



Verified Carbon Standard

FAMILY FOREST CARBON PROJECT



Forest Carbon Works

Document Prepared by Forest Carbon Works, PBC

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1 PROJECT DETAILS

1.1 Summary Description of the Project

Family forests make up over one-third of America's 765 million acres of forestland, according to a 2021 Congressional report (Annex A). This fact puts management decisions providing clean water, recreation, and other valuable resources in the hands of everyday American families. The importance of American forests to the global ecosystem and climate is central to the work of Forest Carbon Works, PBC, a US-based company that seeks to conserve and restore family-owned tracts of forestland throughout the United States. Forest Carbon Works is acutely aware of vulnerabilities particular to family forest owners. Without an alternative form of income, families face pressures to liquidate their timber to cover unforeseen expenses. More and more, younger generations are inheriting these lands and have no intention of maintaining forest management plans that may require decades of planning. Carbon projects alleviate these vulnerabilities but have previously only been available to large scale forests that commanded higher crediting. Forest Carbon Works plans to democratize access to carbon revenue by making carbon offset payments available to these small landowners. By the year 2030, Forest Carbon Works anticipates protecting 500,000 acres of land owned by many individuals with durable agreements of permanent carbon storage. The project longevity shall be at minimum 60 years with possible extension to 125. This ambitious plan contrasts with extractive timber harvesting, common practice for many forested regions of the United States. By extending rotation ages through the implementation of uneven-aged silviculture of these at-risk forests, the project increases carbon storage relative to the baseline case, as well as increases biodiversity and diversity in forest structure. Diverse forest age classes and heterogeneity across landscapes are proven to increase forest resiliency to disturbances such as wildfire, landslides, and insect or disease outbreak (Annex B).

To reduce GHG emissions across the project area, the project shall employ technologies and measures that include transitioning forestland into sustainable, uneven-aged silvicultural systems using extension of rotation age (ERA) technology and improved forest management (IFM) measures that include group selection, patch cuts and continuous thinning, where appropriate (IFM 1, see section 1.11). These transition activities include the application of special silvicultural treatments that accelerate the recruitment of trees into standing dead wood, among other treatments. University research sponsored by Forest Carbon Works indicates that the promotion of standing deadwood through these treatments significantly increases total carbon storage over time, as compared to no treatment or extractive timber harvesting. The application of these treatments to promote enhanced carbon storage is novel and underscores the true additionality of the project compared to common practice. Estimated average GHG emission reductions from the project are 845,991 tons CO₂ equivalent per year, with total reductions over the first 25-year project crediting period of 21,149,786 tCO₂e (Annex Q). At document submission, the project area is 31 hectares. This is a grouped project with one project activity instance included at time of submission, in Washington, USA. The start of the project crediting period coincides with the start date for the project, 14 July 2020, and the end date of the Project Crediting period is therefore 13 July 2045. The non-permanence risk rating of the project at the time of writing is 15%. As a requirement for participation in the project, all instances must ensure permanence of emissions reductions according to eligibility criterion 2e, which states that carbon stocks shall be protected for at

least 60 years from the date of enrollment of the instance to the grouped project (see Section 1.4). Thus, the project longevity period is at least 60 years.

The geographic area of the entire project shall encompass is the contiguous United States and southern Alaska. Currently, the project includes one instance in the US state of Washington. To ensure sustainability in management, Forest Carbon Works requires enrolled forestland to be certified by the Forest Stewardship Council® (FSC®) under the group certificate SCS-FM/COC-009247 prior to the commencement of any harvesting activities. Approved management plans shall meet both FSC requirements and the requirements specified by the management policies of Forest Carbon Works related to the promotion of uneven-aged management, biodiversity, water quality and wildlife habitat.

Table 1: Validation / Verification History

Audit Type	Period	Program	VVB Name	Number of years
Validation	Crediting Period: 14 July 2020 – 13 July 2045	Verified Carbon Standard	AENOR	25-year crediting period
Total				25 years

1.2 Sectoral Scope and Project Type

The Family Forest Carbon Project falls under the sectoral scope 14; Agriculture, Forestry and Other Land Use (AFOLU). Within the AFOLU sectoral scope, the project category is Improved Forest Management, the activity is Extended Rotation Age (IFM ERA) and the methodology applied is VM0003 v1.3. Definitions for terms used throughout this document can be found in Annex K. This is a grouped project.

1.3 Project Eligibility

The Family Forest Carbon Project will meet all applicable rules and requirements laid out in the VCS Standard and abide by all regional laws, per Eligibility Criterion 2g (see Section 1.4). The approved VCS methodology VM0003 Methodology for Improved Forest Management Through Extension of Rotation Age (IFM ERA). This methodology was selected as most appropriate because the project area was previously managed using even aged harvest techniques such as clear cuts with no extension of rotation age, as per Eligibility Criterion 6. The project technologies and measures include extension of rotation age using group selection, patch cuts and continuous thinning to promote uneven-aged management (IFM 1, see Section 1.11).

All instances in the grouped project shall be FSC certified prior to the first verification event OR shall be subject to an easement, or equivalent instrument, recorded against the deed of property that prohibits Commercial Harvesting for the duration of the crediting period, unless later certified to FSC per Eligibility Criterion 7 (see Section 1.4). The project proponent is FSC certified.

A project method will be used to quantify GHG emission reductions. This method was selected as most appropriate for the development of the baseline model. The project baseline will be reassessed every ten years and the project proponent will ensure that the project activities that lead to the intended GHG benefit will be implemented during the verification period.

The project is not located in a jurisdiction covered by the REDD+ program, as the geographic area of the project is limited to the United States. Additionally, the project shall not drain, convert, or degrade native ecosystems for the purpose of generating GHG credits as prohibited by the requirements of FSC. The project proponent, Forest Carbon Works, maintains a harvest policy that prohibits activities that could change the proportion of wetlands in the project area. Per the Eligibility Criterion 1 (see Section 1.4), the project area shall not encompass any managed peat forests. There shall be no activity-shifting leakage as a result of the project, per Eligibility Criteria 2d (see Section 1.4); all forested lands will be enrolled in the project. Eligibility Criterion 5 prohibits harvesting on any forested lands without the consent of the project proponent, with the exception of harvesting techniques that promote uneven-aged silviculture, while Eligibility Criterion 2d ultimately requires all forested lands to be enrolled in the project. These criteria will ensure that the project not only provides secure and long-term storage of carbon, but also empowers small landowners to efficiently protect their forests while accessing carbon revenue.

1.4 Project Design

Initial Project Activity Instance

This project is a grouped project that will consist of multiple Project Activity Instances (PAIs) within the contiguous United States and southern Alaska. The initial project activity instance is described in the table below. One instance is included in the project at time of submission.

Table 2: Project Activity Instance Number

Instance Number	Instance State	Instance Area (acres)	Instance Area (Hectares)
1024	WA	77	31

The addition of new PAIs will meet all eligibility criteria defined in Section 1.4. Carbon sequestration will be increased through the extension of forest rotation age using group selection, patch cuts and continuous thinning including the retention of standing dead trees as described in Section 1.11. The PAI does not exceed capacity limits for grouped projects as the VM0003 methodology does not impose scale or capacity restrictions.

1.4.1 Eligibility Criteria

The initial instance and all new PAIs will meet all applicability conditions for and abide by all federal, state, and regional laws per Eligibility Criterion 2g. Descriptions for how eligibility criteria ensure that

new project activity instances meet all applicability conditions of VM0003 are given in Table 9, Section 3.2.

Harvesting techniques used in the baseline scenario include even-aged management such as clear cuts, as well as seed-tree and shelterwood harvests (WLTWWA, see Section 3.4) per Eligibility Criterion 6. Rotation ages used within the baseline scenario will be determined through consultation with local experts and will be designated in a forester attestation. The baseline rotation ages for each management stratum are also provided in Section 4. Furthermore, exact rotations ages of each management stratum (modeling unit) will be visible in the FVS files provided with the baseline model. See section 3.4 for details on baseline scenario.

Harvest techniques used within the project scenario shall include uneven-aged management such as continuous thinning, group selection, and patch cuts per Eligibility Criterion 5 (IFM1, see Section 1.11). The listed silvicultural treatments for both the baseline and project scenarios conform to VM0003 v1.3 applicability condition #1, found in Section 4 of the methodology.

As treatments in the project scenario will be uneven-aged, lands enrolled in the project will not have a specific 'rotation age' in the project scenario as intermediate treatments serve to delay the rotation age indefinitely. Uneven-age treatments inherently extend the rotation age beyond the lifetime of the project because they are not even-aged rotations. See section 1.11 for details on project scenario management.

Harvest Technique	Baseline Scenario	Project Scenario	Silvicultural System
Clear cuts	WLTWWA		Even aged
Seed-tree	WLTWWA		Even aged
Shelterwood	WLTWWA		Even aged
Other Even aged techniques	WLTWWA		Even aged
Continuous Thinning		IFM 1	Uneven-aged
Group Selection		IFM 1	Uneven-aged
Patch Cuts		IFM 1	Uneven-aged
Other Uneven-aged techniques		IFM 1	Uneven-aged

The following eligibility criteria shall apply to for all PAIs added to the project:

Table 3: PAI Eligibility Criteria

1	The PAI shall not encompass managed peat forests to the effect that no commercial harvesting is permitted on peat soils in the project scenario where the definition of peat soils are those classified as a Histosol where half (50%) or more of the upper 80 cm is organic.
2	The landowner of the PAI shall execute one or more agreements providing for the following: a) require that the landowner hold all timber and carbon sequestration rights; b) convey the right to claim all GHG emissions reductions or removals for the project activity to the project proponent; c) vest legal title to the forest, rights of access to the sequestered carbon (or avoided carbon emissions), current land tenure, and forest management to the project proponent; d) require that the landowner enroll all forested areas in the project, resulting in no activity shifting leakage; e) require that the landowner continue management practices that protect the credited carbon stocks over at least 60 years; f) ensure that the ownership and resource access/use rights are held by the same entity; g) require that the landowner shall abide by all federal, state, and local <u>regulations</u>; h) be enforceable by law; i) prohibit any action in forest management that causes any emissions, including the use of fire, without prior approval from the project proponent; and j) representation that landowner is the sole owner to the effect that ownership is not disputed.
3	The PAI shall have FVS modeled projections of management practices in the baseline and project scenarios. In both scenarios, actual and modeled harvests shall follow maximum recommended water quality protection measures and all applicable laws. In all cases, the models shall demonstrate higher levels of harvesting in the baseline scenario compared to the project scenario. The baseline model shall involve even-aged harvesting techniques such as clear cuts and seed tree, among others. The

	baseline model shall not be unmanaged. The project model shall involve uneven-aged harvesting techniques such as patch cuts, group selection and continuous thinning.
4	The PAI shall fall inside the designated geographic area of the contiguous United States including southern Alaska, and each discrete area of land shall have a unique geographic identifier.
5	The landowner of the PAI shall execute one or more of the following: a) An agreement prohibiting harvesting without the prior consent of the project proponent where the project proponent maintains a policy that limits approval of harvesting to approved techniques that promote the extension of rotation age such as patch cuts, continuous thinning, or group selection practices and prohibits changing the proportion of wetland; OR b) An agreement to defer harvesting.
6	The PAI shall have a baseline scenario demonstrating that common practice is even-aged management, without the extension of rotation age, as demonstrated by the provision of a timber harvest plan (THP) comparable to the baseline model, and in the same geographic/regulatory region, to the PAI. The requirements of the California Air Resource Board Compliance Offset Protocol U.S. Forest Projects section 5.2.1(e)(2)(B) (Annex AF) shall be used to define comparable.
7	Prior to the first verification event, the project area shall meet one of the following conditions: Certified to Forest Stewardship Council (FSC); OR Subject to an easement, or equivalent instrument, recorded against the deed of property that prohibits Commercial Harvesting for the duration of the crediting period, unless later certified to FSC.
8	If the landowner of the PAI was previously under contract with Natural Capital Exchange (NCX), provision of copies of all contracts between landowner and NCX prior to the first verification event is required.

Any new PAIs shall be validated, based on the information reported in the monitoring report, against the applicable set of eligibility criteria. Per EC 6, the baseline scenario of each additional PAI shall be common practice management, evidenced by a timber harvest plan.

Table 4: Supporting evidence for achievement of eligibility criteria for each PAI.

Project Activity Instance (PAI) Number	EC #1	EC #2	EC #3	EC #4	EC #5	EC #6	EC #7	EC #8
1024	The project proponent maintains a policy (Annex BB) that prohibits commercial harvesting on peat soil.	Annex D contains signed agreements that meet all points of eligibility criterion 2: 2a is met by Section 1 which defines owner of timber and carbon rights; 2b is met by Section 5 which conveys carbon rights to project proponent; 2c is met by Section 1 which grants legal title to the forest, right of access, land tenure, and forest management to the project proponent; 2d is met by Section 9.14 that all eligible land is enrolled and described in Exhibit A of Annex D; 2e is met with Exhibit E.11 (and further defined in Exhibit C) which requires PAI to maintain carbon stocks until expiration of project lifetime, at minimum 60 years; 2f is met by Sections 1 and 5 which defines ownership of the forest and resources contained therein; 2g is met by Section 8.3 that	See section 3.4: Baseline Scenario of the PD. The FVS Tree List as well as the ERR Calculation Spreadsheet will also be provided as evidence for the satisfaction of this criteria at verification. This section will outline the even-aged baseline model used and that it describes even-aged management. It will also describe how both project and baseline scenarios consider all regulations and recommend BMPs relevant to the PAI. The project scenario shall model uneven-aged	See Section 1.12: Project Location of the PD. Map shows that the PAI is in the contiguous United States and that the names of PAIs given in the legend show that each discrete area has a unique geographic identifier.	With signature of the legally binding agreement required by EC 2 (Annex D, PAI1024 signed MLA), all harvesting is limited to techniques that promote uneven-aged management and extension of rotation age.	Section 3.4 of this document defines the baseline scenario and determines that it would have been even-aged rotation silviculture. See Annex H for the comparable harvest plan.	PAI is subject to a protective easement signed by the property owner(s) prior to the first verification event which prohibits commercial harvesting without Forest Stewardship Council certification and conditional on approval by the project proponent. See Sections 9.8 and 9.15, within Annex D.	The PAI has not previously been under contract with Natural Capital Exchange (NCX)

		project proponent shall comply with valid laws of any applicable agency; 2h is met by Sections 8.1 and 9.1 stating that the agreement is enforceable both against owner and project proponent; 2i is met by Section 9.2 that prevents any intentional reversal, i.e. any action that causes emissions. 2j is met by Section 9.1 which provides a representation that the landowner is the sole owner.	managemen t.					
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1.5 Project Proponent

Table 5: Project Proponent

Organization name	Forest Carbon Works, PBC
Contact person	Julian Bauer
Title	Director, Conserve
Address	Highlight Center 807 Broadway St NE, Suite 280 Minneapolis, MN 55413
Telephone	1 (800) 399-5246
Email	julian@forestcarbonworks.com

1.6 Other Entities Involved in the Project

There are no other entities involved in the development of this project.

1.7 Ownership

Timber and carbon sequestration rights shall be owned in fee and the right to claim GHG emissions reductions or removals shall be assigned to the project proponent as required by Eligibility Criterion 2b (see Section 1.4). Individual agreements between the project proponent and property owner are provided in the Forest Management Lease Agreement (MLA). The MLA complies with section 3.7.1 of the VCS Standard by providing “an enforceable and irrevocable agreement with the holder of the statutory, property or contractual right in the land, vegetation or conservation or management process that generates GHG emission reductions or removals which vests project ownership in the project proponent.”

1.7.1 Ownership Disparity with Natural Capital Exchange

Where a landowner of a project activity instance was previously under contract with the Natural Capital Exchange (NCX), landowner shall provide a copy of contracts between landowner and NCX per Eligibility Criterion 8. Per the requirements of Section 1.9, the project activity instance crediting period start date may only commence following the latest termination date of agreements used to demonstrate conformance with Eligibility Criterion 2 to avoid conflicts in ownership of carbon sequestration rights and the right to claim emissions reductions and removals prior to the project activity instance crediting start date.

1.8 Project Start Date

The project start date is 14 July 2020, the effective date of the initial instance license agreement (Annex AV) and the date on which emissions reduction and removals first occurred, per Eligibility Criteria 2 and 5 (see Section 1.4), and as described in Section 1.11. The agreement is legally enforceable and demonstrates divergence from the common practice baseline (see Section 3.4) to the ERA project activity (see Section 1.11) as of its effective date. Proceeding the effective date of the license agreement is the execution of the MLA. Per the requirements of Eligibility Criterion 2 (see Section 1.4), the MLA is legally enforceable, requiring the application of ERA for the duration of the crediting period according to the policies of Forest Carbon Works.

1.8.1 Project Activity Instance Start Date

The project activity instance start date shall be determined based on evidence of conformance to the requirements of Eligibility Criterion 5 (see Section 1.4). Where a landowner of a project activity instance was previously under contract with NCX and the legally binding agreement between landowner and NCX is provided as evidence of conformance with the requirements of Eligibility Criteria 5b and 8, the project activity start date shall be the date following termination of such agreements per guidance from Verra (see Annex S).

1.9 Project Crediting Period

The crediting period for the project is 25 years. The start of the project crediting period coincides with the start date for the project, 14 July 2020, and the end date of the Project Crediting period is therefore 13 July 2045. The crediting period can be renewed as may be allowed under VCS.

1.9.1 Project Activity Instance Crediting Start Date

The project activity instance crediting start date shall be determined based on evidence of conformance to the requirements of Eligibility Criterion 5a (see Section 1.4). Where a landowner of a project activity instance was previously under contract with NCX and the legally binding agreement between landowner and NCX is provided as evidence of conformance with the requirements of Eligibility Criterion 5b, the project activity instance shall also meet the requirement of Eligibility Criterion 5a. Under no circumstances shall the project activity instance crediting start date precede the latest effective date of agreements used to demonstrate conformance with Eligibility Criterion 2.

1.10 Project Scale and Estimated GHG Emission Reductions or Removals

Table 6: Project Scale

Project Scale	
Project	
Large project	X

Table 7: Ex-ante Estimated GHG Emission Reductions or Removals

Year	Estimated GHG emission reductions or removals (tCO _{2e})
2020 (14-07-2020 – 31-12-2020)	8,747
2021	38,031
2022	57,047
2023	76,063
2024	225,019
2025	373,975
2026	522,931

2027	671,887
2028	820,843
2029	969,799
2030	1,118,755
2031	1,118,755
2032	1,118,755
2033	1,118,755
2034	1,118,755
2035	1,118,755
2036	1,118,755
2037	1,118,755
2038	1,118,755
2039	1,118,755
2040	1,118,755
2041	1,118,755
2042	1,118,755
2043	1,118,755
2044	1,118,755
2045 (1-01-2045 – 13-07-2045)	604,127
Total estimated ERs	21,149,786
Total number of crediting years	25
Average annual ERs	845,991

1.11 Description of the Project Activity

The project will achieve GHG emission reductions and removals through Improved Forest Management (IFM), Extension of Rotation Age (ERA) which includes group selection, patch cuts, and continuous thinning (IFM 1). In addition to the extension of rotation age, the project proponent plans to utilize special silvicultural treatments that accelerate the recruitment of trees into standing dead wood during continuous thinning treatments (IFM 1). To determine treatments, the project proponent, in conjunction with researchers at the University of Minnesota, will be assessing the recruitment, longevity, management, and carbon storage associated with management activities that add snags to forested landscapes (Annex AW).

The project technologies and measures include transitioning forestland into sustainable, uneven-aged silvicultural systems, where appropriate. These transition activities include the application of special silvicultural treatments that accelerate the recruitment of trees into standing dead wood, among other treatments. Per Eligibility Criterion 5 (see Section 1.4), harvesting in a PAI is prohibited without the consent of the project proponent, Forest Carbon Works. Forest Carbon Works maintains a policy that limits the application of harvesting to techniques that promote ERA, see Conserve Harvest Policy located in Annex AR.

As past management records for the PAIs were not available, the prior rotation age is assumed based on common practice for the region (WLTWWA, section 3.4). Unlike common practice, all future harvesting conducted within the project will be designed to maximize carbon storage and/or improve forest vigor and to transition forest structure to uneven-aged structure, see IFM 1 and IFM 2 below. This shift from even-aged to uneven-aged forest management will also involve an increase in the average age of standing trees within the forest since the goal of the project is to sequester more carbon than currently exists with the project activity instances. Since only uneven-aged silviculture will be practiced, lands enrolled in the project will not have a specific 'rotation age' as intermediate treatments serve to delay the rotation age indefinitely. The baseline rotation age for each management stratum are listed in Section 4.

Per the Harvest Activity section of the Conserve Harvest Policy (Annex AR), harvesting associated with the project activity shall not meet nor exceed the definition of harvest activity described for the VCS program, meaning that the harvesting of trees or vegetation within each project activity instance shall not reduce carbon stocks by 20% or more during any 5-year period.

As described in Eligibility Criterion 5, future harvesting may include patch cuts, continuous thinning, or group selection (IFM 1).

Rotation ages utilized in baseline scenarios will be dependent on common forest management practices in the geographic location of each project activity instance. Information related to silviculture in the baseline scenario for the initial PAI (1024) can be viewed in Section 3.4 and is corroborated by the Forester Attestation (Annex AU). The project has a goal of long-term forest health and carbon sequestration; this includes *inter alia* silviculture for mixed-age classes, increased biodiversity, forest resiliency, sensitive habitat protection, forest health, watershed security, and to transition forest structure to uneven-aged structure.

Management systems applied in the project scenario are described in the table below:

Project Management System	Description
IFM 1	No harvesting of project area except when an intermediate treatment such as thinning, group selection, or patch cut is necessary to promote uneven-aged forest structure.
IFM 2	No harvesting

Refer to the management stratification table in Section 4 for more detail on the application of the project management systems.

The project is not located in a REDD+ jurisdictional area.

1.12 Project Location

As described in Section 1.4, Eligibility Criterion 4, the geographic area for the grouped project is the contiguous United States and southern Alaska. Centroid of this geography is approximately 44°58'2.07622"N 103°46'17.60283"W. As defined in Section 1.4, a KML file of the initial FCW PAI (see Section 1.4) has been provided to the Verra Registry. The KML file will be maintained with the Verra Registry upon the addition of PAIs to the grouped project. All geospatial boundaries have been verified under the QA/QC procedure outlined in Annex AD.



Initial Project Activity Instance

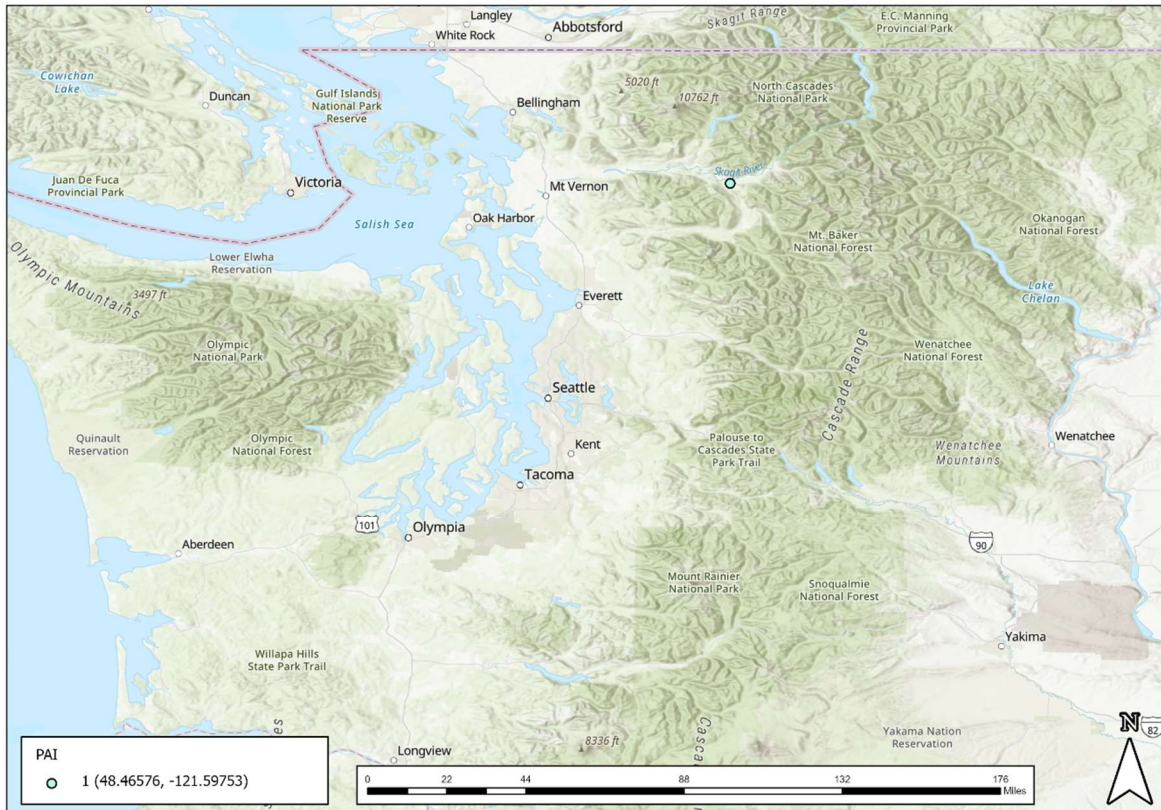


Figure 1: Initial Project Activity Instance

1.13 Conditions Prior to Project Initiation

The baseline scenario as described in Section 3.4 reflects conditions prior to project implementation, conditions that are required by Eligibility Criterion 6 (see Section 1.4). Prior to the project start date, the project area was timber production under the common practice baseline of even-aged management. The baseline scenario reflects the emissions that would have ultimately occurred without the implementation of the project technologies and measures. The project area is presently located in Washington state in the US. It encompasses a region with a variety of land use histories, climates, hydrologies, topographies, soils, ecosystem types, and vegetation types. The project has been implemented with the intention of durable and long-term storage of carbon with no future planned reduction of removal of this carbon stock (see Annex D).

Climate: Average daily mean temperature for this area is 11 degrees Celsius (52 degrees Fahrenheit) on average, and the average precipitation across the area is 97.5 cm (38.4 in) annually, with rainfall distributed fairly evenly throughout each month ([NOAA](#)).

Hydrology: Rainfall ranges throughout the year, with the most rain on average falling in winter months. On average, the project area receives 97.5 cm (38.4 in) of rainfall per year, occurring in January and February ([NOAA](#)).

Topography: The instance is generally flat with no significant elevation changes and is confirmed using the USGS National Elevation Dataset.

Historic Conditions: The initial instance is situated in a region where timber harvests have been performed historically.

Soils: The initial project instance is 99% Pilchuck loamy sand and 1% water (USDA WSS).

Vegetation: The initial project instance is on the west side of the Cascade mountains, consisting generally of cottonwood, bigleaf maple, and western redcedar with coastal rainforest understory of ferns and berries.

Ecosystems: The project area is located in a terrestrial forested ecosystem as verified through analysis of National Agriculture Imagery Program (NAIP) imagery.

1.14 Compliance with Laws, Statutes and Other Regulatory Frameworks

Forest Carbon Works has policies and procedures in place to maintain compliance with all laws listed below, refer to Annex D. Additionally, project Eligibility Criterion 2g (see Section 1.4) mandates all PAIs to comply with all relevant local and state laws not listed.

Among others, compliance with the following laws and regulations is required for business operation in the United States:

- Occupational Health and Safety Act (29 U.S.C. § 651 et seq.) establishes health standards for the workplace (Annex Z).
- Fair Labor Standards Act (29 U.S.C. § 201 et seq.) establishes labor standards, including minimum wage and overtime (Annex Y).
- Civil Rights Act of 1964 (Public Law 88-352, 78 Statute 241) prohibits discrimination based on race, color, religion, sex, or national origin (Annex W).
- Americans with Disabilities Act (42 U.S.C. § 12101 et seq.) prohibits discrimination based on disability (Annex X).

Models of both the baseline and project scenarios reflect all relevant regulations and laws, per Eligibility Criteria 3 and 2g. The following laws and regulations shall be followed as part of the project's forest management activities:

- Federal Water Pollution Control Act (33 U.S.C § 1251 et seq.) establishes objectives for improving water quality and regulates pollution into waterways. Project activities encourage the ongoing improvement of stream water quality, and forest management plans intend to follow maximum state forestry recommendations for watershed quality protection, as required per Eligibility Criteria 2g and 3 (see Section 1.4) (Annex AA).

- National Environmental Policy Act (42 U.S.C. § 4321 et seq.) establishes national goals for protection and enhancement of the environment (Annex AC).
- Endangered Species Act (16 U.S.C. § 1531 et seq.) protects threatened and endangered species and regulates management of their habitats. The project proponent shall check the sensitive species database prior to harvest, if occurring (Annex AB).
- Washington State Forest Practices Rules (Title 222 WAC) establishes standards for timber harvesting, pre-commercial thinning, road construction, and other forest practices applications (Annex F).
- Washington State Forest Practices Act (chapter 76.09 RCW) protects public resources like water quality and fish habitat while maintaining the state timber industry (Annex E).

The objectives in the application of ERA are to increase carbon storage on the landscape while improving the health, diversity, productivity, and ecological functions of the forests under management.

1.15 Participation under Other GHG Programs

1.15.1 Projects Registered (or seeking registration) under Other GHG Program(s)

The project is not registered, and will not seek registration, under any other GHG programs.

1.15.2 Projects Rejected by Other GHG Programs

The project has not been rejected by any other GHG programs.

1.15.3 Avoidance of Double Counting with Natural Capital Exchange

Where a landowner of a project activity instance was previously under contract with the Natural Capital Exchange (NCX), landowner shall meet the requirements of Eligibility Criterion 8 to identify the term of such agreement. The project proponent shall not claim credit for any GHG emissions reductions or removals previously claimed by NCX as guaranteed by the establishment of the project activity instance crediting start date upon termination of the agreement (see Section 1.9).

1.16 Other Forms of Credit

1.16.1 Emissions Trading Programs and Other Binding Limits

The project does not reduce GHG emissions from an emissions trading program, nor does it have any intention to.

1.16.2 Other Forms of Environmental Credit

The project has not sought or received any other forms of GHG-related credit, including renewable energy certificates. If, under the Verra regulatory framework, other programs arise that the project is eligible to participate in, FCW will communicate to Verra immediately to comply with any rules and regulations forthwith. Other programs or carbon registries in which the Project may be eligible to

participate include, among others, the California Air Resources Board Program, American Carbon Registry, and the Climate Action Reserve.

1.16.3 Supply Chain (Scope 3) Emissions

This analysis is not applicable because the project is enrolled under sectoral scope 14; Agriculture, Forestry and Other Land Use (AFOLU). Inventory emissions are not considered under sectoral scope 14.

1.17 Sustainable Development Contributions

In addition to committing to sustainable forest management, the project will also contribute to the United Nations Sustainable Development Goals (SDGs) in the United States. Project activities will work to conserve forest ecosystems through improved forest management by extending rotation age on an initial 31 hectares (77 acres) of forestland located in Washington State, United States of America. Improved forest management contributes to SDG 6: Clean Water & Sanitation, SDG 13: Climate Action, and SDG 15: Life on Land. The project shall extend the rotation age of trees to remove carbon emissions from the atmosphere; protect the integrity of water bodies, streams, and wetlands; and protect forestland in FSC-compliant agreements. Total protected acreage, quantity of emissions reductions, and number of protected streams and wetlands shall be monitored over the project lifetime. See Table 7 in Section 1.10 and materials contained in Annex Q for evidence of contribution towards SDG 13. Evidence of contributions to SDGs 6 and 15 shall be provided in signed legal agreements designating lands as protected for the lifetime of the project.

Table 8: Sustainable Development Contributions

SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
6.6	6.6.1 Change in the extent of water-related ecosystems over time	Activities will be implemented to increase	Protected 31 hectares (77 acres) of forest and all watersheds contained therein in binding long-term agreements, implemented no-touch forestry practices in all stream buffer zones.	Protected 31 hectares (77 acres) of forest and all watersheds contained therein in binding long-term agreements, implemented no-touch forestry practices in all stream buffer zones.
13.0	Tonnes of GHG emissions to be avoided or removed	Activities will be implemented to increase	Will reduce or remove 21,149,786 tons of CO ₂ e from the project area	Will reduce or remove 21,149,786 tons of CO ₂ e from the project area
15.1	15.1.1 Forest area as a proportion of total land area	Activities will be implemented to increase	Placed 31 hectares (77 acres) of forest in legally binding agreements.	Placed 31 hectares (77 acres) of forest in legally binding agreements.

15.2	15.2.1 Progress towards sustainable forest management	Implemented activities to increase	Registered 31 hectares (77 acres) of forest under FSC-compliant forest management plans.	Registered 31 hectares (77 acres) of forest under FSC-compliant forest management plans.
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1.18 Additional Information Relevant to the Project

1.18.1 Leakage Management

No activity-shifting leakage will occur in the project per Eligibility Criteria 2d and 5 (see Section 1.4); all forested lands will be enrolled in the project. Eligibility Criterion 5 prohibits harvesting on any forested lands prior to project proponent consent, while Eligibility Criterion 2d requires all forested lands to be enrolled in the project. Market effects leakage will be monitored, see section 4.3 for more detail.

1.18.2 Commercially Sensitive Information

Per the VCS Standard 3.5.2, qualifying commercially sensitive information may be protected from public review.

Annex AH includes proprietary financial information related to the project proponent's internal project development costs. Annex U includes financial information from the project proponent as supporting evidence for the Financial Viability section of the Non-Permanence Risk Report.

Both Annex AH and U qualify as commercially sensitive as they contain financial information, which by the definition of "sensitive information" in the VCS Program Definitions v4.3, may be omitted from the public documentation if their "disclosure could reasonably be expected to result in a material financial loss or gain, prejudice the outcome of contractual or other negotiations or otherwise damage or enrich the person or entity to which the information relates."

1.18.3 Further Information

N/A.

2 SAFEGUARDS

2.1 No Net Harm

The project is not expected to cause any negative environmental impacts. Because the project activity limits commercial harvesting and any commercial harvesting requires FSC certification, the project will

have positive outcomes for both climate change mitigation and environmental impact reduction. These include increased carbon storage and sequestration, sustainable harvest practices where harvests occur, as well as biodiversity impacts through the preservation of key habitats. Compliance with FSC Standards ensures that no invasive species shall be introduced in the project area as part of any forest management plans written by FCW, and no non-native species shall be used without appropriate justification. At this time, no planting plans are in progress on the project area.

The project proponent also does not expect any negative socio-economic impacts. By working closely with project instance landowners, Forest Carbon Works plans to address any grievances that may arise during the project, detailed in section 2.5 below. While timber harvests are deferred with the switch to extended rotation age management, carbon payments to landowners ensure that over the course of the project, landowners can earn profit on their forest land equal to or exceeding those from timber sales. Expert Forest Carbon Works membership advisors are available to project members throughout the project lifetime to ensure project activities best suit the needs of each landowner.

Forest Carbon Works has developed a robust grievance structure should community members have complaints or comments (see section 2.5), which will help ensure community satisfaction with the project and mitigate any unforeseen negative impacts. Landowner and community input is highly valued in the project, as can be seen in community meetings and opportunities for community members to express opinions about the project and its benefits (see section 2.2).

2.2 Local Stakeholder Consultation

Stakeholders were identified by asking the following questions: *Is the individual or group currently, or will be, affected by implementation of this project? If affected, are they at risk of any negative impacts of this project?* Affected individuals are landowners vesting carbon rights and forest management responsibility to Forest Carbon Works for the duration of the project. Since these rights are the property of landowners exclusively, Forest Carbon Works has determined that no other primary stakeholders exist relative to this project. Neighbors may have access to project instances and may be indirectly affected by project activities and are thus identified as minor stakeholders if they own or reside on property adjacent to enrolled project instances. Since these stakeholders have no direct relationship with FCW, unless a comment or grievance is submitted in formal channels by these stakeholders, they are labeled thus. Risks to these stakeholders were identified according to VCS Standard 3.18.12 and are detailed in the FCW Adaptive Risk Management Plan (Annex T).

Per VCS Standard 3.18.3, local stakeholder consultation has been conducted through outreach by FCW sales team staff. This consultation was not one singular event, but a continued correspondence between FCW and major stakeholders. Major stakeholders in this project include project activity instance landowners and minor stakeholders are neighbors affected by project activities. Expert regional teams of membership specialists and foresters have regular correspondence by phone, in person, or email with these stakeholders, where all aspects of project design are discussed, with mechanisms in place for stakeholders to raise concerns, per VCS Standard 3.18.4. This correspondence may include information about project design, implementation, monitoring,

stakeholder grievances, questions, or worries. If deemed appropriate, FCW may implement project design changes because of this consultation. Due to the confidential nature of membership correspondence, individual PAI correspondence is noted internally and can be made available at verification at auditor request. The correspondence with the landowner was recorded and analyzed for project design comments and feedback, but the major stakeholders have not submitted any criticism or suggested updates to the project design. Thus, no design changes have been made at this time due to stakeholder consultation.

The earliest outreach to stakeholders was in 2020, when landowners of the initial project activity instance were given the FCW offer packet and provided with other information about the project design, implementation, and monitoring requirements. The process of ensuring free, prior, and informed consent for all stakeholders began at this initial phase, with the submission of the FCW Membership guide offer packet and other information to stakeholders (Annex AR). These documents allowed the landowner to be *freely informed prior* to the project implementation. Consent was given to implement the project with the stakeholder signature of the MLA (Annex D).

With the feedback provided by stakeholders, Forest Carbon Works identifies opportunities for improvement throughout the various stages of design and development of the project, which allows best practices to be implemented and stakeholder expectations to be met. This feedback is recorded internally for future reference.

FCW shall communicate and consult with local stakeholders in an ongoing process for the life of the project by following its written Stakeholder Engagement Plan (Annex R) This plan outlines necessary communication with stakeholders, including project design, implementation, and results of monitoring; risks, costs, and benefits of the project; relevant laws covering workers' rights; and the process of VCS Program validation/verification, including the related site visit (VCS Standard 3.18.18). Risks, costs, and benefits of the project shall be communicated with stakeholders prior to project implementation with the stakeholders' receipt of the FCW Membership Guide (Annex AR), as well as regular phone or email correspondence with FCW regional foresters and membership specialists. The plan entails the creation of an adaptive management plan to identify likely natural and human-induced risks to local stakeholder well-being expected during the project lifetime and outline measures needed to mitigate these risks. Forest Carbon Works utilizes continuous feedback and grievance redress procedures as described in section 2.5 so that the stakeholders have an efficient route to address any problems that might arise. Furthermore, all applicable laws and regulations relating to stakeholder or workers' rights will be adhered to as per Section 1.14 of the FCW Project Description.

2.3 Environmental Impact

Project proponent plans to assess the environmental impact according to small and low intensity managed forest guidance required by indicator 6.1.a of the FSC US Forest Management standard v1.0. These include an evaluation of water resources and riparian habitats, state and federally listed threatened and endangered species, natural heritage database consultation, and soil resources. In principle, FCW plans to enhance biodiversity and improve forest health with the goal of increased

species diversity, age-class heterogeneity, spatial arrangement heterogeneity, and standing deadwood recruitment. These hallmarks of a healthy forest inherently promote wildlife diversity, soil, and water quality improvements due to variation in forage availability, improved habitat, and reduced erosion potential.

If sensitive species or habitats are found during these assessments, FCW will prepare a strategy to reduce or avoid net harm.

If harvesting is approved for specific PAIs, forest management plans will ensure that all recommended state erosion control measures are followed when implementing harvest activities, as required by FSC certification per Eligibility Criterion 7 (see Section 1.4). Forest Carbon Works shall follow all state, local, and federal regulations per Eligibility Criterion 2g, as well as conform to best management practices in riparian or other areas with erosion potential, going above and beyond all state recommendations to ensure quality forest management in conformance with FSC requirements.

2.4 Public Comments

During the 30-day public comment period as required by VCS Standard 3.18.8, any comments regarding the project shall be submitted to Verra at secretariat@verra.org and respondents shall provide their name, organization, country, and email address. At the end of the public comment period, Verra will provide all comments received to the project proponent.

Upon receipt of public comment, FCW will review and assess comments for addition to project design, per VCS Standard 3.18.9. A comment form will be available on the Forest Carbon Works website, in addition to hardcopy mail-in comments and voicemails directly to the FCW office. All comments will be recorded and addressed as necessary. At the time of writing, no comments have been received. See Annex AQ.

2.5 AFOLU-Specific Safeguards

Impacts of the project on local stakeholders and necessary safeguards shall be assessed per VCS Standard v4.4 Section 3.18. Stakeholder assessment and identification processes are described in the Adaptive Risk Management Plan (Annex T) and in Section 2.2 above. After stakeholders were identified, the steps as described in the VCS Standard were followed to identify risks:

- Are there legal or customary access/tenure rights to any part of the project area held by local stakeholders? Will these rights be affected by project activities? (3.18.12)
- What is the social, economic, and cultural diversity of the stakeholder groups, and should special attention be paid to any minority / traditionally marginalized groups? (3.18.12)
- Are stakeholders expected to change over time, and if so, are there different risks associated with this different list of stakeholders? (3.18.12)
- Are there changes to wellbeing associated with the baseline scenario? (3.18.12)
- Are there stakeholders outside of the project area? What risks are posed to these stakeholders? (3.18.12)

- Identification of the location(s) of stakeholder property ownership / stakeholder customary access (3.18.12)
- Are any food-security, land loss, loss of yields, or climate change adaptation risks associated with the project? (VCS Standard 3.18.14)
- Are there any environmental or other socio-economic risks associated with project activities? (VCS Standard 3.18.2)

Detailed answers to these questions and identification of risks and mitigation measures are found in the Adaptive Risk Management Plan, Annex T. As detailed in Section 2.3 above, no negative environmental impacts to stakeholders have been identified. In addition, no negative socio-economic impacts have been identified either. If any impacts arise during stakeholder communication during the lifetime of the project, FCW will refer to the Stakeholder Engagement Plan (Annex R) to mitigate them (VCS Standard 3.18.2).

FCW has also identified likely natural or human-induced risks to stakeholders (VCS Standard 3.18.13) in the Adaptive Risk Management Plan, where mitigation measures are laid out in response to these risks.

To ensure ongoing communication and consultation with local stakeholders, and capture any risk not identified by FCW, FCW sustains an open dialogue with stakeholders by maintaining an easily accessible website with a section for stakeholders to provide comments and ask questions at <https://forestcarbonworks.org/stakeholders/>. This open line of communication allows for stakeholders without direct access to FCW membership specialists or foresters to submit feedback about the project, and FCW staff will address each comment received to meet VCS Standard requirements, detailed in section 2.4 above.

To further reduce risk to stakeholders, FCW staff have relevant carbon project development and forest management expertise (VCS Standard 3.18.16). FCW also complies with Title VII of the US Civil Rights Act, which prohibits sexual harassment or discrimination based on gender, marital status, parenthood, or sexual orientation.

Additionally, as per VCS Standard 3.18.20, all communication and consultation will be performed in a culturally appropriate manner, including language and gender sensitivity, directly with local stakeholders or their legitimate representatives when appropriate.

The project implementation information shall be provided to stakeholders in a timely manner and additional consultation shall be performed prior to design changes to allow stakeholders adequate time to respond to the proposed design or action. The project proponent will take due account of all input received during the local stakeholder consultation and through ongoing communications, and either update the project design or justify why updates are not appropriate (VCS Standard 3.18.9). At this time, no design changes have been made or deemed necessary.

2.5.1 Grievance Redress Procedure

The project proponent maintains a grievance redress procedure to address disputes with local stakeholders that may arise during project planning and implementation (VCS Standard 3.18.19). The project proponent will have multiple culturally appropriate methods for submitting a grievance: self-identified, confidential, or anonymous procedures that all stakeholders will be made aware of in advance of project implementation. The project proponent will have a form to submit grievances available on their website, which can be submitted with or without the complainant's identity attached. Additionally, the project proponent will accept grievances submitted by mail to their office, the address of which is publicly available, and will designate a central point of contact to compile all the letters received. All grievances received will be publicly available on the project proponent's website after submission and the complainant will receive confirmation of receipt if contact information is available. During the monitoring period any conflicts or grievances that may arise shall be recorded and resolved as needed. If a grievance is received, the project proponent will attempt to resolve the grievance following a three-stage approach:

1. The project proponent will attempt to amicably resolve the grievance and provide a written response to the grievance in a manner that is culturally appropriate.
2. If there are any grievances received that cannot be resolved internally or via amicable negotiation, then the grievance shall be referred to the Consensus Building Institute for third-party mediation (<https://www.cbi.org/>).
3. Finally, if mediation does not resolve the grievance, it shall be referred to the appropriate, competent jurisdiction within the United States of America Court System without prejudice to a party's ability to submit the grievance to a competent supranational adjudicatory body, if any.

The grievance redress procedure is made publicly available on the stakeholders' page of the project proponent's website, directed to: <https://forestcarbonworks.org/grievance-procedure/>.

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

Title: Methodology for IFM through Extension of Rotation Age

Reference: VM0003

Version: 1.3

The following tools were utilized for the development of this project:

Title: UNFCCC Tool for the demonstration and assessment of additionality

Version: 7.0.0

Title: AFOLU Non-Permanence Risk Tool

Version: 4.0

Title: Calculation of the number of sample plots for measurements within A/R CDM project activities

Version: 02.1.0

Title: Tool for testing significance of GHG emissions in A/R CDM project activities

Version: 01

3.2 Applicability of Methodology

The following table demonstrates and justifies how all project activity meets the applicability conditions of the VM0003 Methodology. All tools used as listed above in Section 3.1 are listed in the methodology and their applicability conditions are as follows:

The CDM Tool for the demonstration and assessment of additionality v7.0.0 and the AFOLU Non-Permanence Risk tool have no applicability conditions relevant to this project. The A/R Methodological Tool Calculation of the number of sample plots for measurements within A/R CDM project activities has “no internal applicability conditions.” The applicability of the Tool for testing significance of GHG emissions in A/R CDM project activities” (Version 01) states that it shall be used in the application of a CDM approved A/R methodology, thus this condition is met.

Table 9: Applicability of Methodology

VM0003 Applicability Conditions	Project Conditions
Forest management in both the baseline and project scenario involves harvesting techniques such as clear cuts, patch cuts, seed tree, continuous thinning or group selection practices.	Per Eligibility Criterion 3 (see Section 1.4), the baseline model must be even-aged management which requires harvesting techniques such as clear cuts, patch cuts and seed tree. Per Eligibility Criterion 6, the baseline model must match the baseline scenario as demonstrated by the provision of a THP. Therefore, the baseline scenario must involve harvesting techniques such as clear cuts, patch cuts and seed tree. See Section 3.4 for baseline scenario management. Per Eligibility Criterion 5, the project scenario must include techniques such as patch cuts, continuous thinning or group selection practices according to a policy maintained by the project proponent (see Annex AR). See Section 1.11 for project scenario management.

Forests which are not subject to timber harvesting or managed without an objective for earning revenue through timber harvesting in the baseline scenario are not eligible under this methodology.	Per Eligibility Criterion 6 (see Section 1.4), the baseline scenario shall be timber harvesting as common practice to the region. Per Eligibility Criterion 3, the baseline model shall not be unmanaged and therefore must be subject to timber harvesting to be comparable to the baseline scenario as required by Eligibility Criterion 6. See Section 3.4 for baseline scenario.
Prior to the first verification event, the project area must meet one of the following conditions: Certified to Forest Stewardship Council (FSC); OR Subject to an easement, or equivalent instrument, recorded against the deed of property that prohibits Commercial Harvesting for the duration of the crediting period, unless later certified to FSC.	Per Eligibility Criterion 7 (see Section 1.4), all PAIs will be certified by the FSC prior to the first verification event OR will be subject to an easement, or equivalent instrument, recorded against the deed of property that prohibits Commercial Harvesting for the duration of the crediting period, unless later certified to FSC.
Project proponents must define the minimum project length in their project description document.	The minimum project crediting period length is 25 years, as stated in section 1.9. Project activity shall occur for at least 60 years, defined by Eligibility Criterion 2e and demonstrated in Annex D.
The project does not encompass managed peat forests and the proportion of wetlands are not expected to change as part of the project.	Per Eligibility Criterion 1 (see Section 1.4), no managed peat forests will be included in the project scenario, nor will the proportion of wetlands change as part of project activity per Eligibility Criterion 5.
Project proponents must have a projection of management practices in both with and without project scenarios.	Per Eligibility Criterion 3 (see Section 1.4), a projection of project scenario (section 1.11) and baseline scenario (section 3.4) shall be modelled.
If fire is used as part of forest management, then fire control measures, such as installation of firebreaks or back-burning, must be taken to ensure fire does not spread outside the project area—that is, no biomass burning must be permitted to occur beyond the project area due to forest management activities.	Per Eligibility Criterion 2i, no fire management can be used as part of management without prior approval from the project proponent. Further, the project proponent maintains a policy (Annex I) that if fire is used as part of forest management, then fire control measures, such as installation of firebreaks or back-burning, must be taken to ensure fire does not spread outside the project area, refer to Annex D.

There may be no leakage through activity shifting to other lands owned or managed by project proponents outside the bounds of the project area.

Per Eligibility Criterion 2d and 5 (see Section 1.4), the project does not allow for activity shifting leakage due to all forested lands of every project activity instance being enrolled in the project.

3.3 Project Boundary

Table 10: Project Boundary

Source		Gas	Included	Justification/Explanation
Baseline	Burning of Biomass	CO2	No	Excluded per Section 5.1 of the VM0003 Methodology
		CH4	Yes	Included per Section 5.1 of the VM0003 Methodology
		N2O	No	Excluded per Section 5.1 of the VM0003 Methodology
		Other	N/A	N/A
Project	Burning of Biomass	CO2	No	Excluded per Section 5.1 of the VM0003 Methodology
		CH4	Yes	Included per Section 5.1 of the VM0003 Methodology
		N2O	No	Excluded per Section 5.1 of the VM0003 Methodology
		Other	N/A	N/A

Table 11: Carbon Pools

Carbon pools	Selected	Justification / Explanation of choice
Above ground biomass, credited	Yes	Major carbon pool subjected to the project activity, eligible for VCU accounting and issuance
Above ground biomass, uncredited	No, however subject to verification	Portion of the major carbon pool which will be subject to the project activity but will conservatively not contribute towards VCU accounting and issuance (see Section 3.6).

reserve stock (URS)		
Below ground biomass	Yes	Below ground biomass stock is expected to increase due to the implementation of the VCS IFM project activity. Below ground biomass subsequent to harvest is not assessed with the conservative assumption of immediate emission.
Dead wood, Standing, credited	Yes	Included per Section 5.1 of the VM0003 Methodology; project proponent may elect to include dead wood as long as it represents less than 50% of the total carbon volume on site in any given year
Dead wood, Standing, uncredited reserve stock (URS)	No, however subject to verification	Included per Section 5.1 of the VM0003 Methodology; project proponent may elect to include dead wood as long as it represents less than 50% of the total carbon volume on site in any given year. Portion of the standing dead wood pool that will be subject to the project activity but will conservatively not contribute towards VCU accounting and issuance (see Section 3.6).
Dead wood, Lying	Yes	Included per Section 5.1 of the VM0003 Methodology; project proponent may elect to include dead wood as long as it represents less than 50% of the total carbon volume on site in any given year.
Litter	No	Changes in the litter pool will be <i>de minimis</i> as a result of rotation extension.
Soil organic carbon	No	Changes in the soil organic carbon pool will be <i>de minimis</i> as a result of rotation extension.
Wood products	Yes	This stock may increase or decrease (relative to the baseline due to implementation of the project activity. Section 5.1 of VM0003 methodology allows for inclusion of this pool and contains an accounting approach if evidence cannot “be provided that carbon stocks in wood products are rising faster in the project case than in the baseline or are decreasing faster in the baseline than in the project case.”

A map of the initial project area is provided below.

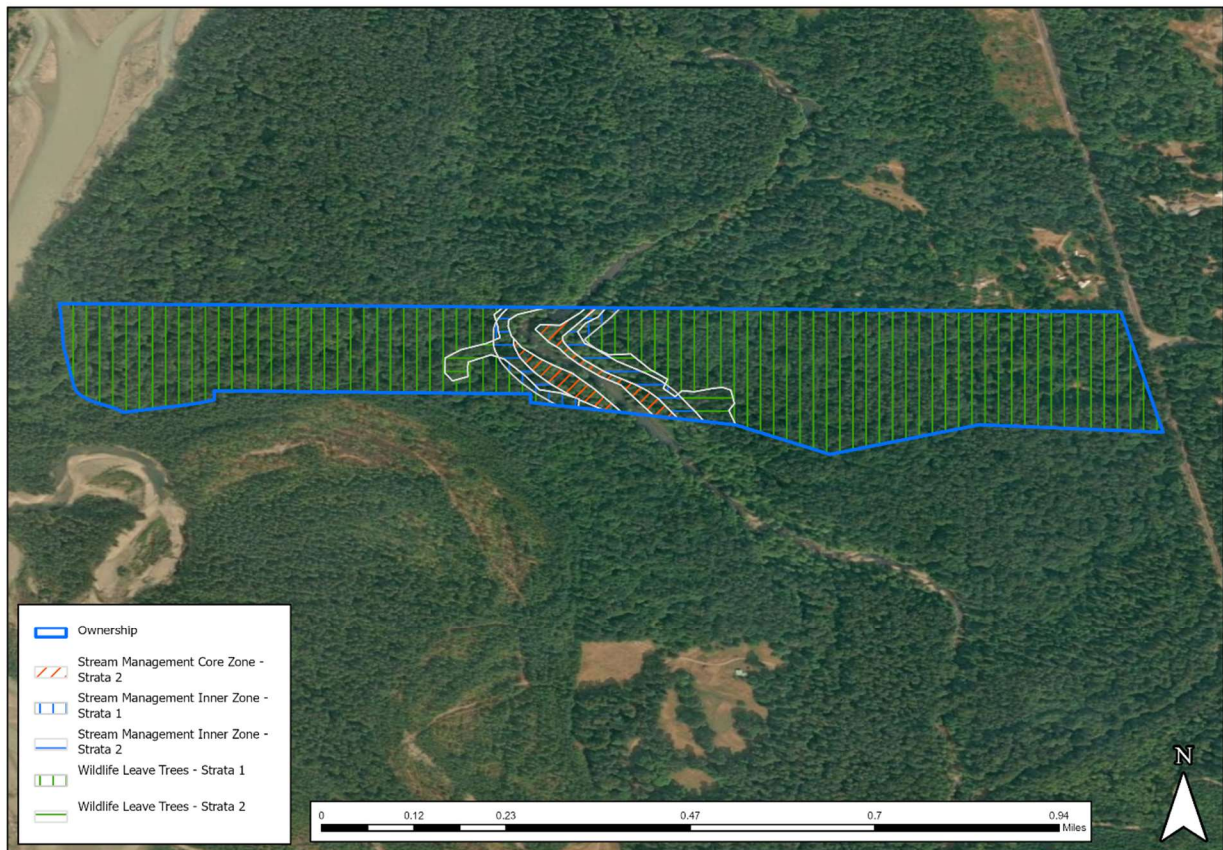


Figure 2: Ownership and management boundaries for PAI 11024. Management restrictions include no harvesting within the core Stream Management Zone (SMZ), reduced harvesting to 30.2 sq. m (325 sq. Ft) basal area in the inner SMZ and leave tree restrictions within the remainder of the project area. Shapefile included within Annex AS.

3.4 Baseline Scenario

According to the VM003 methodology section 6.3 “Determination of Baseline Scenario”, four credible alternative forest management scenarios must be evaluated to determine the Baseline Scenario. These scenarios are as follows:

- Continuation of the pre-project forest management (Historical Baseline),
- Legal requirements for forest management in the region (Legal Baseline),
- Common practice forest management in the region (Common Practice Baseline), and
- Forest management as modeled under the project but in the absence of registration as an IFM project activity.

Per VCS Standard 3.5.13, all factors relevant to the determination of the baseline scenario have been assessed across the entire grouped project geographic area.

Historical Baseline: The FCW PAI (defined in Section 1.4) has been subject to moderate forest management in the past from previous landowners. However, historical records of forest management for the 20 years proceeding project start date have not been found. Per the VM0003 Methodology, if these records are not available “the project must be developed using the Legal or Common Practice Baselines.”

Legal and Common Practice Baseline: Many family forests in the United States face financial pressures to liquidate their timber through the use of even-aged management or sell the property. The Family Forest Carbon Project aims to conserve and restore family-owned tracts of forestland throughout the United States and democratize access to carbon revenue by making carbon offset payments available to these small family landowners. The common practice within geographic regions in which the initial project activity instance, PAI 1024 (30.9 ha), is located is to maximize net present value to the landowner by utilizing even-aged harvesting while complying with all relevant laws and regulations. As this is the same scenario as the Legal Baseline, Common Practice and Legal Baselines are considered to be identical.

To validate the baseline scenario, a comparable timber harvesting plan (THP) is required for each PAI as demonstration of common practice per Eligibility Criterion 6 (see Section 1.4). Comparable plans for the initial PAI are available in Annex H. To determine if a plan is comparable the following attributes are assessed: property slopes, zoning classes, geographic and regulatory region, and prescribed forest management activities. The plan provided for the initial project activity instance, PAI 1024 (30.9 ha), is comparable to the project area and baseline scenario (see *PAI 1024 – Comparable Harvest Materials Comparison* workbook in Annex H). For a more in-depth description of the silviculture applied in the baseline for the current PAI see the Forester Attestation (Annex AU).

Prior to the subsequent addition and verification of any new PAIs to the grouped project, the legality and plausibility of the baseline scenario for each added PAIs shall be confirmed by an independent forest consulting entity in order to comply with the guidance for defining the legal baseline in Section 6.3 of VM0003. The independent forest consulting entity shall render an attestation of substantive form to Appendix B. An independent forest consulting entity is any person not directly involved with the project and is qualified to practice forestry in the United States. Independent forest consulting entities may include those qualified individuals working for industry, university, non-profit, federal, state, county, or local government, or that identify as a forestry consultant. A determination of the baseline scenario’s plausibility can consider local operational and/or economic dynamics, such as contractor availability and rates.

The Forester Attestation provided for the initial project activity instance, PAI 1024 (30.9 ha), was obtained from a forestry consultant in the State of Washington, who is not otherwise associated with the development of this project nor with the project proponent. As such, the Forester Attestation provided is considered independent. The forester reached their conclusion regarding the plausibility of the baseline scenario by using the knowledge they have gained from practicing forestry in the area of

the current PAI and assessing the forest management practices included in baseline modeling. While assessing the baseline scenario the forester considered 1) common forest management practices in the area, 2) financial viability of planned management, and 3) the legality of forest activities. The Forester Attestation, as well as the foresters resume, are provided in Annex AU.

In the area where the FCW Property is located (see Section 1.4), it is common practice to apply even-aged rotation forestry, as demonstrated by conformance with Eligibility Criterion 6. Following harvest, site prep typically involves chemical herbicide treatment prior to the replanting of seedlings.

Description of baseline management systems used in carbon stock quantification for the initial PAI:

Baseline Management System	Description
SMZCWWA	No harvesting.
SMZIWWA	Commercial thin from below down to 325 square feet basal area per acre every 20 years.
WLTWWA	Rotation harvest of existing hardwood trees, while leaving 3 wildlife reserve trees and 2 green recruitment trees per acre (year 0). Following rotation harvest, plant Douglas-fir seedlings at a density of 400 trees per acre (year 0). Pre-commercial thin from below to 180 trees per acre (age 15). Commercial thin from below to 75 square feet of basal area per acre (age 28-35). Rotation harvest of planted Douglas-fir, while leaving 3 wildlife reserve trees and 2 green recruitment trees per acre (year 49).

Refer to the management stratification table in Section 4 for more detail on the application of the baseline management systems.

Forest management modeled under project in absence of registration as IFM project: As per Eligibility Criterion 3 (see Section 1.4), forest management of the baseline and project scenarios shall be modeled over a 100-year period using the US Forest Service Forest Vegetation Simulator (FVS) software. FVS is a forest growth and yield model that allows for region-specific parameterization across the United States.

Assuming a fixed stumpage price across scenarios, the comparison of revenues between the baseline and project scenarios is equivalent to the comparison of harvest volumes across scenarios. Then to demonstrate that revenue generated from ERA selective harvest is lower than the common practice baseline scenario, it is sufficient to demonstrate that harvest volumes in the project scenario are lower than the baseline scenario.

For the initial PAI, the expected harvest volume in the project scenario is lower than the baseline scenario, and therefore the expected revenue from harvesting in the project scenario is lower than the baseline scenario as demonstrated by conformance with Eligibility Criterion 3. Harvest volumes in the project scenario will always be less than in the baseline scenario for two reasons: 1) harvesting in the project scenario is limited by the Membership Lease Agreement in terms of practices allowed (limited treatments such as group selection, patch cuts and continuous thinning and other uneven-aged

management) and harvesting intensity, and 2) harvesting in the baseline scenario utilizes even-aged rotation forestry practices that seek to maximize net present value (IFM-1, see section 1.11).

To comply with VCS Standard V4.4 Section 3.2.7, the baseline will be reassessed every 10 years. The baseline model will be rerun using the best available inventory data to reflect operational constraints present prior to the project start date. Protective easements enacted as a result of the project, such as Annex D, or similar conservation easements that may prohibit or limit harvesting will be relevant to the project scenario and not the baseline scenario for the purposes of baseline reassessment. The modeling horizon will be through 2122, which is 100 years from the project start date.

3.5 Additionality

Additionality was determined using version 7.0.0 of the UNFCCC CDM Tool for the demonstration and assessment of additionality, a project method as required by the VM0003 methodology. The project activities are not mandated by any state, federal, or local law, thus demonstrating regulatory surplus.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

As determined in Section 1.4 above, all FCW PAs shall meet listed eligibility criteria to demonstrate additionality. The property shall meet Eligibility Criterion 6, that the baseline scenario (see Section 3.4) is common practice for the region which excludes extension of rotation age (IFM ERA).

Sub-step 1a: Define alternatives to the project activity

The proposed alternative scenario is the project activity without being registered as a CDM project. Without revenue from the sale of certified carbon emissions reductions and removals, there is no financial incentive for the project proponent to participate in forest management.

Other alternative scenarios to the project activity that deliver outputs with comparable quality. Activities similar to the project activity occur on at least part of the land within the project area resulting from legal requirements.

It is possible, although unlikely, that local or federal government could enact laws banning the common practice scenario.

Continuation of pre-project land use. This alternative scenario reflects the baseline scenario, where the Project Area continues to be used for common practice even-aged forest management.

Sub-step 1b: Consistency with mandatory laws and regulations

All scenarios above will be in compliance with applicable state and federal legal requirements. Per Eligibility Criterion 2g, the project proponent will abide by all federal, state, and local regulations. See Section 1.14 for a comprehensive list of all laws relevant to the project activity and project proponent.

Step 2: Investment Analysis

Sub-step 2a: Determine appropriate analysis method

Per Eligibility Criterion 6, the baseline scenario (Section 3.4) is common practice, so by methodology definition of common practice, the goal was to “maximize net present value to the landowner by utilizing even-aged harvesting while complying with all relevant laws and regulations.” The chosen analysis method is an investment comparison approach using Net Present Value (NPV) to be outlined in subsequent steps 2b through 2d. Reference workbooks with calculations will be provided at verification.

Sub-step 2b & 2c: Application & calculation and comparison of financial indicators

Standard market parameters used within this analysis for the initial project activity instance, PAI 1024 (30.9 ha), are based on regional data published by the Forest Biometrics Research Institute for the most recent year available (Annex BF). The real discount rate was estimated to be 7%.

The timeline for analysis reflects the 100-year project longevity period, which roughly equates to two harvest rotations in the alternative scenario. The 100-year NPV for forest management in the alternative scenario for the initial project activity instance (PAI 1024) was calculated as \$27,223 per acre while the NPV for the project scenario was \$3,896 per acre, as shown in Annex AH. The difference in NPV between the two scenarios is driven by the reduced harvest volumes in the project scenario. In the project scenario, a commercial thin was modeled every 20 years. Harvest revenue was derived from averages published by the Forest Biometrics Institute. These averages are roughly in line with current log prices at the Fritch Mill in Snohomish, WA. This mill is the closest mill to the project area and likely would have been used in the baseline scenario had commercial harvesting occurred in absence of the project. This mill operates independently of Forest Carbon Works and posts log prices on its website¹, though these prices may have changed since the time of writing. Annex AH provides detailed calculations of the assumptions used.

The NPV difference between the project and baseline scenarios is quite dramatic, indicating that the project activity is the not the most financially attractive option compared to the alternative scenario (see Section 3.4).

Sub-step 2d: Sensitivity analysis

Sensitivity analysis for the above NPV indicator was calculated with a range of 10% change in costs and revenues for each scenario. The optimistic scenario used an assumption of an additional 10% revenue in harvested products, and 10% less upfront costs. The pessimistic scenario assumed a negative 10% change in harvest revenue, and an additional 10% initial cost. The real discount rate stayed constant at 7%.

Table 12: Sensitivity Analysis of NPV Analysis of Project and Alternative Scenarios

	Pessimistic	Assumed	Optimistic
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¹ <https://www.fritchmill.com/current-log-price-sheet.aspx>

Harvest Volume	-10%	0%	+10%
Costs	+10%	0%	-10%
Discount Rate	7%	7%	7%
NPV Project Scenario / acre	\$3,386	\$3,896	\$4,406
NPV Alternative Scenario / acre	\$24,230	\$27,223	\$30,218

The results of the sensitivity analysis show that the proposed project activity is less financially attractive than the alternative scenario of common practice management (see Section 3.4). Workbooks with all financial calculations are provided at validation “FCW Conserve PD Additionality NPV v4.0”, Annex AH.

Step 3: Barrier Analysis

Optional, skipped to step 4.

Step 4: Common practice analysis

Sub-step 4a: The proposed CDM project activity applies measures that are listed in the definitions section above

Per Eligibility Criterion 5, the project activity cannot apply any of the measures that are listed in the definitions section above as the only permitted measure is IFM ERA. Does not apply, skipped to Sub-step 4b.

Sub-step 4b: The proposed CDM project activity does not apply any of the measures that are listed in the definitions section above.

According to a regional forester, there are no other project activities in the region similar to the project scenario due to its use of uneven-aged forest management (see Section 1.11). Since this activity is unique to the region, the project is considered additional.

3.6 Methodology Deviations

The project deviates from the procedures set out in VM0003 by applying an alternative method related to the criteria and procedures for monitoring that is more efficient for project-specific circumstance, achieves the same level of accuracy and results and is more conservative than what is set out in the methodology. The deviation does not have an impact on the applicability conditions, additionality, or the appropriateness of the baseline scenario. The relevant parameter has been defined in both Section 5.1, Data and Parameters Available at Validation, and Section 5.2, Data and Parameters Monitored.

3.6.1 Uncredited Reserve Stock

The uncredited reserve stock (URS) is a division of the above ground biomass and standing dead wood carbon pools (see Section 3.1). The uncredited reserve stock (URS) represents a small portion of project carbon stocks that are subject to the project activity but will conservatively not count towards

VCU accounting or issuance. The URS is calculated as nine percent (9%) of the initial carbon stock of all PAIs as quantified at the time of addition of each PAI to the grouped project.

Contributions to, and depletions from, the URS shall be tracked at the PAI level. A PAI's contribution to the uncredited reserve stock will occur once upon enrollment into the grouped project. The balance of the uncredited reserve stock must be included in all future monitoring reports and the balance shall be within the scope of verification however not a selected pool.

Upon first enrollment to the grouped project, the PAI's contribution to the URS shall be quantified as nine percent (9%) of total carbon in the AGBG Living and AG Standing Dead pools. This procedure is further described in Section 4.1.

The purpose of the URS is to establish a dedicated carbon pool that can be depleted to account for carbon removed from the project boundary due to limited harvesting activities according to the policies of Forest Carbon Works, such as limited continuous thinning, which aim to maintain forest vigor and improve structural characteristics to the benefit of added carbon removal by residual trees over time.

Maintenance of Accuracy

The URS does not negatively impact the accuracy of quantified emissions reductions and removals as there is no change in the calculation of uncertainty (Annex AI). The calculation of uncertainty includes the URS (Annex AJ).

Conservativeness of Quantification

The deduction of URS from the initial carbon stock is conservative because it reduces crediting of emissions in the baseline scenario relative to the outcome where it had not been deducted. The tables below provide a comparison of the VCU's eligible for issuance between the *with* and *without* URS accounting scenarios, including relevant intermediate calculations. These tables show that the quantity of VCUs eligible for issuance are 850 with the URS compared to 876 without the URS. Table values are based on inventory data collected from the initial PAI. Analysis workbooks containing the underlying calculations for URS accounting scenarios have been provided to the validation/verification body (Annex AK and Annex AL). This evidence demonstrates that the methodology deviation does not result in an overestimation of net GHG emissions reductions or removals and is therefore conservative.

Table 13: With Uncredited Reserve Stock

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Uncertainty Deduction (%)	Net GHG emission reductions or removals (tCO ₂ e)	Buffer pool allocation	VCU's eligible for insurance
2020	-53	142	39	7.5%	145	21	123

2021	-115	307	84	7.5%	312	46	265
2022	-115	307	84	7.5%	312	46	265
2023	-85	228	62	7.5%	232	34	197
Total	-368	984	269	7.5%	1,001	147	850

Table 14: Without Uncredited Reserve Stock

Year	Baseline emissions or removals (tCO2e)	Project emissions or removals (tCO2e)	Leakage emissions (tCO2e)	Uncertainty Deduction (%)	Net GHG emission reductions or removals (tCO2e)	Buffer pool allocation	VCU's eligible for insurance
2020	-59	142	40	7.5%	149	22	127
2021	-127	307	87	7.5%	322	48	273
2022	-127	307	87	7.5%	322	48	273
2023	-95	228	64	7.5%	239	35	203
Total	-408	984	278	7.5%	1,032	153	876

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

To comply with VM0003 Sections 9.3 and 8.1, the project proponent has elected to stratify the project area twice over. The first type of stratification complies with Section 9.3, to increase measuring precision by stratifying the project area into relatively homogeneous units, called measurement strata. The second type of stratification complies with Section 8.1 of the methodology, “with further division where differences exist in site index, species and/or age class,” in addition to acknowledging differences in forest management systems. The second type of stratification is called management stratification. Both types of stratification are used to estimate GHG emissions reductions and removals by the project.

Measurement Strata

Per VM0003 9.3, the project area was initially stratified ex-ante to increase measurement precision of carbon stock where the carbon stock of the project area is not homogeneous. The project proponent uses the National Agriculture Imagery Program (NAIP) and other aerial imagery datasets to determine differences in forest structure and species composition for sampling purposes. This first process delineates the project into areas of homogeneous forest types to determine measurement strata. The initial PAI was not determined to be homogeneous throughout, as it contains two distinct forest types distinguishable using aerial imagery. Thus, two measurement strata are in the project at validation.

All references to variable i in the VM0003 equations refer to measurement strata, and all references to “stratum” or “strata” in all Annex documents refer to measurement strata.

The table below lists each measurement strata identified at validation and their respective areas in hectares.

Measurement Stratum ID	Area (hectares)
102401	2.9
102402	28.0

Management Strata

Following the requirements of VM0003 Section 8.1, where measurement strata have differences in site index, species, management system, or age class, the measurement strata are further divided into management strata. The purpose of the secondary delineation of management strata is to ensure that all areas subject to management within a given year or within years between monitoring events comprise whole, discrete management strata. Management strata were defined using relevant factors such as site index, site species, and management regime, then used as the basis to model both the baseline (section 3.4) and project (section 1.11) scenarios. Annex E contains harvest constraints reflected in this management stratification.

For the purposes of emission reduction and removal accounting, following VM0003, calculations were carried out at the management strata level then aggregated into the relevant measurement stratum, as detailed in Section 4.4.

All references to variable i in the VM0003 equations refer to measurement strata, and all references to “stratum” or “strata” in the Annex documents shall refer to measurement strata.

The table below describes each management stratum and associated parameters used to delineate each. See section 3.4 for definitions of baseline management systems at validation and 1.11 for project management systems.

Dominant age class is the age of dominant trees in each management strata. The management of dominant trees is the objective of the management systems in the baseline scenario. Each management strata may contain trees younger than or older than the dominate age class. While the dominate age class may be less than the baseline rotation age for some management strata, all age classes present at project initiation are subject to harvest in the baseline scenario. Per WLTWWA

(section 3.4), management strata are subject to a first harvest at year 0 in the baseline system (Annex AU). For example, all management strata would be immediately eligible for the first WLTWWA rotation harvest and SMZIWWA harvest at year zero, as the PAI has a dominant age class of over 150 years (Annex AJ).

Management strata	Measurement strata	Area (hectares)	Site Species, Site Index	Species Composition	Dominate Age Class	Baseline Management System	Project Management System	Baseline Rotation Age	Project Rotation Age
102401 001	102401	1.02	Douglas-fir, 73	See Annex AJ	150+ years	SMZCWWA	IFM 2	No harvesting*	No harvesting*
102401 002	102401	0.80	Douglas-fir, 73	See Annex AJ	150+ years	WLTWWA	IFM 1	+/- 50 years with entries at year +/- 15 and +/- 25	Infinity
102401 003	102401	1.15	Douglas-fir, 73	See Annex AJ	150+ years	SMZIWWA	IFM 1	Periodic entries every +/- 20 years	Infinity
102402 004	102402	27.64	Douglas-fir, 73	See Annex AJ	150+ years	WLTWWA	IFM 1	+/- 50 years with entries at year +/- 15 and +/- 25	Infinity
102402 005	102402	0.38	Douglas-fir, 73	See Annex AJ	150+ years	SMZIWWA	IFM 1	Periodic entries every +/- 20 years	Infinity

*Asterisk in this table denotes that a management stratum does not contribute to crediting due to no harvesting in both the baseline and project management systems (see section 4.4).

4.1 Baseline Emissions

Procedures for the quantification of baseline emissions and/or removals will be taken from Sections 8.2, 8.4, and 8.5 of the VM0003 Methodology. The following equations will be utilized:

To calculate baseline net greenhouse gas removals Equation 1 will be used:

$$\Delta C_{BSL} = \Delta C_{BSLP} - GHG_{BSLE}$$

where:

ΔC_{BSL}	Baseline net greenhouse gas removals by sinks (t CO ₂ e)
ΔC_{BSLP}	Carbon stock changes in all pools in the baseline scenario (t CO ₂ e)
GHG_{BSLE}	Greenhouse gas emissions as a result of forest management activities within the project area in the baseline scenario (t CO ₂ e)

To calculate carbon stock changes in all pools in the baseline Equation 2 will be used:

$$\Delta C_{BSLP} = \Delta C_{BSL_{tree}} + \Delta C_{BSL_{DW}} + \Delta C_{BSL_{WP}}$$

where:

ΔC_{BSLP}	Carbon stock changes in all pools in the baseline scenario (t CO ₂ e)
$\Delta C_{BSL_{tree}}$	Carbon stock changes in above-ground and below-ground biomass of trees in the baseline scenario (t CO ₂ e)
ΔC_{BSLDW}	Carbon stock changes in dead wood in the baseline scenario (t CO ₂ e)

ΔC_{BSLWP}	Carbon stock changes in wood products in the baseline scenario (t CO2e)
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To calculate carbon stock changes in above- and below-ground biomass of trees in the baseline Equation 3 will be used:

$$\Delta C_{BSL_{tree}} = \frac{\left(\sum_{i=1}^{M_B} \Delta C_{BSLAG|BG,i,100} \times \frac{44}{12} \right)}{100} \times t^*$$

where:

$\Delta C_{BSL_{tree}}$	Carbon stock changes in above-ground and below-ground biomass of trees in the baseline scenario (t CO2e)
$\Delta C_{BSLAG BG,i,100}$	Summed annual net carbon stock change in above-ground and below-ground biomass for measurement stratum i summed over the 100-year modeled baseline (t C)
i	1, 2, 3, ..., MB measurement strata in the baseline scenario
t	1, 2, 3, ..., t* years elapsed since the start of the IFM project activity
$\frac{44}{12}$	Ratio of molecular weight of CO2 to carbon (t CO2e t C-1)

To calculate carbon stock changes in dead wood in the baseline Equation 4 will be used:

$$\Delta C_{BSL_{DW}} = \frac{\left(\sum_{i=1}^{M_B} \Delta C_{BSLDW,i,100} \times \frac{44}{12} \right)}{100} \times t^*$$

where:

ΔC_{BSLDW}	Carbon stock changes in dead wood in the baseline scenario (t CO ₂ e)
$\Delta C_{BSLDW,i,100}$	Summed annual net carbon stock change in dead wood for measurement stratum i summed over the 100-year modeled baseline (t C)
i	1, 2, 3, ..., MB measurement strata in the baseline scenario
t	1, 2, 3, ..., t^* years elapsed since the start of the IFM project activity
$\frac{44}{12}$	Ratio of molecular weight of CO ₂ to carbon (t CO ₂ e t C ⁻¹)

Under the VM0003 Methodology, the dead wood pool will be broken into two components: standing dead wood and lying dead wood. Below-ground dead wood will be conservatively omitted. The following equations will be used to calculate dead wood:

To calculate the annual carbon stock change in dead wood Equation 18 will be used:

$$\Delta C_{DW,i,t} = \frac{C_{DW,i,t_2} - C_{DW,i,t_1}}{T}$$

where:

$\Delta C_{DW,i,t}$	Annual carbon stock change in dead wood for measurement stratum i averaged over the monitoring period (t C yr ⁻¹)
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$C_{DW,i,t2}$	Carbon stock of dead wood in measurement stratum i at time $t = 2$ (t C)
$C_{DW,i,t1}$	Carbon stock of dead wood in measurement stratum i at time $t = 1$ (t C)
T	Number of years between monitoring time $t2$ and $t1$ ($T = t2 - t1$) (yr)
i	1, 2, 3, ..., MPS measurement strata in the project scenario
t	1, 2, 3, ... t^* years elapsed since the start of the IFM project activity

To calculate the carbon stocks of dead wood Equation 25 will be used:

$$C_{DW,i,t} = (B_{SDW,i,t} + B_{LDW,i,t}) \times CF_{DW}$$

where:

$C_{DW,i,t}$	Carbon stock of dead wood in measurement stratum i at time t (t C)
$B_{SDW,i,t}$	Biomass of standing dead wood in measurement stratum i at time t (t d.m.)
$B_{LDW,i,t}$	Biomass of lying dead wood in measurement stratum i at time t (t d.m.)

CF_{DW}	Carbon fraction of dry matter in dead wood [0.5] (t C t ⁻¹ d.m.)
i	1, 2, 3, ..., MPS measurement strata in the project scenario
t	1, 2, 3, ... t* years elapsed since the start of the IFM project activity

As required by the VM0003 Methodology, a 10-year linear decay function was applied to standing dead within the FVS baseline model. After 10 years standing dead is assumed to fall and transition into the lying dead wood pool.

To determine lying dead wood values for the baseline model the following steps were taken:

- The supersection, as defined in Annex AF, from the California Air Resource Board, of the initial PAI was established and the forest type was determined based on the occurrence and dominance of tree species present.
- These forest types were then matched with FIA forest types listed in USGS, Forest Management Service Center, and *The Fire and Fuels Extension to the Forest Vegetation Simulator: Updated Model Documentation*, Table 4.16.10, pp.295-296 (2015), see Annex AE.
- Within *The Fire and Fuels Extension to the Forest Vegetation Simulator: Updated Model Documentation* the lying dead wood default biomass values for size classes 3-6, 6-12, and >12 were summed for each forest type associated with a PAI.
- Default lying dead biomass values were then used as lying dead values for the initial year of the baseline model.
- Following the initial year, lying dead wood was assumed to be equal to the difference between current above ground carbon contained within standing dead and the standing wood values reported in the previous 10-year cycle.

Since lying dead was calculated directly from changes in the standing dead wood pool, the same 10-year linear decay function was applied.

Default lying dead wood biomass values that were used for the initial PAI are provided below:

Table 15: Default lying dead wood biomass values.

PAI	CARB Supersection	CARB Forest Type	FIA Forest Type	Lying Dead Biomass (tons/ac)
1024	Northwest Cascades	Northwest Cascade Mixed Conifer	Elm-Ash- Cottonwood	1.45

To calculate carbon stock changes in wood products in the baseline Equation 5 will be used:

$$\Delta C_{BSLWP} = \frac{\left(\sum_{i=1}^{M_B} \Delta C_{BSLWP,i,t} \times \frac{44}{12} \right)}{100} \times t^*$$

where:

ΔC_{BSLWP}	Carbon stock changes in wood products in the baseline (t CO ₂ e)
$\Delta C_{BSLWP,i,t}$	Baseline annual net carbon stock change in wood products for measurement stratum i at time t (t C yr ⁻¹)
<i>i</i>	1, 2, 3, ..., MB measurement strata in the baseline scenario
<i>t</i>	1, 2, 3, ..., t* years elapsed since the start of the IFM project activity
44/12	Ratio of molecular weight of CO ₂ to carbon (t CO ₂ e t C ⁻¹)

To calculate the annual change in carbon stored in wood products Equation 28 was used:

$$\Delta C_{WP,t_1,t_2} = \frac{C_{WP,t_2} - C_{WP,t_1}}{T}$$

where:

$\Delta C_{WP,t_1,t_2}$	Annual carbon stock change in wood products between times t1 and t2, averaged over the monitoring period (t C yr ⁻¹)
$\Delta C_{WP,t_2}$	Carbon stock of wood products at time t = 2 (t C)
$\Delta C_{WP,t_1}$	Carbon stock of wood products at time t = 1 (t C)
T	Number of years between monitoring times t2 and t1 (T = t2--t1) (yr)
t	1, 2, 3, ..., t* years elapsed since the start of the IFM project activity

To calculate wood products the Winjum et al. Method will be used (Annex J). The Winjum et al. Method was chosen as it may be applied to any vegetation type found throughout the world. The following equations will be used:

To calculate the biomass of the total volume extracted from within the project area Equation 29 will be used:

$$EXC_{WP,ty} = \sum_{h=1}^{H_{PS}} \sum_{j=1}^{S_{PS}} (V_{ex,h,ty,j} \times D_j \times CF_j)$$

where:

$EXC_{WP,ty}$	Summed stock of extracted biomass carbon from within the project area for class of wood product ty (t C)
$V_{ex,h,ty,j}$	Volume of timber extracted from within the project area during harvest h for species j and wood product class ty (m3)
D_j	Basic wood density of species j (t d.m. m-3)
CF_j	Carbon fraction of biomass for tree species j; IPCC default value = 0.5 (t C t-1 d.m.)
h	1, 2, 3, ..., HPS harvests since the start of the IFM project activity
j	1, 2, 3, ..., SPS tree species in the project scenario
ty	Wood product class, defined here as sawnwood, wood-based panels, other industrial roundwood, and paper and paper board

To calculate the total carbon in harvested timber that enters the wood products pool based on mill efficiencies and product disposition percentages Equation 32 will be used:

$$C_{Mill,ty} = \sum_{s,w,oir,p}^{ty} EXC_{WP,ty} \times (1 - WW)$$

where:

$C_{Mill,ty}$	Summed stock of carbon remaining in wood products of class ty from within the project area after milling (t C)
$EXC_{WP,ty}$	Summed stock of extracted biomass carbon from within the project area for class of wood product ty (t C)
WW	Wood waste fraction based on mill efficiency
s,w,oir,p	Wood product categories: sawnwood, wood-based panels, other industrial roundwood, and paper and paperboard

Following the Winjum et al. Method, the wood waste fraction (WW) will be assumed to be 0.19 as all PAIs exist within a developed country.

To calculate the total carbon removed from the project area stored in each type of wood product Equation 33 will be used:

$$C_{WP,ty} = \sum_{s,w,oir,p}^{ty} ((C_{Mill,ty} - SLF) - \left(\frac{MLF}{20}\right))$$

where:

$C_{WP,ty}$	Total carbon removed from the project area stored in each type, ty , of harvested wood products (t C)
$C_{Mill,ty}$	Summed stock of carbon remaining in wood products of class ty from within the project area after milling (t C)
SLF	Fraction of wood products that will be emitted to the atmosphere within 3 years of timber harvest (t C)

<i>MLF</i>	Fraction of wood products that is considered stored for the medium term and emitted to the atmosphere each year after harvest for 20 years (t C)
<i>ty</i>	Wood product class, defined here as sawnwood, wood-based panels, other industrial roundwood, paper and paper board
<i>t</i>	1, 2, 3, ..., t* years elapsed since the start of the IFM project activity

Per the VM0003 Methodology, a default value of 0.62 will be used for *OF* for both sawnwood and paper product classes.

To calculate the fraction of wood products emitted to the atmosphere within three years of timber harvest Equation 34 will be used:

$$SLF = (C_{Mill,ty}) \times slp$$

Where:

<i>SLF</i>	Fraction of wood products emitted to the atmosphere within 3 years of timber harvest (t C)
<i>C_{Mill,ty}</i>	Sum of carbon remaining in wood products of class <i>ty</i> from within the project area after milling (t C)
<i>slp</i>	Short-lived proportion
<i>ty</i>	Wood product class, defined here as sawnwood, wood-based panels, other industrial roundwood, and paper and paper board

Per the VM0003 Methodology, default slp values of 0.12 and 0.24 will be used for sawnwood and paper product classes, respectively.

To calculate the fraction of wood products stored between years 3 and 5, Equation 36 will be used:

$$MLF_{3,5} = C_{mill,ty} \times slp_{adj}$$

where:

$MLF_{3,5}$	Fraction of wood products that is considered stored for the medium term for the period $t = 3$ years to $t = 5$ years (t C)
$C_{Mill,ty}$	Summed stock of biomass carbon extracted from within the project area for wood product class ty after milling (t C)
slp_{adj}	Short-lived proportion for the period $t = 3$ years to $t = 5$ years
MLF	Fraction of wood products that is considered stored for the medium term and emitted to the atmosphere each year after harvest for 20 years (t C)

Per the VM0003 Methodology, default slp_{adj} values of 0.08 and 0.16 will be used for sawnwood and paper product classes, respectively.

To calculate the fraction of wood products stored between years 5 and 100, Equation 37 will be used:

$$MLF_{5,100} = (C_{mill,ty} - SLF - MLF_{3,5}) \times 0.615$$

where:

$MLF_{5,100}$	Fraction of wood products that is considered stored for the medium term for the period $t = 5$ years to $t = 100$ years (t C)
$C_{Mill,ty}$	Summed stock of biomass carbon extracted from within the project area for class of wood product ty after milling (t C)

<i>SLF</i>	Fraction of wood products emitted to the atmosphere within 3 years of timber harvest (t C)
<i>ty</i>	Wood product class, defined here as sawnwood, wood-based panels, other industrial roundwood, and paper and paper board
<i>h</i>	Year after harvest

To calculate the fraction of wood products stored for the medium-term Equation 35 will be used

$$MLF = MLF_{3,5} + MLF_{5,100}$$

where:

<i>MLF</i>	Fraction of wood products that is considered stored for the medium term and will be emitted to the atmosphere each year after harvest for 20 years (t C)
<i>MLF_{3,5}</i>	Fraction of wood products that is considered stored for the medium term for the period t = 3 years to t = 5 years (t C)
<i>MLF_{5,100}</i>	Fraction of wood products that is considered stored for the medium term for the period t = 5 years to t = 100 years (t C)

Baseline GHG emissions will be estimated according to VM0003 Section 8.4, Equation 6:

$$GHG_{BSL,E} = \sum_{t=1}^{t^*} (E_{BSL,BiomassBurn,t})$$

where:

GHG _{BSL,E}	Greenhouse gas emissions as a result of forest management activities within the project area in the baseline, t CO ₂ -e
E _{BSL, BiomassBurn,t}	Non-CO ₂ emissions due to biomass burning as part of forest management during the year t in the baseline, t CO ₂ -e
t	1, 2, 3 ...t* years elapsed since the start of the IFM project activity, years

Logging slash (E_{BSL, BiomassBurn,t}) in the baseline scenario is excluded according to the methodology, as such, GHG_{BSL,E} was calculated as zero.

While baseline emissions require a current inventory to determine starting carbon stocks, greenhouse gas emissions as a result of forest management activities within the project area in the baseline are modeled predictions of a future scenario. The *Baseline Depletion Rate* was developed by the project proponent to approximate the yearly decrease in baseline stocks from the project starting year and is a rough estimate. As such, the baseline depletion rate is only considered ex-ante.

Quantification of ex-ante onsite carbon stocking was carried out by following the allometric method approach defined in VM0003

The volume and biomass equations and references were sourced from the US Forest Inventory & Analysis (FIA) program, which are also used in both the California Air Resources Board and Climate Action Reserve programs, and are available on both of these programs' websites, in Annex AF. Biomass equations were compiled in proprietary visual basic analysis code (VBA) in Microsoft Excel and data analysis software. Tree species, DBH, height, decay, and region-specific biomass equations were used to calculate carbon estimates in tonnes of CO₂ equivalent. Carbon was only calculated for trees above 12.7 cm (5 inches) at DBH and above.

Uncredited Reserve Stock

When a PAI is first enrolled to the grouped project, $\Delta C_{BSL,tree}$ and $\Delta C_{BSL,DW,standing}$ shall be conservatively reduced to reflect the nine-percent (9%) portion of initial carbon stocks to be set aside to the URS (see Section 3.6).

1. Calculate nine percent (9%) of the initial carbon stocks (tCO₂e) for the AGBG Living and AG Standing Dead pools, respectively. Initial carbon stocks shall be based on inventory data, projected via FVS to the PAI start date.
2. Deduct reserved AGBG Living carbon calculated in Step 1 from the start of the baseline model (Annex AN).
3. Deduct reserved AG Standing Dead carbon from the start of the baseline model (Annex AN).
4. Calculate $\Delta C_{BSL,tree}$ and $\Delta C_{BSL,DW,standing}$

This procedure shall result in baseline depletion rates for $\Delta C_{BSL,tree}$ and $\Delta C_{BSL,DW,standing}$ that are conservatively lower in baseline emissions, resulting in fewer VCUs as compared to otherwise.

4.2 Project Emissions

Procedures for the quantification of project emissions and/or removals will be taken from Section 8.5 of the VM0003 Methodology. The following equations will be utilized:

To calculate the actual net greenhouse gas removals in the project Equation 10 will be used.

$$\Delta C_{ACTUAL} = \Delta C_P - GHG_E$$

where:

ΔC_{ACTUAL}	Actual net greenhouse gas removals by sinks (t CO2e)
ΔC_P	Sum of the changes in above-ground biomass, dead wood and wood products in the project scenario (t CO2e)
GHG_E	Increase in GHG emissions as a result of implementation of the proposed IFM project activity within the project area (t CO2e)

To calculate the sum of the changes in above-ground biomass, dead wood, and wood products in the project Equation 11 will be used.

$$\Delta C_P = \sum_{t=1}^{t^*} \Delta C_t \times \frac{44}{12}$$

where:

ΔC_P	Sum of the changes in above-ground biomass, dead wood and wood products in the project scenario (t CO2e)
ΔC_t	Annual change in carbon stock in all selected carbon pools for year t (t C yr-1)

t	1, 2, 3, ..., t^* years elapsed since the start of the IFM project activity
$\frac{44}{12}$	Ratio of molecular weights of CO ₂ and carbon (mol mol ⁻¹)

To calculate the annual change in carbon stocks in the project Equation 12 will be used.

$$\Delta C_t = \sum_{i=1}^{M_{PS}} (\Delta C_{AG,i,t} + \Delta C_{BG,i,t} + \Delta C_{DW,i,t} + \Delta C_{WP,i,t})$$

where:

ΔC_t	Annual change in carbon stock in all selected carbon pools for year t (t C yr ⁻¹)
$\Delta C_{AG,i,t}$	Annual carbon stock change in above-ground biomass of trees for measurement stratum i ; may be an average over the monitoring period (t C yr ⁻¹)
$\Delta C_{BG,i,t}$	Annual carbon stock change in below-ground biomass of trees for measurement stratum i ; may be an average over the monitoring period (t C yr ⁻¹)
$\Delta C_{DW,i,t}$	Annual change in the dead wood carbon pool for measurement stratum i ; may be an average over the monitoring period (t C yr ⁻¹)
$\Delta C_{WP,i,t}$	Annual change in the wood products carbon pool for measurement stratum i ; may be an average over the monitoring period (t C yr ⁻¹)

i	1, 2, 3, ..., MPS measurement strata in the project scenario
t	1, 2, 3, ..., t^* years elapsed since the start of the IFM project activity

Average carbon stocks in above-ground biomass per unit area will be estimated based on field measurements in sample plots. As the allometric equation method was chosen, the following equations from the VM0003 Methodology will be used:

To calculate the above-ground biomass of tree by species Equation 19 will be used.

$$C_{ABtree_{l,j,i,sp,t}} = \sum_{l=1}^{N_{j,sp}} f_j(DBH, H) \times CF_j$$

where:

$C_{ABtree_{l,j,i,sp,t}}$	Carbon stock in above-ground biomass of tree l of species j in plot sp in measurement stratum i at time t (t C tree-1)
CF_j	Carbon fraction of biomass for tree species j ; IPCC default value = 0.5 (t C t-1 d.m.)
$f_j(DBH, H)$	Allometric equation for species j linking diameter at breast height (DBH) and possibly height (H) to above-ground biomass of trees (t. d.m. tree-1)
i	1, 2, 3, ..., MPS measurement strata in the project scenario
j	1, 2, 3, ..., SPS tree species in the project scenario
l	1, 2, 3, ..., $N_{j,sp}$ sequence number of individual trees of species j in sample plot sp

t	1, 2, 3, ..., t^* years elapsed since the start of the IFM project activity
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To calculate carbon stocks in below-ground biomass of trees Equation 20 will be used.

$$C_{BBtree\,l,j,i,sp,t} = C_{ABtree\,l,j,i,sp,t} \times R_j$$

where:

$C_{bBtree\,l,j,i,sp,t}$	Carbon stock in below-ground biomass of tree l of species j in plot sp in measurement stratum i at time t (t C tree-1)
$C_{aBtree\,l,j,i,sp,t}$	Carbon stock in above-ground biomass of tree l of species j in plot sp in measurement stratum i at time t (t C tree-1)
R_j	Root-shoot ratio appropriate for biomass stock of species j (dimensionless)

58Following the IPCC, Good Practice Guidance for Land Use, Land-Use Change and Forestry, 2003 (Annex O), a root-to-shoot ratio of 0.24 will be used for all species in all measurement strata.

To calculate total carbon stocks in trees Equation 21 will be used:

$$C_{tree\,i,sp,t} = \sum_{j=1}^{S_{PS}} (C_{ABtree\,l,j,i,sp,t} + C_{BBtree\,l,j,i,sp,t})$$

where:

$C_{tree\,i,sp,t}$	Carbon stock in trees in plot sp of measurement stratum i at time t (t C)
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$C_{aBtrl,j,l,sp,t}$	Carbon stock in above-ground biomass of tree l of species j in plot sp in measurement stratum i at time t (t C tree-1)
$C_{bBtrl,j,l,sp,t}$	Carbon stock in below-ground biomass of tree l of species j in plot sp in measurement stratum i at time t (t C tree-1)
i	1, 2, 3, ..., MPS measurement strata in the project scenario
j	1, 2, 3, ..., SPS tree species in the project scenario
t	1, 2, 3, ..., t^* years elapsed since the start of the IFM project activity

To calculate the carbon stocks in trees for each measurement stratum Equation 22 will be used:

$$C_{tree,i,t} = \frac{A_i}{A_{sp_i}} \sum_{sp=1}^{P_i} C_{tree,i,sp,t}$$

where:

$C_{tree,i,t}$	Carbon stock in trees in measurement stratum i at time t (t C)
$C_{tree,i,sp,t}$	Carbon stock in trees in plot sp of measurement stratum i at time t (t C)

Asp_i	Total area of all sample plots in measurement stratum i (ha)
A_i	Area of measurement stratum i (ha)
sp	1, 2, 3, ..., P_i sample plots in measurement stratum i in the project scenario
i	1, 2, 3, ..., MPS measurement strata in the project scenario
t	1, 2, 3, ..., t^* years elapsed since the start of the IFM project activity

To calculate the annual carbon stock changes in above-ground biomass of trees Equation 23 will be used:

$$\Delta C_{AG,i,t} + \Delta C_{BG,i,t} = \frac{C_{tree,i,t_2} - C_{tree,i,t_1}}{T}$$

where:

$\Delta C_{AG,i,t}$	Annual carbon stock change in above-ground biomass of trees for measurement stratum i (t Cyr-1)
$\Delta C_{BG,i,t}$	Annual carbon stock change in below-ground biomass of trees for measurement stratum i (t C yr-1)

$C_{tree,i,t}$	Carbon stock in trees in measurement stratum i at time t (t C)
T	Number of years between monitoring time t_1 and t_2 ($T = t_2 - t_1$) (yr)
i	1, 2, 3, ..., MPS measurement strata in the project scenario
t	1, 2, 3, ..., t^* years elapsed since the start of the IFM project activity

Dead wood carbon and harvested wood carbon pools within the project will be calculated in the same manner as the baseline. For the ex-ante GHG model, the project scenario did not model harvesting resulting in no harvested wood products in the accounting for ex-ante project emissions. Information related to the calculation of dead wood harvested wood carbon stocks is available in Section 4.1.

From VM0003 Methodology section 8.5.2, Equation 35, the change in GHG emissions as a result of the implementation of the proposed IFM project activity within the project area will be estimated as:

$$GHG_{PS,E} = \sum_{t=1}^{t^*} (E_{PS,BiomassBurn,t})$$

where:

$GHG_{PS,E}$ Greenhouse gas emissions as a result of forest management activities within the project area in the project scenario; t CO₂-e

$E_{PS, BiomassBurn,t}$ Non-CO₂ emissions due to biomass burning as part of forest management during the year t in the project scenario; t CO₂-e

t 1, 2, 3 ...t* years elapsed since the start of the IFM project activity

Because the only GHG emitting activity considered by the methodology is biomass burning, and no biomass burning will take place within the Project Area for the duration of the project, the emissions as a result of the project will be zero.

Quantification of ex-ante onsite carbon stocking was carried out by following the allometric method approach defined in VM0003.

The volume and biomass equations and references were sourced from the US Forest Inventory & Analysis (FIA) program, which are also used in both the California Air Resources Board and Climate Action Reserve programs, and are available on both of these programs' websites, in Annex AF. Biomass equations were compiled in proprietary visual basic analysis code (VBA) in Microsoft Excel and data analysis software. Tree species, DBH, height, decay, and region-specific biomass equations were used to calculate carbon estimates in tonnes of CO₂ equivalent. Carbon was only calculated for trees above 12.7 cm (5 in) at DBH and above.

Within the ex-ante model the two main parameters used were the *Annual Delta C_{actual}* and the *Baseline Depletion Rate*. The *Annual Delta C_{actual}* is an estimate the project proponent developed for yearly carbon accretion rates in a per acre basis in the northwest United States based on inventories conducted in the region. While limited forest management is allowable and expected across the project, harvesting was not modeled ex-ante so harvested wood products are not included in *Annual Delta C_{actual}*. The *Baseline Depletion Rate* was developed by the project proponent to approximate the yearly decrease in baseline stocks from the project starting year. Both parameters represent preliminary estimates. As such, they are only used in the ex-ante accounting model and will not be used within the ex-post calculations.

Default values that were used within equations contained in Sections 4.1 and 4.2 are further provided below:

Table 16: Equation Number

Equation Number	Default Name	Default Abbreviation	Default Value
20	Root-to-shoot ratio	Rj	0.24
32	Wood Waste Fraction	WW	0.19
33	Proportion of Remaining Wood Products Oxidized (sawnwood & paper)	OF	0.62
34	Short-lived proportion (sawnwood)	Slp (sawnwood)	0.12
34	Short-lived proportion (paper)	Slp (paper)	0.24
35	Short-lived proportion years 3 to 5 (sawnwood)	Slpadj (sawnwood)	0.08

35	Short-lived proportion years 3 to 5 (paper)	Slpadj (paper)	0.16
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Uncredited Reserve Stock

The project shall account for emissions from the implementation of limited harvesting as allowed by the policies of Forest Carbon Works which include continuous thinning, group selection and patch cuts for the purpose of maintaining forest health. These emissions shall be quantified based on measurements of stock change according to the measurement methods required by VM0003. Were the total project emissions as a result of harvesting as allowed by policy exceed the quantity of the URS, such excess emissions shall be accounted for in the selected carbon pools and equation 12 (see Section 3.3).

4.3 Leakage

Under the VM0003 methodology, leakage emissions are quantified as the GHG emissions due to market effects resulting from a shift in harvest through time. Leakage will be estimated using VM0003 Methodology Section 8.6, Equation 39:

$$LK = LK_{MarketEffects}$$

where:

LK Total GHG emissions due to leakage; tCO₂e

LK_{Market Effects} Total GHG emissions due to impacts of project on timber supply and demand; tCO₂e

Leakage due to market effects will be calculated from VM0003 Methodology Section 8.6.1, Equation 41:

$$LK_{MarketEffects} = LF_{ME} * (\Delta C_{ACTUAL} - \Delta C_{BSL})$$

where:

LK_{Market Effects} Total GHG emissions due to market- effects leakage through decreased timber harvest; t CO₂-e

LFME Leakage factor for market-effects calculations; dimensionless

Δ CACTUAL Actual net greenhouse gas removals by sinks; t CO₂-e

Δ CBSL Baseline net greenhouse gas removals by sinks; t CO₂-e

The leakage factor (LF_{ME}) will be determined by using regional FIA data for all PAIs and the locations to where harvesting would likely be displaced. Within each measurement stratum, the proportion of total biomass in merchantable species (PMP_i) will be calculated and compared with the mean proportion of total merchantable biomass for each forest type (PML_{FT}). These calculations were carried out in Annex AJ. Values for the merchantable biomass as a proportion of total biomass by forest type (PML_{FT}) were obtained from section 9.1 of the VM0003 methodology.

Merchantable biomass is defined as total gross biomass (including bark) of a tree 12.7 cm (5 in) DBH or larger from a 30.48 cm (1-ft) stump to either the minimum of 10.2 cm (4 in) top DOB of the central stem or the highest merchantable height of the central stem. Trees are not considered merchantable if they are not a species that is commercially harvested in the region or have bole forms that would prevent efficient milling of wood products from taking place.

After PMP_i and PML_{FT} are calculated for each measurement stratum, a leakage deduction factor (LF_{ME}) will be applied to that measurement stratum, determined by the relationship between PMP_i and PML_{FT} :

Where:

PML_{FT} is equal ($\pm 15\%$) to PMP_i , $LF_{ME} = 0.4$

PML_{FT} is $> 15\%$ less than PMP_i , $LF_{ME} = 0.7$

PML_{FT} is $>15\%$ greater than PMP_i , $LF_{ME} = 0.2$

Where:

PML_{FT} Mean merchantable biomass as a proportion of total aboveground tree biomass for each forest type; % (default values see parameter table)

PMP_i Merchantable biomass as a proportion of total aboveground tree biomass for measurement stratum i within the project boundaries; %

LF_{ME} Leakage factor for market-effects calculations; dimensionless

Following this procedure, LF_{ME} was determined to be 0.2 for the initial Family Forest Carbon Project property, see Annex AK.

Measurement Stratum Number	PAI Number	PML_{FT}	PMP_i	LF_{ME}
102401	1024	69%	17%	0.2
102402	1024	69%	20%	0.2

An applicability condition of using the VM0003 Methodology is that the project will not have any leakage because of activity shifting to lands owned by the project proponent that are outside the project area. Per Eligibility Criteria 2d, there will be no leakage due to activity shifting. The project proponent (FCW) does not own any lands, forested or otherwise. The landowner(s) of associated PAI(s) at the time of validation represent to have enrolled all forested lands in their ownership per Section 9.14 of Annex D. The project proponent performs further diligence checks of PAI landowner(s) for any other eligible forested land using geospatial analysis and publicly available land ownership data. The diligence check conducted by the project proponent (Annex AZ) did not identify other eligible forestlands owned by the landowner(s) of the initial PAI. This confirms that there is no activity shifting leakage because the project proponent and landowner do not have any unenrolled forested lands to shift harvesting onto.

For the purposes of defining forestland, the Food and Agriculture Organization of the United Nations (FAO) definition (Annex AY, 1a) is used. Per the FAO definition, land used predominantly under agricultural or urban land use is not considered forested and may be considered as Other land with Tree Cover (Annex AY, 1f). Land use is the key criteria for distinguishing between forest (1a) and other land with tree cover (1f). Agricultural, urban, and residential land uses will be considered Other land with tree cover (1f).

Market leakage assessments will occur at validation and verification and the appropriate market leakage discount factor will be applied (VCS Standards 3.15.8 & 3.15.9).

Uncredited Reserve Stock

As the policies of Forest Carbon Works limit harvesting to continuous thinning, group selection and patch cuts as the project technology and measure under ERA, and accounting for related harvest emissions from the URS must be in accordance with the policy, then no activity shifting leakage of harvesting in the baseline scenario is possible. The limited harvest emissions associated with the URS are generated by the project technologies and measures.

4.4 Net GHG Emission Reductions and Removals

The FCW Family Forest Carbon Project's initial activity instance underwent an inventory in 2022. The inventory sampling design for the initial PAI was a systematic grid sample having a random origin, with plots comprising the sampling units. As the grid is conditional on a random origin prior to measurement, plots were randomly allocated from the sampling frame a priori. All points were allocated within the sampling frame, which is the Project Area. The Project Area consists of the entire property, net of non-forest areas. A total of 37 plots were sampled. Per VM0003, the tool "Calculation of the number of sample plots for measurements within A/R CDM project activities" was used to select an appropriate sample size. Based on ex-ante estimations, the tool recommended a minimum sample size of 32 plots (Annex BD). Sample size was calculated at a targeted precision of +/- 10% of the mean at a 90% confidence level. The approaches for projecting the ex-ante baseline and project scenarios are described in Sections 4.1 and 4.2, respectively. The information from the initial 37 plots was used according to these approaches to extrapolate to the entire ex-ante planned area where the projected emissions reductions and removals from the application of these approaches are given in Table 17.

Inventories for additional PAIs may be conducted under a systematic grid or simple random sample approach.

Belowground carbon stocks will be estimated using the IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry suggested root-to-shoot ratio) of 0.24 for broadleaf forests with biomass above 150 tonnes per hectare.

Under the VM0003 Methodology, the actual net greenhouse gas removals will be estimated by using the following equations:

Actual net greenhouse gas removals by sinks will be calculated from VM0003 Methodology Section 8.5 using Equation 10:

$$\Delta C_{ACTUAL} = \Delta C_P - GHG_E$$

Where:

ΔC_{ACTUAL}	Actual net greenhouse gas removals by sinks (t CO ₂ e)
ΔC_P	Sum of the changes in above-ground biomass, dead wood and wood products in the project scenario (t CO ₂ e)
GHG_E	Increase in GHG emissions as a result of implementation of the proposed IFM project activity within the project area (t CO ₂ e)

Sum of the changes in above-ground biomass, dead wood, and wood products in the project scenario will be calculated from VM0003 Methodology Section 8.5.1 using Equation 11:

$$\Delta C_P = \sum_{t=1}^{t^*} \Delta C_t \times \frac{44}{12}$$

Where:

ΔC_P	Sum of the changes in above-ground biomass, dead wood and wood products in the project scenario (t CO ₂ e)
ΔC_t	Annual change in carbon stock in all selected carbon pools for year t (t C yr ⁻¹)
t	1, 2, 3, ..., t^* years elapsed since the start of the IFM project activity
44/12	Ratio of molecular weights of CO ₂ and carbon (mol mol ⁻¹)

Annual change in carbon stocks in all selected carbon pools for year t will be calculated from VM0003 Methodology Section 8.5.1 using Equation 12:

$$\Delta C_t = \sum_{i=1}^{MPS} (\Delta C_{AG,i,t} + \Delta C_{BG,i,t} + \Delta C_{DW,i,t} + \Delta C_{WP,i,t})$$

Where:

ΔC_t	Annual change in carbon stock in all selected carbon pools for year t (t C yr ⁻¹)
$\Delta C_{AG,i,t}$	Annual carbon stock change in above-ground biomass of trees for measurement stratum i ; may be an average over the monitoring period (t C yr ⁻¹)
$\Delta C_{BG,i,t}$	Annual carbon stock change in below-ground biomass of trees for measurement stratum i ; may be an average over the monitoring period (t C yr ⁻¹)
$\Delta C_{DW,i,t}$	Annual change in the dead wood carbon pool for measurement stratum i ; may be an average over the monitoring period (t C yr ⁻¹)
$\Delta C_{WP,i,t}$	Annual change in the wood products carbon pool for measurement stratum i ; may be an average over the monitoring period (t C yr ⁻¹)
i	1, 2, 3, ..., MPS measurement strata in the project scenario
t	1, 2, 3, ..., t^* years elapsed since the start of the IFM project activity

The annual change in the dead wood carbon pool for measurement stratum i shall be the sum of the lying and standing deadwood components. Lying and standing deadwood components are differentiated as VM0003 v1.3 requires standing deadwood to be sampled using a plot method, while lying dead is to be sampled using a transect method.

The net anthropogenic GHG removals by sinks of the IFM project activity will be calculated from VM0003 Methodology Section 8.6.1 using Equation 42.

$$C_{IFM} = \Delta C_{ACTUAL} - \Delta C_{BSL} - LK$$

Where:

C_{IFM}	Net anthropogenic greenhouse gas reductions and removals (t CO ₂ e)
ΔC_{ACTUAL}	Actual net greenhouse gas removals by sinks (t CO ₂ e)
ΔC_{BSL}	Baseline net greenhouse gas removals by sinks; t CO ₂ e
LK	Total GHG emissions due to leakage

To aggregate from management strata to the relevant measurement strata (see Management Strata table in Section 4), the following procedure will be followed at verification:

- Above and below ground living carbon (AGBG), standing dead carbon, and harvested wood products for related management strata will be summed to the relevant measurement strata (see Section 4). Aggregated measurement strata total carbon will be reported by 10-year model cycle.
- The URS (section 3.6.1) will be applied to the first 10-year model cycle for each measurement strata for standing dead and AGBG living carbon pools.
- Following VM0003 equation 3, the changes in above and below ground carbon, standing dead carbon, and harvested wood products for each measurement stratum will be annualized over the 100-year model for input to ERR accounting.

Both the project and baseline models shall utilize the same underlying forest inventory data for future projections of both scenarios modeled using the Forest Vegetation Simulator (FVS). Outputs from these models will determine the project and baseline values for the purposes of GHG emissions reductions and removals accounting. FVS input and output files for the project and baseline models developed for the initial activity instance are available in Annex AG. Wood products for the baseline model are available in Annex AO. Initial lying dead values in the baseline were derived from the literature and calculations for the initial PAI are viewable in Annex BE. Both the project and baseline models will utilize a 100-year time horizon. Per the methodology, no activity-shifting leakage shall be permitted during the span of the project. The projects' buffer pool will also be calculated in the ERR Calculation Spreadsheet.

Management stratum with no harvesting in both the baseline and project management systems do not contribute to crediting from harvesting as carbon stocks are identical between the project and baseline scenarios, as demonstrated by the project and baseline models (see Annex AG). These management strata are included in the project area to satisfy requirements related to the prevention of activity-shifting leakage, per eligibility criterion 2d (section 1.4.1). Applicable management strata are denoted with an asterisk in Management Stratum table in Section 4.

The table below forecasts the ex-ante GHG removals and reductions derived from the ex-ante carbon accounting model as well as forecasted increases in project hectares under planned expansions and enrollment of additional landowners in future monitoring periods (Annex Q). For the years 2021-2023,

ex-ante values reported in Table 17 reflect a plan for PAIs with a historical start date projected for inclusion to the grouped project at initial verification.

Table 17: EX-ante GHG Removals and Reductions

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)	Estimated hectares
2020 (14-07-2020 to 31-12-2020)	(1,035)	9,899	2,187	8,747	3,035
2021	(4,500)	43,039	9,508	38,031	6,070
2022	(6,750)	64,559	14,262	57,047	9,106
2023	(9,000)	86,078	19,016	76,063	12,141
2024	(26,625)	254,648	56,255	225,019	35,917
2025	(44,250)	423,218	93,494	373,975	59,692
2026	(61,875)	591,788	130,733	522,931	83,468
2027	(79,500)	760,358	167,972	671,887	107,244
2028	(97,125)	928,928	205,211	820,843	131,020
2029	(114,750)	1,097,498	242,450	969,799	154,796
2030	(132,375)	1,266,068	279,689	1,118,755	178,571
2031	(132,375)	1,266,068	279,689	1,118,755	202,347
2032	(132,375)	1,266,068	279,689	1,118,755	202,347
2033	(132,375)	1,266,068	279,689	1,118,755	202,347
2034	(132,375)	1,266,068	279,689	1,118,755	202,347
2035	(132,375)	1,266,068	279,689	1,118,755	202,347
2036	(132,375)	1,266,068	279,689	1,118,755	202,347
2037	(132,375)	1,266,068	279,689	1,118,755	202,347
2038	(132,375)	1,266,068	279,689	1,118,755	202,347
2039	(132,375)	1,266,068	279,689	1,118,755	202,347
2040	(132,375)	1,266,068	279,689	1,118,755	202,347
2041	(132,375)	1,266,068	279,689	1,118,755	202,347
2042	(132,375)	1,266,068	279,689	1,118,755	202,347
2043	(132,375)	1,266,068	279,689	1,118,755	202,347
2044	(132,375)	1,266,068	279,689	1,118,755	202,347
2045 (01-01-2045 to 13-07-2045)	(71,483)	683,677	151,032	604,127	202,347
Total	(2,502,518)	23,934,715	5,287,447	21,149,786	202,347

4.4.1 Quantification of Uncertainty

The determination of sampling error for the purposes of calculating the uncertainty deduction will be assessed at the project-level using a 90 percent confidence interval, per the requirements of Section 8.7.1 of VM0003. Measurement stratum-level sampling variances will be combined to a single project-level sampling variance, weighted by measurement stratum acreage relative to the total project acreage (w_{ij}) as is standard for stratified samples. Following from Lohr (2014), the project-level sampling variance will be estimated as

$$var(\bar{x}) = \sum_{i=1}^M \sum_{j=1}^{L_i} (w_{ij})^2 var(x_{ij})$$

where M is the total number of PAI at any given time and L_i is the number of measurement strata in the i^{th} PAI subject to the constraint that $\sum_{i=1}^M \sum_{j=1}^{L_i} w_{ij} = 1$.

Due to the number of PAIs and plots anticipated to be enrolled into the grouped project at the time of verification, as per equation 44 outlined in section 8.7.2 of VM0003, no deduction for uncertainty due to the discount factor is expected (Annex BA). The uncertainty deduction was calculated as

$$C_{IFM_adj} = C_{IFM} \times (1 - \text{Discount factor})$$

where C_{IFM_adj} is net anthropogenic greenhouse gas emissions and removals by sinks adjusted for uncertainty and the discount factor to be applied for calculating the conservativeness deduction (%) and where $C_{IFM_error_}$ is less than or equal to 10 percent of C_{IFM} , there is no deduction for uncertainty. C_{IFM_error} of the grouped project is expected to be less than 10 percent of at the time of verification.

For both the project and baseline scenarios, the included carbon pools for above ground biomass, below ground biomass, wood products, and standing dead wood will all either be measured as part of the plot-based inventory sample or will be modelled based on input inventory data from the plot-based sample. In accordance with VM0003, since these pools will be measured as part of the same sample, they will share the same %SEM. The %SEM will be calculated based on plot-based inventory data. Even though the above ground biomass, below ground biomass, and standing dead pools are distinguished in VM0003, the pools were measured on the same plot as the statistical measurement device, and thus the pools are treated accordingly to statistically estimate the %SEM of the plot-based inventory.

For both the project and baseline scenarios, lying dead wood shall be estimated as part of the transect-based inventory sample, resulting in a distinct sample from the plot-based inventory. Thus, the %SEM of the Lying deadwood pool shall be distinctly estimated using the inventory data collected from the transect-based sample.

5 MONITORING

5.1 Data and Parameters Available at Validation

Data / Parameter	ABSL, <i>i</i>	
Data unit	Hectares	
Description	Area of baseline measurement stratum, <i>i</i>	
Source of data	GIS analysis, county data, survey data	
Value Applied	Measurement strata	Area (hectares)
	102401	2.9
	102402	28.0
Justification of choice of data or description of measurement methods and procedures applied	Using a combination of GIS and county data allowed the most accurate calculation of area. Refer to Annex N. Project area calculated according to VCS Standard A1.5 by project proponent on 22 March 2023.	
Purpose of data	Determination of baseline scenario	
Comments		

Data / Parameter	BEF
Data unit	Dimensionless
Description	Biomass expansion factor for conversion of annual net increment in stem biomass to total above ground tree biomass increment for species <i>j</i>

Source of data	VM0003 Methodology v1.3 Section 8.5.1.1																																				
Value Applied	<table><tr><th>Climatic zone</th><th>Forest type</th><th>Minimum dbh (cm)</th><th>BEF₂ (overbark) to be used in connection to growing stock biomass data (Equation 3.2.3)</th><th>BEF₁ (overbark) to be used in connection to increment data (Equation 3.2.5)</th></tr><tr><td rowspan="2">Boreal</td><td>Conifers</td><td>0-8.0</td><td>1.35 (1.15-3.8)</td><td>1.15 (1-1.3)</td></tr><tr><td>Broadleaf</td><td>0-8.0</td><td>1.3 (1.15-4.2)</td><td>1.1 (1-1.3)</td></tr><tr><td rowspan="3">Temperate</td><td>Conifers: Spruce-fir</td><td>0-12.5</td><td>1.3 (1.15-4.2)</td><td>1.15 (1-1.3)</td></tr><tr><td>Pines</td><td>0-12.5</td><td>1.3 (1.15-3.4)</td><td>1.05 (1-1.2)</td></tr><tr><td>Broadleaf</td><td>0-12.5</td><td>1.4 (1.15-3.2)</td><td>1.2 (1-1.3)</td></tr><tr><td rowspan="2">Tropical</td><td>Pines</td><td>10.0</td><td>1.3 (1.2-4.0)</td><td>1.2 (1-1.3)</td></tr><tr><td>Broadleaf</td><td>10.0</td><td>3.4 (2.0-9.0)</td><td>1.5 (1.3-1.7)</td></tr></table> Source: IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry (2003), Table 3A.1.10.	Climatic zone	Forest type	Minimum dbh (cm)	BEF ₂ (overbark) to be used in connection to growing stock biomass data (Equation 3.2.3)	BEF ₁ (overbark) to be used in connection to increment data (Equation 3.2.5)	Boreal	Conifers	0-8.0	1.35 (1.15-3.8)	1.15 (1-1.3)	Broadleaf	0-8.0	1.3 (1.15-4.2)	1.1 (1-1.3)	Temperate	Conifers: Spruce-fir	0-12.5	1.3 (1.15-4.2)	1.15 (1-1.3)	Pines	0-12.5	1.3 (1.15-3.4)	1.05 (1-1.2)	Broadleaf	0-12.5	1.4 (1.15-3.2)	1.2 (1-1.3)	Tropical	Pines	10.0	1.3 (1.2-4.0)	1.2 (1-1.3)	Broadleaf	10.0	3.4 (2.0-9.0)	1.5 (1.3-1.7)
Climatic zone	Forest type	Minimum dbh (cm)	BEF ₂ (overbark) to be used in connection to growing stock biomass data (Equation 3.2.3)	BEF ₁ (overbark) to be used in connection to increment data (Equation 3.2.5)																																	
Boreal	Conifers	0-8.0	1.35 (1.15-3.8)	1.15 (1-1.3)																																	
	Broadleaf	0-8.0	1.3 (1.15-4.2)	1.1 (1-1.3)																																	
Temperate	Conifers: Spruce-fir	0-12.5	1.3 (1.15-4.2)	1.15 (1-1.3)																																	
	Pines	0-12.5	1.3 (1.15-3.4)	1.05 (1-1.2)																																	
	Broadleaf	0-12.5	1.4 (1.15-3.2)	1.2 (1-1.3)																																	
Tropical	Pines	10.0	1.3 (1.2-4.0)	1.2 (1-1.3)																																	
	Broadleaf	10.0	3.4 (2.0-9.0)	1.5 (1.3-1.7)																																	
Justification of choice of data or description of measurement methods and procedures applied	Calculation process detailed in VM0003 Methodology v1.3 Section 8.5.1.1.																																				
Purpose of data	Determination of baseline scenario																																				
Comments																																					

Data / Parameter	CF _j
Data unit	tCt ⁻¹ d.m.
Description	Carbon fraction of dry matter
Source of data	Default value from IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry – Section 4.3
Value Applied	0.5 tCt ⁻¹ dry matter
Justification of choice of data or description of measurement methods and procedures applied	Recommended in VM0003 Methodology v1.3 Section 8.4. CF _j used in Family Forest Carbon Project selected by project proponent
Purpose of data	Calculation of baseline emissions
Comments	

Data / Parameter	D _{DW}														
Data unit	T d.m. ft ⁻³														
Description	Basic wood density of dead wood in the density class- sound (1), intermediate (2), and rotten (3)														
Source of data	Harmon et al. 2011														
Value Applied	<table><tr><th>Decay Class</th><th>Standing Dead (g/cm³)</th><th>Downed Dead (g/cm³)</th></tr><tr><td>1</td><td>0.40</td><td>0.40</td></tr><tr><td>2</td><td>0.38</td><td>0.33</td></tr><tr><td>3</td><td>0.35</td><td>0.26</td></tr></table> Average density (g/cm3) for standing dead and downed dead trees for all species and sites by decay class. Source: Harmon et al. 2011, Table 4.			Decay Class	Standing Dead (g/cm ³)	Downed Dead (g/cm ³)	1	0.40	0.40	2	0.38	0.33	3	0.35	0.26
Decay Class	Standing Dead (g/cm ³)	Downed Dead (g/cm ³)													
1	0.40	0.40													
2	0.38	0.33													
3	0.35	0.26													
Justification of choice of data or description of measurement methods and procedures applied	Data published and used by the United States Forest Service. Recommended by VM0003 Methodology v1.3 8.5.1.2. D _{DW} used in Family Forest Carbon Project selected by project proponent on 24 April 2023.														
Purpose of data	Determination of baseline scenario														
Comments	Annex M														

Data / Parameter	D_j
Data unit	t d.m. tree ⁻³
Description	Basic wood density of species j
Source of data	Miles, Patrick D.; Smith, W. Brad. 2009. Specific gravity and other properties of wood and bark for 156 tree species found in North America. Res. NoteNRS-38. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 35 p.

Value Applied	Species and region specific. Species included in current PAI (1024) are listed below:												
	<table> <tr> <th>Species Name</th><th>t/m³</th></tr> <tr> <td>Western red cedar</td><td>0.49</td></tr> <tr> <td>Bigleaf maple</td><td>0.86</td></tr> <tr> <td>Red alder</td><td>0.86</td></tr> <tr> <td>Black cottonwood</td><td>0.87</td></tr> <tr> <td>Cherry</td><td>0.83</td></tr> </table>	Species Name	t/m ³	Western red cedar	0.49	Bigleaf maple	0.86	Red alder	0.86	Black cottonwood	0.87	Cherry	0.83
Species Name	t/m ³												
Western red cedar	0.49												
Bigleaf maple	0.86												
Red alder	0.86												
Black cottonwood	0.87												
Cherry	0.83												
Justification of choice of data or description of measurement methods and procedures applied	Data published and used by the United States Forest Service. Recommended by VM0003 Methodology v1.3 8.5.1.3 Method 2. D_j used in Family Forest Carbon Project selected by project proponent on 24 April 2023.												
Purpose of data	Calculation of baseline and project carbon storage												
Comments	Annex AX												

Data / Parameter	$f_j(\text{DBH}, H)$
Data unit	T d.m. tree ⁻³
Description	Allometric equation for species j linking diameter at breast height (DBH) and possible height (H) to above ground biomass of living trees
Source of data	California Air Resources Board
Value Applied	Species and region specific
Justification of choice of data or description of measurement methods and procedures applied	Equations selected are specific to all PAI regions. Data published and used by the California Air Resources Board. f_j used in Family Forest Carbon Project selected by project proponent on 24 April 2023.
Purpose of data	Determination of baseline scenario
Comments	Annex P

Data / Parameter	OF, WW
Data unit	Kg kg ⁻¹

Description	OF = Fraction of wood products that will be emitted to the atmosphere between 5 and 100 years after production; WW = Fraction of extracted biomass effectively emitted to the atmosphere during production
Source of data	Winjum et al. 1998
Value Applied	OF = Value of 0.62 given by VM0003 v1.3 for both sawnwood and paper and paperboard WW = Value of 0.19 given by VM0003 v1.3 for developed countries
Justification of choice of data or description of measurement methods and procedures applied	Values provided by VM0003 Methodology v1.3 Section 8.5.1.3 Equation 32. OF, WW used in Family Forest Carbon Project selected by project proponent on 24 April 2023.
Purpose of data	Calculation of project emissions
Comments	Annex J

Data / Parameter	Data unit	Description	Source of data	Value Applied	Justification of choice of data or description of measurement methods and procedures applied	Purpose of data	Comments
PML _{FT} PAI 1 measurement stratum 102401	%	Mean merchantable biomass as a proportion of total above ground tree biomass for each forest type	VM0003 Methodology v1.3 Section 8.6.1	69%	Recommended in VM0003 Methodology v1.3. PML_{FT} used in Family Forest Carbon Project selected by project proponent on 24 April 2023.	Calculation of leakage	

PML _{FT} PAI 1 measurement stratum 102402	%	Mean merchantable biomass as a proportion of total above ground tree biomass for each forest type	VM0003 Methodology v1.3 Section 8.6.1	69%	Recommended in VM0003 Methodology v1.3. PML _{FT} used in Family Forest Carbon Project selected by project proponent on 24 April 2023.	Calculation of leakage	
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Data / Parameter	R		
Data unit	Kg kg ⁻¹		
Description	Root-shoot ratio appropriate for biomass increment of forest type/biome		
Source of data	IPCC, Good Practice Guidance for Land Use, Land-Use Change and Forestry, 2003		
Value Applied	Vegetation Type	Aboveground biomass (t/ha)	Root-to-shoot ratio, R
	Conifer forest/plantation	<50	0.46
	Conifer forest/plantation	50-150	0.32
	Conifer forest/plantation	>150	0.23
	Broadleaf	<75	0.46
	Broadleaf	75-150	0.23
	Broadleaf	>150	0.24
	Average belowground to aboveground biomass ratio (root-shoot ratio, R) in natural regeneration by broad category (tonnes dry matter). Source: Table 3A.1.8 IPCC, Good Practice Guidance for Land Use, Land-Use Change and Forestry, 2003.		
Justification of choice of data or description of measurement methods and procedures applied	Recommended per VM0003 Methodology v1.3. R used in the Family Forest Carbon Project selected by project proponent on 24 April 2023.		
Purpose of data	Determination of baseline scenario		

Comments	Annex O	
Data / Parameter	SLF	
Data unit	Unitless	
Description	Short-lived fraction- proportion of wood products that oxidize immediately in the first three years after harvesting	
Source of data	Winjum et al. 1998 Annex J	
Value Applied	Wood Product Class	SLF
	Sawnwood	0.12
	Woodbase panels	0.06
	Other industrial roundwood	0.18
	Paper and paperboard	0.24
Justification of choice of data or description of measurement methods and procedures applied	Recommended per VM0003 Methodology v1.3. SLF used in the Family Forest Carbon Project selected by project proponent on 24 April 2023.	
Purpose of data	Calculation of project emissions	
Comments	Annex J	

5.2 Data and Parameters Monitored

Data/ Parameter	Ai
Data unit	Hectares
Description	Area of measurement stratum i
Source of data	GIS area

Description of measurement methods and procedures to be applied	Area defined by property boundaries, watershed boundaries, and operational unit boundaries. Monitoring and measuring will be performed by project proponent. Measurement using ArcGIS software is highly accurate. Per VCS Standard 3.16.5, where measurement and monitoring equipment is used, the project proponent shall ensure the equipment is calibrated according to the equipment's specifications and/or relevant national or international standards. FCW staff and contractors will be responsible for taking measurement.	
Frequency of monitoring/recording	Annually	
Value applied	Measurement stratum	Hectares
	102402	28.0
	102401	2.9
Monitoring equipment	ArcGIS software	
QA/QC procedures to be applied	Geospatial boundaries will be checked to confirm accuracy through the use of management plans, official surveys and publicly available data. Aerial imagery will be used to check for agreement with digitized boundaries. Online tax maps will also be checked for agreement with ownership boundaries. Project shapefiles will be kept current and backed up.	
Purpose of data	Calculation of project emissions	
Calculation method	ArcGIS "Calculate Geometry" tool	
Comments	Annex N	

Data/ Parameter	Ap
Data unit	Hectares/Acres
Description	Area of sample plot
Source of data	See section 5.3 Monitoring Plan of the Project Description
Description of measurement methods and procedures to be applied	Plots measured in accordance with standard forest measurement practices. Project proponent will be responsible for performing measurement. Monitoring and measuring will be performed by

	project proponent. Further description of measurement methods can be found in section 5.3. Per VCS Standard 3.16.5, where measurement and monitoring equipment is used, the project proponent shall ensure the equipment is calibrated according to the equipment's specifications and/or relevant national or international standards. FCW staff and contractors will be responsible for taking measurement.										
Frequency of monitoring/recording	At least prior to baseline reassessment										
Value applied	5.1m (16.7 ft) (1/123.5 Hectares 1/50 acre)										
Monitoring equipment	Measuring tape, laser or equivalent to establish plot radius										
QA/QC procedures to be applied	<table> <tr> <th>Stage</th><th>QA/QC Step</th></tr> <tr> <td>Inventory</td><td>Field instruments will be calibrated before and throughout the inventory to ensure the collection of the most accurate and precise data.</td></tr> <tr> <td>Inventory</td><td>Project proponent will ensure that foresters follow behind forestry technicians checking their measurements on a sample of plots until they are sure proper techniques are being used and the quality of measurements suffices</td></tr> <tr> <td>Data Checks</td><td>Inventory data are sent to project proponent and reviewed for data accuracy. Feedback is given to the project proponent's forester regarding this data. The data is entered into the treelist workbook. This data is backed up on project proponent's servers</td></tr> <tr> <td>Data Checks</td><td>Data is compiled to ensure that all allocated plots have been visited and measurements have been taken.</td></tr> </table>	Stage	QA/QC Step	Inventory	Field instruments will be calibrated before and throughout the inventory to ensure the collection of the most accurate and precise data.	Inventory	Project proponent will ensure that foresters follow behind forestry technicians checking their measurements on a sample of plots until they are sure proper techniques are being used and the quality of measurements suffices	Data Checks	Inventory data are sent to project proponent and reviewed for data accuracy. Feedback is given to the project proponent's forester regarding this data. The data is entered into the treelist workbook. This data is backed up on project proponent's servers	Data Checks	Data is compiled to ensure that all allocated plots have been visited and measurements have been taken.
Stage	QA/QC Step										
Inventory	Field instruments will be calibrated before and throughout the inventory to ensure the collection of the most accurate and precise data.										
Inventory	Project proponent will ensure that foresters follow behind forestry technicians checking their measurements on a sample of plots until they are sure proper techniques are being used and the quality of measurements suffices										
Data Checks	Inventory data are sent to project proponent and reviewed for data accuracy. Feedback is given to the project proponent's forester regarding this data. The data is entered into the treelist workbook. This data is backed up on project proponent's servers										
Data Checks	Data is compiled to ensure that all allocated plots have been visited and measurements have been taken.										
Purpose of data	Calculation of project emissions										
Calculation method	Varies by stand										
Comments	Fixed radius plot design										

Data/ Parameter	DM _{n,l,t}
Data unit	Cm (ln.)

Description	Diameter of piece n of dead wood along the transect in measurement stratum i , at time t											
Source of data	Field measurement in sample transects											
Description of measurement methods and procedures to be applied	Project proponent will be responsible for performing measurement. Further description of measurement methods and procedures can be found in Harmon & Sexton 1996 (Annex M). FCW staff and contractors will be responsible for taking measurement.											
Frequency of monitoring/ recording	At least prior to baseline reassessment											
Value applied	Specific to each piece of dead wood along the transect in measurement stratum i , at time t											
Monitoring equipment	Logger tape or laser											
QA/QC procedures to be applied	<table><tr><th>Stage</th><th>QA/QC Step</th></tr><tr><td>Inventory</td><td>Field instruments will be calibrated before and throughout the inventory to ensure the collection of the most accurate and precise data.</td></tr><tr><td>Inventory</td><td>Project proponent will ensure that foresters follow behind forestry technicians checking their measurements on a sample of plots until they are sure proper techniques are being used and the quality of measurements suffices</td></tr><tr><td>Data Checks</td><td>Inventory data are sent to project proponent and reviewed for data accuracy. Feedback is given to the project proponent's forester regarding this data. The data is entered into the treelist workbook. This data is backed up on project proponent's servers</td></tr><tr><td>Data Checks</td><td>Data is compiled to ensure that all allocated plots have been visited and measurements have been taken.</td></tr></table>		Stage	QA/QC Step	Inventory	Field instruments will be calibrated before and throughout the inventory to ensure the collection of the most accurate and precise data.	Inventory	Project proponent will ensure that foresters follow behind forestry technicians checking their measurements on a sample of plots until they are sure proper techniques are being used and the quality of measurements suffices	Data Checks	Inventory data are sent to project proponent and reviewed for data accuracy. Feedback is given to the project proponent's forester regarding this data. The data is entered into the treelist workbook. This data is backed up on project proponent's servers	Data Checks	Data is compiled to ensure that all allocated plots have been visited and measurements have been taken.
Stage	QA/QC Step											
Inventory	Field instruments will be calibrated before and throughout the inventory to ensure the collection of the most accurate and precise data.											
Inventory	Project proponent will ensure that foresters follow behind forestry technicians checking their measurements on a sample of plots until they are sure proper techniques are being used and the quality of measurements suffices											
Data Checks	Inventory data are sent to project proponent and reviewed for data accuracy. Feedback is given to the project proponent's forester regarding this data. The data is entered into the treelist workbook. This data is backed up on project proponent's servers											
Data Checks	Data is compiled to ensure that all allocated plots have been visited and measurements have been taken.											
Purpose of data	Calculation of project emissions											
Calculation method	Measured											
Comments	Lying dead wood pool conservatively excluded for project, but included in baseline											
Data/ Parameter	DBH											

Data unit	Cm (In.)	
Description	Diameter at breast height of tree 1.4 m (4.5 ft. above the ground)	
Source of data	Field measurements in sample plots	
Description of measurement methods and procedures to be applied	Project proponent will be responsible for performing measurement and monitoring. DBH measurements will be taken for all trees within sample plots that are at least 12.7 cm (5 inches) in diameter. Collection of DBH measurements will be facilitated through the use of a proprietary hardware device. Further description of measurement methods using our proprietary hardware and software can be found in section 5.3. Per VCS Standard 3.16.5, where measurement and monitoring equipment is used, the project proponent shall ensure the equipment is calibrated according to the equipment's specifications and/or relevant national or international standards. FCW staff and contractors will be responsible for taking measurement.	
Frequency of monitoring/recording	At least prior to baseline reassessment	
Value applied	Specific to each measurement taken	
Monitoring equipment	FCW proprietary hardware device and inventory management software	
QA/QC procedures to be applied	Stage	QA/QC Step
	Inventory	Field instruments will be calibrated before and throughout the inventory to ensure the collection of the most accurate and precise data.
	Inventory	Project proponent will ensure that foresters follow behind forestry technicians checking their measurements on a sample of plots until they are sure proper techniques are being used and the quality of measurements suffices
	Data Checks	Inventory data are sent to project proponent and reviewed for data accuracy. Feedback is given to the project proponent's forester regarding this data. The data is entered into the treelist workbook. This data is backed up on project proponent's servers
	Data Checks	Data is compiled to ensure that all allocated plots have been visited and measurements have been taken.
Purpose of data	Calculation of project emissions	

Calculation method	Measured prior to baseline reassessment; modelled in FVS for forecasting.
Comments	

Data/ Parameter	H	
Data unit	M (Ft.)	
Description	Height of tree	
Source of data	Field measurements in sample plots	
Description of measurement methods and procedures to be applied	Project proponent will be responsible for performing measurement and monitoring. Height measurements will be taken for trees within sample plots. Collection of height measurements will be facilitated through the use of a proprietary hardware device. Further description of measurement methods using our proprietary hardware and software can be found in section 5.3. Per VCS Standard 3.16.5., where measurement and monitoring equipment is used, the project proponent shall ensure the equipment is calibrated according to the equipment’s specifications and/or relevant national or international standards. FCW staff and contractors will be responsible for taking measurement.	
Frequency of monitoring/ recording	At least prior to baseline reassessment	
Value applied	Specific to each tree measured	
Monitoring equipment	FCW proprietary hardware device and inventory management software	
QA/QC procedures to be applied	Stage	QA/QC Step
	Inventory	Field instruments will be calibrated before and throughout the inventory to ensure the collection of the most accurate and precise data.
	Inventory	Project proponent will ensure that foresters follow behind forestry technicians checking their measurements on a sample of plots until they are sure proper techniques are being used and the quality of measurements suffices
	Data Checks	Inventory data are sent to project proponent and reviewed for data accuracy. Feedback is given to the project proponent’s forester regarding this data. The data is entered into the treelist

		workbook. This data is backed up on project proponent's servers
	Data Checks	Data is compiled to ensure that all allocated plots have been visited and measurements have been taken.
Purpose of data	Calculation of project emissions	
Calculation method	Measured prior to baseline reassessment, otherwise modelled using FVS for forecasting.	
Comments		

Data/ Parameter	L	
Data unit	M (Ft.)	
Description	Length of the transect to determine volume of lying dead wood	
Source of data	Field measurements in sample transects	
Description of measurement methods and procedures to be applied	Project proponent will be responsible for performing measurement. Monitoring and measuring will be performed by project proponent. Measurement methods and procedures shall follow guidelines by Harmon & Sexton 1996 (Annex M). Per VCS Standard 3.16.5, where measurement and monitoring equipment is used, the project proponent shall ensure the equipment is calibrated according to the equipment's specifications and/or relevant national or international standards. FCW staff and contractors will be responsible for taking measurement.	
Frequency of monitoring/ recording	At least prior to baseline reassessment	
Value applied	See Annex M	
Monitoring equipment	Logger tape or laser	
QA/QC procedures to be applied	Stage	QA/QC Step
	Inventory	Field instruments will be calibrated before and throughout the inventory to ensure the collection of the most accurate and precise data.
	Inventory	Project proponent will ensure that foresters follow behind forestry technicians checking their measurements on a sample of plots until they are sure proper techniques are being used and the quality of measurements suffices

	Data Checks	Inventory data are sent to project proponent and reviewed for data accuracy. Feedback is given to the project proponent's forester regarding this data. The data is entered into the treelist workbook. This data is backed up on project proponent's servers
	Data Checks	Data is compiled to ensure that all allocated plots have been visited and measurements have been taken.
Purpose of data	Calculation of project emissions	
Calculation method	Measured	
Comments		

Data/ Parameter	N	
Data unit	Dimensionless	
Description	Total number of wood pieces intersecting the transect	
Source of data	Field measurements in sample transects	
Description of measurement methods and procedures to be applied	Project proponent will be responsible for performing measurement. Monitoring and measuring will be performed by project proponent. Measurement methods and procedures shall follow guidelines by Harmon & Sexton 1996 (Annex M). Per VCS Standard 3.16.5, where measurement and monitoring equipment is used, the project proponent shall ensure the equipment is calibrated according to the equipment's specifications and/or relevant national or international standards. FCW staff and contractors will be responsible for taking measurement.	
Frequency of monitoring/ recording	At least prior to baseline reassessment	
Value applied	Specific to each transect measured	
Monitoring equipment	Go-no-go Fuel Sizing Gauge	
QA/QC procedures to be applied	Stage	QA/QC Step
	Inventory	Field instruments will be calibrated before and throughout the inventory to ensure the collection of the most accurate and precise data.
	Inventory	Project proponent will ensure that foresters follow behind forestry technicians checking their

		measurements on a sample of plots until they are sure proper techniques are being used and the quality of measurements suffices
	Data Checks	Inventory data are sent to project proponent and reviewed for data accuracy. Feedback is given to the project proponent's forester regarding this data. The data is entered into the treelist workbook. This data is backed up on project proponent's servers
	Data Checks	Data is compiled to ensure that all allocated plots have been visited and measurements have been taken.
Purpose of data	Calculation of project emissions	
Calculation method	See Annex M.	
Comments		

Data/ Parameter	PMP _i	
Data unit	%	
Description	Merchantable biomass as a proportion of total above ground tree biomass for measurement stratum / within the project boundaries	
Source of data	Inventory data	
Description of measurement methods and procedures to be applied	Calculate merchantable biomass and total above ground biomass following VM0003 Methodology v1.3 Section 9.1. Project proponent will be responsible for monitoring and measurement. FCW staff and contractors will be responsible for taking measurement.	
Frequency of monitoring/ recording	At least prior to baseline reassessment	
Value applied		
	Measurement Stratum	PMP _i (%)
	102401	20
	102402	17
	PMP _i was calculated by dividing merchantable biomass (total gross biomass of a tree 12.7 cm (5 in) DBH or larger from a 30.48 cm (1 ft) stump to either the minimum of 10.16 cm (4 in) top DOB of the central stem or the highest merchantable height of the central	

	stem. Trees are not considered merchantable if they are not a species that is commercially harvested in the region or have bole forms that would prevent efficient milling of wood products from taking place) by total biomass in the project area.
Monitoring equipment	N/A
QA/QC procedures to be applied	Calculations are double checked for accuracy.
Purpose of data	Calculation of market effects leakage
Calculation method	Divide merchantable biomass by the total above ground biomass
Comments	

Data/ Parameter	URS					
Data unit	tCO2e					
Description	Uncredited Reserve Stock					
Source of data	Inventory data					
Description of measurement methods and procedures to be applied	Nine percent (9%) of initial carbon stock per VM0003 Methodology v1.3 Section 9.1. Project proponent will be responsible for monitoring and measurement.					
Frequency of monitoring/ recording	Upon the addition of each new PAI to the grouped project					
Value applied	<table><tr><th>PAI</th><th>URS (tCO2e)</th></tr><tr><td>1024</td><td>1,300 (estimate)</td></tr></table>		PAI	URS (tCO2e)	1024	1,300 (estimate)
PAI	URS (tCO2e)					
1024	1,300 (estimate)					
Monitoring equipment	N/A					
QA/QC procedures to be applied	Calculations are double checked for accuracy.					
Purpose of data	Account for emissions from limited harvesting to promote forest health according to the policies of Forest Carbon Works, such as continuous thinning					

Calculation method	9% of total carbon stock in living and standing dead trees
Comments	See Annex AJ

Data/ Parameter	T
Data unit	year
Description	Number of years between monitoring period time t_2 and t_1 ($T = t_2 - t_1$)
Source of data	Monitoring reports
Description of measurement methods and procedures to be applied	Calculated by subtracting the monitoring period start year t_1 from the current monitoring period year t_2 . Monitoring and measuring will be performed by project proponent.
Frequency of monitoring/ recording	Each reporting period
Value applied	Specific to each monitoring period
Monitoring equipment	Calendar
QA/QC procedures to be applied	Calculations are double checked for accuracy
Purpose of data	Calculation of project emissions
Calculation method	$T = t_2 - t_1$
Comments	

5.3 Monitoring Plan

The objective of the monitoring plan is to provide an overview of the procedures and timing planned for the collection, organization, and processing of relevant data and parameters listed in Section 5.2.

Field data collection will be conducted through the use of a smartphone application named Oxylyx and data will be processed by using a desktop computer program called Nephos. Both are proprietary

technologies developed by the project proponent and are considered commercially sensitive. Information on the use of these technologies, including the calibration of equipment, is provided in Annex L.

Fixed-area sample plots will occur within each instance with the location randomly allocated. The targeted precision level for biomass estimation across the project will be +/- 10% of the mean at a 90% confidence level. The initial sampling intensity will be determined based on ex-ante estimations input to the "Calculation of the number of sample plots for measurements within A/R CDM project activities Version: 02.1.0" tool. Depending on forest characteristics, plots will have a radius between 3.6 meters | 1/247.1 ha (11.8 feet | 1/100 ac) and 5.1 meters | 1/123.6 ha (16.7 feet | 1/50 ac).

When determining whether a tree is within a plot, the distance from the plot center to the center (pith) of the tree at breast height will be measured. Note that trees that are partially within the plot radius but do not have their centers within this radius are not included. Measurements of plot radius will be taken horizontally.

The following data will be gathered for each living and dead tree greater than, or equal to, 12.7 cm (5 in) in diameter that fall within a given plot radius:

- Species
- Distance from plot center (m)
- Azimuth from plot center (degrees)
- Tree status – living or dead. If dead, the decay class will be designated
- Total height (m)
- Merchantable height, if applicable (m)
- Height to dead or broken top, if present (m)
- Diameter at breast height (cm)
- Missing biomass (%)

Each allocated plot will be located in the field using a GPS device and a chance device. Once located as precisely as possible, the field cruiser will close their eyes, spin around, and randomly throw a hat or object over their shoulder as the chance device; the object's landing point will then be taken as the center of the plot for measurement. Plot border-line trees will be determined post process using the horizontal distance to the face of each tree, DBH measurements, and notes from the cruiser. If necessary, plots will be revisited in order to confirm determinations of in or out trees. Azimuth including declination will be recorded for all trees.

If a plot lands along a distinct edge, no steps will be carried out by the field cruiser other than to make note that the plot landed along a distinct edge and complete the plot as normal. With the GPS location, the distance and azimuth of each tree in the plot, as well as additional records of trees both on and off

the plot, the plot layout can be reconstructed using photogrammetry and the mirage method will be applied post inventory process, if necessary.

Non-stocked plots will not be treated differently from stocked plots. The Project Area will not be revised as a result of non-stocked plots; non-stocked plots will simply make no contribution to carbon stock estimates though they will still be included in the inventory.

In addition to tree attribute data collected during the inventory, the lying dead wood pool will be monitored using the Harmon and Sexton 1996 method, Annex M, as described in the VM0003 Methodology.

Following VM0003 Section 9.3, where PAIs are not homogeneous, each PAI project area shall be stratified into homogeneous units to increase measurement precision of carbon stock, as defined in Section 4 of this document. The creation of measurement strata shall always be completed ex-ante using aerial imagery datasets and, where available. Both the baseline and project scenarios use the same measurement stratification. There are currently 2 measurement strata in the project.

Ex-post stratification may required if any of the activities listed in VM0003 Section 9.3, including unexpected disturbance or forest management activities, occur during this crediting period and will be recorded at verification.

Where measurement stratification is implemented, the stratified sampling frame will be independent of observed plot data. For the purposes of the estimation of carbon stocks, the number of measurement strata and measurement strata boundaries will be irrelevant so as long as every sample unit will be assigned to a measurement stratum. To reduce sample size and improve the precision of the carbon stock estimate for a given sample size, the sampling frame will be stratified into regions of homogenous carbon stocks, per Section 9.3 of VM0003. Forest type will be interpreted from stand typing as an indicator of regions of homogenous carbon stocks. See Section 4 for more detail on stratification.

Two factors could significantly influence the accuracy of estimates, resulting in potentially biased estimates: dropping sampled plot locations from the sample frame due to inaccessibility and failing to use random sampling in the selection of sample sites. With respect to the first, unreachable areas shall be excluded from the sampling frame and the project area; all areas of the project are subject to sampling. With respect to the second, the use of a random chance device shall be used to spatially allocate plots for measurement using GIS.

Where non-conformances with the validated monitoring plan exist at the time of any verification, the project proponent shall justify any non-conformances of the plan as a project description deviation according to the requirements of Section 3.19 of the VCS Standard.

Forest Carbon Works will continue managing the project throughout the project lifetime, including the ongoing monitoring, reporting, and verification of underlying data and parameters that contribute to the quantification of project greenhouse gas emission reductions and removals through the life of the project's crediting period. Forest Carbon Works will oversee inventory updates, data collection and

processing, to ensure continued project reporting and monitoring activities. All data will be saved to secure cloud-based servers regularly. Data collected as part of the monitoring activities shall be maintained for at least 2 years following the end of the project. A line diagram showing the flow of data is provided below:



The project proponent, Forest Carbon Works, is a project developer with expertise in the technical aspects of carbon offset project design, planning, and development with a focus on forest biometrics, carbon accounting methodologies, and remote sensing. Key personnel have extensive experience validating and verifying projects under the Verified Carbon Standard (VCS), California Air Resources Board (ARB), Climate Action Reserve (CAR) Standard, Gold Standard and Climate Community & Biodiversity (CCB) Standard. Key personnel are Verra-approved experts in IFM and REDD.

In terms of organization structure, the project proponent is divided into a project development team and a field team. The project development team is responsible for all quantification, modeling, and documentation associated with the project, while the field team is responsible for the forest inventory and any related field work. The field team is led by regional foresters who have extensive experience practicing forestry in their respective regions. Regional foresters will lead all on-the-ground monitoring activities that will take place during the lifetime of the project, including data collection and inventory management.

The project proponent will be responsible for all oversight and accountability of monitoring activities throughout the life of the project. If contractors are used for collecting inventory data, they will be trained and supervised directly by project proponent staff.

QAQC procedures will be carried out on all recorded measurements throughout the inventory process by the Project Proponent. All measurements will be reviewed for completeness, thoroughness, and accuracy by the Project Proponent during and after the inventory cruise. Evaluation of tree measurements will be performed using photogrammetry on image data collected in the field. During the review and processing of collected inventory data, inconsistent, seemingly erroneous, and/or otherwise insufficient data will be investigated using photogrammetric methods and where necessary the forest technician will be further consulted by the Project Proponent team. If necessary, the forest technician will revisit plots and update measurements as needed.

Inventory data will be checked using the following QAQC procedures:

- Assessment of unusual DBH measurements
- Assessment of unusual height measurements
- Ensuring that total height > live crown bottom height
- Ensuring that total height $\geq$ height to top kill in dead trees

- Ensuring phantom heights are used correctly for broken trees (both live and dead)
- Check DBH relative to height
- Check biomass defect to ensure no percentages over 100
- Check carbon calculations to ensure reasonable results
- Ensure all trees have proper species entries

Field instruments will be calibrated before and throughout the inventory to ensure the collection of the most accurate and precise data.

Upon event of natural disturbance (such as fire, wind, pests) that may alter the carbon stocks in the project area, the affected area will be delineated into appropriate measurement strata and all plots within the affected area re-measured prior to subsequent verification. All affected areas that are greater than 1 hectare will be delineated. If no plots fall within the disturbance region, new plots may be allocated. New plots shall be randomly allocated to preserve unbiased estimates of carbon stocks.

APPENDIX A: IMPLEMENTATION PARTNER ROLES AND RESPONSIBILITIES

- The implementation partner must comply with all local, state, and federal laws, including payment of property taxes.
- The implementation partner must consent to a credit check.
- The implementation partner must maintain the timber rights to the forest.
- The implementation partner may not plant non-native trees in the forest.
- The implementation partner may not employ broadcast fertilization within the forest.
- The implementation partner must coordinate with Forest Carbon Works if a conservation easement is placed on the forest. The addition of a conservation easement will be relevant to the project scenario and is not part of the baseline scenario.
- The implementation partner must notify Forest Carbon Works if they are planning to enroll in any state-administered tax program.
- The implementation partner must disclose any unexamined legal encumbrances on the forest prior to signing the Membership Lease Agreement, including right-of-way easements.
- The implementation partner must provide Forest Carbon Works staff with periodic access to the forest (with reasonable prior notification).
- The implementation partner must fill out an online form each year detailing any major updates related to the forest, including disturbances, harvests, firewood collection, changes in ownership or potential changes in ownership.
- The implementation partner must maintain their forest during the 100-year Legacy Period.
- Any harvests must be approved by FCW and follow an FSC-approved management plan.
- The implementation partner must promptly notify Forest Carbon Works of forest disturbances including damage by fire, wind, pest, or disease.
- If choosing to commercially harvest at any time, harvests must be approved by Forest Carbon Works and have an FSC-certified (Forest Stewardship Council) forest management plan in place. Forest Carbon Works will assist in making this possible at no cost.

APPENDIX B: ATTESTATION

ATTESTATION

Date: _____

I, _____, am qualified to practice forestry in the United States and have confirmed the legality and plausibility of the specific management practices modeled as the baseline scenario for each of the following Project Activity Instances, listed below by unique identifier:

For each Project Activity Instance, I have confirmed that the model for the following elements of forest management is common practice for the region in which it resides:

- ☐ Harvest rotations
- ☐ Harvest methods
- ☐ Species harvested and planted
- ☐ Riparian management areas
- ☐ Areas of steep slope or unstable soils
- ☐ Maximum patch cut areas

Signature of attestation:

APPENDIX C: ANNEXES

Annex	Title	Conf.
Annex A	IF12001 - Congressional Report 2021	
Annex B	Ecosphere - 2016 - Stephens - US Federal Fire and Forest Policy Emphasizing Resilience in Dry Forests	
Annex C	ES-2016-8830	
Annex D	MLA_Signed_PAI1024	
Annex E	RCW 76.09 - WA state FPA	
Annex F	WAForestPracticeRulesCh222	
Annex G	Global Indicator Framework after 2023 refinement_Eng	
Annex H	timbermanagement_Skagit.pdf PAI 1024 - Comparable Harvest Materials Comparison.xlsx Comparable Harvest Shapefile	
Annex I	Fire as Management Tool Policy v1.0	
Annex J	Winjum et al 1998	
Annex K	vcs-program-definitions-v4.3-final	
Annex L	2022 Forest Cruiser Training v1.1 NephosDigitizationManual	
Annex M	Harmon & Sexton 1996	
Annex N	Tax Parcels and Project Area of PAI 1024	
Annex O	IPCC, Good Practice Guidance for Land Use, Land-Use Change and Forestry, 2003	
Annex P	U.S. Forest Projects (June 25, 2015) - Volume and Biomass Equations for Forest Offset Projects in All States Except Alaska, California, Oregon, and Washington biomass.equations.ca.or.wa volume.equations.ca.or.wa	
Annex Q	PD-Table 4.4 v0.3	
Annex R	FCW 5-year MLA Offer Packet Template v1.10 - no back payment	

	FCW Conserve Membership Guide_v1.2	
	FCW Stakeholder Engagement Plan v1.0	
Annex S	NCX - Verra Communication	
Annex T	FCW Conserve Adaptive Management Plan v1.0	
Annex U	FCW VCS Certification Model	
	Kimmeridge Carbon Solutions, L.P. and Chestnut Carbon LLC Proof of Funds <i>Confidential due to proprietary financial information</i>	Yes
Annex V	FCW Conserve Risk-Report-Calculation-Tool-v1.0	
	FCW Conserve_Non-Permanence-Risk-Report v1.1	
Annex W	Civil Rights Act of 1964 (Public Law 88-352, 78 Statute 241)	
Annex X	Americans with Disabilities Act (42 U.S.C. § 12101 et seq.)	
Annex Y	Fair Labor Standards Act (29 U.S.C. § 201 et seq.)	
Annex Z	Occupational Health and Safety Act (29 U.S.C. § 651 et seq.) establishes health standards for the workplace	
Annex AA	Federal Water Pollution Control Act (33 U.S.C § 1251 et seq.)	
Annex AB	Endangered Species Act (16 U.S.C. § 1531 et seq.)	
Annex AC	National Environmental Policy Act (42 U.S.C. § 4321 et seq.)	
Annex AD	QAQC Reference V1.0	
Annex AE	The Fire and Fuels Extension to the Forest Vegetation Simulator: Updated Model Documentation Lying Dead Reference Table, USDA FS, pp295-296.png	
Annex AF	Forest Protocol 2015 assessment.area.data.file	
Annex AG	FVS Files	
Annex AH	FCWConservePDAdditionality_NPV_v4.0.xlsx	Yes
Annex AI	FCW Conserve TL v0.12 - PAI 1024 - No URS	
Annex AJ	FCW Conserve TL v0.12 - PAI 1024	

Annex AK	FCW Conserve ERR Calculation Spreadsheet v0.3	
Annex AL	FCW Conserve ERR Calculation Spreadsheet v0.3 - No URS	
Annex AM	FCW Conserve Model Results v1.0 - PAI 1024 - No URS	
Annex AN	FCW Conserve Model Results v1.0 - PAI 1024	
Annex AO	FCW Conserve Baseline Wood Products v1.0.xlsm	
Annex AP	FCW Conserve Implementation Plan v1.0	
Annex AQ	No Public Comments Evidence from Verra.pdf	
Annex AR	FCW Membership Guide July 2023.pdf Conserve Harvest Policy.pdf	
Annex AS	PAI 1024 Modeling Units Shapefile	
Annex AT	Evidence of Project Ownership	
Annex AU	PAI 1024 Forester Attestation.pdf Resume – Attesting Forester – 2023.pdf	
Annex AV	FCW Landowner License Agreement	
Annex AW	UMN – Research Statement 2022	
Annex AX	Specific Gravity and Other Properties of Wood and Bark for 156 Tree Species Found in North America	
Annex AY	Global Forest Resources Assessment 2020 - Terms and Definitions FRA 2020	
Annex AZ	PAI1024 Landowner Parcels PAI1024 Email Confirmation	
Annex BA	Estimated Discount Factor at the time of MP1 Verification.xlsx	
Annex BB	Forest Carbon Works Conserve Peat Policy	
Annex BC	PAI 1024 Plot/Plotgrid Shapefiles	

Annex BD	FCW Conserve – Sample Size (PAI 1024)	
Annex BE	FCW Conserve Lying Dead by PIA v1.0.xlsx	
Annex BF	The Economic Results of a PNW Silvicultural Costs Survey	