VERIFICATION REPORT

American Carbon Registry

ACR Project ID #368 – Blue Source - Middlebury Improved Forest Management Project

Reporting Period:
26 September 2017 to 25 September 2018

Prepared for:
Bluesource

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I. Summary

This report presents the findings of the verification assessment of the Blue Source - Middlebury Improved Forest Management Project (the Project) developed by Bluesource LLC.

The assessment was performed under the verification guidance described in the ACR Validation and Verification Standard Version 1.1 (May 2018). In the course of the assessment, findings were developed and issued which included New Information Requests (NIRs), Non-Conformity Reports (NCRs) and Observations (OBS). All New Information Requests and Non-Conformity Reports have been adequately addressed by the Project Proponent, resulting in their closure.

On the basis of the information provided and the analyses completed, SCS was able to determine that the Monitoring Report conforms to the requirements of the ACR Standard Version 4.0 and the ACR-approved methodology, Improved Forest Management (IFM) Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands v. 1.2 (the Methodology).

II. Introduction

This document reports on verification activities for the Blue Source - Middlebury Improved Forest Management Project. Activities were focused on the evaluation of the Project Plan and the Monitoring Report against the requirements of the ACR Standard Version 4.0 and the ACR Methodology, IMF Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands v. 1.2 (referred to collectively as the ACR Requirements). This report presents the findings of the assessment and provides a description of the steps involved in the verification process.

III. Project Description

The Project improves forest management on Middlebury College’s forests, with Middlebury’s forest management practices representing an improvement in the carbon storage and conservation value compared to higher return management regimes of industrial private lands in the region, which are characterized by shorter, even-aged rotations. The project describes the project activities as natural forest growth and maintenance harvests for essential activities and forest health. In addition, the project ensures long-term sustainable management of the forests, which could otherwise undergo commercial timber harvesting.

At its validation, the Project was expected to sequester approximately 232,066.6 mtCO2e (without risk buffer deduction) over the first crediting period of 20 years.
IV. Verification Specifications

A. Objectives

The objective of the verification engagement was to review impartially and objectively the GHG emission reductions/removal enhancements claimed in the Monitoring Report against the ACR Requirements.

B. Level of Assurance

The level of assurance for this assessment is reasonable as opposed to absolute or limited. Reasonable assurance is attained by examining a sufficient amount of information, informed by the verifier’s professional judgment.

C. Treatment of Materiality

ACR requires that discrepancies between the emission reductions/removal enhancements claimed by the Project Proponent and estimated by the verifier be less than the materiality threshold of plus or minus 5 percent.

D. Scope

The scope of the verification assessment encompasses desk assessment activities for the Project against the following requirements:

- ACR Standard Version 4.0, January 2015 (ACR Standard)
- ACR Forest Carbon Project Standard Version 2.1, November 2010
- ACR’s IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Version 1.2, December 2016 (Methodology)

The assessment was performed using the following client-supplied information:

- The validated GHG Project Plan, “Middlebury GHG Plan_4_12_2018__Redacted”
- Supporting documentation provided by the Project Proponent
- An interview conducted on 10 December 2018 with management personnel Jack Byrne and Mark Lapin regarding management and monitoring activities on the project area during the monitoring period

The assessment process included examination of:

- Methodologies and calculations used to generate estimates of emissions reductions/removal enhancements
V. Verification Team

**Lead Verifier: Zane Haxtema, SCS Global Services, Senior Verification Forester**
Mr. Haxtema holds a M.S. in Forest Resources from Oregon State University (Corvallis, Oregon, USA) and a B.S. from The Evergreen State College (Olympia, Washington, USA). A well-rounded forestry professional, Mr. Haxtema held a wide variety of positions in forest research and management before coming to SCS, ranging from work on logging and tree planting crews to experience as a wildland firefighter and research assistant. A specialist in natural resource inventory, Mr. Haxtema holds significant expertise in sampling design, inventory management and growth modelling. Mr. Haxtema is well versed in a wide variety of methodological approaches for carbon accounting, having served as a lead auditor on a wide variety of projects under the Climate Action Reserve, the Verified Carbon Standard and the Climate, Community and Biodiversity Standards.

**Verifier: James Cwiklik, SCS Global Services, Verification Forester**
Mr. Cwiklik has an M.F. in Forestry and Ecosystem Management from Michigan Technological University. He completed his undergraduate work at the University of Pittsburgh, receiving a B.A. in Environmental Studies, with a minor in Religious Studies and a certificate in Geographic Information Systems. Previously he has been a Lead Consulting Forester with Davey Tree’s Resource Division supervising a team of foresters for Pacific Gas and Electric’s (PG&E) Community Pipeline Safety Initiative (CPSI) project. Mr. Cwiklik is a certified Arborist and has contributed to the efforts of eradicating the Asian long horned beetle in southwestern Ohio as an Inventory Arborist and Quality Control Specialist. He has also worked with the Michigan Department of Natural Resources as a Forest Technician Crew Leader to lead forest inventories across northern Michigan with an emphasis on the spread of Emerald Ash Borer and Beech bark disease. Since joining SCS in February 2018, he has conducted multiple site visits under different standards to assist with data collection, analysis, and field training.

**Senior Technical Reviewer: Francis Eaton, SCS Global Services, Verification Forester**
Francis Eaton holds a Masters of Forest Science from the Yale School of Forestry and Environmental Studies and received his B.S. in Forestry from Northern Arizona University, graduating with honors. The focus throughout his studies was forest management with emphases on sampling design and statistical analysis. Mr. Eaton has seven years’ experience working as a verification forester and is a lead auditor with SCS Global Services (SCS) in their greenhouse gas verification program. He has experience auditing AFOLU projects under the Verified Carbon Standard (VCS) and Climate, Community, and Biodiversity Alliance (CCBA) standards, as well as Improved Forest Management projects under the standards of the Climate Action Reserve (CAR), The American Carbon Registry (ACR), and the California Air Resources Board (ARB). Prior to working for SCS, Mr. Eaton worked in the southwestern U.S. performing fire risk assessments and writing management plans for private landowners. Mr. Eaton also spent three years working for the Ecological Restoration Institute focusing on restoration of ponderosa pine and grassland ecosystems.

VI. Verification Process
A. Desk Assessment

The Project Proponent engaged SCS to provide the required third-party verification of the Monitoring Report for the Project. The Project Proponent provided to SCS the Monitoring Report (initially dated 22 October 2018) and additional supporting documentation for a desk review on 26 October 2018. SCS reviewed the materials to assess conformance with the ACR requirements. As this review proceeded, SCS identified items of non-conformance as well as a number of items requiring additional information or clarification. These items were recorded as Findings. In addition, the Project Proponent’s ex-post GHG assertion was checked to ensure that the carbon stock quantification was conducted properly without material error, and that algorithms, equations, and default factors used were appropriate and from published sources.

In addition to screening the Monitoring Report for conformance to the ACR requirements, the audit team also performed a risk-based analysis to identify those areas where errors or omissions pose the greatest risk that the GHG assertion might be overstated. Key factors that impact the reported emission reductions/removal enhancements were identified in a sampling plan that informed the Verification Plan which was created to focus on the critical elements presenting potential risk for errors and material misstatement.

B. Findings

Throughout the verification, there was an iterative exchange between SCS and the project team to gather additional information for review and examination, and to report instances of non-conformance of the Project to the ACR Requirements. This exchange includes Findings—New Information Requests (NIR) and Non-Conformity Reports (NCR)—that are issued by SCS to the project team. The project team must respond to NIRs and NCRs in order for SCS to render a verification opinion. At this time all Findings have been appropriately addressed by Bluesource and subsequently closed by SCS.

The Findings from the verification of the Project are compiled in a list of findings and included as Appendix A.

VII. Verification Activities

SCS verified the Monitoring Report against the verification criteria contained in the ACR Standard, and the ACR-approved Improved Forest Management (IFM) Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands v. 1.2 (the Methodology). Verification occurred for the reporting period of 26 September 2017 through 25 September 2018. The following sections describe the elements of the Monitoring Report that were examined.

A. Quantification of Carbon Stock Changes

The verification team’s quantitative review included an assessment of the primary quantitative data used to assess carbon pools accounted for by the project for both baseline and project scenarios. The Project’s carbon pools were evaluated including above and belowground biomass, standing deadwood, and harvested wood products. Building on the quantitative review performed as part of the verification for the initial reporting period, the team performed a check of all the project
quantification worksheets and model inputs including allometric equations for calculating tree biomass, Forest Vegetation Simulation (FVS) inputs, and values used in ex post quantification. Once inputs were verified, the FVS models were rerun and the calculation of ERTs checked.

To derive the carbon values for the end of the reporting period, the project used live tree carbon stocks from the inventory performed October 2016 through March 2017. To derive the with-project scenario, the inventory was projected three growing seasons ahead to September 2018 (the end date of the monitoring period). The growth projections were developed by deriving individual live tree annual diameter growth rates from one 10 year cycle model run using the FVS-Northeast variant, with no management. Building on the quantitative review performed as part of the verification for the initial reporting period, the FVS modeling was assessed to confirm all calculations were conducted appropriately.

Carbon in standing dead wood was estimated using the FVS Fire and Fuels Extension (FFE) with the Jenkins equations, with deductions taken for standing dead per decay classes recorded in the field. Decay classes were translated to the most closely corresponding Methodology-defined class. Additionally, for all standing dead wood with methodology decay class 4 (i.e. 4 or 5 as recorded in the field), only stem wood was included in carbon calculations. The verification team confirms that the calculations were conducted appropriately and free of material error.

In summary, all of the above calculation methods are in conformance with the ACR Requirements.

B. Data Management and QA/QC

The project’s collection and management of monitoring plot data, check cruises, and maintaining QA/QC procedures for forest inventory SOPs, including field data collection, data management, and recordkeeping are detailed in the GHG Project Plan. The verification team finds the risk of material misstatement in the area of data management and QA/QC to be low.

C. Uncertainty

The verification team checked the calculation of ex-post (with-project) uncertainty and confirmed that uncertainty was used appropriately in the Monitoring Report calculations, and that the uncertainty analysis was conducted in accordance with the ACR requirements and the GHG Project Plan. Per the methodology, as the uncertainty (as calculated in Equation 19) is less than 10%, no deduction for uncertainty was applied.

D. Leakage

The GHG Project Plan describes that leakage analysis was limited to market leakage and indicates that activity-shifting leakage is precluded as a result of the project design. The assigned market leakage deduction of 40%, as documented in the GHG Project Plan, was used in the quantification of GHG emission reductions and removals.

E. Ex-Post Quantification of GHG Emission Reductions and Removals

The Monitoring Plan includes a quantification of additional annual net greenhouse gas emission
reductions and Emission Reduction Tons (ERTs). The verification team confirmed that the quantification of ERTs for the reporting period is in conformance with the ACR Requirements and is free from material error, using validated inputs as found in the GHG Project Plan.

F. Verification Data:

The data and information supporting the GHG assertion for the reporting period of 26 September 2017 to 25 September 2018 are reported in the Monitoring Report. The ERTs for the reporting period are projected using the FVS growth and yield model for both the baseline and project scenario. Other data used in the quantification of ERTs was derived from the validated GHG Project Plan and the baseline analysis therein.

The ERT’s (as calculated by equation 20 of the methodology) associated with the reporting period are reported in the Monitoring Report and verified by the verification team are as follows: 19,528 tCO2e.

The verification team confirmed that the Monitoring Report conforms to the requirements of the ACR Standard, the ACR Validation and Verification Standard, and the Improved Forest Management (IFM) Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands v. 1.2.

VIII. Verification Opinion

For verification, the level of assurance and objectives, scope and criteria of the verification are described in Section IV of this report. Through verification activities, the SCS assessment team was able to confirm that:

- The Monitoring Report conforms to the requirements of the ACR Standard, the ACR Validation and Verification Standard, and the Improved Forest Management (IFM) Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands v. 1.2;
- The data and information supporting the GHG assertion were projected and/or historical in nature;
- The actual number of ERTs, 19,528 tCO2e associated with the Monitoring Report has been verified.
- The actual number of credits to be deposited in the buffer account is 4,287 tCO2e. This is calculated as the product of (a) the difference between the project and baseline carbon stock changes, (b) the 40% leakage value subtracted from 100% and (c) the 18% non-permanence buffer deduction that was verified as part of the last full verification and that, per ACR rules, will not be re-assessed until the next full verification.

Through the verification assessment, SCS has determined that the Bluesource - Middlebury IFM Project, developed by Bluesource LLC is in conformance with the American Carbon Registry Standard and the ACR Methodology for Improved Forest Management (IFM) for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands (Version 1.2). Furthermore, all issues identified during the verification assessment were resolved and found to be
in conformance with ACR Requirements. The Monitoring Report is considered accurate, complete, transparent, and free of material misstatements. Whereas, some discrepancies exist between the project reporting and the verification calculations, the verification team does not consider these discrepancies correctable and the discrepancies do not violate the 5.00 percent materiality threshold. The overall aggregation of errors and omissions is 0.00%. Therefore, SCS can issue a qualified positive Verification Opinion.

Zane Haxtema, Lead Verifier

Francis Eaton, Technical Reviewer
Appendix A: List of Findings

The following is a complete list of findings issued and resolved during this assessment. All project responses are verbatim and have not been altered for this report.
Finding: The ACR Standard requires the following: "Project Proponents shall use the template for Project Monitoring Reports available at www.americancarbonregistry.org." While the template available at www.americancarbonregistry.org has generally been used, a few areas have been identified where the guidance text of the template has not completely been adhered to.

1. Section III(4) of the Monitoring Report Template requires the following: "State whether all regulatory requirements were completed at required intervals." The monitoring report does not contain the statement that is specifically required by the Monitoring Report Template.
2. Section IV(3) of the Monitoring Report Template requires the following: "State whether the project is using the original inventory". The monitoring report does not contain the statement that is specifically required by the Monitoring Report Template.
3. Section V(1) of the Monitoring Report Template requires the following: "Populate the following tables with all parameters monitored during the reporting period adding tables, as necessary (report all validated modeled parameters using the below tables as well)". While the tables in the monitoring report do appear to include all parameters monitored during the reporting period, they do not include all validated modeled parameters.
4. Section VI(3) of the Monitoring Report Template requires the following: "If applicable, provide a summary calculation of leakage emissions; attach as an appendix, a spreadsheet documenting leakage emissions quantification". It is correctly reported in the monitoring report that "Quantification of leakage is limited to market leakage". However, a summary calculation of leakage emissions is not provided.
5. Section VII(1) of the Monitoring Report Template requires the following: "State the date of the last full site visit verification". This information has not been provided.

Project Personnel Response: 1. The Regulatory compliance attestation was completed in RP1 and isn’t required during subsequent years.
2. The following language has been added to the Middlebury_RP2_MonitoringReport.docx: "The project is using the original inventory data and no changes were made to the inventory methodology or inventory data."
3. An email has been sent to ACR to seek guidance on the definition of "validated modeled parameters" and what needs to be included in this section.
4. The market leakage deduction calculation has been added to section VI(3).
5. Response has been corrected in accordance with the monitoring report template in the updated document "Middlebury_RP2_MonitoringReport.docx."
**Auditor Response:** The audit team reviewed the revised monitoring report, entitled "Middlebury_RP2_MonitoringReport_12_10_18", to see whether the finding could be closed. The audit team's findings are as follows:

1. Section III(4) of the revised monitoring report still does not explicitly "State whether all regulatory requirements were completed at required intervals." Therefore, the non-conformity has not been resolved.

2. Section IV(3) of the revised monitoring report clarifies that "The project is using the original inventory data and no changes were made to the inventory methodology or inventory data." Therefore, the non-conformity has been resolved.

3. Section V(1) of the monitoring report now includes the monitored parameter "Defect". Guidance from ACR personnel was sought regarding whether "validated modeled parameters" needed to be included as well, and the following guidance was provided by Quincy Oliver via email dated 11 December 2018: 'Section 6E (p40) of the ACR Standard states “The report shall describe the current status of project operation, and include the data monitored and monitoring plan, and the calculated emission reductions for the reporting period.” Section V(1) is looking for the parameters collected for modeling and calculation. Unless SCS finds a parameter Bluesource measured that is input during modeling and calculations that isn’t listed, I think the list you provided looks adequate.' Given the clarifying guidance in the ACR Standard, as quoted by ACR personnel, the audit team agrees that validated modeled parameters pertaining to the baseline need not be included. The non-conformity has been resolved.

4. Section VI(3) of the monitoring report includes a summary calculation of the market leakage deduction. The non-conformity has been resolved.

5. Section VII(1) of the monitoring report correctly indicates that the last full site verification occurred on 25 September 2017 (technically speaking, this was the first day of the site visit). Therefore, most of the issues have been resolved. However, because item #1 has still not been completely addressed, this finding cannot be closed at this time.

**Project Personnel Response 2:** The monitoring report has been updated to state that all regulatory requirements were completed at the required intervals. The updated report has been added to the shared Dropbox folder: "Middlebury_RP2_MonitoringReport_12_14_18".

**Auditor Response 2:** Through review of the revised monitoring report, entitled "Middlebury_RP2_MonitoringReport_12_14_18", the audit team can confirm that the monitoring report clearly states that all regulatory requirements were completed at required intervals. Therefore, the non-conformity has been resolved.
Finding: The ACR Standard states the following regarding the "Annual Attestation Statement": "The Attestation is required in order to continue crediting." Please provide the annual attestation statement for review by the audit team.

Project Personnel Response: 1. The Annual Attestation Statement has been uploaded to the Middlebury_RP2_Verification\Project Supporting Docs\Attestations\RP2 folder.

Auditor Response: In addition to being uploaded to the Dropbox folder, the Annual Attestation Statement was uploaded directly to the project’s APX webpage, and was downloaded by the audit team from that location. The Statement appears to have been duly produced using the currently prevailing version of the "Annual ACR Attestation" template (last updated in 2016), and is executed by David J. Provost, representative of the President and Fellows of Middlebury College and the same individual who executed the Statement in respect of the initial reporting period. Therefore, the information request has been satisfied.