VERIFICATION REPORT FOR BETHLEHEM AUTHORITY IMPROVED FOREST MANAGEMENT PROJECT

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Summary:

The Bethlehem Authority Improved Forest Management Project (Project) is located on 17,527 acres in Monroe County and Carbon County, Pennsylvania. The Project extends the rotation age of the timber resource on the property by approximately 70 years compared to Common Practice, thereby reducing carbon emissions and increasing carbon sequestration. The project activities result in the reduction of greenhouse gases (GHG) including carbon dioxide (CO_2).

Bluesource contracted with Ruby Canyon Environmental, Inc. (RCE) to perform the verification of emission reductions during this monitoring period from 1 January 2020 to 31 December 2020. Bluesource manages the Project regarding the calculation of emissions reductions for Bethlehem Authority.

The purpose of the verification is to ensure that the Project Proponent implemented the project activity according to the monitoring plan, that the emission reduction assertion submitted by Bluesource and Bethlehem Authority is materially correct and free of errors and omissions, and that the Project meets all criteria requirements. Specifically, RCE assessed the Project against the Approved VCS Methodology VM0003 Methodology for Improved Forest Management through Extension of Rotation Age, Version 1.1 (Methodology). RCE assessed the Project Monitoring Report, including the Project's monitoring plan, based on the above criteria documents as well as relevant VCS criteria and guidance documents.

During the verification process, RCE completed a desk review of the monitoring report and supporting documents to confirm that Project Proponents implemented the project activity as stated in the validated VCS Project Description (PD). This included a review of data and information control systems and interviews with key personnel. During the verification, RCE issued Non-material Findings (2), Additional Documentation Requests (1) and Clarification Requests (5) which are described in Appendix A. Bluesource and Bethlehem Authority provided adequate responses to all requests. RCE did not find any significant uncertainties associated with the verification.

RCE concludes, to a reasonable level of assurance, that the Project's GHG assertion of 32,897 metric tonnes of CO_2 equivalent emissions for the period of 1 January 2020 to 31 December 2020 is fairly stated.

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1 INTRODUCTION

1.1 Objective

The objective of the verification is to ensure that the GHG emission assertion made by Bluesource and Bethlehem Authority is materially correct and that the data provided are accurate, complete, and transparent. Additionally, RCE ensured that the Project is in conformance with the criteria as stated in Section 1.2.

1.2 Scope and Criteria

The scope of the Project includes the boundary of the Project area which includes a 17,527 acre split-parcel situated in Monroe County and Carbon County, Pennsylvania. The GHGs included in the scope of the Project are CO_2.

RCE conducted the verification based upon the following criteria:

- Verified Carbon Standard Version 4.1 (22 April 2021);
- VCS Program Guide Version 4.0 (19 September 2019);
- Validation and Verification Manual Version 3.2 (October 19, 2016);
- Approved VCS Methodology VM0003 Methodology for Improved Forest Management through Extension of Rotation Age, Version 1.1
- Validated VCS Project Description, dated 18 March 2013;
- ISO 14064-3:2006 Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions.

Additionally, RCE reviewed the Project's monitoring period-specific Monitoring Report Version 2.0 dated 18 October 2021, including the monitoring plan, during verification activities.

1.3 Level of Assurance

RCE conducted the verification to a reasonable level of assurance.

The VCS Standard defines materiality as errors, omissions, or discrepancies resulting in misstatement of greater than five percent of the Project's GHG assertion. Additionally, RCE considered qualitative non-conformances with criteria requirements as material during the verification process.

1.4 Summary Description of the Project

The Project extends the rotation age of the timber resource on the property by approximately 70 years compared to Common Practice, thereby reducing carbon emissions and increasing carbon sequestration. The Project area has been put under a 60-year term conservation easement with The Nature Conservancy (TNC) with the intention of conserving the property and managing its forest resources sustainably into perpetuity. The Project area has ecological, scientific, educational and aesthetic value in its present state as a natural area that has not been subject to development or severe exploitation. The Project area is comprised of primarily native forest types characteristic of the region and surrounds the headwaters of Tunkhannock Creek and Wild Creek that flow into the Delaware Basin. Interspersed with the hardwood forests are significant stands of mixed conifers and special habitat types including wetlands that provided habitat for a multitude of rare species and natural communities.

2 VERIFICATION PROCESS

2.1 Method and Criteria

RCE used a risk-based approach to assess the Project against the VCS Program rules including the criteria defined in Section 1.2.

The verification process included the following independent and objective activities:

- RCE selected a verification team. The verification team was selected according to RCE's GHG Verification Policies & Procedures to ensure team members are qualified to perform validation activities pertaining to the Project. The validation team consisted of the following individuals:
    - Lead Verifier: Zach Eyler
    - Technical Experts: Christian Eggleton (Professional Forester, FRST Corp), Tim Facemire (FRST Corp)
    - Independent Reviewer: Phillip Cunningham
- RCE completed a conflict-of-interest review to determine whether any potential conflicts exist with the project proponent. The assessment revealed no conflicts of interest.
- RCE held a verification kick-off meeting with Bluesource to introduce the Bluesource and RCE teams, review the verification objectives, process, VCS requirements, to confirm the schedule, and to request data and documents.
- RCE performed a strategic analysis and risk assessment of the received data and support documents to understand the scope and areas of potential risk in the GHG emission reductions.
- RCE developed a risk-based sampling plan based upon the strategic review and risk assessment. The verification plan and sampling plan were used throughout the verification and were revised as needed based upon additional risk assessments.

- RCE conducted a detailed desktop review of submitted data and documents including source data, evidence for ongoing QA/QC procedures, and emission reduction calculations.
- RCE submitted corrective action requests, additional documentation requests, and clarification requests, as necessary, to Bluesource throughout the verification.
- RCE's independent reviewer conducted a review of the verification sampling, verification findings, and Verification Report.
- RCE issued the final verification report and verification representation, and
- RCE held an exit meeting with Bluesource.

2.2 Document Review

The verification consisted of a review of the Project's calculated emission reductions for the monitoring period, as well as a review of the Monitoring Report and other supporting data and documents to demonstrate compliance with the validated Project Description and the VCS Program rules. RCE reviewed the following documents and data:

- Validated Project Description
- Validation Report
- Monitoring Report version 2.0, dated 18 October 2021
- Leakage calculations
- FVS calculations
- Timber prices spreadsheets
- Non-permanence risk report
- Risk Tool Financials
- Worldwide Governance Indicator
- Harvest descriptions
- Spatial files/information of harvest area
- Updated plot information for those plots within a harvest area
- Harvest volume information

2.3 Interviews

RCE held discussions with the following personnel during the verification:

- Liz Lott, Director, Bluesource
    - Liz is responsible for the management of project data as well as the development and maintenance of the Project Monitoring Report and emissions reductions calculation. She also addressed all items noted in the list of findings.

Since this verification was desktop only and did not require any site inspections, Liz Lott possessed enough knowledge regarding the Project to sufficiently answer all issues and questions that RCE had. Liz has over eight years of experience and has worked with the Project for many years.

2.4 Site Inspections

RCE's subcontractor, Christopher Cartwright, conducted a site visit to the Project area from August 18-21, 2020 for the previous reporting period. Christopher completed plot remeasurements in three strata (1, 5, 7) and a paired t-test was run against the Project's original plot measurements to confirm the accuracy of the inventory. In addition, Christopher performed reconnaissance on the Project area boundaries, stand boundaries as well as any areas where harvests were conducted. The three strata all eventually passed the paired t-test. Initially, stratum 7 failed, but was re-inventoried by Bethlehem Authority and then passed. No other issues were discovered during the site visit.

No site inspection occurred for the verification of this current reporting period. RCE and FRST were able to review monitored data and current calculations and confirm their accuracy. As a part of this process, RCE and FRST reviewed harvesting information provided for this reporting period, including treatment prescriptions, harvest volume, spatial information, photos and updated plot information.

2.5 Resolution of Findings

During the verification process, RCE issued non-material findings (2), additional documentation requests (1) and clarification requests (5). RCE documented these requests in the List of Findings. Bluesource and Bethlehem Authority sufficiently addressed all material requests as documented in Appendix A.

2.5.1 Forward Action Requests

There were no forward action requests during the verification of the previous monitoring period nor during the verification of this monitoring period.

2.6 Eligibility for Validation Activities

RCE did not perform validation activities as part of the verification process.

3 VALIDATION FINDINGS

No validation activities took place during the verification of this monitoring period.

3.1 Participation under Other GHG Programs

The Project does not participate in any other GHG offset programs.

3.2 Methodology Deviations

There are two methodology deviations that have been present during previous verifications and monitoring periods. They are not identified in the validated PD. First, the procedures for measuring standing dead wood in the project's forest inventory slightly deviate from those prescribed in the VM0003 methodology as stumps were not included in the project's field measurements. The exclusion of stumps increased both model accuracy and ensured conservatism.

The second deviation is a five-class system was initially used to identify level of decay in standing dead trees. However, after data was recorded, classes 4 and 5 were merged to represent one class of dead trees with only the bole and no branches remaining. This left four total classes conforming to the descriptions of each class laid out in VM0003 v1.1.

RCE concludes that the methodology deviations applied to the Project are valid.

3.3 Project Description Deviations

Bluesource and Bethlehem Authority identified and appropriately justified three Project description deviations in the Monitoring Report. These same deviations were identified and approved by a different verification body during previous monitoring periods.

1. The original PD only used three decay classes but was modified to a four-class approach in the updated project inventory to better align with the methods described in VM0003 v1.1.

2. During a forest inventory update it was discovered that a minor roads component was erroneously omitted from the original forested Project area. The 63.4 acres occupied by these roads are no longer included as "forested acres" in the project scenario. Quantitative evidence was provided to the verification body demonstrating that the reduction of project acres did not have a material effect on the number of VCUs issued to the Project.

3. The PD erroneously showed -15,897 tCO2e as the baseline emissions for 2013. The -15,897 value was calculated by subtracting the to-date GHG emission reductions and removals at year t1 (2012) from t2 (2013). However, the removals for year t2 (2013) in the original VCU calculations were incorrect. In the original calculations, year t2 (2013) was computed as two full years of baseline emissions (-12,086 x 2), but the first reporting period (2012) was 7 months, not 12 months. Therefore, the 2nd reporting period should be calculated as -12,086 x 1.58 for onsite stocks plus the sequestration from baseline wood products. The edit to baseline stocks results in baseline emissions of -10,821 tCO2e for 2013 instead of -15,897 tCO2e. This edit does not affect the number of credits issued for 2012, and only conservatively impacts the 2013 calculations.

RCE approves these deviations because they do not impact the applicability of the methodology, additionality, or appropriateness of the baseline scenario, and the Project remains in compliance with VCS rules.

3.4 Grouped Project

N/A, this is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The Project start date is 14 April 2011, as stated in the validated Project Description. The crediting period is for 100 years, beginning on 29 May 2012 and ending on 28 May 2112. RCE found that the Project was implemented in conformance with the validated Project Description except for the deviations noted above. RCE verified the previously validated methodology deviations noted above and confirmed that the Project continues to meet the requirements of the VCS Standard Version 4.1.

RCE confirmed that there were no changes to the project proponents for this monitoring period. The Project Proponent— Bethlehem Authority —is identified in the Monitoring Report. Bluesource is involved as the project developer and to provide technical assistance. Project ownership was assessed during the validation and the Project Proponent continues to hold the rights to the Project area and activities that generate GHG emission reductions. Additionally, Bethlehem Authority has not sought or received any other form of environmental credit.

The Project activities have been fully implemented as documented in the validated PD. The project is extending the rotation age of the forest resource, as compared to the common practice baseline scenario, using sustainable forest management practices. Management practices are being applied across the landscape to enhance local ecological features, remain in compliance with the conservation easement, follow the forest management plan, and maintain the FSC certification.

In addition, RCE also confirmed that:

- The Project has not participated or been rejected under any other GHG programs since the previous verification.
- The Project has not received or sought any other form of environmental credit or has become eligible to do so since the previous verification.
- The Project's GHG emission reductions or removals have not been included in an emissions trading program or any other mechanism that includes GHG allowance trading.
- The Project did not note any sustainable development contributions in its Monitoring Report.

RCE confirmed two previous methodology deviations (as noted in Section 3.2 of this report).

- The procedures for measuring standing dead wood in the project's forest inventory slightly deviate from those prescribed in the VM0003 methodology as stumps were not included in the project's field measurements. The exclusion of stumps increased both model accuracy and ensured conservatism.
- The second deviation is a five-class system was initially used to identify level of decay in standing dead trees. However, after data was recorded, classes 4 and 5 were merged to represent one class of dead trees with only the bole and no branches remaining. This left four total classes conforming to the descriptions of each class laid out in VM0003 v1.1.

RCE and FRST confirmed that the Project met all monitoring requirements as outlined in the validated PD, monitoring Plan and methodology. RCE confirmed that the Monitoring Report was accurate and up to date.

4.2 Safeguards

4.2.1 No Net Harm

The Project was validated prior to this requirement being implemented in VCS and is exempt. However, negative environmental impacts are not expected since the Project holds a Forest Stewardship Council (FSC) certification.

4.2.2 Local Stakeholder Consultation

The Project was validated prior to this requirement being implemented in VCS and is exempt.

4.3 AFOLU-Specific Safeguards

This Project was validated prior to this requirement being implemented in VCS and is exempt.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Bluesource and Bethlehem Authority calculated the Project's emission reductions in accordance with the equations in the Methodology, validated PD and any approved deviations. RCE and FRST reviewed all data, parameters, inputs and calculations provided by Bluesource for this monitoring period.

The primary Project data includes per-plot tree measurements and harvest information, resulting in quantification of above and below ground net change in carbon in live trees and above ground carbon in dead trees.

Any requests for corrective actions, non-material findings and additional documentation/data, as documented in RCE's List of Findings (Appendix A) were addressed by Bluesource and Bethlehem Authority.

RCE and FRST completed a full recalculation of the emission reductions for the monitoring period to assess manual transposition errors and the accuracy of the Project's emissions reductions. RCE and FRST found the baseline emission, project emission, and GHG emission reduction calculations to be in conformance with the Methodology, validated PD and to be free of material misstatement. RCE and FRST also confirmed that uncertainty was assessed correctly using the updated inventory and no confidence deduction was required.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Bluesource and Bethlehem Authority provided sufficient documentation for the emission reduction calculations as well as the Project's information control systems, data management processes, and data quality assurance procedures. RCE reviewed the Project's Monitoring Report, GIS data, FSC Certification, harvest information, and emission reduction calculations. RCE verified that the Project Proponent ensures that project documents and records are secure and retrievable for at least two years after the crediting period.

RCE found the information provided to be transparently documented and in accordance with requirements of the Methodology and the validated PD. RCE concludes that the quantity and quality of the evidence used to determine the GHG reductions and removals was sufficient for the Project for this reporting period.

4.6 Non-Permanence Risk Analysis

The AFOLU Non-Permanence Risk Tool was used by Bluesource and Bethlehem Authority to assess overall project risk. RCE and FRST reviewed the Non-Permanence Risk Report 2020 provided with supporting documentation and confirmed that the Project adheres to the requirements set out in the VCS AFOLU Non-Permanence Risk Tool. RCE and FRST confirmed the final score of 3.75%, requiring the minimum 10% contribution to the buffer pool.

5 VERIFICATION CONCLUSION

RCE conducted a risk-based verification of the Bethlehem Authority Improved Forest Management Project including a strategic review and analysis of the Project data, documentation, and emission reduction calculations. RCE concludes to a reasonable level of assurance that the GHG assertion is free of material misstatement. The emission reductions for the monitoring period 1 January 2020 to 31 December 2020 can be considered in conformance with the following criteria:

- Verified Carbon Standard Version 4.1 (22 April 2021);
- Validation and Verification Manual Version 3.2 (October 19, 2016);
- Approved VCS Methodology VM0003 Methodology for Improved Forest Management through Extension of Rotation Age, Version 1.1
- Validated VCS Project Description, dated 18 March 2013;
- ISO 14064-3:2006 Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions

Verification period: From 1 January 2020 to 31 December 2020

The non-permanence risk rating was determined as 3.75%, requiring 10% contribution to the buffer pool. Verified GHG emission reductions and removals in the above verification period:

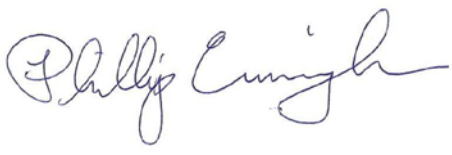
Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)	Buffer pool allocation	VCUs eligible for issuance
2020	12,301	28,821	8,224	32,897	4,112	28,785
Total	**12,301**	**28,821**	**8,224**	**32,897**	**4,112**	**28,785**

Lead Verifier Signature



Zach Eyler

Internal Reviewer Signature



Phillip Cunningham

APPENDIX A: VERIFICATION FINDINGS

Corrective Action Request, Nonmaterial Item, Additional Documentation Request, or Clarification Request ID#	Finding	OPO/APD response	RCE response	Additional OPO/APD response	Additional RCE response	Open or Closed
CAR 1						
NM 1	In 'VCU Calculations Vintage 2020_4_28_21' on the 'FVS Grow-output' tab for 1_198 standing dead RP9, the values used from 'FVSharvest Plots' is belowground dead.	This has been corrected (in" VCU Calculations Vintage 2020_5_18_21.xlsx"). Cell "CI367" increased from 0.01 to 0.05.	Confirmed. Thank you for making this correction, this item may be closed.			Closed
NM 2	In 'VCU Calculations Vintage 2020_4_28_21' on the 'FVS Grow-output' tab for 1_219 standing dead RP9, the previous years carbon is being inadvertently subtracted from the harvested RP9 plot value.	This has been corrected. Cell CI439 is no longer referencing the previous year's carbon, and now only reflects the harvested RP9 plot value. Cell CI439 increased from -0.18 to zero. These two changes increased the Strata 1 RP9 Standing Dead C; the Monitoring Report has also been updated.	Confirmed. Thank you for making this correction, this item may be closed.			Closed
ADR 1	Please provide scale tickets justifying the harvested values in '9thverifwoodprod' tab of the VCU calculations.	The 2020 operation was a bid sale, with a lump-sum payment to the contractor. The reported volumes are the same as were advertised for the bid sale - the sale prospectus has been provided (HarvestData folder). The volumes were based off a 100% tally of saw and pulp trees.	Confirmed volumes match documentation. This item may be closed.			Closed
CR 1	In 'VCU Calculations Vintage 2020_4_28_21' on the 'AnnualNetStocks' tab the total project stock at the end of RP9 is currently the same as at the end of RP8, should this be updated?	This has been corrected; however, this cell does not affect the calculations so has no impact on the final VCU issuance.	Thank you for this correction. This item may be closed.			Closed
CR 2	Have there been any changes in plot count or location, strata acreages or classification, FVS growth modeling/inputs, treelists, or project boundaries?	The only treelist updated was for the plot that was harvested and checked post-harvest. There were no other changes.	Thank you for this confirmation. This item may be closed.			Closed
CR 3	The shapefiles 'BA_Treatment_History_2018' show planned management/harvest actions through 2022. Does this shapefile match actual operations?	The provided shapefile (BA_Treatment_History_2018 (1).shp) does match actual 2020 operations, with one 74-ac harvest in 2020. For clarification, we have updated the shapefile to isolate the 2020 harvest, and updated the file name to the current year (BA_Treatment_History_2020.shp)	Thank you for this clarification. This item may be closed.			Closed
CR 4	Have there been any additional changes to the project that should be described since the last verification for RP8?	No changes beyond the harvested plot.	Thank you for this confirmation. This item may be closed.			Closed
CR 5	Please describe any monitoring procedures implemented for RP9.	Following the end of the reporting period, we ask the landowner to report any harvests and to note if any plots fell in the harvest boundaries. For any plots that fell within harvest boundaries, these were re-measured and re-run through FVS to update the plot carbon and incorporated into the VCU calculations.	Thank you for this clarification. This item may be closed.			Closed