outer buffer for Category A
			Category C Streams, and for lakes and wetlands smaller than one acre	Buffer	75'
				Buffer Management Activities	Managed according to provisions for outer buffer for Category A
			Category D streams	Management Activities	-maintains root strength and stream bank and channel stability -recruits coarse wood to the stream system -minimizes management-related sediment transport to the stream system
3.	Chemical Use	Distances from water bodies when using chemicals (distances measured horizontally)	Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides.		

	Chemical application buffers required for waters of the state by chemical and other petroleum products rule	Herbicides, Rodenticides, insecticides and all other chemicals except the next two columns		Fungicides and non-biological insecticides		Fertilizers		<p>1. World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement, shall be prohibited. If chemicals are used, proper equipment and training shall be provided to minimize health and environmental risks.</p> <p>No products on the FSC list of Highly Hazardous Pesticides are used (see FSC-POL-30-001 EN FSC Pesticides policy 2005 and associated documents)</p> <p>2. All toxicants used to control pests and competing vegetation, including rodenticides, insecticides, herbicides, and fungicides are used only when and where non-chemical management practices are:</p> <p>a) not available;</p> <p>b) prohibitively expensive, taking into account overall environmental and social costs, risks and benefits;</p> <p>c) the only effective means for controlling invasive and exotic species; or</p> <p>d) Result in less environmental damage than non-chemical alternatives (e.g., top soil disturbance, loss of soil litter and down wood debris).</p> <p>If chemicals are used, the forest owner or manager uses the least environmentally damaging formulation and application method practical.</p> <p>3. Chemicals and application methods are selected to minimize risk to non-target species and sites*. When considering the choice between aerial and ground</p>	
		Application	Aerial	Ground	Aerial	Ground	Aerial		Ground
		Fish bearing streams with no domestic use (most type F)	60 feet	10 feet	300 feet	10 feet	No direct application		No direct application
		Domestic use streams with fish (Type D and some Type F)	60 feet	10 feet	300 feet	10 feet	100 feet		100 feet
Other streams (Type N)	No buffers specified	No buffers specified	60 feet if flowing at time of application	No buffer specified	No direct application to large and medium streams	No direct application to large and medium streams			

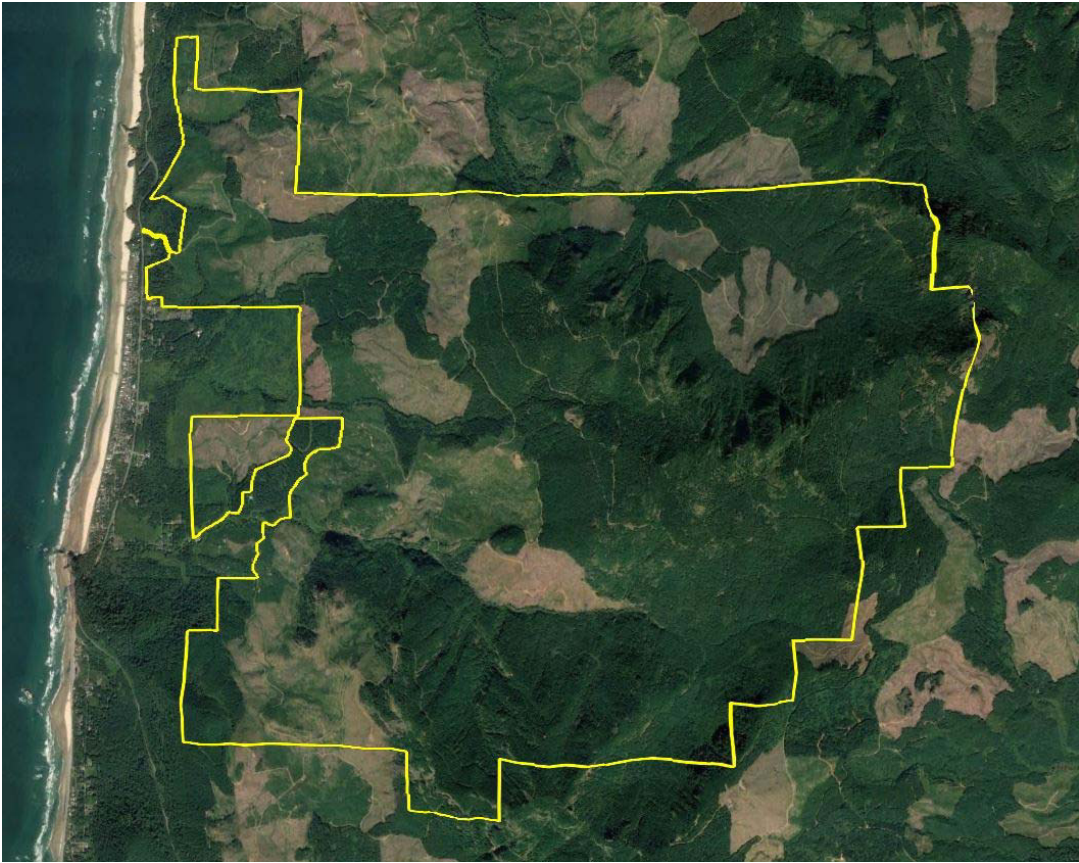
Significant wetlands	60 feet	10 feet	300 feet	10 feet	No-direct application	No-direct application
Aquatic areas of lakes > 8 acres	60 feet	10 feet	300 feet	10 feet	No-direct application	No-direct application
Aquatic areas of other lakes with fish	60 feet	10 feet	300 feet	10 feet	No direct application	No direct application
Other standing water larger than ¼ acres at time of application	60 feet	10 feet	300 feet	10 feet	No direct application	No direct application
All other waters	No buffer specified	No buffer specified	No buffer specified	No buffer specified	No buffer specified	No buffer specified

application, the forest owner or manager evaluates the comparative risk to non-target species and sites, the comparative risk of worker exposure, and the overall amount and type of chemicals required.

* Non-target species and sites include but are not limited to: water courses and buffer zones; rare, threatened or endangered plant and animal species and their habitats; RSAs and HC VF areas; vegetation selected for within-stand retention; adjacent stands; and, human use areas.

4. Whenever chemicals are used, a written prescription is prepared that describes the site-specific hazards and environmental risks, and the precautions that workers will employ to avoid or minimize those hazards and risks, and includes a map of the treatment area. Chemicals are applied only by workers who have received proper training in application methods and safety. They are made aware of the risks, wear proper safety equipment, and are trained to minimize environmental impacts on non-target species and sites

5. If chemicals are used, the effects are monitored and the results are used for adaptive management. Records are kept of pest occurrences, control measures, and incidences of worker exposure to chemicals.



ONION PEAK HOLDINGS PROPERTY MANAGEMENT PLAN

NOVEMBER 2017 – PUBLIC DRAFT 1



Property Summary Information

Date:	July 2017
Property Name:	Onion Peak Holdings
Planning Period:	2017-2021
Legal Description:	Sections 20, 21, 28, Parts of Sections 18, 19, 22, 27, 29-34, Township 4 North, Range 10 West, Clatsop County, Oregon. Parcels: 410000000627, 410000004500, 41030D000300, 410000000623, 410000004600, 410000004800, 410000000614, 410000005300, 410000000615, 410000000616, 410000000617, 410000000618, 410000000622, 410000000621, 410000000620, 410000000619.
Total Acreage:	Onion Peak 3,722 acres, Angora Peak 1,333 acres
Date Purchased:	November, 2016.
Prior Owner(s):	Stimson Lumber, Weyerhaeuser, Willamette Industries, Hampton Natural Resources Co., Cavenham Forest Industries.
Adjacent Lands:	Small private forest landowners, Weyerhaeuser, Lewis & Clark Oregon Timber LLC, Oregon State Parks, Oregon Department of Forestry, Arch Cape Sanitary District, Cannon View Park Inc, Oregon State Department of Transportation, Clatsop County
Conservation Initiatives:	North Coast Land Conservancy – Coastal Edge Conservation Initiative Within landscape of Oregon Conservation Strategy Conservation Opportunity Areas including North Fork Nehalem River, Tillamook Head & Necanicum River.
Fire Protection Entity:	Oregon Department of Forestry (ODF) Northwest Oregon North Zone
Topography/Elevation:	Gentle to moderately sloped lands in western portion of the property giving way to steeply sloped and dissected ridges and peaks. Elevation ranges from 40 to 3,060 feet.
Geology & Soils:	Silty loams, gravelly loams, and rock outcrops. Underlying rock are basalts and breccias along ridges and sedimentary and sandstones and siltstones in lower lying marine terrace areas.
Water Resources:	81 miles of creek. Northwestern, southwestern and southeastern parts of the property drain into streams emptying directly into ocean, northeastern lands flow into the Ecola Creek Watershed, while a small part of the eastern edge is situated within the Lower North Fork Nehalem River Watershed, small area along southern boundary drains into Short Sands Creek. Parts of Shark, West Fork Ecola Creek, Asbury, and Arch Cape and tribs are classified as fish bearing. Coho, chum, steelhead, and cutthroat trout on Ach Cape Creek. Common native resident fish on other creeks, Hwy 101 culvert blocks anadromous use on Shark/Asbury Creeks. Approximately 23 acres of riverine and freshwater forested/scrub wetland per National Wetland Inventory.

Property Summary Information (Continued)

Vegetation Types:	Mid/Late Rotation Conifer Forest (58%), Early Rotation Conifer (42%). Stand composition in both young and older stands is predominantly Western hemlock & Sitka spruce, while Douglas-fir, Western redcedar, Pacific silver fir, & red alder are minor species.
HCVF/RSA:	Fish bearing riparian habitats are designated as High Conservation Value Forest (HCVF), the conservation easement area at the summit of Onion Peak is designated as a Representative Sample Area (RSA).
Site Index:	Mostly site class 3 & 4 (98%).
Operability:	Ground-based: (25%), Cable-based: (71%), Helicopter (4%)
Road System:	42 miles of mapped road. Road network in good condition overall with two noteworthy slumps and some drainage improvements primarily needed in the upper parts of the Property.
Known Rare Plants and Habitats:	8 species of rare plants known to occur on the property, occurring mostly on ridgetop outcrops.
Focal/At-Risk Fish & Wildlife Species:	11 bird, 12 mammal, 6 amphibian, and 6 fish species current or future, potential occurrence.
Recreation:	Past use has been mostly non-motorized use including hiking, biking and horses. Some motorized-based hunting has been allowed in the past.
Management Strategies:	<p>Vegetation: Manage recent harvest units for high quality early seral, maintain mature forest structural features in retention areas including riparian buffers to voluntary FSC standards in mid/late rotation forests. Protect rare plant habitats including ridgeline outcrops and meadows, and petal tail seeps.</p> <p>Water Resources: Protect water quality for municipal use by buffering streams and wetlands to FSC standards, avoiding herbicide use in sensitive areas, and applying best management practices for roads to minimize sediment production and delivery to streams.</p> <p>Roads: Maintain road network for efficient management operations and fire control. Implement best management practices to minimize sediment flows into streams.</p> <p>Fish & Wildlife: Identify opportunities to improve fish passage. Restrict vehicle access by the public, promote early seral habitats and develop mature forest structure. Retain all remaining old growth stumps, down logs, and snags.</p> <p>Recreation and Scenic Resources: Non-motorized access. Horses, bikes, and predator hunting are not allowed.</p>

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

www.ecotrustforests.com
503.467.0829

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Introduction

Purpose and Need

The Onion Peak Holdings are situated in Southwest Clatsop County along the Northwest coast of Oregon (see Map 1). This Property Management Plan (PMP) includes both the Onion Peak (3,722 acres) and Angora Peak (1,333 acres) properties and is referred to as “Onion Peak Holdings” or “Property” in this PMP (see Map 2).

The Property provides water to four communities, contains unique botanical and geologic features, and encompasses nearly the entire watershed of several coastal streams. These lands border protected state parks and buffers these mature forest habitats, while the upper ridges and slopes provide viewsheds. It is a well-visited landscape with potential to provide a mix of recreational opportunities and is an important component of the North Coast Land Conservancy’s Coastal Edge strategy. The lower lying areas of the Property provide an outstanding opportunity to demonstrate community forestry that recognizes the wide range of values this land can produce. Past management has degraded the Property’s forest and water resources. This management document identifies opportunities for active, innovative, stewardship that will enhance the ecological and financial values of the Property, towards the vision of a protected working landscape.

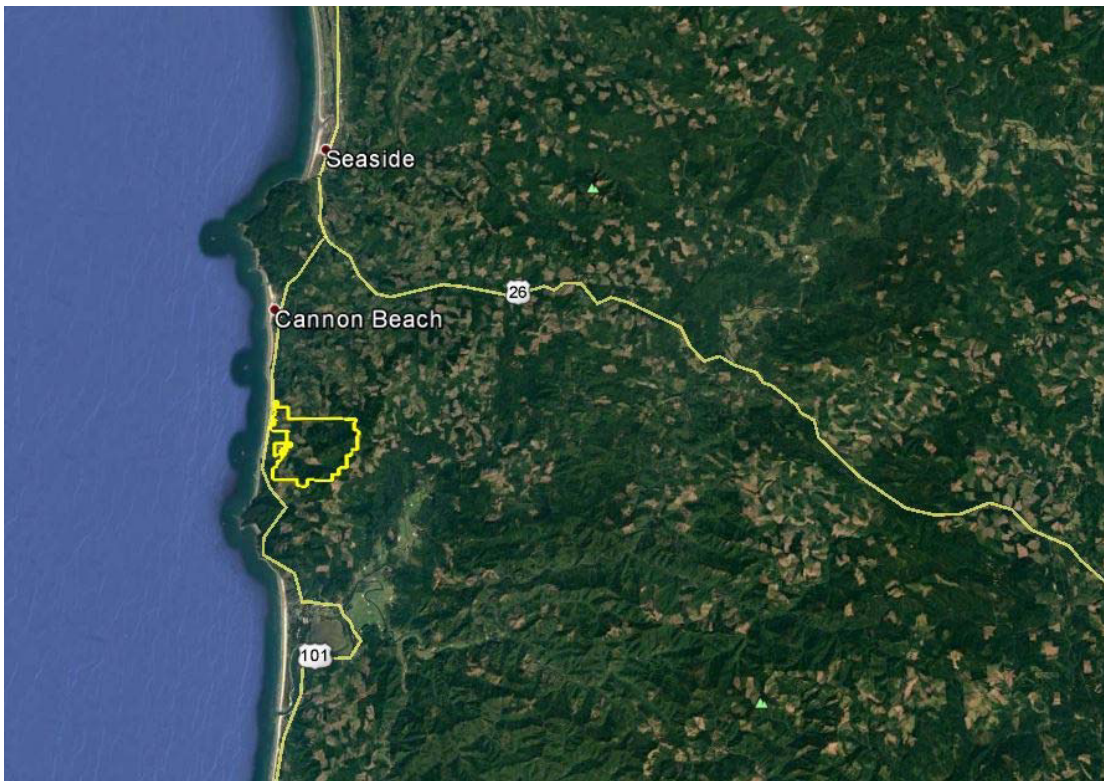
Plan Structure

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. Actions contingent on the securing of outside funding sources and partnerships are distinguished from core management activities. 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.

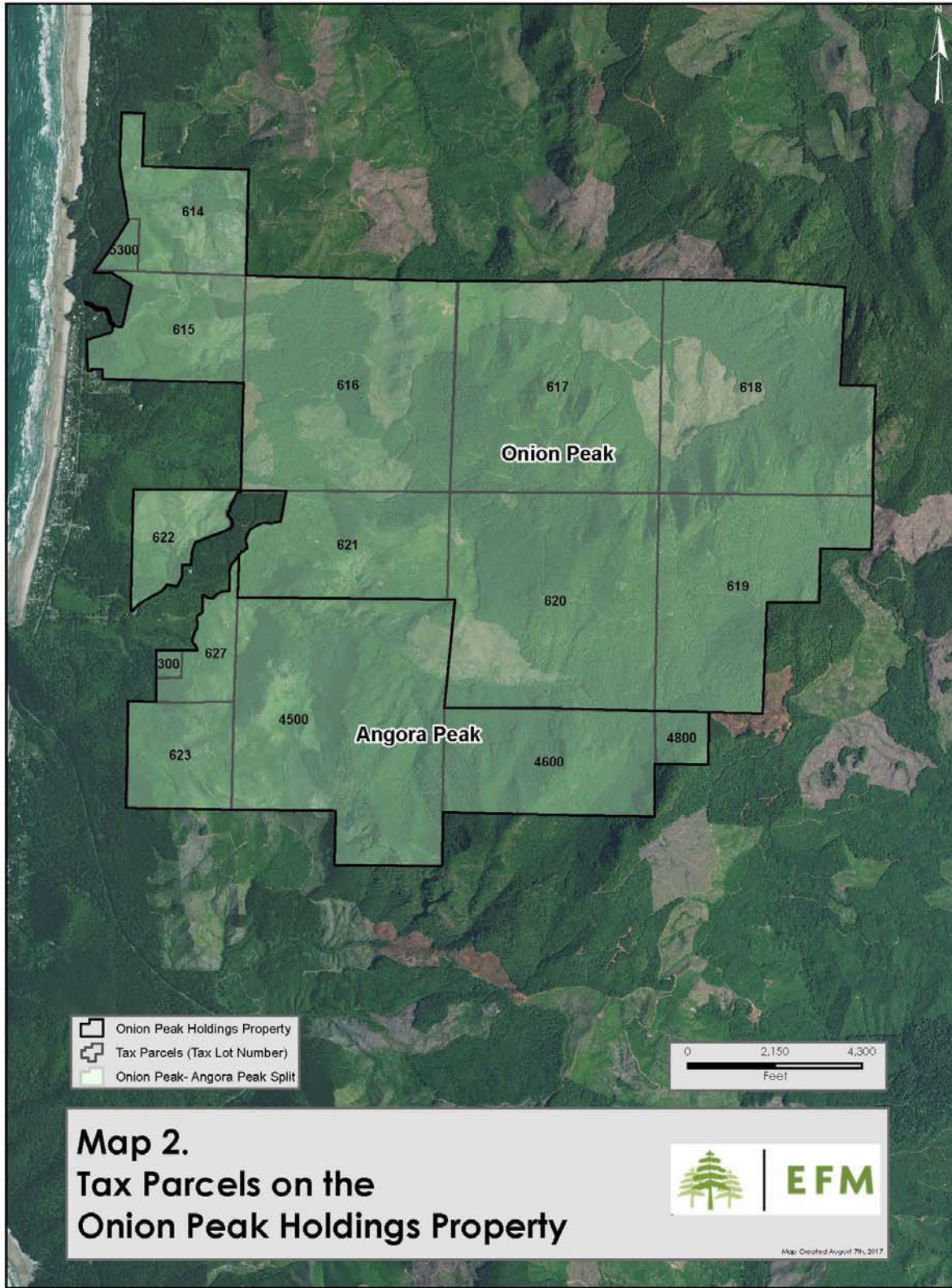
Location, Landscape, and Access

The Onion Peak Holdings are located four miles south of the popular coastal community of Cannon Beach and about 60 miles northwest of Portland. The property is bound to the north, east and most of the south by industrial timberlands (Lewis & Clark Timberlands, and Weyerhaeuser) and state forest. The western boundary is a mixed ownership of Oregon State Department of Transportation, Cannon View Park Inc., Arch Cape Sanitary District, Oregon State Department of Parks and Recreation (Hug Point and Oswald West State Parks), and small private lots. The greater landscape contains a mix of industrial and state forestlands except along a narrow coastal belt of small private woodlots, beach communities and municipal and water district lands, and state parkland.

There are three main access points to the Property, all entering from Highway 101. The main access to the Onion Peak Property is via Hug Point Road (gated). This is a direct access as the Property intersects Highway 101. Access via the central part of the Onion Peak Property initiates from Shingle Mill Lane and enters the property just past the Arch Cape wastewater treatment facility (gated). This road is public but there is a short privately owned stretch of road just before



Map 1. Onion Peak Holdings (yellow boundary) and vicinity.



entering the Property directly across from the wastewater facility. The main access to the Angora Property is from the gated Falcon Cove Road. The approximately 1.25 mile access road leading up to the gated entrance along the south property boundary is owned by Weyerhaeuser.

There are several other secondary access points to the Property. The Tolovana/Hug Point mainline enters the property from Lewis & Clark Timberlands at the north end of the Property. Two spurs enter the northwest corner of the Property from Lewis & Clark Timberlands, also via the Hug Point Road. The High Side Road enters the northeast corner of the Property from Lewis & Clark Timberlands and ends along the western Property boundary. This road is non-passable. A second road (Rock Crusher Road) enters the property below and to the west of the High Side Road and connects with the Side Seven Road. This road is not passable. Arch Cape Mill Road (just west of the wastewater facility) used to provide access to the Angora Property from Arch Cape Sanitary District land. Passage is now prevented due to removal of the bridge on Arch Cape Creek. Entry from Arch Cape Mill Road from the south (via Weyerhaeuser land) is uncertain but the road appears from aerial imagery to be non-passable.

All access points to the property are controlled with locked gates.

Legal Ownership and Easements

The Property was purchased in November 2016 by Ecotrust Forests II, LLC. The Onion Peak Property is owned by Onion Peak, LLC. Angora Peak is owned by Ecotrust Forests II, LLC. Ecotrust Forest Management (EFM) is the manager of the Property. The main easements that concern management of the Property are described below. Arch Cape Water and Service Districts has an easement to run utilities to their lands for wastewater discharge and access for bio-solids dispersal. Cannon View Park Inc., has an easement to access its water storage tanks and spring box on Hug Point Roads. The North Coast Land Conservancy (NCLC) has a conservation easement to protect rare plants in part of Section 22. Greenwood Resources and Weyerhaeuser have a right of way agreement to access their adjacent lands and use of tailholds/tower guylines on the property. This and other easements are listed in Appendix D.

Ownership History and Use

Prior to purchase by Ecotrust Forests II, LLC the Property was owned by Stimson Lumber Company, which bought the ownership from Weyerhaeuser in 2004. Weyerhaeuser acquired these lands when it purchased Willamette Industries in 2002. Prior owners included Hampton Natural Resources Co. and Cavenham Forest Industries. The Property was initially logged extensively in the 1960s. A cedar mill (Arch Cape Shingle Company) located in the current location of the Arch Cape wastewater treatment plant processed logs from the Property for decades until it burnt down in 1967. A railroad line was constructed during the early period of logging to move logs to local mills. A second round of logging initiated in the early 2000s and accelerated after 2005. Most of the western half of the property was harvested by 2014. Between 2014-16 harvests were mostly concentrated in the northeast corner of the Property. Intensive commercial forestry has been the predominant use on the Property. Harvested stands have been planted and supplemented with natural regeneration. In recent years, herbicide use

has been limited to areas outside of domestic watersheds. Salvage of old growth cedar logs and stumps has been occurring for several decades. Rock pits have been developed during periods of logging for road building and maintenance. Use of the Property by Native Americans is unknown.

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 1. 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.

Table 1. Property Goals and Objectives

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

#	Goal	#	Objective
	<i>management and at-risk species.</i>	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.
		3	<i>Maintain road infrastructure while minimizing environmental impacts.</i>
3.2	Reduce sediment delivery from roads and drainage structures.		
3.3	Reduce road impacts to wildlife.		
4	<i>Manage forests and roads to maintain quality of domestic water supply.</i>	4.1	Reduce sediment delivery from roads and drainage structures with domestic watershed. See 3.2
		4.2	Work with Arch Cape Water District, Cannon View Park, Cannon Beach Public Works and Falcon Cove Beach Domestic Water Supply District to maintain desired water quality.
5	<i>Contribute to local conservation economy.</i>	5.1	Employ local contractors and suppliers wherever practicable for harvests, road work, research, monitoring, habitat enhancement, and other activities.
		5.2	Identify opportunities to enhance the benefits the property provides to local residents by allowing hunting, hiking, and biking.
6	<i>Engage community in collaborative management.</i>	6.1	Seek public input and involvement in management activities by key stakeholders, such as tribes, resource agencies, neighboring landowners, and the North Coast Land Conservancy.
		6.2	Consult periodically with community members, indigenous peoples, forest researchers, neighboring landowners, and wood production facilities.
		6.3	Provide opportunities for public involvement and collaboration.
		6.4	Consult with tribes with interests in the property and co-develop access or monitoring programs where indicated.
7	<i>Encourage non-vehicular public access</i>	7.1	Provide signage explaining access policy.
		7.2	Work with North Coast Land Conservancy to develop recreation uses consistent with their vision for the land.

Resource Assessment

Physical Environment

Climate

The Property has a maritime climate featuring relatively warm to cool and moderately moist summers and cool, wet winters. Average annual precipitation at sea level is about 80" with most occurring between November and May. Average annual temperatures range from 45° F in winter to 56° F in summer. With an elevation gain of 3,000', the upper areas of the Property are cooler and moister than the low lying topography. Snow accumulation during cold winter periods is common and winds are extremely strong and persistent. These high winds are a significant management factor when designing silvicultural prescriptions to minimize windthrow.

Topography and Soils

The Onion Peak Holdings are situated in the Coast Range: Volcanics Ecoregion. The lower lying western areas of the property are mostly gradually sloped and underlain by sedimentary rocks (see Map 3). These areas give rise to steep and dissected extrusive igneous ridge and peaks composed of breccias, basalt flow rock and pillow basalt. Onion Peak is the most prominent



Map 3. Topography of Onion Peak Holdings (map facing east, Arch Cape in foreground).

landmark of the Property and part of an impressive U-shaped ridge system that forms a cirque. Other defining topographic features of the Property include a steep east/west running canyon formed by Arch Cape Creek and the prominent ridgeline that includes Angora Peak (which is situated just south of the ownership. Elevation ranges from 40' at the extreme west edge of the Property to a highpoint of 3,060' on Onion Peak.

The present topography was formed as the result of a rising seafloor which exposed the sedimentary layer that forms much of the bedrock on the property. Also exposed during this lifting were the volcanic flows that originally erupted and cooled under the ocean. These igneous layers (basalt flows and pillows and breccia) have subsequently been shaped into steep ridgelines with rocky outcrops and pinnacles from weathering.

There are 12 major soil complexes on the Property (see Map 4, and Table 3 in Appendix E). Laderly-Rock outcrop complex is the dominant soil complex on the Property occupying Onion Peak and surrounding ridges and upper slopes (26% of Property). Murtip-Caterl complex (boulder), Skipanon gravelly silt loam, and Killam-Fawceter-Rock outcrop combined comprise 37% of the Property.

Soils generally consist of silty loams and gravelly loams with a depth to bedrock generally increasing at lower elevations and with lands to the west. Depth to a restrictive layer ranges from 0 -40" in Laderly-Rock outcrop complex and Killam-Fawceter-Rock outcrop complex in the property uplands to 80+ inches in the Klootchie-Necanicum complex found along the western property boundary. Parent materials are mostly igneous rock and most soils formed in colluvium. Lower lying areas to the west of Onion Peak contain sedimentary sandstones and siltstones. Soils along the western boundary are a mix of igneous and sedimentary formed from mass movements.

All soils except Grindbrook silt loam, Mues silt loam, and Walluski silt loam (combined <15 acres) are well-drained. Nearly the entire Property is susceptible to severe or very severe erosion on exposed compacted road and off road soils. The soil survey indicates a low to moderate risk of seedling mortality.

Soil survey productivity as measured by tree site index ranges from 111-136. The broad flat areas of the Property average around 105, while the slopes are 111. The weighted Property average site index is 116 (high site class 3). Soil productivity is highest in the northwest and western edge of the Property where soils are deepest and elevations are lowest. High winds on south and west exposed ridges and slopes, particularly at the higher elevations limit tree growth and biological productivity.

Water Resources

With its prominent high elevation ridges and slopes, the Property captures large amounts of precipitation, most of it flowing directly into the Pacific Ocean via a series of small coastal frontal watersheds. Nearly 82 miles of creeks occur on the property (see Map 5). The largest of these are Arch Cape (Large classified) which drains the south part of Property and Asbury and Shark Creeks (both Medium Classified), situated in the central part of the Property. West Fork Ecola Creek (Large) drains lands in the northeastern part of the Property and is part of the Ecola Creek Watershed. Part of the eastern slope of Onion Peak is situated in the Lower North Fork

Nehalem River Watershed. Part of the south slopes of Angora Peak drain into Short Sands Creek which eventually flows through Oswald West State Park. Fall Creek (Medium) drains the extreme north end of the Property. Steep topography and shallow soils create flashy hydrography, particularly during winter storms and in response to rain on snow events.

Approximately 23 acres of wetlands are mapped on the Property per the National Wetland Inventory. Most of this wetland is classified as riverine. Two small palustrine forested wetlands (totaling < 1 acre) occur at the lower end of Arch Cape Creek and along an unnamed tributary. Fish use on the property is discussed below (see Fish and Wildlife).

The Property provides domestic water to the following communities.

Arch Cape

Shark Creek provides water to the community of Arch Cape between the months of October and June. During the summer months, the intake is on Asbury Creek just east of Hwy 101. There are 280 connections to this water supply from a population that ranges from 150 residents to over 900 during the tourist season. The 2015 Arch Cape Domestic Water Supply District Water Management and Conservation Plan cites concerns for both turbidity and chemical contamination from forest management practices on industrial lands within the drainage (Chick 2015).

Cannon View Estates

Springs on the Property along the lower Hug Point Road provide water to Cannon View Estates subdivision. The drainage above this spring is owned by Cannon View Park Inc.

Cannon Beach

The West Fork of Ecola Creek is a summer water intake for the town of Cannon Beach.

Falcon Cove

The community of Falcon Cove uses water that drains off slopes in the southwest corner of the Property.

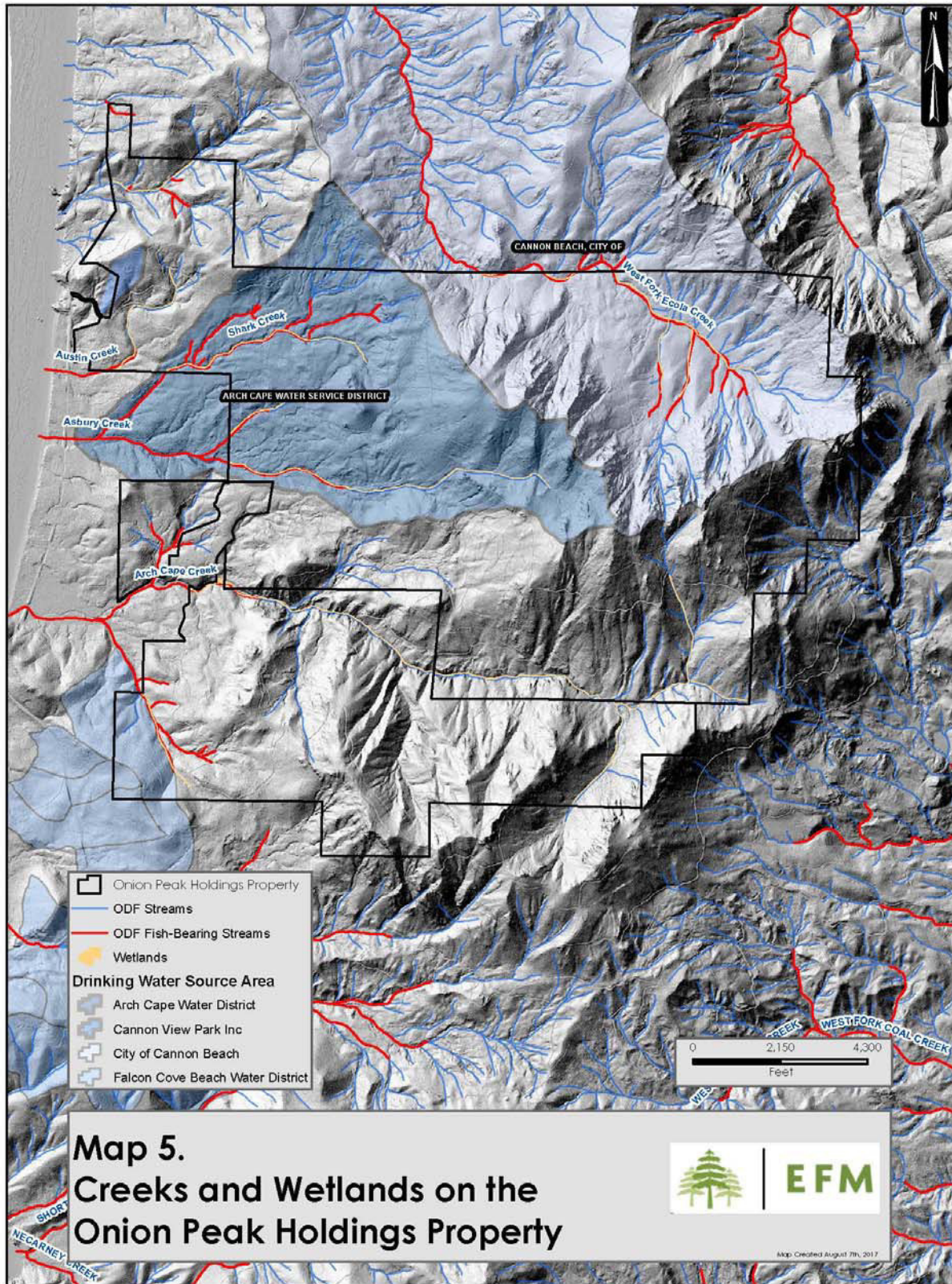
Other

Parts of Fall Creek and its tributaries and a small creek at extreme northwest part of the Property are domestic water sources. An unnamed creek in the southwest corner of the Property has a domestic use.

Vegetation

Overview

The Property is nearly completely typed as forest and contains a mix of newly regenerated and second / third growth coastal temperate conifer stands. Due to a dramatic elevation gradient, these stands span three forest zones (Sitka Spruce, Western hemlock, and pacific Silver fir). At its crest, rocky outcrops and meadows host several rare plant communities and contain some species found only in a few coastal locations.



Stand Descriptions

Structure and Composition

A total of 191 stands were delineated by the previous owner, most ranging in size from 1-142 acres (stand encompassing Onion Peak is notable exception at 683 acres). Most stands are dominated by Western hemlock, while Sitka spruce and Douglas-fir are common minor species. Pacific silver fir becomes common in mixed stands at higher elevations. Hardwoods mostly comprised of red alder with occasional bigleaf maple and black cottonwood are limited mostly to stream edges, inner canyons and roadsides.

Stand structure throughout the Property is nearly all single cohort and in either the stem exclusion stage or early seral stages of development. Approximately 55% of the gross acres are 10 years of age or younger and mostly distributed in the western half of the Property (see Map 6). Stands in the commercial age classes (40+ years) constitute 38% of total area, much of this on the upper elevation areas of Angora and Onion Peaks. According to the forest inventory, the oldest stand on the Property contains trees estimated at 70 years of age. Small patches of older forest are likely to occur scattered throughout on areas difficult to access by past logging.

Understory plant communities are often poorly developed in closed stands due to high tree densities. Typical composition may include low cover by sword fern, salal, salmonberry, vine maple, dwarf Oregon grape, and evergreen huckleberry. Recently harvested stands contain early-seral native and some non-native species (see Noxious and Invasive Species below). Pacific reedgrass is a typical dominant species along with common shrubs in newly planted areas.

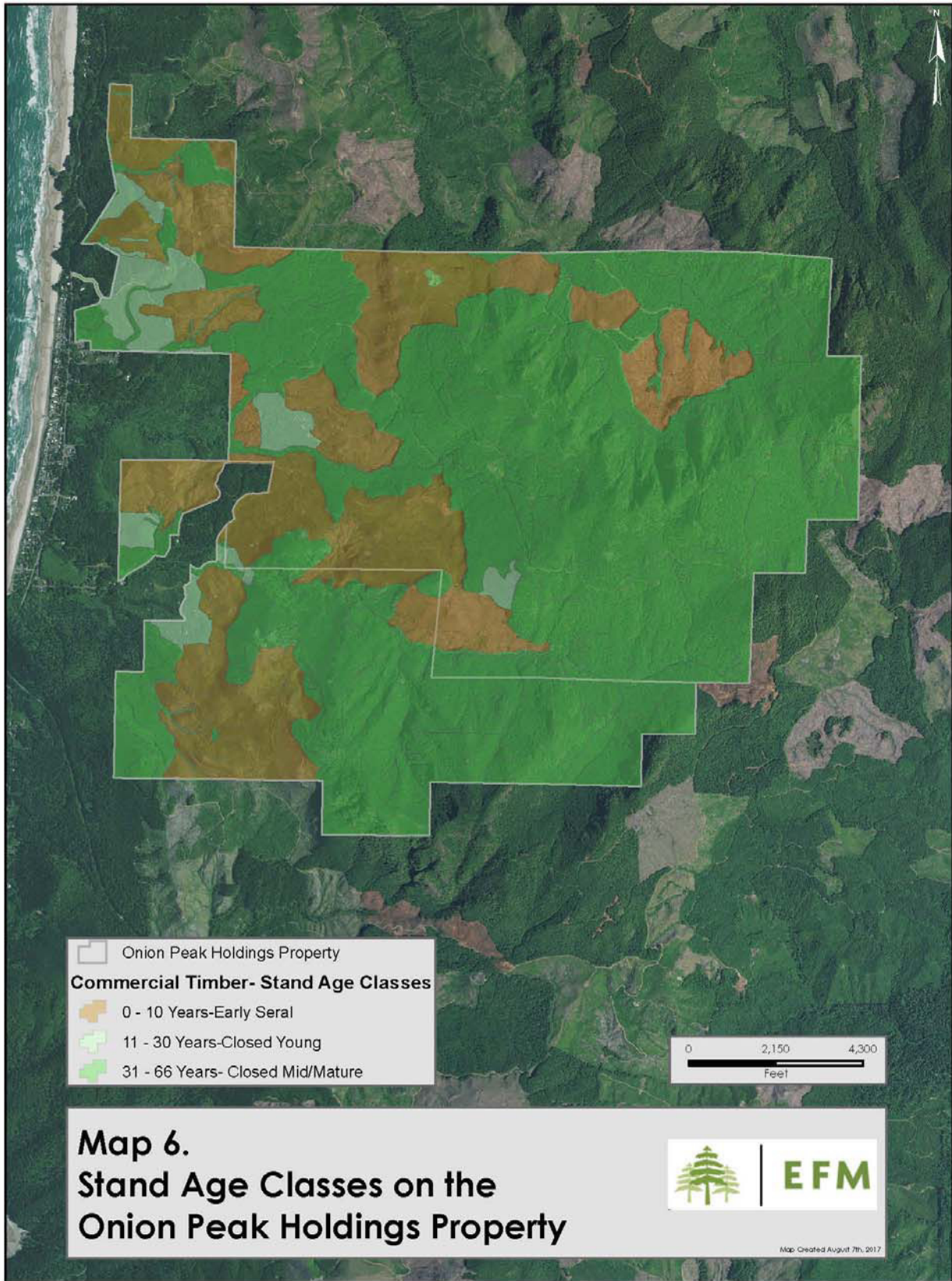
Less common plant communities on the Property are found on top elevation ridgelines and slopes. These thin soiled slopes and outcrops contain “balds” and meadow “rock gardens” which are a botanical highlight of this Property (see Unique Habitats and Rare and Listed Plants below). Between the Pacific silver fir stands and open outcrop habitats is a zone of shrubland dominated by copper bush (a relatively rare species) and vine maple along with Sitka alder, foals huckleberry, and oval-leaf huckleberry.

Dead Wood

There currently is no inventory data to quantify dead wood on the Property. Large snags are observed to be very uncommon due to intensive timber harvesting. Another important habitat condition, decay in living trees is also lacking. Black bear have been creating snags in closed stands and many dead trees are noticeable along Dave’s Spur and the upper part of the Onion Peak Road. These snags are providing some well needed dead wood recruitment and mortality is not considered excessive currently. In most areas, down wood is a more prevalent structure having carried over from the original forests. However, large cedar down logs and stumps have been salvaged over the past decades and are depleted from many areas.

Unique Habitats (Special Management Areas)

The Conservation Easement Area which includes upper-elevation ridgeline and slopes on Onion Peak is a Representative Sample Area (RSA) (see Map 7, Appendix F). The riparian zones on fish bearing creeks are classified as High Conservation Value Forests (HCVF).



Disturbance Regimes

Insects and Disease

No major insect issues were observed during Property site visits in spring 2017. 2015 aerial reconnaissance does not show Swiss Needle Cast impacting the area in the immediate vicinity of the property. Remnant naturally regenerated Douglas-fir from locally adapted stock on the Property could be used as source for potentially SNC resistant seedlings. Deformities on trees caused by the Spruce tip weevil were observed but damage is minor. Due to the prevalence of young vigorous forests and location, forest pathogens such as root and heart rots appear to be very limited.

Fire

Historic fire regimes on the Property are unknown, but were likely characterized by low frequency and moderate to high severity events. The prevalence of large old growth Western redcedar stumps suggests long fire free intervals.

In the industrial period up until the last 15 years, broadcast burns were common after logging and likely used on the Property as is evidenced by the relatively sparse stand understories. In November of 2014, a slash pile burn escaped and burned several hundred acres of recently planted and young forest. Since this incident, slash piles have been removed as biomass or retained on site.

Other Abiotic Agents: Windthrow and Unstable Slopes

Windthrow and slope failure are the main abiotic disturbance events causing tree mortality on the Property. The exposed profile of this property subjects it to frequent strong coastal winds year round, which are most extreme during winter months. Evidence of these winds is common across the property both with stunted heights and bent form on trees and windthrow along harvest edges. Riparian buffers have experienced major blowdown, particularly those oriented perpendicular to prevailing winter winds.

NRCS Soil Survey lists Skipanon Gravelly Silt Loams on moderate to steep slopes as subject to sliding and slumping due to deep plastic soils and fractured bedrock. The slump on the HP 19 road occurs in this soil type. Another road failure on the upper Shingle Mill Road suggests unstable slopes in this area. Rock and debris fall is a persistent issue on steep rocky slopes particularly along Side 7, upper Hug Point, and Onion Peak roads. Other evidence of recent slides can be seen south of the Shingle Mill Road where a large near vertical expanse of bedrock has been exposed, and in the upper Arch Cape Creek drainage.

Rare and Listed Plants

There are eight identified plant species listed with some level of rarity classification (see Table 4). Three are federally listed species of concern and state candidate species for listing. The species in Table 4 are associated with rock gardens and balds on the Onion Peak ridgeline system. Queen-of-the-forest is also found in wet rocky seeps and along streams in other locations on the Property. An additional species, Frigid shootingstar (*Dodecatheon*

austrifrigidum), a federal Species of Concern and ORBIC List 1, has not been found but is assumed to be present.

Table 4. State/Federal/ORBIC Listed Plant Species

Species:	Scientific Name:	Federal	State	ORBIC	Location
Saddle Mt. bittercress	<i>Cardamine pattersonii</i>	SOC	C	1	Onion Peak
Queen-of-the-forest	<i>Filipendula occidentalis</i>	SOC	C	1	Onion Peak
Saddle Mt. saxifrage	<i>Micranthes hitchcockiana</i>	SOC	C	1	Onion Peak
Fringed kittentail	<i>Synthyris schizantha</i>	None	None	3	Onion Peak
Rosy lewisia	<i>Lewisia columbiana var. rupicola</i>	None	None	2	Onion Peak
Wandering daisy	<i>Erigeron peregrinus var. peregrinus</i>	None	None	2	Onion Peak
Pink fawn-lily	<i>Erythronium revolutum</i>	None	None	4	Onion Peak
Flett's groundsel	<i>Packera flettii</i>	None	None	2	Onion Peak

Soc= Species of concern, C=Candidate for listing as Threatened or Endangered, ORBIC= Oregon Biodiversity Information Center, 1= Threatened or Endangered throughout range, 2= Threatened, Endangered or extirpated from Oregon, but secure or abundant elsewhere, 3= Review, 4= Watch.

Noxious and Invasive Species

Scotch broom and Armenian blackberry are the most common and problematic noxious weeds on the Property (see Table 5). Both are spreading along roadsides and in some recently harvested units. Tansy ragwort has been found along roadsides and in clearcuts. The other weeds are on plant lists for the Property but extent and rate of spread are unknown. In addition to noxious weeds other non-native species are known to occur within “rock gardens” and “balds. Species such as annual velvetgrass, ox-eye daisy, hairy cat’s ear, mullein, and foxglove are present and impacting the native plant community, though to what extent is not known.

Table 5. State-listed Noxious Weeds

Weed:	Incidence/Spread:
Bull thistle	Unknown
Canada thistle	Unknown
Common St. John’s wort	Unknown
Tansy ragwort	Moderate incidence and spreading along roadsides and in some units.
Armenian blackberry	Moderate incidence and spreading along roadsides.
Scotch broom	Light incidence and spreading along roadsides and in some units.

All plants listed above are Class B on Oregon state noxious weed list. Weed incidence and spread are based on best guess. Inventory has not been completed.

Non-Timber Forest Products

No assessments have been made for non-timber forest products. To date EFM has not conducted any commercial non-timber harvest activities on the Property.

Reference Conditions and Consistency with DFC and Trajectory Conditions

Remnant stumps and aerial photos indicate much of the Property was late-successional conifer forest until initial harvests occurred in the 1960s. Cedar stumps, many massive in size, are abundant, or were before salvage, throughout the lower elevation areas both in draws and on slopes. The cedar shingle mill along Arch Cape Creek is further testimony to the cedar resource that preceded logging. This species likely co-mingled with other canopy dominants including Douglas-fir, Sitka Spruce, and Western hemlock in multiple canopy structure.

The forest landscape on the Property has been heavily altered with successive harvests. Along with changes in structure (loss of large trees, canopy complexity, dead wood) species such as Western redcedar have been depleted. DFC of mature forest conditions will occur over the decades/centuries by limiting logging, retaining trees during harvest and with passive management. However, silvicultural manipulations such as PCT, gap creation and underplanting will accelerate this progression. The rebuilding of the cedar resource can be assisted by interplanting newly regenerating stands.

Though we don't know what reference conditions looked like on the rocky outcrop habitats on the Onion Peak and Angora Peak ridgelines, they likely have been dominated by grass/forb and shrub communities soon after these features formed. The lack of soil and the harsh environment has provided a competitive advantage for these habitats over trees. Logging may have actually helped maintain these communities by removing adjacent shading forest cover, though these disturbances have also brought weeds to the sites. Invasive weeds are likely the largest threat along with conifer encroachment. Climate change may lead to species composition changes.

Fish and Wildlife

Overview

Wildlife use of the Property by species commonly associated with early seral to young closed conifer/hardwood coastal forests is likely. Many of these species have been observed by visitors. Roosevelt elk frequent the Property. Use by black bear, blacktail deer, coyote, bobcat, mountain lion and other mammals is known. The upland basalt outcrops and balds provide unique habitat niches on the Property. Common birds of prey such as red-tailed hawk and turkey vulture as well as more rare species such as Peregrine falcon and bats may be using the rocky cliffs. Western bluebird and other early-seral bird species may be occupying the grass/shrub and small tree environments at high elevations. Though snags and large decayed, deformed trees are rare and limit woodpecker and associated secondary cavity nesting species, observed abundance of down wood in some areas likely provides good habitat for a range of amphibians and small mammals (e.g. western red-backed vole). Limited use of herbicides by the past owner has created more high quality early-seral habitat.

Arch Cape Creek has documented use by Pacific coho, Steelhead and chum along about ¼ mile of creek on the property until a natural barrier (water fall) prevents passage. A historical run of

the same species used to occur on Asbury Creek but a culvert under Hwy 101 now prevents fish passage. Asbury and Shark Creeks are classified as fish bearing above this culvert and are likely used by resident cutthroat, and rainbow trout. Other fish bearing streams occur on the West Fork Ecola Creek and some of its tributaries, Coal Creek (a tributary to the Lower North Fork Nehalem River) and Dichter Creek (a tributary to Asbury Creek).

Limiting factors for wildlife include lack of forest structural complexity. The predominance of young stem-exclusion stage forests and lack of biological legacy structures (old trees and large snags) limit use by a greater number of wildlife species. Species associated with large cedar will benefit in the long term from reforestation of this species.

The most significant human limiting factor to anadromous fish use on the Property may be the fish passage barrier culvert on Hwy 101 under Asbury Creek. Stewart (2011) surveyed the lower parts of Asbury and Shark Creeks and identified potential natural barriers and likely limits of anadromous passage if ODOT barrier was removed. He notes some anadromous habitat up to the HP 19 crossing on the Property may exist. The culverts on the HP 19 road over Asbury and Shark Creeks are fish barriers. Additional assessment of quality of anadromous fish habitat including whether passage could occur up to and beyond these culverts is needed.

Classified and Priority Habitat Fish and Wildlife Species

Table 6 lists 35 focal management species that may be present currently or in the future with restoration of the Property and greater regional conservation efforts. This list includes 11 bird, 12 mammal, 6 amphibian, and 6 fish species. Actual use is confirmed for Peregrine falcon, Olive sided flycatcher, Band-tailed pigeon, Mountain quail, Pileated woodpecker, Coastal tailed frog, Northern red-legged frog, Steelhead, Coastal coho, Chum, and Cutthroat trout.

Limiting Factors for focal wildlife include lack of mature, structurally complex forest and biological legacies (all wildlife groups) including large and abundant snags, down wood, large trees, canopy layering, and spatial heterogeneity. Species closely tied with late-successional habitat (Marbled murrelet and Northern spotted owl) are unlikely to be using the property currently due to lack of mature forest. Lack of structural retention in clearcuts limits greater use by species such as Western bluebird and Olive-sided flycatcher and bats. Fish passage obstructions limits some use (Asbury/Shark Creek). Greater knowledge of stream habitat conditions would allow assessment of possible limiting factors for both fish and amphibians.

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

Species:	Scientific Name:	Federal	State	OCS Strategy	Current Use
Bald Eagle	<i>Haliaeetus leucocephalus</i>	None	Vuln.	Yes	P
Peregrine Falcon	<i>Falco peregrinus anatum</i>	None	Vuln.	Yes	C
Northern Goshawk	<i>Accipiter gentilis</i>	Concern	Vuln.	No	P
Northern Spotted Owl	<i>Strix occidentalis caurina</i>	Threat	Threat	Yes	U
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Threat	Threat	Yes	U
Mountain Quail	<i>Oreortyx pictus</i>	Concern	Vuln.	No	C

Species:	Scientific Name:	Federal	State	OCS Strategy	Current Use
Band-tailed Pigeon	<i>Patagioenas fasciata</i>	Concern	None	Yes	C
Olive-Sided Flycatcher	<i>Contopus borealis</i>	Concern	Vuln.	Yes	C
Pileated Woodpecker	<i>Dryocopus pileatus</i>	None	Vuln.	No	C
Willow Flycatcher	<i>Empidonax traillii</i>	None	Vuln.	No	P
Western Bluebird	<i>Sialia mexicana</i>	None	Vuln.	No	P
Red Tree Vole	<i>Arborimus longicaudus</i>	Cand.	Vuln.	Yes	P
White-footed Vole	<i>Arborimus albipes</i>	Concern	None	No	P
Pacific Fisher	<i>Pekania pennanti</i>	Cand.	Crit.	No	U
Pacific Marten	<i>Martes caurina</i>	None	Vuln.	Yes	P
California Myotis	<i>Myotis californicus</i>	None	Vuln.	Yes	P
Long-eared Myotis	<i>Myotis evotis</i>	Concern	None	No	P
Fringed Myotis	<i>Myotis thysanodes</i>	Concern	Vuln.	No	P
Long-legged Myotis	<i>Myotis volans</i>	Concern	Vuln.	Yes	P
Yuma Myotis	<i>Myotis yumanensis</i>	Concern	None	No	P
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	Concern	Vuln.	Yes	P
Townsend's Big Eared Bat	<i>Corynorhinus townsendii</i>	Concern	Crit.	Yes	P
Hoary Bat	<i>Lasiurus cinereus</i>	None	Vuln.	Yes	P
Western Toad	<i>Anaxyrus boreas</i>	None	Vuln.	Yes	P
Coastal Tailed Frog	<i>Ascaphus truei</i>	Concern	Vuln.	Yes	C
Northern Red-legged Frog	<i>Rana aurora</i>	Concern	Vuln.	No	C
Columbia Torrent Salamander	<i>Rhyacotriton kezeri</i>	None	Sens.	Yes	P
Clouded Salamander	<i>Aneide ferreus</i>	None	Vuln.	Yes	P
Cope's Giant Salamander	<i>Plethodon elongatus</i>	None	Vuln.	Yes	P
Pacific Lamprey	<i>Entosphenus tridentatus</i>	Concern	Vuln.	Yes	P
Western Brook Lamprey	<i>Lampetra richardsoni</i>	None	Vuln.	Yes	P
Coastal Coho Salmon	<i>Oncorhynchus kisutch</i>	Threat	Vuln.	Yes	C
Chum Salmon	<i>Oncorhynchus keta</i>	Threat	Crit.	Yes	C
Steelhead (summer/winter)	<i>Oncorhynchus mykiss</i>	Concern	Vuln.	Yes	C
Coastal Cutthroat Trout	<i>Oncorhynchus clarkii</i>	Concern	Vuln.	Yes	C

OCS Strategy= Oregon Conservation Strategy species for Coast Range Region, Cand.= Candidate, Crit.= Critical, Sens.= Sensitive, Threat.= Threatened, Vuln.= Vulnerable, Current Use= Current known use of the Property (C=Confirmed, P= Possible, U= Unlikely).

Other Special Management Species

A population of black petal tail dragonfly (*Tanypteryx hageni*) on Onion Peak is one of only a few sites where this species has been found on the Oregon Coast. Though not a listed species, it is somewhat uncommon and has a highly specialized habitat consisting of mud (nymphs burrow into this substrate), mostly in bogs and other spring fed areas. Petal tails have been found on the Property in wet areas where springs and streams intersect roads. Mapping of these

populations and potential habitats will help to avoid adverse impacts during management activities, particularly road maintenance such as culvert replacement and ditching.

Infrastructure

Road System

The Property has a well-developed road system of nearly 43 miles (see Map 8). The main network consists of Hug Point, HP 19, HP 19G, Arch Cape Mill, Shingle Mill, Onion Peak, and Falcon Cove Roads. The Side Seven Road and Dave's Spur are important secondary roads. Numerous spur roads exist some passable and others have revegetated. While a formal inventory has not been completed by EFM, Stimson provided a roads and culverts layer and the road network has generally been well-maintained by the previous owner. With the exception of the Shingle Mill Road, which is non-passable in Section 28 due to a slump, and the upper part of the Arch Cape Mill Road, the above roads are rocked and passable. There are several other significant road issues identified during October 2016 road inspections. These include a re-occurring slump on the HP 19 road, at least two stream crossing culverts that need replacement, and other repairs to culverts, ditches, and grades. Hydrology on the Property is very flashy due to heavy, often concentrated precipitation including rain on snow events, shallow soils, exposed bedrock and steep topography. In response, previous owners have installed many drainage structures to keep water off the roads. Even with these culverts, drainage issues often occur, typically in the higher elevation areas of the Property along Dave's Spur and Onion Peak Roads. Ditch filling from slough is frequent, particularly at the higher elevations and requires frequent inspections and clearing. Maintaining the shape of road grades will also be important to property drainage to prevent larger issues.

There are eight locked gates on the property and all passable roads have controlled access (see Map 8). The ungated High Side and upper Arch Cape Mill Roads are entry points but are not passable.

A road inventory is scheduled for completion in 2017 to update existing information and aid in prioritization of repairs and maintenance.

Structures and Utilities

An amateur radio repeater tower is located at the end of Dave's Spur (See Map 8). The Sunset Empire Radio Club maintains the site. No other structures are listed or shown in available documentation for the Property, were observed during management planning visits, or are visible in remote imagery. There are two power transformer boxes, buried power cable, a utility box, and wastewater pipe along the lower Shingle Mill Road just east of the gate at the wastewater treatment facility. This utility pumps wastewater up to a series of sprinklers for discharge on Arch Cape Sanitary District forestland bordering the Property. Cannon View Park Inc. maintains a spring box and outlet pipe surrounded by a cyclone fence on the Property about 600 east of the gated main entrance to Hug Point Road.

Water Sources for Fire Control

and other water sources will be identified and mapped in 2017 and included in the fire plan for this Property.

Rock Pits

Rock pits are located on the lower Hug Point Road, Side Seven and Onion Peak Roads. A gravel stockpile is located on the HP 19 just south of the borrow pit on the Hug Point Road. Pits will be mapped during 2017 road inventory.

Community

Socio-economic Conditions

The Property is situated in Clatsop County, which had a population of 37,474 in 2014. Pioneer industries were logging/sawmills and fish processing. Current principal industries include forest products, maritime industries (wood products, fishing), health care, and tourism. Tourism is the fastest growing segment of the economy with Seaside, Cannon Beach, and Astoria attracting large numbers of visitors. In 2015, the median household income for Clatsop County was \$46,408 (compare to state average of \$54,148). The unemployment rate for Clatsop County in 2016 was 5.4% (compare to state average of 4.6%). Nearly 16% of Clatsop County residents live in poverty. Clatsop County's largest city, Astoria, has a population of 9,477. The closest community to the Property is Arch Cape, a quiet beach enclave of vacation homes and permanent residents with a population 242.

Clatsop county is 98% forestland and mostly privately owned (70%), with remaining lands in state/federal ownership. Of these private lands, 78% is industrial forest and remaining is non-industrial forest. Remaining non-forested lands (2%) include urban and industrial areas, agriculture and pasture, and wildlife lands.

Adjacent Landowners

The Property is surround by a diverse mix of landowners. Land directly north borders Lewis & Clark Timberlands and the State Board of Forestry. The eastern boundary is shared with state lands and Weyerhaeuser. The southern edge of the Property borders mostly Weyerhaeuser and includes a small shared boundary with God's Valley Trust LLC., at the southwest corner of the ownership. The western boundary is joined by Oregon State Department of Transportation lands at the north end and properties owned by Cannon View Park Inc., Arch Cape Sanitary District, LynScot Ventures LLC., Congero Management Corporation, other small private lots and Oregon State Department of Parks and Recreation (Oswald West State Park).

Community Partners and Outreach

EFM and the North Coast Land Conservancy (NCLC), a local land trust promoting conservation of north coast lands in Oregon, are working collaboratively with stewardship of the Property. This partnership includes cooperative tours, ecological monitoring, and habitat restoration.

Management activities are coordinated with NCLC, particularly as they relate to the conservation easement area on Onion Peak. EFM will be working with other community partners including Arch Cape Water and Sanitary District, Cannon View Park, Cannon Beach Public Works to effectively manage water resources flowing off the property. North Coast Watershed Association is a possible project partner with stream habitat improvement projects. A stakeholder group including members from Arch Cape Water and Sanitary District, Oregon Department of Forestry, NCLC, and a local tribal member is being formed to review plans and provide annual feedback on Property management (see Appendix C).

Recreation

The Property is a popular destination for the public. Users hunt, mountain bike, hike, and run along the road network. The most popular entry points for recreation are at the Hug Point and Falcon Cove Road junctions near Hwy 101. Recent timber harvests have provided expansive views at many points on the Property and visitors can see the Columbia Bar, Saddle Mountain, Cascade high peaks, and area coastline during clear weather from various viewpoints. While most hunting has been walk-in, some vehicle and horse-based access by employees and invited parties has occurred over the years. The only known human use trails lead up to Onion Peak and Mystery Peak. The areas high points offer exceptional opportunities to observe rare plants along ridgetops and meadow habitats. The primary area of visitation is Onion Peak, though folks also hike to Mystery Peak. Hikers climbing Angora Peak (located on Weyerhaeuser land just south of the Property) walk in along the Arch Cape Mill Road via the Falcon Cove Road. This is currently probably the highest use area. Both Angora and Onion Peaks are featured on several internet sites as recreation destinations. Interestingly, the sites describing Onion Peak do not mention that the peak is closed to public use to protect sensitive plants. There are two spurs near the end of the Onion Peak Road that provide access to highpoints on the ridgeline, are outside the conservation area, and could be developed to provide alternative access for hikers. Some OHV use likely occurs but has not been identified as a management issue by the previous owner.

Aesthetic and Scenic Resources

Position, topography, and heavy timber obstructs the lower parts of the property. However, some areas including the high ground including Onion Peak can be seen from Seaside and Cannon Beach, while the slopes of Angora Peak are visible from Wheeler on clear days. Upper elevations of the Property are visible from area high points including Saddle and Neahkahnne Mountain.

Archeological/Cultural Resources

The Property and surrounding landscape were historically inhabited by tribes of the Chinook Nation. The Oregon Historic Sites Database lists no documented archeological sites and/or other cultural resources occurring on the property.

Summary of Limiting Factors, Opportunities, and Information Needs

Table 7. Limiting Factors, Opportunities, and Information Needs.

Topography/Soils	
Resource:	Limiting Factor/Issue & Opportunity:
Soils	Most areas susceptible to severe/very severe erosion with compacted, exposed soils. Potential instability on moderate/steep slopes, particularly Skipanon gravelly silt loams, which are found along western edge of the Property. Slumps along HG19 and upper Shingle Mill Roads indicate unstable slopes.
Topography	
Information Needs:	Steep slopes should be evaluated prior to any timber harvest to evaluate slope stability.
Water Resources	
Resource:	Limiting Factor/Issue & Opportunity:
Creeks/Springs	See “Classified and Oregon Conservation Strategy Species” below. Need to ensure protection of water quality in domestic watersheds.
Wetlands	None noted.
Information Needs:	Road inventory to identify and prioritize work to minimize sediment delivery.
Vegetation	
Resource:	Limiting Factor/Issue & Opportunity:
General Forest	Young homogenous forest. Development of mature forest conditions could be accelerated with thinning. See “Noxious and Invasive Weeds” below. Western redcedar depleted and need to restock where opportunities arise (interplanting).
Riparian/Special Management Areas	Unauthorized use by hikers in conservation easement area, with potential damage to sensitive plant communities.
Disturbance Regimes	High winds limit thinning as silvicultural option.
Rare and Listed Plants	Outside of the conservation easement area, rare plant habitats are unprotected.
Noxious and Invasive Weeds	Scotch broom and Armenian blackberry mostly roadside are biggest weed challenges. Opportunity to control these species while they are still limited in distribution.
Non-Timber/Other Forest Products	Recent salvage of cedar stumps and logs has reduced this resource. Protect remaining stumps & logs.
Information Needs:	Document roadside and ridgetop rare plant populations to ensure protection. Weed mapping to prioritize treatments.

Fish & Wildlife	
Resource:	Limiting Factor/Issue & Opportunity:
Common Species	Lack of mature forest conditions or structural features is limiting for some species. Modified practices (retaining more dead wood, no future salvage of cedar stumps, retaining bear snags), treating noxious/invasive weeds, and road closures will benefit a range of wildlife species.
Classified and Oregon Conservation Strategy Species	Lack of mature forest conditions (lack of dead wood, large tree structure and canopy layering) are limiting factors. Existing culverts on the HP 19 road over Asbury Creek are fish barriers. Replacement may open some new anadromous habitat once fish barrier culvert on Hwy 101 is replaced with a bridge per ODOT plans. Other culvert updates could improve passage for resident fish and amphibians.
Other Special Management Species	Petal tail dragonfly populations are known to occur on the property. These sites and species are uncommon on the Oregon Coast. Protect known locations during road operations.
Information Needs:	Determine length of anadromous fish habitat potentially created with culvert updates on Asbury Creek. Map petal tail sites to protect during road maintenance activities.
Infrastructure	
Resource:	Limiting Factor/Issue & Opportunity:
Road System and Access	Slumps on HG19 and Shingle Mill Road, culvert and other drainage issues as identified in road inspections.
Structures and Utilities	None noted.
Water Sources for Fire Control	Lack of sources on property. Need to identify alternate sources.
Rock Pits	Need to map. Possible rock sales to city of Cannon Beach.
Information Needs:	Complete road inventory including mapping of rock pits, water sources, and utility boxes on the lower Shingle Mill Road. Map location of roadside petal tail and rare plants to avoid damage during road maintenance.
Community	
Resource:	Limiting Factor/Issue & Opportunity:
Adjacent Landowners	None noted.
Community Partners and Outreach	None noted.
Recreation	Web information on several sites is encouraging unauthorized use of the conservation easement area. Opportunity to develop alternative trails on old railroad grades to highpoints on the Onion Peak ridgeline to reduce use within the conservation easement area.
Aesthetic and Scenic Resources	None noted.
Archeological/Cultural Resources	None noted.
Information Needs:	Cultural survey before harvest.

Management Strategies and Implementation

Management strategies and actions for this five year planning window are provided in Table 8 and 9.

General Forest

Lands classified as general forest (all stands not reserved from harvest to protect riparian and other sensitive areas) will be stewarded for timber production, habitat maintenance and improvement.

Forest

Stands will be managed using an evenage with retention approach with rotations between 40-60 years depending on site class, slope, and location in relation to municipal watershed. Thinning is generally not appropriate as a silvicultural approach on most of the Property due to strong coastal winds, steep slopes, and windthrow risk. Areas where thinning will be considered include the gradually sloped stands within the upper Shark Creek drainage.

Early Seral Stands

Recently planted harvest units will be managed toward development of a mixed species forest with composition dominated by western hemlock, with Sitka spruce, Western redcedar, and red alder as minor associate species. Pacific silver fir will become more abundant at higher elevations on the Property. Douglas-fir, due to risk associated with Swiss Needle Cast is not a preferred species but will be allowed to persist as a minor component in stands. Herbicides and manual vegetation control within recent harvest areas will not be used unless reforestation failures occur. If vegetation control is deemed necessary, herbicides will be avoided unless critical for tree establishment.

Riparian and other Special Management Areas

No harvesting will occur with either RSA or HCVF areas on the Property. Other retention areas will include wetlands and non HCVF creeks which will be buffered to voluntary FSC standards, and the conservation easement area on Onion Peak (RSA). Steep and unstable slopes will be considered for exclusion from harvest.

Disturbance Regimes

Insects and Disease

Given increases of Swiss Needle Cast along the Oregon Coast and predictions for disease spread with climate change Douglas-fir will not be encouraged on the Property. Fortunately it has only been a minor component used in reforestation (15% of net volume). In more mature stands, the health of Douglas-fir will be evaluated when considering harvests and other species planted.

Managing for mixed species stands is also the best approach to limiting impacts from other pathogens and damaging insects.

Fire Prevention and Control

The risk of fire on the Property is relatively low due a maritime climate, limited plans for timber harvesting, and because public vehicle access and campfires are prohibited. The main strategy to reduce risk of fires on the Property is to continue to maintain locked gates on the main access roads, post allowed use signs, and to maintain roads to provide access for fire control. All contractors and staff will be directed to comply with state guidelines and policies regarding fire prevention and control. Oregon Department of Forestry has been provided a combination for the locked gates which provide access to the Property.

Other Abiotic Agents: Windthrow and Landslides

Windthrow risk will be reduced by avoiding large harvest openings with edges exposed to prevailing winds. Precommercial thinning should be a standard treatment soon after crown closure to improve long-term windfirmness.

To reduce the risk of slope failures, harvest areas will be evaluated for slope stability. Proper road maintenance with a focus on drainage will minimize such risk. A road inventory will be developed to identify issues for treatment prioritization. The two road slumps that have been identified on HP19 and Shingle Mill Road will be evaluated to develop corrective actions.

Noxious and Invasive Species

Scotch broom will be controlled manually along roadsides. Roadside Armenian blackberry may be controlled with herbicides outside of municipal watersheds and manually in sensitive areas. Surveys for rare plants and petal tail sites will be conducted prior to roadside weed work to minimize impacts. Invasive species control plans may be developed/implemented for sensitive plant areas including the conservation easement area and other ridgetop habitats and roadside seeps/springs with partner funding and collaboration.

Fish and Wildlife

The silvicultural strategy described above (see General Forest) will advance wildlife goals on the Property. Most of the focal management species (see Table 6) require mature forest or structural components such as down wood and snags. Bats in particular (7 of the 12 focal mammal species on the Property) will benefit from retention of snags and defective mature trees. The moratorium of salvage of cedar stumps and down logs will maintain such structure. EFM will work with Oregon State Parks to minimize impacts from forest management activities on Marbled murrelets on Oswald West State Park. Early seral species (Western bluebird) and those requiring shrubs and edge habitats (quail), will benefit from no herbicide strategy and retention of all snags (except those removed for safety). Non focal species including deer and elk will benefit from the strategy that promotes high quality early seral habitats and weed control along roadsides.

The best opportunity to improve fish habitat is likely to replace culvert(s) on Asbury Creek. A road management strategy to minimize chronic sediment delivery to streams and from road failures will be implemented. Any future harvesting will adhere to FSC buffers to provide added protection to fish and the six focal amphibian species that are aquatic.

Infrastructure

Road System

The main road network to provide access for silvicultural operations, fire control, and to facilitate tours and operations of our partners will be actively managed for vehicle passability. At a minimum this network includes Hug Point, HP 19, HG 19G, HP 19 Tie, Side 7, Onion, Dave's Peak, Arch Cape Mill, and part of the lower Shingle Mill Road. Other roads will be managed to minimize sediment production and delivery and hazard but may not remain open to vehicle traffic. A road inventory will be completed in fall 2017 to verify the current layer and to identify/prioritize road work. Completed inspections have identified road work to be completed in 2017. No new roads are scheduled for construction during the planning period, except as needed to fix road slumping issues on HP19 and Shingle Mill Roads. Efforts will be made to protect sensitive sites during road work such as a rare plants and petal tail habitats. Road management within municipal watershed areas will be conducted with the objective of minimizing sediment production and delivery.

Structures and Utilities

Minimal management of structures is needed on the Property. Dave's spur will be maintained to provide access to the tower. Care will be taken when conducting road maintenance on the lower Shingle Mill Road to avoid damaging the two power transformer boxes, buried power cable, utility box, and wastewater pipe and the spring box, outlet pipe and cyclone fence on the lower Hug Point Road.

Community

Outreach

EFM will continue to explore opportunities to collaborate with community organizations, schools, business and individuals interested contributing to long-term stewardship of the Property. We will work with our partner, North Coast Land Conservancy to develop volunteer work party activities, tours, habitat restoration projects, monitoring, and consultations on recreation uses, and protection of the conservation easement. We will also maintain close coordination with the Arch Cape Water and Sanitary District, Cannon View Park, and Cannon Beach Public Works to keep them abreast of Property management activities that relate to their water use on the Property. Other relationships will be explored, time permitting, with other community organizations (e.g. North Coast Watershed Association) to pursue stewardship projects.

Recreation

The Property will remain open to walk-in recreation including non-predator hunting and hiking. Access may be further restricted during periods of high fire danger. Signs will be posted at major access points describing allowed uses. The conservation easement area will remain closed to most use including public visitation and signs are posted at the entrance to this zone. Use of the Mystery Peak trail will be allowed but not widely promoted in order to protect the rock garden plant communities. To improve safety, users will be re-directed to the HP 19 Tie road to access the high ground of the property on Onion Peak. Additional guidance on recreation use is provided in the EFM Forest Management Plan.

Aesthetic and Scenic Resources

Harvesting is not currently being considered in areas on the Property that are highpoints and visible from popular public use areas off the ownership. Views from within the Property will become more limited in many areas with growth of roadside trees in recent clearcuts.

Archeological/Cultural Resources

Prior to any harvest identification and protection measures for archeological/cultural resources will be completed as described in the EFM Forest Management Plan.

Economic Opportunities

EFM will hire local contractors whenever feasible to perform routine monitoring and maintenance. Such activities may include road inspections, maintenance and reconstruction, noxious and invasive weed control, tree and non-timber forest products harvesting, and tree planting.

Log Markets and Non-Timber Forest Products

Wood products from the Property will be marketed to area mills and export facilities to achieve maximum return. There are no currently planned sales of non-timber forest products.

Monitoring

Planned monitoring currently includes road and culvert inventory and inspections, periodic property inspections, stand inventory, and noxious weed surveys. Wildlife and rare plant/habitat monitoring may be initiated after establishing partnerships and securing funding.

Please refer to the EFM Forest Management Plan for the overarching monitoring and adaptive management strategy.

Table 8. Management Strategies

Resource	G/O	Management Strategy		
		1	2	3
General forest	1.3	Maintain property in EFM pool of FSC certified lands.	Manage property consistent with current FSC standards.	
	1.4	Manage ownership consistent with EFM master and property fire plan.	Pursue recreation policy described below.	
Fish & wildlife	2.1	Use variable density commercial thinning and variable retention harvests.	Apply FSC riparian buffers.	Areas administratively withdrawn from harvest due to steep slopes and inaccessibility.
	2.2	Retain minor species during thinning and regeneration harvests.	Plant Western redcedar in low stocking areas of recent harvest units. Include cedar as dominant species in reforestation projects after harvests.	
	2.3	Avoid herbicide use, except where necessary to control invasive species, critical for tree establishment, and where not in domestic water supply areas.		
	2.4	Apply FSC riparian buffers.		
	2.5	Apply FSC riparian buffers	Forest associated with steep, inaccessible slopes are not scheduled for harvest	Protect Onion Peak Conservation Easement area. Identify additional rare plant habitats for protection.
	2.6	Treat roadside noxious weeds and Scotch broom in units.		
Roads	3.1-2	Maintain main roads in open and fully functioning condition. Ensure other roads drain properly.	Conduct annual and post-storm monitoring to identify road issues.	
	3.3	Maintain locked gates at entrances.	No motorized vehicles, no bikes, no horses, no predator hunting.	
Domestic Water	4.1-2	See MS # 1 of Roads above. Consider other BMP measures (e.g. disconnect ditches from water courses) to reduce sediment within Shark/Asbury drainages.	Coordinate management activities with water users.	Seek alternatives to herbicide use in domestic water.

Resource	G/O	Management Strategy		
		1	2	3
Local Economy	5.1-2	TBD		
Collaborative Management	6.1-4	TBD		
Recreation	7.1-2	Maintain locked gate at Property entrances, and post signage.	Cooperate with NCLC on development of a recreation plan for the Property (NCLC to take lead on this project)	Install Kiosks

G/O = Goal/Objective

Table 9. Management Actions Schedule

Action	Who	Type	Goal	2017				2018				2019				2020				2021				2022							
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Road Inventory	CON	Assess	1, 3																												
Rare Plant Surveys	PART	Assess	1, 2	To be determined, contingent on funding and partnerships.																											
Forest Inventory	EFM	Assess	1, 2																												
Outreach to Property Partners	EFM	Outreach	1, 4, 6																												
Install Information Kiosks	EFM	Outreach	1,4,6	Trial kiosk to be installed at Hug Point entrance in fall 2017, others to follow if deemed useful.																											
Annual Road Repairs/Maintenance	CON	Treat	1, 3, 4	To be performed as needed prior to wet season.																											
Road Upgrades/Decommissioning/Fish Passage Projects	CON	Treat	1, 2, 3, 4	To be determined, contingent on funding and partnerships.																											
Scotch Broom Control	CON	Treat	1, 2																												
Precommercial Thinning	CON	Treat	1,2																												
Annual Property and Road Inspection	EFM	Monitor	1-4, 7																												
Post-storm Property Inspection	EFM	Monitor	1, 2, 3	To be performed after major storms.																											
Noxious Weed Surveys	EFM	Monitor	2																												
Archeological/Cultural Survey	TBD	Monitor	1	To be performed in advance of harvests.																											

Green box indicates planned completion date, Goal = See Table 1, Who = Entity responsible for completing task (EFM = Ecotrust Forest Management and Consultant, CON = Contractor, PART = Partner, TBD = To be determined).

Appendices

A- References

Chick, P. 2015. Arch Cape Domestic Water Supply District Water Management and Conservation Plan December 2015.

Stewart, D. 2011. Asbury Creek Rapid Habitat Survey. Oregon Department of Fish and Wildlife.

B- Property Contacts

Table 2. Property Contacts

Name	Title	Organization	Location	Phone	Email
Phil Chick	District Manager	Arch Cap Water and Sanitary District	Arch Cape	(503) 436-2790	philchickacutil@gmail.com
Jon Wickersham	Associate Director	NCLC	Seaside	(503) 738-9126	jonw@NCLCtrust.org
Thomas Merrell	Manager	CannonView Water	Arch Cape	(503)739-2383	thomasmerrell@gmail.com
Doug Ray	Consultant	Carex Consulting	Seaside	(503) 440-5482	kdray@pacifier.com
Matt Benedict	Fire Chief	Cannon Beach Rural Fire Protection District.	Cannon Beach	(503) 739-1234	mbenedict@cbfire.com
Dale Moseby	Manager	Sunset Empire Radio Club		(503) 332-5201 (c)/503-436-2751 (h)	dale@archcape.com
Cruz Flores	Manager	Cannon Beach Public Works-Water	Cannon Beach	(503) 436-8068	flores@ci.cannon-beach.or.us
Larry Brown	Manager	Pacific Corp		(503) 262-2110	larry.brown@pacificcorp.com
Mark Morgans	Forester	Greenwood Resources		(503) 738-2435	Mark.Morgans@gwrglobal.com
Craig Sorter	Forester	Weyco		(503) 739-2367	craig.sorter@weyerhaeuser.com
Jasen McCoy	Stewardship Forester	ODF		(503) 325-5451	jasen.r.mccoy@oregon.gov.

C- Property Stakeholder Advisors

Phil Chick, Arch Cap Water and Sanitary District
Jon Wickersham, North Coast Land Conservancy
Mark Morgans, Greenwood Resources
Tribal representative, TBD

D- Easements

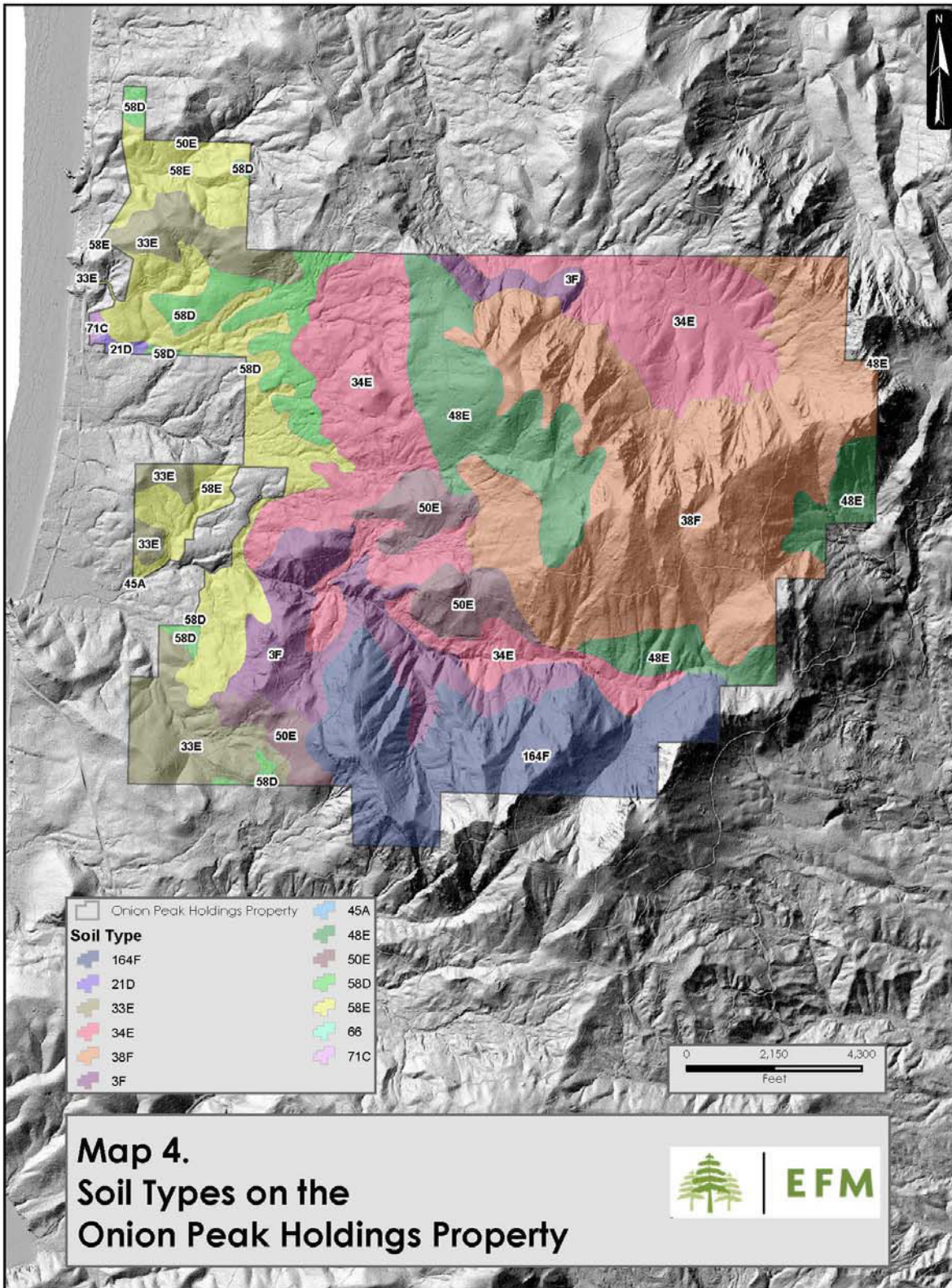
E- Soil Types

Table 3. Soil Types and Management Characteristics

MUS	Soil Type	Acres	% Total	Erosion		50-yr Site Index	Drainage	Seedling Mortality
				On Road	Off Road			
3F	Ascar-Rock outcrop complex, 60 to 90 percent slopes	383.5	7.6	Severe	Very severe	111	Well drained	Low
21D	Grindbrook silt loam, bedrock substratum, 3 to 30 percent slopes	8.8	0.2	Severe	Moderate	136	Moderately well drained	Moderate
33E	Kloutchie-Necanicum complex, 30 to 60 percent slopes	319	6.3	Severe	Severe	120	Well drained	Low
34E	Kloutchie-Necanicum complex, 30 to 60 percent slopes, bouldery	962.4	19.0	Severe	Severe	116	Well drained	Moderate
38F	Laderly-Rock outcrop complex, 60 to 90 percent slopes	1,310.90	25.9	Severe	Very severe	113	Well drained	Moderate
45A	Mues silt loam, 0 to 3 percent slopes	0.3	0.0	Slight	Slight	NP	Moderately well drained	Low
48E	Murtip-Caterl complex, 30 to 60 percent slopes, bouldery	514.9	10.2	Severe	Severe	115	Well drained	Low

Erosion								
MUS	Soil Type	Acres	% Total	On Road	Off Road	50-yr Site Index	Drainage	Seedling Mortality
50E	Necanicum-Ascar complex, 30 to 60 percent slopes	220.9	4.4	Severe	Severe	111	Well drained	Low
58D	Skipanon gravelly silt loam, 3 to 30 percent slopes	188.7	3.7	Severe	Moderate	127	Well drained	Low
58E	Skipanon gravelly silt loam, 30 to 60 percent slopes	532.1	10.5	Severe	Severe	127	Well drained	Low
66	Tropofluvents, 0 to 3 percent slopes	0	0.0	Slight	Slight	NP	Well drained	Low
71C	Walluski silt loam, 7 to 15 percent slopes	5.5	0.1	Severe	Moderate	NP	Moderately well drained	Low
164F	Killam-Fawceter-Rock outcrop complex, 60 to 90 percent slopes	611.5	12.1	Severe	Very severe	NP	Well drained	Moderate
Total		5058.5	100					

Data from NRCS Soil Web Survey



F- HCVF and RSA

