



VERIFICATION REPORT
ARB VERIFICATION OF THE FINITE CARBON – LYME LOGAN IFM PROJECT
(CAR1205/CAFR5305)
REPORTING PERIOD 3

4/20/2021
Version 2.0

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Abbreviations

ACR	American Carbon Registry
ARB	Air Resources Board
APD	Authorized Project Designee
ANSI	American National Standards Institute
BMP	Best Management Practices
CCR	California Code of Regulations
CH ₄	Methane
CO ₂ e	Carbon Dioxide Equivalent
CP	Common Practice
EPA	Environmental Protection Agency
ERTs	Emission Reduction Tons
FOP	Forest Offset Protocol
GHG	Greenhouse Gas
HWP	Harvested Wood Products
HWPCW	Harvested Wood Products Calculation Worksheet
ICS	Initial Carbon Stocks
MBL	Minimum Baseline
NPV	Net Present Value
NRCS	USDA Natural Resource Conservation Service
OMM	Offset Material Misstatement
OP	Offset Provider
OPO	Offset Project Operator
OPDR	Offset Project Data Report
QCE	Qualified Conservation Easement
RPF	Registered Professional Forester
PD	Project Developer
PP	Project Participant
S&A	S&A Carbon
t	Metric Tonnes
U.S.A	United States of America
USDA	United States Department of Agriculture

1 Introduction

S&A Carbon (S&A) has been contracted by Finite Carbon to verify the emission reductions generated by the Finite Carbon – Lyme Logan IFM Project (the project). The verification process is required by the California Air Resources Board Compliance Offset Protocol (COP) for U.S. Forest Projects (November 14, 2014) and Title 17, California Code of Regulations, Article 5. S&A verification activities began on 1/7/2021. This report presents the findings from the verification the project's greenhouse gas (GHG) emission reductions/enhancements.

The Offset Project Registry (OPR) for this project is the Climate Action Reserve (CAR), listed as CAR1205/CAFR5305.

2 Project Overview

2.1 Project Participants

Role	Project Participant	Contact Information
Offset Project Operator (OPO)	Lyme Mountaineer Timberlands II, LLC	David Hoffer 23 South Main Street Hanover, NH 03755 603-643-3300; dhoffer@lymetimber.com
Technical Consultant (TC)	Finite Carbon Corporation	Sean Carney 435 Devon Park Drive, 700 Building Wayne, PA 19087 484-586-3080; scarney@finitecarbon.com

Entities listed in the table above are collectively referred to as project participants (PP) throughout this document.

2.2 Description of Project

The Finite Carbon – Lyme Logan IFM Project (the Project) is an Improved Forest Management project, consisting of 47,505.75 acres of forestland in the Commonwealth of West Virginia. The majority of the Project Area is second and third growth Eastern hardwood and conifer mix, the result of timbering and farming over a 175 year period. The project area is currently zoned as timberland. Future use of the property may consist of commercial forestry practices as well as mining, recreation and hunting.

Project Commencement Date: 12/19/2017

Crediting Period Start Date: 12/19/2017

Crediting Period End Date: 12/18/2042

Verification Start Date: 1/7/2021

2.3 Offset Verification Services Scope and Criteria

This is the Project's third ARB verification. The scope is to conduct a less-intensive verification to assess the Project's conformance with the ARB criteria outlined below, for the third reporting period covering 8/19/2019 to 8/18/2020.

The verification follows the COP reporting and verification requirements in sections 9 and 10 of the COP, and assesses the project with respect to the baseline scenarios presented in the Offset Project Data Report (OPDR).

Specific verification tasks include:

- Verifying that actual monitoring systems and procedures are in compliance with the COP;
- Verifying that the implementation of the monitoring plan is in accordance with the OPDR.
- Evaluating the GHG emission reduction/enhancement data and express a conclusion with a reasonable level of assurance about whether the reported GHG emissions reduction/enhancement data is free from offset material misstatement of asserted emission reductions/enhancements; and
- Verifying that reported GHG emissions data is sufficiently supported by evidence.
- To verify the project in accordance with the verification guidelines outlined in the Regulation and the COP.

The criteria for the offset verification services are:

- Title 17, California Code of Regulations, Article 5, Subchapter 10, Sections 95800 to 96022 (Regulation), April 1, 2019
- Technical Guidance for Offset Verifiers: Verification of Offset Project Data Reports, October, 2013
- Guidance for Verifying Forest Carbon Inventories, September 9, 2013
- ARB Compliance Offset Program, U.S. Forest Offset Protocol, Frequently Asked Questions, October 2013
- U.S. Forest Projects, November 14, 2014

2.4 Verification Objective

The purpose of this report is to document the verification process and to assess the Project's conformance with the criteria listed above.

2.5 Materiality

The verification team must state with reasonable assurance that the percent overstatement of the OPO's total reported GHG emission reductions and removal enhancements are no more than a 5.00% overstatement of the "true" GHG emission reductions and removal enhancements, as calculated by the verifier using the equation below (§95977.1(b)(3)(Q)) The analysis must consider all discrepancies, omissions, or misreporting, for the subset of data included in the data checks.

$$\text{Percent error} = \frac{[\sum \text{Discrepancies} + \sum \text{Omissions} + \sum \text{Misreporting}] \times 100\%}{\text{Total Reported Emission Reductions and Removal Enhancements}}$$

2.6 Level of Assurance

S&A Carbon provides reasonable assurance that the Project meets the above criteria.

2.7 Findings

Throughout the verification, findings were recorded by the verification team as per verification guidance outlined in the COP and supporting documents cited above. Any discrepancies, omissions,

or misreporting identified by the verification team were documented in the Issues Log (per §95977.1(b)(3)(O)). The offset verification team has also documented in the Issues Log the source of any difference identified, including whether the difference results in a correctable error (per §95977.1 (b)(3)(M)). The Issues Log was submitted to the PP. Prior to completion of the verification, all identified non-conformances were required to be addressed, and correctable errors were required to be fixed. The PP submitted additional evidence for S&A's evaluation for conformance. The PPs corrected all correctable issues. The Issues Log and the Verification Report are shared with the PP, the S&A verification team, and the OPR.

Please note, throughout the report reference numbers have been assigned to the various verification documents. These include both those prepared by the PP and the S&A verification team. Specific details regarding document delivery dates, general descriptions and associated file names are found in Appendix A of this report. Some of these documents have been revised during the course of the verification; only the final versions are listed in Appendix A.

3 Summary of Reporting Period ROC's

During the verification process, the S&A verification team gathered evidence to evaluate the project design, the project implementation, and assess the accuracy of the GHG assertion associated with the reporting period.

After review of all project information, procedures, calculations, and supporting documentation and site visit, S&A confirms that Project reporting is accurate and consistent with all aforementioned criteria and requirements in the COP and the Regulation. S&A confirms all verification activities, including objectives, scope and criteria, level of assurance, and project documentation adhere to the COP. S&A concludes without any qualifications or limiting conditions that the Project meets the requirements of the ARB COP and Regulation.

S&A has verified the OPO's GHG assertion of 157,102 tCO₂e for the Reporting Period of 8/19/2019 to 8/18/2020.

	Total ROCs (Q _{ry}) (tCO ₂ e)	Total ROCs to Buffer Pool (tCO ₂ e)	ROCs net (Q _{ry after buffer}) (tCO ₂ e)
Total for RP3	157,102	30,227	126,875

4 Verification Methodology

4.1 Verification Team

Role	Name
Lead Verifier	Pablo Reed
Independent Reviewer	Kyle Silon
Biometrician	Elizabeth McGarrigle
Project Manager	Alexa Kandarlis
WV RPF	Jeff Parsons

4.2 Description of the Verification Process

S&A submitted a proposal to the PP for the verification of the Project on 11/4/2021. Upon contract execution, S&A was selected as the Verification Body. The Notice of Verification Services (NOVS) and Conflict of Interest (COI) forms were initially filed with the OPR and ARB on 12/8/2021 and approved on 12/12/2021. S&A began verification activities on 1/7/2021. The verifiers reviewed the Listing document and confirm that it is complete and accurate meeting the requirements of §95975.

A kick off conference call was held on 1/7/2021. The project team and verifiers discussed initial findings from a desk review of submitted documents, targeting aspects of the OPDR that might affect the site visit. Meeting minutes were prepared following the kick off meeting.

Signed OPDRs were provided prior to the site visit. The verifiers reviewed these documents to prepare for the site visit. The verifiers also assessed the eligibility criteria required to design, measure, and monitor the Project to the requirements of the COP and the Regulation (See §95977.1(b)(3)(D)(1), §95977.1(b)(3)(D)(2)(a)-(e), and §95977.1(b)(3)(D) (2)(f)-(i)). Verifiers confirmed that these eligibility requirements were met. The Verification Plan, site visit plot selection and associated maps were completed.

A draft Sampling Plan was prepared based on information available from the APD. The Sampling Plan considers the requirements of §95977.1(b)(3)(G)(1)) and evaluates the credibility and rigor of six methodology items. It considers the size (both in area and carbon storage) of the GHG reservoirs (forest strata) and discusses the risk associated with each. Since this is an annual desk verification, the emphasis was placed on the following items, in compliance with the annual verification checklist included in the protocol:

- Any changes in the status of the Forest Owner including, if applicable per Section 3.8.1 of the COP, and the acquisition of new forest landholdings
- Checks on whether Forest Project and associated Project Lands have met and followed all local, state, or federal regulatory requirements during the reporting period.
- Estimates of Actual Onsite Carbon Stocks
 - o A detailed review of any changes in reported carbon stocks from previous years are within expected bounds resulting from reported harvest, growth, and disturbance effects.
- Project Reversals
 - If a reversal has occurred during the previous reporting period, the report must include a written description and explanation of the reversal, whether the reversal has been classified as intentional or unintentional, and the status of compensation for the reversal.
- Baseline stocks, IFM-1 and IFM-3
 - o A thorough Baseline review was required for the initial verification, but since this is an annual desk review of the third reporting period, the degree of baseline review is reduced. Verifiers traced data from the OPDR back to the results of the baseline modeling and did a general review of the baseline modeling process. The level of review was augmented if any issues surface in the process.
- Emission Reductions
 - o Verifying emission reductions included tracking all components of any OPO-submitted emission reduction calculation worksheet, including:

- Checks that the entries for boRP stocks, confidence deduction, baseline stocks, baseline and harvested wood products, and the reversal risk are all entered correctly from their computed sources.
 - The accuracy of these sources was confirmed.
 - Checks that calculations within the worksheet were correct.
- Harvested Wood Products (HWP), IFM-7, IFM-8, IFM-17 (following guidance in COP Appendix C.)
 - Project-level harvesting took place during the reporting period, so cross reference of harvest volumes with actual mill slips were verified, and the OPO's corresponding calculations checked. Baseline harvested wood estimates are outside the scope of this verification, yet basic data checks for correct calculations on baseline HWP were also performed.
- Biological emissions from site prep and project leakage
 - The verifier confirmed the use or lack of site preparation activities.
- Secondary Effects
 - The verifiers checked that calculation steps and/or factors provided in Section 6 and approved at the time of the offset project listing, were utilized correctly during the monitoring period.

As required by §95077.1(b)(3)(K), the Sampling Plan will be retained by S&A for a period of not less than 15 years following the submission of the Offset Verification Statement. All material received, reviewed, and generated by the provision of Offset Verification Services will be retained by S&A for the same period.

The verification process included exchanges between S&A and the PPs, in order to gather additional information for review and examination. These exchanges included 2 rounds of an Issues Log by S&A to which the PPs were required to respond. The final responses by the PPs to these issues were provided to the verifier on 03/03/2021. The Issues Log is a confidential document, available under separate cover. With responses to the issues as well as supplementary information, S&A was able to close all issues and render a positive verification opinion. Verifiers confirmed on 03/08/2021 that all remaining issues were satisfied in the responses to the final Issues Log.

S&A auditors drafted the Verification Statement and Verification Report and presented it for Independent Review, which determined the Verification Statement to be justified based on the project documentation and verification assessment. The final verification documents were then presented to the PPs for review and comment on 03/30/2021. A final call to close the verification was held on 4/1/2021. Members of the verification body and the PPs were present on the call. Upon approval, S&A uploaded the final verification documents to the OPR website for registry review.

5 Verification Findings

Please note, non-conformances or observations identified during the verification are included in the "Issues Log". All findings related to verification team's review of evidence submitted by the PPs are included within this verification report and the final Issues Log. Data checks for many items are available in the verifier's data check log.

5.1 Project Eligibility and GHG Assessment Boundary **COP § 2.1.2, 2.2**

The verifiers are reasonably assured the land is still privately owned based on reviewing the project Deeds, parcel tax list, and GIS project area and historical shape files. These were also assessed during the previous initial verification, which also included a review of marked project boundaries during the site visit. Verifiers confirmed that all parcels reviewed are within the project areas and they correlate reasonably well with the delineated GIS project boundary. No evidence was uncovered to suggest project boundaries have changed since the previous reporting period.

Sources used by the verifiers to assess the percentage of tree canopy included reviewing the latest, publicly available aerial imagery (ESRI 2019) and project documents (maps, previous site visit observations & harvest records). Imagery used by verifiers appears comparable to a map submitted by the OPO with the initial OPDR. Based on this imagery and previous site visit observations, the verifiers confirm that the project property still exhibits greater than 10% tree canopy.

Management activities that will lead to increased carbon stocks in the project area compared to the baseline include but are not limited to longer rotations between harvests and maintaining stocks at higher levels (i.e. shorter rotations and maintaining lower stocking levels in the baseline). The forest types are native to the area and are comprised of multiple ages and mixed species. Sustainable management criteria are currently not applicable as no commercial harvesting is occurring within the Project Area (see COP §3.8.2 below). The OPO continues to attest that no broadcast fertilization has been or is being employed. The verifiers uncovered no evidence that the Project was previously listed as an Early Action project.

The annual OPDR states that harvesting did occur within the project area during this reporting period. Longer rotations and greater retention have and will continue to be used to gradually increase forest-wide stocking relative to a common practice baseline. This is an eligible activity under COP §2.1.2.

The OPO attests that all project documentation and reports that reference carbon stocks have been reviewed by a Professional Forester, in this case, Chad Westfall, who is a WV CF (NO. 3789). Verifiers confirmed the good standing of this individual's certification through a check of the licensed foresters on the West Virginia Board of Registration for Foresters website.

The verifiers uncovered no evidence that the Project was previously listed as an Early Action project or as a Forest Project under any other voluntary or compliance protocol by checking the following registries:

- Verra (<http://www.vcsprojectdatabase.org/>)
- American Carbon Registry (<https://acr2.apx.com/myModule/rpt/myrpt.asp>)
- Climate Action Reserve (<https://thereserve2.apx.com/myModule/rpt/myrpt.asp>)
- Clean Development Mechanism (<https://cdm.unfccc.int/>)

Verifiers also checked these registries for evidence of any ARB compliance offset projects that occurred within this same project area. Prior to the Site Visit for the initial verification, the verifiers were informed of an adjustment made to the project area boundary due to a minor (e.g. approx. 5 acres) overlap with the adjacent Wyoming Improved Forest Management Project (ACR 249) that was identified by the PP. Updated spatial data for the project area boundary was provided, showing the project area acreage (47,542.48). The final project area boundary was compared against spatial data for the adjacent Wyoming IFM project obtained by the verifiers from the ACR project database, which confirmed the final Lyme Logan project boundary to have no overlapping area with the adjacent

Wyoming project. After an ARB review of the project's documentation for RP1, the project's final acreage was further refined to be 47,505.75 acres. The Climate Action Reserve is the only registry that lists the current project (CAR1205/CAFR5305). No evidence of double counting was found.

COP § 3.1, 3.1.1, 3.1.2

The Project continues to **not be** mandated by any law, statute, or regulation, and verifiers found no evidence to the contrary. The verifiers conclude with reasonable assurance that the Project offset credits generated are additional to any laws and regulations and exceed a conservative baseline scenario.

An Improved Forest Management Project automatically satisfies the performance test.

COP § 3.2

The offset project commencement date was 12/19/2017, which corresponds to the date of ownership transfer from the previous forest owner (Heartwood Forestland Fund II, LP) to the current Forest Owners (Lyme Mountaineer Timberlands I, LLC and Lyme Mountaineer Timberlands II, LLC) and OPO (Lyme Mountaineer Timberlands II, LLC).

COP § 3.3, 3.4

The Project Crediting Period for offset projects using the COP is 25 years. The crediting period is coincident with the start of the current reporting period, 12/19/2017, and ends no later than 12/18/2042. This third reporting period includes 08/19/2019 to 08/18/2021. The OPO will monitor the forest carbon stocks for a period of 100 years following the last year of the issuance of any offset credits. These assertions are made in the listing and OPDR documents.

COP § 3.5

No Qualified Conservation Easement is in place on this property. This was confirmed by the OPO in the OPDR and no evidence of any conservation easements were found in a review of the deeds.

COP § 3.6

Verifiers are reasonably assured the project land continues to be privately owned and located within the jurisdiction of the Commonwealth of West Virginia (Wayne, Lincoln, Logan, and Mingo Counties). According to the initial OPDR, no tribal interests or land ownership are documented within the project area; Centroid latitude and longitude coordinates are approximately 37.710 and -82.138, respectively. The project lies in climate zones 6a and 6b on the USDA Plant Hardiness Zone map. This information is available in the initial OPDR, project listing and Appendix A and was confirmed by the verifiers.

COP § 3.7

In the listing document, the OPO attests that the project is in compliance with all applicable laws.

The following laws and regulations were once more reviewed as part of the desk review:

- National Wild and Scenic Rivers Act;
- Endangered Species Act (ESA);
- Clean Water Act;
- West Virginia Best Management Practices (BMP)
- West Virginia Logging Sediment Control Act (LSCA)

The verifiers reached reasonable assurance that the project is still in compliance with these local, state and federal laws, requirements and regulations.

COP § 3.8.1, 3.8.2

Native Species

The initial OPDR states the project area is comprised of at least 95% native species. Based on the OPO's supporting calculations for the percentage of standing live basal area by species, for the 2016 inventory, approximately 98.78% of the species in the project area were found to be native to the region. The verifiers calculated the same percent native species composition using the individual tree data provided confirming the percentage of native species is meets the 95% or greater COP criteria.

The OPDR's calculations show that composition of the native species within the project area is mixed; no single species exceeds the species diversity index for the assessment areas. The verifiers reviewed the calculations for relative species distribution and confirmed that no species exceeds the Species Diversity Index (SDI) for each applicable Assessment Area designations for the project. The maximum concentration at the project level is still in Chestnut Oak at 15.48%. The OPO also calculated the percent species composition for each applicable Assessment Area. At the Assessment Area level, Chestnut Oak has the highest percent composition in the Allegheny & North Cumberland Mountains – Oak-Hickory Assessment Area (16.32%) as well as in the Southern Allegheny Plateau Mixed Hardwoods, Northern Hardwoods, Oak-Hickory and Mixed Pine Hardwoods Assessment Areas (14.21%, 16.86%, 18.04% and 17.43% respectively). Yellow-poplar has the highest percent composition in the Allegheny & North Cumberland Mountains Mixed Hardwoods, Northern Hardwoods and Mixed Pine Hardwoods Assessment Areas (15.11%, 15.90% & 15.93% respectively).

Sustainable Harvesting & Natural Forest Management Practices

The sustainable harvesting practices requirements are met via third party certification, which in this case would signify a good and current standing within the FSC program. According to the initial OPDR, this and all other harvesting that occurs in the future will involve management activities that will lead to increased carbon stocks in the project area compared to the baseline include but are not limited to longer rotations with reduced harvest intensity. Longer rotations and greater retention will be used to gradually increase forest-wide stocking relative to a common practice baseline. The status of the Forest Owner/OPO's FSC Certification was confirmed (RA-FM/COC-004261) via checks on the online FSC Certificate Database and through contacts with the FSC Certification Body responsible for the Lyme Timber Company's certification /R11/. The primary goal of the forest management plan is stated as gradually improving the overall forest conditions in a manner that will maintain of enhance both the financial and ecological attributes of the forest over time.

Age-class distribution

According to the OPDR and the associated supporting calculations, the age class distribution of trees younger than 20 years represents approximately 1.5% of forested acres for both the entire project area and watersheds (<10,000 acres) at the time of the initial verification. Both of these are below the COP threshold of 40%. The verifiers confirmed this by reviewing the source data (project and watershed age class proxy analysis) and calculating the percentage for this age class, running a Carbon Online Estimator (COLE) 1605(b) report and independent age class analysis, by reviewing recent aerial photographs, and through forest age class observations made during the previous verification site visit. Since the project has not undergone considerable even aged management harvesting, nor has it suffered any major disturbances, the verifier team can be reasonably assured that the figures provided for native species composition remain compliant with the COP.

Structural Elements

The natural forest management criteria require structural elements, in the form of standing and lying deadwood, are retained in ecologically sufficient quantities in the Project Area. The COP requires projects to demonstrate the higher of either: 1) at least 1% of standing live carbon stocks in standing deadwood or 2) at least one metric tonne (t), on average, of deadwood per acre, or progress towards that goal.

Based on the 2017 forest inventory data, the OPO's calculated value for the actual onsite carbon for standing dead wood within the entire forested project area was 0.74 t carbon (C) per acre (equivalent to 1.66% of standing live carbon). The verifiers calculated similar values. New figures for structural element requirements were provided for RP3, though the verifiers' checks on these are superfluous as these are based on modeling, and will need to be confirmed during the next full verification and inventory update. The weighting and overall mean calculation for total standing live calculated by the verifiers were within reasonable agreement with OPO values.

The amount of carbon within total standing dead meets the minimum 1% of total standing live carbon requirement (2.89%). Total standing dead now does meet the 1tC per acre threshold (1.35 mtC/acre). As indicated in the annual OPDR, harvesting did occur in the project area during RP3. For this harvest and other than occur in the future, structural elements will be retained in sufficient quantities by implementing project activities that do not include the active harvest or removal of standing or lying dead wood. Therefore, it is reasonable to expect that quantities of carbon in standing dead wood will be maintained and have the potential to increase over time. No evidence of the removal of standing dead wood was observed during the initial site visit.

Requirements of COP §3.8.1/3.8.2 are satisfied.

COP § 3.8.3

Since the project start date (12/19/2017), the OPO's project monitoring worksheet shows no decrease in standing live carbon stocks. Verifiers confirmed that these calculations are correct.

COP § 3.8.4

The intent of this section of the COP is to limit the regeneration harvests in even-aged management systems to stands no greater than 40 acres. Harvested stands must also meet certain criteria for age or regeneration height in adjacent stands. Compliance with this requirement was met via the employment of longer rotations and greater retention used to gradually increase forest-wide stocking relative to a common practice baseline under FSC certification. The status of the Forest Owner/OPO's FSC Certification was confirmed (RA-FM/COC-004261) via checks on the online FSC Certificate Database and through contacts with the FSC Certification Body responsible for the Lyme Timber Company's certification /R11/. The primary goal of the forest management plan is stated as gradually improving the overall forest conditions in a manner that will maintain or enhance both the financial and ecological attributes of the forest over time.

COP § 4

The OPO submitted OPDR map appendices for the project area as part of the initial verification and these have not changed since, apart from the small acreage change made after the initial ARB review discussed earlier in this report. Geographical coordinates are included in Part V of the OPDR. A description of the Assessment Areas encompassing the project is included in the Initial OPDR Part V

(A) as well as the determination of the project area in section C. Present and historical land cover/land use, forest vegetation type, land pressures, climate zone classification, site class, zoning and project land use are also described in this section of the OPDR. A geospatial database of the project area was provided. The verifiers confirm that the information provided still complies with the requirements of the COP (§4 & §9.1.1.1 (15) (a-l)).

Verifiers conducted a cursory review of the depictions of physical boundaries and stand typing (stratification) of the project area by overlaying the associated shape files with recent orthophotographs, private and federal property boundaries, survey monuments, and topographic features. Stand typing and property boundary lines were assessed during the previous verification's site visit and have not changed for this reporting period.

Non-forest areas consist of mines, residences, fields and roads. Roads included in the delineation of non-forested features were limited to service roads and timber haul roads. Verifiers checked the calculations examined mapped areas associated with these exclusions and found them to be accurate. Verifiers also concur with the calculated Project Area (47,505.75 acres).

COP § 5.2

The following SSRs (OPDR Table 8) were reviewed for inclusion in the Offset Project Boundary:

Project: IFM-1, IFM-3, IFM-7, IFM-8, IFM-14, IFM-17

Baseline: IFM-1, IFM-3, IFM-7, IFM-8, IFM-17

All appropriate SSRs are included. IFM6 is excluded from the project and baseline because the conditions in Table 5.2 (COP) that would require inclusion of this pool (deep ripping, furrowing, or plowing where soil disturbance exceeds 25% of the Project Area, or mechanical site preparation that is not conducted on contours) are not planned. Likewise, IFM-9 is excluded as site preparation is not expected to occur on more than 25% of the project area over the project life, nor is mechanical site preparation expected to be conducted on contours.

5.2 Inventory Methodology

COP Appendix A.1

The Logan forest has been extensively managed in the past for timber production, mining, and outdoor recreation using even-aged and uneven-aged silvicultural systems, depending on site conditions and species composition. Natural regeneration is the most prevalent and favorable regeneration method on the landscape. The forest is currently managed extensively. Review of air photos and satellite imagery still reveal a forest dominated landscape with minor agricultural uses and mining in some areas.

A check against the ARB assessment area map confirms that the project area is still located in both the *Allegheny & North Cumberland Mountains* and the *Southern Allegheny Plateau* Supersections. The species evident on the property and in the inventory confirm appropriateness of the choice of the assessment areas. Checks on the percent species composition for each assessment area as outlined in the Initial OPDR and supporting calculation workbook were carried out against the species list in the ARB Assessment Area Data File. Prevalent species in each assessment area selected by the project generally aligned with the list of species found in the Assessment Area Data File. The site class calculations for each assessment area are based on FIA DataMart data analysis. Site index and site productivity values for the applicable WV counties were obtained by accessing

FIA DataMart tables to develop site index and site productivity information used in establishing Common Practice carbon stocks and to calibrate site index in the FVS growth model used in the project baseline and project inventory growth. The site index and site class analysis using FIA DataMart tables spatially overlaid with the project area for determination of site class values was verified during the previous verification and that analysis was found to be still applicable. The calculations for the weighting of the Common Practice value for each Assessment Area within the project have not changed since the previous verification and are thus still considered applicable.

Finding for COP Appendix A.3, items 2-8

A project inventory methodology was provided during the initial verification that satisfies the requirements of this section. The OPO conducted a forest carbon inventory within the project area between 2/26/2018 through 3/28/2018. As the Forest Owner/OPO purchased the Logan property with the project already being listed, the TC used an existing inventory stratification and plot allocations. The inventory strata were established by the previous forest owner and was/is based on an automated mapping process that classified the property according to site attributes including slope, aspect, and land form. It is noted that the inventory strata were considered acceptable for estimating forest carbon stocks, but are different than the project's Assessment Area stratification that was performed for determining the project's Common Practice values. The existing inventory strata utilized by the project have not changed since the initial verification, with the exception of new strata created in order to quantify depleted stocks in areas following harvest events. The stratification of the rest of the project area is thus still applicable and found to reasonably correspond to the assessment area descriptions noted for the specified supersections.

Detailed inventory procedures and specifications are described in Appendix A of the OPDR. During the initial verification, verifiers confirmed that these processes were a) in conformance with USFS and other generally accepted professional standards; and b) effectively followed by the inventory crews.

Section VIII (A) of the initial OPDR contains details about the modeling process and also the methods used to calculate live and standing dead carbon stocks. These have not changed since the initial verification of the project. The processing methods are thorough, systematic, and follow the COP guidance for projects outside of California, Washington and Oregon.

COP Appendix A (b)

A project inventory methodology was provided during the initial verification that satisfies the requirements (1-10) of this section. The species evident on the property and in the inventory confirm appropriateness of the choice of the assessment areas. The common practice value for the assessment area was confirmed by verifiers by reviewing the Assessment Area Data File and has not changed since the initial verification.

The stratification rules are provided in the OPDR. Historic stand mapping maintained by the OPO formed the basis for four strata. Stratification based on size class is considered reasonable for this region and also has not changed since the previous verification.

Finding for COP Appendix A (c-j)

The full carbon inventory completed in 2018 was used to calculate the carbon for the end of the reporting period. FVS was used to grow the inventory data to the end of the reporting period and beyond. The verification can confirm the following:

- The model was calibrated and used appropriately;
- The application of the model results is accurate and appropriate;
- The amount of growth predicted by the model is consistent with Forest Inventory and Analysis (FIA) program estimates for the region and is consistent with published studies;

Detailed inventory procedures and specifications are described in Appendix A of the initial OPDR. Verifiers confirmed that these processes were a) in conformance with USFS and other generally accepted professional standards; and b) effectively followed by the inventory crews.

Identification and descriptions of known or potential disease(s) that may affect the health of the project's inventory have been described within the initial OPDR. Verifiers have reviewed these documents and confirm that these documents still adequately and accurately provide the necessary information to meet the intent of the COP.

Finding for COP Appendix A (k-o)

The sampling error was recalculated based on the verifier calculations and was shown to be identical with the OPO's calculation (OPO 4.16%; VB 4.16%). The appropriate confidence deduction is calculated as 0% and applied correctly in the Monitoring Calculation worksheet.

5.3 Baseline Carbon Stocks

COP § 6.2.1 steps 1-4

As a thorough Baseline modelling review was required for the previous full verification, the degree of baseline review is thus reduced for this less intensive annual verification. Nevertheless, verifiers have traced data from the OPDR back to the results of the baseline modeling and conducted a general review of the baseline modeling process. The level of review was not further augmented as no issues of concern surfaced during the process. The baseline modelling assumptions have been previously confirmed as being in conformance with the protocol requirements during the last full verification. The analytical methods used to apply growth to current stocks are described in Attachment M (Initial OPDR). The verifiers reviewed these calculations and procedures once more and found:

- The FVS model was calibrated and used appropriately;
- The application of the model results is accurate and appropriate;
- The amount of growth predicted by the model is consistent with FIA estimates for the region and is consistent with published studies; and
- The methods used to calculate biomass and carbon from tree data are consistent with the protocol and have been accurately applied.

COP § 6.2.3

Baseline carbon in harvested wood products was determined from the FVS-based yield curves for the carbon in harvested trees delivered to the mill. Data for 100 years is averaged to determine the ratio of wood harvested to wood delivered. The ratio of wood harvested to wood delivered was correctly calculated and is in line with the ratio of the bole biomass to the total tree biomass, based on the entire inventory of merchantable trees.

Verifiers conducted cursory reviews of the overall modeling process, calculations and supporting documents, and based on these reviews, the verification team can confirm that the methods were accurately implemented and the associated calculations done correctly to comply with the COP

specifications for estimating the average amount of carbon in standing live carbon stocks for each year over 100-year baseline period.

5.4 Project Carbon Stocks

COP § 6.2.4

Since the project start date, previous project monitoring and verification reports suggest no decrease in standing live carbon stocks. The verifier team also reviewed recent aerial imagery that confirms the reported extent of recent harvesting, and that no reversals, or natural disturbances are evident that might suggest a decrease in standing live stocks.

The carbon inventory completed in 2018 was used by the OPO to grow this data set forward, and along with the verified biomass equations, to calculate the onsite carbon stocks for the end of the reporting period. The end of reporting period stocks were grown forward at the plot level; the end of reporting periods stocks are based on the calculation of annual growth from FVS that is derived through linear interpolation for each plot from a five year growth prediction. Limited harvesting activity occurred between the completion of the inventory and the end of the reporting period, prompting the re-stratification of the project area in order to account for harvesting in this third reporting period. Average carbon stock by strata was used to produce weighted total Onsite Carbon Stocks. The two primary carbon pools for the initial and the reporting period stocks, IFM 1 and IFM 3, are reported in the initial and annual OPDR, respectively. The verification can also confirm, as reported in Section 2 above, that the OPO conducted all calculations according to the protocol and found close agreement with the OPO estimates of initial stocks. OPDR reporting is consistent with the estimates shown in the supporting workbooks.

COP § 6.2.5

Actual carbon in harvested wood products was verified during this desk verification as harvesting took place during this third reporting period. The OPO filled out their HWP calculation worksheet to determine the storage rates for baseline and project harvested wood products appropriately and used the actual product proportions to arrive at final calculations. Harvesting volumes were verified by reviewing actual mill slips and other documentation /R12/R13/.

COP § 6.2.6

Equation 6.10 of the COP was used correctly to quantify the secondary effects of the project. Twenty percent of the difference between the actual onsite carbon harvested and the baseline carbon harvested is noted in the OPDR. The verifier checked the calculation of the built-in equations in the ARBOC Monitoring Calculation worksheet and confirm that it is correct.

5.5 Calculation of GHG Reductions and Removals

COP § 6

The OPO has provided the ROC/ARBOC Monitoring Calculation worksheet as the implementation of COP equation 6.1. This document accounts for project and baseline stocks, project and baseline harvested wood products, HWP storage, secondary effects, buffer pools and any reversals. All data entered by the user into this workbook is consistent with supporting documents. Calculations embedded in the worksheet were recalculated and checked by the verifier.

5.6 Reversal Risk Rating

Finding for COP Appendix D

The table below presents the verifiers' findings pertaining to the Project's Reversal Risk Rating, following the guidance in the COP Appendix D. The verifiers concur with the assessment offered in the annual OPDR and found that it complies with the protocol guidance for each risk type. The table summarizes the evidence used to support each risk level.

Risk Type	Conform	Finding	OPDR	Verif. Check
Financial	Y	Default	5%	5%
Management: Illegal removal of forest biomass	Y	Default	0%	0%
Management: Conversion of project area to alternate land use	Y	Default	2%	2%
Management: Over-harvesting	Y	Default	2%	2%
Social	Y	Default	2%	2%
Natural disturbance: Wildfire	Y	Default	4%	4%
Natural disturbance: Disease or insect outbreak	Y	Default	3%	3%
Natural disturbance: Other episodic catastrophic even	Y	Default	3%	3%
Cumulative Risk	Y		19.24%	19.24%

The Project proponents have calculated their reversal risk rating to be 19.24%, which shows that the risk rating has remained fixed since the last full verification when the site visit occurred. The verifier team also reviewed the CRT Calculation Worksheet and previous years' verification reports to make sure the correct values have been utilized throughout. Further, the verifier team also recalculated the reversal risk rating and confirms that it was calculated correctly during the initial verification, as all risk factors were either defaults for the US or for the region.

6 Summary Table of Data Checks -- § 95977.1(b)(3)(L)

A summary of selected data checks for project are provided below. The assigned ranking reflects both the size and uncertainty associated with these SSRs. These and other data checks performed (along with narrative details of the check and results) are included in the verifiers data check log.

SSR (rank)	Data reviewed	Reported (OPO) tCO₂e	Calculated (VB) tCO₂e	Discrepancy tCO₂e	Impact on misstatement/ conformance
	Checks performed				
Rank 1 Project stocks IFM1, IFM3	Inventory, volume and biomass estimates, grown modeling results, grown	8,416,836.28	8,416,906.14	69.86	Impact on OMM

inventory & grown ahead; end of RP1 (AC _{onsite, end RP})	tree list. Carbon calculations on inventory. Model appropriateness and use. Data systems.				
	Model performance against independent benchmarks. Checks of accumulations and correct transfer to OPDR				
Comment: Discrepancy due to slight difference in strata means and rounding values.					
Rank 2 Quantified GHG removal enhance-ments (QR _{end RP})	OPDR	157,102	157,102	0	No impact on OMM
	Checks that all OPO entries are correct. Check sources. Checks that calculations within the worksheet are correct. Calculation check uses OPO values.				
Comment: Please note the discrepancy noted in SSR Rank 1 (Project Stocks) was not included; Rank 2 checks that equation 6.1 was used correctly (uses OPO values).					
Rank 3 Baseline stocks IFM1, IFM3 (BC _{onsite, end RP})	OPDR and supporting modeling documents, web-based review of methods. Model appropriateness and use. Data systems.	4,933,649	4,933,649	0	No impact on OMM
	Model calibration. Model performance against independent benchmarks. Checks of accumulations and correct transfer to OPDR				
Comment: NA					
Rank 4 Actual HWP stocks IFM7, IFM8 (AC _{WP, end RP})	OPDR, supporting worksheets ; Model results, HWP worksheet Confirm model projections and sums. Correct use of HWP worksheet.	3,052	3,052	0	No impact on OMM
Comment:					
Rank 5 Buffer Pool and Risk Rating	OPDR, calculation workbooks, supporting documents.	(30,227)	(30,227)	0	No impact on OMM
Comment:					

Rank 6 Confidence Deduction (CDend RP))	OPDR, supporting worksheets	0	0	0	No impact on OMM
	Use OPO data for initial stocks; checks the calculation of CD was done correctly. Recalculated from initial inventory.				
Comment:					
Rank 7 IFM7, IFM8 Baseline, end RP1 (BC _{wp,end} RP)	OPDR, supporting worksheets	45,375	45,375	0	No impact on OMM
	Model results, HWP worksheet Confirm model projections and sums. Correct use of HWP worksheet.				
Comment: IFM 8, landfill is included. Actual harvesting < baseline for RP					
Rank 8 Secondary Effects (SE _v)	OPDR, supporting worksheets	(38,253)	(38,253)	0	No impact on OMM
	Confirm model projections and sums. Correct use of HWP worksheet				

7 Offset Material Misstatement -- § 99577.1(b)(3)(O)

The verification team must state with reasonable assurance that the percent overstatement of the OPO's total reported GHG emission reductions and removal enhancements is no more than a 5.00% overstatement of the "true" GHG emission reductions and removal enhancements, as calculated by the verifier using the equation below (§95977.1(b)(3)(Q)) The analysis must consider all discrepancies, omissions, or misreporting, for the subset of data included in the data checks. Any omissions, discrepancies, and misreporting errors are identified separately in the table above.

$$\text{Percent error} = \frac{[\sum \text{Discrepancies} + \sum \text{Omissions} + \sum \text{Misreporting}] \times 100\%}{\text{Total Reported Emission Reductions and Removal Enhancements}}$$

To determine the Offset Material Misstatement, verifiers calculated the difference between the OPO's inventory carbon stocks and the inventory carbon stocks calculated by the verifiers using the inventory tree list. Verifiers then calculated the difference between the OPO's Inventory Carbon Stocks and End of Reporting Period Carbon Stocks, and the percent increase in stocks between these two datasets. This percent increase was then applied to the difference between the OPO's inventory carbon stocks and the inventory carbon stocks calculated by the verifiers to come up with the final OMM determination. Details on the OMM calculation can be found in the verifiers Data Check Log.

$$\text{OMM} = (-69.86 * 100\%) / 157,102 = -0.04\%$$

Total discrepancies, omissions and misreporting*	Total RP emission reductions (before buffer pool) QR_{end RP}	Calculated OMM %
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69.86	157,102	(0.04%)
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*Note: In this column, a positive value represents *over-reporting* by the OPO.

The Offset Material Misstatement (OMM) is 0.04%, *under-reporting*. Therefore, the project is less than the threshold of 5.00% over-reporting for the OMM.

APPENDIX A: REFERENCE LIST

Project Documents

Document Description		Filename
Age Class Analysis		Logan_AgeClass_Analysis.zip
Assessment	Area Stratification Methodology	Logan Assessment Area Stratification Methodology v1.0 PROPRIETARY.pdf
Audit Results		LYME_Logan_Audit Results_4_16_2018.pdf
Baseline	Summary	CAR1205 Baseline Summary 20181031 v1.2.xlsx
Calculation Workbooks	OPDR RP1	CAR1205 RP1 OPDR Worksheet Calculations v1.5.xlsx
	Monitoring RP1	CAR1205 RP1 Monitoring_Calculation_Worksheet v1.2.xlsx
	OPDR RP3	CAR1205 RP3 OPDR Worksheet Calculations v1.1.xlsx
	Monitoring RP3	CAR1205 RP3 Monitoring_Calculation_Worksheet v1.1.xlsx
Forest Management Plan		2018 Lyme Mountaineer Forest Management Plan - Logan Tract.pdf
GIS Checklist		Logan_GIS_checklist.xlsx
Inventory Methodology		Appendix A. CAR1205 Project Inventory Methodology Proprietary v1.1.pdf
OPDR	Initial	CAR1205 RP1 Initial OPDR v1.3_20181031 signed.pdf
	Annual RP1	CAR1205 RP1 Annual OPDR v1.3_20181031 signed.pdf
	Annual RP3	CAR1205 RP3 Annual OPDR v1.1_Draft.pdf
Ownership	Wyoming Property	Lyme_Wyoming GIS.zip
	Boundary	Logan Ownership Boundary.zip
FSC Certification		Logan FSC Certificate_2021_02_09.pdf
Harvest Corroboration	Volume	Sample of Actual Mill Slips/Tickets
GIS Shapefiles used for Harvest Estimates		CAR1205_RP3_Attachment E GIS_v1.mdb

Verifier Documents

Document Description	Filename
COI Form	CAFR5305-RP3_COI
Data Check Log	CAFR5305_RP3_datachecklog.xlsx
Issues Log	CAFR5305_RP3_IssuesLog_Final
NOVS	CAFR5305-RP3_NOVS
Sampling Plan	CAFR5305-RP3_SamplingPlan
Verification Plan	CAFR5305-RP3_VerificationPlan

APPENDIX B: PROJECT TEAM

Verification Team	Qualifications
Pablo Reed	Pablo Reed is a Senior Associate at S&A Carbon, and a member of the forestry verification team. He is an ARB approved forestry project specialist and ARB lead verifier, and generally acts as a sector expert supporting internal reviews of verification documents. Prior to joining S&A, Pablo spent five years working at Det Norske Veritas (DNV), an international certification company, leading forestry validations and verifications across all major GHG programs. He is accredited as a lead validator/verifier of forestry projects submitted to the Climate Action Reserve, American Carbon Standard, and Verified Carbon Standard. He has extensive experience in MRVS systems, forestry inventories and logging operations, and with the development of environmental and social safeguards. Pablo also has extensive experience working with conservation and development projects in various countries in Latin America. He served as country director for a joint USAID/Idaho State University community conservation project in the Alta Verapaz region of Guatemala and also spent time in Panama working as an environmental and GIS consultant. He also worked with the Peace Corps in Ecuador as a program manager for the posts' natural resource conservation program. Pablo received a Masters of Environmental Management degree from the Yale School of Forestry & Environmental Studies, and holds a Bachelor of Science degree in Forest and Ecological Engineering, and a minor in Latin American Studies from the University of Washington in Seattle. His research centered on the development of REDD (Reducing Emissions from Deforestation and Degradation) policy frameworks, especially as they pertain to the inclusion of communal Indigenous territories and lands under tropical forestry conservation projects. In his free time, Pablo enjoys playing music and hiking outdoors.
Kyle Silon	Kyle Silon holds an M.S. in Energy and Environmental Economics. He has ten years' experience in climate change mitigation strategies and carbon reduction projects. Prior to founding S&A, he worked for a leading international certification company, specializing in validation and verification of small-scale household energy demand projects (such as cook stove and water filter projects), primarily located in South America, Asia, and Africa. He has participated in numerous verifications of forestry, landfill, and livestock projects, and has worked across all major GHG programs, including the Air Resources Board, Verified Carbon Standard, Climate Action Reserve, American Carbon Registry, Gold Standard, and Clean Development Mechanism (CDM).

Verification Team	Qualifications
Elizabeth McGarrigle	Elizabeth McGarrigle holds three forestry degrees (BScF, MScF, PhD). Her work has focused on forest inventory, growth and yield, and forest management planning. During her Masters she focused her work on examining the impact of uncertainties in the inputs to long term forest management plans when optimization models are employed. While completing her PhD, she was part of a larger project developing a regional growth and yield model for the Acadian forest in the Northeastern United States and Canada. She developed a stand-level model that is used to predict survivor growth, ingrowth, and mortality in the region. As part of her dissertation, she dealt with several variants of the Forest Vegetation Simulator and several regional growth and yield models from across Canada and the United States. Dr. McGarrigle is currently working with the provincial government in Nova Scotia Canada as a Forest Inventory Data Analyst where she is responsible for the design and analyses of permanent sample plots. In addition to her work as a biometrician on several ARB forest projects, she has also been involved in research at Natural Resources Canada using a fine scale forestry model to assess the impact of climate change on species composition in forest types across Canada.
Alexa Kandarlis	Alexa has 4 years' experience in carbon auditing and climate change mitigation policy and is accredited by ARB as a verifier under their US Forests protocol. In this time, she has participated in over 70 verifications of carbon offset projects and corporate inventories under a variety of GHG programs, including the Air Resources Board, Climate Action Reserve, American Carbon Registry, and Carbon Disclosure Project. Alexa developed tracking systems for a program registered under the Clean Development Mechanism as a Program of Activities and has been involved in registering this program of activities with the Gold Standard. Prior to this, Alexa conducted extensive research on emissions leakage in addition to authoring work pertaining to the structure of California Assembly Bill 32. Alexa is currently responsible for implementation of S&A's corporate management system to ensure ongoing improvement and compliance with ISO requirements. In addition to this, she has field experience with Forestry, Ozone Depleting Substances, and Livestock verification projects. She holds a Bachelor of Arts in Economics with a minor in Business Administration, and a focus on natural resource and environmental Economics.
Jeff Parsons	Jeff Parsons holds an undergraduate degree in Forestry and a graduate degree in Business Administration (MBA), is a state licensed real estate agent, WV Registered Professional Forester (WVRPF336) and a Nationally Certified Forester (CF255) by the Society of American Foresters.