

Pine Creek Improved Forest Management Project
Offset Project Data Report

California Air Resources Board
Compliance Offset Protocol: U.S. Forest Projects Adopted 25 June 2015
Regulation Version CCR Title 17 §95800-96022 (April 2019)

OPR Project ID: CAR1368

ARB Project ID: CAFR6368

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ATTESTATION AND OPO SIGNATURE

	I certify under penalty of perjury under the laws of the State of California the GHG reductions and/or GHG removal enhancements for			
	Project Name: **Pine Creek Improved Forest Management Project**			
	from	Reporting Period Start Date: **2018-08-31**	to	Reporting Period End Date: **2019-06-30**
	are measured in accordance with the Compliance Offset Protocol			
EW Initial	Check the appropriate Compliance Offset Protocol: ☐ U.S. Forest Projects, October 20, 2011 ☐ U.S. Forest Projects, November 14, 2014 ☒ U.S. Forest Projects, June 25, 2015			
	and all information required to be submitted to ARB is true, accurate, and complete.			

In signing this form, I certify under penalty of perjury of the laws of California that the information contained in this form is true, accurate, and complete. I further certify that I am duly authorized to represent and legally bind the Offset Project Operator (OPO) on all matters related to this form.

Signature: Emily Warms	Printed Name: Emily Warms
Title: Associate Director	Date: October 26, 2020

1 OPO/APD Information

1.1 Offset Project Operator

Forest Offset Protocol 2015 §7.1(a)(3)(A)

Name:	California Timberlands 2, LLC
Contact Person:	James Bullen
Phone:	415-321-3300
Mailing Address:	235 Pine Street Suite 1475, San Francisco, CA 94104
Physical Address:	235 Pine Street Suite 1475, San Francisco, CA 94104
Email Address:	jbullen [at] newforests-us.com
CITTS ID Number:	CA2146

1.2 Authorized Project Designee

Forest Offset Protocol 2015 §7.1(a)(3)(B)

Name:	N/A
Contact Person:	
Phone:	
Mailing Address:	
Physical Address:	
Email Address:	
CITTS ID Number:	

1.3 Submitted by

Forest Offset Protocol 2015 §7.1(a)(3)(C)

This form is being submitted by the Offset Project Operator (OPO).

Name:	California Timberlands 2, LLC
Contact Person:	James Bullen
Phone:	415-321-3300
Mailing Address:	235 Pine Street Suite 1475, San Francisco, CA 94104
Physical Address:	235 Pine Street Suite 1475, San Francisco, CA 94104
Email Address:	jbullen [at] newforests-us.com
CITTS ID Number:	CA2146

1.4 TECHNICAL CONSULTANTS

Forest Offset Protocol 2015 §7.1(a)(3)(D)

Name:	BBW & Associates, Inc.
Contact Person:	Paul Harper
Phone:	707-825-0475
Mailing Address:	P.O. Box 702, Arcata, CA 95518
Physical Address:	494 H Street, Arcata, CA 95521
Email Address:	pharper [at] bbwassociates.com

2 Offset Project Information

2.1 Offset Project Name

Forest Offset Protocol 2015 §7.1.1(a)(1), §7.2.1(a)(1)

Pine Creek Improved Forest Management Project

2.2 Offset Project Type

Forest Offset Protocol 2015 §7.1.1(a)(2), §7.2.1(a)(3)

Improved Forest Management

The Project has not been listed as an early action offset Project and therefore is not transitioning to the Compliance Offset Protocol U.S. Forest Projects.

2.3 Commencement Date & Justification

Forest Offset Protocol 2015 §3.6(a)(2), §7.1.1(a)(16)

August 31st, 2018 which is the date of ownership transfer to the OPO.

2.4 Listing Date Completion

Forest Offset Protocol 2015 §7.1(a)

The Pine Creek Improved Forest Management Project listing was completed and submitted on the 26th of June, 2019.

2.5 Reporting Period One (Initial Reporting Period)

Forest Offset Protocol 2015 §7.1.1(a)(17), §7.2.1(a)(7)

2018-08-31 to 2019-06-30

2.6 Physical Address of Project Site (if available)

(Forest Offset Protocol 2015 §7.1.1(a)(10))

The Project site has no physical address.

3 PROJECT CHANGES

Not all the information submitted for Project listing is still accurate. The differences are listed in Table 1 below.

Table 1. Listing Document to OPDR Changes

Item #	Item Description	Listed As	Currently Reported As
1	First Reporting Period	31 August 2018 – 01 June 2019	31 August 2018 – 30 June 2019
2	Project Area	8,278 acres total Southern Cascades Mixed Conifer: 6,775 acres Northern California Coast: 1,503 acres	8,005 acres Southern Cascades Mixed Conifer: 6,354 acres Northern California Coast: 1,471 acres
3	Initial Onsite Carbon Stocks (metric tons CO2e)	IFM-1 Standing Live: 2,078,155 IFM3-Standing Dead: 18,377 IFM-7 In-Use Forest Products: 0 IFM-8 Forest Products in Landfills: 0 Secondary Effects: -8,745	IFM-1 Standing Live: 1,804,914 IFM3-Standing Dead: 34,167 IFM-7 In-Use Forest Products: 0 IFM-8 Forest Products in Landfills: 0 Secondary Effects: -5,927
4	Initial Above-Ground Standing Live Carbon Stock per Acre	202.6 metric tons CO2e/acre	225.46 metric tons CO2e/acre
5	Minimum Baseline Level	137.5 metric tons CO2e/acre	137.1 metric tons CO2e/acre
6	Weighted Common Practice Value	136.9 metric tons CO2e/acre	137.1 metric tons CO2e/acre
7	Baseline Carbon Stocks	1,469,155 metric tons CO2e	1,391,121 metric tons CO2e
8	Baseline Carbon in Long-Term Harvested Wood Products	7,202 metric tons CO2e	4,257 metric tons CO2e
9	Composition of Native Species	Project area does NOT consist naturally of mixed species distribution	Project area consists naturally of mixed species distribution
10	Reversal Risk Rating	17.6%	15.9%
11	Distribution of age classes/sustainable management	Third-party certification	Third-party certification and employment of uneven-aged silvicultural practices

Please Note

The submission of this OPDR and its calculations of onsite carbon stocks was overseen by Paul Harper of BBW & Associates, Inc., California Registered Professional Forester # 2672.

Introduction and Background

The Pine Creek Improved Forest Management Project (also known as the Pine Creek Carbon Project or the Project) is an Improved Forest Management (IFM) Project developed pursuant to the California Air Resources Board Compliance Offset Protocol – U.S. Forest Projects adopted June 25, 2015. The Project is approximately 8,005 acres in size and is located in the Northern California Coast and Southern Cascades supersections.

The Project is located on private land directly west of and adjacent to the Hoopa Valley Indian Reservation, California in northern Humboldt County and owned by California Timberlands 2, LLC. Surrounding ownerships include a mixture of private, tribal, and federal lands. Before the 1849 Gold Rush, which brought an influx of Euro-American miners and other settlers into the area, the land was occupied by Native American peoples, most notably the Hupa, who have lived in the Hoopa Valley along the Trinity River for thousands of years. The United States signed a treaty in 1864 giving the Hupa their sovereignty over the land now known as the Hoopa Valley Indian Reservation.

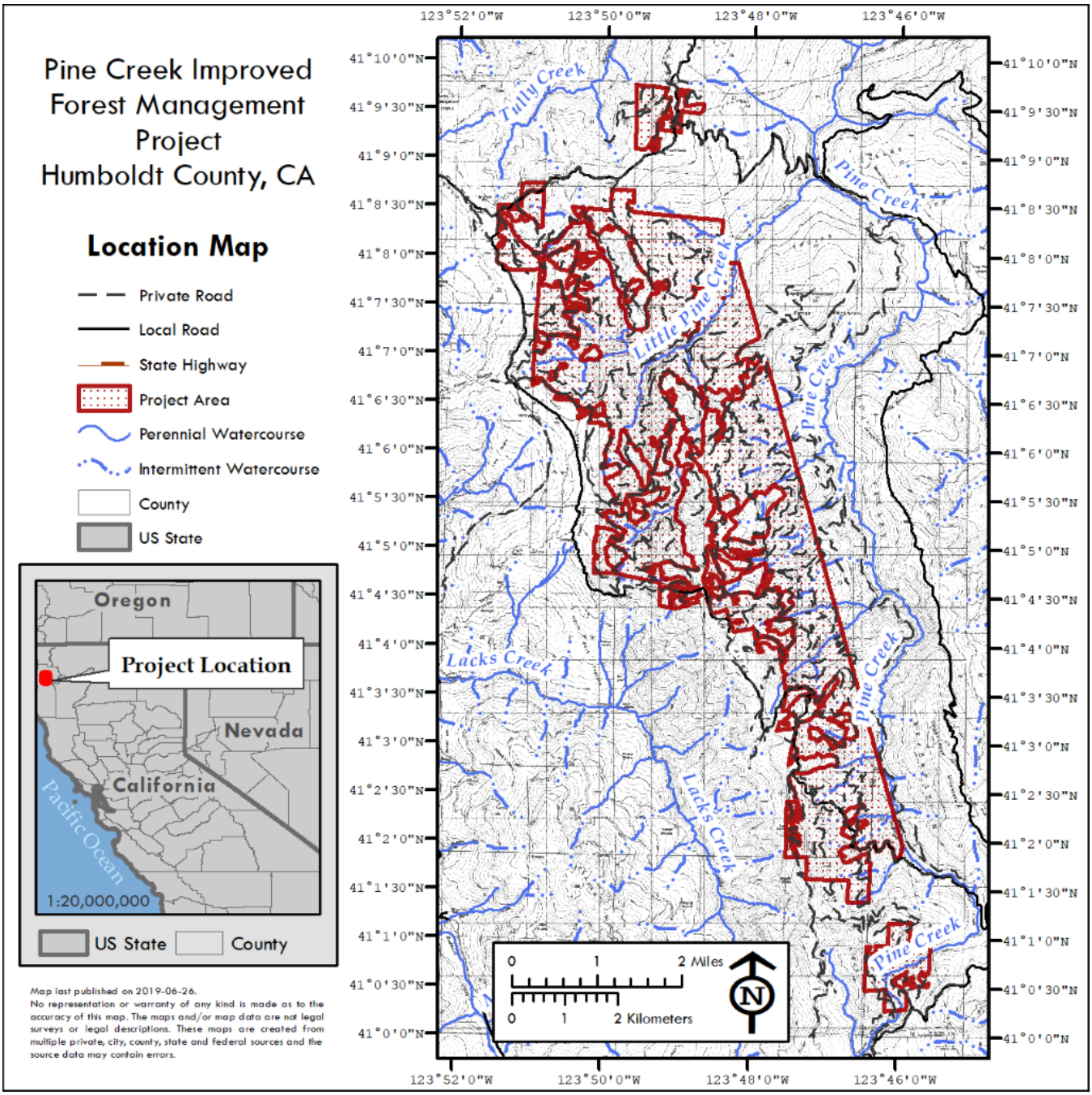
The Pine Creek property is comprised of three disjunct portions of property located in close proximity to one another. Road access is via Bald Hills Road from the north or Bair Road from the south. The property has been extensively managed for timber production. Past silvicultural practices include clearcuts, commercial thins, selection harvests, and rehabilitations of hardwood dominated stands with hack and squirt. Evidence of past fires is visible on older trees throughout the property. The stands are composed primarily of second growth Douglas-fir and tan oak.

The planned management strategy is to continue historical land use practices, with some changes in forest management due to implementation of the Project. Near term management may include commercial harvesting within the Project as well as hardwood control activities.

Table 2. Project Location by Township, Range, and Section

Township and Range	Principal Meridian	Section(s)
9N 3E	Humboldt	22, 27, 28, 29, 32, 33, 34, 35
8N 3E	Humboldt	2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 23, 24, 25, 26, 36
8N 4E	Humboldt	30, 31
7N 3E	Humboldt	1
7N 4E	Humboldt	6, 7

Figure 1. Location Map of Project



4 LAND OWNERSHIP

4.1 LOCATION

Forest Offset Protocol 2015 §2.2(b)(2), §3.1(a)(2), §7.1.1(a)(11), Regulation §95975(l)

The Project takes place on private land located in the United States. **Figures 1**. **and 2** show the location and vicinity of the property.

California Timberlands 2, LLC is the sole private owner in fee of the offset Project area. Further documentation is provided as a separate attachment (see section 12 Attachments).

The offset Project area is **not** located on

1) on land that is owned by, or subject to an ownership or possessory interest of a Tribe,

2) on Indian Land as defined in 25 U.S.C. §81(a)(1), or

3) on land that is owned by any person, entity, or Tribe within the external borders of such Indian Lands.

4.2 QUALIFIED CONSERVATION EASEMENT(S)

(Forest Offset Protocol 2015 §7.1.1(a)(20))

The Project does not employ any conservation easements or Qualified Conservation Easements.

4.3 Name & Mailing Address of All Forest Owners, Including Third Parties with Existing Property Interests

(Forest Offset Protocol 2015 §7.1.1(a)(8))

Table 3. Name and Mailing Address if All Forest Owners, Including Third Parties with Existing Property Interests

Name	Address	Interest
California Timberlands 2, LLC	235 Pine Street, Suite 1475, San Francisco, CA 94104	Fee interest in the land and standing timber
Simpson Timber Co.	3rd & Franklin Shelton, WA 98584	Oil, gas, geothermal, hydrocarbon substances and minerals
Simpson Redwood Co.	3rd & Franklin Shelton, WA 98584	Non-exclusive right of way for forest management and timber harvesting, Agreement for Reciprocal Easements
Sierra Pacific Industries	PO Box 496028, Redding, CA 96049	Non-exclusive right of way for forest management and timber harvesting
RH Emmerson & Sons and Pacific Forest Industries	PO Box 496028, Redding, CA 96049	Non-exclusive right of way for forest management and timber harvesting
Champion International Corp. Acquired by International Paper Co.	6400 Poplar Ave, Memphis, TN 38197	Non-exclusive right of way for forest management and timber harvesting
State of California	801 K Street, MS 20-15, Sacramento, CA 95814	Removal and exploration of all minerals
Fred G. Anderson	unknown	Oil, gas, oil shale, coal, phosphate, sodium, gold, silver, geothermal resources and all other minerals
Greenacres, Inc.	unknown	Oil and minerals
Stover Ranch, LLC	1410 2nd Street, Eureka, CA 95501	Reciprocal Easement Agreement

Name	Address	Interest
Soper Company and Soper-Wheeler Company, LLC	19855 Barton Hill Road, Strawberry Valley, CA 95981	Reciprocal Easement Agreement
North California Development Co.	unknown	Railroad
United States of America	unknown	Right of way for a CCC truck trail, an exclusive road easement
Londa Pickett Ogletree, Ina May Ogletree and husband	unknown	Right of way
Soper-Wheeler Co.	19855 Barton Hill Road, Strawberry Valley, CA 95981	Non-exclusive easement for ingress, egress and right to repair, reconstruct and develop roads for timber harvesting and management

4.4 Name & Mailing Address of Parties with a Material Interest

Forest Offset Protocol 2015 §7.1.1(a)(9)

None

5 Offset Project Area

5.1 Description of Project Area& List of Onsite Carbon Pools Included

Forest Offset Protocol 2015 Appendix A(b)(1)

This is provided in the separate inventory methodology attachment. See section 12 Attachments.

5.2 Project Area Governing Jurisdictions & Project Coordinates

Forest Offset Protocol 2015 §7.1.1(a)(15)(A)

The Pine Creek Carbon Project is located in Humboldt County, California, USA, within the Cal Fire Coast District.

Table 4. Project Coordinates and Area

Latitude of Offset Project Location:	**Longitude of Offset Project Location:**	**Project Area Total Acreage:**
41°5’30” N	123°48’0” W	8,005

Figure 2 Pine Creek Improved Forest Management Project Vicinity map

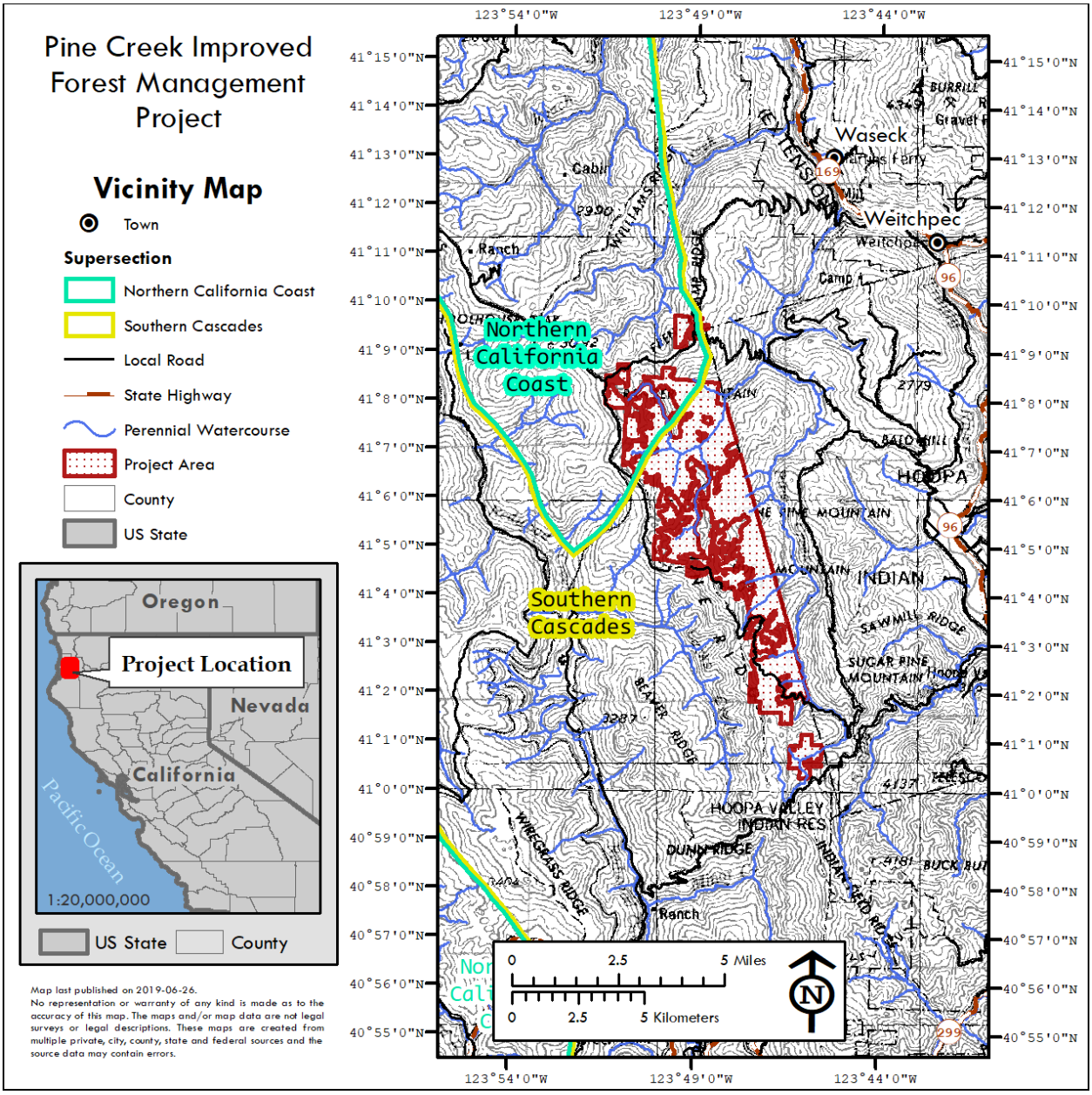
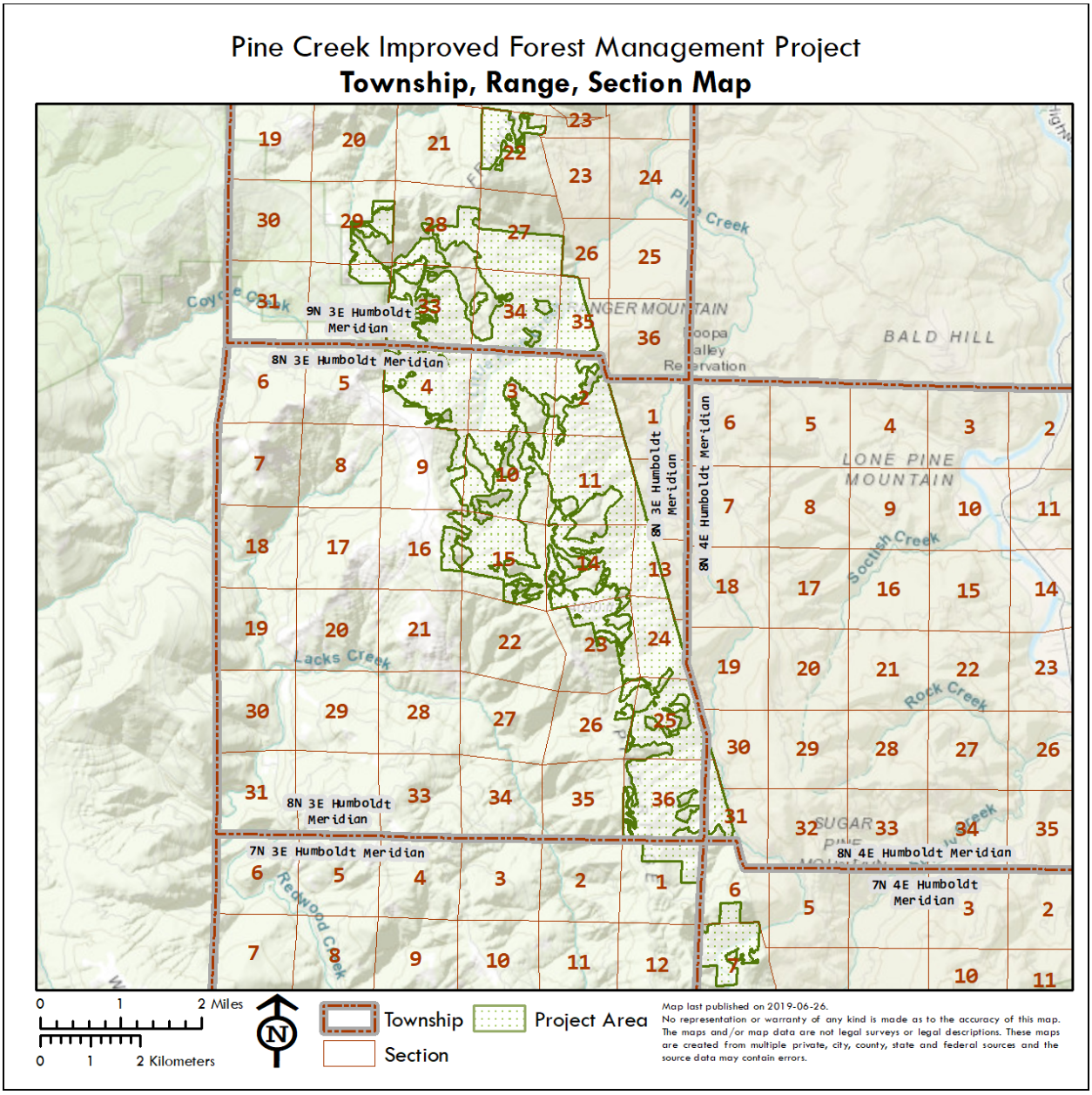


Figure 3. Township, Range, and Section Map



5.3 PROJECT AREA FOREST VEGETATION TYPES

(Forest Offset Protocol 2015 Appendix A(a)(2))

Vegetation types across the entire ownership included grassland (non-forest), conifer-dominated stands, hardwood-dominated stands, and mixed hardwood-conifer stands. A subset of forested

stands was selected for inclusion in the carbon Project and were grouped into four strata (see the inventory methodology attachment listed in section 12 Attachments). These strata form the basis of Project analysis and baseline modeling and are summarized in **Table 5**.

Table 5. Forest Summary by Stratum

Stratum	Acres	Plots	Conifer Basal Area/acre	Hdwd Basal Area/acre	Conifer BF/acre	Total Cubic Ft. per acre	Avg Site Index†	Stratum Total Age
DFR	2,027	73	159	20	16,991	3,746	98.0	50
HWDF	704	32	75	255	12,052	7,288	104.5	52
MHC3	3,083	124	72	147	8,480	3,313	101.2	47
MHC4	2,192	87	64	130	7,670	2,518	93.5	49
Total	**8,005**	**316**	**92**	**120**	**10,727**	**3,554**		

† Average Site Index for each stratum reported in this table was calculated using Krumland and Eng site indexes.

5.4 Land Pressure(s) and Climate Zone Classification

Forest Offset Protocol 2015 §7.1.1(a)(15)(J), Appendix A(a)(5, 6)

The Project is located in a rural area with very little evidence of development. There is pressure to divide timberland and large ranches into smaller parcels for homesteading and agricultural development. However, timber management is expected to remain the primary land use in the area.

The Project area's climate can be characterized as Mediterranean, experiencing warm, dry summers and cold, wet winters. Historical annual precipitation averages 110 inches, mostly falling within the winter and spring months. The Project area covers a wide range of elevations (1,300 ft to 3,800 ft) and aspects, which strongly influence microclimate and vegetation types. Temperatures range from the average high 65 ˚F in summer to the average low 46 ˚F, with average annual temperature 55˚F (PRISM). In the winter season it is not uncommon for snow to accumulate in the higher elevations.

5.5 Historical Land Use

Forest Offset Protocol 2015 §7.1.1(a)(15)(K)

The Project area has been covered in forestland for the past 100 years or longer. The Project Area was previously occupied by Native American peoples, most notably the Yurok People. Pre-European contact Yurok were primarily hunter-gatherers whose major subsistence foods included fish from the abundant anadromous fish runs, acorns, and wild game. Traditional Native American land uses were heavily curtailed with the Gold Rush and the beginnings of white settlement in the early 1850s. The land has largely been used as a timber resource since that time.

5.6 Current Zoning

Forest Offset Protocol 2015 §7.1.1(a)(15)(K)

The property is zoned Timberland Production Zone (TPZ) in Humboldt County. Forest production, forest processing, and tree farming are permitted uses under these zoning types.

5.7 Planned Management Activities

Forest Offset Protocol 2015 Appendix A(a)(8)

The Projected land use on the property is a continuation of the historical land uses, although there will be changes in forest management due to implementation of the carbon Project. Near-term management may include commercial harvesting within the Project area as well as on other parts of the property as part of a partially completed active THP. Additional harvesting and hardwood control activities may occur in the future.

5.8 Forest Conditions within the Project Area

Forest Offset Protocol 2015 §7.1.1(a)(19)

5.8.1 Age-Class Distribution

Forest Offset Protocol 2015 §3.1(a)(1), Table 3.1, Appendix A(a)(3)

Most of the property was heavily managed for decades resulting in stands no older than 50 years with a majority being 35-50 years old. Field data collected during the 2017-19 inventory was used to analyze the distribution of age classes in the Project Area. Age class was based on gathering age from potential site trees near 89 of the 316 plots within the Project area to determine an average age for each stratum. The distribution of tree ages ranges from 17 to 77 years. The Project's four strata range in average age from 47 to 52 years as shown in **Table 5 above.** This also demonstrates that the Project meets the requirement that, on a watershed scale up to 10,000 acres (or the Project Area, whichever is smaller), Projects must maintain, or make progress toward maintaining, a maximum of 40% of the Project's forest lands in ages that are less than 20 years old.

The Pine Creek Carbon Project meets the criteria for distribution of age classes/sustainable management outlined in Table 3.1 of the Forest Offset Protocol 2015.

5.8.2 Topography

Forest Offset Protocol 2015 Appendix A(a)(4)

The Pine Creek Carbon Project is located in the Northern California Coast and Southern Cascades Supersections on the western side of the Klamath Mountains. The Project is located in the watersheds shown in **Figure 4**. The elevation range of the property boundary is 1300 ft to 3800 ft.

5.8.3 Management History

Forest Offset Protocol 2015 Appendix A(a)(8)

Commercial logging has been practiced in and around the Project area for decades as evidenced by decaying stumps, logging roads, and residual stand damage from past operations. Past harvesting operations have resulted in current stand ages from 0 – 50 years old. Past silvicultural practices have included clearcutting, commercial thinning, selection and rehabilitation of hardwood dominated stands with hack and squirt. Evidence of fire is also visible on older trees throughout the property.

5.8.4 Potential Risks to Tree Health

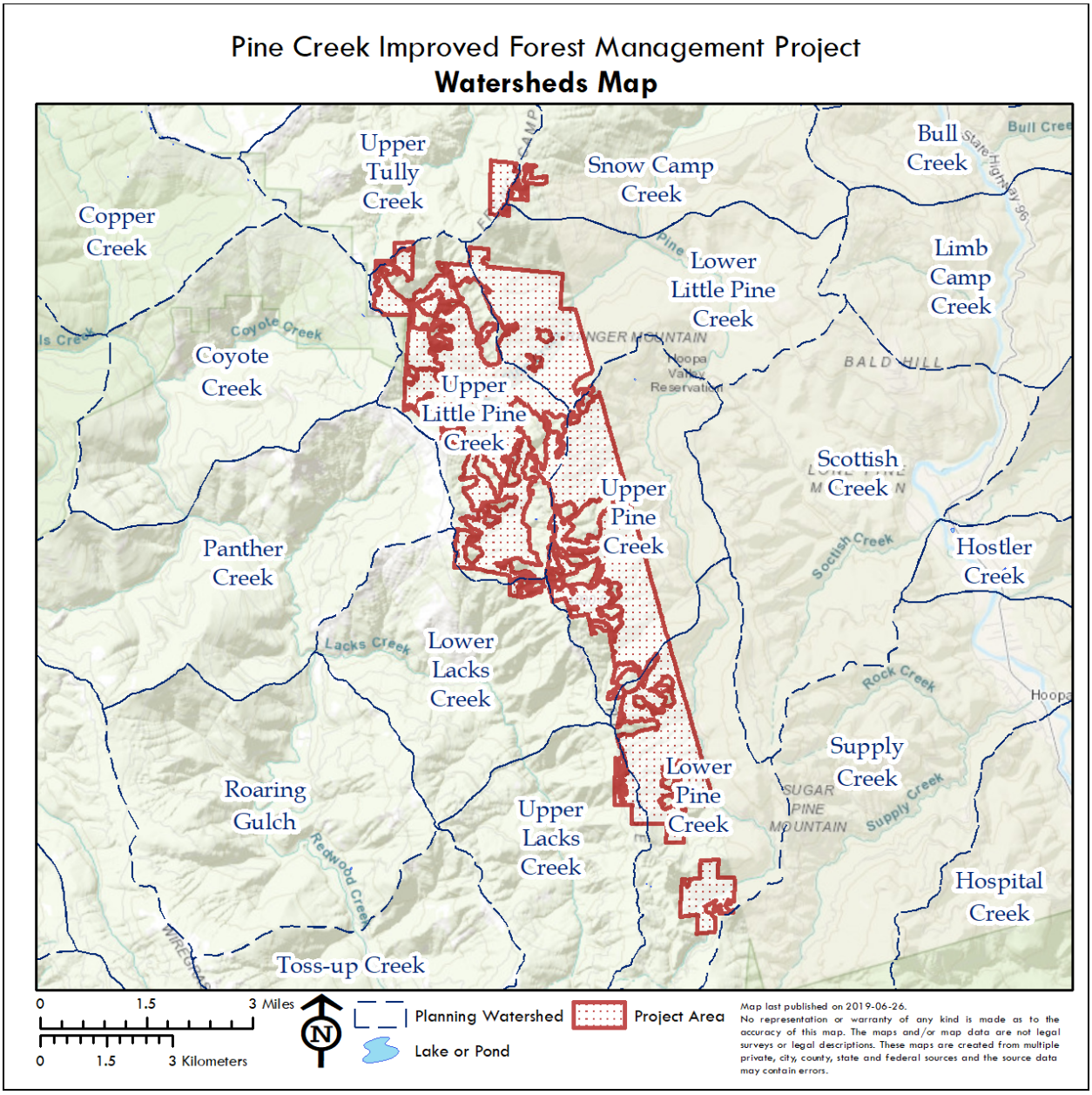
The Pine Creek Carbon Project is within the Sudden Oak Death Zone of Infestation established by the State Board of Forestry. No other insect or disease zones of infestation have been established in the Project area.

5.8.5 Species Composition

Forest Offset Protocol 2015 Appendix A(a)(1)

Please see section 6.4.2 Species Composition for the discussion of species composition.

Figure 4. Project Area Watersheds



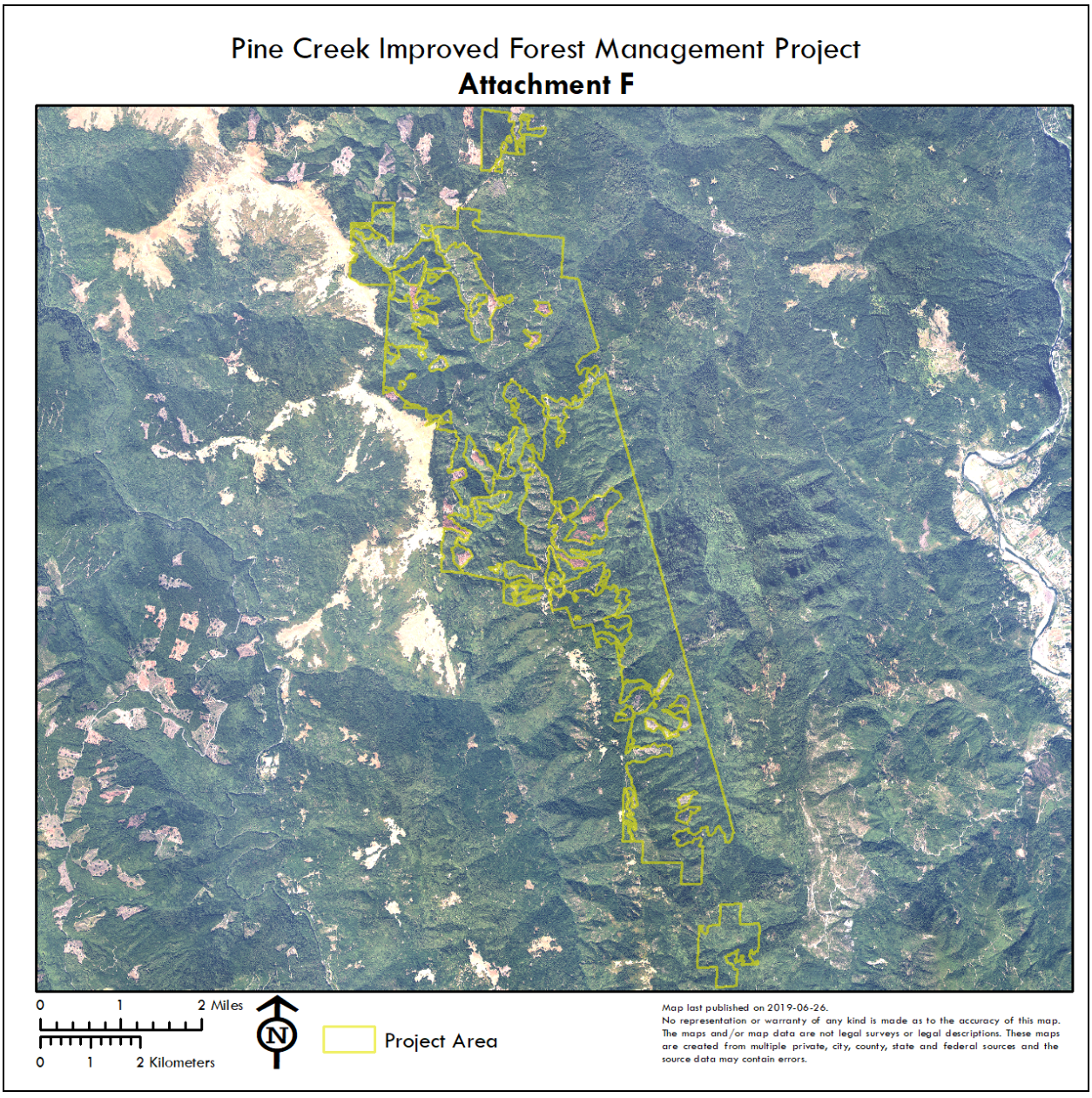
6 OFFSET PROJECT ELIGIBILITY

6.1 CANOPY COVER

(Forest Offset Protocol 2015 §2.2(b)(3), §7.1.3(1))

The Pine Creek IFM Project takes place on land that has greater than 10-percent tree canopy cover as seen in Figure 5.

Figure 5. Attachment F showing greater than ten percent canopy cover.



6.2 Regulatory Compliance

The Project was in compliance with all local, state, and federal regulatory requirements during the Reporting Period, including, but not limited to:

- Z'berg Nejedly Forest Practices Act
- Porter Cologne Water Quality Act
- California Fish and Game Code
- California Endangered Species Act
- California Environmental Quality Act (CEQA)
- National Environmental Policy Act
- Clean Water Act
- Endangered Species Act
- Archaeological Resources Protection Act (ARPA)

6.3 Broadcast Fertilization

Forest Offset Protocol 2015 §3.1(b)(3), §7.1.1(a)(21)

No broadcast fertilization has been used in the Project area since the Project commencement date, and the Project will not employ broadcast fertilization in the future.

6.4 Natural Forest Management Criteria

Forest Offset Protocol 2015 §3.1, §7.1.1(a)(23)

Management activities that occur on the Project area will be designed to improve natural ecosystem processes, enhance native tree species and adhere to the Natural Forest Management practices required by the Forest Offset Protocol 2015.

6.4.1 Native Species

The Project consists of at least 95 percent native species based on the sum of carbon in the standing live pool. Project Area species composition has been measured using basal area per acre. One hundred percent of the Project is comprised of native species based on the 2017-19 inventory (Table 6).

6.4.2 Species Composition

Forest Offset Protocol 2015 Appendix A(a)(1)

The Project naturally consists of a mixed species distribution where no single species' prevalence, measured as the percent of basal area of all live trees in the Project Area, exceeds the percentage value of standing live carbon shown under the heading 'Species Diversity Index' in the Assessment Area Data File (Table 6).

The species composition in the Project Area is 43% Douglas-fir, 45% tanoak, 5% Canyon live oak, and 3% Pacific madrone. No other species comprises more than 2% of the forest by basal area, although there are other species present in lesser amounts.

Table 6. Species composition by basal area and native species proportion

Species				**Basal Area per Acre (ft2)**	**Composition by Basal Area**	**Native Species**	**Native Species Composition**
Common Name	**Scientific Name**	**FVS Code**	**FIA Code**				
Tanoak	*Notholithocarpus densiflorus*	TO	631	96.0	45.4%	Yes	45.4%
Douglas-fir	*Pseudotsuga menziesii*	DF	202	91.7	43.4%	Yes	43.4%
Canyon live oak	*Quercus chrysolepsis*	CY	805	10.3	4.9%	Yes	4.9%
Pacific madrone	*Arbutus menziesii*	MA	361	6.7	3.2%	Yes	3.2%
Red alder	*Alnus rubra*	RA	351	2.3	1.1%	Yes	1.1%
Golden chinquapin	*Chrysolepis chrysophylla*	GC	431	1.9	0.9%	Yes	0.9%
Bigleaf maple	*Acer macrophylum*	BM	312	1.3	0.6%	Yes	0.6%
Oregon white oak	*Quercus garryana*	WO	815	0.8	0.4%	Yes	0.4%
Western hemlock	*Tsuga heterophylla*	WH	263	0.2	0.1%	Yes	0.1%
Willow	*Salix* sp.	WI	920	0.1	0.1%	Yes	0.1%
Total				**211.3**	**100.0%**		**100.0%**

6.4.3 SUSTAINABLE MANAGEMENT

Forest Offset Protocol 2015 §3.1(a)(1), Appendix (A)(a)(7)

The Project will meet the requirement for sustainable management if regeneration or commercial harvesting is planned or initiated within the Project Area to demonstrate sustainable long-term harvesting practices. The Project will do this by the method(s) selected below:

☐ Not applicable; no commercial harvesting is occurring within the Project Area.

☒ Third-party certification under the Forest Stewardship Council, Sustainable Forestry Initiative, or Tree Farm System, whose certification standards require adherence to and verification of harvest levels which can be permanently sustained over time.

☐ Adherence to a renewable long-term management plan that demonstrates harvest levels which can be permanently sustained over time and that is sanctioned and monitored by a state or federal agency.

☒ Employ uneven-aged silvicultural practices and maintain canopy retention averaging at least 40% across the forest, as measured on any 20 acres within the entire forestland owned by the Forest Owner, including land within and outside of the Project Area (areas impacted by Significant Disturbance may be excluded from this test).

The OPO demonstrates sustainable harvesting practices within the Project with Forest Stewardship Council certification on the Pine Creek property and with an analysis of canopy retention on other land holdings (**Table 7**). The full analysis is presented in section 13 Appendices.

Table 7. Canopy Cover on Other California Timberlands 2, LLC Landholdings

Property Tract Name	Canopy Cover (%)
Cappell 40	99
Cappell Creek	99
Howe Creek	98
Lord Ellis	95
Smith River	87
Waterman Ridge	99
Williams Ridge	99

The Pine Creek property is third-party certified under Forest Stewardship Council® certification. The other properties owned by California Timberlands 2, LLC employ uneven-aged silvicultural practices and maintain over 40% canopy retention. This is demonstrated by the analysis discussed in section 13.1 Appendix A: Analysis of Canopy Cover on Landholdings Not Covered by Third-Party Certification.

6.5 Age Class Requirement.

Forest Offset Protocol 2015 §3.1(a)(1), Table 3.1, Appendix A(a)(3)

Section 5.8.1 Age-Class Distribution for the discussion of age class distribution.

6.6 Structural Elements (Standing & Lying Dead Wood)

Forest Offset Protocol 2015 §3.1(a)(1), Table 3.1

No salvage logging has occurred during the first reporting period within the Project area. No active removal of down dead wood is conducted on the Project area. Therefore, the Project must maintain or demonstrate ongoing progress toward an average of at least:

- one (1) metric ton of carbon (C) in standing dead wood per acre; or
- 1% of standing live carbon stocks, in standing dead wood, whichever is higher.

The current standing dead wood stock is 1.16 metric tons of carbon per acre, which is higher than 1% (or 0.61 metric tons per acre) of standing live carbon stocks and is above the target of one (1) metric ton. Since the current carbon stocks in standing dead exceed the minimum requirements, the Project must maintain an average of at least one (1) metric ton of carbon (C) in standing dead wood per acre.

6.7 Management Activities Leading to Increased Carbon Stocks

Forest Offset Protocol 2015 §7.1.1(a)(18), Appendix A(a)(7)

The Project will produce reductions by managing the Project forest for increased stocking and carbon sequestration when compared to the Project baseline. This will be accomplished in the near term by allowing net forest growth after harvest and by managing with predominantly selection management and thinning on suitable sites. Hardwood challenged stands may be treated using group selection and/or herbicide applications with the goal of eventually bringing the even-aged portions of the property under selection management over the long term.

Overall stocks will never drop below the level of standing live carbon stocks at the initiation of the Project. Stocks will be maintained at a level that assures all credited standing live carbon stocks are permanently maintained.

6.8 Previous Registration as Forest Offset Project

Forest Offset Protocol 2015 §3.1(a)(5)

None of the land within the Project Area has ever been listed or registered with an offset Project registry or program, nor have greenhouse gas emission reductions or removal enhancements associated with the Project Area been credited or claimed for the purpose of greenhouse gas mitigation or reduction goals, either in a voluntary or regulatory context.

6.9 Additionality: Legal Requirement Test

Forest Offset Protocol 2015 §3.4.1, Regulation §95973(a)(2) & §95975(k)

The primary legal constraints to forest management on the Project Area are the California Forest Practice Rules and the California Forest Practices Act. As a result, the baseline for this Project was modeled using applicable provisions of California state law, including the Z'berg Nejedly Forest Practice Act and the Porter-Cologne Water Quality Control Act, as well as California's rules for forest management at 14 CCR 895 through 14 CCR 1110 which are designed to protect water quality, archaeological resources, threatened and endangered species, cumulative impacts, etc. In doing so, we used the 14 CCR 895 through 14 CCR 1110 requirements which include stream buffer requirements for all class I and II watercourses, application of threatened and endangered species protections including protection of Northern Spotted Owl (NSO) habitat, silvicultural requirements, adjacency requirements, archaeological resource protection, etc.

These constraints are examined more closely in the Legal Constraints section of this document.

Since 1) the Project activities are not legally required, and 2) modeling of the forest Project's baseline carbon stocks reflects all legal constraints, the emission reductions or removals enhancements achieved by the forest Project exceed those required by any law, regulation, or other legally binding mandate and thus the Project satisfies the legal requirement test.

6.10 Additionality: Performance Standard Evaluation

Forest Offset Protocol 2015 §3.4.2, Regulation §95973(a)(2)

An Improved Forest Management Project automatically satisfies the performance standard evaluation, since the Project activities produce GHG emission reductions and GHG removal enhancements in excess of those that would have occurred under a conservative business-as-usual scenario (*i.e.,* the baseline).

7 CARBON STOCK INVENTORY

(Forest Offset Protocol 2015 §4.2, §7.1.1(a)(24, 27, 28, 31), Appendix A

7.1 INITIAL ABOVE-GROUND STANDING LIVE TREE CARBON STOCKS

Forest Offset Protocol 2015 §5.2.1(b)

Based on the initial forest carbon inventory for the Project Area the initial carbon stocks (ICS) of the above-ground live tree component are estimated to be 182.04 metric tons CO2e per acre. This includes four plots originally dropped as too hazardous to measure but that are now included as empty plots.

7.2 PROJECT'S RISK REVERSAL CALCULATION

(Forest Offset Protocol 2015 Appendix D)

Table 8. Pine Creek Carbon Project contribution to Buffer Account based on risk analysis.

Risk Category	**Contribution from Risk Descriptions**	
	Source	**Forest Project without a Qualified Conservation Easement and/or Public Ownership**
Financial Failure	Default Risk	5%
Illegal Forest Biomass Removal	Default Risk	0%
Conversion	Default Risk	2%
Over-harvesting	Default Risk	2%
Social	Default Risk	0%
Wildfire	Fuels reduction evaluation	2%*
Disease or Insect Outbreak	Default Risk	3%
Other Catastrophic Events	Default Risk	3%
Overall Contribution Based on Appendix D.1 Calculation		15.9%

* Project has conducted fire risk reduction work. Please see the Cal Fire fire risk reduction letter (see section 12 Attachments).

Overall Contribution to Buffer Pool is 15.9% (74,914 credits) as calculated per the equation in the Forest Offset Protocol 2015, Appendix D, and as shown below:

100% - ((1-5%) x (1-0%) x (1-2%) x (1-2%) x (1-0%) x (1-2%) x (1-3%) x (1-3%)) = **15.9**%

8 OFFSET PROJECT BASELINE

Forest Offset Protocol 2015 §5.2.1

8.1 INVENTORY METHODS

Forest Offset Protocol 2015 §5.2.1(a),§ 7.2.1(24)(C)

The Project Inventory Methodology is submitted as a separate attachment. Please see section 12.1 List of Attachments.

8.2 MODELLING PLAN

Forest Offset Protocol 2015 § 7.2.1(24)(D), Appendix B

The Project Modelling Plan is submitted as a separate attachment. Please see section 12.1 List of Attachments.

8.3 BASELINE CARBON STOCKS

Forest Offset Protocol 2015 §5.2.1, §7.2.1(24)(A), Appendix A

The graph, description, and estimates of the Project's final baseline incorporating all required carbon pools are submitted as a separate attachment. Please see section 12.1 List of Attachments.

8.4 FINAL BASELINE INCORPORATING ALL REQUIRED ONSITE CARBON POOLS

Forest Offset Protocol 2015 §5.2.1(g)

There are no optional carbon pools in this Project. Standing live (IFM-1), standing dead (IFM-3), and in-use forest products carbon (IFM-7) are required pools. Forest products carbon stored in landfills (IFM-8) is also required when baseline harvesting exceeds Project harvesting. In order to determine the amount of carbon stored in harvested wood products (HWP) the cut trees are further divided into Harvested Live and Harvested Merch. Harvested Live is defined as the carbon in all portions of live trees removed from the Project during a harvest (including belowground carbon). Harvested Merch is defined as the carbon in the merchantable portions (bole without bark) of the commercially harvested trees that are sent to mills to be processed into wood products. These values are used in the Offset Credit calculation worksheet (Table 16). The average annual values of the baseline carbon pools are shown in Table 9.

Table 9. Average annual values of the required baseline carbon pools

Carbon Pool	Carbon (t CO2e)
Standing Live (IFM-1)	1,356,473
Standing Dead (IFM-3)	34,648
HWP – Harvested Live	35,707
HWP- Harvested Merch	22,128
HWP in use (IFM-7)	4,257
HWP in landfills (IFM-8)	2,738

8.5 Baseline Carbon in Harvested Wood Products

Forest Offset Protocol 2015 §5.2.3, Appendix C

The average amount of merchantable carbon harvested each year was calculated from the baseline modeling. This was done by using the harvest yields from FVS for each strata/prescription/timing choice combination. Appendix C of the Protocol requires a different methodology for calculating the carbon in harvested wood than it does for live trees. First, the merchantable cubic foot volumes of all species that will be delivered to a mill are selected from the harvest yields. Harvested wood volumes excluding bark were calculated for softwood and hardwood, sawtimber and pulp. The minimum merchantable DBH for pulp was 6 inches DBH and the minimum merchantable DBH for sawtimber was 10 inches DBH. The volumes were multiplied by the wood density factor from Table C.1 of the Protocol for the Douglas-fir forest type and summed to get total pounds of harvested wood. This total was multiplied by 0.5 to convert to carbon and divided by 2,204.6 to convert from pounds to metric tons of carbon. A weighted average mill efficiency value was used to arrive at the total carbon transferred into wood products based on the regional factors for the Pacific Southwest by hardwood/softwood and sawlog/pulpwood categories as provided from the ARB website (**Table 10**), weighted by the percentage of merchantable volume in these categories. Next, the table C.2 worksheet was used to calculate the long-term carbon storage in In-Use wood products. Product class assumptions were based on default values for the Southern Cascades and Northern California Coast weighted by the acres in each supersection. Long-term storage in landfills was determined using the table C.3. Worksheet and also used the same default product class percentages.

Table 10. Mill Efficiencies for Hardwood and Softwood in the Pacific Southwest.

		Hardwood		Softwood	
Region	**State**	**Saw Log**	**Pulpwood**	**Saw Log**	**Pulpwood**
Pacific Southwest (PSW)	California	0.568	0.568	0.675	0.675

8.6 Projection of Baseline and Actual Harvest Volumes

Forest Offset Protocol 2015 § 7.2.1(a)(15), §7.2.1(24)(A)

The Projection of baseline and actual harvesting volumes from the Project Area over 100 years is submitted as a separate attachment. Please see section 12.1 List of Attachments.

8.7 Determining Actual Onsite Carbon Stocks

(Forest Offset Protocol 2015 §5.2.4)

The baseline modelling included all plots within the Project area measured during the 2017-19 inventory (312 plots), while the actual onsite carbon stocks included these same plots plus four hazard plots not measured (*i.e.,* there were 316 total plots for onsite carbon stocks calculations). The not-measured hazard plots were included as empty plots for the onsite carbon stocks calculations.

No harvesting has occurred between the start of the Project and the end of the initial reporting period. The carbon inventory was collected in late 2017 and early 2018 with a mid-point date of 2/12/2018. There were also 15 plots added at the end of April 2019. These plots were backdated to 2/12/2018 using FVS-Projected growth rates in order to coincide with the rest of the plot data. Once all calculations were done on this 'as measured' dataset, the total onsite carbon stocks were incremented 82% of the Projected annual growth to the Project start date of 8/31/2018. The starting onsite carbon stocks were then incremented 77% of the annual growth to represent the end of RP1 on June 30, 2019. These percentages were determined using seasonal growth allocation by month from a JDSF study (Bawcom et al., 1961).

Table 11. Summary of carbon stocks in all required pools at the end of the reporting period

Carbon Pool	**Carbon (t CO2e)**	**Carbon (t CO2e) with Confidence Deduction Applied**
Standing Live (IFM-1)	1,840,491	1,840,491
Standing Dead (IFM-3)	34,167	34,167
HWP in use (IFM-7)	0	0
HWP in landfills (IFM-8)	0	0

The sampling error at the 90% level is calculated by multiplying the standard error by the t-value of 1.645. The standard error was determined using a stratified random sample formula.

Table 12 summarizes the data and statistics for each of the strata and the pooled sampling error for all the strata combined.

Table 12. Forest Offset Protocol 2015 Table A.2 Summarizing Total Carbon by Carbon Pool and Stratum

Stratum Name	No. of Plots	Carbon (CO_2/acre)						Acres	Carbon (CO_2) Total	Percentage Carbon (CO_2) Total
		Avg. Live AG	**Avg. Live BG**	**Avg. Dead**	**Avg. Onsite**	**Std. Dev.**	**Std. Error**			
DFR	73	161.2	38.8	5.5	205.4	117.1	13.70	2,027	416,419	22.6%
HWDF	32	335.2	75.2	6.5	416.9	155.1	27.42	704	293,371	16.0%
MHC3	124	182.8	43.9	4.2	230.9	96.5	8.67	3,083	711,782	38.7%
MHC4	87	151.1	36.9	2.5	190.5	112.8	12.09	2,192	417,509	22.7%
Total	**316**	**182.04**	**43.42**	**4.27**	**229.73**			**8005.3**	**1,839,080**	

Sampling Error at 90% level = 4.5%

Confidence Deduction = 0%

Table 13. Forest Offset Protocol 2015 Table A.3 Summarizing Carbon Pools and Total Metric Tons CO2e/acre by Carbon Pool

Carbon Pool	Source	Gross Metric Tons CO_2e per Acre
Standing Live Tree Above- and Below-ground Carbon Stocks	From sampling results of trees	225.46
Standing Dead Tree Above- and Below-ground Carbon Stocks	From sampling results of standing dead biomass	4.27
Shrubs and Herbaceous Understory Carbon (if required)	From sampling results of shrubs and herbaceous understory	0
Soil Carbon (if required)	From sampling results of soil	0
	Sum of t CO_2e from Required Pools	**229.73**

Table 14. Carbon (CO2e) Reported from the Project Activity Harvest Schedule

Year	AG Live Tree	BG Live Tree	Standing Dead	Cut – All	Cut - Merch
2018	1,457,310	347,604	34,167	-	-
2028	1,807,597	421,471	34,167	-	-
2038	2,224,989	507,531	34,167	-	-
2048	2,554,443	573,948	34,167	-	-
2058	2,698,334	602,238	34,167	-	-
2068	2,819,490	625,751	34,167	-	-
2078	2,921,174	645,198	34,167	-	-
2088	3,011,072	662,202	34,167	-	-
2098	3,089,230	676,774	34,167	-	-
2108	3,157,629	689,364	34,167	-	-
2118	3,218,610	700,457	34,167	-	-

8.8 Determining Actual Carbon in Harvested Wood Products

(Forest Offset Protocol 2015 §5.2.5)

The FVS simulation of Project activity was used to estimate the wood products carbon for the next 100 years. Since all Project acres were allocated to the "let grow" scenario, no harvest is currently Projected for the 100-year period. If any harvesting does occur at some point in the future, the actual harvested amount will be reported and used as determined from truck scale tickets. Reported hauling weights can be converted to carbon using the methodology in Protocol Appendix C (C.1). The calculation for the wood products storage is identical to the methods used for the baseline but will be based on these actual harvested amounts rather than Projections.

For the initial reporting period, there was no harvest, and thus no estimate of merchantable harvest volume or associated carbon in harvested wood products.

8.9 Common Practice (CP) Value

Forest Offset Protocol 2015 §5.2.1(c), Appendix F

8.9.1 Identification of Supersections & Assessment Area(s) by Area

Forest Offset Protocol 2015 §7.1.1(a)(14), Appendix F(a-c)

The Project is located within the Southern Cascades and Northern California Coast Supersections (**Figure 2**).

The Project is located in two Assessment Areas (Table 15).

8.9.2 Common Practice Site Class Stratification

Forest Offset Protocol 2015 Appendix F(d-f)

Since all soil types on the Project fall into the High site class category, as shown in Table 15, no grouping of soil types into site classes was necessary.

8.9.3 Single Common Practice Value

Forest Offset Protocol 2015 Appendix F(h)

Table 15. Assessment Area(s), Site Class(es), and Common Practice Calculation

Supersection	Assessment Area	Site Class	Area (acres)	Common Practice Above-Ground CO_2e (metric tons/acre)
Southern Cascades	Southern Cascade Mixed Conifer	High	6,535	121.77
Northern California Coast	Northern California Coast Redwood/Douglas-fir Mixed Conifer	High	1,471	205.15
Total Acres | Weighted Avg Common Practice			8,005	137.09

8.10 Common Practice Compared to Above-Ground Standing Live

Forest Offset Protocol 2015 §5.2.1(d)

The Project's initial above-ground standing live carbon stocks (ICS) are above CP, so it is not necessary to estimate the High Stocking Reference (HSR). The Project Area is a single logical management unit (LMU) as defined by its unique biological attributes at the time California Timberlands 2, LLC took ownership of the property.

The LMU includes all forest stand polygons within the property containing sufficient stocking to be allocated to uneven-aged harvesting in the near term or stocking and species composition appropriate to be allocated to carbon storage as the primary management objective. Because the LMU and the Project area are one and the same, the weighted average above-ground standing live tree carbon stocks per acre within the LMU (WCS) equals the initial above-ground standing live carbon stocks per acre within the Project area (ICS), thus the minimum baseline level (MBL) =CP.

8.10.1 Weighted-Average Above-Ground Standing Live Tree Carbon Stocks

Equation 5.5:

MBL = MAX(CP, MIN(ICS, CP+ICS-WCS)) = MAX(CP, MIN(ICS, CP) = MAX(CP,CP) = CP

8.11 Calculating Secondary Effects

(Forest Offset Protocol 2015 §5.2.6)

Secondary effects include changes in emissions due to unintended changes in regional carbon stocks that may result from the Forest Project, and are always negative. Secondary effects include activity shifting leakage that results from changes in forest management activity resulting from the Forest Project activity. The calculation itself is 20% of the difference between actual and baseline carbon in harvested wood. For the first year of the Project this is 20% x (0 – 29,637) = -5,927 metric tons CO_2e as shown in the Offset Credit calculation worksheet (Table 16).

8.12 Legal Constraints

Forest Offset Protocol 2015 §3.4.1(c)(2), §5.2.1(e)(1), §7.1.1(a)(25) , Appendix (a)(10)

8.12.1 Watercourse and Lake Protection

The Project is located in the Coastal Anadromy Zone of the Coast Forest Practices District and as such all practices within the Watercourse and Lake Protection Zones (WLPZ) fall under the Anadromous Salmonid protection regulations (916.9; hereafter, ASP rules) of the California Forest Practice rules (California Code of Regulations 14).

The hydro layers used for the Pine Creek Improved Forest Management Project were obtained from the following sources:

- Hydro GIS features downloaded from Cal Fire's FTP site. This was a geodatabase of feature classes created and maintained by the State of California and the Department of Forestry and Fire Protection (Cal Fire).
- The previous landowner, who had hydro data in GIS format.
- A memorandum from the State of California Department of Fish and Game was used to confirm classifications of sections of Little Pine Creek.

Locations and classifications were evaluated between the Cal Fire and landowner datasets. THP classifications in the owner's data were presumed to be the more accurate when the datasets differed in attributes. Watercourse THP classes 5 (unclassified perennial) or 6 (unclassified intermittent) were assumed to be THP class I or II, respectively, which is a conservative approach. THP classes were modified if updated information about their classification was obtained through current management information or field verification.

In order to create a single GIS layer of hydro constraints based on California's Forest Practice Rules, all Class I watercourse line feature class were buffered to 30 feet, 100 feet, and 150 feet. These buffer distances correspond to WLPZ core, inner, and outer buffers for Class I

watercourses, respectively. Class II-L streams were buffered by 30 feet and 100 feet, which correspond to WLPZ core and inner buffers for Class II-L streams. The remaining Class II streams (Class II-S streams) were buffered by 15 feet for the Class II-S core buffer. Class II-S inner buffers were based on percent slope and were designated as follows:

- Class II-S watercourses on slopes less than 30% were buffered 50 feet,
- II-S watercourses on slopes between 30% and 50% were buffered 75 feet,
- and II-S watercourses on slopes greater than 50% were buffered by 100 feet.

Percent slope was calculated in ArcMap 10+ using a 10-meter or better National Elevation Dataset (NED) Digital Elevation Model (DEM) originating from the USDA/NRCS National Geospatial Center of Excellence and downloaded from the USDA Data Gateway.

All WLPZ core buffers and Class I and II-L inner buffers remained in the Project and were assigned a let grow prescription. While the FPRs allow harvesting to an 80% canopy in the inner buffers, to be conservative, no harvesting was prescribed for these areas. Class I outer buffers and Class II-S inner and core buffers were retained and assigned a selection prescription leaving a minimum 50% canopy post-harvest. In addition, inner gorge special management zones (SMZ) were delineated on slopes >55% adjacent to Class I watercourses and extended 100' from the edge of the Class I outer zone WLPZ; these constrained acres in the SMZ were allocated to the selection prescription in the baseline harvest schedule. Class I Special Operating Zones (SOZ) were delineated for all north-facing slopes greater than 50% and extended 50' from the edge of the Class I outer zone WLPZ; these constrained acres in the SOZ were allocated to the let grow prescription in the baseline harvest schedule.

Class III watercourses were buffered based on a GIS analysis of recent completed THPs in which clearcuts occurred in the vicinity of a Class III stream. Based on the resulting average trees retained per acre by strata, we estimated the acres of trees to leave behind in the Class III buffer zones and these acres were allocated to the let grow prescription in the baseline harvest schedule.

8.12.2 WILDLIFE

Wildlife buffers for Northern Spotted Owl (NSO) were determined and the habitat types were delineated following the guidance in the document from the US Fish and Wildlife Service (USFWS) regarding Northern Spotted Owl Take Avoidance Analysis and Guidance for California Coast Forest District ("Attachment A"). Attachment A is intended for use by RPFs in the redwood region of the Coast district. The coast region for NSO does not directly overlap with the Coast Forest District because NSO coast and interior areas are based on the geographic extent of the redwood forest type. It was assumed that under a baseline scenario harvest plans would be filed

using 14CCR 919.9(e) in order to get a determination from the USFWS that take of NSO would be avoided.

There were four (4) NSO Activity Centers (AC) mapped in the California Natural Diversity Database (CNDDB) located within 0.7 miles of the property. Attachment A stipulates retention of at least 500 acres of suitable habitat for an AC. Post-harvest habitat retention requires a 100-acre core area of nest/roost habitat contiguous with the AC, and an additional 100 acres of nest/roost habitat, and 300 acres of foraging habitat all within 0.7 miles of the AC.

Watercourse and Lake Protection Zones on the property within the 0.7-mile buffer were considered to contribute toward the acreage requirements, as per Attachment A. The results of this typing indicate that 106 acres of nest/roost habitat and 97 acres of foraging habitat exist within the Project area and would need to be maintained. Parameters relevant to the habitat definitions were tracked in the baseline prescription modeling. These are the percent canopy of trees >= 11" dbh (40% for foraging, 60% for nest/roost) and the basal area of trees >=11" dbh (75 ft^2 for foraging, 100 ft^2 for nest/roost). Harvest scheduling was constrained to require the nest/roost habitat be assigned a let grow prescription and foraging habitat assigned the WLPZ selection prescription.

8.12.3 Forest Practice Rules

Clearcutting, commercial thinning, and selection are the FPR silvicultural prescriptions modeled in the baseline. Modeling incorporated all age and stocking standards specified by the California forest practice rules (CCR 14) as summarized in the modelling methodology attachment (see section 12 Attachments). Site class 3 strata have higher stocking standards than site class 4 strata. Selection prescriptions retained greater than 75 ft^2 or 50 ft^2 of group A species as well as 15 or 12 ft^2 in trees (group A species) greater than 18" as per 14CCR 913.2(a)(2)(A)4. Commercial thinning prescriptions retained 100 ft^2 or 75 ft^2 of group A species as per 14CCR 913.3(a)(1)(A). Compliance with these standards was accomplished by examining the FVS output tables each time a prescription was run and adjusting the parameters in the key file if necessary. Clearcutting in site class 3 strata was delayed until it reached 60 years old and delayed until 80 years old for site class 4 strata. Hardwood control through "hack & squirt" was simulated 10 to 15 years before the initial harvest in all strata except DFR. Regeneration in even-aged harvest units was simulated to undergo hardwood control and to be planted to fully occupy the site and pass point count stocking requirements.

The impact of adjacency requirements was addressed by examining the acres harvested by clearcutting within each stratum. In DFR, MHC3 and MHC4 clearcutting was restricted in any 5-year period to no more than 25 percent of the total area available for even-aged harvesting in that stratum. In HWDF clearcutting in any 5-year period was limited to 33 percent of the total area available for even-aged harvesting. This is because HWDF has much fewer acres than the other

strata and is dispersed throughout the property in smaller polygons such that adjacency would not be as limiting.

The provisions of 14 CCR 14 CCR 933.1(a)(6) and 14 CCR 14 CCR 933.1(a)(7) require special consideration for silvicultural treatments and timber operations within 200 ft of the edge of the travelled surface of any permanent road maintained by the County or State, or within 200 ft of adjacent non-federal lands not zoned TPZ for aesthetic enjoyment. As such, we allocated the required acreage to be constrained as aesthetic roads.

8.13 Financial Feasibility of Baseline & Financial Constraints

Forest Offset Protocol 2015 §5.2.1(e)(2)(A), §7.1.3(4), Appendix A(a)(10)

The primary financial constraints affecting the feasibility of timber harvesting are the price of logs at the mill, logging costs, and hauling costs. It is assumed that harvest plans conducted on the property and nearby lands must have been financially feasible to conduct, or harvest plans would not have been completed. Therefore, as long as Projected harvests in the Baseline scenario are sufficiently comparable to actual past harvest plans, then the modeled prescriptions would be financially feasible.

The price of logs at the mill fluctuates substantially from year to year, making some years more feasible for implementing harvest plans than other years. The baseline modeling utilizes 5-year windows in which activities are planned, which allows for the price of logs to be high enough at some point during those 5 years to justify harvesting. Logging costs track well with inflation and are lower for even-aged silviculture than uneven-aged. Hauling costs from the property depend on which mill buys the wood, but logs would likely go to mills on the coast which are a relatively short haul.

The most compelling argument that the harvesting regime modeled for the baseline is financially feasible is that previous owners of the property implemented intensive harvesting practices over most of the property. The silviculture practiced was very similar to the prescriptions modeled for the baseline. Nearby industrial landowners have been and continue to implement intensive harvesting under the same financial constraints faced by the owners of the Pine Creek Carbon Project property.

Further evidence and analysis of financial feasibility is provided as required (see section 12.1 List of Attachments).

8.14 Harvest Planning

8.14.1 Regeneration Cut/Commercial Harvest

Forest Offset Protocol 2015 §7.1.1(a)(22)

Commercial harvesting is currently planned within the Project area as well as on other parts of the property as part of a partially completed active THP. However, no harvesting has occurred within this reporting period and harvest planning has not been finalized. Harvesting is planned and has occurred on other landholdings owned by California Timberlands 2, LLC.

9 OTHER OFFSET PROGRAMS

(Forest Offset Protocol 2015 §7.1.1(a)(33 – 34)

No GHG emission reductions associated with land within the Project area have ever been:

- Listed or registered by another registry or program,
- Credited or claimed by another registry or program, or
- Sold to a third party prior to listing.

10 GHG Reductions and Removals

(Forest Offset Protocol 2015 §5)

Equation 6.1 was used for estimating the first reporting period GHG reductions and removals. This was implemented using a modified version of the Forest Project calculation worksheet provided by the Climate Action Reserve, and is provided along with the Project input data. This process included the changes in onsite stocks, long-term average wood product storage, and secondary effects.

Table 16. GHG Reductions and Removals Worksheet

Reporting Period **Data entered for end of each Period; after Period 2, each Period = 12 months**	Inventory Data grown 82% of 1 yr to match Project Start 8/31/18	1 End of RP1 - 6/30/19 - Starting stocks + 77% of annual growth
Calculating GHG Reductions/Removals for Onsite Carbon Stocks - All Project Types		
Actual Onsite Carbon Stocks (tonnes CO_2e)	1,839,080	1,874,658
Confidence Deduction	0.0%	0.0%
Adjusted Actual Onsite Carbon Stocks (adjusted for confidence deduction) (tonnes CO_2e)	1,839,080	1,874,658
Increment in Actual Onsite Carbon Stocks (tonnes CO_2e)		35,577
Baseline Onsite Carbon Stocks (tonnes CO_2e)	1,391,121	1,391,121
Increment in Baseline Onsite Carbon Stocks (tonnes CO_2e)		-
Quantified GHG Reductions / Removals for Onsite Carbon Stocks (tonnes CO_2e)	447,959	35,577
Calculating Carbon Stored in Wood Products Including Market Effects and Leakage - All Project Types		
Actual Carbon in Trees Harvested for Wood Products in (tonnes CO_2e)		-
Baseline Carbon in Trees Harvested for Wood Products (tonnes CO_2e)		29,637
Actual Carbon in Harvested Wood Delivered to Mills (tonnes CO_2e)		-
Baseline Carbon in Harvested Wood Delivered to Mills (tonnes CO_2e)		18,366
Actual Carbon Stored Long-term in Wood Products (tonnes CO_2e) - Excl Landfill		0
Actual Carbon Stored Long-term in Wood Products (tonnes CO_2e) - Incl Landfill		0
Baseline Carbon Stored Long-term in Wood Products (tonnes CO_2e) - Excl Landfill		4,257
Baseline Carbon Stored Long-term in Wood Products (tonnes CO_2e) - Incl Landfill		6,995

Reporting Period **Data entered for end of each Period; after Period 2, each Period = 12 months**	Inventory Data grown 82% of 1 yr to match Project Start 8/31/18	1 End of RP1 - 6/30/19 - Starting stocks + 77% of annual growth
Diff Between Actual and Baseline Carbon in Harvested Wood (tonnes CO_2e) - Excl Landfill		(4,257)
Difference Between Actual and Baseline Carbon in Harvested Wood (tonnes CO_2e) - Incl Landfill		(6,995)
Difference in Actual and Baseline Carbon Stored in Wood Products (tonnes CO_2e) - Landfill Adj		(6,995)
GHG Reductions / Removals for Carbon Stored in Wood Products (tonnes CO_2e) w/ mkt response		(5,596)
Calculating Other Secondary Effects - Improved Forest Management Projects		
Difference Between Actual and Baseline Carbon in Trees Harvested for Wood Products (tonnes CO_2e)		(29,637)
Other Secondary Effects Emissions (shifting activities/materials) IFM Projects (tonnes CO_2e)		(5,927)
Quantified GHG Reductions and Removals		
Annual GHG Reductions/Removals Net of Discounts and Secondary Effects (tonnes CO_2e)	447,959	24,054
Cumulative GHG Reductions/Removals; not incl.neg. carryover or reversals (tonnes CO_2e)	447,959	472,013
Cumulative Negative Carryover from Prior Year (tonnes CO_2e)		0
Credits Issued - Net of Negative Carryover, bef. Buffer or adjust for Reversals (tonnes CO2e)	447,959	24,054
Calculation of Buffer Pool Contribution		
Project Specific Reversal Risk Rating	15.9%	15.9%
Buffer Pool Contributions (Credits)	71,096	3,818
Accounting for Reversals		
Annual Reversals (tonnes CO_2e)		-
Total "Avoidable Reversals" to be compensated (tonnes CO_2e)		-
"Unavoidable Reversals" compensated from the Buffer Pool (tonnes CO_2e)		-
Compensating for Avoidable Reversals		
"Avoidable Reversals" compensated from Forest Owners Account (tonnes CO2e)		-
"Avoidable Reversals" compensated by retirement of other eligible credits or instruments (tonnes CO2e)		-
Carryover "Avoidable Reversals" which need to be compensated (tonnes CO2e)		-
Credits Issued to Account Holder		
Annual Credits Issued to Account Holder	376,863	20,236
Cumulative Credits Issued to Account Holder	376,863	397,099

11 SELECTED REFERENCES

References listed here were not necessarily cited in the document or its attachments.

Anderson et. al. 1976. A Land Use and Land Cover Classification System for Use with Remote Sensor Data. USGS Numbered Series 964. 28 p.

Bawcom, R.H.; R.J. Hubbell and D.M. Burns. 1961. Seasonal diameter growth in trees on Jackson State Forest. State Forest Notes, No. 6.).

California growth and yield modeling cooperative [CAGYM]. 2011. FORest and Stand Evaluation Environment (FORSEE) beta version computer program. Website: http://www.cagym.com.

Cairns, M.A., S. Brown, E.H. Helmer, and G.A. Baumgardner. 1997. Root biomass allocation in the world's upland forests. Oecologia 111:1-11.

CALFIRE, Fire and Resource Assessment Program. 2006. fvego6_1.

Crookston, N. L. 1997. Suppose: an Interface to the Forest Vegetation Simulator, in R Teck, M Moeur, and J Adams eds., Proceedings: Forest Vegetation Simulator Conference. Fort Collins, CO, USDA Forest Service Intermountain Research Station, Intermountain Research Station INT-GTR-373, p. 7-14.

DOE. 2007. Technical guidelines, voluntary reporting of greenhouse gases (1605(b) program. Office of Policy and International Affairs, US Dept. of Energy. 280 p.

FIA. 2010a. FIA Volume Equation Documentation (dated 22 March 2010). USDA Forest Service, Pacific Northwest Research Station.

FIA. 2010b. Regional biomass equations used by FIA to estimate bole, bark, and branches (updated 13-Jan-2010). USDA Forest Service, Pacific Northwest Research Station.

FRAP. 20-4. California Fire Hazard Reduction Projects. California Department of Forestry and Fire Protection. On CALFIRE website at http://frap.cdf.ca.gov/data/frapgisdata-sw-calmapper_download.php

Hann, David and John Scrivani. 1987. Dominant-height-growth and site-index equations for Douglas-fir and Ponderosa pine in southwest Oregon. Forest Research Laboratory, Oregon State University, Corvallis, Research Bulletin 59. 13 p.

Harmon, M.E., C.W. Woodall, B. Fasth, and J. Sexton. 2008. Woody detritus density and density reduction factors for trees species in the United States: A synthesis. USDA Forest Service Northern Research Station General Technical Report NRS-29:90.

Harmon, M.E., C.W. Woodall, B. Fasth, J. Sexton, and M. Yatkov. 2011. Differences between standing and downed dead tree wood density reduction factors: A comparison across decay classes and tree species. Res. Pap. NRS-15. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 40 p.

Keyser, Chad E. comp. 2008 (revised May 30, 2014). Inland California and Southern Cascades (CA) Variant Overview – Forest Vegetation Simulator. Internal Rep. Fort Collins, CO: U. S. Department of Agriculture, Forest Service, Forest Management Service Center. 64 p.

Krumland, Bruce and Helge Eng. 2005a. Site Index Systems for Major Young-Growth Forest and Woodland Species in Northern California. California Forestry Report No. 4, April 2005.

Krumland, Bruce and Helge Eng. 2005b. CA_SITEINDEX Users Guide and Programming Notes. On CALFIRE website at http://www.fire.ca.gov/resource_mgt/resource_mgt_stateforests_publications_reports_sitereports.php

PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu, created 4 Feb 2004.

Shiver, B.D. and B.E. Borders. 1996. Sampling techniques for forest resource inventory. John Wiley & Sons, Inc. 356 p.

USDA Natural Resources Conservation Service. 2013. Soil Survey Geographic (SSURGO) database for Shasta-Trinity National Forest Area, CA. Ft. Worth, TX. Available online at http://websoilsurvey.nrcs.usda.gov/.

USDA Natural Resources Conservation Service. 2014. Soil Survey Geographic (SSURGO) database for Six Rivers National Forest Area, CA. Ft. Worth, TX. Available online at http://websoilsurvey.nrcs.usda.gov/.

Wensel, L. C. and C. M. Olson. 1995. Tree taper models for major commercial California conifers. Hilgardia 62(3), 16 p.

12 ATTACHMENTS

Relevant shapefiles are available for distribution to the Verification Body and the Offset Project Registry.

12.1 LIST OF ATTACHMENTS

Attachment File Name	Description	Note
OPDR_AttachmentA.pdf	Documentation showing the OPO's ownership and timber interests for the property.	
pc-baseline-Projections-[Version-Date].pdf	Projections of baseline and actual harvesting volumes from the Project area over 100 years	
pc-inventory-methodology[Version-Date].pdf	The complete carbon inventory methodology that meets the requirements of appendix A	
pc-modelling-methodology[Version-Date].pdf	The complete modelling plan methodology that meets the requirements of appendix B	
pc-final-baseline[Version-Date].pdf	The final baseline incorporating all required carbon pools portrayed in a graph depicting time (100 years) in the x-axis and metric tons CO2e in the y-axis. The graph must be supported with written characterizations that explain any annual changes in baseline carbon stocks over time.	
pc-financial-feasibility_20190924.pdf	Financial analysis of the anticipated growth and harvesting regime that captures all relevant costs and returns, taking into consideration all legal, physical, and biological constraints.	A redacted version of this document, "pc-financial-feasibility-REDACTED", will be made available for public dissemination.
pc_pab_20190910.zip	Georeferenced shapefile showing the Project Area boundary.	
CAL FIRE fire risk reduction letter 20200130.pdf	Confirmation of fire risk reduction work.	A redacted version of this document, "pc-CAL_FIRE_letter-REDACTED", will be made available for public dissemination.

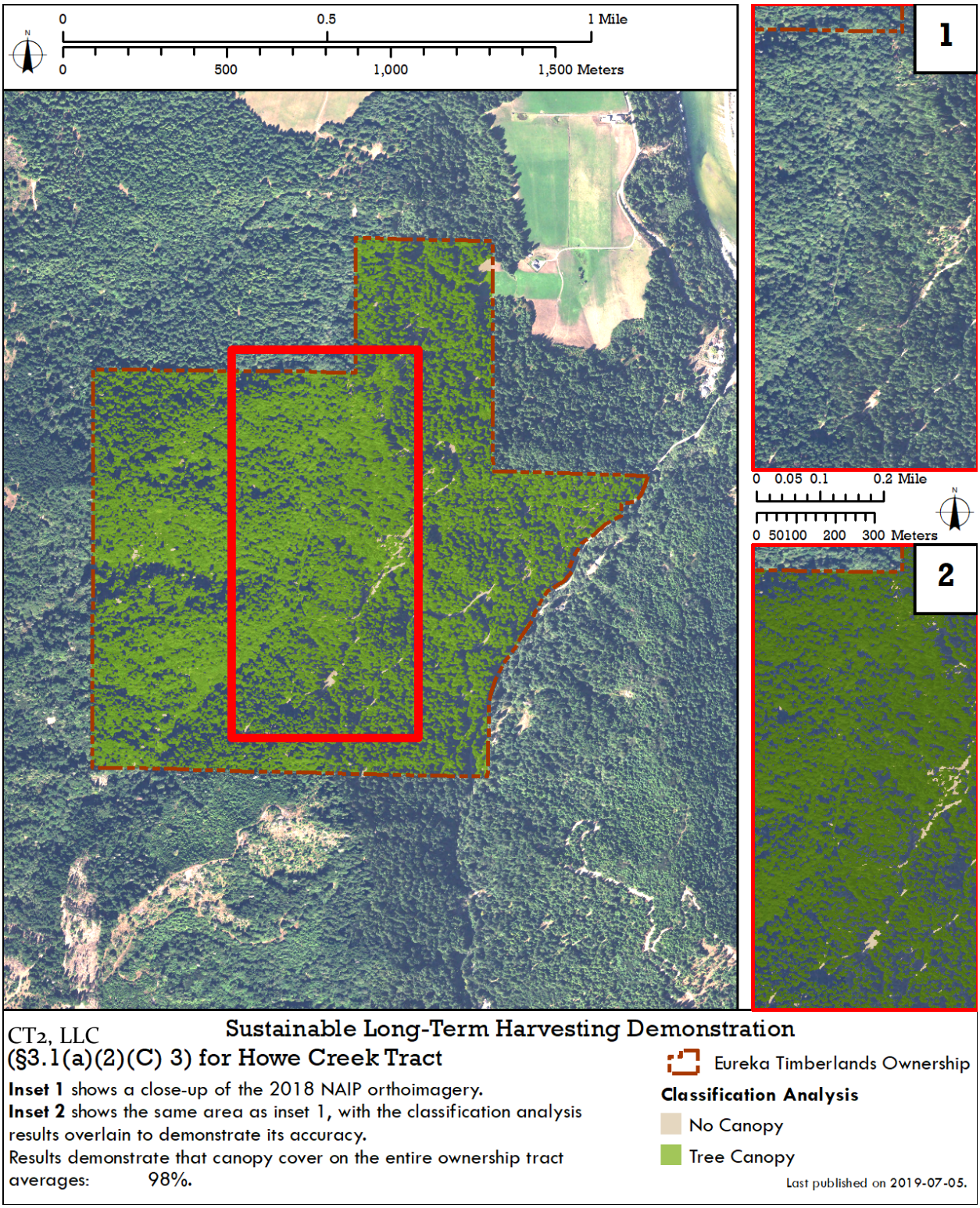
13 APPENDICES

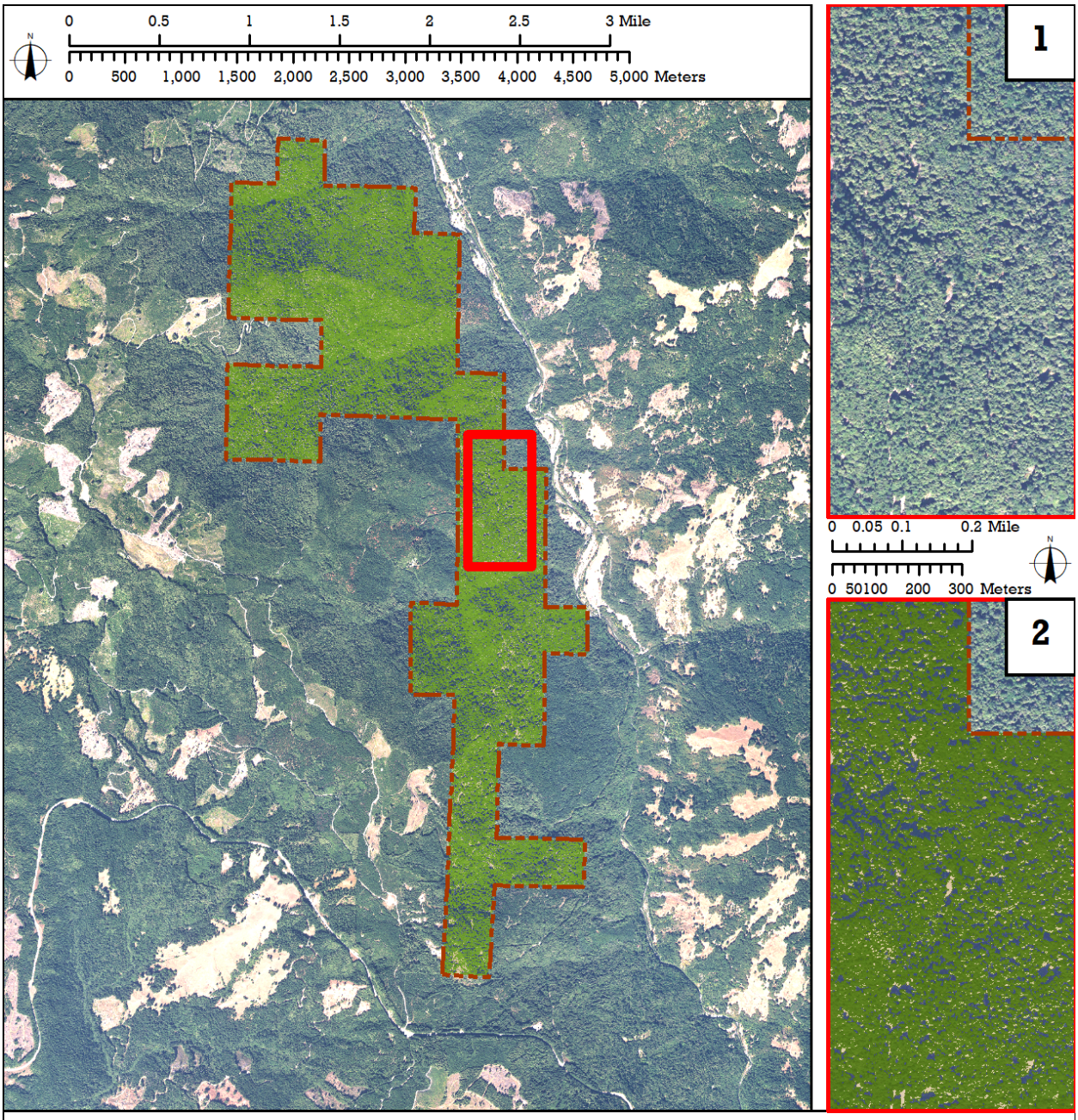
13.1 APPENDIX A: ANALYSIS OF CANOPY COVER ON LANDHOLDINGS NOT COVERED BY THIRD-PARTY CERTIFICATION

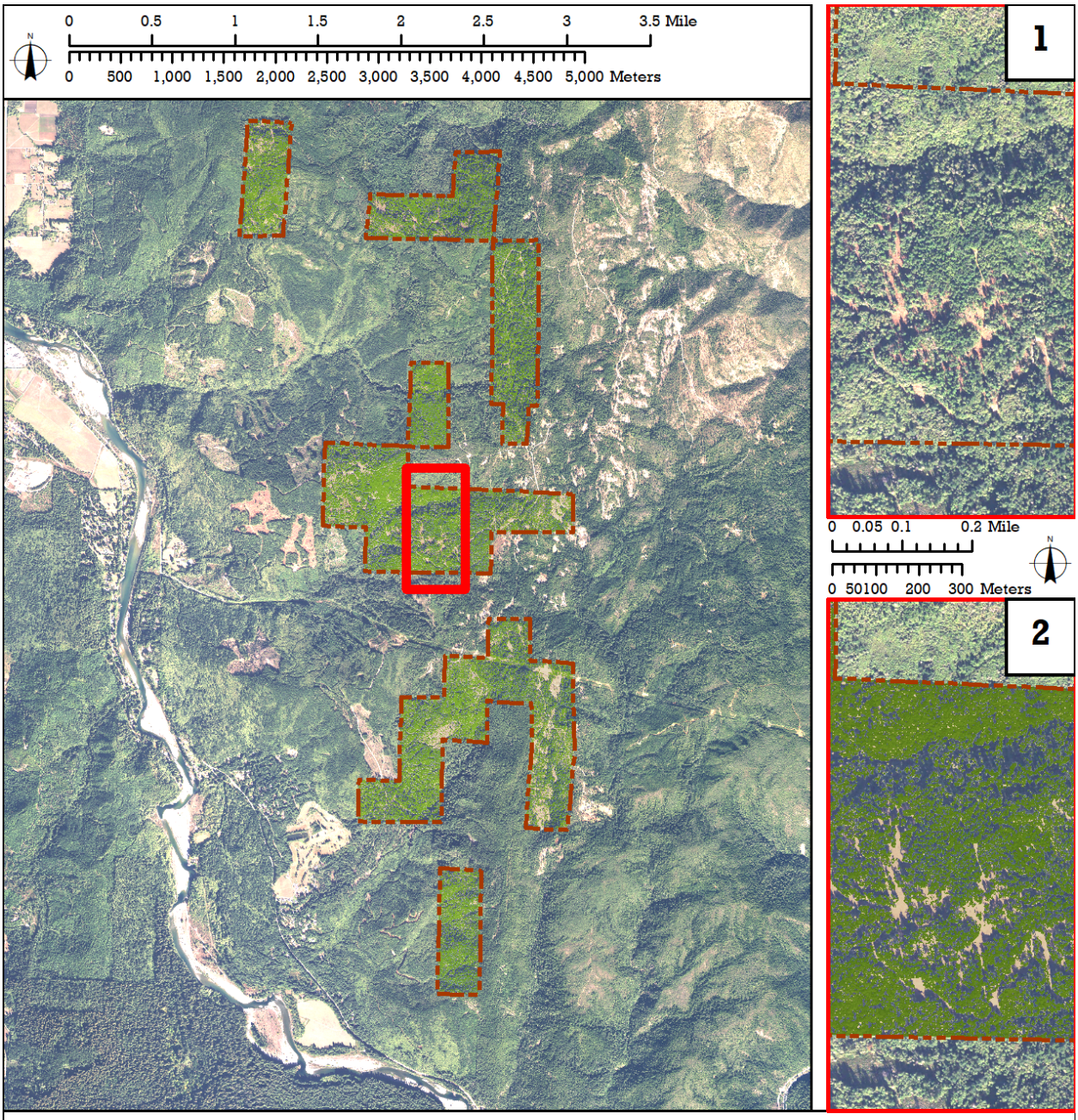
In order to assess canopy retention on the California Timberlands 2, LLC landholdings not covered by FSC certification, we used a remote sensing technique known as unsupervised classification. Unsupervised classification uses an algorithm to automatically classify pixels into a predetermined number of classes. For this analysis, we compiled the most recent National Agricultural Imagery Program (NAIP) vertical aerial imagery available for the areas of interest, which was September and October 2018. We used spectral bands in the visible and near-infrared range for the analysis, and the analysis was done using the Iso Cluster Unsupervised Classification script in ArcMap 10.3, which uses the Iso Cluster and Maximum Likelihood Classification Tools. The imagery was subset to 100 meters around the property boundary to minimize edge effects within the property, which was the actual area of interest.

The multiband imagery subsets were grouped into 10 classes, which were then refined and assigned to one of three groups manually: shadow, bare ground/no tree canopy, and tree canopy. The reason 10 classes were chosen and not three or four classes was because the algorithm was not able to distinguish between bare ground and brightly reflected tree canopy very well. By increasing the automatically generated number of classes, the results were better refined and bare ground and bright canopy were better classified.

Pixels classified as shadows were removed from further analysis, since it could not be determined whether they represented bare ground or tree canopy. Bare ground pixels were then coded as 0 (zero) and tree canopy pixels coded as 1 (one). The final results were clipped to the actual property boundary and the mean raster value was the proportion of the property covered by tree canopy. The results of the analysis are presented in the figures below.


0
0.5
1 Mile
0
500
1,000
1,500 Meters
1
0 0.05 0.1 0.2 Mile
0 50100 200 300 Meters
2
CT2, LLC
Sustainable Long-Term Harvesting Demonstration
(§3.1(a)(2)(C) 3) for Howe Creek Tract
Inset 1 shows a close-up of the 2018 NAIP orthoimagery.
Inset 2 shows the same area as inset 1, with the classification analysis results overlain to demonstrate its accuracy.
Results demonstrate that canopy cover on the entire ownership tract averages: 98%.
Eureka Timberlands Ownership
Classification Analysis
No Canopy
Tree Canopy
Last published on 2019-07-05.


0 0.5 1 1.5 2 2.5 3 Mile
0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 4,500 5,000 Meters
1
0 0.05 0.1 0.2 Mile
0 50100 200 300 Meters
2
CT2, LLC
Sustainable Long-Term Harvesting Demonstration
(§3.1(a)(2)(C) 3) for Lord Ellis Tract
Inset 1 shows a close-up of the 2018 NAIP orthoimagery.
Inset 2 shows the same area as inset 1, with the classification analysis results overlain to demonstrate its accuracy.
Results demonstrate that canopy cover on the entire ownership tract averages: 95%.
Eureka Timberlands Ownership
Classification Analysis
No Canopy
Tree Canopy
Last published on 2019-07-05.



CT2, LLC

Sustainable Long-Term Harvesting Demonstration

(§3.1(a)(2)(C) 3) for Smith River Tract

Inset 1 shows a close-up of the 2018 NAIP orthoimagery.
Inset 2 shows the same area as inset 1, with the classification analysis results overlain to demonstrate its accuracy.
Results demonstrate that canopy cover on the entire ownership tract averages: 87%.

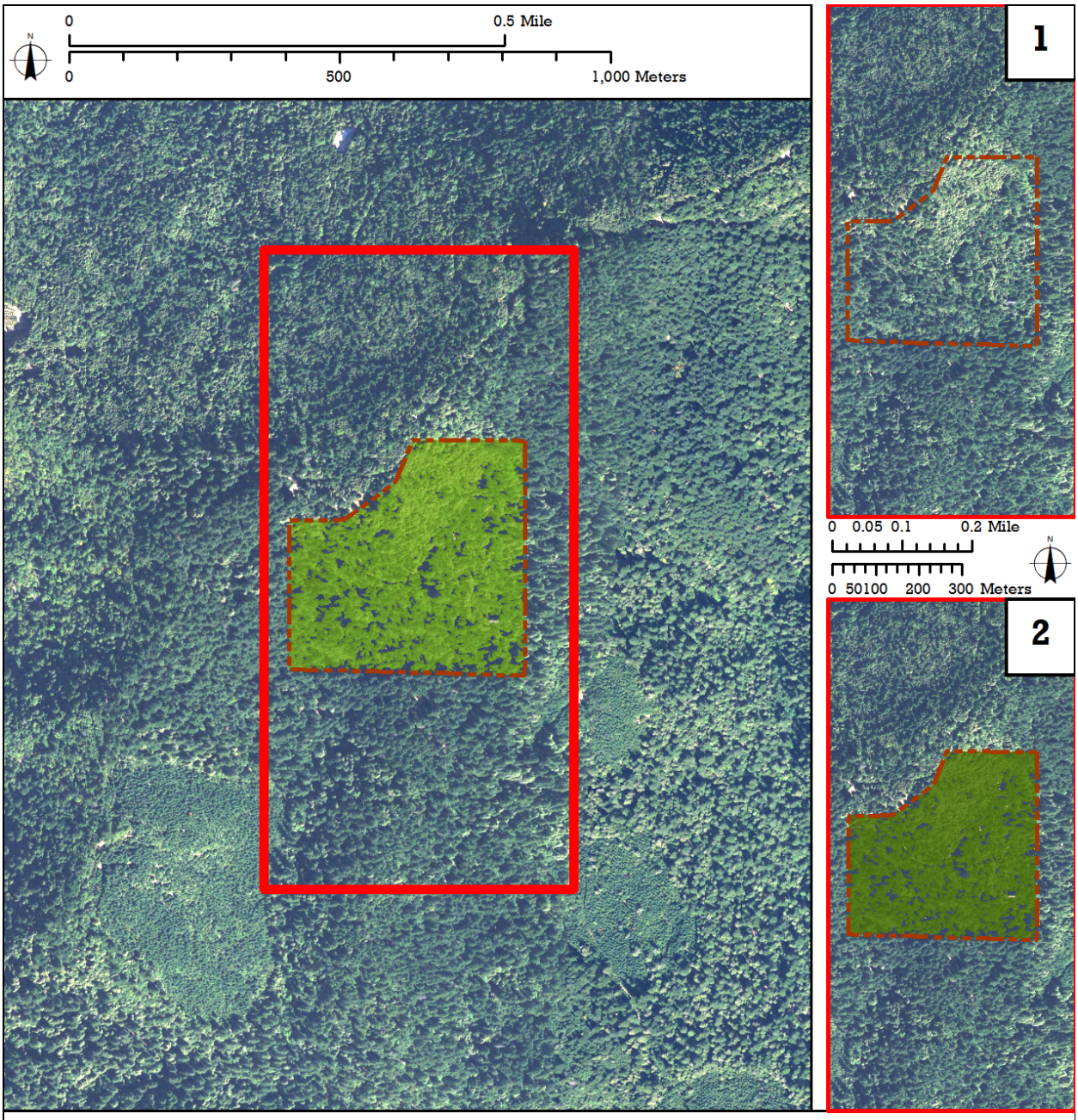
Eureka Timberlands Ownership

Classification Analysis

No Canopy

Tree Canopy

Last published on 2019-07-05.



CT2, LLC
Sustainable Long-Term Harvesting Demonstration
(§3.1(a)(2)(C) 3) for Waterman Ridge Tract

Inset 1 shows a close-up of the 2018 NAIP orthoimagery.
Inset 2 shows the same area as inset 1, with the classification analysis results overlain to demonstrate its accuracy.
Results demonstrate that canopy cover on the entire ownership tract averages: 99%.

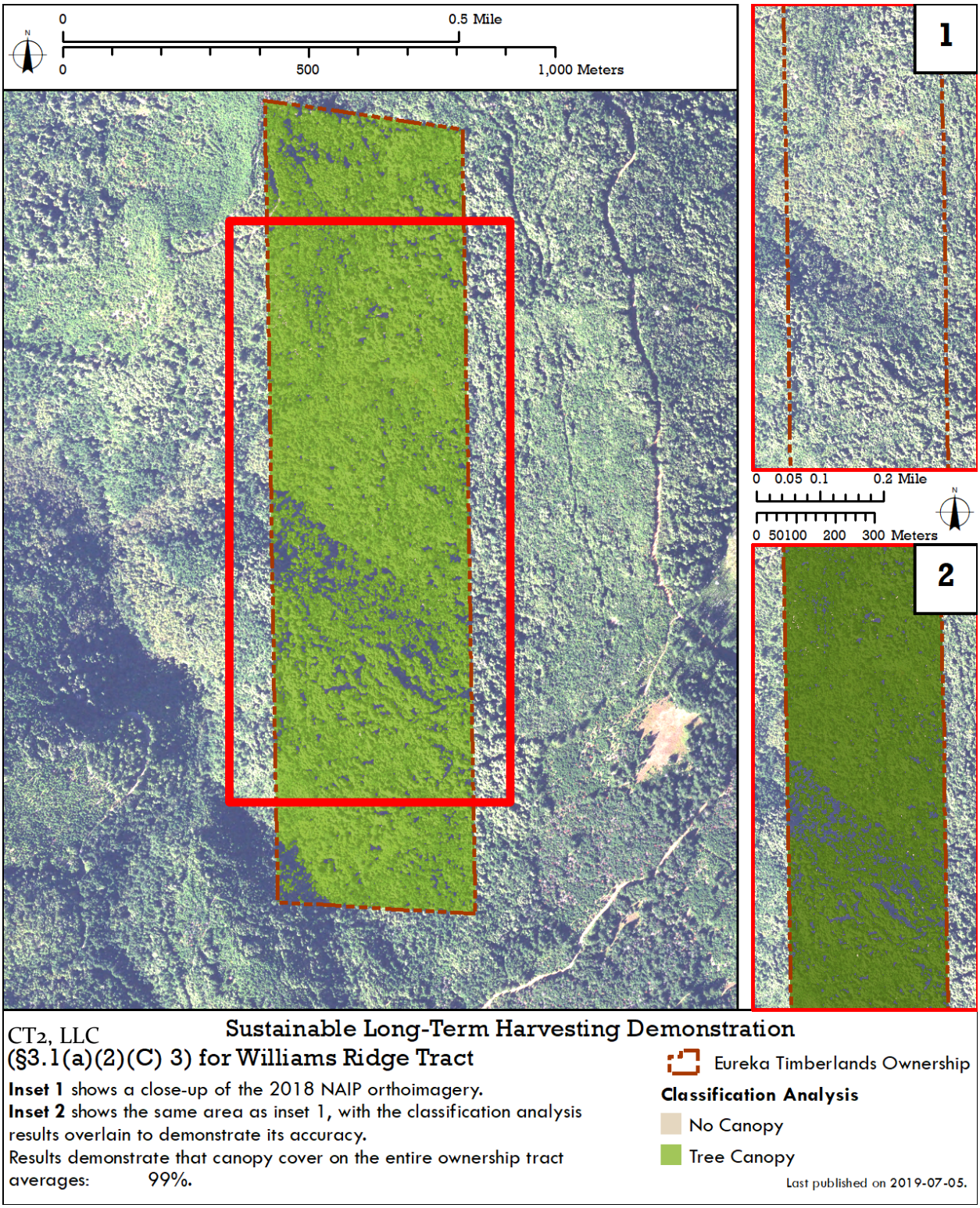
Eureka Timberlands Ownership

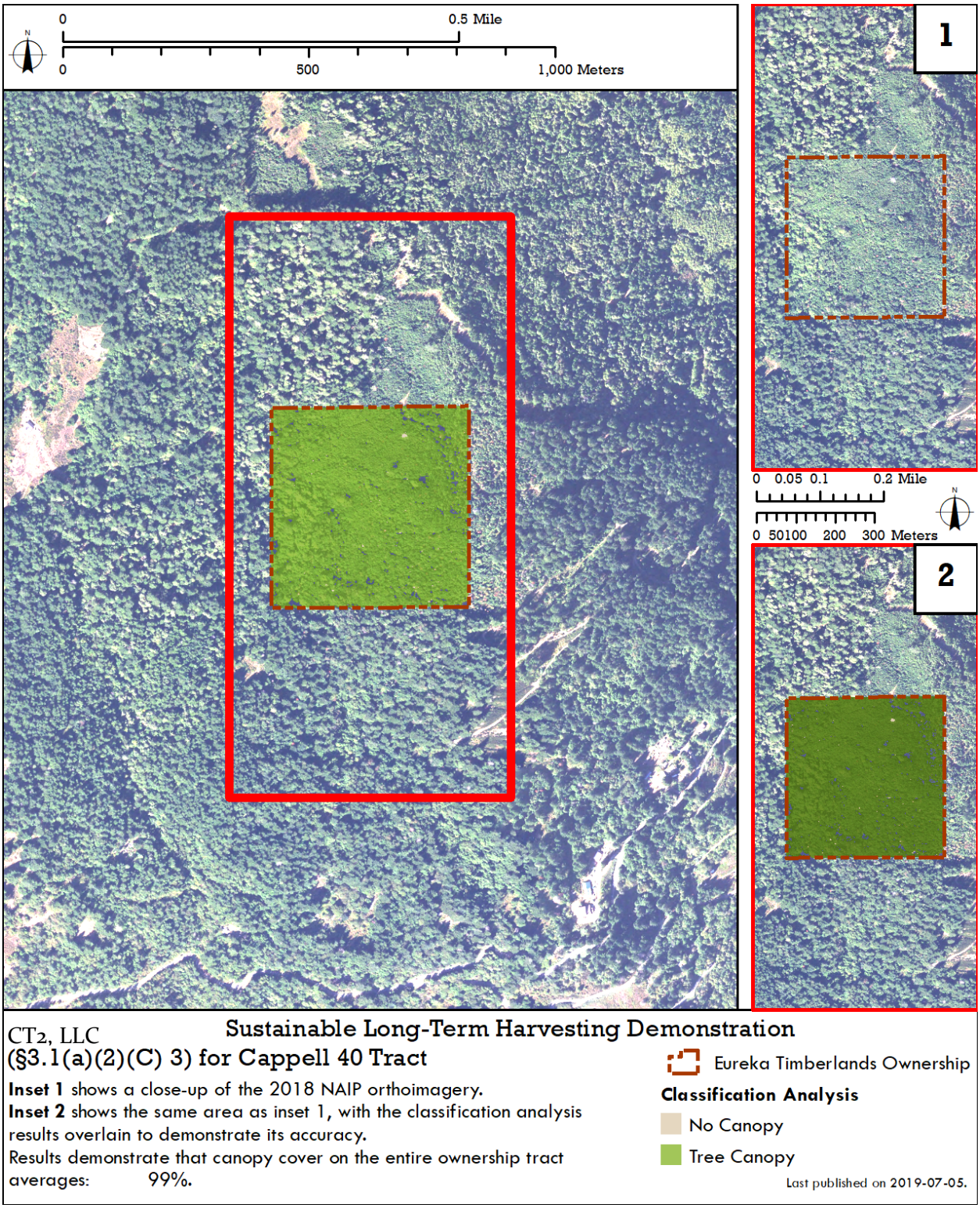
Classification Analysis

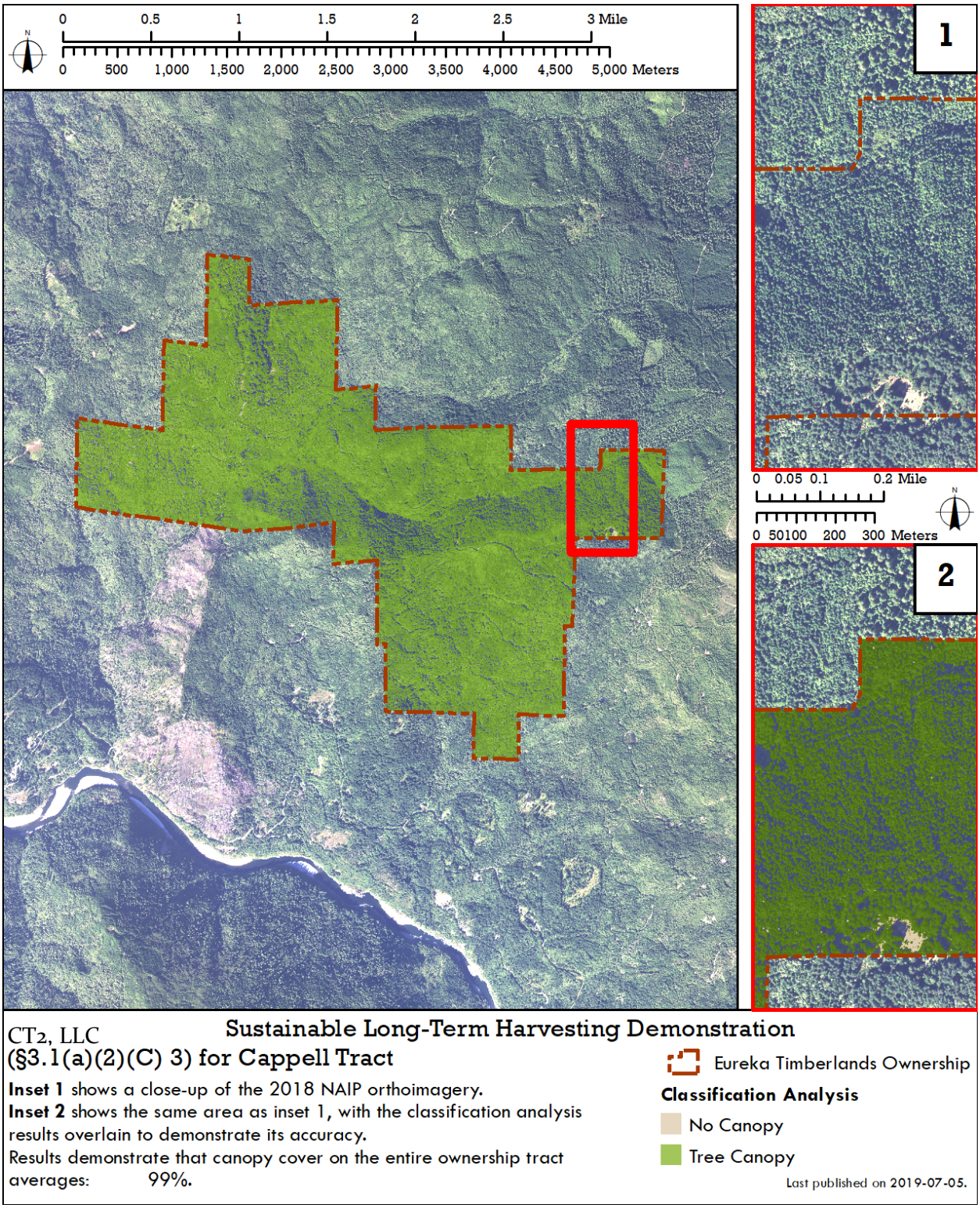
No Canopy

Tree Canopy

Last published on 2019-07-05.


0
0.5 Mile
0
500
1,000 Meters
1
0 0.05 0.1 0.2 Mile
0 50100 200 300 Meters
2
CT2, LLC
Sustainable Long-Term Harvesting Demonstration
(§3.1(a)(2)(C) 3) for Williams Ridge Tract
Inset 1 shows a close-up of the 2018 NAIP orthoimagery.
Inset 2 shows the same area as inset 1, with the classification analysis results overlain to demonstrate its accuracy.
Results demonstrate that canopy cover on the entire ownership tract averages: 99%.
Eureka Timberlands Ownership
Classification Analysis
No Canopy
Tree Canopy
Last published on 2019-07-05.


0
0.5 Mile
0
500
1,000 Meters
1
0 0.05 0.1 0.2 Mile
0 50100 200 300 Meters
2
CT2, LLC
Sustainable Long-Term Harvesting Demonstration
(§3.1(a)(2)(C) 3) for Cappell 40 Tract
Inset 1 shows a close-up of the 2018 NAIP orthoimagery.
Inset 2 shows the same area as inset 1, with the classification analysis results overlain to demonstrate its accuracy.
Results demonstrate that canopy cover on the entire ownership tract averages: 99%.
Eureka Timberlands Ownership
Classification Analysis
No Canopy
Tree Canopy
Last published on 2019-07-05.



CT2, LLC

Sustainable Long-Term Harvesting Demonstration (§3.1(a)(2)(C) 3) for Cappell Tract

Inset 1 shows a close-up of the 2018 NAIP orthoimagery.
Inset 2 shows the same area as inset 1, with the classification analysis results overlain to demonstrate its accuracy.
Results demonstrate that canopy cover on the entire ownership tract averages: 99%.

Eureka Timberlands Ownership

Classification Analysis

No Canopy

Tree Canopy

Last published on 2019-07-05.