Background and Eligibility Information

1. Project Title: Chimacum Forest (Short’s Forest)

2. Conservation Futures Acquisition Request: $140,000
   Conservation Futures O&M Request: $0

3. Total Conservation Futures Request: $140,000

4. Please indicate the type of interest contemplated in the acquisition process.
   X Warranty Deed ___ Easement ___ Other (Please describe below.)
   In whose name will the property title be held after acquisition?

Jefferson Land Trust

5. Applicant Information

Name of Applicant or Organization: Jefferson Land Trust
Contact: Sarah Spaeth
Title: Director, Conservation and Strategic Partnerships
Address: 1033 Lawrence St., Port Townsend, WA 98368
Phone: (360) 379-9501, ext. 101
Email: sspaeth@saveland.org

6. Sponsor Information: (if different than applicant)
   same

This application was approved by the sponsor’s legally responsible body (e.g., board, council, etc.) on February 20, 2018.

7. Site Location
   Street Address or Description of Location: 1921 Center Road
   Driving Directions from Port Townsend: Drive south on Highway 19 to the Chimacum intersection. Turn south onto Center Road. Travel approx. 2 miles to 1921 Center Road. Take driveway to left and follow to residence.
   Section: 23, 26 & 27

2018 CF Program Application
http://www.co.jefferson.wa.us/560/Conservation-Futures-Program
Township: 29 N
Range: 1W
Assessor’s Parcel Number(s): 901262001, 901233001

Please differentiate current and proposed ownership of each APN and indicate if the parcel is to be acquired with CF funds or used as match.

Both parcels are to be acquired with CF funds and match funding

Please list the assessed values for each property or APN, as applicable.
901262001 - $260,751
901233001 - $117,125

8. Existing Conditions

New Site: Yes X No _______ Number of Parcels: 2
Addition to Existing Site: Yes No X __________ Acres to Be Acquired: 65
Total Project Acreage (if different): ______________ Current Zoning: RF-40 Rural Forest and RR 1:10
Existing Structures/Facilities:
One residence and associated outbuildings on 901262001. Derelict shed on 901233001
Any current covenants, easements or restrictions on land use: None known
Current Use: Residential and designated forest land
Waterfront (name of body of water): NA
Shoreline (linear feet): NA
Owner Tidelands/Shorelands: ____________________________

9. Current Property Owner X is ___ is not a willing seller.

Project Description

10. In 1,000 words or less, provide a summary description of the project, the match, overarching goal, and three top objectives. Include information about the physical characteristics of the site that is proposed for acquisition with Conservation Futures Program funds including: vegetation, topography, surrounding land use, and relationship to parks, trails, and open space. Describe the use planned for the site, any development plans after acquisition (including passive development), characteristics of the site which demonstrate that it is well-suited to the proposed use, and plans for any structures currently on the site. If applicable, describe how the site relates to the larger project, and whether the project has a plan, schedule and funding dedicated to its completion. Please also list any important milestones for the project or critical dates, e.g. grant deadlines. List the dates and explain their importance. Please attach a spreadsheet of the budget.

Jefferson Land Trust is requesting Conservation Futures Funds for the fee-simple acquisition of the Chimacum Forest located approximately 2 miles south of the Chimacum intersection. The Chimacum Forest property is a 65-acre property consisting of two parcels, with mature, naturally regenerated,
mixed-species, second-growth forest rising on the east side of the Center Valley. The Chimacum Forest is surrounded by agricultural operations and rural private residences along the valley floor, with predominantly commercial timberland operations at higher elevations. The location is significant in that it links two of the Chimacum community's most significant land protection efforts: the rich farmland soils of the 253-acre Short Family Farm in the river valley, protected with a conservation easement in 2016, and the scenic, landmark 853-acre working forest on the top of Chimacum ridge between the two forks of Chimacum Creek, which anchors an active project to establish community forest management on over 1243 acres of working forest in the immediate vicinity.

The relatively narrow property (approximately 750 by 4000 feet) parallels Center Road running north/south in orientation. Topographically the property slopes down ~200 vertical feet from east to west, with several seasonal creek ravines coming down from the ridge. Chimacum Creek, which is fed by runoff from the Chimacum Forest, provides spawning and rearing habitat for coho and steelhead, and there is documented presence of ESA-listed summer chum salmon (Oncorhynchus keta) as well as fall chum and pink salmon.

The Chimacum Forest comprises two tax parcels, the northern one of which is zoned Rural Residential-10; the other zoned Rural Forest 1:40, with a total of three development rights allowed on the property. There are two unused development rights on the 20.75-acre RR-10 parcel, enabling that property to potentially be divided and have two homes. Under county zoning, each of the three allowable residences can be accompanied by an Auxiliary Dwelling Unit of not more than 1200 sq. ft. Commercial timber harvest is permissible on both tax parcels. A home and several nearby outbuildings are located on the southern end of the property, and are clustered in a small cleared area approximately 1.5 acre in size accessed from a gravel driveway sloping up from Center Road. An old shack in a clearing on the north end has been abandoned for many years. That area and a second clearing nearby of approximately ½ acre are serviced by two short driveways entering from Center Road. An old dirt road runs north/south through the forest nearly the full length of the property and game tracks crisscross through the forest and on up to Chimacum Ridge.

With the exception of an estimated 5 acres that are given over to the homesite, roads, and clearing for two homes that were planned but never built, the property is completely forested with mature second-growth forest. In an area that was originally harvested about 100 years ago, western red cedar is found in the greatest volume, followed by red alder, Douglas fir, and big-leaf maple. There are a few scattered hemlock, spruce, and willow, with individual grand fir and redwood planted along the driveway. Some stands are over-stocked and others are under-stocked with patchy intermediate layers and the number of very young trees is limited, probably due to the fairly dense overstory. Sword fern predominates the understory, with some mahonia and huckleberry, and a minimum of invasive non-native species.

The Chimacum Forest project is an important component of the larger Chimacum Ridge Community Forest project that is a current priority collaborative effort for Jefferson Land Trust, Ecotrust Forest Management, the U.S. Navy's Readiness and Environmental Protection Integration program (REPI), the Washington Environmental Council, the Washington State Legislature and other local partners. Our goal is to preserve these contiguous working forest lands in perpetuity and eliminate the two remaining development rights through sale of an easement to the Navy. The property will be managed as a Community Forest with a balance of sustainable timber production, habitat, recreational, and educational uses. Joining together, these lands will provide a connected network of trails for public recreation, accessible from nearby population centers in Chimacum, Port Ludlow, and beyond. The location and topography of the Chimacum Forest, and its relation to Center Road, make it well suited for public access and education and we foresee its use as a demonstration forest and as an entry point for the adjacent Chimacum Ridge property and its forest roads, which in turn connect with the State Department of Natural Resources 325-acre property to the SE.

2018 CF Program Application
http://www.co.jefferson.wa.us/560/Conservation-Futures-Program
Secured funding for the 65-acre Chimacum Forest project includes $400,000 from the USFS Federal Community Forest Program, ~$1,000,000 from the REPI program for sale of an easement to the Navy, and private foundation funding of $100,000. The landowners have agreed to sell the property at a bargain sale rate. With Conservation Futures Funding, we will be close to our funding goal for acquisition of the property, which we anticipate will happen in late August or September. The last piece of funding will come from private sources.

The larger Chimacum Ridge Community Forest project was recently appropriated $3,400,000 by the WA State Legislature. This funding will be used to purchase a working-forest conservation easement on the Ridge from the current bridge landowner that will guarantee certain sustainable forest management protocols and standing volume of timber on the property. Jefferson Land Trust hopes to purchase the underlying fee interest in the Chimacum Ridge property in 2023 in order to implement the Community Forest vision.

Overarching Goal:
Preserve the 65-acre Chimacum Forest parcels for recreational, habitat, education and working forest values as an important component of the larger Chimacum Ridge Community Forest.

Objectives
1) Exercise our option to acquire the Chimacum Forest property by September 2018, utilizing available grant and private funding and REPI dollars that will eliminate the remaining development rights.
2) Prepare a management plan for the property that includes community input. This plan creation is a requirement of our Federal Community Forest grant award.
3) Install a caretaker in the residence and determine the additional uses of the sound structures on the property.

11. Estimate costs below, including the estimated or appraised value of the propert(ies) or property right(s) to be acquired, even if Conservation Futures funds will only cover a portion of the total project cost. In the case of projects involving multiple acquisitions, please break out appraisals and estimated acquisition costs by parcel. Estimated or Appraised Value of Propert(ies) to be Acquired: $2,042,000

Total Estimated Acquisition-related Cost (see Conservation Futures Manual for eligible costs): $50,000
Total Operation and Maintenance Cost: 0
Total Project Cost: $2,092,000

Basis for Estimates (include information about how the property value(s) was determined, anticipated acquisition-related costs, general description of operation and maintenance work to be performed, task list with itemized budget, and anticipated schedule for completion of work):

The property value was determined through an appraisal process conducted by Terra Valuations and reviewed by the Navy. The appraisal included an extensive inventory and valuation of timber, verified by two independent timber experts. The high cost of the acquisition is primarily due to the volume and value of the standing timber on the 65 acres. The land owner has agreed to a significant bargain sale of the property at $1,750,000.00. Jefferson Land Trust has already had a Phase I Environmental Assessment done on the property, as well as a preliminary Forest Management Plan. We will engage a stakeholder group to help us refine an overall management plan for the property within 120 days of the acquisition (required by the USFS) and will determine the timing of conservation forestry activities, trail building, interpretive signage and parking. We will be conducting these activities over the immediate
years following the acquisition, and will have ongoing obligations for upkeep and maintenance as the long term owner. We have not included O&M expenses or an O&M budget, as that will be refined and financed after acquisition.

<table>
<thead>
<tr>
<th>Chimacum Forest Project related costs</th>
<th>Timeline</th>
<th>Est. Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land acquisition (to be acquired at a bargain sale rate)</td>
<td>Fall 2018</td>
<td>$2,042,000.00</td>
</tr>
<tr>
<td>Land acquisition related costs, i.e. appraisal, review, Phase I, Forest Management and Stewardship Plans, closing costs</td>
<td>Ongoing 2018</td>
<td>$40,000.00</td>
</tr>
<tr>
<td>Project management, admin and legal fees</td>
<td>Fall 2018</td>
<td>$10,000.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$2,092,000.00</strong></td>
</tr>
</tbody>
</table>

**Scored Questions**

1. a. Sponsor or other organizations X will ___will not contribute to acquisition of proposed site and/or operation and maintenance activities.

1. b. If applicable, please describe below how contributions from groups or agencies will reduce the need to use Conservation Futures program funds.

1 c. Matching Fund Estimate

<table>
<thead>
<tr>
<th></th>
<th>Acquisition</th>
<th>O&amp;M</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation Futures Funds Requested</td>
<td>$140,000</td>
<td></td>
<td>.067%</td>
</tr>
<tr>
<td>Matching Funds/Resources*</td>
<td>$1,952,000</td>
<td></td>
<td>99.93%</td>
</tr>
<tr>
<td>Total Project Acquisition Cost</td>
<td>$2,092,000</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

*If a prior acquisition is being proposed as match, please describe and provide documentation of value, location, date of acquisition and other information that would directly link the match to the property being considered for acquisition.

1 d. Source of matching funds/resources

<table>
<thead>
<tr>
<th>Source of matching funds/resources</th>
<th>Amount of contribution</th>
<th>Contribution approved?</th>
<th>If not, when?</th>
<th>Contribution available now?</th>
<th>If not, when?</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Forest Service</td>
<td>$400,000</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Navy REPI</td>
<td>$1,000,000</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Private sources</td>
<td>$260,000</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Landowner bargain sale</td>
<td>$292,000</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

*NOTE: Matching funds are strongly recommended and a higher rating will be assigned to those projects that guarantee additional resources for acquisition. Donation of property or a property right will be considered as

http://www.co.jefferson.wa.us/560/Conservation-Futures-Program
a matching resource. Donation of resources for on-going maintenance or stewardship ("in-kind" contributions) are not eligible as a match.

2 a. Sponsoring agency X is __is not prepared to provide long-term stewardship (easement monitoring, maintenance, up-keep, etc.) for the proposed project site.

2 b. Describe any existing programs or future plans for stewardship of the property, including the nature and extent of the commitment of resources to carry out the stewardship plan.

Jefferson Land Trust staff, volunteers, community members and professional consultants will be actively managing the Chimacum Forest property, including the forest and forestry road system, and the structures and infrastructure created to accommodate public uses including parking and trails. We will be following the guidance of the preliminary Forest Management Plan and will be engaging the community to help us to refine that plan, and plans for recreational and educational use. We will seek other private foundation funding to jump-start stewardship and management activities, though we expect that revenue generated from conservation-forestry activities will generate the resources necessary to maintain the property and infrastructure located on the property. We plan to have a caretaker on-site and may use the residence as an auxiliary office as well as potential educational facility.

Jefferson Land Trust will be engaging volunteers to remove noxious weeds on the Chimacum Forest property shortly after acquiring the parcel. In addition, we perform a formal site inspection of all Land Trust-owned properties, including those secured with CFF funding sponsored by the Land Trust, no less than annually, and in some cases quarterly. Monitoring of Jefferson Land Trust properties includes documentation of any changes that have occurred since the acquisition, or since any previous monitoring visit. These monitoring visits will result in a written monitoring report, with photographs and written descriptions documenting any relevant changes. The written reports will be reviewed by the Jefferson Land Trust staff to help determine if activity on the property is consistent with the protection of the conservation values of the property.

The caretaker will have daily monitoring responsibilities, but more comprehensive monitoring will be conducted regularly also to ensure site objectives are being achieved. The following types of monitoring will be conducted at this site:

Annual Site Monitoring - This monitoring includes inspecting boundaries and management zones/habitat nodes to ensure trespass and/or encroachment is not occurring on properties and/or any other inappropriate uses of the site are occurring.

Land Change Monitoring - This will help identify potential impacts to habitat features or qualities of the site. Changes may include naturally-occurring disturbances such as fallen trees, or human-caused impacts such as trash dumping.

Development Monitoring - This will document any changes in Preserve infrastructure.

Access Monitoring - This will help to identify any current or potential future impacts to the site resulting from changes in Preserve access by members of the public. This monitoring will occur through observations of perceived impacts and estimations of frequency of visitors observed during monitoring visits and by the caretaker.
Surrounding Land Use Monitoring - This will help to identify any potential direct or indirect impacts to the integrity of the site, including hydrologic function. This monitoring will occur through incidental observations during annual monitoring or other site activities within the vicinity of the site.

Habitat and Wildlife Monitoring - Wildlife monitoring will generally be conducted incidentally while on site. This effort will involve recording wildlife observations, tracks or other signs in monitoring reports. In order to determine species composition and utilization of habitat, other non-invasive methods may be employed, such as wildlife cameras, which can be helpful in detecting use by more elusive or nocturnal species. Other tools could include scat or hair analysis or species specific surveys.

Stewardship Needs - Stewardship needs will be noted as part of the monitoring visit, identifying actions necessary to reduce current or prevent future negative impacts to the conservation values of the site.

3 a. Describe the sponsoring agency’s previous or on-going stewardship experience.

Over the 29 years since it was formed, Jefferson Land Trust has managed many acquisition projects and has been responsible for conducting or coordinating restoration activities with several project partner organizations, including Jefferson County, NOSC, JCCD, HSCEL and others. The Land Trust holds title to over 500 acres of preserves, including the 135-acre Bullis Forest Preserve, which includes a 28-acre working forest that we have actively managed with the oversight of professional foresters since we were gifted the property in 1996. We also hold 58 conservation easements on nearly 3000 acres, and have helped with the preservation and stewardship of another 12,900 acres in Jefferson County. Stewardship activities are carried out by professional staff with the assistance of volunteer Preserve Stewards. The Hoh River Trust and Washington State Parks contract with Jefferson Land Trust to monitor and steward nearly 7400 acres of land under their control. In addition, Jefferson Land Trust stewards land owned by Jefferson County, the City of Port Townsend and the Department of Natural Resources. Jefferson Land Trust stewardship and monitoring protocols were developed with the guidance of the Land Trust Alliance and adherence to those protocols is one of the requirements for our national accreditation.

3 b. Has the sponsor and/or applicant of this project been involved in other projects previously approved for Conservation Futures funding?

___No, neither the sponsor nor applicant has been involved in a project previously approved for Conservation Futures funds.

X Yes, the sponsor and/or applicant for this project has been involved in a project previously approved for Conservation Futures funds. Please provide details:

Jefferson Land Trust has sponsored many applications on behalf of private landowners interested in preserving their property through sale of a conservation easement, or as an applicant and sponsor for fee interest purchase of properties from willing sellers. These projects include: Sunfield Farm, 2003; Quimper Wildlife Corridor, 2004; East Tarboo Creek Conservation Project, 2005; Tamanowas Rock Phase 1, 2006; the Winona Buffer Project, 2006; Glendale Farm, 2007; Finnriver Farm, 2008; Quimper Wildlife Corridor, 2009; Brown Dairy, 2009; Salmon Creek Ruck 2010; Quimper Wildlife Corridor 2010; Tamanowas Rock 2010; Chimacum Creek Carleson 2011; Winona Basin - Bloedel 2011; L. Brown 2012; Boulton Farm 2012; Quimper Wildlife Corridor and Short Family Farm 2013; Quimper Wildlife Corridor and Snow Creek Irwin and Jenks, 2014; Midori Farm, 2015; QWC 2016 Addition, Tarboo Creek, Farm and Forest 2016; Serendipity Farm, Snow Creek Taylor and Tarboo Iglitzin 2017.
4 a. Property X can __ cannot feasibly be acquired in a timely fashion with available resources.

4 b. Necessary commitments and agreements are X are not in place.

4 c. All parties X are __ are not in agreement on the cost of acquisition.

If “not” to any of the above, please explain below.

Jefferson Land Trust received $400,000 from the USFS Federal Community Forest Program in 2016. Since that time, we have been conducting due diligence activities such as appraisal, appraisal review, Phase I Environmental Assessment and landowner negotiations, and have been working to raise the additional funding necessary to acquire the Chimacum Forest property. The Navy has agreed to contribute a significant portion of the purchase price; the landowner has agreed to a bargain sale of the property, and we have received several private foundation grants. In addition to the Conservation Futures Fund request, we have approximately $170,000 to secure from private sources. We are confident that we can raise these in time to close on the acquisition by fall 2018.

5. The proposed acquisition X is specifically identified in an adopted open space, conservation, or resource preservation program or plan, or community conservation effort. Please describe below, including the site’s importance to the plan. Please reference the website of the plan if available or include the plan with this application.

__complements an adopted open space or conservation plan, but is not specifically identified. Please describe below, and describe how the proposed acquisition is consistent with the plan.
__is a stand-alone project.

In Jefferson Land Trust's Conservation Plan, this area has four priority habitat indicator layers (the maximum) and is also identified as one of the specific areas for conservation of working forest. The plan is located on the Land Trust's website, www.saveland.org.

The Nature Conservancy's Pacific NW resilience assessment [http://nature.ly/resilienceNW] maps this natural area as one contributing to resiliency in the face of climate change by facilitating species movement, ecological processes, and biodiversity.

More broadly, the Natural Resource Conservation Element [table on p.4-1] of Jefferson County's Comprehensive Plan enumerates the rural land use, environmental, open space/recreational, and economic benefits of natural resource lands, further supported by the Rural Forest zoning designation of the larger parcel.

6. Conservation Opportunity or Threat:

6 a. The proposed acquisition site X does __ does not provide a conservation or preservation opportunity which would otherwise be lost or threatened.

6 b. If applicable, please carefully describe the nature and immediacy of the opportunity or threat, and any unique qualities about the site.

The N&L Valley View Trust, consisting of the nine children of Norris and Laura Short, has been interested in selling the 65-acre parcel, as it is the last joint holding of the N&L Trust. They have been willing to work with Jefferson Land Trust and our lengthy fundraising process, versus selling on the open market. The property is a critical piece in the creation of a Chimacum Community Forest, in that it provides the missing link for public access to the Chimacum Ridge; has some infrastructure that can be

2018 CF Program Application
http://www.co.jefferson.wa.us/560/Conservation-Futures-Program
used for educational and caretaker purposes; contains significant forest resources that will benefit from management and protection; and bridges the unprotected gap between the 853-acre Chimacum Ridge forest (plus the adjoining 325-acre DNR Egg & I property) and the 253-acre Short Farm. The volume and value of the standing timber on the property make it extremely attractive to a timber company or individual interested in significant harvest. The Land Trust has an Option Agreement with the N&L Valley View Trust, and plans to exercise the option to purchase before the end of April, with closing scheduled for August or September. The Land Trust acquisition of the property will include the sale of the remaining development rights to the Navy through the REPI program, as the Navy is a critical partner in funding preservation of the Chimacum Forest property.

7. The proposed acquisition:
7 a. _____ provides habitat for State of Washington Priority Habitat and/or State or Federal Threatened, Endangered or Sensitive species.
7 b. X provides habitat for a variety of native flora or fauna species.
7 c. X contributes to an existing or future wildlife corridor or migration route.

If affirmative in any of the above, please describe and list the Priority Habitat(s) and Threatened, Endangered, or Sensitive species below, and cite or provide documentation of species’ use.¹

¹ See, for example, http://www.dnr.wa.gov/researchscience/topics/naturalheritage/pages/amp_nh.aspx
http://www.wdfw.wa.gov/conservation/psh/list/
http://www1.dnr.wa.gov/nhp/refdesk/plants.html

2018 CF Program Application
http://www.co.jefferson.wa.us/560/Conservation-Futures-Program
Table 4: The following are wildlife species of conservation concern to this and neighboring properties throughout the region. They were mostly not observed on the Property, but many are considered to be possible to occur or will occur with restoration and improvement of the Property and continued regional conservation efforts.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Federal Status</th>
<th>State Status</th>
<th>Washington Priority Habitats and Species</th>
<th>Current Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bald Eagle</td>
<td><em>Haliaeetus leucocephalus</em></td>
<td>Concern</td>
<td>Sensitive</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Peregrine Falcon</td>
<td><em>Falco peregrinus anatum</em></td>
<td>Concern</td>
<td>Sensitive</td>
<td>Yes</td>
<td>U</td>
</tr>
<tr>
<td>Northern Goshawk</td>
<td><em>Accipiter gentilis</em></td>
<td>Concern</td>
<td>Candidate</td>
<td>Yes</td>
<td>U</td>
</tr>
<tr>
<td>Northern Spotted Owl</td>
<td><em>Strix occidentalis caurina</em></td>
<td>Threatened</td>
<td>Endangered</td>
<td>Yes</td>
<td>U</td>
</tr>
<tr>
<td>Mountain Quail</td>
<td><em>Oryzotis pictus</em></td>
<td>None</td>
<td>None</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Pileated Woodpecker</td>
<td><em>Dryocopus pileatus</em></td>
<td>None</td>
<td>Candidate</td>
<td>Yes</td>
<td>C</td>
</tr>
<tr>
<td>Western Bluebird</td>
<td><em>Sialia Mexicana</em></td>
<td>None</td>
<td>Monitor</td>
<td>No</td>
<td>P</td>
</tr>
<tr>
<td>Pacific Fisher</td>
<td><em>Pekania pennantii</em></td>
<td>Candidate</td>
<td>Endangered</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Pacific Marten</td>
<td><em>Martes caurina</em></td>
<td>None</td>
<td>Monitor</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Fringed Myotis</td>
<td><em>Myotis thysanodas</em></td>
<td>None</td>
<td>Monitor</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Long-eared Myotis</td>
<td><em>Myotis evotis</em></td>
<td>None</td>
<td>Monitor</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Long-legged Myotis</td>
<td><em>Myotis volans</em></td>
<td>None</td>
<td>Monitor</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Townsend's Big Eared Bat</td>
<td><em>Corynorhinus townsendii</em></td>
<td>Concern</td>
<td>Candidate</td>
<td>Yes</td>
<td>U</td>
</tr>
<tr>
<td>Gray Wolf</td>
<td><em>Canis lupus</em></td>
<td>Endangered</td>
<td>Endangered</td>
<td>Yes</td>
<td>U</td>
</tr>
<tr>
<td>Western Toad</td>
<td><em>Anaxyrus boreas</em></td>
<td>None</td>
<td>Candidate</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Northern Red-legged Frog</td>
<td><em>Rana aurora</em></td>
<td>Concern</td>
<td>None</td>
<td>No</td>
<td>P</td>
</tr>
<tr>
<td>Van Dyke's Salamander</td>
<td><em>Plithodon vandykei</em></td>
<td>Concern</td>
<td>Candidate</td>
<td>Yes</td>
<td>P</td>
</tr>
</tbody>
</table>

C = Confirmed sighting or signs of use  
P = Possible use of Property  
U = Unlikely or known not to presently occur

7 d. Does the current owner participate in conservation programs that enhance wildlife habitat? If so, please provide details.

No.

8. Describe to what degree the project protects habitat for anadromous fish species (for example: marine shorelines, stream/river corridors including meander zones, and riparian buffers). Please provide documentation and maps that demonstrate the location, quality and extent of the existing buffer and adjoining habitat.
The Chimacum Forest property does not contain fish-bearing stream habitat, but does have several seasonal streams running through the forest that originate on the Chimacum Ridge property and enter the mainstem of Chimacum Creek located in the valley below. Maintaining healthy forested buffers along these tributaries to Chimacum Creek is important for water quality and quantity for the salmonid species that utilize the creek for spawning, rearing and migration. Please see the map of Chimacum Forest hydrology from the Forest Management Plan.

9 a. Describe the extent and nature of current and planned agricultural use of the proposed acquisition, including any anticipated changes to that use once the property, or property right, is acquired with Conservation Futures funds.

NA

9 b. Describe any current or future management practices that promote the preservation of soil and water quality and good watershed function on the farm.

NA

9 c. Describe how the owner employs agricultural management practices that will protect or enhance wildlife habitat.

NA

10 a. Describe the extent and nature of current and planned silvicultural use of the proposed acquisition. Please cite or provide documentation of existing or planned silvicultural activities including forest management plan(s) or forest ecosystem restoration.

The Chimacum Forest has not been actively managed in many years by the current landowners. Jefferson Land Trust hired professional foresters Logan Sander and Earl Kong to conduct an inventory of the forest resources and prepare a preliminary forest management plan. Their work revealed that there are several impacts to forest health that will benefit from management. (See draft Forest Management Plan)

Once in our ownership, Jefferson Land Trust’s goals and objectives for management of the Chimacum Forest are to retain the forest in a healthy condition for the benefit of current and future generations, so that it can continue to provide:

• Clean water and air
• High quality wildlife habitat
• Recreational opportunities and scenic values
• Resiliency in the face of climate change
• Economic benefits through sustainable forest management
• Benefits from forest-based educational programs

Jefferson Land Trust will maintain and enhance these values through our long term ownership and stewardship of the property. In general, forest management activities will be designed to improve overall forest health by decreasing competition between trees. Retained trees will have improved capacities to withstand stressors, including drought, insects, disease, and fire. Also, trees infected with laminated root rot will be removed, lowering the likelihood of infection of residual individuals.

More specifically, active forest management will be conducted to create: 1. A structurally diverse forest stand, with variable tree density and a wide range of age classes and species; 2. Well-distributed large-
diameter trees common throughout the dominant crown class; 3. Well-distributed standing dead trees throughout the Property; and 4. Down tree logs and other woody debris on the forest floor.

10 b. Describe the silvicultural management practices that promote the preservation of soil and water quality and good watershed function on the property.

The forest management inventory and planning process included an analysis of geology and soil types on the Chimacum Forest property. All soil types are moderately to severely susceptible to erosion. Due to steep potentially unstable slopes, a geotechnical report from a qualified geologist is required for a WA Forest Practices Application that would be needed for any harvest. Certain stands in the forest with steep slopes and riparian buffers will be held as reserves with no timber harvest. Sustainable and selective management of the remaining forested slopes above the valley floor will limit runoff and resulting siltation of waterways, thereby contributing to surface and ground water quality and reserves as well as stormwater management. In addition to farmlands and salmon habitat immediately adjacent and downstream, wells critical to the Public Utility District draw from the ground water of the Chimacum Creek watershed. Managing hillside vegetation to limit seasonal runoff becomes ever more important as weather patterns change and intense winter rains become more frequent.

10 c. Describe the owner’s timber harvest plan and harvest methods that will protect or enhance wildlife habitat on the property.

Uneven-aged management will, over time, allow for the development of older, mature stands with multi-layered vertical structure. This will improve habitat for species that require more downed woody debris (amphibians), large diameter trees and snags (piliated woodpecker, barred owl), and shrub and sapling layers in open patches (nuthatches, brown creepers, towhees, thrushes). The early phases of recently cut root rot infested patches will offer open, brushy habitat for deer and other species that favor open habitat (flycatchers, grouse, rodents). As the replanted saplings fill in and occupy the growing space, the stand will transition to offering good hiding cover. Planned reserves and buffers far exceed WA Forest Practices Board requirements for wildlife reserve trees and green recruitment trees across harvested areas. Retention of a diversity of hardwood and conifer-dominated stands will promote edge-related habitat characteristics, and increase resiliency in the face of changing climate too. Stream buffers and steep slope reserves will minimize sedimentation of downstream fish-bearing streams and wetlands. Dense stands of bigleaf maple, Douglas-fir and western red cedar will be thinned, temporarily freeing up growing space for understory plants and associated wildlife. Important habitat structures will be retained and created (snags, high-quality wildlife trees). Retention of coarse woody debris in forestry activity areas will maintain and improve amphibian habitat. Artificial and constructed structures: Brush piles can be important habitat for ground-nesting birds; small, unmerchantable logs can be safely stacked to provide cover and habitat for rodents. Where possible (so as to minimize risk to recreational users), large-diameter standing snags can be retained or created to provide nesting habitat for pileated woodpeckers.

11. a. Describe how the proposed acquisition benefits primarily a local area X broad county area including the area served, the nature of the benefit, the jurisdictions involved, and the populations served.

There are numerous local and regional benefits to Community Forest creation and sustainable forest management of this and the adjacent Chimacum Ridge property, located at the top of the Chimacum Creek watershed. Community organizations and agencies have invested over $4 million dollars of federal, state and local funds in salmon habitat preservation and restoration, as well as preservation of prime agricultural soils and farmland viability, in the Chimacum Creek watershed. The carbon sequestration provided by sustainably-managed forests, such as we propose here, is an additional
environmental benefit: land management practices and conversion has been identified as one of the primary contributors to greenhouse gas production on the Olympic Peninsula. These environmental values of water quality and quantity, and reduction of greenhouse gases, have attendant economic benefits. Larger blocks of working forest, in this case >1200 contiguous acres, preserve biological diversity, promote connectivity and enable more effective ecosystem functioning than is possible with smaller parcels in isolation. An additional economic benefit resulting from our forest management would be reduction of fuel loads. Historically, the Olympic Peninsula has experienced forest fires and, as we have seen elsewhere around the state and country, accumulated excessive fuel loads result in hotter, more damaging fires that are harder to control when they do occur.

Public and private school students now are gaining practical knowledge and skills with riparian habitat science and restoration projects, and the central location and easy access make this property an ideal location for expanding those efforts to include study of working lands and forest management. Regional attractions include agro-tourism associated with the thriving local foods movement. Visitors make the trip from the Seattle metropolitan area to tour the farms and cideries featured as part of the Olympic Culinary Loop. The successful local foods movement is now serving as a model inspiring appreciation for the benefits that local wood production and markets can provide. A local wood movement, akin to the local food movement, that promotes the importance and benefits of local wood would be a visible component complementing and invigorating the existing community movement to grow a sustainable local natural resource-based economy. The Chimacum community forest would support this vision through its high visibility, community relevance, involvement by a broad contingent of local partners, and active on-the-land learning programs promoting sustainable forest management practices. The people drawn to the recreational opportunities provided by this community forest would also expand the reach of education about forest management possibilities and the attendant community benefits.

The Chimacum Forest and Chimacum Ridge are not far from the 130-mile Olympic Discovery Trail crossing the Olympic Peninsula and the 1200-mile Pacific Northwest National Scenic Trail that links the Glacier National Park with the Pacific Ocean. There is an extensive trail network on Kitsap Peninsula on both public and Pope lands, and this property's location connecting the valley to Chimacum Ridge is a logical route for connecting the Kitsap trails with the Olympic Peninsula trails through nearby Anderson Lake State Park.

11 b. Is the project located in an area that is under-represented by CF funded Projects? Areas that Conservation Futures has not been able to support to date include Marrowstone Island, Toandos Peninsula, Dosewallips Valley, Bolton Peninsula, and the West End.

No.

12. Describe the educational or interpretive opportunities that exist for providing public access, educational or interpretive displays (signage, kiosks, etc.) on the proposed site, including any plans to provide those improvements and any plans for public accessibility.2

The Chimacum Forest property is ideally situated for public access both onsite and as a gateway to the Chimacum Ridge property to the east. In fact, access opportunities provided by this property are a critical piece in the larger Community Forest concept. A small parking area will be established, and new trails and existing roads will be constructed and maintained to minimize habitat impacts, erosion and risk. Several trail organizations will help plan and establish the network of non-motorized trails for educational programs, hikers, equestrians and bicyclists. While timber management activities provide excellent opportunities for public education, we expect public access to be temporarily closed, or limited

2 The words “education” and “interpretation” are interpreted broadly by the CF Committee.

2018 CF Program Application
http://www.co.jefferson.wa.us/560/Conservation-Futures-Program
and carefully controlled, during actual harvest activities, complemented by 'before and after' educational
tours. The residence and associated outbuildings may provide opportunities for education programs for
educational institutions such as CedarRoot Folk School, the NW School of Wooden Boat Building, Port
Townsend School of Woodworking, Chimacum School District and WSU Cooperative Extension. While
Jefferson Land Trust will take the lead role in acquiring and managing the Chimacum Forest, numerous
partners organizations, agencies and individuals are very interested and enthusiastic about
participating in creation of a community forest on this property, and the neighboring Chimacum Ridge
property.

13. The proposed acquisition ___ includes historic or culturally significant resources ³ and
   ___ is registered with the National Register of Historic Places, or an equivalent program.
   ___ is recognized locally as having historic or cultural resources.
   ___ is adjacent to and provides a buffer for a historic or cultural site.

If affirmative in any of the above, please describe below, and cite or provide documentation of the historical or
cultural resources.

NA

Verification

14. Sponsors of applications that are approved for funding by the Board of County Commissioners are required to
submit a brief progress report by October 30 every year for three years after the award is approved, or three years
after the acquisition funds are disbursed to the applicant, whichever is later. The progress report must address any
changes in the project focus or purpose, progress in obtaining matching funding, and stewardship and
maintenance. Sponsors receiving O&M funds will also submit an annual report for each year that O&M funds are
expended. The Committee will use the information to develop a project “report card” that will be submitted
annually to the Board of County Commissioners.

If this application is approved for funding, I understand the sponsor is required to submit progress reports for
three years and for any year in which O&M funds are expended. ___ SS _____ Initials 03/26/18 Date

15. If, three years after the date funding is approved by the Board of County Commissioners, the applicants have
not obtained the required matching funds, the Committee may request the Board of County Commissioners to
nullify their approval of funds, and may require the project to re-apply.

If this application is approved for funding, I understand that we may be required to re-submit the application if the
project sponsor does not obtain the necessary matching funding within three years. ___ SS _____ Initials 03/26/18 Date

³ Cultural resources means archeological and historic sites and artifacts, and traditional religious ceremonial and
social uses and activities of affected Indian Tribes and mandatory protections of resources under chapters 27.44
and 27.53 RCW
Landowner Information

Name of Landowner: Valley View N & L Family Trust

Landowner Contact Information:

First Name: Sue

Last Name: McIntyre

Contact Mailing Address:

204 Fox Trail Rd
PT Townsend, WA 98370

Contact E-Mail Address:
mmsmac@cyjpen.com

Property Address or Location:

1. Valley View N & L Family Trust is the legal owner of property described in this grant application.

2. I am aware that the project is being proposed on my property.

3. If the grant is successfully awarded, I will be contacted and asked to engage in negotiations.

4. My signature does not represent authorization of project implementation.

5. If I am affiliated with the project sponsor, I will recuse myself from decisions made by the project sponsor to work on or purchase my property.

Landowner Signature: [Signature]

Date: 3/23/18

Project Sponsor Information

Project Name: Chimacum Forest

Project Applicant Contact Information: Jefferson Land Trust

Mr. □ Ms. □ Title: 

First Name: Sarah

Last Name: Spaeth

Mailing Address: 1033 Lawrence St, Port Townsend, WA

E-Mail Address: sspaeth@saveland.org
PROPOSED COMMUNITY FORESTS
CHIMACUM FOREST, CHIMACUM RIDGE, AND MATS MATS - VICINITY

- Chimacum Forest
- Chimacum Ridge Forest
- Mats Mats Forest
- Short Family Farm - CE in progress
- Bishop Dairy - CE in progress
- WA Dept. Natural Resources
- Land Trust Preserves
- Land Trust Conservation Easements
- Private Working Forests

Map created in December, 2015
2013 Aerial Image (NAIP)
For informational purposes only. All data represented are from varying sources and approximate.
Ravine with Chimacum Ridge drainage
Potential trail route to Chimacum Ridge

Residential/caretaker infrastructure
March 23, 2018

Jefferson County Conservation Futures Program

Subject: Jefferson Land Trust Application for the Chimacum Forest

Ecotrust Forest Management (EFM) is pleased to write a letter in support of Jefferson Land Trust’s Application to the Jefferson County Conservation Futures Fund for conservation of 65 acres of mature native forest located near the town of Chimacum in Jefferson County, Washington. We strongly support Jefferson Land Trust’s and partner organization’s efforts to conserve these 65 acres as a community forest. This property is representative of the rural landscape of east Jefferson County, which is dominated by working forests that help produce the natural resources and recreational opportunities enjoyed by the surrounding community.

EFM is a forestland investment management company with over 27,000 acres under management in the region. We are deeply committed to community participation and ownership of forest assets and believe local involvement is key to addressing the conflict that exists over how the region’s forests should be managed. The Chimacum Forest has tremendous potential to present a new model of forest management that respects the need for timber supply and jobs while protecting and enhancing carbon storage, habitat protection, and the recreational and scenic values inherent to intact, healthy forests.

In 2015 we purchased the 852 acre Chimacum property adjoining the subject property in collaboration with the Jefferson Land Trust and the Trust for Public Land. We are currently holding and managing the property in anticipation of acquisition of the property as part of the community forest network. Our shared vision is to create a community forest that includes Chimacum and a number of neighboring properties managed for timber production, recreation, scenic vistas, and habitat.

The acquisition of the 65 acre property will significantly complement and support the Chimacum Forest. The property provides the perfect public access opportunity for recreation trails and educational programs on the property and on the adjacent forestland property of nearly 1200 acres (which includes EFM’s 852 acre holding) proposed for community forest management. Jefferson County community members and collaborating organizations are developing strategies to create value-added enterprises and employment in local wood processing and distribution, non-timber forest product harvesting, recreation, bioenergy, restoration, and other goods and services that benefit local communities and the public interest.

In the effort to maintain the working forest landscape of East Jefferson County, we enthusiastically support the long term active management of this parcel for the broad spectrum of
economic, ecological and community values. We hope to partner with Jefferson Land Trust, as well as other partner organizations, local businesses, community members, the USFW, and Jefferson County to accomplish these goals.

Sincerely,

Bettina von Hagen
Chief Executive Officer
Chimacum Forest
Management Plan

September 2017

Logan Sander & Earl Kong
Landowner: Valley View N&L Family Trust  
Address: Susan McIntire Successor Trustee  
204 Fox Trail Rd.  
Port Townsend, WA 98368

Prepared for: Jefferson Land Trust  
Address: 1033 Lawrence Street  
Port Townsend, WA 98368

Property Name: “Chimacum Forest”

Summary Description of Property: 2 adjacent forested parcels (total 65.75 acres) in the Chimacum Creek watershed, managed as a single unit (the “Property”).

Legal Description:
- Tax parcel 901233001 (20.75 acres), Section 23, Township 29, Range 1 West, SW ¼;
- and
- Tax parcel 901262001 (45 acres), Section 23, Township 29, Range 1 West, NW ¼, Jefferson County, Washington.

Property Acreage: 65.75 acres, forested

Address: 1921 Center Road, Chimacum, WA 98325

Directions and Access: Travel 1.9 miles south along Center Road from main intersection in Chimacum, Washington (Center Rd., Chimacum Rd. and Highway 19). On left (east-side of road) is small sign indicating “1921” and steep gravel driveway heading uphill through the forest to the residence. The driveway is approximately 0.4 miles south of the Short Family Farm entrance.

Plan Prepared By:

Logan Sander  
Consulting Forester  
16732 32nd Ave NE  
Lake Forest Park, WA 98155

Earl Kong  
Forestech, LLC., Principal  
Consulting Forester  
Port Townsend, WA

Plan Completed: September 2017
Table of Contents:

I. Landowner Objectives ................................................................................................................................. 1

II. Overview ......................................................................................................................................................... 2
    General Property Description .......................................................................................................................... 3
    Legal Ownerships, Easements and Zoning ........................................................................................................ 3
    Summary of Property Features ....................................................................................................................... 3
    Property Boundaries ....................................................................................................................................... 4
    Vegetation Summary ....................................................................................................................................... 4

III. Resource Descriptions and Recommended Management Practices ........................................................................... 5
    1. Forest Health, Wildfire & Invasive Species ................................................................................................. 5
    2. Geology & Soils .......................................................................................................................................... 9
    3. Streams and Hydrology ............................................................................................................................. 12
    4. Forest Stands / Timber Resources ............................................................................................................ 16
    5. Equipment, Property Access, Roads, Skid Trails & Landings ................................................................. 28
    6. Wildlife .................................................................................................................................................... 32
    7. Protection of Special Resources & Biodiversity .......................................................................................... 34
    8. Aesthetics & Recreation ............................................................................................................................ 35
    9. Carbon Sequestration & Climate Resilience .............................................................................................. 36

IV. Management Activities .................................................................................................................................... 38
    Management Activities Schedule ................................................................................................................... 38
    Estimated Improvement Costs ........................................................................................................................ 39

V. Landowner Signature ...................................................................................................................................... 40

IV. Appendices .................................................................................................................................................. 41
    A. Forests ................................................................................................................................................... 41
    B. Soils ....................................................................................................................................................... 43
    C. Site Class ................................................................................................................................................. 44
    D. Physiography .......................................................................................................................................... 45

Tables
    1. Forested Stand Summaries ........................................................................................................................ 4
    2. Invasive Species ....................................................................................................................................... 7
    3. Stand Details ........................................................................................................................................... 17
    4. Wildlife .................................................................................................................................................. 33
    5. Management Actions Schedule ............................................................................................................... 38
    6. Estimated Improvement Costs ................................................................................................................... 39
    7. Soil Properties ....................................................................................................................................... 43

Maps
    Local Area .................................................................................................................................................... 2
    Forest Health .............................................................................................................................................. 6
    Local Geology ............................................................................................................................................. 9
    Soils ............................................................................................................................................................ 11
    Streams ..................................................................................................................................................... 13
    Stands .......................................................................................................................................................... 18
    Roads, Trails & Infrastructure ...................................................................................................................... 31
    Site Class ................................................................................................................................................... 44
    Topography ............................................................................................................................................... 45
    Hillshade .................................................................................................................................................... 46
    Slopes ......................................................................................................................................................... 47
I. Landowner Objectives

**Goals and Objectives:**

To retain the forest in a healthy condition for the benefit of current and future generations, so that it can continue to provide:

- Clean water and air
- High quality wildlife habitat
- Recreational opportunities and scenic values
- Economic benefits through sustainable forest management
- Benefits from forest-based educational programs

Jefferson Land Trust will maintain and enhance these values through:

- Long-term retention and stewardship of the Property
- Active forest management to create:
  - 1. A structurally diverse forest stand, with variable tree density and a wide range of age classes; and
  - 2. Well-distributed large-diameter trees common throughout the dominant crown class; and
  - 3. Well-distributed standing dead trees throughout the Property; and
  - 4. Down tree logs and other woody debris on the forest floor.
- Development and maintenance of a road and trail system designed to minimize sedimentation and protect local hydrologic resources
- Development of recreational infrastructure and educational content
II. Overview

Chimacum Forest Area Map

Scale is approximately 1:63,000; 1" = 1 mile

Map prepared by Logan Sander
August 2017

Chimacum Forest Management Plan
II. Overview

**General Property Description:**

The Chimacum Forest is a 65-acre property with mature, naturally regenerated, mixed-species, second-growth forest rising on the east side of what is locally called Center Valley in east Jefferson County, located on the Olympic Peninsula, in Washington State. The Chimacum Forest is surrounded by a vibrant community composed of organic agricultural operations and rural private residences along the valley floor, with predominantly commercial timberland operations at higher elevations. The Property location is significant, in that it links a scenic, landmark 853-acre working forest on the top of Chimacum Ridge between the east and west forks of Chimacum Creek (currently managed by Ecotrust Forest Management), with the rich farmland soils of the conservation easement protected 253-acre Short Family Farm in the river valley. Currently, the Property is classified as Designated Forest Land with a single residence on the southern parcel with several outbuildings. The relatively narrow Property (approximately 750 by 4000 feet) parallels a rural arterial road running north/south in orientation and is accessed by a steep gravel driveway to the residence. Topographically the Property slopes down from east to west, with several seasonal and perennial creek ravines coming down from the ridge. In the Valley, Chimacum Creek, which is fed by runoff from the Chimacum Forest, provides spawning and rearing habitat for coho and steelhead, and there is documented presence of ESA-listed summer chum salmon (*Oncorhynchus keta*) as well as fall chum and pink salmon.

**Legal Ownership, Easements and Zoning:**

The Property is currently owned by the Valley View N&L Family Trust. Previously, the Property was owned by the Short family before being placed in the family trust in 2000. Jefferson County has a right of way along the existing Center Road on the western edge of the Property. The Property is zoned as RR-10 Rural Residential (parcel # 901233001) and RR-40 Rural Forest (#901262001).

**Streams:** 3 Non-fish bearing perennial streams.

**Wetlands:** No forested or non-stream wetlands are present.

**NRCS Hydric Soils:** None.

**Rare Plants and Animals:**

- No known rare plants.
- No state or federally listed animals are known to use the Property.

**Buildings:** 1 residential home, at least 4 outbuildings and sheds.

**Roads:**

- 0.26 miles of improved gravel roads.
- 0.54 miles of unimproved former logging roads.
- An extensive network of abandoned, former skid trails run throughout the property.

**Other Improvements and Infrastructure:** 3 large clearings (0.25 to >1 acres each).

Chimacum Forest Management Plan
II. Overview

Property Boundaries:
- The east boundary is well marked with tree blazes and orange paint. Several border trees have metal “Crown Zellerbach” placards, partially covered in bark.
- The west boundary is demarcated by the cleared vegetation at the edge of Center Road.
- The north boundary is marked with stakes and orange flagging. Northeast corner is marked with CZ placard, tree blaze and orange paint.
- The south boundary is not conspicuously marked. Southeast corner is marked with a metal stake, tree blaze and orange paint tree.

Vegetation Summary:
2nd and 3rd growth mixed-species, mixed-age naturally-regenerated forest, dominated by bigleaf maple, western redcedar and Douglas-fir with significant red alder components. Several harvest entries over the past 100+ years have contributed to the complex mosaic of stands and cover-types:
- “Old growth” harvested around 100-120 years ago, burning, natural regeneration.
- 2nd growth harvested from present to 70+ years ago.
- Recurring small-scale harvest of trees for firewood, figure-maple, etc.

Table 1: Forested Stand Summaries

<table>
<thead>
<tr>
<th>Stand #</th>
<th>Type</th>
<th>Average Basal Area / Acre (ft²)</th>
<th>Average Trees per Acre</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Maple-Redcedar</td>
<td>200</td>
<td>245</td>
<td>6.1</td>
</tr>
<tr>
<td>2</td>
<td>Douglas-fir</td>
<td>240</td>
<td>131</td>
<td>2.0</td>
</tr>
<tr>
<td>3</td>
<td>Maple-Alder</td>
<td>200</td>
<td>77.2</td>
<td>2.2</td>
</tr>
<tr>
<td>4</td>
<td>Mixed Conifer-Hardwood</td>
<td>316</td>
<td>181</td>
<td>21.6</td>
</tr>
<tr>
<td>5</td>
<td>Douglas-fir</td>
<td>440</td>
<td>315</td>
<td>1.7</td>
</tr>
<tr>
<td>6</td>
<td>Maple-Redcedar</td>
<td>168</td>
<td>89</td>
<td>3.8</td>
</tr>
<tr>
<td>7</td>
<td>Maple-Redcedar</td>
<td>313</td>
<td>155</td>
<td>5.1</td>
</tr>
<tr>
<td>8</td>
<td>Douglas-fir - Redcedar</td>
<td>207</td>
<td>147</td>
<td>7.3</td>
</tr>
<tr>
<td>9</td>
<td>Mixed-Species Reserve</td>
<td>-</td>
<td>-</td>
<td>2.9</td>
</tr>
<tr>
<td>10</td>
<td>Mixed-Species Reserve</td>
<td>-</td>
<td>-</td>
<td>6.1</td>
</tr>
</tbody>
</table>

More detailed stand description to follow under Section III.4.

Plan Structure:
Section III of this plan includes the current status of resources (“Resource Conditions”) and proposed management practices and recommendations (“Management Practices”). Section IV includes a proposed management activities schedule and estimated costs of improvements to the Property. Section V, the appendices, includes supplemental information to support this plan (maps, tables, glossary).

Chimacum Forest Management Plan
III. Resource Descriptions
1. Forest Health, Wildfire & Invasive Species

Forest Health:

Resource Conditions:

- Disease –
  - Cubical butt rot (several species): A common infection of local species. Detected throughout the Property in low concentrations by examination of tipped-over Douglas-fir trees – this is not a significant concern to forest health on the Property.
  - Laminated root rot (*Phellinus weirii*): A fungus that kills infected conifers. Signs in a forest include clumps of dead Douglas-fir trees and tip-up mounds without smaller roots. Positive diagnosis is determined by locating delamination of growth rings in larger roots. In our region, Douglas-fir is most susceptible, while western redcedar is considered resistant and hardwoods are immune. Laminated root rot infections are very common in our area: the US Forest Service estimates that 8% of the total area with susceptible host species is affected. Host trees can transmit the fungus through root grafts. Extensive areas of infection are present on this property in Stands 4 and 8, with high mortality of Douglas-fir (See Forest Health Map). Treatment is imperative to stop the spread of the disease and maintain the health of uninfected individuals.

- Insects
  - Evidence of insect infestations (beetles) is present, though at local baseline levels and likely not a significant concern to overall forest health.

- Other health factors:
  - Summer drought conditions can stress trees and decrease their capacity to respond to insects and diseases. Moisture competition is common in regional forests during summer months.

Management Practices:

- More detailed management practices are described in individual stand recommendations (III.4). In general, forest management activities will be designed to improve overall forest health by decreasing competition between trees. Retained trees will have improved capacities to withstand stressors. Also, trees infected with laminated root rot will be removed, lowering the likelihood of infection of residual individuals.
III. Resource Descriptions

1. Forest Health, Wildfire & Invasive Species

Chimacum Forest
Forest Health

Laminated root rot infections determined by ground-based reconnaissance.

Map prepared by Logan Sander
August 2017
III. Resource Descriptions
1. Forest Health, Wildfire & Invasive Species

Wildfire:

Resource Conditions:
- Overall, there is a low risk of wildfire to the Property. Center Road and the extensive agricultural areas in Center Valley to the west act as a buffer. Forest operations on the property to the east (Chimacum Ridge) allow for improved access in the event of a fire.
- Factors contributing to fire risk include: nearby residences, Center Road, forest harvest operations.

Management Practices:
- Access to areas throughout the Property for fire suppression will be improved through forest operations and associated infrastructure improvements and upgrades.

Invasive species:

Resource Conditions:
- Noxious weeds are determined for the purpose of this plan by the Jefferson County Noxious Weed Control Board “2017 Proposed Weed List.”
- State Weed Law defines control as \textit{to prevent all seed production and to prevent the dispersal of all propagative parts capable of forming new plants.} (See WAC 16-750-003).

Table 2: Invasive species observed during fieldwork

<table>
<thead>
<tr>
<th>Common Name (Scientific Name)</th>
<th>Status (Jefferson County Noxious Weed Control Board)</th>
<th>Location Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>tansy ragwort ((Senecio jacobaea))</td>
<td>Class B - Mandatory control</td>
<td>Along driveway, pullouts, along logging road</td>
</tr>
<tr>
<td>reed canarygrass ((Phalaris arundinacea))</td>
<td>Class C – Mandatory control</td>
<td>Meadow (Stand 1), along driveway</td>
</tr>
<tr>
<td>Himalayan blackberry ((Rubus armeniacus))</td>
<td>Weed of concern - Monitoring and control are encouraged</td>
<td>Throughout disturbed sites</td>
</tr>
<tr>
<td>evergreen blackberry ((Rubus laciniatus))</td>
<td>Weed of concern - Monitoring and control are encouraged</td>
<td>Throughout disturbed sites</td>
</tr>
<tr>
<td>herb Robert ((Geranium robertianum))</td>
<td>Weed of concern - Monitoring and control are encouraged</td>
<td>Near home, along forest edge</td>
</tr>
<tr>
<td>English ivy ((Hedera spp.))</td>
<td>Weed of concern - Monitoring and control are encouraged</td>
<td>Several sites throughout forest, near home</td>
</tr>
<tr>
<td>English holly ((Ilex aquifolium))</td>
<td>Not listed, considered weed of concern in other counties</td>
<td>Several sites throughout forest</td>
</tr>
<tr>
<td>creeping buttercup ((Ranunculus repens))</td>
<td>Not listed, considered weed of concern in other counties</td>
<td>Throughout Property, common</td>
</tr>
<tr>
<td>Canada thistle ((Cirsium arvense))</td>
<td>Weed of concern – Monitoring and control are encouraged</td>
<td>Meadow (Stand 1)</td>
</tr>
</tbody>
</table>
III. Resource Descriptions
1. Forest Health, Wildfire & Invasive Species

Management Practices:

- General
  - Remove or treat invasive plants from harvest areas before forest operations take place to minimize spread to disturbed areas.
  - After harvest, clean up invasive plants from landings before they can establish larger populations.
  - Plant native tree species as soon as possible in order to control growing space in disturbed areas.
  - Request that loggers clean soil, debris and plant material from equipment before transport to the Property.

- Tansy ragwort
  - Manually remove and bag plants after they have grown a long stem ("bolted"), being careful to remove all seeds, rosettes and roots.
  - Monitor location for several years.
  - This plant is toxic: gloves should be worn while handling plant material.
  - Refer to “Jefferson County Noxious Weed Control Board Best Management Practices for Tansy Ragwort” for more information on control.

- Reed canarygrass
  - Shade will kill populations of this grass.
  - Mechanical control and removal can reduce populations (twice-yearly harvest, remove seed heads before maturation); clipping to the ground and covering with black tarps can reduce populations.
III. Resource Descriptions

2. Geology & Soils

**Geology:**

Recent glacial advances heavily influenced the vegetation, soils and geology of this area. During the last ice age (Fraser Glaciation), massive glaciers advanced south into Puget Sound. Near the Chimacum Forest Property, runoff from the advancing ice collected in proglacial lakes, depositing fine sediments atop ancient sedimentary bedrock and previous glacial deposits. Later, the advancing ice deposited vast quantities of sand and gravel from its leading edge. These were carried and deposited by meltwaters above the earlier layer of fine lakebed (lacustrine) deposits. As the ice sheet continued to advance it overrode all of these deposits and added and crushed other coarse materials beneath the glacier, leaving a dense layer of unsorted glacial till atop the advance outwash sands and underlying lakebed muds. By 14,000 years ago, at the maximum extent of the last glacial advance, a massive lobe of the Cordilleran Ice Sheet occupied all of Puget Sound between the Olympic and Cascade Mountains. Over time, the ice retreated northward. Again, meltwaters worked to redistribute the material from each successive layer.

Over thousands of years the Property has eroded away to reveal several of layers of glacial origin. The western parts of the Property sit atop lakebed deposits, exposed and clearly visible in the deeply incised gullies of the Property’s minor streams that run west into Chimacum Creek. Higher, forming headwalls and steep escarpments along the eastern border of the Property, are the advance outwash deposits of sand and gravel. Higher still, atop Chimacum Ridge to the east, lie deposits of compacted glacial till.

**Legend**

(map symbols relevant to Property are included):
- Qgaf – Vashon advance lacustrine mud
- Qgic – Vashon ice contact deposits
- Qgas – Vashon advance outwash sand
- Em – undifferentiated sedimentary rocks (late Eocene to early Oligocene)

Map by Washington Division of Geology and Earth Resources, 2014
III. Resource Descriptions
2. Geology & Soils

Soils:

Soils on the Property have formed since the most recent glacial advance (>10,000 years ago), and are a reflection of the underlying geology, local climate, and vegetation. 5 soil types are found on the Property (summarized in Appendix B, Table 7; indicated on Soil Map).

- The dominant soils on the Property are Kitsap silt loams (KtD) and Kitsap gravelly loams (KsD). These soils are found on terraces and escarpments from ancient lakebed deposits from the last glacial advance. Due to their fine texture and associated clays, these soils have a relatively high site index (growth rate of trees over a given time period) for soils on the Eastern Olympic Peninsula. On this property Kitsap soils are found on some of the steepest slopes near Center Road. Recently, a small landslide has occurred on a steep slope between two abandoned skid trails, indicating that on this property these soils are susceptible to erosion and need to be treated with caution. Also, in Stand 3, a large slump has occurred sometime in the recent past.

- Sinclair gravelly sandy loams (SnD) occur on the upper slopes of the Property near the top of Chimacum Ridge. These soils are comprised of glacially transported sands and gravels (till) compacted beneath the overlying glacial ice. These soils indicate a lower site index (tree growth potential) than adjacent Kitsap and Alderwood soils, likely due to their coarse texture and low nutrient and water holding capacity.

- Cassolary sandy loams (CfE) occur on the northeast edge of the Property, on the mid and upper slope complexes near the top of Chimacum Ridge. These soils formed in reworked glacial deposits. The site index of Cassolary soils is relatively low.

- Alderwood gravelly sandy loams (AlD) are found on convex slopes on the northern end of the Property. This soil is comprised of unconsolidated glacial debris which may (or may not) overlay an extremely hard, dense layer of material (“densic”). If this densic layer is present, perched water will be at its highest during the winter months (January-March). Alderwood soils have a moderate site index (similar to Cassolary soils).

Management Practices:

- All soils on this site are deep and moderately well-drained. All soil types are moderately to severely susceptible to erosion, both on and off trails and roads. Most soil types on the Property are moderately suited to road construction, provided care is taken to avoid the steepest slopes.

- Site index refers to the potential of a site to grow a specific tree over a defined time period, measured in feet height/years. Site index values for this property (site class 2-3) are consistent with average to above-average values for the Eastern Olympic Peninsula. Soil properties that restrict plant growth on this property include: summer moisture deficits, slope stability and low water holding capacity.

- NRCS soil properties for specific activities (road construction, harvest equipment, etc.) are included in Appendix B.

- Due to steep, potentially unstable slopes, a geotechnical report from a qualified geologist is required for a WA Forest Practices Application.
III. Resource Descriptions
2. Geology & Soils

Chimacum Forest Management Plan

Chimacum Forest Soil Map

Map prepared by Logan Sander
August 2017
III. Resource Descriptions
3. Streams and Hydrology

**Hydrological Resources:**

**Methods:**

All streams on the Property are mapped as non-fish bearing according to maps accessed during August 2017 from Washington DNR’s Forest Practices Application and Review System. No other wetlands were observed during fieldwork or are mapped on WA DNR hydrological maps.

During fieldwork, mapping with a handheld GPS device and classification of each known stream on the Property was conducted. Fieldwork followed an unusually dry period (>50 days with no measurable precipitation). If flowing water and a clearly defined channel were present at the time of fieldwork (August 2017), the stream was typed as a non-fishbearing perennial stream (Np). Apparent stream channels with no detectable flow were typed as non-fishbearing seasonal streams (Ns). Streams are numbered on Stream Map for reference in this report only.

**Resource Conditions:**

Several perennial streams cut across the Property. As the Property steepens along its western edge, these streams incise deeply (>6’) into the soft, erodible soils, in some cases cutting into the sedimentary bedrock. All streams on the Property originate from groundwater discharge or springs along the eastern edge of the Property and the neighboring property.

Wetland indicator plants were observed in the northernmost landing (near the shed/structure), such as hardhack (*Spiraea douglasii*) and rushes (*Juncus* spp.), though soils and hydrological characteristics of wetlands were not present. Likely, severe compaction of the site from historic use contributed to a soil restrictive layer and artificially moist surface conditions.

**Stream 1** (Stand S1) - Several extensive reaches with severe erosion and deep incision. Mostly, these are in areas that will not be accessed with harvest equipment and present no restrictions. At several locations, skunk cabbage (*Lysichitum americanum*), an obligate wetland indicator species (WSDOT Wetland Monitoring Plant List 2016), was observed growing next to the stream channel. Stream 1 crosses the logging road inside a broken 12” diameter concrete culvert.

**Stream 2** (Stand S2) – Originating in headwall seeps near the eastern boundary of the Property, this stream is minimally incised and there is not significant erosion along its channel throughout the Property. Where this stream crosses the logging road there is a significant deposit of fine materials. It is unclear whether this is a result of equipment or an inadequate culvert beneath the logging road. Logging road over stream appears to be constructed on top of large pieces of cedar. At this crossing there is a perched culvert (6” diameter) and a buried pipe (6” diameter).

**Stream 3** (Stand S3) – Impermeable and semi-impermeable surfaces (home, yard, garage, road, etc.) may be contributing to increased flow to the west of the house. Immediately below the house, the stream reaches a significantly steeper slope, facilitating increased sediment transfer and increased stream incision into the soft Kitsap soils. This stream may need a significant culvert installed where it flows beneath the driveway. A type Ns stream contributes to stream 3 near the eastern border of the Property.

Chimacum Forest Management Plan
III. Resource Descriptions
3. Streams and Hydrology

Chimacum	Forest	Management	Plan

Legend
- WA DNR Mapped Streams
- Ground-Truthed Streams, Type
- Contour = 15 feet
- Parcel Boundaries

Chimacum Forest Stream Map
-Washington State Watercourse Hydrography data from Washington State Department of Natural Resources
-Streams ground-truthed with handheld GPS. Typological errors manually removed.
-Stream types estimated in field on August 12, 2017
Map prepared by Logan Sander

Chimacum Forest Management Plan
III. Resource Descriptions
3. Streams and Hydrology

At their contact with Center Road, streams 1 and 2 are channeled and conveyed beneath the road (2’ and 1’ diameter culverts, respectively). Stream 3, however, was not observed to flow beneath the road into a culvert and may later follow a deep ditch to a conveyance beneath the road.

Currently, wintertime sediment loading of creeks from erosion is likely. Debris from a landslide located in Stand 10 from winter 2016-2017 is clearly visible in the ditch adjacent to Center Road and on the road’s shoulder. Several actively eroding escarpments are visible where 50 year old (+\-\-) skid roads were constructed in soft Kitsap soils. Also, in times of peak discharge, eroding sediment is transported from stream channel walls and nearby unstable slopes and discharged into the Chimacum Valley.

Management Practices:

- Improvements to mitigate fish-passage constraints are not needed on the Property, as there is no evidence that fish passage is impeded at any point on or immediately before this property.
- Relevant regulations on forest operations in type-N streams are as follows (from WAC 222-30.2):
  - 30-foot mandatory equipment limitation zone
  - 50-foot riparian management zone, in which limited thinning activities are permitted
  - Type-Np stream reaches >500’ from their confluence with fish-bearing streams have mandatory 50’ no-harvest buffers for a percentage of their length through a harvest unit.

Chimacum Forest Management Plan
III. Resource Descriptions
3. Streams and Hydrology

- All reaches of type-Np streams on the Property are more than 500 feet from their confluence with a fish-bearing stream (Chimacum Creek). As a result, they require mandatory buffering with a 50-foot two-sided no-harvest zone for 42%, 42% and 38% of their lengths across the harvest units (streams 1-3 respectively), following calculations from the “Western Washington Type-Np RMZ Worksheet.” Mandatory type-Np buffers have not been specifically mapped in this plan – buffering to meet regulatory requirements (in addition to mapped stream reserves and steep slope reserve stands) will be determined in the field during harvest layout in order to include the most critical areas with active erosion and high quality wildlife habitat.

- All remaining type-Np stream reaches on the Property will be buffered by a 30-foot reserve zone (no harvest), to further protect water resources (see Stand Map). As the riparian management zone extends another 20-feet beyond this zone, limited harvest is permitted of these outermost trees in the to-be-determined non-mandatory reserve zones.

- Culverts for forest roads and skid trails will need to be installed where they cross the three type-Np streams and any type Ns streams on the Property.

- Culvert design for type-N streams (for cost estimates) is based on “Method B,” sizing for type-N streams by measured bankfull width (WA Forest Practices Board Manual, Sections 2 & 5). “Method B” requires that culvert diameter be at least equal to the bankfull width of the stream. In this management plan, all recommendations are preliminary and for the purposes of planning. Final culvert sizing and design will follow Hydraulic Project Approval with Washington Department of Fish and Wildlife.
  - Field-measured bankfull width on the Property at normalized reaches directly upstream of proposed culverts:
    - Stream 1: 3-4’
    - Stream 2: 3’
    - Stream 3: 3’

- Logging Slash Practices for Type-N Streams:
  - Any logging debris and slash that may be expected to interfere with culverts must be cleared from the channel for at least 50 feet upstream of the culvert. Debris removed from the channel must be placed downstream of the culvert, outside of the 100-year flood level. Exceptions are debris or logs that are buried in the stream or buried under stable deposits.
  - Logging slash will be used to protect soil in harvest operations areas. After trees are dropped, slash will be placed, whenever possible, in skid paths where equipment will operate. Logging slash can prevent erosion, prevent rutting by equipment and help mitigate downstream of sedimentation of streams by trapping fine sediments. Additionally, logging slash can provide important habitat for amphibians, small mammals and birds.
III. Resource Descriptions
4. Forest Stands / Timber Resources

**Forest Management Summary:**

The Property is almost entirely forested in 2nd and 3rd growth, mixed-age mixed-species stands, with all age-classes represented except for early-successional saplings and “old growth.” The future of this working forest lies in improving forest health and accelerating the growth of retained trees – especially western redcedar - throughout the Property. Western redcedar should respond well to the recommend treatments – this property is relatively productive and a good site for cedar. The greatest challenge to management is the high canopy of large-crowned bigleaf maple across much of the Property. Maple stump-sprouts after harvest – controlling this species to create a more productive working forest will be of paramount importance. Special care must be taken when removing maple to minimize damage to retained trees on the site. Maple management in thinning and selection system regimes is costly, but will be financially offset by active management in several stands of high-quality conifers and alder. Operationally, much of the Property is challenging and will require significant planning and technical expertise in laying out harvests, especially on steeper slopes.

Forest inventory data (stocking density, basal area, species composition, timber quality) were collected previously by an independent contractor for the landowner (May 2017) and were obtained and utilized for this management plan. Data from 57 variable-radius plots were recorded and flagged in the field. GPS coordinates of plot locations were used to analyze inventory data by stand. Quantitative forest inventory summaries are reported with each stand.

Stands were delineated using aerial imagery and field reconnaissance. Stands are generally defined by age-class of dominant trees, species composition, site index and/or stocking density. Due to natural regeneration, random dispersal patterns, management history and the ecological preferences of each species, the forest we see today is a complex mosaic of multi-aged cover-types. Because this level of complexity is unmanageable to break into discrete units (some <1-acre), some stands (especially Stands 2, 4, 6 & 8) represent mosaics of cover-types and previous management regimes with relatively uniform future management recommendations over the stand as a whole. Stands on the Property are complex and have undergoing almost continual small-scale management.

Stand descriptions include a vegetative description of the stand, qualitative history of the stand, and estimates of stand age and stocking. A glossary of common forestry terms and ecological summaries of the relevant tree species are included in Appendix A.

Forest operations equipment recommendations are detailed in Section III.5., “Equipment, Property Access, Roads, Skid Trails & Landings.”
### Table 3: Stand Details

<table>
<thead>
<tr>
<th>Stand #</th>
<th>Description</th>
<th>Management Recommendation</th>
<th>Management Priority</th>
<th>Average Basal Area / Acre (ft²)</th>
<th>Average Trees per Acre</th>
<th>Acres</th>
<th>Inventory: # of plots</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Maple-Redcedar</td>
<td>High thinning to remove maple</td>
<td>Medium</td>
<td>200</td>
<td>245</td>
<td>6.1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Douglas-fir</td>
<td>Reserve</td>
<td>Low</td>
<td>240</td>
<td>131</td>
<td>2.0</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Maple-Alder</td>
<td>Group selection w/ reserves</td>
<td>Low</td>
<td>200</td>
<td>77.2</td>
<td>2.2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Mixed Conifer-Hardwood</td>
<td>Convert root rot patches to alder; high thinning to remove maple and favor highest quality conifers</td>
<td>High</td>
<td>316</td>
<td>181</td>
<td>21.6</td>
<td>19</td>
</tr>
<tr>
<td>5</td>
<td>Douglas-fir</td>
<td>Group selection</td>
<td>Medium</td>
<td>440</td>
<td>315</td>
<td>1.7</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>Maple-Redcedar</td>
<td>High thinning &amp; group selection; convert stand to conifers</td>
<td>Low</td>
<td>168</td>
<td>89</td>
<td>3.8</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>Maple-Redcedar</td>
<td>High thinning to remove maple</td>
<td>Medium</td>
<td>313</td>
<td>155</td>
<td>5.1</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>Douglas-fir - Redcedar</td>
<td>Treat and convert root rot patches; high thinning of alder-rich areas</td>
<td>High</td>
<td>207</td>
<td>147</td>
<td>7.3</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>Steep Slopes Reserve</td>
<td>Reserve</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2.9</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Steep Slopes Reserve</td>
<td>Reserve</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6.1</td>
<td>-</td>
</tr>
<tr>
<td>S1</td>
<td>Stream buffer</td>
<td>Reserve</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2.5</td>
<td>-</td>
</tr>
<tr>
<td>S2</td>
<td>Stream buffer</td>
<td>Reserve</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.5</td>
<td>-</td>
</tr>
<tr>
<td>S3</td>
<td>Stream buffer</td>
<td>Reserve</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.6</td>
<td>-</td>
</tr>
<tr>
<td>House, yard, parking area</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.1</td>
<td>-</td>
</tr>
</tbody>
</table>

Chimacum Forest Management Plan
III. Resource Descriptions
4. Forest Stands / Timber Resources

Chimacum Forest
Stands

-Plot data collected by consultant, May 2017
-Perennial streams include 30 foot buffers.

Map prepared by Logan Sander
August 2017
III. Resource Descriptions
4. Forest Stands / Timber Resources

Forest Stand Descriptions and Management Recommendations:

Stand 1: Maple-Redcedar

Size: 6.1 acres.

Description: Codominant trees are multi-stemmed bigleaf maple and western redcedar with patches of red alder. Relatively open stand, with smaller, young trees. Understory vegetation includes swordfern, red huckleberry, osoberry, salal, and scattered English ivy.

Management History:
• Forest first logged 100-120 years ago; site was burned (evidence of burned out old growth cedar stumps), naturally regenerated into bigleaf maple with scattered alder clumps.
• Over the decades, western redcedar and small amounts of grand fir and western hemlock regenerated and grew slowly underneath the predominately bigleaf maple overstory.
• Maple harvested 20-25 years ago. Older cohort of red alder shows damage from this event.
• Maple stumps sprouted and again are in the overstory with codominant and intermediate redcedar.

Management Recommendations:
• High thinning - maple, damaged/defective and mature alder. Retain conifer components (about 100 trees per acre). Retained conifers will show accelerated growth.
• Underplant shade-tolerant species: redcedar (70%), with Sitka spruce (25%) and western hemlock (5%) for diversity and future wood products for local craft market. Sitka spruce is growing well on the Property (at least 3 specimens located during fieldwork). Light regime is insufficient to underplant Douglas-fir.

Challenges and Risks:
• Because retained conifer components (mostly redcedar) are insufficient to shade and suppress bigleaf maple from stump sprouting, repeated mechanical cutting of stump sprouts will be necessary, until the overstory is closed.
• Care must be taken to minimize damage to retained trees from the high lateral branches of maple as they are felled.
III. Resource Descriptions
4. Forest Stands / Timber Resources

Stand 2: Douglas-fir

Size: 2.0 acres.

Description: Older 2nd growth stand, dominated by large-diameter, tall, apparently healthy Douglas-fir, with components of grand fir, redcedar, hemlock, bigleaf maple. These are the largest trees on the Property. Understory of Oregon grape, evergreen huckleberry and swordfern.

- Average age of Douglas-fir is more than 80 years old. One particularly large Douglas-fir tree (44” DBH, 170’+ height) is of the size and structure to be potential marbled murrelet nesting habitat in the future (>6” branch diameter, <50 miles from coast).
- Evidence of tip-up mounds throughout stand, potentially from a windstorm >100 years ago.

Management History:
- Harvested approximately 1900-1930, burned. Potentially a salvage harvest after windstorm.
- Natural regeneration over several decades.
- Repeated harvest history, small entries.

Management Recommendations:
- This stand would make an ideal reserve of heritage trees. A short walking trail could be developed from a nearby parking area (proposed landing). Trees in this stand are particularly impressive and unique for this property.
- Smaller Douglas-fir could be pruned (limbed) to 32 feet. This would increase their value as they continue to grow, creating options for future management. Branch piles will create wildlife habitat.
- If management priorities change over the decades, this stand may come into production.

Challenges & Risks:
- Douglas-fir may someday become infected with root rot or other diseases; at that point, stand can be harvested and replanted.
III. Resource Descriptions
4. Forest Stands / Timber Resources

Stand 3: Maple-Alder

Size: 2.2 acres.

Description: This hardwood-dominated stand is comprised of economically mature bigleaf maple (single-stemmed & multi-stemmed) and red alder, with scattered grand fir. Understory plants include osoberry, red huckleberry, cascara, sword fern & English ivy.

• The concave slope positions of this stand made it ideal for hardwood establishment.
• An architecturally complex, potentially “old-growth” redcedar is growing atop a small “hogsback” that separates two swales in the stand.
• Forestry operations on this stand would be relatively simple due to good access and existing skid trails.

Management History:
• Single-stemmed maple trees are at least 70-80 years old, multi-stemmed maple were cut more recently from same cohort and stump sprouted (around 40 years ago).
• Red alder established in openings on disturbed soil from harvest history. Some alder is very mature, indicating it may be contemporaneous with the original cohort of maple.

Management Recommendations:
• Harvest maple and alder with group selection system over several cycles (1/2-1 acre, 5-10 years) – “patch cuts.”
• Maple stumps will require frequent mechanical treatments to mitigate stump sprouting.
• Replant into Douglas-fir (or possibly red alder).
• Maintain wildlife trees, such as mature redcedar, as small reserves.

Challenges & Risks:
• A slump on the southern side of the stand has created a large gap in the forest cover. Forestry operations are likely possible on each side of this slump though not upslope of it. A geotechnical report will be needed for this and other areas of the Property.
• The English ivy infestation needs to be managed to prevent its spread during forestry operations.
III. Resource Descriptions
4. Forest Stands / Timber Resources

Stand 4: Mixed Conifer-Hardwood

Size: 21.6 acres.

Description: This extensive stand is dominated by 2nd and 3rd growth forests. Extremely patchy and complex, this stand is a mosaic of naturally-regenerated Douglas-fir, western redcedar, red alder and bigleaf maple. Understory vegetation is patchy and includes sword fern, red huckleberry and elderberry, with very little regeneration.

- Many trees in areas of this stand are of merchantable size - average diameter at 4.5’ (approximate):
  - Douglas-fir 20-28”
  - Western redcedar 24”
  - Red alder 18-20”
  - Bigleaf maple 24”
- The northern part of stand has an extensive (>2-acre) laminated root rot infestation, affecting Douglas-fir and western redcedar.

Management History:
- First logged 100-120 years ago; site was burned.
- Naturally regenerated into bigleaf maple, Douglas-fir, western redcedar and red alder.
- Repeated harvests from 50+ years ago.
- Landowner has likely been recently harvesting individual root rot infected trees.

Management Recommendations:
- Harvest all trees infected with laminated root rot.
  - Harvest all trees within 50’ buffer of laminated root rot infestation.
  - Replant red alder in root rot pocket.
- High thinning to remove most bigleaf maple.
  - Leave sufficient shade to suppress regrowth on bigleaf maple.
- In dense conifer patches, conduct high thinning to 150 trees per acre as a goal in order to free up growing space.
- After 10 (+/-) years, group selection harvest of mature red alder, Douglas-fir, and western redcedar.
  - Can conduct additional low thinning at this time to remove weak & defective trees of all species.
  - Replant Douglas-fir, western redcedar, western hemlock (<10%) as appropriate (dependent on gap size and light regime).

Challenges & Risks:
- Highest priority is to contain root rot infestation.
- Care must be taken to minimize damage to retained trees from the high lateral branches of maple as they are felled.
- Trees should be felled uphill in order to protect roadside vegetation.
III. Resource Descriptions
4. Forest Stands / Timber Resources

Stand 5: Douglas-fir

Size: 1.7 acres.

Description: Almost pure, even-aged stand of 2nd growth Douglas-fir. Stand is in the late stem-exclusion stage of stand development, with high competition and associated mortality.

Management History:
• Stand was harvested 80-100 years ago.
• Naturally regenerated into Douglas-fir.

Management Recommendations:
• Harvest with group selection system – ½ - 1 acre “patch cuts” – over several cutting cycles.
  o Replant Douglas-fir.
• Because they are in good health and are self-thinning, these trees will continue to add economic value – can harvest now or later.

Challenges & Risks:
• All trees must be cut in each harvest patch due to the convex slope shape and the likelihood of damage to retained trees.
• Monitor for forest health changes, including laminated root rot infestation.
III. Resource Descriptions
4. Forest Stands / Timber Resources

Stand 6: Maple-Redcedar

Size: 3.8 acres.

Description: Dominated by bigleaf maple, with several emergent Douglas-fir trees and intermittent patches of western redcedar. Differs from Stand 7 in that stocking is lower, there are fewer western redcedar throughout the stand, and most are confined to patches near the southern edge along the riparian buffer. This will be a challenging stand to manage and may require significant resources to restore to production. However, pairing treatments on this stand with other nearby stands (4, 7) will make active management feasible.

Management History:
• After initial harvest (>60 years ago) maple regenerated, with some Douglas-fir and western redcedar.

Management Recommendations:
• High thinning where western redcedar is dense enough to partially suppress maple resprouting (mostly along northern edge). Remove most maple, and Douglas-fir and alder with poor growth form/health.
• Conversion to conifers using group selection system in areas of hardwood dominance.
  o Harvest bigleaf maple; largest patch size acceptable to landowner.
  o Replanting of Douglas-fir, western redcedar.
  o Continued monitoring and mechanical cutting of bigleaf maple stump sprouts.

Challenges & Risks:
• Without a consistent, widespread cohort of medium-sized established conifers (as in Stand 7) it will be difficult to suppress regrowth from maple stumps throughout most of the stand, especially the northern half. Several re-entries may be necessary to control bigleaf maple sprouts.
• Residual Douglas-fir may be more susceptible to windthrow. Evaluate on a case-by-case basis for retention or harvest.
• This may be a challenging and expensive stand to rehabilitate.
III. Resource Descriptions
4. Forest Stands / Timber Resources

Stand 7: Maple-Redcedar

Size: 5.1 acres.

Description: Expansive, large-crowned bigleaf maple with extensive intermediate western redcedar and Douglas-fir. Understory of osoberry and sword fern, with scattered holly.
- Undulating surface of stand is potentially evidence of catastrophic windstorm before stand establishment.

Management History:
- After harvest (>60 years ago), maple regenerated, with some Douglas-fir. This may have been salvage logging after a windstorm.
- 20-40+ years ago western redcedar established.

Management Recommendations:
- High thinning.
  - Cut most maple trees and allow stumps to be shaded by retained trees; residual stand will see accelerated growth.
  - Later (10+ years), after maple sprouts have been suppressed, harvest of Douglas-fir and some western redcedar is possible.
- Create a landing near the proposed road (see Road, Trail & Infrastructure Map).

Challenges & Risks:
- Suppression of maple will be difficult. Before any other trees are removed, it is imperative to ensure that maple stumps cannot resprout.
- Monitor stand for laminated root rot.
III. Resource Descriptions
4. Forest Stands / Timber Resources

Stand 8: Douglas-fir–Redcedar

Size: 7.3 acres.

Description: Closed-canopy 2nd growth Douglas-fir and western redcedar with minimal understory or regeneration. Some areas of this stand are undergoing a high degree of mortality from competition and at least two separate, expanding infestations of laminated root rot. Significant snags and coarse woody debris.

Management History:
• 100+ years ago previous stand was cut and burned.
• Naturally regenerated into Douglas-fir and western redcedar.
• As Douglas-fir has died from competition it has been removed through small-scale harvests.

Management Recommendations:
• Harvest all trees infected with laminated root rot.
  o Harvest all trees within 50’ buffer of laminated root rot infestation.
  o Replant/underplant root rot resistant species based on microsite and light regime (western redcedar, red alder).
• Harvest large-diameter and defective red alder; retain young alder and trees with good form.
• Retain western redcedar, healthy patches of Douglas-fir, unless it is highly susceptible to windthrow.
• Retain/create snags away from recreational infrastructure.

Challenges & Risks:
• Retained trees must be reasonably safe from windthrow – otherwise, harvest of individuals is preferable.
III. Resource Descriptions
4. Forest Stands / Timber Resources

**Stand 9: Steep Slopes Reserve**

**Size:** 2.9 acres.

**Description:** Steep slopes near eastern property boundary. Tall, mixed conifer-hardwood forest. Operationally inaccessible due to steep slopes and riparian corridors.

**Management History:** Naturally regenerated 2\textsuperscript{nd} growth, established after burning.

**Management Recommendations:**
- Maintain as forested slopes.
- Limit all forest operations in this stand.
- Recreational access paths may be created and maintained in order to avoid dispersed access and erosion.

**Stand 10: Steep Slopes Reserve**

**Size:** 6.1 acres.

**Description:** Steep slopes near Center Road. Tall, mixed conifer-hardwood forest. Signs of significant erosion, including a small landslide between skid trail scarps.

**Management History:** Naturally regenerated 2\textsuperscript{nd} growth, likely established after burning.

**Management Recommendations:**
- Maintain as buffer along Center Road.
- Limit all forest operations in this stand. If needed, stabilize slopes eroding near former skid trails.
- Fell trees in adjacent stands away from this area to prevent injury to roadside trees and vegetation.
III. Resource Descriptions
5. Equipment, Property Access, Roads, Skid Trails & Landings

**Equipment and Operations Summary:**

Harvest system and equipment recommendations are outlined below. Harvest system choice represents a trade-off between cost, suitability, availability, speed and environmental protection.

- A ground-based harvest system is recommended for the Property due to the small scale of the property and the extremely high costs of aerial harvest.
- Rubber tired skidders are recommended due to their maneuverability in tight spaces, relatively low cost and local availability. Skidders excel at the types of thinning regimes recommended across this property.
- Another locally utilized ground-based harvest system, harvesters/processers, cannot perform as well on the steep undulating terrain of the Property. Shovel logging is also common in the area, but requires large spaces to operate and is more conducive to clearcut management.
- All forest operations with skidders need to be conducted in dry weather to protect soil resources.
- Steep slopes (>35%) can be harvested on a case-by-case basis, as long as skid trails do not need to traverse such slopes.
- All tree felling will be by hand.

**Access:**

**Resource Conditions:**

- Currently, the Property can be accessed from Center Road via the main driveway and two gated logging road access points on the north-end of the Property.

**Management Practices:**

- Access to this property is sufficient for all anticipated forest operations.
- During active operations, signage needs to be placed 100’ on each end of active access points along Center Road, indicating, “truck crossings.”
- Gates need to be monitored, locked and kept in good working order.
- All public access to areas with active forestry operations should be limited to field tours and educational programs.

**Roads:**

**Resource Conditions:**

- Currently, vehicle access to the Property is via the gravel driveway leading southeast to the homesite (1300 feet). The lower part of this road is graded between 18-20%, making it challenging, though possible, for logging trucks to access the Property.
- Another unimproved road runs north-south throughout much of the Property north of the house (2300 feet). This road is in poor condition, mostly unsurfaced and severely rutted (4”+), evidence of wet-season use. Several perennial stream crossings are unsuitable for conveying heavy equipment or trucks. Any use of this road for logging operations, in its current condition, would pose a significant risk of sedimentation and harm to aquatic resources.
III. Resource Descriptions
5. Equipment, Property Access, Roads, Skid Trails & Landings

Management Practices:

- The steep northern end of the driveway will likely be usable by logging trucks as they will be ascending the steepest area unloaded.
- The unimproved logging road running north-south will need significant improvement in order to convey heavy equipment (resurfacing with crushed rock, properly-sized culverts). Proper surfacing with crushed rock of various sizes (3/4 minus) will decrease erosion during harvest operations. Wet areas will need a base of larger sized rock and a cap of ¾ minus crushed rock. In any case, to minimize potential erosion and stream sedimentation, it will be important to conduct forest operations in the summer months during dry weather. Additionally, the logging road will need to be extended south beyond the house for approximately 450 feet, in order to access a proposed landing south of the house.
- Annual inspection of road conditions, culverts and drainage will be conducted for compliance with Washington Department of Natural Resources (DNR) Road Maintenance and Abandonment standards.

Skid Trails:

Resource Conditions:

- An extensive network of skid trails traverses the Property. Mostly, these are very old - in places 15” DBH red alder trees are growing from the trail. In many places, skid trails are on steep slopes (>35%), exceeding the maximum advisable grade. Extensive areas of steep slopes (>35%) have been included in no-harvest reserves.

Management Practices:

- No skid trails will be used on slopes greater than 35%. Harvest of trees on steeper slopes can take place as long as skidders do not need to drive to the trees to transport them.
- Many skid trails on steeper ground (>35%) need to be abandoned. Other skid trails may be useful for future timber harvests, on a case-by-case basis.
- On the steep southwestern part of the Property care must be taken that any use of the skid trails (including recreation) does not contribute to mass wasting or erosion of the slopes. For example, a recent landslide (20’ x 50’) has occurred between these former skid trails. The trail that forms the scarp of the landslide was observed during fieldwork to have water seeping out of it. All skid roads in this area on moderate to steep slopes (>20%) should be abandoned and monitored for problems.
- Major skid trails are not limited to those mapped – many other major and minor trails traverse throughout the Property.
III. Resource Descriptions
5. Equipment, Property Access, Roads, Skid Trails & Landings

Landings:

Resource Conditions:
- Two former landings exist on the northern end of the Property.

Management Practices:
- With minimal effort the existing landings could be functional for seasonal (summer) forest operations in good weather. For operations during the off-season or if weather during the summer is wet, gravel and some groundwork are needed (see Table 6).
- Three additional 60’ x 60’ landings are proposed on the mid-and southern parts of the Property (all indicated on the Road, Trail & Infrastructure Map). In order to minimize the removal of stumps, two of these proposed landings (one north of driveway on logging road and one south of house) should be constructed where large-crowned, widely spaced bigleaf maple trees currently grow.
- Landings on this type of terrain have a serviceable range of approximately 600’. With 5 total landings throughout the Property, virtually all areas of potential forest operations will be covered (see shaded regions on Road, Trail & Infrastructure Map).
- One proposed landing, located in a clearing on the northern part of the Property, could be transitioned between active timber harvests to a parking area for recreational activities on the Property.
- If heavy rain falls during active operations, forestry activities can be temporarily postponed and straw can be spread around landings to minimize erosion.

Cost estimates for roads and infrastructure improvements are included in Table 6, Section IV. Management Activities.
III. Resource Descriptions
5. Equipment, Property Access, Roads, Skid Trails & Landings
III. Resource Descriptions
6. Wildlife

Wildlife:

Resource Conditions:

- Overall, stands in the Chimacum Forest Property are mid-successional, with no very old stands (e.g. “old growth”) and minimal areas of early-successional saplings or shrubs. Moderate diversity of wildlife habitat can be found within stands and across stands.
- The Property has a high degree of contrast with neighboring properties (i.e. valley-bottom and upland plantation forest) and has significant edge habitat (along Center Road, the access driveway and the small clearings).
- Downed wood (coarse woody debris) levels are high across most of the Property, typical of a forest with a high degree of competition and mortality.
- Snags are common, especially in areas with active root rot infestations.

Management Practices:

- Uneven-aged management (group selection system) will, over time, allow for the development of older, mature stands with multi-layered vertical structure. This will improve habitat for species that require more downed woody debris (amphibians), large-diameter trees and snags (pileated woodpecker, barred owl), and shrub and sapling layers in open patches (nuthatches, brown creepers, towhees, thrushes).
- The early phases of recently cut root rot infested patches will offer open, brushy habitat for deer and other species that favor open habitat (flycatchers, grouse, rodents). As the replanted saplings fill in and occupy the growing space, the stand will transition to offering good hiding cover.
- Planned reserves and buffers far exceed WA Forest Practices Board requirements for wildlife reserve trees and green recruitment trees across harvested areas.
- Retention of a diversity of hardwood and conifer-dominated stands will promote edge-related habitat characteristics.
- Stream buffers and steep slope reserves will minimize sedimentation of downstream fish-bearing streams and wetlands.
- Dense stands of bigleaf maple, Douglas-fir and western redcedar will be thinned, temporarily freeing up growing space for understory plants and associated wildlife. Important habitat structures will be retained and created (snags, high-quality wildlife trees).
- Retention of coarse woody debris in forestry activity areas will maintain and improve amphibian habitat.
- Artificial and constructed structures: Brush piles can be important habitat for ground-nesting birds; small, unmerchantable logs can be safely stacked to provide cover and habitat for rodents.
- Snags and wildlife trees: all retained or created snags need to be located away from trails and roads at distance of more than their height, in order to protect recreational users. Where possible, large-diameter standing snags can be retained or created to provide nesting habitat for pileated woodpeckers.
III. Resource Descriptions
6. Wildlife

Table 4: The following are wildlife species of conservation concern to this and neighboring properties throughout the region. They were mostly not observed on the Property, but many are considered to be possible to occur or will occur with restoration and improvement of the Property and continued regional conservation efforts.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Federal Status</th>
<th>State Status</th>
<th>Washington Priority Habitats and Species</th>
<th>Current Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bald Eagle</td>
<td><em>Haliaeetus leucocephalus</em></td>
<td>Concern</td>
<td>Sensitive</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Peregrine Falcon</td>
<td><em>Falco peregrinus anatum</em></td>
<td>Concern</td>
<td>Sensitive</td>
<td>Yes</td>
<td>U</td>
</tr>
<tr>
<td>Northern Goshawk</td>
<td><em>Accipiter gentilis</em></td>
<td>Concern</td>
<td>Candidate</td>
<td>Yes</td>
<td>U</td>
</tr>
<tr>
<td>Northern Spotted Owl</td>
<td><em>Strix occidentalis caurina</em></td>
<td>Threatened</td>
<td>Endangered</td>
<td>Yes</td>
<td>U</td>
</tr>
<tr>
<td>Mountain Quail</td>
<td><em>Oreortyx pictus</em></td>
<td>None</td>
<td>None</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Pileated Woodpecker</td>
<td><em>Dryocopus pileatus</em></td>
<td>None</td>
<td>Candidate</td>
<td>Yes</td>
<td>C</td>
</tr>
<tr>
<td>Western Bluebird</td>
<td><em>Sialia Mexicana</em></td>
<td>None</td>
<td>Monitor</td>
<td>No</td>
<td>P</td>
</tr>
<tr>
<td>Pacific Fisher</td>
<td><em>Pekania pennanti</em></td>
<td>Candidate</td>
<td>Endangered</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Pacific Marten</td>
<td><em>Martes caurina</em></td>
<td>None</td>
<td>Monitor</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Fringed Myotis</td>
<td><em>Myotis thysanodes</em></td>
<td>None</td>
<td>Monitor</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Long-eared Myotis</td>
<td><em>Myotis evotis</em></td>
<td>None</td>
<td>Monitor</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Long-legged Myotis</td>
<td><em>Myotis volans</em></td>
<td>None</td>
<td>Monitor</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Townsend’s Big Eared Bat</td>
<td><em>Corynorhinus townsendii</em></td>
<td>Concern</td>
<td>Candidate</td>
<td>Yes</td>
<td>U</td>
</tr>
<tr>
<td>Gray Wolf</td>
<td><em>Canis lupus</em></td>
<td>Endangered</td>
<td>Endangered</td>
<td>Yes</td>
<td>U</td>
</tr>
<tr>
<td>Western Toad</td>
<td><em>Anaxyrus boreas</em></td>
<td>None</td>
<td>Candidate</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>Northern Red-legged Frog</td>
<td><em>Rana aurora</em></td>
<td>Concern</td>
<td>None</td>
<td>No</td>
<td>P</td>
</tr>
<tr>
<td>Van Dyke’s Salamander</td>
<td><em>Plethodon vandykei</em></td>
<td>Concern</td>
<td>Candidate</td>
<td>Yes</td>
<td>P</td>
</tr>
</tbody>
</table>

C = Confirmed sighting or signs of use
P = Possible use of Property
U = Unlikely or known not to presently occur

Chimacum Forest Management Plan
III. Resource Descriptions
7. Protection of Special Resources & Biodiversity

**Threatened, Endangered, Candidate Species of Concern and/or Priority Habitat – Animals and/or Plants:**

There are no known threatened, endangered, candidate or priority species and/or habitat resource protection issues on this property, as determined by fieldwork and a preliminary call to the Washington Department of Natural Resources office in Forks, WA (8/17/17). A formal review to identify these resources, if any, and their potential protection requirements, will be conducted by the Washington Department of Natural Resources if and when the landowner proposes to conduct forestry activities that require a DNR-approved Forest Practices Application/Notification.

Directly downslope of the Property in the valley are priority wetland areas such as Chimacum Creek and associated wetlands that act as fish and seasonal waterfowl habitat.

**Cultural Resources:**

There are no known archeological and/or historic resource protection issues on this property. A formal review, to identify these resources, if any, and their potential protection requirements, will be conducted by the Washington Department of Natural Resources if and when the landowner proposes to conduct forestry activities that require a DNR-approved Forest Practices Application/Notification.

**Forests of Recognized Importance (FORI):**

There are no known Forests of Recognized Importance on or adjacent to this property.

**Biodiversity (how vegetation relates to surroundings):**

Overall, vegetation on the Chimacum Forest Property is moderately variable. Most stands are 60+ year-old, mixed-species forest – only a few small patches of early-successional vegetation exist in the brushy clearings throughout the Property and along the driveway.

However, due to the complex nature of these naturally-regenerated stands, many important structural elements can be found at the sub-stand level, such as highly variable tree spacing and density and several large, open-grown “wolf” trees and structurally complex bigleaf maple trees.

In the context of neighboring properties, the Chimacum Forest is important because it represents a transition from the larger, adjacent Chimacum Ridge forest and the valley-bottom and Chimacum Creek. As an example of the importance of these transition zones, the Chimacum Forest can be nesting habitat for raptor species that require tall trees and mature forest conditions adjacent to open feeding habitat. Also, this property contains a much higher relative coverage in broadleaf tree species (alder, bigleaf maple) than the neighboring Chimacum Ridge property, while Chimacum Ridge offers extensive areas of younger, early-successional conifer forest. On this landscape level, vegetative diversity is high.
Aesthetics & Recreation:

Resource Conditions:
- Much of the Property is presently in a state of high aesthetic value: tall, broad crowns of moss-covered bigleaf maple interspersed with dense groves of western redcedar; stately 170’+ high Douglas-fir trees on the northern slopes; open meadows; and deep, shady gullies containing perennial streams and seeps.

Management Practices:
- All forest management operations should take place in the conditions necessary to minimize harm to the residual trees, vegetation and soils (i.e. summer, good weather).
- Parking areas can be located at either of the northernmost proposed landings (in the existing brushy clearings).
- Maintain all stream buffers and steep slope reserves as intact, unaltered forest.
- Maintain Stand 2 as a “heritage tree” reserve. This stand’s large, healthy trees and close proximity to the proposed parking area make it ideal situated for a short hiking or interpretive trail.
- Forested stands will be maintained in several stages of management and development, in order to facilitate educational opportunities associated with forest ecology and management.
- All wildlife retention trees should be left as far away as necessary from planned recreational infrastructure and trails to ensure public safety. Creation of a recreational plan is essential before laying out forestry operations on the Property.
- Skid trails and logging roads used in forestry activities can be utilized as recreational infrastructure to minimize new construction and the sedimentation of local water resources.
- To some, active forestry will represent a temporary aesthetic compromise. However, after the first few years of a thinning regime with underplanting, trees will flush with growth, the ground cover will visibly recover and the forest as a whole will take on a pleasing and “healthy” gestalt.
III. Resource Descriptions
9. Carbon Sequestration & Climate Resilience

Carbon Sequestration:

Over the short-term, proposed forest management activities will reduce stored carbon across the Property. By harvesting root rot infested patches of Douglas-fir and opening up the hardwood-dominated canopy to free growing space for western redcedar and the underplanted regeneration, carbon will be removed from the Property in wood products (and possibly sequestered for several decades more). Increased light and warmth on the forest floor will temporarily accelerate microbial decomposition and respiration in the soil and leaf litter. However, the Property’s growing space will soon be occupied as the residual canopy fills in. The accelerated growth of the remaining trees will contribute to an increase in stored carbon. The harvested patches of Douglas-fir will be replanted with young, vigorous seedlings which, over the next few decades, will represent a major carbon sink on the Property. Additionally, the improved forest health and long-term retention of forest cover across the Property will ensure that these trees continue to hold onto carbon long into the future.

Management recommendations for this property are not designed with carbon sequestration as an explicit goal. However, as detailed above, many of the proposed activities are compatible with societal goals of carbon sequestration. Future management priorities could be adjusted to include increasing stocks of stored carbon across this property as a stated goal.

Presently, opportunities to sell carbon credits on properties of this scale are limited. While current stocking is likely to be above the regional baseline used to determine carbon credit payments, the high fixed cost of developing a carbon credit project and the associated inventory and monitoring would make a project unfeasible. Most successful projects number in the many thousands of acres. However, efforts are underway in the Pacific Northwest to aggregate small landholdings across several different ownerships into a single, marketable carbon credit project (see https://www.forestcarbonworks.org/ for more information). Bundled with other forestland parcels in the landowner’s portfolio, it is possible that someday this property could be part of a carbon project that could see financial returns to the landowner.
Resilience to Climate/Weather-Related Influences:

Climate change projections for the region near the Chimacum Forest Property are uncertain but include:

- Higher peak streamflow during winter months (rain-fed vs. snowfed).
- Lower streamflow during summer months, due in part to decreased snowpack.
- Increased and highly variable precipitation.
- Increased temperature.
- Increased occurrence of drought and other extreme weather events.

Forest response to these changes is uncertain and will be species and context specific. Plant responses to the environment are multi-dimensional: for example, increased atmospheric CO₂ may increase productivity unless other limitations are present (i.e. drought stress, temperature extremes, etc.).

Presently, drought is more of a challenge to this property’s forest than other climate-related events. Forested stands on the Property are fully stocked, with virtually all growing-space occupied by mature trees. As a result, growing-season evapotranspiration of water from tree photosynthesis across the Property tends to be high. Trees may experience periods of drought stress during summer months, especially hardwoods with fewer physiological adaptations to drought (i.e. red alder, bigleaf maple). Proposed forestry activities may temporarily reduce drought stress across managed stands.

Extreme weather may also include extreme winter rainfall events, leading to slope instability and landslides. On this property, care has been taken to set aside in reserves the steepest areas that are most erosion and landslide-prone. Also, there is significant historical evidence of windthrow in some stands. Tall, recently exposed trees are most prone to wind damage. In general, proposed management activities will minimize risk of excessive wind damage to the residual stand.

Unable to precisely predict future conditions at the scale of this property, the best preparation for climatic uncertainty is to maintain diversity across the forest: a portfolio of stands that includes all species and ages with variable stocking density and genetics. This can act as a hedge against unforeseen conditions, while also supporting the objectives of maintaining wildlife habitat, aesthetics and working forests. Future seedling planting efforts should anticipate climate trends in the choice of provenance and species.
IV. Management Activities

Table 5: Management Actions Schedule

<table>
<thead>
<tr>
<th>Action</th>
<th>Type</th>
<th>Goal</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culvert Design &amp; Improvement - Hydraulic Projects Approval</td>
<td>Assess</td>
<td></td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Geotechnical Report</td>
<td>Assess</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Root Rot Assessment and Mapping</td>
<td>Assess</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest Inventory</td>
<td>Assess</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harvest Plan</td>
<td>Plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Road Maintenance</td>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road and Landing Construction</td>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noxious Weed Removal</td>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Root Rot Infestation Group Selection Harvest (Stand 4 &amp; 8)</td>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Selection Harvest (Stand 5)</td>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thinning (Stand 4)</td>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Harvests</td>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>To be determined</td>
</tr>
<tr>
<td>Annual Property and Road Inspection</td>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wildlife Surveys</td>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>To be determined</td>
</tr>
<tr>
<td>Noxious Weed Surveys</td>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Archeological/Cultural Survey</td>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>To be performed in advance of harvests</td>
</tr>
<tr>
<td>Post-storm Property Inspection</td>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>To be performed after major storms</td>
</tr>
</tbody>
</table>

Green highlighted boxes indicate planned activity date.
### IV. Management Activities

Table 6: Estimated Improvement Costs

<table>
<thead>
<tr>
<th>Expenditure</th>
<th>Description:</th>
<th>Materials</th>
<th>Estimated Cost (Summer 2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road improvement</td>
<td>Existing logging road (grading, ditching, materials)</td>
<td>$3 / foot; 2300 feet</td>
<td>$6,900</td>
</tr>
<tr>
<td>Road Construction</td>
<td>Southernmost extension, near house</td>
<td>$3.50 / foot; 450 feet</td>
<td>$1,575</td>
</tr>
<tr>
<td>Landings</td>
<td>Clearing + materials (2 existing + 3 proposed landings)</td>
<td>$1200 each, average</td>
<td>$6,000</td>
</tr>
<tr>
<td>Stream crossings</td>
<td>3 x 3' diameter culverts</td>
<td>3' metal culvert ($75 / linear foot)</td>
<td>$5500 ($1500 each + $1000 for delivery)</td>
</tr>
<tr>
<td>Stream crossings</td>
<td>Construction + materials</td>
<td>3 1/2&quot; rock base, 3/4&quot; (-) on road surface</td>
<td>$3,000</td>
</tr>
<tr>
<td>Slash Abatement</td>
<td>-</td>
<td>-</td>
<td>To be determined</td>
</tr>
<tr>
<td>Geotechnical Report</td>
<td>For steep and unstable slopes; performed by a qualified geologist</td>
<td>-</td>
<td>$10,000</td>
</tr>
<tr>
<td>Seedlings</td>
<td>To be determined – depends on species chosen and timing</td>
<td>$1.50 / seedling + $1 / planting (100 trees per acre, 50 acres (+/-))</td>
<td>$12,500</td>
</tr>
</tbody>
</table>

**Estimated Improvement Costs:** $45,475
V. Landowner Signature

________________________

Landowner Signature

I approve of the contents of this forest management plan and intend to implement the described management activities to the best of my/our abilities and to manage the Property in a manner consistent with applicable regulatory requirements.

This plan and its contents can be updated at any time at the request of the landowner.

________________________

Landowner Signature and Date Signed
VI. Appendices  
A. Forests

Glossary of Important Terminology:

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basal Area</strong></td>
<td>Cross-sectional area of trees, measured at 4.5’ height. Usually reported in feet$^2$ per acre. This is typically used to indicate the amount of wood/biomass on an acre of forestland.</td>
</tr>
<tr>
<td><strong>Dominance</strong></td>
<td>Generally, refers to the tallest trees with the most open crowns in a stand. Dominant trees can be from one or more species. These are typically the fastest-growing trees in a stand.</td>
</tr>
<tr>
<td><strong>Group Selection</strong></td>
<td>A “patch cut” designed to mimic multi-tree mortality events, such as root rot or windthrow. Harvest is intended to allow for the regeneration of intermediate-tolerance and shade-tolerant species such as Douglas-fir and western redcedar.</td>
</tr>
<tr>
<td><strong>Growing Space</strong></td>
<td>The space a plant/tree needs to grow. Usually this is defined in terms of the limiting resource: light or water. In the case of westside forests of the Pacific Northwest, this is almost always light.</td>
</tr>
<tr>
<td><strong>High Thinning</strong></td>
<td>A thinning that removes trees of the dominant and codominant crown classes in order to favor the highest quality trees of those same classes.</td>
</tr>
<tr>
<td><strong>Shade-tolerance</strong></td>
<td>A tree species’ ability to survive and grow in low light conditions.</td>
</tr>
<tr>
<td><strong>Stand</strong></td>
<td>An area of forest that shares one or more of the following characteristics: age-class, species composition, site quality and/or stocking density</td>
</tr>
<tr>
<td><strong>Stocking</strong></td>
<td>Refers to the density of trees in a given area (i.e. trees per acre)</td>
</tr>
</tbody>
</table>
Chimacum Forest Property Tree Species Site Preferences:

<table>
<thead>
<tr>
<th>Species</th>
<th>Shade-Tolerance</th>
<th>Preferred Site Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Douglas-fir (<em>Pseudotsuga menzeisii</em>)</td>
<td>Intermediate</td>
<td>Regenerate in open conditions; convex slopes; very wide ecological conditions are acceptable</td>
</tr>
<tr>
<td>Western redcedar (<em>Thuja plicata</em>)</td>
<td>Shade-tolerant</td>
<td>Can regenerate under closed-canopy; tends to prefer moist sites</td>
</tr>
<tr>
<td>Western hemlock (<em>Tsuga heterophylla</em>)</td>
<td>Very shade-tolerant</td>
<td>Can regenerate under closed-canopy; often found growing on stumps and coarse woody debris; does not establish in dry sites</td>
</tr>
<tr>
<td>Grand fir (<em>Abies grandis</em>)</td>
<td>Shade-tolerant</td>
<td>Intermediate moisture sites</td>
</tr>
<tr>
<td>Red alder (<em>Alnus rubra</em>)</td>
<td>Shade-intolerant</td>
<td>Needs scarified, exposed soil in full light to establish; tends to prefer moist sites</td>
</tr>
<tr>
<td>Bigleaf maple (<em>Acer macrophyllum</em>)</td>
<td>Shade-intolerant</td>
<td>Needs full sun to establish</td>
</tr>
</tbody>
</table>
### Table 7: Soil properties

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Soil Type</th>
<th>Acres</th>
<th>% Total</th>
<th>On Road</th>
<th>Off Road</th>
<th>Suitability for Log Landings</th>
<th>50-Year Site Index (ft)</th>
<th>Drainage</th>
</tr>
</thead>
<tbody>
<tr>
<td>AID</td>
<td>Alderwood gravelly sandy loam, 15-30 percent slopes</td>
<td>13.2</td>
<td>20.1%</td>
<td>Severe</td>
<td>Moderate</td>
<td>Moderate</td>
<td>111</td>
<td>Moderately Well Drained</td>
</tr>
<tr>
<td>CfE</td>
<td>Cassolary sandy loam, 30-50 percent slopes</td>
<td>1.5</td>
<td>2.3%</td>
<td>Severe</td>
<td>Severe</td>
<td>Poor</td>
<td>110</td>
<td>Well Drained</td>
</tr>
<tr>
<td>KsD</td>
<td>Kitsap gravelly loam, 15-30 percent slopes</td>
<td>40.3</td>
<td>61.4%</td>
<td>Severe</td>
<td>Moderate</td>
<td>Moderate</td>
<td>128</td>
<td>Moderately Well Drained</td>
</tr>
<tr>
<td>KtD</td>
<td>Kitsap silt loam, 15-30 percent slopes</td>
<td>4.3</td>
<td>6.5%</td>
<td>Severe</td>
<td>Moderate</td>
<td>Moderate</td>
<td>128</td>
<td>Moderately Well Drained</td>
</tr>
<tr>
<td>SnD</td>
<td>Sinclair gravelly sandy loam, 15-30 percent slopes</td>
<td>6.4</td>
<td>9.7%</td>
<td>Severe</td>
<td>Moderate</td>
<td>Moderate</td>
<td>105</td>
<td>Moderately Well Drained</td>
</tr>
</tbody>
</table>
VI. Appendices
C. Site Class

Chimacum Forest Site Class Map

-Site class data from Washington Department of Natural Resources
-Site class range refers to height of Douglas-fir at age 50 in Western Washington

Map prepared by Logan Sander
August 2017

Chimacum Forest Management Plan
Chimacum Forest

Topographic Map

Legend
- Chimacum Forest Parcels
- Contour = 15 feet

Topographic data from National Elevation Dataset, USGS, 1/9 arc-second resolution DEM

Map prepared by Logan Sander
August 2017

Chimacum Forest Management Plan
Chimacum Forest Hillshade Map

1/9 Arc-Second Digital Elevation Model from National Elevation Dataset, USGS

Z-Factor = 3

Map prepared by Logan Sander
August 2017
VI. Appendices
D. Physiography

Chimacum Forest
Slope Map

Slope calculations computed from National Elevation Dataset, USGS, 1/9 arc-second resolution DEM

Map prepared by Logan Sander
August 2017

Chimacum Forest Management Plan