

## American Carbon Registry Monitoring Report

**Instructions:** The American Carbon Registry (ACR) requires that a Project Monitoring Report be provided to the verification body at each Project verification. To facilitate this requirement, use of this monitoring report template is required. Please follow all instructions found within each section and provide all requested information. If a field is not applicable, mark it as “N/A”. Please save this Monitoring Report as a PDF prior to uploading to your Project page within the ACR registry system.

Section I: Report Completed By		
1	<b>Name</b>	Megan McKinley
2	<b>Title</b>	Analyst – Forest Carbon Projects
3	<b>Organization</b>	Bluesource LLC
4	<b>Phone</b>	(403) 262-3026 ext. 304
5	<b>Email</b>	meganm@bluesourcecan.com
Section II: Offset Project Information		
1	<b>Project name</b>	Blue Source – Hawk Mountain Improved Forest Management Project
2	<b>ACR Project ID#</b>	375
3	<b>ACR account holder</b>	Bluesource LLC
4	<b>Reporting period (MM/DD/YYYY–MM/DD/YYYY)</b>	03/17/2018 – 03/16/2019
5	<b>Project start date (MM/DD/YYYY)</b>	03/17/2017
6	<b>Current project crediting period (MM/DD/YYYY–MM/DD/YYYY)</b>	03/17/2017 – 03/16/2037
7	<b>ACR Standard Version at time of listing/initial submittal</b>	ACR Standard Version 5.0
8	<b>Relevant ACR Sector Standard(s) and Version(s)</b>	ACR Standard Version 5.0
10	<b>ACR-Approved Methodology Title and Version</b>	Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands v.1.3
Section III: Project Details		
1	<p><b>Project Description</b></p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> <li>• Provide a brief project description</li> <li>• State the total GHG reductions or removals during the reporting period covered by this monitoring report</li> </ul> <p>Project Description: The Blue Source - Hawk Mountain Improved Forest Management Project is located on 2380.13 acres of oak-hickory forest in eastern Pennsylvania. Hawk Mountain Sanctuary Associations manages their forest with sustainable long-term goals for forest health and preservation. The</p>	

	<p>conservation easement was put in place shortly after the project start date (within one year) and in conjunction the on-going timber harvests on the property will be below net annual growth. This project ensures the long-term conservation and sustainable management of the forest, promotes healthy wildlife habitat, and prevents future compromise of the forest carbon stocks. By committing to maintain forest CO<sub>2</sub> stocks above the regional common practice, the project will provide significant climate benefits through carbon sequestration.</p> <p>Total GHG reductions or removals during reporting period: 46,175 tCO<sub>2</sub>e.</p>
<p><b>2</b></p>	<p><b>Program of Activities Project Implementation</b> <i>Instructions:</i></p> <ul style="list-style-type: none"> <li>• For a PoA, describe any new project instances, fields, producers, or facilities added during the reporting period</li> <li>• State whether the additional cohort(s) conform to the project boundaries and baseline criteria established in the initial GHG project plan</li> <li>• Provide the start date and crediting period for the additional cohort(s)</li> <li>• Define the roles and responsibilities for all personnel involved in the inclusion of the new cohort(s)</li> <li>• Describe procedures to avoid double counting as described in the ACR Standard</li> <li>• Provide all necessary information as stipulated in the validated project plan to ensure that leakage, additionality, baseline establishment, baseline emissions, and eligibility requirements are met by the additional cohort(s)</li> <li>• Provide a map of each new instance, field, producer, or facility added during the reporting period</li> </ul> <p>N/A: No additional cohorts beyond those described in initial GHG plan have been added to the project.</p>
<p><b>3</b></p>	<p><b>Project Deviations</b> <i>Instructions:</i></p> <ul style="list-style-type: none"> <li>• ACR may permit project-specific deviations to an existing approved methodology where they do not negatively impact the conservativeness of an approved methodology's approach to the quantification of GHG emissions reductions and removal enhancements. For instance, where alternate monitoring or measurement regimes are proposed, ACR may permit these changes provided they are conservative. ACR will not permit, on a project-specific basis, changes to requirements related to additionality assessment or baseline establishment.</li> <li>• State the deviation and rationale for the deviation; in the rationale, provide both the necessity of the deviation and demonstration that the deviation is conservative (i.e. will underestimate net GHG reductions/removals).</li> <li>• State whether ACR has formally approved the deviation</li> </ul> <p>N/A: No project deviations have occurred in this reporting period.</p>
<p><b>4</b></p>	<p><b>Regulatory Compliance</b> <i>Instructions:</i></p> <ul style="list-style-type: none"> <li>• Projects must maintain material regulatory compliance. In order to maintain material regulatory compliance, a project must complete all regulatory requirements at required intervals. Project Proponents are required to provide a regulatory compliance attestation to a verification body at each verification. This attestation must disclose all violations or other instances of noncompliance with laws, regulations, or other legally binding mandates directly related to project activities.</li> <li>• State whether all regulatory requirements were completed at required intervals.</li> </ul>

	<ul style="list-style-type: none"> <li>State whether the required regulatory compliance attestation has or will be provided to the Project's verification body.</li> </ul> <p>Blue Source – Hawk Mountain IFM is not a required project by any law, regulation, or legally binding mandate. The project is in compliance with all local, state, and federal timber laws. All regulatory requirements were completed at required intervals. The required regulatory compliance annual attestation has been provided to the Project's verification body for this reporting period.</p>
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**Section IV: AFOLU Projects**

<b>1</b>	<p><b>Reversals (Please note that reversals must be reported to ACR as soon as they are discovered per the ACR Risk Mitigation Agreement)</b></p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> <li>State whether there have been any intentional or unintentional reversals during the reporting period</li> <li>If a reversal has occurred, describe the reversal in this section</li> </ul> <p>N/A: No reversals have occurred.</p>
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<b>2</b>	<p><b>Carbon Pools</b></p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> <li>Populate the below table with the total tCO<sub>2</sub>e for each applicable carbon pool as specified (add rows for any additional relevant carbon pools)</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Carbon Pool</th> <th style="width: 30%;">Previous (total tCO<sub>2</sub>e)</th> <th style="width: 30%;">Current (total tCO<sub>2</sub>e)</th> </tr> </thead> <tbody> <tr> <td>Standing Live (AG + BG)</td> <td style="text-align: center;">378,311</td> <td style="text-align: center;">383,090</td> </tr> <tr> <td>Standing Dead</td> <td style="text-align: center;">76,895</td> <td style="text-align: center;">76,895</td> </tr> <tr> <td>Soil</td> <td style="text-align: center;">n/a</td> <td style="text-align: center;">n/a</td> </tr> <tr> <td>Harvested Wood Products</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> </tbody> </table>	Carbon Pool	Previous (total tCO <sub>2</sub> e)	Current (total tCO <sub>2</sub> e)	Standing Live (AG + BG)	378,311	383,090	Standing Dead	76,895	76,895	Soil	n/a	n/a	Harvested Wood Products	0	0
Carbon Pool	Previous (total tCO <sub>2</sub> e)	Current (total tCO <sub>2</sub> e)														
Standing Live (AG + BG)	378,311	383,090														
Standing Dead	76,895	76,895														
Soil	n/a	n/a														
Harvested Wood Products	0	0														

<b>3</b>	<p><b>Inventory</b></p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> <li>State whether the project is using the original inventory</li> <li>Describe any changes to the original inventory methodology since the last verification, if applicable</li> <li>For new inventory plots that were re-measured, list the updated confidence statistic and deduction percentage, if applicable</li> <li>If new plots were added to inventory, please provide an updated map showing plot locations and describe how plot locations were determined.</li> </ul> <p>The project is using the original inventory and no plots were added. No changes were made to the inventory methodology or inventory data.</p>
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**Section V: Project Monitoring**

<b>1</b>	<p><b>Parameters Monitored/Modeled</b></p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> <li>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)</li> </ul>
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<b>Parameter</b>	A <sub>1</sub>
<b>Units</b>	Acres
<b>Description</b>	Area of IFM Project
<b>Methodology</b>	Strata area figures adjusted based on stocking levels and species distribution
<b>Equation #(s)</b>	
<b>Source of Data</b>	GIS shape file derived from GPS coordinates
<b>Measurement</b>	

<b>Parameter</b>	T
<b>Units</b>	yr
<b>Description</b>	Number of years between monitoring time t and t1 ( $T = t_2 - t_1$ )
<b>Methodology</b>	
<b>Equation #(s)</b>	
<b>Source of Data</b>	Monitoring reports
<b>Measurement</b>	Subtraction

<b>Parameter</b>	Diameter at breast height of tree
<b>Units</b>	Inches (to 1/10 <sup>th</sup> an inch)
<b>Description</b>	Tree diameter measure 4.5 feet above ground
<b>Methodology</b>	Measured with Loggers Tape or calipers
<b>Equation #(s)</b>	
<b>Source of Data</b>	Field measurement
<b>Measurement</b>	

<b>Parameter</b>	H
<b>Units</b>	Feet
<b>Description</b>	Height of tree
<b>Methodology</b>	Measured with clinometer or hypsometer
<b>Equation #(s)</b>	
<b>Source of Data</b>	Field measurement
<b>Measurement</b>	

<b>Parameter</b>	Decay Class
<b>Units</b>	
<b>Description</b>	Qualitative degree of decomposition
<b>Methodology Section</b>	Qualitative assessment of dead tree into 1 of 4 decay classes based on class descriptions
<b>Equation #(s)</b>	
<b>Source of Data</b>	Field measurement
<b>Measurement</b>	

<b>Parameter</b>	Tree Live/Dead Status
<b>Units</b>	
<b>Description</b>	Live or Dead
<b>Methodology</b>	Measured per the Hawk Mountain Carbon Plot Methodology
<b>Equation #(s)</b>	
<b>Source of Data</b>	Field measurement
<b>Measurement</b>	

<b>Parameter</b>	Defect
<b>Units</b>	
<b>Description</b>	Qualitative percent of missing biomass
<b>Methodology Section</b>	Qualitative assessment of tree assessed by thirds for the % missing biomass from each third. Post-inventory weighting conducted for each third of tree (Bottom 65%, Middle 25%, Top 10%)
<b>Equation #(s)</b>	
<b>Source of Data</b>	Field measurement
<b>Measurement</b>	

<b>Parameter</b>	Species Composition
<b>Units</b>	%
<b>Description</b>	Spp composition as a percentage of basal area
<b>Methodology</b>	Derived from the basal area calculations in the inventory data.
<b>Equation #(s)</b>	
<b>Source of Data</b>	Calculation of project emissions.
<b>Measurement</b>	

<b>Parameter</b>	Harvest Wood Products
<b>Units</b>	Metrics tons CO <sub>2</sub>
<b>Description</b>	Carbon remaining in stored wood products 100 years after harvest for the project in year t.
<b>Methodology Section</b>	Wood volumes harvested will be monitored using American Forest Management's internal recordation system.
<b>Equation #(s)</b>	
<b>Source of Data</b>	Field measurement
<b>Measurement</b>	

<b>Parameter</b>	Forest Carbon
<b>Units</b>	Metrics tons of CO <sub>2</sub>
<b>Description</b>	Carbon stores in above and below ground live trees at the beginning of the year t
<b>Methodology</b>	Consistent with Hawk Mountain Carbon Plot Methodology.docx
<b>Equation #(s)</b>	
<b>Source of Data</b>	Calculation of project emissions.
<b>Measurement</b>	

<b>2</b>	<p><b>Monitoring Plan</b></p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> <li>• Provide the personnel names and roles/responsibilities for each party involved in monitoring the offset project</li> <li>• Provide a description of the GHG management system employed including: <ul style="list-style-type: none"> <li>• The location and recordkeeping/retention requirements for all stored data</li> <li>• Methods used to generate data</li> <li>• Transfer points and methods of non-automated transfer of data</li> </ul> </li> <li>• If applicable, describe any calibration procedures and the frequency with which calibration and other maintenance requirements are performed</li> <li>• Describe the internal audit and other quality assurance/quality control procedures</li> <li>• Sampling methods utilized and performed during the reporting period</li> </ul> <p>See section D2. Monitoring Plan of the GHG Plan for a detailed outline of the reporting requirements.</p>
<b>Section VI: GHG Emission Reductions and Removals</b>	
<b>1</b>	<p><b>Baseline Emissions</b></p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> <li>• Provide a summary calculation of baseline emissions; attach as an appendix, a spreadsheet documenting baseline emissions quantification</li> </ul> <p>Baseline emission in live and dead trees in March 2019, grown from the inventory data, is -72,180 t CO<sub>2</sub> (= <math>\Delta_{2019-2018}</math>Live Tree CO<sub>2</sub> baseline + <math>\Delta_{2019-2018}</math>Standing Dead CO<sub>2</sub> baseline + HWP baseline). See “HawkMountain_RP_ERT_HWP.xls” documentation of baseline emissions quantification.</p>
<b>2</b>	<p><b>Project Emissions</b></p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> <li>• Provide a summary calculation of project emissions; attach as an appendix, a spreadsheet documenting project emissions quantification</li> </ul> <p>Live tree carbon stocks in the with-project scenario were projected two growing seasons from the March-April 2017 inventory. The projection was developed by deriving individual live tree annual diameter growth rates from one 10-year cycle model run of FVS-NE with no management (reflecting the lack of timber harvest or other forest management activities occurring in the actual case during the monitoring period). The process is detailed below: (see also GHG Plan).</p>

Carbon stock estimates for the end of the March 17, 2018 – March 16, 2019 monitoring period were modeled via FVS-NE from the March-April 2017 inventory data via the approach outlined below.

1. April 2017 inventory data were entered into FVS-NE and grown for 10 years with no management (with “NoTriple” keyworded to track individual trees and permit cross-referencing to raw inventory dataset).
2. For each live tree (ascribed a unique identifier), annual diameter growth was derived assuming linear growth during the 10-year projection interval (i.e. for dbh, annual growth calculated as dbh at end of 10-year interval *minus* dbh at beginning of 10-year interval, reported in the FVS Treelist output, *divided by* 10).
3. For each live tree, diameter data from the April 2017 inventory were grown referencing the annual rates derived in step 2 above, adding two years of annual growth (i.e. two growing seasons) from the Mar 2017 measurement value.
4. Carbon stocks were recalculated using the grown data. No harvests or significant disturbances took place during the intervening period.

Modeled results for above- and belowground (live) tree biomass for the 16 May 2018 verification date are presented in the table below.

<b>Live (AG + BG) CO2</b>	<b>Mean live tCO2/acre</b>
<i>Project Area average</i>	<i>159.2</i>

Stocks of standing dead wood were assumed to be constant through the period.

<b>Standing Dead</b>	<b>Mean dead tCO2/acre</b>
<i>Project Area average</i>	<i>32.3</i>

Project emission reduction in live and dead trees in March 2019, grown from the inventory data, is 4,779 t CO<sub>2</sub> (=  $\Delta_{2019-2018}$ Live Tree CO<sub>2</sub> Project +  $\Delta_{2019-2018}$ Standing dead CO<sub>2</sub> Project + HWP Project).

No burning of any kind took place in the project area. Thus, parameter  $BS_P$  equals zero and the outcome of equation 13 of the methodology, parameter  $GHG_P$ , equals zero.

As no timber harvests took place during the March 17, 2018 – March 16, 2019 monitoring period, inputs of carbon in long-term storage in wood products in the with-project case,  $C_{P,HWP,I}$ , are equal to zero.

Carbon in all pools/sources/sinks in the with-project scenario for March 17, 2018 – March 16, 2019 monitoring period are detailed in the table below. Values for sources/sinks (harvested wood products and emissions due to burning logging slash) represent totals through the end of the second monitoring period.



Date	Live t CO <sub>2</sub> /acre	Standing dead t CO <sub>2</sub> /acre	total HWP t CO <sub>2</sub>	total GHG,P t CO <sub>2</sub>
March 17, 2018	159.2	32.3	0	455,206
March 16, 2019	161.0	32.3	0	459,985

  

**3 Leakage Emissions**  
*Instructions:*

- If applicable, provide a summary calculation of leakage emissions; attach as an appendix, a spreadsheet documenting leakage emissions quantification

Quantification of leakage is limited to market leakage, as no activity-shifting leakage is allowed by the methodology beyond de minimis levels. All forestlands owned by Hawk Mountain Sanctuary Association are FSC certified and included in the carbon project, therefore there is no activity-shifting leakage.

Market leakage was determined by quantifying the merchantable carbon removed in both the baseline and with-project cases. Carbon in long-term storage in in-use wood products and landfills, was used to assess relative amounts of “total wood products produced” in the two scenarios. The decrease in wood production relative to the baseline was then calculated and the applicable market leakage discount factor was determined.

Table VI.3.a. Baseline Leakage Factors

Period	Total HWP stored for 20 yr. crediting period in the Baseline (tCO <sub>2</sub> e)	Total HWP stored for 20 yr. crediting period project scenario (tCO <sub>2</sub> e)	Decrease in Wood Products as Percentage of Baseline Stocks	Applicable Leakage Factor
2017-2037	56,067	1,496	97%	40%

  

**4 Buffer Pool Contribution (For AFOLU and other sequestration projects only)**  
*Instructions:*

- Provide a summary calculation of the buffer pool calculation; attach as an appendix, a spreadsheet documenting buffer pool quantification

Buffer Pool contribution: GHG emissions without risk buffer deduction – GHG emissions with 19% buffer = 46,175 – 37,402 = 8,773

  

**5 Net GHG Emission Reductions/Removals**  
*Instructions:*

- State the net GHG emission reductions; provide a summary calculation showing the net GHG emission reduction/removal calculation as required by the relevant methodology





Methodology calculations and estimates of net reductions and removals enhancements are detailed in the table below and in “HawkMountain\_RP\_ERT\_HWP.xls”.

Reporting Period	RP1	RP2
ACR Account Year Date	2018	2019
<b>Baseline</b>		
Live Tree CO2 Baseline	304,266	238,032
Standing dead CO2 Baseline	68,145	59,395
HWP Baseline	2,803	2,803
sum stocks	375,214	300,230
20yr Avg Baseline	141,351	141,351
Year T	0	0
deltaC baseline	-72,180	-72,180
<b>Project</b>		
Live Tree CO2 Project	378,311	383,090
Standing dead CO2 Project	76,895	76,895
Greenhouse gas emission from logging slash burning	0	0
HWP Project	0	0
sum stocks	455,206	459,985
deltaC project	7,812	4,779
Buffer pool contribution	7,199	8,773
Total uncertainty	-8.21%	-7.80%
Emissions reduction at t	38,876	37,402
Negative C balance	0	0
ERTs Issued at time t	38,876	37,402
ERTs Transferred In	0	0
ERTs Transferred Out	0	0
ERTs Retired	0	0
Tradable Balance at time t	38,876	37,402

Note: the total tradeable balance shows the amount with the 19% buffer. As this credit amount will be supplied from a separate account, the full tradeable balance at time t is the credit volume being requested to be issued (37,402 + 8,773 = 46,175).

## Section VII: Verification

### 1 Verification

Instructions:

- State whether the project is undergoing a full site visit verification or a desk review
- State the date of the last full site visit verification
- Provide the name of the verification body for this reporting period
- State the number of consecutive years the verification body has verified the project

Verification Type: Desk Review



**WINROCK**  
INTERNATIONAL



	<p>Last Site Visit Verification Date: May 16, 2018 Name of Verification Body: SCS Global Services No. of Consecutive Years Verifying Project: 2 year</p>
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