

FiniteCarbon

Offset Project Data Report

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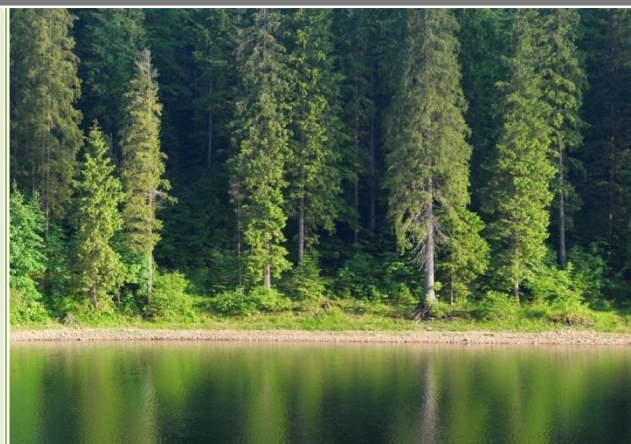
CONNECTING
FORESTRY
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FINANCE

Finite Carbon – Farm Cove Community Forest Project (CAR1063/CAFR5051)

CA EPA Air Resources Board Compliance Offset Protocol
U.S. Forests Projects: Improved Forest Management

Adopted: October 20, 2011

Initial/Annual OPDR for Reporting Period: 01/01/2014 – 07/30/2015



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Table of Contents

1	Introduction	3
1.1	Project Area Description	6
1.2	Land Cover and Land Use: Past and Present	7
1.3	Forest Types, Flora and Fauna	7
1.3.1	Aspen-Birch Woodland	8
1.3.2	Northern Hardwoods: Beech – Birch – Maple Forest	8
1.3.3	Spruce-Fir	8
1.3.4	Northern White Cedar	8
1.3.5	White Pine Forest	8
2	Project Definition and Requirements	8
2.1	Project Type	8
2.2	Forest Owner	9
3	Eligibility Rules and Other Requirements	10
3.1	Additionality	10
3.2	Legal Requirement Test	10
3.3	Performance Test	12
3.4	Project Commencement Date	12
3.5	Crediting Period	13
3.6	Project Life and Minimum Time Commitment	13
3.7	Use of Qualified Conservation Easement	14
3.8	Project Location	14
3.9	Regulatory Compliance	14
4	Sustainable Harvesting and Natural Forest Management Practices	14
4.1	Sustainable Harvesting Practices	14
4.2	Natural Forest Management	14
4.3	Promotion of the Onsite Standing Live Carbon Stocks	21
4.4	Balancing Age and Habitat Classes	21
5	Identifying the Project Area	21
5.1	Defining the Project’s GHG Assessment Boundary	22
6	Quantifying Net GHG Reductions and Removals	24
6.1	Inventory Plan and Design	24
6.2	Field Data Collection	25

6.2.1 Inventory Plot Statistics	26
7 Growth & Yield Model	27
7.1 Model Calibrations.....	27
7.2 Model Plan.....	28
7.3 Estimating Baseline Onsite Carbon Stocks – Private Lands	28
Step 1 – Determine the Common Practice Carbon Stocks for the Project’s Assessment Area	28
Step 2 – Determine if Initial Stocks are Above or Below Common Practice.....	32
Step 3 – Determine Baseline Above-Ground Standing Live Carbon Stocks	34
7.4 Consideration of Legal Constraints	34
7.4.1 Baseline Activities	34
7.4.2 Baseline Legal Constraints	35
7.5 Consideration of Financial Constraints	36
7.6 Minimum Baseline Level.....	37
7.6.1 Setting the Baseline for Above-Ground Standing Live Carbon Stocks	37
Step 4 – Determine the Baseline for All Onsite Carbon Pools	38
8 Estimating Baseline Carbon in Harvested Wood Products	38
9 Determining Actual Onsite Carbon Stocks	41
10 Determining Actual Carbon in Harvested Wood Products	41
11 Quantifying Secondary Effects.....	42
12 Calculating Total Net GHG Reductions and Removals	42
12.1 Confidence Deduction	42
12.2 Total Net GHG Reductions and Removals.....	42
12.3 Final Carbon Pool Totals	42
13 Ensuring the Permanence of Credited GHG Reductions and Removals	43
13.1 Monitoring, Reporting and Verification.....	43
13.2 Regulatory Obligation	43
13.3 Forest Buffer Account.....	43
14 Project Monitoring.....	45
14.1 Methods for Quality Control.....	46
14.1.1 Organization and Responsible Individuals.....	46
14.1.2 Document Control	46
14.1.3 Central Data Repository.....	46
14.2 Accuracy of Project Listing Information.....	46
15 References	48

1 Introduction

California's Cap and Trade Regulation ("Regulation") took effect on January 1, 2012, with amendments to the Regulation effective September 1, 2012. The enforceable compliance obligation began on January 1, 2013. The Air Resources Board (ARB) has developed and implemented a compliance offset program as part of Cap and Trade Program. Covered entities may use a limited number of ARB offset credits to fulfill up to 8% of their compliance obligation. Offset credits are tradable compliance instruments that represent verified greenhouse gas (GHG) emission reductions or removal enhancements made in sectors and sources not covered by the Cap and Trade Program.

The ARB U.S. Forest Projects Compliance Offset Protocol adopted on October 20, 2011 ("Forest Offset Protocol"; "Protocol"; COP; or FOP) provides requirements and methods for quantifying the net climate benefits of activities that sequester carbon on forestland. The protocol provides offset project eligibility rules; methods to calculate an offset project's net effects on GHG emissions and removals of CO₂ from the atmosphere (removals); procedures for assessing the risk that carbon sequestered by a project may be reversed (i.e. released back to the atmosphere); and approaches for long term project monitoring and reporting. The goal of this protocol is to ensure that the net GHG reductions and GHG removal enhancements caused by an offset project are accounted for in a complete, consistent, transparent, accurate, and conservative manner and may therefore be reported as the basis for issuing ARB or registry offset credits. The protocol is built from The Climate Action Reserve's Forest Project Protocol Version 3.2.

Finite Carbon is a forest carbon project developer specializing in the creation and monetization of forest carbon offsets. Combining unparalleled project development experience with extensive carbon market knowledge, Finite Carbon offers the most comprehensive forest carbon project development and commercialization service in the United States. With an in-house team of forest carbon experts, Finite Carbon provides all the expertise and resources for successful implementation of forest carbon inventories, project design, verification management and monetization of carbon offset.

This document is the Offset Project Data Report (OPDR) for Finite Carbon – Farm Cove Community Forest Project ("Farm Cove"), assigned by the Climate Action Reserve, which is an ARB approved Offset Project Registry (OPR), as Project ID: CAR1063. The OPDR and all other project documentation and reports that reference carbon stocks have been prepared and submitted by Steve Dettman, SAF Certified Forester (No. 4019). Additional oversight of forestry documentation and modeling practices was provided by Kyle Burdick, who is a current Maine Licensed Forester operating under license No. LF3582 (see Figure 1) and satisfies the professional forester¹ requirements outlined in the FOP, section 9.1.

¹ The project is located in a jurisdiction (State of Maine) with a Professional Forester law; accordingly oversight by a Maine Licensed Forester has been employed to maintain professional standards and project quality.

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DEPARTMENT OF PROFESSIONAL AND FINANCIAL REGULATION
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BOARD OF LICENSURE OF FORESTERS

KYLE L. BURDICK

FORESTER

License Number: LF3582
Status: [Active](#)
Expiration Date: 12/31/2020
Licensed By: Other

CE Required By: 12/31/2020
CE Hours Required: 6

Mailing Address: PEMBROKE, ME 04666
Primary Phone: +1 (207) 448-2224

History

License Type	Start Date	End Date
FORESTER	05/24/2010	12/31/2020

Supervised License [\(2 records\) hide](#)

Name	Issue Date	License Number
JEREME M. FRANK	04/25/2018	FI3860
LOGAN EARL JOHNSON	01/17/2020	FI4095

License/Disciplinary Action

None.

GENERAL INFORMATION

Other Phone Numbers [\(2 records\) hide](#)

Phone Number	Type
+1 (207) 214-4341	Cell
+1 (207) 448-2224	Office

Figure 1: Registered Forester Certification

Farm Cove is an Improved Forest Management (IFM) project (the “Project”) developed and implemented using the ARB FOP. The project is located in the downeast region of Maine in the United States of America (Figure 2).

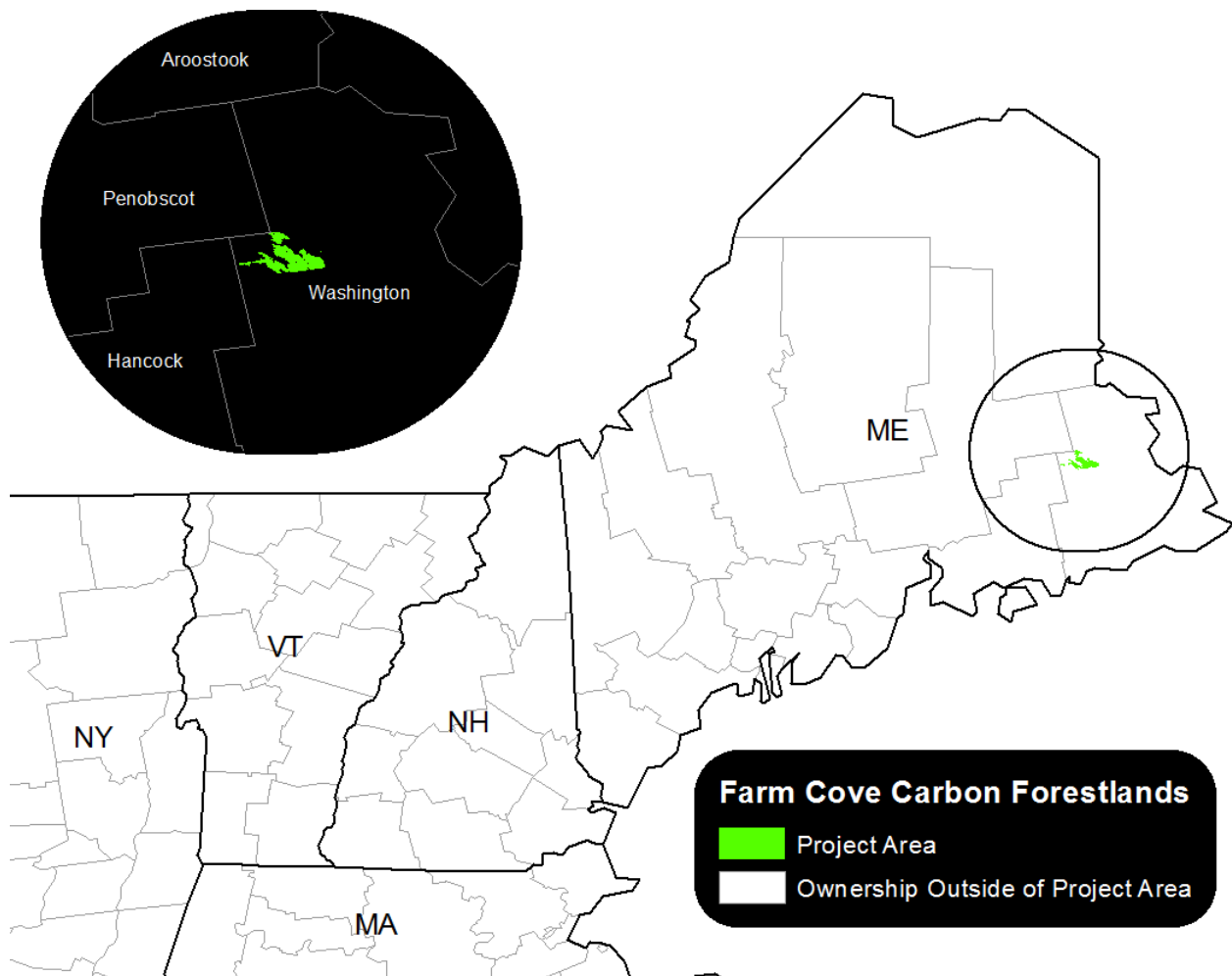


Figure 2: Project Location

The primary goal of the project is to generate carbon offset credits fashioned by the investment objectives of the forest owners (see 2.2). The forest owners' strategy is to maintain and increase additional forest carbon stock by integrating carbon budget analyses into their short- and long-term silvicultural activity planning. The Offset Project Operator (OPO) information is listed below in Table 1. The project was initiated on 04/27/2010 when the OPO submitted listing information to the Offset Project Registry for the purpose of developing an offset project. The OPO has engaged Finite Carbon as the project developer consultant.

Table 1: Offset Project Operator Summary

Offset Project Name:	Finite Carbon – Farm Cove Community Forest Project
OPR Project ID:	CAR1063
Offset Project Commencement Date:	04/27/2010
First Reporting Period Start Date:	01/01/2014
First Reporting Period End Date:	07/30/2015
OPO Contact Person Name and Person Completing Report:	David Montague
OPO Name & Mailing Address:	Downeast Lakes Land Trust 4 Water Street Grand Lake Stream, ME 04668
OPO Contact Email Address:	dmontague@downeastlakes.org
OPO Contact Phone Number:	207-796-2100
OPO's CITSS ID#:	CA1442

1.1 Project Area Description

The project area is located within the Downeast Lakes region of Maine, which encompasses more than 1 million acres of forested lands. The project area contains 19,104 acres in Washington County, Maine near the town of Grand Lake Stream. Milford road bisects the property from east to west. There are numerous private roads throughout the property.

The Community Forest is part of the eastern lowlands biophysical region and located within two watersheds: the St. Croix River, which is the international boundary between Maine and New Brunswick, Canada, and the Machias River, which is designated as important habitat to the Atlantic salmon, a federally threatened species. The Community Forest includes 62 miles of shoreline on six lakes. The topography of the Community Forest is gently rolling with elevations ranging from 240 to 800 feet. Soils consist generally of three series formed from glacial till. The overall condition of the forest is good, with commercial harvesting occurring through the mid-1990's. As a result of past forest management practices, the current tree species composition is heavily skewed towards hemlock, followed by spruce, white pine, and cedar. Softwoods account for approximately 80% of the composition, and hardwoods account for less than 20%.

Due to its location, the project is not in an area that is part of the Public Land Survey System. The project area is located in T5 & T6ND, Washington County Maine.

1.2 Land Cover and Land Use: Past and Present

The project area's history is linked to the village of Grand Lake Stream, once the site of the world's largest tannery. The abundant hemlock resource of the Downeast Lakes Region was essential to the prosperity of this once thriving community. Logging and bark collection were central to the economy of the area; linked closely to the health of the tanning facility.

The Downeast Lakes Region has been a mecca for the sport fishing and gaming crowd since the turn of the 20th century. A vibrant guiding industry developed to provide services to this clientele. The forestlands of the region served the local timber and pulp industry since the advent of the paper industry in the early 1900's. Forestland within the project area were part of the St. Croix Paper Company lands until they were purchased by Georgia-Pacific Corporation. These towns were part of a nearly one-million-acre ownership that stretched across the U.S.-Canadian border. For years the mill required spruce and fir to run until the early 1970's when the pulping process was converted to hardwood.

These towns continue to be within the wood procurement circle of the Domtar facility in Woodland (formerly Georgia-Pacific). The hardwood resource within the project area has been significantly reduced because of past forest management. Management in the past was market driven. Trees weren't harvested unless a market existed for them once cut. In a forest type such as this, this type of harvesting ensured the perpetual presence of a forest cover because market specifications demanded larger sized timber. The small (5" – 10") trees generally remained to grow. As market conditions changed, so did harvest methods and the harvest intensity. In the early 1970's, Georgia-Pacific's whole tree chipping had a dramatic impact on harvesting. Using this method of in-woods product transformation, whole trees were converted to usable chips, blown into vans and transported to the mill.

This technology had an impact on the forests within the project area, although to a lesser extent than other areas of the region. Because of the small amount of hardwood acreage on these towns they areas were essentially commercially clearcut in the early 1980s. In the mid-1980s and early 1990s, markets for hemlock logs developed in Asia. Georgia-Pacific used the abundant and ever-increasing hemlock resource on their lands to supply this market out of Eastport, Maine. Much of the mature hemlock on these towns was harvested at that time.

In 1999, Georgia-Pacific sold all of its Maine and New Brunswick timberlands to an investor group – Wagner Forest Management assumed management of the lands. A limited harvest was conducted in 2001.

The 19,104-acre Farm Cove Community Forest Carbon Project is owned by the Downeast Lakes Land Trust (DLLT). DLLT was formed in 2001 by a committed group of residents from Grand Lake Stream and surrounding communities for the purposes of managing land for the benefit of the community and the region. The land trust worked diligently in cooperation with the New England Forestry Foundation and Wagner Forest Management to negotiate the acquisition of the property and placement of a conservation easement on the tract. DLLT's mission seeks to ensure the long-term economic and environmental well-being of the Downeast Lakes region through the conservation and exemplary management of its undeveloped woodlands.

Currently, timber harvests and overall forest management activities are certified to the Forest Stewardship Council (FSC). The property is protected by a working forest conservation easement and future uses will consist of commercial forestry practices as well as recreation and wildlife habitat management.

1.3 Forest Types, Flora and Fauna

The property is predominantly forested with softwood, mixed wood, and hardwood forest types. As a result of past forest management practices, the current tree species composition is heavily skewed towards hemlock, followed by spruce, white pine, and cedar. Softwoods account for approximately 80% of the composition, and hardwoods account for less than 20%.

1.3.1 Aspen-Birch Woodland

Paper birch, big-toothed aspen, quaking aspen, and red maple are the most common trees. Shrub layer is variable, but commonly includes shadbush and gray birch. Typical herbaceous species include bracken fern, Canada mayflower, and sheep fescue. This forest type typically develops in small to large patches (up to several hundred acres) after heavy disturbance (fire or clearcutting). Early successional, often followed by one of the other types listed below. Ruffed grouse and American woodcock commonly use young stands with dense sapling cover and little herbaceous cover. Snags remaining after wildfire in northern or eastern occurrences of this community type provide foraging strata for three-toed woodpeckers and perches for the rare olive-sided flycatcher.

1.3.2 Northern Hardwoods: Beech – Birch – Maple Forest

Various mixes of beech, yellow birch, red maple, and sugar maple are dominant; mixed wood stands may include up to 50% hemlock, red spruce, or balsam fir. The shrub layer is variable and dominated by regenerating overstory species. In northern New England this is typically a matrix-forming ecosystem that covers large areas of the landscape where better soils are found. This forest type provides nesting habitat for many passerine bird species. Most notable are the black-throated blue warblers, but also includes black-throated green warblers, pose-breasted grosbeak, scarlet tanager, and ovenbird. They also provide important habitat for American marten and white-tailed deer.

1.3.3 Spruce-Fir

Stands ranging from pure red spruce to pure balsam fir. On Grand Lake Stream these stands have a particularly high hemlock component. They also sometimes include a significant white pine or hardwood (red maple and yellow birch) component. A matrix-forming ecosystem in northern New England found on cool, moist, and/or lower-fertility sites. The areas provide essential winter cover required by white-tailed deer and other important game species. Dense regenerating conifers provide habitat for snowshoe hare.

1.3.4 Northern White Cedar

These conifer bogs include both northern white cedar swamps found in level basins and cedar-spruce seepage forests on gentle slopes. In addition to cedar these areas include a mix of red and black spruce, red maple, balsam fir, eastern hemlock and eastern white pine. The shrub and ground layers are variable, forming a lush mosaic of vegetated hillocks interspersed with moist hollows. The understory is largely northern white cedar and balsam fir.

1.3.5 White Pine Forest

A closed canopy forest type in which white pine is dominant. Includes a significant northern white cedar, red spruce, and balsam fir component. In many of these forests the dense and strongly coniferous canopy limits understory growth. The herbaceous layer commonly includes lowbush blueberry, forbs, and ferns. This forest community is used as nesting habitat by coniferous or mixed forest specialist bird species such as the sharp-shinned hawk, pine warbler, black-throated green warbler, blackburnian warbler, and red crossbill.

2 Project Definition and Requirements

2.1 Project Type

Farm Cove is an *Improved Forest Management* project type and the forest owner declares:

The project area takes place on forestland that has greater than 10 percent tree canopy cover. In 2015, the project area was estimated to have 74.6 percent tree canopy cover. Percent Canopy Cover (PCC) is the percentage of the ground area that is directly covered with tree crowns and was computed from inventory data for each stratum.

The project employs natural forest management practices as defined in Section 3 of the FOP and demonstrated by its ongoing forest certification under the Forest Stewardship Council (FSC) program administered by Rainforest Alliance – SmartWood (Certificate Registration Code:SW-FM/COC-002682)

The project does not employ broadcast fertilization.

Previously Listed and/or Registered Forest Offset Project Details:

☒ (N/A if not checked): The offset project is an early action offset project transitioning to the FOP according to the provisions of the Regulation and the FOP.

Early Action OPR: Climate Action Reserve

Early Action OPR Project ID: CAR657

Early Action ARB Project ID: CAFR0002

iv. Reporting Periods: 04/27/2010-12/31/2014

v. Vintages: 2011, 2012, 2013

vi. Total Number of Early Action Offset Project ARBOCs Issued: 242,131

ARB Project ID # by Reporting Period	Vintage Year	ARB Offset Credits Issued/ Vintage Year	ARB Offset Credits in Forest Buffer Account	Date of ARB Issuance	Invalidation Timeframe	Start of Invalidation Timeframe
CAFR0002-A	2011	242,131	46,577	11/12/2013	8 years	11/12/2012

☐ (N/A if not checked): No GHG reductions or GHG removal enhancements associated with the Project lands have ever been listed or registered with, or otherwise claimed by, another registry or program, or sold to a third party prior to listing, including;

No lands within the Project Area have ever been listed or registered with an offset project registry or program in the past.

No greenhouse gas emission reductions or removal enhancements associated with Project lands within the Project area have been credited or claimed for the purpose of greenhouse gas mitigation or reduction goals, whether in a voluntary or regulatory context.

The project takes place on private lands.

2.2 Forest Owner

For the initial reporting period (01/01/2014 – 07/30/2015), the subject reporting period being verified under this OPDR) there was one forest owner, Downeast Lakes Land Trust (DLLT). DLLT is also the sole owner in fee of the project area forestlands.

No other entity besides the forest owner stated above has control over the forest or management. All information submitted to ARB or an Offset Project Registry shall reference the Offset Project Operator and all Forest Owner(s) who are ultimately responsible for the accuracy and completeness of the information submitted.

3 Eligibility Rules and Other Requirements

3.1 Additionality

The Project yields surplus GHG emission reductions or removal enhancements that exceed any GHG reductions or removals otherwise required by law or regulation, or any GHG reduction or removal that would otherwise occur in a conservative Business-As-Usual Scenario and according to ARB's legal requirement and performance tests. The project is not being implemented and conducted as the result of any law, statute, regulation, court order, or other legally binding mandate.

3.2 Legal Requirement Test

The project only asserts claims on emission reductions and removals that are above and beyond all laws, regulations and legally binding mandates for purposes of additionality. Table 2 list all rules and regulations that were reviewed and considered as part of quantifying GHG removals and reductions and ensuring legal additionality.

Table 2: Evaluation of Rules and Regulations subject to the Project Area

Rule/Regulation	Description	Notes
Conservation Easement	The easement is considered a working forest conservation easement. It was recorded in May, 2005 and covers 15,332 acres of forests, wetlands and bogs.	The purpose of the easement is to maintain the property forever in its present and historic primarily undeveloped condition in a manner that allows its continued operation as a Community Forest with the perpetual ability to produce forest products, and to conserve and/or enhance forest wildlife and habitats, undeveloped shoreline, and historic public recreation opportunities of the property for present and future generations.
Endangered Species Act (ESA) & Maine Department of Inland Fisheries & Wildlife (MDIFW) Species of Special Concern	The Endangered Species Act (ESA) provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing ESA are the U.S. Fish and Wildlife Service (FWS) and the U.S. National Oceanic and Atmospheric Administration (NOAA) Fisheries Service. The FWS maintains a worldwide list of endangered species. Species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees.	Habitat protection considerations are applied in both the baseline and project scenarios; however, there have been no observed or detected endangered species in the Project area that would require any restrictions on forest management activities as a result of the ESA.
Clean Water Act (CWA) of 1972 & Best Management Practices for Forestry: Protecting Maine's Water Quality (2004)	The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The Maine BMP publication is primarily a reference and training tool designed to help foresters and loggers become better informed about the best management practices for protecting water quality during timber harvests.	The recommended procedures from the state BMPs are assumed to be adhered to in both the baseline and project implementation. These procedures work in concert with the regulations established by the State of Maine Rule Chapters (detailed below) to protect water quality in the Project Area.

National Wild & Scenic Rivers Act	The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.	There are no nationally designated wild and scenic rivers in the Project area, or close enough to have a direct impact on forest management activities. www.rivers.gov/
Maine Forest Practices Act – State of Maine Rule Chapters for the Department of Agriculture, Conservation and Forestry	Chapter 10: Land use Districts and Standards, Maine Land Use Regulation Commission (LURC). Chapter 20: Forest Regeneration and Clearcutting Standards, Maine Department of Conservation, Maine Forest Authority: 12 MRSA c. 805, sub-c. III-A Chapter 21: Maine Department of Conservation – Statewide Standards for Timber Harvesting in Shoreland Areas Chapter 23: Timber Harvest Standards to substantially Eliminate Liquidation Harvesting.	The timber harvesting limitations for P-SL1 and P-GP subdistricts are the most relevant and restrictive constraints in the LURC rules. In order to be conservative, these constraints were applied to <u>all</u> LURC zones found on the property. The requirements limit timber harvesting, in any 10-year period, to removals of no more than 40% of the volume or basal area. Even-aged silviculture used for Intolerant Hardwoods (IH) is the only strata affected by this regulation. IH covers 3,834 acres or 20% of the 19,104-acre project area. To ensure harvested stands meet the size and separation zone requirement in the regulation, the harvest model cuts more than 1,741 acres of IH per 10-year period (less than 1% of the project area annually). Consideration of Shoreland areas was incorporated by over laying the LURC zones with Shoreland areas to ensure all shoreland requirements were met. The LURC restrictions cover the shoreland areas and also satisfy the Shoreland limitation of no more than 40% volume or basal area removals. While the conservative silvicultural treatments selected for the baseline and project scenarios used would comply with this regulation, the standard does not directly apply to DLLT because more than five years has passed since the original purchase (2004) of property.
Other Local Ordinances	n/a	There are no local ordinances or regulations in the towns or counties of the project area that affect timber harvesting.

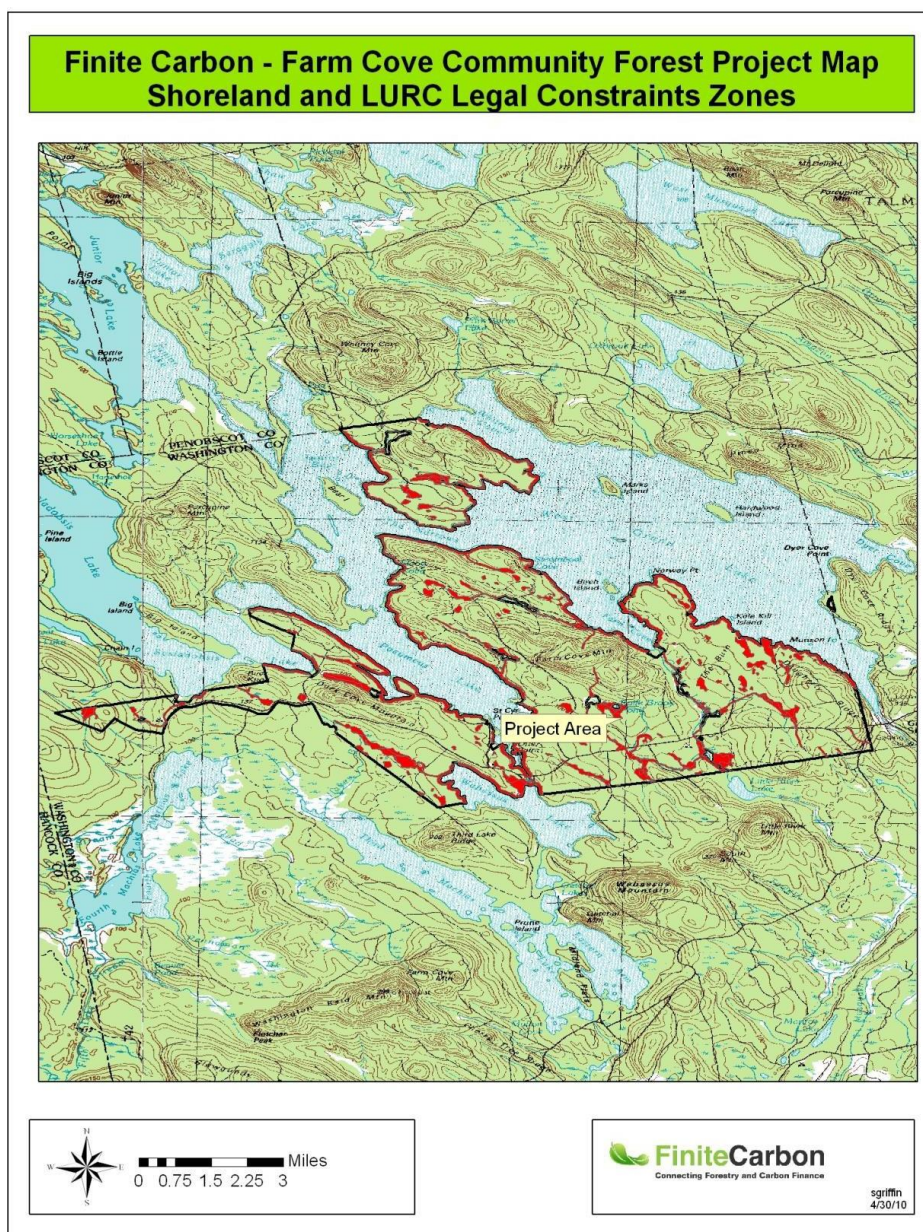


Figure 3: Constraints relative to Project Area

These legal constraints are reflected in the project's modeled baseline carbon stocks, as required in section 6.2 of the FOP. The Forest Owner has also signed all of the attestations indicating the project is in compliance with all laws and has been voluntarily implemented. The Forest Project and associated Project lands have met and been in compliance with all local, state, and federal regulatory requirements during the reporting period.

3.3 Performance Test

Since the project is an Improved Forest Management project, it automatically satisfies the performance test.

3.4 Project Commencement Date

An Improved Forest Management project's offset project commencement date must be linked to a discrete, verifiable action that delineates a change in practice relative to the Forest Project's baseline. Any one of the

following actions denotes an Improved Forest Management project's offset project commencement date:

- Recordation of a conservation easement on the Project Area. The date the easement was recorded is the Forest Project's offset project commencement date.
- Transferring of property ownership (to a public or private entity). The offset project commencement date is the date of property transfer.
- Submitting the offset project listing information specified in Section 9.1.1. Offset project commencement is the date of submittal of listing information, provided that the offset project completes verification within 30 months of being submitted. If the offset project does not meet this deadline, the listing information must be resubmitted under the latest version of the protocol.

Adequate documentation denoting the offset project commencement date must include where applicable, deeds of trust, title reports, conservation easement documentation, dated forest management plans, and/or other relevant contracts or agreements.

The project commencement date is April 27, 2010 when the forest owner submitted listing information to the Offset Project Registry for the purpose of developing an offset project. The discrete, verifiable action identifying the project commencement date for this project reflects an initiation of a commitment to employ practices and technologies that will maintain or increase net carbon stocks for the duration of the FOP's commitment period. The OPO has uploaded verifiable evidence to the OPR project account for verification purposes demonstrating the commencement date.

Additionally, no GHG reductions or GHG removal enhancements associated with the Project lands have ever been listed or registered with, or otherwise claimed by, another registry or program, or sold to a third party prior to listing, including;

- a. No lands within the Project Area have ever been listed or registered with an offset project registry or program in the past.
- b. No greenhouse gas emission reductions or removal enhancements associated with Project lands within the Project area have been credited or claimed for the purpose of greenhouse gas mitigation or reduction goals, whether in a voluntary or regulatory context.

3.5 Crediting Period

The crediting period for offset projects using the FOP is 25 years. This means that after a successful initial verification, a Forest Project will be eligible to receive Offset Credits for GHG reductions and/or removals quantified using this protocol, and verified by ARB-approved verification bodies, for a period of 25 years following the offset project's commencement date (or 25 years following the start of the initial reporting period, whichever is most recent). A project may be renewed for subsequent crediting periods, subject to approval at that time and use of the quantification methods in the most recent approved version of the Forest Offset Protocol at the time of renewal. The baseline for any Forest Project under this version of the Forest Offset Protocol is valid for the duration of the Project Life following a successful initial verification where the offset project receives a Positive Verification Statement. The crediting period for the project starts January 1, 2014 and ends no later than December 31, 2039, a period equal to 25 years.

3.6 Project Life and Minimum Time Commitment

The project will monitor and verify forest carbon stocks for a period of 100 years following the last year of the issuance of any ARB Offset Credits (ARBOCs) or Registry Offset Credits (ROCs).

3.7 Use of Qualified Conservation Easement

- ☒ The Project does not employ a qualified conservation easement at this time as defined in the FOP.
☐ The Project does employ a qualified conservation easement at this time as defined in the FOP.

3.8 Project Location

The project is located in the United States of America on privately held land.

Furthermore, the offset project ☐ does / ☒ does not occur on any of the following categories of land:

- a. Land that is owned by, or subject to an ownership or possessory interest of a Tribe;
- b. Land that is “Indian lands” of a Tribe, as defined by 25 U.S.C. §81(a)(1); or
- c. Land that is owned by any person, entity, or Tribe, within the external borders of such Indian lands.

Specifically, it is situated in the county of Washington, ME. The approximate geometric center of the project area is 45.1980° latitude, -67.8840° longitude.

3.9 Regulatory Compliance

The forest owner attests that the project is in material compliance with all applicable laws relevant to the project activity and as described in section 3.2 Legal Requirement Test.

4 Sustainable Harvesting and Natural Forest Management Practices

This project employs both sustainable harvesting practices and natural forest management practices over time as described below.

4.1 Sustainable Harvesting Practices

Commercial harvesting is planned in the project area at both a strategic and operational level. The forest owner elects to demonstrate sustainable long-term harvesting practices and harvest levels which can be permanently sustained over time on all of its forest landholdings, including the project area, using the forest certification option. All of the forest owner’s landholdings, including the project area, are certified under the Forest Stewardship Council (FSC) program, administered through the Rainforest Alliance’s sustainable forestry program. The Certification Registration Code is: RA-FM/COC-002682. The current certificate was issued on October 16, 2012 and is valid until October 15, 2017. The license can be validated on the FSC Public Certificate Search website (<https://us.fsc.org/fsc-certificate-database.311.htm>).

Furthermore, since the project commencement date, the forest owner has not acquired new forest landholdings within their entity during this reporting period. The forest owner confirms that any new landholdings acquired in the future will be incorporated under their current forest certification license within one year of the acquisition date.

4.2 Natural Forest Management

The evaluation worksheet provided in Table 3.2 of the FOP was used to determine that the project fully meets the criteria and requirements for the establishment and maintenance of native species and natural forest management. The test results are summarized in Table 3 below.

Table 3: Evaluation Criteria for Native Species and Natural Forest Management

<i>Criteria</i>	<i>Response</i>
Native Species	
Project consists of at least 95% native species based on the sum of carbon in the standing live pool. The assessment shall be conducted using estimates of stems per acre for Reforestation Projects and basal area per acre for Improved Forest Management and Avoided Conversion Projects.	Basal area per acre by species (standing live) was calculated for all strata using inventory data and then weighted by area (project area only). Native tree species constituted 100 percent of standing live carbon (Table 4).
Composition of Native Species	
Improved Forest Management and Avoided Conversion Projects Where the Project Area naturally consists of a mixed species distribution, no single species' prevalence, measured as the percent of the basal area of all live trees in the Project Area, exceeds the percentage value of standing live carbon shown under the heading 'Composition of Native Species' in the Assessment Area Data File maintained on the ARB's website.	No single species' prevalence, measured as the percent of the 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' (SDI) (Table 4).
Distribution of Age Classes/Sustainable Management	
All forest landholdings owned or controlled by the Forest Owner are currently under one of the following: 1. 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, or 2. Operating under 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, or 3. The Forest Owner must employ uneven-aged silvicultural practices and canopy retention averaging at least 40 percent 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 project elects option 1. All of the forest owner's landholdings, including the project area, are certified under the Forest Stewardship Council (FSC) program, administered through the Rainforest Alliance's sustainable forestry program. The Certification Registration Code is: RA-FM/COC-002682. The current certificate was issued on October 16, 2012 and is valid until October 15, 2017.
On a watershed scale up to 10,000 acres (or the project area, whichever is smaller), all projects must maintain, or make progress toward maintaining, no more than 40 percent of their forested acres in ages less than 20 years. (Areas impacted by Significant Disturbance may be excluded from this test.)	Overall, the Project Area holds less than 26.84% percent of its forested acres in ages less than 20 years. The Project Area was divided by watershed sub-basin to comply with the 10,000-acre threshold in the FOP and individual watershed percentages are provided later in the document.

Structural Elements (Standing and Lying Dead Wood)

Forest Owners must ensure that lying dead wood is retained in sufficient quantities, as described below.

For portions of the Project Area that have not recently undergone salvage harvesting:

If a verifier determines that the quantity of lying dead wood is commensurate with recruitment from standing dead trees (i.e. there is no evidence that lying dead wood has been actively removed), the Forest Owner must maintain (or demonstrate ongoing progress toward) an average of at least:

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

If a verifier determines that the quantity of lying dead wood is **not** commensurate with recruitment from standing dead trees (i.e. it appears lying dead wood has been actively removed), the Forest Owner must maintain (or demonstrate ongoing progress toward) an average of at least:

- two (2) metric tons of carbon (C) per acre; or
- 1% of standing live carbon stocks, in *standing* dead wood, whichever is higher,

Standing dead wood may be evenly or unevenly distributed throughout the portion of the Project Area unaffected by salvage harvesting, as long as the appropriate minimum average tonnage per acre requirement is met.

For portions of the Project Area that have undergone salvage harvesting within the previous year:*

If a verifier determines that the quantity of lying dead wood following salvage harvest is commensurate with recruitment from standing dead trees, the project must maintain (or demonstrate ongoing progress toward) an average of at least two (2) metric tons of carbon (C) per acre in standing dead wood,

If a verifier determines that the quantity of lying dead wood following harvest is not commensurate with recruitment from standing dead trees, the project must maintain (or demonstrate ongoing progress toward) an average of at least four (4) metric tons of carbon (C) per acre in standing dead wood,

Standing dead wood may be evenly or unevenly distributed throughout the portion of the Project Area subject to salvage harvesting, as long as the appropriate minimum average tonnage per acre requirement is met.

This requirement must be met for a period of 30 years following the salvage harvest. After 30 years, the portion of the Project Area subject to salvage harvesting must meet the requirements for portions that have not recently undergone salvage harvesting (described above).

At the end of reporting period 1 (7/30/2015), the actual onsite carbon for standing dead wood in the entire project area was less than 1 metric ton of carbon per acre. While the project area may not currently meet the requirement of at least one (1) metric ton of carbon (C) per acre in standing dead wood, it has specific components in its management plans to demonstrate progress towards maintaining and increasing structural elements in standing dead wood.

Structural elements in all areas are likely to increase because the forest owner does not have policies or implement timber harvesting treatments which actively remove standing or lying dead wood.

In addition, the forest owner maintains a commitment and demonstrates ongoing progress toward adequately recruiting snags, and subsequently down dead wood, through a commitment and implementation of their FSC Forest Management Plan. FSC also requires the forest owner to provide adequate habitat for species associated with large and/or decaying trees and dead wood. Some stands may take extensive time to develop these structural elements. Evidence of ongoing progress includes measurable goals (e.g., annual activity reviews and planning for the Conservation Easement, as well as application of silviculture systems and harvesting practices that develop and maintain these structures over time). Long-term passive approaches are also used to develop snags and coarse down and dead woody material by allowing retention trees (e.g., large live decay trees) to die naturally, rather than girdling and/or felling trees specifically for that purpose. Trees with decay or declining health include but are not limited to cavity trees. While species selected for retention should be generally representative of the species found on the site, flexibility in the proportions of species retained may be based on ecological and financial objectives.

Table 4: Standing live basal area and percentage by species (RP1)

Species ID	Common Name	Scientific Name	BA (sqft/ac)	Percent
261	Eastern Hemlock	<i>Tsuga canadensis</i> (L.) Carrière	42.40	33.64%
097	Red Spruce	<i>Picea rubens</i> Sarg.	17.55	13.92%
241	Northern White-Cedar	<i>Thuja occidentalis</i> L.	13.55	10.75%
371	Yellow Birch	<i>Betula alleghaniensis</i> Britton	9.90	7.85%
531	American Beech	<i>Fagus grandifolia</i> Ehrh.	8.65	6.86%
129	Eastern White Pine	<i>Pinus strobus</i> L.	7.50	5.95%
375	Paper Birch	<i>Betula papyrifera</i> Marsh.	7.00	5.55%
316	Red Maple	<i>Acer rubrum</i> L.	6.40	5.08%
012	Balsam Fir	<i>Abies balsamea</i> (L.) Mill.	5.14	4.08%
095	Black Spruce	<i>Picea mariana</i> (Mill.) Britton, Sterns & Poggenb.	1.52	1.21%
743	Bigtooth Aspen	<i>Populus grandidentata</i> Michx.	1.31	1.04%
746	Quaking Aspen	<i>Populus tremuloides</i> Michx.	0.92	0.73%
315	Striped Maple	<i>Acer pensylvanicum</i> L.	0.79	0.63%
318	Sugar Maple	<i>Acer saccharum</i> Marsh.	0.72	0.57%
761	Pin Cherry	<i>Prunus pensylvanica</i> L. f.	0.58	0.46%
541	White Ash	<i>Fraxinus americana</i> L.	0.50	0.40%
379	Gray Birch	<i>Betula populifolia</i> Marsh.	0.42	0.33%
125	Red Pine	<i>Pinus resinosa</i> Aiton	0.41	0.33%
126	Pitch Pine	<i>Pinus rigida</i> Mill.	0.29	0.23%
701	E. Hophornbeam	<i>Ostrya virginiana</i> (Mill.) K. Koch	0.28	0.22%
094	White Spruce	<i>Picea glauca</i> (Moench) Voss	0.08	0.06%
071	Tamarack	<i>Larix laricina</i> (Du Roi) K. Koch	0.08	0.06%
543	Black Ash	<i>Fraxinus nigra</i> Marsh.	0.05	0.04%
833	Northern Red Oak	<i>Quercus rubra</i> L.	0.01	0.01%
Total Native			126.05	100.00%
Total			126.05	100.00%

Table 5: Composition of Native Species (RP1)**Strata/Assessment Area: Conifer Bog (SDI: 80 percent)**

Species ID	Common Name	Scientific Name	BA (sqft/ac)	% BA
241	Northern White-Cedar	Thuja occidentalis L.	62.5	39.8%
095	Black Spruce	Picea mariana (Mill.) Britton, Sterns & Poggenb.	49.1	31.2%
097	Red Spruce	Picea rubens Sarg.	15.6	10.0%
261	Eastern Hemlock	Tsuga canadensis (L.) Carrière	15.0	9.5%
012	Balsam Fir	Abies balsamea (L.) Mill.	5.6	3.6%
129	Eastern White Pine	Pinus strobus L.	2.4	1.5%
371	Yellow Birch	Betula alleghaniensis Britton	2.4	1.5%
316	Red Maple	Acer rubrum L.	2.2	1.4%
071	Tamarack	Larix laricina (Du Roi) K. Koch	1.6	1.0%
375	Paper Birch	Betula papyrifera Marsh.	0.7	0.4%
			157.1	

Strata/Assessment Area: Poplar/Birch (SDI: 75 percent)

Species ID	Common Name	Scientific Name	BA (sqft/ac)	% BA
261	Eastern Hemlock	Tsuga canadensis (L.) Carrière	55.5	42.3%
371	Yellow Birch	Betula alleghaniensis Britton	17.2	13.1%
097	Red Spruce	Picea rubens Sarg.	10.4	7.9%
375	Paper Birch	Betula papyrifera Marsh.	10.3	7.9%
531	American Beech	Fagus grandifolia Ehrh.	9.9	7.6%
316	Red Maple	Acer rubrum L.	7.7	5.9%
241	Northern White-Cedar	Thuja occidentalis L.	4.6	3.5%
012	Balsam Fir	Abies balsamea (L.) Mill.	4.3	3.3%
743	Bigtooth Aspen	Populus grandidentata Michx.	3.4	2.6%
746	Quaking Aspen	Populus tremuloides Michx.	2.7	2.0%
129	Eastern White Pine	Pinus strobus L.	1.9	1.5%
761	Pin Cherry	Prunus pensylvanica L. f.	0.9	0.7%
315	Striped Maple	Acer pensylvanicum L.	0.9	0.7%
125	Red Pine	Pinus resinosa Aiton	0.4	0.3%
541	White Ash	Fraxinus americana L.	0.4	0.3%
318	Sugar Maple	Acer saccharum Marsh.	0.3	0.2%
379	Gray Birch	Betula populifolia Marsh.	0.2	0.2%
094	White Spruce	Picea glauca (Moench) Voss	0.2	0.1%
701	E. Hophornbeam	Ostrya virginiana (Mill.) K. Koch	0.1	0.1%
			131.4	

Strata/Assessment Area: Northern Hardwoods (SDI: 70 percent)

Species ID	Common Name	Scientific Name	BA (sqft/ac)	% BA
261	Eastern Hemlock	<i>Tsuga canadensis</i> (L.) Carrière	37.0	32.1%
531	American Beech	<i>Fagus grandifolia</i> Ehrh.	21.3	18.5%
371	Yellow Birch	<i>Betula alleghaniensis</i> Britton	20.2	17.5%
375	Paper Birch	<i>Betula papyrifera</i> Marsh.	11.4	9.9%
097	Red Spruce	<i>Picea rubens</i> Sarg.	9.8	8.5%
761	Pin Cherry	<i>Prunus pensylvanica</i> L. f.	2.6	2.2%
316	Red Maple	<i>Acer rubrum</i> L.	2.4	2.1%
379	Gray Birch	<i>Betula populifolia</i> Marsh.	2.4	2.1%
315	Striped Maple	<i>Acer pensylvanicum</i> L.	2.3	2.0%
701	E. Hophornbeam	<i>Ostrya virginiana</i> (Mill.) K. Koch	1.2	1.0%
129	Eastern White Pine	<i>Pinus strobus</i> L.	1.0	0.9%
241	Northern White-Cedar	<i>Thuja occidentalis</i> L.	1.0	0.8%
318	Sugar Maple	<i>Acer saccharum</i> Marsh.	0.8	0.7%
012	Balsam Fir	<i>Abies balsamea</i> (L.) Mill.	0.8	0.7%
746	Quaking Aspen	<i>Populus tremuloides</i> Michx.	0.7	0.6%
743	Bigtooth Aspen	<i>Populus grandidentata</i> Michx.	0.5	0.4%
833	Northern Red Oak	<i>Quercus rubra</i> L.	0.1	0.0%
			115.25	

Strata/Assessment Area: Spruce-Fir (SDI: 70 percent)

Species ID	Common Name	Scientific Name	BA (sqft/ac)	% BA
261	Eastern Hemlock	<i>Tsuga canadensis</i> (L.) Carrière	41.7	33.4%
097	Red Spruce	<i>Picea rubens</i> Sarg.	21.3	17.1%
241	Northern White-Cedar	<i>Thuja occidentalis</i> L.	13.4	10.8%
531	American Beech	<i>Fagus grandifolia</i> Ehrh.	10.0	8.0%
371	Yellow Birch	<i>Betula alleghaniensis</i> Britton	8.6	6.9%
129	Eastern White Pine	<i>Pinus strobus</i> L.	6.5	5.2%
316	Red Maple	<i>Acer rubrum</i> L.	5.7	4.6%
375	Paper Birch	<i>Betula papyrifera</i> Marsh.	5.6	4.5%
012	Balsam Fir	<i>Abies balsamea</i> (L.) Mill.	4.6	3.7%
318	Sugar Maple	<i>Acer saccharum</i> Marsh.	1.2	1.0%
095	Black Spruce	<i>Picea mariana</i> (Mill.) Britton, Sterns & Poggenb.	1.1	0.8%
743	Bigtooth Aspen	<i>Populus grandidentata</i> Michx.	1.0	0.8%
315	Striped Maple	<i>Acer pensylvanicum</i> L.	0.7	0.5%
125	Red Pine	<i>Pinus resinosa</i> Aiton	0.6	0.5%
126	Pitch Pine	<i>Pinus rigida</i> Mill.	0.6	0.5%
541	White Ash	<i>Fraxinus americana</i> L.	0.5	0.4%
379	Gray Birch	<i>Betula populifolia</i> Marsh.	0.4	0.3%
701	E. Hophornbeam	<i>Ostrya virginiana</i> (Mill.) K. Koch	0.4	0.3%
761	Pin Cherry	<i>Prunus pensylvanica</i> L. f.	0.4	0.3%
			124.8	

Strata/Assessment Area: Pine Forests (SDI: 65 percent)

Species ID	Common Name	Scientific Name	BA (sqft/ac)	% BA
261	Eastern Hemlock	<i>Tsuga canadensis</i> (L.) Carrière	36.3	29.0%
241	Northern White-Cedar	<i>Thuja occidentalis</i> L.	22.0	17.6%
097	Red Spruce	<i>Picea rubens</i> Sarg.	18.7	14.9%
129	Eastern White Pine	<i>Pinus strobus</i> L.	17.3	13.9%
012	Balsam Fir	<i>Abies balsamea</i> (L.) Mill.	8.5	6.8%
316	Red Maple	<i>Acer rubrum</i> L.	8.4	6.7%
375	Paper Birch	<i>Betula papyrifera</i> Marsh.	6.0	4.8%
371	Yellow Birch	<i>Betula alleghaniensis</i> Britton	3.1	2.5%
746	Quaking Aspen	<i>Populus tremuloides</i> Michx.	1.1	0.8%
531	American Beech	<i>Fagus grandifolia</i> Ehrh.	1.0	0.8%
541	White Ash	<i>Fraxinus americana</i> L.	0.8	0.6%
743	Bigtooth Aspen	<i>Populus grandidentata</i> Michx.	0.6	0.5%
315	Striped Maple	<i>Acer pensylvanicum</i> L.	0.5	0.4%
095	Black Spruce	<i>Picea mariana</i> (Mill.) Britton, Sterns & Poggenb.	0.3	0.2%
094	White Spruce	<i>Picea glauca</i> (Moench) Voss	0.2	0.1%
125	Red Pine	<i>Pinus resinosa</i> Aiton	0.1	0.1%
761	Pin Cherry	<i>Prunus pensylvanica</i> L. f.	0.1	0.1%
379	Gray Birch	<i>Betula populifolia</i> Marsh.	0.1	0.1%
318	Sugar Maple	<i>Acer saccharum</i> Marsh.	0.0	0.0%
			125.0	

Table 6: Project Area Age Classes relative to Watersheds

Sum of ACRES	Watershed (HUC12)							Grand Total
	Chain Stream	Fifth Machias Lake-Fourth Machias Lake	Little River	Pocumcus Lake	Sysladobsis Lake	Third Machias Lake-First Machias Lake	West Grand Lake	
Age Class								
Non-forested	1.41	0.18	53.79	75.23	14.77	4.01	46.18	195.56
Early Successional R/S (0-10yrs)			149.94	259.57		28.58	63.38	501.46
Early Successional S/SP (10-30yrs)		5.64	942.20	1,490.76	337.30	70.88	1,583.69	4,430.47
Intermediate	31.44	18.62	3,131.52	3,392.34	522.00	246.15	2,923.39	10,265.46
Mature	92.50	21.65	1,152.15	1,354.28	189.77	9.82	890.52	3,710.70
Grand Total	125.34	46.09	5,429.61	6,572.18	1,063.84	359.44	5,507.15	19,103.66
% of TOTAL in Early Successional or NF	1.12%	12.62%	21.11%	27.78%	33.09%	28.79%	30.75%	26.84%

Early Successional is estimated between 0-30 years of age; Non-forested is conservatively assumed to be recently cleared

Source Data: CAR1063_WatershedAgeClass_v2.shp

4.3 Promotion of the Onsite Standing Live Carbon Stocks

Since the project start date, the Project's monitoring reports do not indicate a decrease in the standing live carbon stocks over any 10-year consecutive period.

4.4 Balancing Age and Habitat Classes

A variety of silvicultural practices may be employed in the Project Area during the course of a Forest Project though the protocol does not endorse any particular practice. To ensure environmental integrity, Forest Projects must meet a minimum set of standards in the use of any such practices. For projects that employ even-aged management practices, harvesting must be limited to stands no greater than 40 acres. Stands adjacent to recently harvested stands must not be harvested using an even-aged harvest until the average age of the adjacent stand is at least 5-years old, or the average height in the adjacent stand is at least 5 feet. On a watershed scale up to 10,000 acres, all projects must maintain, or make progress toward maintaining, no more than 40 percent of their forested acres in ages less than 20 years. Areas impacted by a Significant Disturbance are exempt from this test until 20 years after reforestation of such areas.

Since the project commencement date, no harvesting has occurred in stands that qualify as "even-aged management" to the extent where the residual stand was less than 5 years old and less than 5 feet in height.

Additionally, all harvest units from reporting period 1 are adjacent to stands that are at least 5 years old or 5 feet in height.

The project's commitment and environmental integrity to management practices with respect to balancing age classes and habitat structure is also strengthened through its enrollment in third-party forest certification (i.e. adherence to Forest Stewardship Council Principles and Criteria).

5 Identifying the Project Area

The methodology used to determine the project area boundaries and area (calculated GIS acres) is described by Equation 1 below. The equation was applied using the following steps:

1. The equation to determine the Project area is:

$$PROJAREA = FARMCOVEAREA STANDS - ROADS AREA \quad (1)$$

Where: $PROJAREA$ = Total acres in project area

$FARMCOVEAREA$ = Total stands acres in Farm Cove ownership area (includes fee simple land)
 $STANDS$ =

$ROADS AREA$ = Area in Public Roads and Private Haul Roads

Using Equation 1, the project area is 19,103.7 acres

5.1 Defining the Project's GHG Assessment Boundary

This section was adapted from the FOP, Table 5.2 and describes the project's GHG assessment boundary.

Table 7: Sources, Sinks, and Reservoirs

SSR	Description	Type	Gas	Quantification Method	Justification/Explanation
Primary Effect Sources, Sinks, and Reservoirs					
IFM-1	Standing live carbon (carbon in all portions of living trees)	Reservoir / Pool	CO2	Baseline: Modeled based on initial field inventory measurements Project: Measured by field measurements and updating forest carbon inventory	Increases in standing live carbon stocks are likely to be the largest primary effect of Improved Forest Management Projects.
IFM-3	Standing dead carbon (carbon in all portions of dead, standing trees)	Reservoir / Pool	CO2	Baseline: Modeled based on initial field inventory measurements Project: Measured by updating forest carbon inventory	Improved Forest Management Projects may significantly increase standing dead carbon stocks over time.
IFM-6	Soil Carbon	Reservoir / Pool	CO2	*Included/ Excluded Soil carbon must be included in the Offset Project Boundary, if any of the following activities occur: Site preparation activities involve deep ripping, furrowing, or plowing where soil disturbance exceeds (or is expected to exceed from the baseline characterization and modeling) 25 percent of the Project Area over the Project Life, or Mechanical site preparation activities are not conducted on contours.	Excluded because the conditions in the FOP Table 5.2 that would require inclusion of this pool (deep ripping, furrowing, or plowing where soil disturbance exceeds 25% of the Project Area, or mechanical site preparation that is not conducted on contours) are not planned.

IFM-7	Carbon in in-use forest products	Reservoir / Pool	CO2	Baseline: Estimated from modeled harvesting volumes Project: Estimated from measured harvesting volumes	Included because many Improved Forest Management Projects may significantly change carbon storage in in-use forest products relative to baseline levels. Treated as a “source/sink” because forest product carbon is quantified according to the change in harvesting volumes, relative to baseline levels, in each year. Of this change (increase or decrease), only the average amount of carbon expected to remain stored for 100 years is included in the final quantification of annual net GHG removals/emissions. This approach accounts for CO2 emissions from decomposition or disposal of wood products (see SSR #IFM-17).
IFM-8	Forest product carbon in landfills	Reservoir / Pool	CO2	Baseline: Estimated from modeled harvesting volumes Project: Estimated from measured harvesting volumes	Because of significant uncertainties associated with forecasting the quantity of forest product carbon that will remain stored in landfills, landfill carbon is excluded from quantification in years when project harvesting volumes exceed baseline volumes. Landfill carbon is included, however, in years when project harvesting volumes are below baseline levels. This case-dependent exclusion or inclusion is necessary to ensure that total GHG reductions and removals caused by the Forest Project are not overestimated.
Secondary Effect Sources, Sinks, and Reservoirs					
IFM-9	Biological emissions from site preparation activities	Source	CO2	Baseline: N/A Project: Quantified based on measured carbon stock changes in included reservoirs (SSR #IFM-6, where applicable)	Biological emissions from site preparation are not quantified separately, but rather are captured by measuring changes in included carbon reservoirs (soil carbon, where applicable). For other carbon reservoirs, changes are unlikely to have a significant effect on total quantified GHG reductions/removals.
IFM-14	Biological emissions/removals from changes in harvesting on forestland outside the Project Area	Source / Sink	CO2	Baseline: N/A Project: Estimated using a default 20% “leakage” factor applied to the difference in harvest volume relative to Baseline	Improved Forest Management Projects may either increase or decrease harvesting relative to baseline levels. If harvesting is reduced in the Project Area, harvesting on other lands may increase to compensate for the lost production. This “leakage” effect is included in the GHG Assessment Boundary. If harvesting is increased in the Project Area, harvesting on other lands may decrease in response to the increased production. The reduction in harvesting may lead to increased carbon stocks on other lands. Carbon stock increases on other lands are excluded from the GHG Assessment Boundary, however, because it is not possible to ensure their permanence.
IFM-17	Biological emissions from decomposition of forest products	Source	CO2	Baseline: Quantified as a component of calculating carbon stored for 100 years in wood products (SSR #IFM-7) and landfills (SSR #IFM-8) Project: Quantified as a component of calculating carbon stored for 100 years in wood products (SSR #IFM-7) and landfills (SSR #IFM-8)	CO2 emissions from the decomposition of forest products are built into calculations of how much forest product carbon will remain in in-use wood products and in landfills, averaged over 100 years.

6 Quantifying Net GHG Reductions and Removals

6.1 Inventory Plan and Design

The baseline inventory was planned and implemented by the landowner's forestry consultant and completed in 2010. A remeasurement of the project area onsite carbon stocks was conducted in the summer of 2015. The primary land use for the region is forestry. Review of air photos and satellite images reveal a forest dominated landscape with minor agricultural uses in some areas. Review of air photos and satellite images reveal a forest dominated landscape with minor agricultural uses in some areas. The forest project lies entirely in the 4b and 5a climate zones as shown on USDA FS mapping for the region. The forest inventory will serve to directly estimate the IFM-1 and IFM-3 carbon pools described in Section 5.1 as well as indirectly estimate the remaining carbon pools required by the FOP for an IFM project.

The stratification used in the project was based on the previous owner's stand typing classification. These forest cover types were subsequently mapped to the appropriate FOP Assessment Areas (i.e. forest vegetative communities) listed in the Assessment Area Data File for the project's Supersection. The tree species found in any particular stratum in the project area were also consistent with the species listed in the Assessment Area Data File. Forest cover type designations were estimated based on existing forest inventory data and geographic information systems (GIS), and validated in the field during the forest inventory conducted for the project. Final determination of the strata was based on species composition and current stocking according to the species listed in the Assessment Area Data File. The strata in the project area inventory are shown in Figure 4.

The number of plots in each stratum, i.e. sampling intensity, was formulated based on precision targets of historical measures of variance of the property. The target statistical error was ± 5 percent for onsite forest carbon at a 90 percent confidence interval. The sampling intensity was determined as 502 plots. Plots were allocated along a randomly placed grid within stratum delineations (i.e. polygons), with grid lines generally running along one of two perpendicular azimuths, north/south or east/west. All plots were assigned GPS coordinates and stored in the project geodatabase. A total of 5 plots were not measured in the correct location during the initial inventory. As a result, these were considered zero tally plots for determining the carbon averages by strata. These plots will be measured prior to the next site visit verification.

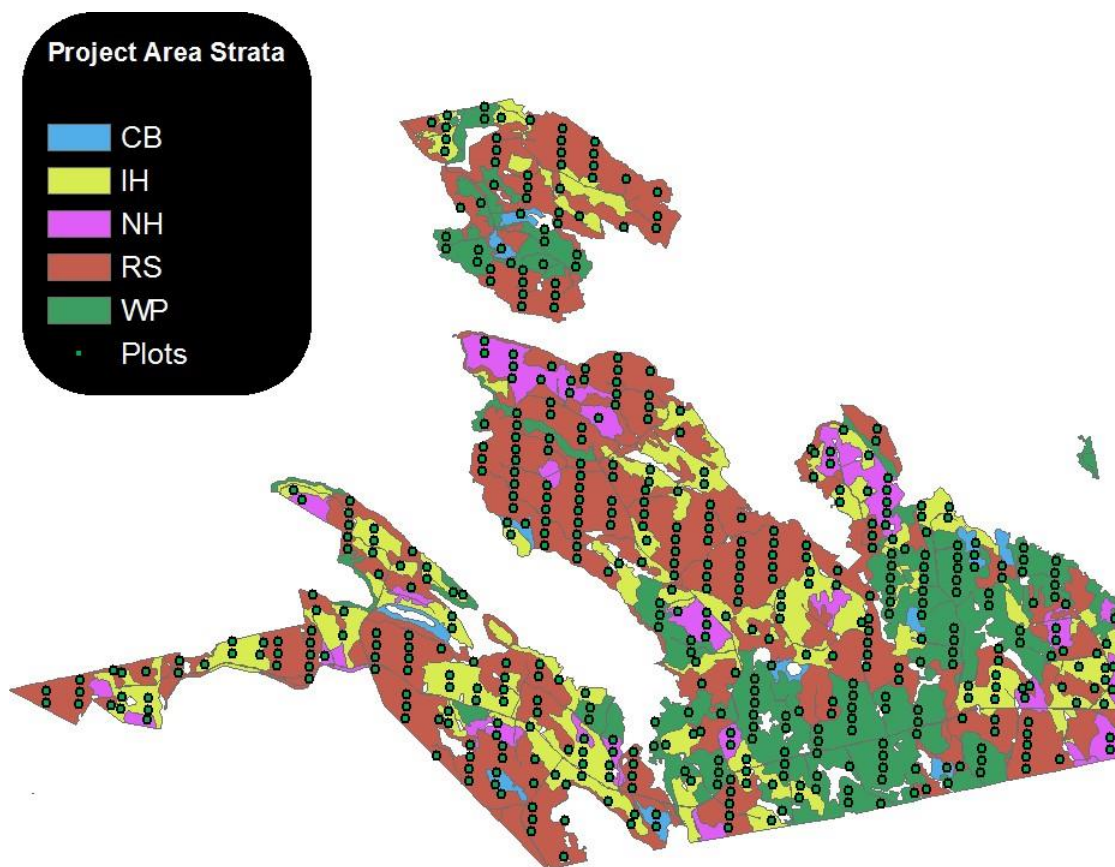


Figure 4: Cruise lines and plots for baseline inventory

6.2 Field Data Collection

All cruisers were provided with GIS developed base maps for the cruise. Each plot center was located using 3 to 5 meter accuracy GPS (WAAS enabled) units. Plot centers were permanently monumented with steel pipe, pins or rebar and paint. Cruisers also used GPS to locate or update base map features as well as ground-truth forest types and stand lines.

Tree data was then systematically collected using 1/15th acre fixed radius sampling plot for all stems 5.0 inches dbh and larger. A nested plot of 1/250th acre for trees below 4.9 inches dbh and greater than or equal to 1.0 inches dbh was also collected at the same plot center. All borderline trees were measured to the geometric center of the base of the tree using approved devices, including slope adjustments for slopes of 10% and greater in accordance with the USFS procedures laid out in the forest management field book 2008 edition.

The following data was collected for all standing live or dead trees in the plot starting with the first “in” tree immediately east of magnetic north from plot center:

- tree species;
- diameter at breast height;
- height of each stem;

- Standing Dead Form Class

In order to verify the quality of the data collection, the contractor performed an internal audit of the data. This audit consisted of a minimum of 5% of the samples collected. Initially, audits addressed all cruisers equally. If however, individual cruisers were found to be consistently out of compliance, the auditor or audit team then focused on individuals in order to verify compliance with the specifications.

Audit reports were generated weekly throughout the inventory project and were submitted with per cruiser audit totals and results. The final audit results were provided to Finite Carbon at the completion of the project and included audit dates, number of audited samples per cruiser including sample location identifiers, total audited samples vs. total samples as a percent, corrective actions per cruiser, any plots re-done due to non-compliance, and overall auditor's comments.

Corrective actions: Re-training non-compliant cruisers, correcting erroneous samples, and gathering missing data were the minimum corrective actions implemented. Based on the results of audits, if a cruiser repeatedly did not meet the quality standards for allowable error, all points for that cruiser were re-done by a new cruiser that met the quality thresholds.

6.2.1 Inventory Plot Statistics

A statistical analysis of the 2015 inventory of onsite carbon stock within forested acres was conducted. The onsite carbon stock for each plot was determined using the ARB published cubic foot volume and biomass equations for projects in the states outside of California, Washington, and Oregon as referenced by species in Table 10. The mean, standard error and 90 percent confidence interval for onsite carbon stock were then calculated for each stratum from their respective plot carbon stocks. The confidence interval was determined as the product of the standard error and 1.645.

Percent error by stratum was determined by dividing half of the width of the confidence interval by the mean. The percent error for tCO_{2e} per acre for all actual onsite carbon stocks combined was calculated by strata at a 90 percent confidence level (Table 8). The total project uncertainty (sampling error) was 3.52%

Table 8: Summary of Percent Error by Strata and Project Total

Confidence Statistics Row Labels	Count of PlotID	Average of Sum	Acres	Avg AG	TOTAL AG	TOTAL	StDev	Half 90% CI	% Error	TCSxPE
CB	13	81.43	369.80	61.40	22,707.75	30,112.32	50.38	22.98	28.22%	72,228,595.77
IH	103	98.88	3,833.60	79.26	303,833.57	379,073.82	42.53	6.89	6.97%	698,352,960.73
NH	39	86.89	1,477.88	70.20	103,742.71	128,407.33	43.35	11.42	13.14%	284,744,053.09
RS	240	88.84	9,173.17	70.67	648,263.05	814,972.02	42.90	4.55	5.13%	1,745,609,423.77
WP	107	82.04	4,249.24	64.76	275,168.98	348,625.71	41.62	6.62	8.07%	790,919,423.04
TOTAL	502		19,103.69	70.86						3,591,854,456.39
									TOTAL	3.52%

7 Growth & Yield Model

Forest inventory field data was transferred to the project developer in a database, along with all relevant GIS files. A project geodatabase serves as the central data repository for spatial data. The inventory data was then reformatted for input to the Forest Vegetation Simulator (Crookston 2003). The Forest Vegetation Simulator (FVS) is a family of forest growth simulation models supported and maintained by a special unit of the USDA Forest Service (www.fs.fed.us/fmfc/fvs/). Since its initial development in 1973, it has become a system of highly integrated analytical tools. These tools are based upon a body of scientific knowledge developed from decades of natural resources research. The FVS growth model is an approved ARB growth model (FOP 3.2, Appendix B, Section B.1).

The FVS is an individual-tree, distance-independent growth and yield model (Dixon 2002). It has been calibrated for specific geographic areas (variants) of the United States. FVS can simulate a wide range of silvicultural treatments for most major forest tree species, forest types, and stand conditions. The Northeastern (NE) Variant (Keyser 2008) has been used for the Farm Cove Carbon project.

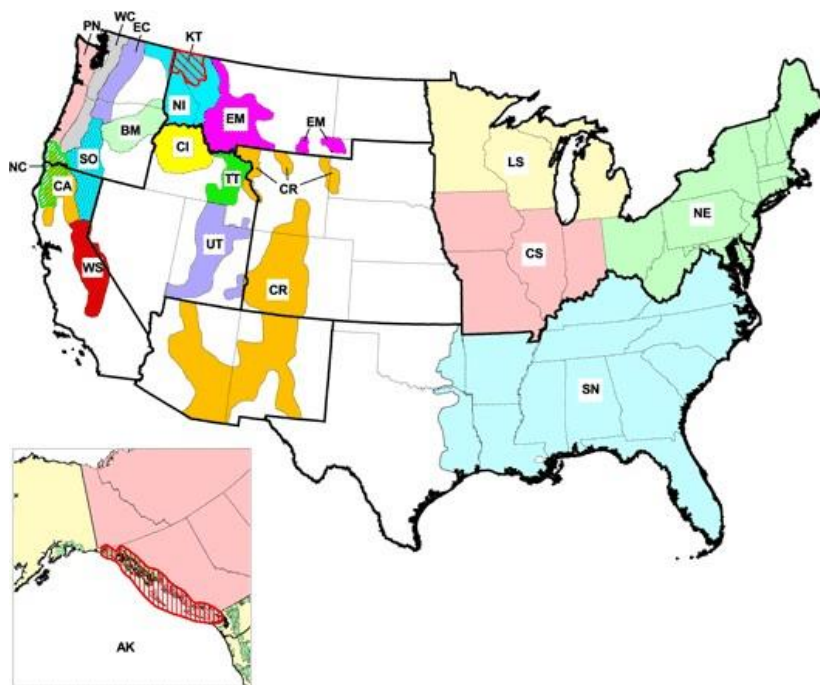


Figure 5: FVS Variants Map

Tree data is entered directly into the model with the inventory sampling design in order to grow the stands and perform simulated management activities in both the baseline and project scenario. FVS outputs a tree list with tree level attributes which are used to apply the appropriate cubic foot volume and biomass equations by species for the respective ARB Supersections for projects located outside of California, Washington or Oregon as published on the ARB's website. The calculated results, in both wood volume and forest carbon, were summarized at the strata level to create yield tables based on just growth or harvest treatment type.

7.1 Model Calibrations

The variant ("NE") and project location code (indicating the closest National Forest – in this case, 922-White Mountain) were input to the model along with the inventory design parameters for proper calibration. Several site trees were measured in the initial inventory to help calibrate the growth model. Red Spruce is a dominate species and comprises the largest assessment area. Red Spruce site-trees indicate a lower SI than default FVS settings. Therefore, a site index of 43 (43' @ 50 years old) for Red Spruce was input as the site species within FVS. The site

index for other species is adjusted using a transformation methodology based on species-specific factors (Keyser 2008). Consultation with the forest owner's professional forester confirmed the FVS site index values were appropriate for the project area as well. The full list of site index values used by species is found in the FVS output files provided under separate cover for verification purposes.

7.2 Model Plan

A description of all the silviculture methods modeled in the baseline can be found under "Baseline Activities" in Section 7.4 including a description of trees harvested/retained, harvest frequency and regeneration assumptions. A description of how legal constraints affect forest management and the silviculture methods used to ensure the constraint is respected can be found under "Baseline Legal Constraints" in Section 6.2.1. A description of the site indices used for each species and an explanation of the source of the site index values used can be found in the FVS output files provided under separate cover for verification purposes.

The following section numbers reference those of section 6.2 in the FOP for Improved Forest Management projects.

7.3 Estimating Baseline Onsite Carbon Stocks – Private Lands

Step 1 – Determine the Common Practice Carbon Stocks for the Project's Assessment Area

The project area is situated in the Maine - New Brunswick Foothills and Lowlands supersection.

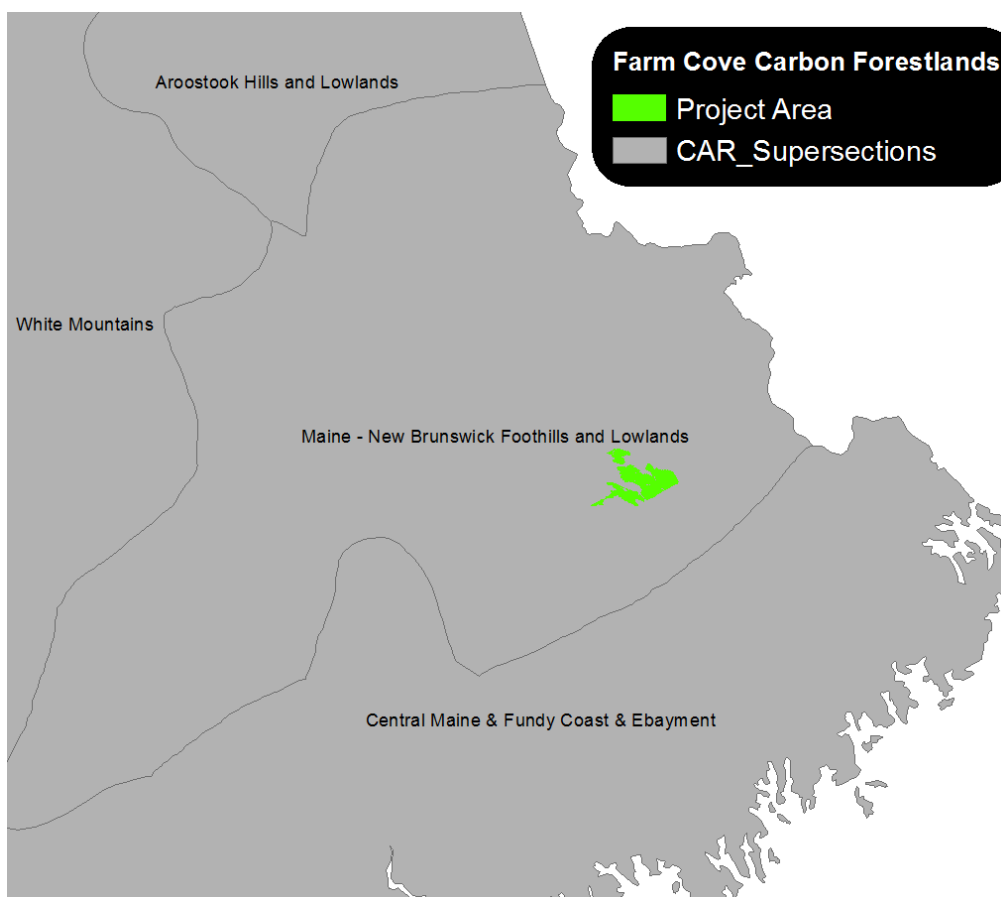


Figure 6: Project Area relative to CAR Supersections

The project area was further classified into Assessment Areas by associating the corresponding species composition from FOP Appendix F with that of the broad forest types mapped for each stratum and stand based on aerial photography analysis and field validation during the forest carbon inventory in 2010. Forest cover types identified in the project area were mapped to five Assessment Areas.

Table 9: Common Practice Assessment Area Data

Assessment Area	Associated Species	Site Class	Per Acre			Species Diversity Index	Fire Risk Rating
			Board Feet	Basal Area (Square Feet per Acre)	Common Practice - Above Ground Carbon Mean (Metric Tonnes CO ₂ -equivalent)		
Maine - New Brunswick Foothills and Lowlands Conifer Bog	White cedar, tamarack	All	2,878	119	51	80%	4%
Maine - New Brunswick Foothills and Lowlands Lowland Hardwoods	Balsam poplar, black ash, american elm, red maple, silver maple, sweetbay, swamp tupelo, sycamore, pecan	All	900	50	26	60%	4%
Maine - New Brunswick Foothills and Lowlands Northern Hardwoods	Willow, black cherry, white ash, yellow poplar, basswood, beech	Low	1,811	85	53	70%	4%
		High	2,230	92	54	70%	4%
Maine - New Brunswick Foothills and Lowlands Pine Forests	White pine, eastern hemlock, red oak, white ash, jack pine, red oak, pitch oak, Hickory	All	5,528	141	80	65%	4%

Maine - New Brunswick Foothills and Lowlands Poplar/Birch	aspen, gray birch, paper birch	All	1,614	80	41	75%	4%
Maine - New Brunswick Foothills and Lowlands Spruce-Fir	Balsam fir, eastern hemlock, larch, Norway spruce, red spruce, white spruce	High	3,348	112	55	70%	4%
		Low	2,830	100	48	70%	4%

For Assessment Areas where data are attributed for high and low site classes, Forest Owners must further stratify the Project Area and identify the acreage that falls within each site class. For site class stratification purposes, a high site class means a Timber Site I or II (Forest Service Types I, II, and III). A low site class means a Timber Site III, IV, or V (Forest Service Types IV – VII). Landowners must determine the portion of the Project Area that is in each site class for each Assessment Area using soils data from a state or federal agency, direct site class data from a state or federal agency, attestation from a state forester, or through field analysis.

The proportion of project area that is in each site class for each Assessment Area to calculate the final common practice stocks was determined by overlaying soils data with the forest stands layer. A soils dataset² from a federal agency was used to completely cover the project area. Site classes were spatially explicit based on these soil layers but site index values used for modeling, while still species specific, were the same across the entire project area representing an appropriate property-wide average. Site class (high or low) was assigned to each forest stand.

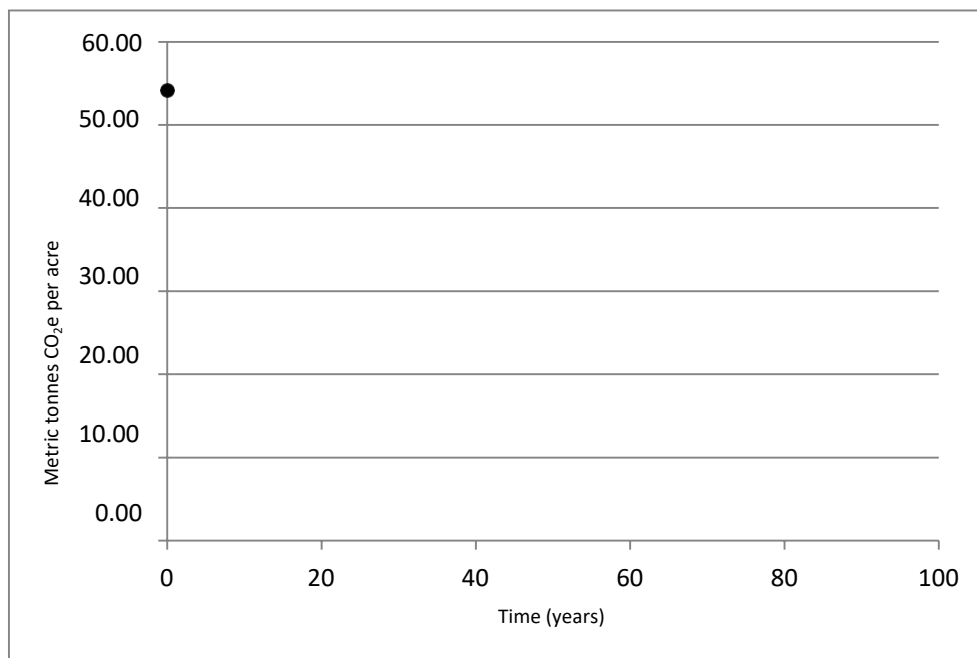
Based on this analysis, the total common practice carbon stock is 1,034,616 tCO₂e. The weighted average common practice carbon stock on a per acre basis is 54.16 tCO₂e (

Table 10).

¹ Spatial and tabular soils data was acquired through the NRCS Geospatial Data Gateway. The SSURGO 2.2 database for ME was acquired through NRCS Soil Data Mart in order to import and use the tabular soils data.

Table 10: Common Practice Carbon Stocks

Common Practice				
Assessment Area	Area	CP Stock	AreaWeight	Weighted CP
CB	369.80	51.00	0.02	0.99
IH	3,833.60	41.00	0.20	8.23
NH	1,477.88	53.00	0.08	4.10
RS	9,173.17	48.00	0.48	23.05
WP	4,249.24	80.00	0.22	17.79
TOTAL	19,103.69			54.16

**Figure 7: Step 1 - Common Practice**

Step 2 – Determine if Initial Stocks are Above or Below Common Practice

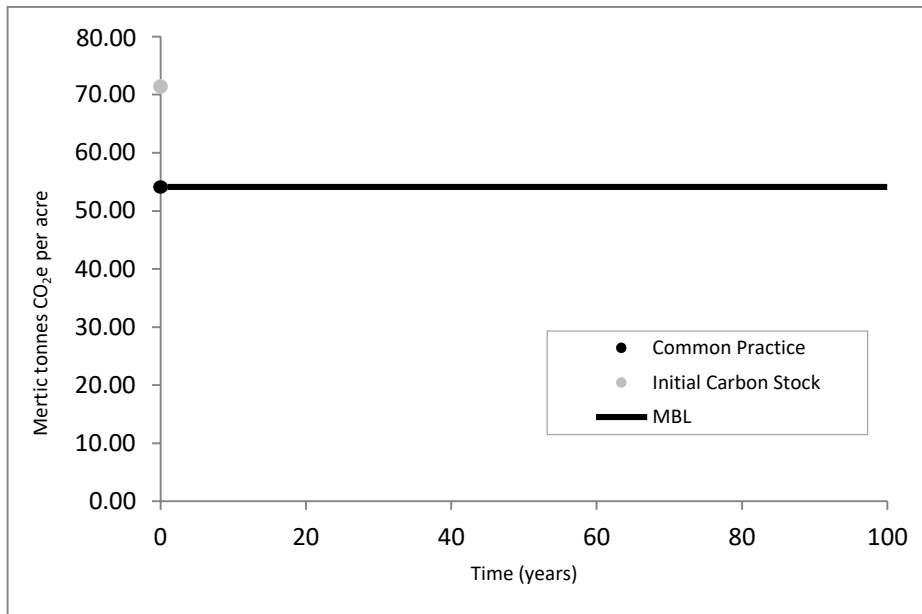
Initial carbon stocks were determined using the inventory data and the most current volume and biomass equations (i.e. as specified for projects outside of California, Washington and Oregon on ARB's website as of January 2014) appropriate for the Project's Supersection and species as published and approved by ARB. The species observed in the project are listed in Table 10. The total initial above-ground standing live carbon stock is 1,339,593 tCO₂e which is above the common practice. The weighted average above-ground standing live carbon stock per acre is 70.12 tCO₂e (Table 11).

Table 10: Volume and Biomass Equation Assignments by Species

Species Name	FIA Code	Published ARB FIA Volume Equation Reference (or Equivalent)	Equation Reference
Balsam Fir	012	012	Scott, Charles T., 1981
Tamarack	071	131	Scott, Charles T., 1981
White Spruce	094	094	Scott, Charles T., 1981
Black Spruce	095	094	Scott, Charles T., 1981
Red Spruce	097	094	Scott, Charles T., 1981
Red Pine	125	129	Scott, Charles T., 1981
Pitch Pine	126	126	McClure, J. and Cost, N. 2010
Eastern White Pine	129	129	Scott, Charles T., 1981
Northern White-Cedar	241	241	Scott, Charles T., 1981
Eastern Hemlock	261	261	Scott, Charles T., 1981
Striped Maple	315	999	Scott, Charles T., 1981
Red Maple	316	316	Hahn, Jerold T., 1984
Sugar Maple	318	318	Scott, Charles T., 1981
Yellow Birch	371	371	McClure, J. and Cost, N. 2010
Paper Birch	375	375	Hahn, Jerold T., 1984
Gray Birch	379	370	Scott, Charles T., 1981
American Beech	531	531	Scott, Charles T., 1981
White Ash	541	544	Scott, Charles T., 1981
Black Ash	543	544	Scott, Charles T., 1981
E. Hophornbeam	701	999	Scott, Charles T., 1981
Bigtooth Aspen	743	544	Scott, Charles T., 1981
Quaking Aspen	746	746	Hahn, Jerold T., 1984
Pin Cherry	761	999	Scott, Charles T., 1981
Northern Red Oak	833	833	Scott, Charles T., 1981

Table 11: Standing Live Above-Ground Carbon

Row Labels	Acres	Count of PlotID	Average of SLAG
CB	369.80	13	61.40
IH	3775.48	103	79.26
NH	1464.52	39	70.20
RS	9081.29	240	70.67
WP	4217.03	107	64.76
NF	195.56	0	0.00
Grand Total	19103.69	502	70.12

**Figure 8: Step 2 - Common Practice vs. Initial Carbon Stock**

Step 3 – Determine Baseline Above-Ground Standing Live Carbon Stocks

The baseline above-ground standing live carbon stocks were determined by modeling above-ground standing live carbon stocks through a series of growth and harvesting scenarios over 100 years. The annual stock levels were averaged over the required 100-year time frame such that the baseline is expressed as a single (average) value for above-ground standing live carbon stocks per acre in every year. The modeling was performed following the guidance in the FOP's Appendix B and considers the following required conditions:

7.4 Consideration of Legal Constraints

In modeling the baseline for standing live carbon stocks, the forest owner has considered and incorporated all legal constraints that could affect baseline growth and harvesting scenarios.

7.4.1 Baseline Activities

The baseline scenario maximizes timber harvesting over 100 years, as a function of what it is legally allowable, financially feasible and physically possible. A combination of even-age and selection system harvesting scenarios were chosen for the baseline simulation. Even-aged harvests were prescribed to maintain legacy green trees (2.5ft² BA/acre) and limited in size to meet Maine Clearcut Standards. Selection harvests retain 50% of pre-harvest basal area by thinning evenly across all diameters and species. 2,559 acres of the Farm Cove Community project area were identified as legally constrained (LURC zones). To account for those legal restrictions, selection harvests remove no more than 40% of pre-harvest basal area.

Table 12: Silvicultural treatment by strata

Strata	Silviculture	LURC zones	Non-LURC stands
CB	Selection	13-yr rotation	13-yr rotation
IH	Clearcut	None	Harvest @ years 1 and 11 (50% area each)
NH	Selection	One entry @ year 6	19-yr rotation
RS	Selection	12-yr rotation	18-yr rotation
WP	Selection	12-yr rotation	17-yr rotation

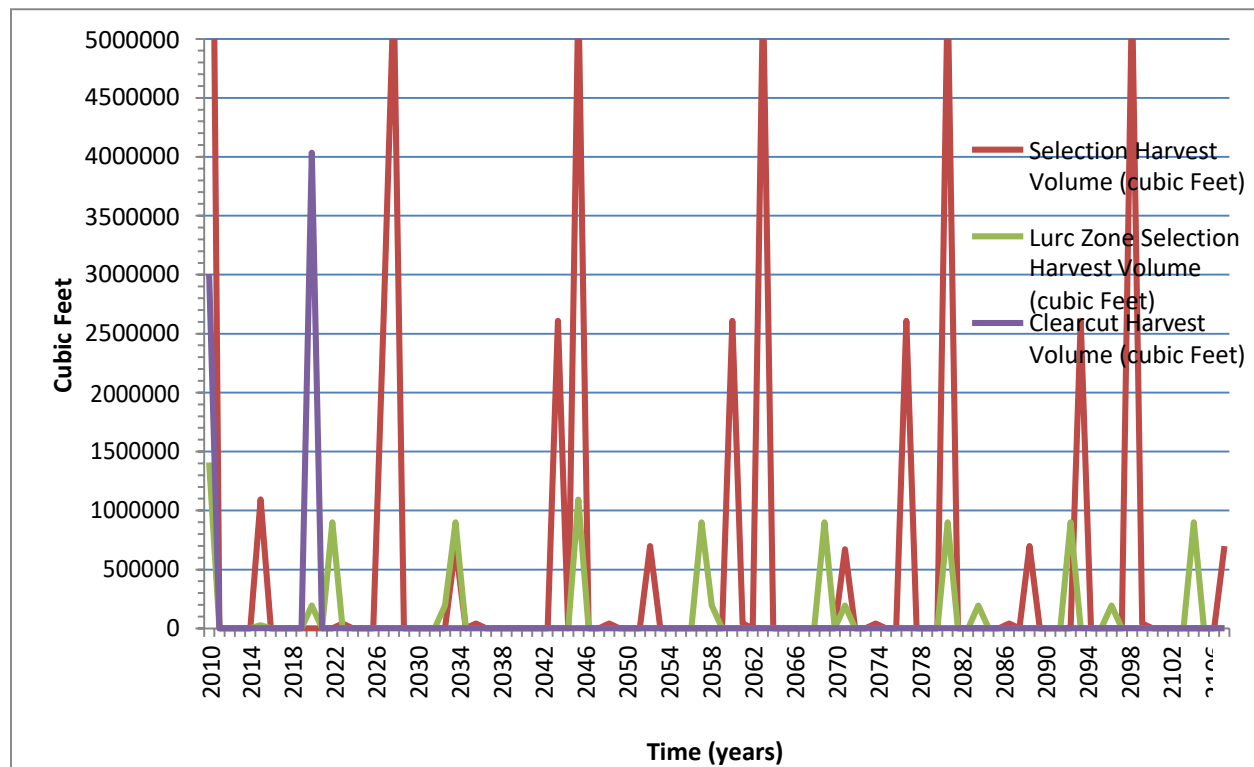


Figure 9: Harvest Prescription (top) and harvest volumes (bottom) over time by silviculture and legal constraints

7.4.2 Baseline Legal Constraints

Constraints that affect land-use specific to forest management activities have been incorporated into the carbon modeling. For this project, legal constraints have the greatest effect on timber harvesting levels. These constraints dictate what types of silvicultural activities (treatment types) are allowed, and where (spatial) and when (temporal) they are allowed, that is, there are different legal constraints for different sections of the project area.

Applicable federal, state, and local government regulations reviewed in constructing the Farm Cove Community Forest baseline harvesting scenario include:

- 1) The federal Clean Water Act of 1972 (33 U.S.C. §1251 et seq.). This Act regulates discharges of pollutants into the waters of the United States and regulates quality standards for surface waters.
- 2) The Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884). The purpose of this Act is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved and to provide a program for the conservation of such endangered species and threatened species. It prohibits unauthorized taking, possession, sale, and transport of endangered species.
- 3) Chapter 20: Forest Regeneration and Clearcutting Standards, Maine Department of Conservation, Maine Forest Authority: 12 MRSA c. 805, sub-c. III-A

This rule establishes the procedures for notifying the Department of Conservation, Bureau of Forestry, of proposed commercial timber harvesting activities, and sets the standards for clearcutting and for forest regeneration following timber harvesting. In general, landowners are required to notify the Bureau of Forestry, in writing, before timber is cut or removed, when the primary purpose of the harvest is to sell or use the timber as forest products. If the harvesting activities result in a clearcut larger than five acres, there must be a separation zone between clearcuts and regeneration standards must be met. No clearcut can be greater than 250 acres.

4) Chapter 23: Timber Harvest Standards to substantially Eliminate Liquidation Harvesting.

Section 6.A Limited Basal Area Removal states that 5 years from the time of original purchase, timber harvesting must not remove more than 50 percent of the basal area of trees 4.5" DBH and larger, present on the entire parcel at the time of purchase. Timber harvesting must not result in high grading and must include measures to protect advanced regeneration by minimizing the area damaged by logging equipment.

5) Chapter 10: Land use Districts and Standards, Maine Land Use Regulation Commission (LURC).

The following LURC requirements apply to timber harvesting within all development and protection subdistricts except as otherwise provided: Harvesting shall not remove, in any ten year period, more than 40 percent of the volume on each acre involved of trees 6 inches in diameter and larger measured at 4½ feet above ground level. Removal of trees less than 6 inches in diameter, measured as above is permitted if otherwise in conformance with regulations. For the purpose of these standards, volume may be determined as being equivalent to basal area.

6) Chapter 21: Maine Department of Conservation – Maine Forest Service Chapter 21 Rules – Statewide Standards for Timber Harvesting in Shoreland Areas

This rule establishes statewide standards for timber harvesting and related activities in shoreland areas. In general, timber harvesting activities in shoreland areas must protect shoreline integrity and not expose mineral soil that can be washed into water bodies, including nonforested freshwater and coastal wetlands and tidal waters. Timber harvesting and related activities in shoreland areas below the 300 acre drainage point must leave windfirm stands of trees that provide adequate shade. If located in shoreland areas, roads used primarily for timber harvesting and related activities must be constructed and maintained to standards designed to minimize the chance of exposed soil washing into water bodies, including wetlands. Stream crossings must not disrupt the natural flow of water and must not allow sediment into water bodies.

7) Conservation Easement on Lands of Downeast Lakes Land Trust: The purpose of the easement is to maintain the property forever in its present and historic primarily undeveloped condition in a manner that allows its continued operation as a Community Forest with the perpetual ability to produce forest products, and to conserve and/or enhance forest wildlife and habitats, undeveloped shoreline, and historic public recreation opportunities of the property for present and future generations. Forest management activities, in compliance with local, state, and federal laws and regulations, including reforestation, planting, growing, cutting, and harvesting trees are permitted by the conservation easement.

7.5 Consideration of Financial Constraints

In modeling the baseline for standing live carbon stocks, the forest owner has incorporated financial constraints that affect baseline growth and harvesting scenarios. Constraints were identified by completing a 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. Cost and revenue variables in the financial analysis are based on documented costs and returns for the project area. Additionally, the project area only includes sites with

adequate operability and access for commercial harvesting. Stands were only eligible for treatments if they yielded a minimum harvest volume. The forest owner maintains an extensive network of permanent and seasonal roads to support forest operations across the property.

7.6 Minimum Baseline Level

The averaged model results must not fall below a minimum baseline level (MBL). Since initial above-ground standing live carbon stocks were above Common Practice, the MBL was determined using the formula in the FOP's Equation 6.5 (Determining the Minimum Baseline Level Where Initial Stocks Are Below Common Practice).

Equation 6.5:

$$\text{MBL} = \text{CP}$$

Where: MBL = Minimum baseline level (above-ground standing live carbon stocks)

 CP = Common Practice (as determined in Step 1)

Therefore,

$$\text{MBL/acre} = 54.16$$

The average modeled results, expressed as above-ground standing live carbon stocks per acre, must not fall below the MBL, 54.16 tCO₂e/acre, or 1,034,616 tCO₂e across the entire project area.

7.6.1 Setting the Baseline for Above-Ground Standing Live Carbon Stocks

The baseline growth and harvest regime was planned using Remsoft's forest modeling software, Woodstock³. Yield tables (i.e. development cases) were created from the 2010 inventory data for each stratum using the Forest Vegetation Simulator (FVS⁴) as described previously, taking into account the timing and responses of harvesting and mortality. All legal and financial considerations were applied in the baseline model through treatment types and output constraints. The results show the 'average above-ground standing live carbon stocks' per acre (54.16 tCO₂e), which constitutes the baseline and is a result of modeling the legal constraints as the basis for the project baseline, does not fall below the MBL.

² <http://www.remsoft.com/products.php>

³ <http://www.fs.fed.us/fmfc/fvs/>

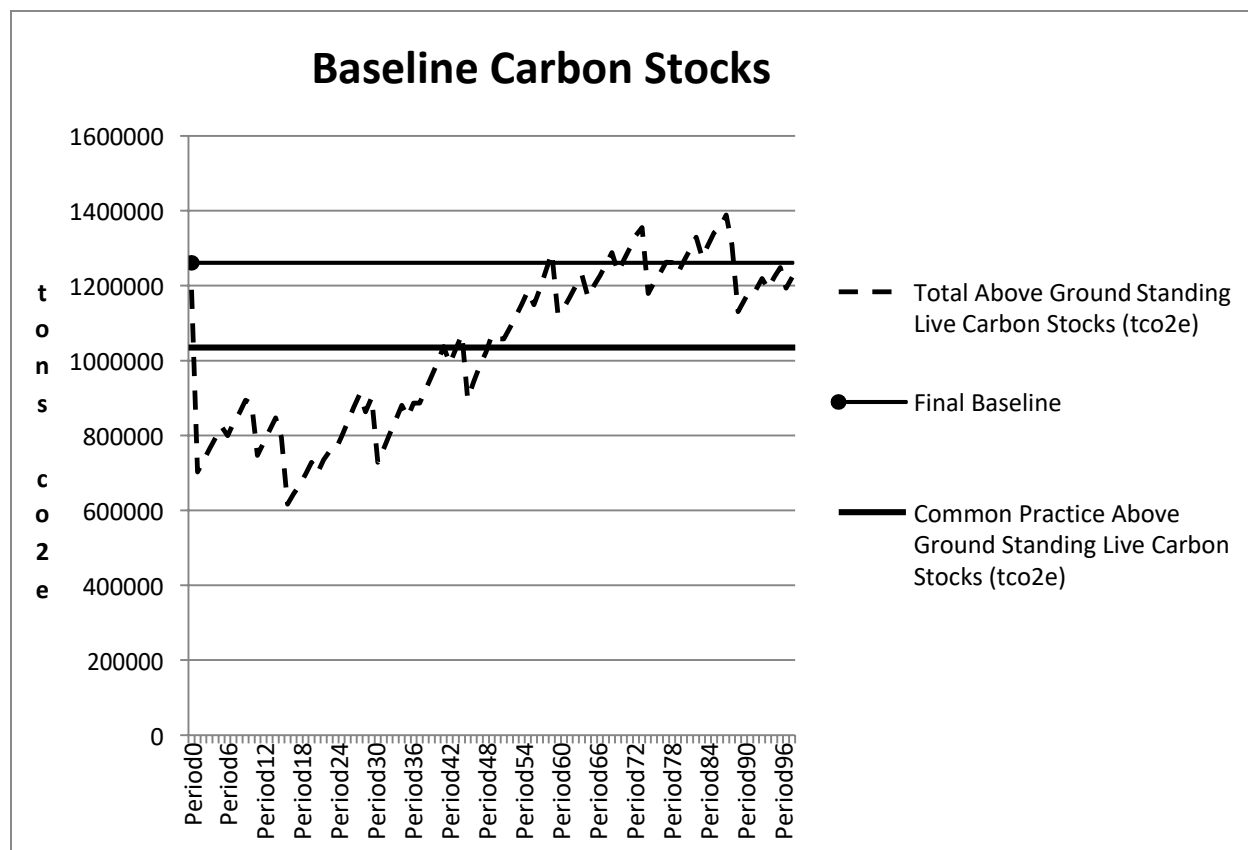


Figure 10: Baseline above-ground standing live carbon stocks.

Step 4 – Determine the Baseline for All Onsite Carbon Pools

Additional pools were modeled and quantified in the same fashion as the above-ground standing live carbon stocks in the previous step. These additional pools were below-ground standing live carbon stocks (11.6 tCO₂e per acre) and standing dead carbon stocks (0.24 tCO₂e per acre). The final total baseline onsite carbon stock for all pools is 1,260,633 tCO₂e or 65.99 tCO₂e per acre. This was input to the Monitoring Calculation Worksheet under *Baseline Onsite Carbon Stocks (tonnes CO₂e), calc row 6*.

8 Estimating Baseline Carbon in Harvested Wood Products

To estimate the amount of baseline carbon transferred to long-term storage in harvested wood products, first the amount of carbon in trees (i.e. standing live carbon stocks) harvested for wood products was determined from the growth and harvest regime used to develop the baseline for onsite carbon stocks. The average of baseline carbon in trees harvested for wood products adjusted for the number of days in the reporting period (January 1, 2014 – July 31, 2015) was 64,702 tCO₂e. This was input to the Monitoring Calculation Worksheet calc row 10.

Second, the amount of baseline carbon in harvested wood delivered to the mill was calculated. This is only the carbon in the merchantable wood portion of the trees harvested for wood products prior to delivery to the mill (i.e. DRYBIO_BOLE less the bark component). The top, stump and below ground portions were considered to be immediately emitted to the atmosphere for accounting purposes. The estimates were derived using the same volume and biomass equations to calculate biomass in live trees. The average baseline carbon in harvested wood delivered to the mill adjusted for the length of the reporting period was 29,742 tCO₂e. This was input to the Monitoring Calculation Worksheet, calc row 12.

The amount of carbon in wood delivered to the mill that transfers to wood products is then determined for each reporting period within the Harvested Wood Products (HWP) Worksheet provided under separate cover for verification purposes. The HWP tool is regional specific. Farm Cove is in Maine which is grouped in the Northeast Region “NE” as shown in Figure 11 .

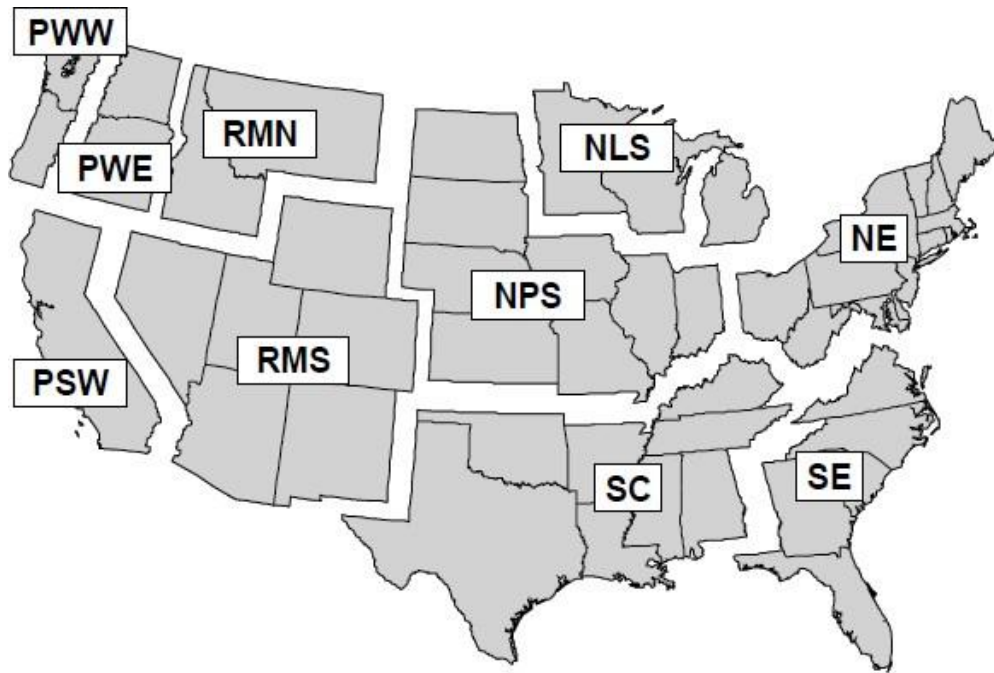


Figure 11: USFS regions

The average baseline carbon in harvested wood delivered to the mill was input to the HWP worksheet. The average baseline carbon in harvested wood delivered to the mill is distributed among the wood product classes based on the percent product values established by the volume actually harvested in the project for that reporting period. Actual harvest volumes for Reporting Period 1 were entered by wood product so the average baseline carbon in harvested wood delivered to the mill is distributed among the correct wood product classes. A mill efficiency rate is applied next to determine the net baseline carbon in harvested wood delivered to the mill that is actually transferred to wood products. Default mill efficiency data, which vary by region, state, species group and product class, is provided in the Mill Efficiency Data File as it appears on the ARB website and within the HWP worksheet. The mill efficiencies are also shown in Table 13 below.

Table 13: Mill efficiencies

Region	State	Hardwood Saw Log	Hardwood Pulpwood	Softwood Saw Log	Softwood Pulpwood
Northeast (NE)	Maine	0.614	0.650	0.569	0.513

After applying the mill efficiency rate, the HWP worksheet approximates the climate benefits of carbon storage in harvested wood products by estimating the *average* amount of carbon stored over 100 years in In-use wood products and landfills for each *wood product class*. Decay rates for each wood product class for In-use wood products and landfills have been provided by ARB as “average storage factors”.

The amount of carbon transferred into each wood product class was multiplied by the 100-year average storage factor for In-use wood products to estimate the average carbon storage over 100 years in In-use wood products for the period.

In the same fashion, 100-year average storage factors were used to estimate the average carbon storage over 100 years in landfills for the period. The HWP worksheet sums the baseline carbon stored long-term in wood products for the reporting period, first by excluding carbon stored in landfills, and then by including carbon stored in landfills. These values are then input to the Monitoring Calculation Worksheet in calc rows 15 and 16.

The total baseline carbon stored long-term in wood products since the project start date is shown in Table 14.

Table 14: Total Baseline Carbon Stored Long-Term in Harvested Wood Products

Reporting Period Start Date	Reporting Period End Date	Baseline Carbon Stored Long-term in Wood Products (tonnes CO ₂ e) - Excl Landfill	Baseline Carbon Stored Long-term in Wood Products (tonnes CO ₂ e) - Incl Landfill
01/01/2014	07/30/2015	4,089	8,349

9 Determining Actual Onsite Carbon Stocks

Initial onsite carbon stocks were determined using the inventory data and the most current volume and biomass equations (i.e. volume and biomass equations for projects outside of California, Washington and Oregon) appropriate for the Supersections and species as published by the ARB. For each subsequent reporting period (excepting inventory years) actual onsite carbon stocks will be determined using the same growth and yield model software as described in the baseline. The actual onsite carbon stocks are listed by reporting period in Table 15 and the total stocks were input to the Monitoring Calculation Worksheet in calc row 1 (Sampled Onsite Carbon Stocks).

This difference between the baseline carbon stocks and the actual carbon stocks is a result of the project's management activities. The management activities that lead to increased carbon stocks are not necessarily characterized as different types of silviculture systems than what are used in the baseline (see baseline characterization). Rather, the project deploys different procedures and technology which influence management decisions and the intensity of harvest treatments across space and time. The most noticeable change is the implementation of forest carbon accounting. Now, maintaining and increasing onsite carbon stocks is a forest management objective and is part of the inventory specifications and management planning process.

Table 15: Actual Onsite Carbon Stocks

Reporting Period Start Date	Reporting Period End Date	< -----Total Stocks (tCO ₂ e) ----->			< -----Stocks Per Acre (tCO ₂ e) ----->		
		IFM 1	IFM 3	Total	IFM 1	IFM 3	Total
01/01/2014	07/30/2015	1,635,674	47,804	1,683,478	85.62	2.50	88.12

10 Determining Actual Carbon in Harvested Wood Products

The amount of actual carbon transferred to long-term storage in harvested wood products was estimated using the same HWP tool and settings as discussed in Section 8. Harvest volume delivered to the mill was summarized in a Verified Mill Report in tons for both softwoods and hardwoods based on the actual harvest reports and mill scale receipts/load tickets in the Project reporting periods. Total harvested wood volumes in metric tonnes of carbon for the reporting period equals 3,678.

The harvest volume is then subsequently converted to cubic feet and then tons of CO₂e using the conversion factors and specific gravity factors. The sum of these tons of CO₂e in all wood product classes is reported as the actual project carbon in harvested wood delivered to the mill and is input to the Monitoring Calculation Worksheet in calc row 11 (13,499 tCO₂e).

The actual project carbon in trees harvested for wood products (i.e. carbon in the wood delivered to the mill plus all other components of the tree, i.e. bark, stump, top, and coarse roots) is determined using a multiplier, or expansion ratio. The multiplier is developed based on the ratio of baseline carbon in trees harvested for wood products to baseline carbon in harvested wood delivered to the mill. The actual project carbon in trees harvested for wood products is input to the Monitoring Calculation Worksheet in calc row 9 (29,637 tCO₂e).

The net wood material transferred to wood products (i.e. after mill processing) is determined by applying the respective mill efficiency rates to the harvest volumes by wood product class. This volume is then converted to cubic feet and tons of CO₂e. After the net tons CO₂e transferred to wood products is calculated, the long-term storage in In-Use wood products and wood products in landfills is determined by applying the average-storage factors by wood product.

Finally, the actual project carbon stored long-term in wood products is summed by wood product class for both excluding and including carbon stored in landfills. These values are entered into the Monitoring Calculation Worksheet in calc rows 13 (1,856 tCO₂e) and 14 (3,790 tCO₂e), for each reporting period.

11 Quantifying Secondary Effects

Secondary effects were calculated automatically by the project Monitoring Calculation Worksheet according to Equation 6.10 in the FOP. The values used were (CalcRow9 – CalcRow10) * 20%, which equals CalcRow28 (-7,067 tCO₂e). The baseline and actual carbon in trees harvested for wood products represents total tree carbon. Note that landfill carbon is included in the harvested wood products calculation if the cumulative project harvests are less than baseline harvests in that reporting period.

12 Calculating Total Net GHG Reductions and Removals

12.1 Confidence Deduction

The inventory uncertainty was calculated as 3.52 percent error (see Table 7). The inventory was field-verified using the sequential sampling method. Because the inventory percent error is less than the 5 percent threshold for allowed uncertainty before applying a discount (see Table A.4. in FOP, Appendix A), 0.0 percent was applied in the Monitoring Calculation Worksheet (i.e., Calc row 2).

12.2 Total Net GHG Reductions and Removals

Total Net GHG Reductions and Removals were calculated automatically using the Project Monitoring Calculation Worksheet. Total net reductions equal 116,491.

12.3 Final Carbon Pool Totals

Table 16: Final Project Carbon Pools

SSR	Description	Baseline/Project	TOTALS
Primary Effect Sources, Sinks, and Reservoirs			
IFM-1	Standing live carbon (carbon in all portions of living trees)	Baseline	1,256,124
		Project (includes confidence deduction)	1,635,674
IFM-3	Standing dead carbon (carbon in all portions of dead, standing trees)	Baseline	4,509
		Project (includes confidence deduction)	47,804
IFM-6	Soil Carbon	Baseline	N/A
		Project	N/A
IFM-7	Carbon in in-use forest products	Baseline	4,089
		Project	1,856
IFM-8	Forest product carbon in landfills	Baseline	4,260
		Project	1,934
Secondary Effect Sources, Sinks, and Reservoirs			
IFM-9	Biological emissions from site preparation activities	Baseline	N/A
		Project	N/A

IFM-14	Biological emissions from site preparation activities and removals from changes in harvesting on forestland outside the Project Area	Baseline	N/A
		Project	-7,067
IFM-17	Biological emissions from decomposition of forest products	Baseline	calculated through IFM-7 and IFM-8 values
		Project	calculated through IFM-7 and IFM-8 values
TOTAL Secondary Effects			-7,067
TOTAL before Risk Buffers			116,491
Risk Buffer	Application of risk buffer (19.2%) to carbon totals		22,413
TOTAL after Risk Buffers			94,078

13 Ensuring the Permanence of Credited GHG Reductions and Removals

The ARB requires that credited GHG reductions and removals be effectively “permanent.” For Forest Projects, this requirement is met by ensuring that the carbon associated with credited GHG reductions and removals remains stored for at least 100 years. The ARB ensures the permanence of GHG reductions and removals through three mechanisms:

13.1 Monitoring, Reporting and Verification

Forest owners are required to monitor onsite carbon stocks, submit regular monitoring reports, and submit to regular third-party verification of those reports along with periodic verification site visits for the duration of the project life. See the Project Monitoring section for more detail. As demonstrated the Monitoring Calculation Worksheet no reversal has been identified in Reporting Period 1 nor has there been any decrease over any 10-year consecutive period in the standing live carbon pool.

13.2 Regulatory Obligation

The regulatory obligation for all intentional reversals of GHG reductions and GHG removal enhancements will be compensated for through retirement of other Compliance Instruments.

13.3 Forest Buffer Account

A buffer account is maintained by the ARB to provide insurance against reversals of GHG reductions and removals due to unavoidable causes (including natural disturbances such as fires, pest infestations or disease outbreaks).

The required buffer account contribution is determined by a project-specific, risk rating worksheet and the following formula:

$$100\% - ((1-\text{financial failure}\%) \times (1-\text{illegal forest biomass removal}\%) \times (1-\text{conversion}\%) \times (1-\text{over harvesting}\%) \times (1-\text{social risk}\%) \times (1-\text{wildfire}\%) \times (1-\text{disease/insect outbreak}\%) \times (1-\text{other catastrophic events}\%))$$

The total required buffer account contribution for the current reporting period is 19.24 percent (Table 16).

Table 17: Risk rating analysis for required buffer pool contribution

Risk Category	Risk Sub-Category	Without QCE and or Public Ownership	QCE and or Public Ownership	Score	(1-Score)
Financial		5.0%	1.0%	5.0%	95.00%
Management					
	Illegal Logging	0.0%	0.0%	0.0%	100.00%
	Risk of conversion	2.0%	0.0%	2.0%	98.00%
	Risk of over harvesting	2.0%	0.0%	2.0%	98.00%
Social		2.0%	2.0%	2.0%	98.00%
Natural Disturbance					
	Wildfire*	4.0%	4.0%	4.0%	96.00%
	Disease Insect	3.0%	3.0%	3.0%	97.00%
	Other catastrophic	3.0%	3.0%	3.0%	97.00%
Risk Rating Analysis Result				100% -	80.76%
Total Risk Score					19.24%

* = Default values from FOP Assessment Area Data File

All risk 'scores' were determined using the 'Without QCE' ratings. Wildfire risk was established based on the default risk for the subject Supersection and Assessment Areas from the most recent Assessment Area Data File as published on the ARB website.

14 Project Monitoring

The primary purpose of the project's annual monitoring plan is to ensure up-to-date estimates of project carbon stocks and provide assurance that GHG reductions or removals achieved by a project have not been reversed.

This project enhances an already very strong forest monitoring program on the property. The major components of the monitoring plan are:

- Multiple Annual Third-Party Audits
 - Enforcement of the conservation easement
 - Forest Stewardship Council certification under the Rainforest Alliance forest certification program
 - Forest carbon project verification by OPR/ARB accredited verifier
- Annual forest inventory and carbon stock updates (described in detail below)

The forest owner will use the most recent measurements from the permanent CFI plots and approved growth & yield modeling to annually update the project's forest carbon stocks in between full site visit verifications. The CFI plots will be remeasured just prior to the full site visit verifications. Measuring the same plots through time will reduce sampling variability and provide reliable estimates of actual growth through time. Inventory plot data used in the estimate of actual onsite carbon stocks will not be more than 12 years old.

For annual inventory updates that utilize growth and yield modeling, each event (e.g. timber harvests) will require spatial and tabular updates of the carbon data set. Data updates, including harvest volume summaries and silvicultural prescriptions, will be submitted by the Forest Owner to Finite Carbon on or shortly after August 31st for the previous year and prepared for verification within the required time period allowed (4 months for annual OPDR submittal).

1. Land Sales: Land sales activity has a tremendous bearing on every carbon project. Should all or a portion of the area committed to the carbon contract be sold while under the contract term, Finite Carbon will need to be notified as soon as possible. The forest owner will be required to provide digital mapping and possibly other documentation for the area affected by the sale. Please note that any Land Sales taking place on the Project Area will remain subject to the Regulations, and therefore remain part of the Project. Should any portion of the Project Area be sold and wish to terminate the Project, the whole project will be considered terminated. Once the Project Area for Improved Forest Management Projects has been verified, the Project Area cannot be changed for the duration of the Project's lifetime.

2. Natural Events: Natural events can include wind storms, tornadoes, ice storms, floods, land-slides, earth quakes, insect or disease infestations, or other impacts of weather or nature on the forest carbon stocks. Finite Carbon must be notified immediately following an event of this type. The forest owner will be required to supply mapping of the damaged area, and in some cases, a re-inventory of the original sample locations affected by the event performed to the specifications attached.

3. Harvests and Land Use Conversions: IFM projects typically encounter planned timber harvests, thinning, clearing for roadways, log yards, decks, or other uses on a regular basis. When these events occur, the Forest Owner is required to provide Finite Carbon with a digital (GPS and/or GIS) polygon file of the affected area. Finite Carbon shall also be informed if the activity produces or is expected to produce a forest type conversion.

On-going monitoring by the forest owner and its forest managers will ensure Unintentional Reversals and will be reported to ARB. Where necessary, an inventory of affected portions of the forest may be inventoried to account for unintentional reversals that create a need for ARB offset credits replacement from the ARB buffer account.

Inventory design to account for losses from unintentional reversals will depend on the extent and intensity of the reversal should they occur; however, they will always follow the project inventory specifications

14.1 Methods for Quality Control

Quality Control for this project is defined as a series of activities and documented procedures that serve to maintain an acceptable level of data quality for monitoring forest carbon stocks and demonstrating compliance with the FOP. Quality control success will be measured by whether or not the project passes annual verifications.

14.1.1 Organization and Responsible Individuals

Individuals responsible for maintaining project operations have been defined in the Listing Form and listed under the OPO's account information. Any changes, including new contact information, will be updated to the account information immediately.

14.1.2 Document Control

Forest Owner will be responsible for maintaining critical documents and files that support forest carbon data collection and processing. The most critical documents and files necessary to be maintained include:

- Offset Project Data Reports;
- Inventory Specifications and Procedures document;
- Project geodatabase (GIS files);
- Model Plan and Analytical Systems document;
- ARB Offset Credit Monitoring Calculation Worksheet;
- Harvest Wood Product Calculation Worksheets; and
- Annual forest monitoring report.

All edits and revisions to documents after project registration will be clearly marked and identified by placing a revision date or version at the beginning of the document or at the end of the name of the file. Operation procedures are in place so that out dated files will be archived in the OPO's OPR project account, the OPO's computers and offices and/or Finite Carbon's computers and offices for a minimum of 15 years. Other forms and documents required by the ARB will be maintained and stored in the Offset Project Registry software.

14.1.3 Central Data Repository

The ESRI personal geodatabase format will be used to store spatial and tabular project inventory data. Built-in features of the geodatabase structure, such as domains (i.e. field value validation) and relationships, help control data quality. Edits and updates will occur at the end of each reporting period to account for activities in the previous year unless an event such as a reversal occurs, in which case updates will take place and be reported to the ARB in the required time frame as outlined in the FOP. All results will be summarized in the annual forest offset project data report.

14.2 Accuracy of Project Listing Information

All of the information submitted for project Listing is still accurate with the exception of the following updates listed in Table 18.

Table 18: Summary of Updates since project listing

Project Changes	Yes/No
Is all the information in the offset project listing still accurate?	No
Is there an updated Offset Project Commencement Date, Reporting Period Start Date, and/or Reporting Period End Date?	Yes
Is there an updated OPO/APD	No
Are there Updates to the Land Ownership listing Information?	No
Are there updates to the Offset Project Area listing information?	No
Are there updates to the Carbon Stock Inventory listing information?	Yes
Are there updates to the Offset Project Baseline listing information?	Yes
Are there any other updates to the listing information?	Yes
Have there been any changes in the status of the Forest Owner including, if applicable per Section 3.8.1 of the U.S. Forest protocol, the acquisition of new forest landholdings?	No
Has a Qualified Conservation Easement (QCE) been recorded since the previous Reporting Period?	No
Have there been any modifications to the inventory methodology of any carbon pools included in the project's boundary since the last Reporting Period?	No

15 References

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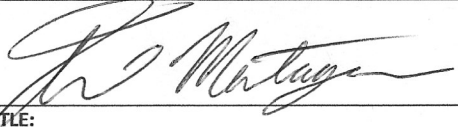
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**Attestation and OPO/APD Signature
for
CAFR5051/CAR1063
Submitted with the Offset Project Data Report**

	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:		Reporting Period Start Date:	Reporting Period End Date:
	Finite Carbon - Farm Cove Community Forest Project (CAFR5051/CAR1063)		from 01/01/2014	To 07/30/2015
	are measured in accordance with the Compliance Offset Protocol U.S. Forest Projects, October 20, 2011 and all information required to be submitted to ARB in the Offset Project Data Report is true, accurate, and complete.			
Initial Above				
I further certify that I am duly authorized to represent and legally bind the Offset Project Operator (OPO) on all matters related to the Offset Project Data Report.				
SIGNATURE:		PRINTED NAME:		
		David Montague		
TITLE:		DATE:		
President + CEO		4/7/20		

This attestation satisfies the requirement in Section 95976(d)(5), which is now section 95976(d)(6) following the amendments effective July 1, 2014.