



ENVIRONMENTAL SERVICES, INC.

Climate Action Reserve Forest Project Protocol Version 3.2 -Verification Report 14 May 2013

Virginia Conservation Forestry Program -
Rich Mountain (CAR 696)
Project Design Document
28 March 2013

Project Developer/Forest Owner:
The Nature Conservancy

Verification Conducted by:
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Project Number VO11064.00



ANSI ACCREDITED PROGRAM
GREENHOUSE GAS
VALIDATION AND VERIFICATION
0800



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1 EXECUTIVE SUMMARY

Environmental Services, Inc., (ESI) was contracted by The Nature Conservancy (TNC) to perform the Climate Action Reserve (Reserve) project verification of *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)*. Our verification process closely followed the Reserve's Forest Project Protocol Version 3.2 (August 31, 2010), ISO14064-3:2006, and ISO 14065:2007.

Specifically, the project verification included the review of the requirements outlined in the Reserve's Forest Project Protocol Version 3.2 (August 31, 2010). The assessment included the following items: GHG project and baseline scenarios; physical infrastructure, activities, technologies and processes of the GHG project; GHG assessment boundary (sources, sinks and/or reservoirs); types of GHG's; and time periods covered. The geographic verification scope was defined by the project boundary, the carbon reservoir types, management activities, growth and yield models, inventory program, contract periods, and TNC's responses to all non-conformity reports (NCRs) and clarifications (CLs).

All NCRs and CLs were addressed satisfactorily by TNC during the project verification process. The responses to these NCRs and CLs provided the needed information to ensure the project complied with the Reserve's program requirements for GHG projects.

After review of all project information, procedures, calculations, and supporting documentation and site visit, ESI confirms that *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* (dated 28 March 2013) is accurate and consistent with all aforementioned Reserve criteria and requirements. ESI confirms all verification activities, including objectives, scope and criteria, level of assurance, and project documentation adherence to the Reserve's Forest Project Protocol, v3.2, as documented in this report are complete. ESI concludes without any qualifications or limiting conditions that *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* meets the requirements of the Reserve.

The GHG assertion provided by TNC and verified by ESI has resulted in the GHG emission reduction or removal of 163,074 tCO₂ equivalents by the project during the verification period/reporting period (20 June 2002 – 31 December 2011).



2 INTRODUCTION

This verification report is prepared in accordance with the outlined requirements of the Climate Action Reserve (Reserve), Forest Project Protocol Version 3.2 (August 31, 2010). Environmental Services, Inc., (ESI) presents project verification findings of *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)*, which was prepared by TNC. The project verification was conducted as part of the Reserve's program requirements for GHG offset projects. ESI is accredited by the American National Standards Institute under ISO14065:2007 for greenhouse gas validation and verification bodies, including ISO 14064-3:2006, ISO 14065:2007, and validation/verification of assertions at the project level for Land Use and Forestry (Group 3). ESI is approved to verify for the Reserve.

2.1 Project Developer Contact Information

Project Developer: The Nature Conservancy	Greg Meade Conservation Forestry Program Manager 146 E Main Street Abingdon, VA 24210 gmeade@tnc.org / 276- 608-1144
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2.2 Verification Team Contact Information, Including Roles and Responsibilities

Accredited Verification Entity: Environmental Services, Inc.	Shawn McMahon – Lead Verifier (smcmahon@esinc.cc / 330-822-9941) Caitlin Sellers – Verification Team Member (csellers@esinc.cc / 772-834-8571) Stewart McMorrow – Verifier Trainee (smcmorrow@esinc.cc / 530-525-6692) Janice McMahon – QA/QC (jmcmahon@esinc.cc / 330-833-9941) Cheryl Daniels – Senior Internal Reviewer (cheryl.daniels@davey.com / 410-916-1347)
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2.3 Project Description

ESI was contracted by TNC to conduct the Reserve's project verification of *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)*, which falls under the Climate Action Reserve Forestry Project Protocol Version 3.2 (August 31, 2010).

As stated by TNC, the goals of *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* are to “protect and enhance water quality, rare species and representative natural communities, soil quality, and other forest resources; produce valuable forest products, including high-quality sawtimber; generate income for the fee landowner and contribute to the overall economic health of the local economy; maintain positive relations through ongoing communication with adjacent property owners and the residents of the local communities; and relate our management of Rich Mountain to the management of the greater forest system in which it occurs” (PDD, Section 2.e,



Page 10). The project will provide long-term climate benefits by Improved Forest Management, including conserving the forests through long rotations, which is very different from the regional common practice approach.

The start date of the project is 20 June 2002 – the date TNC took ownership of the forest resources through a Forest Management Easement. The project consists of 5,750 acres (2,326 hectares) of native, diverse, mixed Appalachian hardwood forests. The project falls within the Allegheny and North Cumberland Mountain Supersection. The four assessment areas that occur on the project are Oak-Hickory, Northern Hardwood, Cove Hardwood, and Mixed Hardwood.

3 VERIFICATION DETAILS

3.1 Verification Objective

The verification objective was to ensure the project was in compliance with Reserve's criteria (Forest Project Protocol, Version 3.2; August 31, 2010). ESI assessed the GHG emissions removal assertions for this Improved Forest Management project.

3.2 Verification Scope

The scope of *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* verification included the GHG project and baseline scenarios; physical infrastructure, activities, technologies and processes of the GHG project; GHG assessment boundary (sources, sinks and/or reservoirs); types of GHG's; and time periods covered. The geographic verification scope was defined by the project boundary, the carbon reservoir types, management activities, growth and yield models, inventory program (FVS), and contract periods. The scope also defined the primary and secondary effects of the GHG assessment boundary by indicating the forest carbon stock and emission categories as being required or optional. The scope of *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* was defined as follows:

Baseline Scenario	To determine the baseline, the logical management unit (LMU) of the project area was determined. The assertions of the project were as follows: • The management of the forest resource is guided by a tract specific legal document, the Forest Management Easement, which is unique to this property alone. • Forest Inventories are carried out on this property independently of other properties. • Rich Mountain has a unique management plan that does not include other properties. • The allowable harvest is calculated independently for Rich Mountain. • Rich Mountain is assigned its own Cost Center within TNC's accounting system, with revenues and costs being tracked independently of any other property. • Annual payment calculations to the fee landowner of Rich Mountain are computed independently without influence of other properties. Although TNC owns timber rights on other properties in
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	surrounding areas, the verifier confirmed that the project itself is a sustainable planning subunit, as its harvesting regime is dictated by the Forest Management Easement explicit to Rich Mountain. In addition, a separate Forest Management Plan implemented in February 2004 is unique and specific to Rich mountain. Therefore, the forest inventories and allowable harvest are carried out independently on the project area. Per confirmations of these assertions, the LMU was determined to be equivalent to the project area for baseline calculations. The baseline carbon stock model resulted in an average weighted (by strata acreage) baseline aboveground live carbon stock of 50.5 mt CO₂e/acre over the 100-year projection period. As required by the FPP V3.2, Section 6.2.1, this value is not below the Minimum Baseline Level (MBL) determined using Equation 6.6 of the FPP V3.2 (found to equal 50.5 mt CO₂e). ESI reviewed NRCS soils data using a Geographic Information System (GIS) and confirmed that site class stratification was determined following the procedures outlined in Appendix F of the FPP V3.2. ESI also verified that the weighted Common Practice (CP) value (used in Equation 6.6) was calculated accordingly. The final baseline value (after including below-ground biomass for live trees and above- and below-ground biomass for dead standing trees) was found to equal 64.7 mt CO₂e/acre.
Activities/Technologies/Processes	Improved Forest Management
GHG Assessment Boundary (Sources/sinks/Reservoirs)	<u>Primary Effects</u> IFM -1 Standing live carbon IFM -3 Standing dead carbon IFM -7 Carbon in in-use products IFM -8 Forest product carbon in landfills <u>Secondary Effects</u> IFM -9 Biological emissions from site prep activities IFM -14 Biological emissions/removals from changes in harvesting on forestland outside project area IFM -17 Biological emission from decomposition of forest products *No optional pools are included
GHG Type	Carbon dioxide
Time Period	Start date: 20 June 2002 Reporting/Verification Period: 20 June 2002 to 31 December 2011 (initial verification)



Project Boundary

5,750 acres in Washington and Russell Counties, VA

3.3 Verification Criteria:

The criteria followed the verification guidance documents provided by the Reserve located at <http://www.climateactionreserve.org/how/program/program-manual/> and <http://www.climateactionreserve.org/how/protocols/forest/>. These documents include the:

- a) *Climate Action Reserve Forest Project Protocol, Version 3.2, August 31, 2010*
- b) *Protocol Resources, such as Biomass Equations, Assessment Area Data, Forest Project Forms, and Forest Project Baseline Determination, as updated on the Reserve website*
- c) *Climate Action Reserve Verification Program Manual, Version 2.0, December 20, 2010*
- d) *Climate Action Reserve Program Manual, October 26, 2011*
- e) *Policy Memos, as updated on the Reserve website*
- f) *Policy Memo on Optional Pools, March 4, 2011*
- g) *Climate Action Reserve Software*
- h) *ISO 14064-3:2006 Principles and Requirements for Verifying GHG Inventories and Projects*

3.4 Verification Level of Assurance:

The level of assurance was used to determine the depth of detail that the verifier placed in the verification plan to determine if there were any errors, omissions, or misrepresentations (ISO 14064-3:2006). ESI selected samples of data and information to be verified to provide *reasonable assurance* (not *absolute assurance*) to meet the materiality requirements of the specific project (*Reserve Verification Program Manual, Version 2.0, December 2010*). Sample size was determined based upon the guidance provided in the *Reserve Forest Project Protocol Version 3.2* (August 31, 2010) and project parameters.

3.5 Verification Materiality Threshold:

Materiality is a concept that errors, omissions and misrepresentations could affect the GHG emissions reduction assertion and influence the intended users (ISO 14064-3:2006). Based on the Reserve's Verification Program Manual, verification bodies must form a view on the materiality of all identified issues, errors, or uncertainties. ESI classified each issue as material (significant) or immaterial (insignificant). Throughout the verification process, TNC addressed all non-conformity reports and clarifications that were requested by ESI to the satisfaction of the ESI verification team.

The Reserve's Verification Program Manual establishes a quantitative materiality threshold, which sets a numeric cap [5% for all projects where the carbon removals are $\leq 25,000$ Climate Reserve Tonnes (CRTs) annually] on the magnitude of cumulative error in stated reductions permissible under the Reserve, as a percent of the verifier's recalculated emission reductions. In determining whether a material misstatement has occurred, the verification body must compare the aggregate total of misstatements against the materiality threshold for the total CRTs reported to the Reserve.

Additionally, there can also be qualitative issues identified by the verification body as non-conformances with the project protocols that relate to the requirements laid out in the protocols (e.g., the metering, monitoring, management systems, record-keeping, etc.). Any non-conformance related to a prescriptive requirement outlined in the protocol would be considered material and must be corrected in order for the project to receive a positive Verification Statement. A prescriptive requirement relates to any specific guidance or requirement mandated by the protocol itself that does



not allow for deviation, or for verifier professional judgment. All potential non-conformances identified were sufficiently addressed by the Project Developer.

4 VERIFICATION PROCESS

The verification process closely followed the guidance provided by the Climate Action Reserve, Forest Project Protocol (v3.2), Verification Program Manual, ISO14064-3 and ISO 14065, and the ESI Management System and Management System Manual (v12), Section V.3.

As defined by ISO 14064-3:2006 (E), “verification is the systematic, independent and documented process for the evaluation of a greenhouse gas assertion in a GHG project plan against agreed verification criteria”. Specifically the project verification (assessment) included the review of the requirements outlined in the Climate Action Reserve, Forest Project Protocol Version 3.2 (August 31, 2010). The assessment included the following items: eligibility criteria, baseline approach, additionality, project boundary, emissions, leakage, quantification of GHG reductions/removals, monitoring, data and parameters, and adherence to the project-level principals (relevance, completeness, consistency, accuracy, transparency, conservativeness).

ESI’s verification is generally broken down into four parts: desktop assessment, site visit, quantitative review, and meetings/interviews.

4.1 Desktop Assessment

ESI received and reviewed the submittals to the Reserve to assess conformance with the requirements of the Reserve’s Forest Project Protocol. Key factors that impacted the reported emissions reductions were identified and a Verification and Sampling Plan was created to focus on the critical elements presenting potential risk for errors in reported data. These elements included:

- Appropriate and adequate documentation of IFM project type.
- Implementation of appropriate and adequate eligibility criteria, by reviewing documentation and field conditions relevant to additionality, voluntary implementation attestation, project start date, crediting period, minimum time commitment, implementation agreement, conservation easements/deeds/titles, project location, regulatory compliance, sustainable harvesting and natural forest management.
- Completeness and accuracy of *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* Project Design Document.
- Implementation of appropriate and adequate approach/tools for additionality (legal requirements test and performance test), by reviewing documentation and field conditions which reflect the most-likely without-project scenario, as it deviates from the with-project scenario.
- Implementation of appropriate and adequate approach to project boundary/project area definitions, by reviewing documentation of project boundaries and ownership status, and field conditions relative to clearly delineated ownership extents and control over management activities within the project area.
- Implementation of appropriate and adequate approach to GHG assessment boundary for IFM projects [i.e. define all sources, sinks and reservoirs that must be accounted for in quantifying IFM projects reductions and removals (Table 5.1 of the Forest Project Protocol, Version 3.2)].
- Implementation of appropriate and adequate approach to the inventory methodology.
- Appropriate and adequate approach for quantifying and modeling net GHG reductions and removals (baseline/actual onsite carbon stocks, baseline/actual carbon in harvested wood products, project’s primary and secondary effects, total GHG reductions/removals) confirmed through documentation, re-calculations/sampling, and field condition assessment.



- Appropriate and adequate monitoring of onsite carbon stocks, by confirming the application of approved/acceptable monitoring practices in the field, and the appropriate handling and analysis of field data once collected.
- Appropriate and adequate approach to data and parameters, by reviewing data handling practices, and reviewing documentation at each step of the data analysis procedure.
- Implementation and adherence to project-level principles, by reviewing documentation and discussing the application of project-level principles with core staff.

Prior to the field visit, the verification team conducted a desk review of project documents which included the PDD, the Reserve listing submittal, and supporting reports. ESI found the documentation submitted by TNC to be adequate to proceed with the site visit.

Please see Appendix A for a listing of all documents ESI received and reviewed during project verification.

4.2 Site Visit

Following the initial desk review, ESI conducted an on-site assessment of the project area on 05-08 December 2011. The site visit was used to review project records with a representative of TNC, discuss the calculation of carbon pools and sinks, and visit random portions of the ownership for reconnaissance to ground-truth the assertions of the PDD and submitted data.

During the site visit, the following 6 plots were randomly selected for quantitative field verification: 278, 310, 311, 341, 371 and 373 (Please refer to Appendix B, which details their location). The Forest Owner was not aware of the plots to be sampled until the day of the site visit. The verifier was able to independently locate each plot and determined that the plots were monumented in a way that allowed for a paired t-test. The verifier collected and recorded species, DBH and height data as described in the inventory methodology (Appendix B of the PDD), while confirming the Project's adherence to its inventory methodology. The required Standing Live and Standing Dead pools were inventoried in accordance with Appendix A of the FPP. The project has an Inventory Update Process in place (Section 4.e of PDD), but as this was the first verification event and the inventory occurred within the last two years, the inventory update process had not yet been utilized. A paired t-test was conducted on the plot data obtained by the verifier, and the results indicated the data was within the 80% confidence interval, confirming our sample inventory was within the same population as the inventory submitted by the Forest Owner. Further results of the paired t-test are discussed in Section 5.10.

Additionally, project boundaries were visited in several areas of *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* to compare to the GPS files and maps provided. All areas visited conformed to the provided data.

4.3 Quantitative Review

ESI conducted an intensive review of all input data, parameters, formulas, connections, conversions, statistics and resulting uncertainties and output data to ensure consistency with the Reserve's FPP (v3.2). Please refer to Section 5.10 (Quantifying Net GHG Reductions and Removals) for specific information about the quantitative review.



4.4 Meetings/Interviews

During the course of the project verification, ESI and TNC held multiple meetings. All other correspondence occurred via email. The details of the meetings are briefly described in the table below:

Date	Attendees	Topics Discussed
21 November 2011	Greg Meade (TNC) Tim Robards Shawn McMahon (ESI) Janice McMahon (ESI)	Opening Meeting - preliminary review of verification and sampling plan - review of travel logistics - review of project timeframes and deadlines
02 December 2011	Greg Meade Caitlin Sellers (ESI) Janice McMahon (ESI)	Follow-up call with ESI and project team to discuss process and logistics
22 December 2011	Greg Meade Tim Robards Caitlin Sellers (ESI) Stewart McMorrow (ESI) Shawn McMahon (ESI)	Follow-up call to discuss project calculations
06 January 2012	Greg Meade Tim Robards Caitlin Sellers (ESI) Stewart McMorrow (ESI) Shawn McMahon (ESI)	Discussion of NCRs/CLs and project calculations
13 January 2012	Greg Meade Stewart McMorrow (ESI) Shawn McMahon (ESI)	Discussion of NCRs/CLS
23 April 2012	Greg Meade Tim Robards Caitlin Sellers (ESI) Janice McMahon (ESI) Shawn McMahon (ESI)	Discussion of error discovered in calculations
08 May 2012	Greg Meade Tim Robards Caitlin Sellers (ESI) Stewart McMorrow (ESI) Shawn McMahon (ESI)	Discussion of additional error noted in calculations
04 February 2013	Greg Meade (TNC) Tim Robards Caitlin Sellers (ESI) Shawn McMahon (ESI) Jonathan Pomp (ESI)	Meeting to discuss the application of the Component Ratio Method to the carbon calculations and implications on the project
— 14 May 2013	Greg Meade Caitlin Sellers (ESI)	Closing Meeting - Review of final verification report and findings lists; PIA - Next steps and project upload - Request feedback on process



4.5 Verification Milestones

The following table documents the main verification activities that occurred during the project verification process:

Project/Verification Activity	Date
ESI Internal Conflict of Interest (COI) process completed and approved (no issues). TNC Notification.	17 October 2011
Reserve approval of NOVA/COI	31 October 2011
Opening meeting with TNC	21 November 2011
Submission of Verification and Sampling Plan to TNC for approval	23 November 2011
Receipt of Signed Verification and Sampling Plan from TNC	28 November 2011
Field Verification	05-08 December 2011
Round 1a of non-conformances/clarifications submitted	14 December 2011
Round 1b of non-conformances/clarifications submitted	09 January 2012
Round 2 of non-conformances/clarifications submitted	30 January 2012
ESI completes preliminary review	08 June 2012
Draft report and project information sent to Senior Independent Reviewer	08 June 2012
Draft verification report submitted to TNC for review	20 March 2013
Draft verification report submitted to the Reserve for review and PIA execution	21 March 2013
Final PDDs uploaded to Reserve by TNC and Final Draft Report Uploaded by ESI	02 April 2013
ESI completes review of PIA execution and recording	14 May 2013
Closing Meeting with TNC	14 May 2013
ESI uploads report and files to Reserve website	14 May 2013

5 CLIMATE ACTION RESERVE FOREST PROJECT REQUIREMENTS (IMPROVED FOREST MANAGEMENT)

5.1 Project Definition/Type

Virginia Conservation Forestry Program - Rich Mountain (CAR 696) has demonstrated it occurs on land with canopy cover exceeding 10%. The site visit and review of aerial imagery confirmed canopy cover well exceeded the 10% canopy threshold across the project area. In addition, no broadcast fertilizer utilization occurs in the project area, as confirmed in the PDD (Section 2.e, Page 11) and observed during the site visit.

Virginia Conservation Forestry Program - Rich Mountain (CAR 696) is an IFM project that is intended to create additional carbon stocks in the project area through conserving the forests through long rotations, which is very different from the regional common practice approach of earlier rotations and high-grading during harvest. *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* is not part of any previously registered Forest Project and is in compliance with the Reserve's project eligibility requirements set forth in the Reserve's Forest Project Protocol 3.2.

5.2 Project Start Date and Reporting Period

The start date of *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* is 20 June 2002 – the date TNC took ownership of the forest resources through a Forest Management Easement from Stuart Land & Cattle Company of Virginia, Inc. The verifier reviewed the survey associated with the easement to confirm the project boundaries. The Forest Management Easement named



Stuart Land & Cattle Company of Virginia, Inc., the owner of the land. The verifier also reviewed a Title Insurance Policy stating TNC has the conservation easement interest of the forest resources, which is also confirmed in the Forest Management Easement.

The reporting period is 20 June 2002 to 31 December 2011.

5.3 Project Area and Location

Virginia Conservation Forestry Program - Rich Mountain (CAR 696) consists of 5,750 acres (2,326 hectares) of native, diverse, mixed Appalachian hardwood forests. The project falls within the Allegheny and North Cumberland Mountain Supersection. The four assessment areas that occur on the project are Oak-Hickory, Northern Hardwood, Cove Hardwood, and Mixed Hardwood. The verifier confirmed the species located within the project area were consistent with the assessment areas chosen for the project during the site visit and by reviewing the species in the inventory data.

Virginia Conservation Forestry Program - Rich Mountain (CAR 696) is located on private land in Washington and Russell Counties in Southwest Virginia, United States of America. The project area is within a larger fee ownership of the Stuart Land & Cattle Co., Inc. The approximate coordinates of the project midpoint in degrees, minutes, seconds are 36°53'41.51"N, 81°53'50.64" W.

5.4 Additionality

Legal Requirement Test – TNC has signed the Reserve's Attestation of Voluntary Implementation form indicating that the project's improved forest management activities are not legally required and were not legally required at the time of the project's start date. In addition, the verifier conducted a risk-based review of applicable laws by visiting the Commonwealth of Virginia government website. The Commonwealth has given the State Forester, under the Virginia Department of Forestry (DOF), the power and direct responsibility to carry out any laws relating to the forest resources in the state.¹ Besides the Virginia Silvicultural Water Quality Law, which limits harvesting in riparian areas,² no other laws affecting the project were identified. The DOF is the lead state agency in establishing riparian buffers.³

Performance Test – *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* is an IFM project eligible for registration under the Climate Action Reserve because it will increase carbon stocks through longer rotations, which is different from the Business As Usual approach of shorter rotations and high grading. According to Section 3.1.2.2 of the FPP, an IFM project automatically satisfies the performance test to the extent it produces GHG reductions and/or removals above the Business As Usual scenario. Therefore, the project activities have been deemed to pass the additionality test.

5.5 Permanence

This requirement states that GHGs must be permanently reduced or removed from the atmosphere to be credited as carbon offsets. For Forest Projects, this requirement is met by ensuring that the carbon associated with credited GHG reductions and removals remains stored for at least 100 years.

¹ <http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+10.1-1105>

² http://dcr.cache.vi.virginia.gov/stormwater_management/documents/uForestry.PDF

³ <http://www.dof.virginia.gov/mgt/index-laws.htm>



The Forest Owner ensures the permanence of GHG reductions and removals from *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* through three mechanisms:

The Forest Owner understands and has agreed to monitor onsite carbon stocks, submit regular monitoring reports, and submit to regular third-party verification of those reports along with periodic verification site visits (as detailed in Sections 8 through 10 of the Forest Project Protocol) for the duration of the Project life.

The project Forest Owner has signed a Project Implementation Agreement (PIA) with the Reserve, as described in Section 3.5 of the Forest Project Protocol, which obligates Forest Owners to retire CRTs to compensate for reversals of GHG reductions and removals. The PIA was recorded on 15 January 2013. Subsequent to the recordation of the PIA, but prior to the issuance of any CRTs, it was discovered that Exhibit B of the PIA (the PDD) contained errors that required correcting (i.e. updating for appropriate use of the CRM). Thus, an amendment to the recorded PIA (includes the updated PDD) was recorded on 13 May 2013.

The Forest Owner understands that a percentage (20.22%) of their carbon credits will be reserved for a Buffer Pool to provide insurance against reversals of GHG reductions and removals due to unavoidable causes.

The verifier confirmed the reversal risk rating of 20.22% was appropriate by conducting a review of the project's risk assessment. Each of the four risk categories mentioned in Appendix D of the Forest Project Protocol were separately reviewed and calculated. In addition, the risk category not mentioned in the Forest Project Protocol – the PIA Risk category – was appropriately included and calculated in the PDD.

5.6 Included Carbon Pools

Virginia Conservation Forestry Program - Rich Mountain (CAR 696) includes the following carbon pools (primary and secondary effects): IFM-1 Standing live carbon, IFM-3 Standing dead carbon, IFM-7 Carbon in in-use products, IFM-8 Forest product carbon in landfills, IFM-9 Biological emissions from site prep activities, IFM-14 Biological emissions/removals from changes in harvesting on forestland outside project area, and IFM-17 Biological emissions from decomposition of forest products. No optional pools are included.

5.7 Leakage Assessment

The Climate Action Reserve Forest Project Protocol requires an assessment of leakage (secondary effects) on an annual basis. TNC applied all default “leakage” factors for secondary effects appropriately.

5.8 Climate Action Reserve Attestations

The Nature Conservancy signed the Climate Action Reserve's Attestation of Title form (12 January 2012), thereby affirming that TNC has an exclusive ownership claim to the GHG reductions and removals achieved by *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)*. The verifier has confirmed the Attestation of Title was signed on 12 January 2012 and uploaded to the Reserve website. In addition, TNC provided a Survey (12 June 2002) and Forest Management Easement (20 June 2002) naming Stuart Land & Cattle Company of Virginia, Inc., the owner of the land and a Title Insurance Policy (20 June 2002) stating TNC has the conservation easement interest, which is confirmed in the Forest Management Easement.



TNC also signed the Attestation of Regulatory Compliance (12 January 2012), thereby affirming the project's compliance status throughout the project reporting period. During the site reconnaissance and desk review verification activities, ESI sought to confirm that *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* is in compliance with all laws related to the scope of the IFM project under the Reserve's Forest Project Protocol.

TNC has stated in the PDD (Section 2.d, Page 10) that the only applicable law is the Virginia Silvicultural Water Quality Law, which limits harvesting in riparian areas. This law has been modeled into the baseline and project calculations, and the verifier concludes the Project is in compliance with this regulation.

ESI's own risk-based internal review of any applicable federal, state, and local laws did not yield additional results. The silvicultural practices are standard and allowable by the governing legal authorities.

ESI concludes that there is no basis to question TNC's Attestation of Regulatory Compliance for this forest project.

Finally, by signing the Attestation of Voluntary Implementation (12 January 2012), TNC has affirmed that *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* was established and implemented voluntarily and continues to operate as such.

The risk-based internal review mentioned above confirmed that the project was not legally required by any federal, state, or local laws at the time of the project's start date and that the Attestation for Voluntary Implementation is accurate.

5.9 Sustainable Harvesting and Natural Forest Management Practices

Because the project will include commercial harvesting, Sustainable Harvesting Practices must be met in the Project. The project will demonstrate compliance with Sustainable Harvesting Practices by ensuring canopy cover will exceed 40% on all forest land within the assessment area, as measured on any 20 acres. This was also confirmed in the Reserve's *Response to Request for Project Guidance*, dated 12 December 2011.

The project complies with the Natural Forest Management Practices by the following:

- Based on the 2011 inventory, 100% of the basal area is comprised of native species. This falls above the 95% minimum set by the Reserve.
- Based on the Reserve's Assessment Area Data File, no single species can compose more than 60-70% (depending on the assessment area) basal area. Of the 31 species identified in the inventory, not one composed greater than 14% of the total basal area.
- By extending common practice rotation ages and practicing uneven-aged management practices, the project will maintain an appropriate distribution of age classes to ensure the support of habitat for locally native plant and wildlife species.
- As stated in Section 3.b.iv of the PDD, no salvage logging has occurred during the project. The project contains 4,092 tonnes of standing dead wood carbon, which does not meet the higher of the two criteria for Structural Elements (5,750 tonnes) and is reflective of past management practices. However, TNC's ownership of the forest rights and sustainable harvesting practices will ensure the requirement is met over the lifetime of the project. This requirement will be continuously monitored and confirmed during future verification events.



- The project is designed for on-site standing live carbon stocks to be maintained and/or increase throughout the lifetime of the project. Carbon stocks will be monitored through new inventories to ensure this requirement is achieved.

5.10 Quantifying Net GHG Reductions and Removals

ESI conducted an intensive review of all input data, parameters, formulas, connections, conversions, statistics and resulting uncertainties and output data to ensure consistency with the Reserve's FPP (v3.2). Further, ESI reproduced calculations for selected samples to ensure accuracy of the results. All data, conversion factors, formulas, and calculations were provided by the project proponent in spreadsheet format to ensure all formulas were accessible for review. The project proponent also provided a step-by-step overview of calculations to ensure ESI understood the approach and could confirm its consistency with the FPP. ESI confirms that the project employed the correct alternative Component Ratio Method (CRM) process $((\text{total_AG_biomass_Jenkins} - \text{foliage_biomass_Jenkins}) * \text{AdjFac})$ to determine above- and below-ground biomass from measured tree data in all cases. Specific items related to quantifying net GHG reductions and removals are detailed below.

Using the FVS inputs described in the PDD, the verifier took the data compiled from the 6 plots sampled in the field and completed carbon stocking estimates separate from the project's own data. The results of a paired t-test indicated that mean carbon stocking calculated from ESI's on-site plot measurements is not significantly different from those reported by the inventory at $\alpha = 0.2$. This assured the verifier that the project's inventory and carbon stocking assertions were in accordance with the FPP, and that the estimates were within the range of expected growth patterns for the Project Area.

For baseline determinations, the Forest Owner provided the model choice (FVS). No calibrations occurred. Site indices of each species were sourced from USDA NRCS soil series information. The project incorporated the appropriate legal restraints in the baseline and project calculations (50% biomass must remain within riparian buffers). The financial analysis of the growth and harvesting regime demonstrated the project is a financially viable activity. Modeling occurred in accordance with Section 6.2 of the FPP, and modeling outputs demonstrated the required periodic harvest, inventory, and growth estimates. The verifier confirmed the project's modeling document (Appendices C-G) contained the verification items listed in Table 10.10 of the FPP. The silvicultural guidelines (prescriptions) were demonstrated in the project's modeling document (Appendix C), Table C21, and associated spreadsheets.

Standing live tree carbon estimates were derived from plot data taken in 2011. Component Ratio Method was used to derive biomass estimates from all portions of the tree. Appropriate allometrics were used from the correct Assessment Area and Supersection for appropriate tree species that were identified on-site during the sampling effort. All estimates were based on DBH and height measurements. Sound tree volumes were based on an average of all the cull volume combined and averaged across the entire project area, where all trees were finally reduced by a soundness percentage equally. An adjustment factor was developed that was a comparison between the FIA volume and Jenkins volume. This adjustment factor was then applied to all components across the sampling plots. Final CO₂ was derived as a result of converting final biomass per acre for each plot to carbon and then converted to CO₂ kilograms and finally to CO₂ tonnes. All of the steps needed for this process were followed in the "Rich Mtn Inventory Carbon EstimateV5.xls" file provided to the verifier.



Additionally, in accordance with Table 10.9 #3 of the FPP, the verifier compiled a representative sample plot that included three trees of varying diameters and heights of each species found within the project area. The verifier input this sample data into our own model, and the results was a percent error of 0.14%. The verifier determined that this difference was due to rounding. The project post-stratified its data to determine if a confidence deduction was necessary. Because the sampling error was less than 5% with or without stratification, a confidence deduction was not applied, in accordance with FPP Appendix A.4.

In addition, ESI confirmed Harvested Wood Products calculations were in accordance with the guidelines of Table 10.11 and Appendix C of the FPP. The verifier reviewed the spreadsheet associated with Harvested Wood Products (“HarvestScheduleRichMtnV14.xlsx”) and the *Wood Products – Factors for Project Calculations* and compared side-by-side to the standards and factors of the FPP. The verifier confirmed the appropriate factors were used and that the Standard Wood Products Generated by the Reserve were appropriate to the project’s accounting of Harvested Wood Products.

ESI reviewed the calculations associated with Primary and Secondary Effects to ensure consistency with Sections 6 and 6.2.6 of the FPP, respectively. For project emissions, the default leakage factor of 20% was applied to the difference in harvest volume relative to baseline harvest volume, which the verifier confirmed in the project’s calculations. This factor can be found in Rows 26 & 27 of Table 18 in the PDD.

In addition, the Project’s risk analysis and buffer pool contribution were reviewed. All relevant risk assessments, including the PIA assessment not included in the FPP, were included, and the resulting risk rating was 20.22% to be contributed to the buffer pool. The results were deemed appropriate and acceptable by the verifier.

ESI also conducted a comprehensive assessment of all data collection and storage procedures to ensure all opportunities for error in transposition of data between data were minimized. ESI recalculated the statistics independently to confirm the accuracy of the reported precision, and the results correlated. Field data collection utilized appropriate principles of forestry data collection, including appropriate tools and methods. Collected data was handled appropriately, including a structured process for quality check. Analysis of collected data used appropriate formulas, conversions, and parameters, supported by scientific literature. Where ranges of parameters exist, or other types of formulaic uncertainty, appropriately conservative values were used in data analysis.

During ESI’s verification, the evidence provided by the project proponent was more than sufficient in both quantity and quality to support the determination of GHG emission removals reported by the project.

6 VERIFICATION FINDINGS

The ESI verification team identified non-conformity reports (NCRs) and clarifications (CL). All were addressed satisfactorily by TNC during the project verification process. The responses to these NCRs and CLs provided the needed clarity to ensure project compliance with Reserve program requirements for GHG projects.



The List of Findings has been compiled and is available under separate cover. The List of Findings is a confidential document between ESI (verifiers) and TNC (Project Developer/Forest Owner) and is not publicly available.

After review of all project information, procedures, calculations, and supporting documentation and site visit, ESI confirms that *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* is accurate and consistent with all aforementioned Reserve criteria and requirements. ESI confirms all verification activities, including objectives, scope and criteria, level of assurance, and project documentation adherence to the Reserve's Forest Project Protocol, v3.2, as documented in this report are complete. ESI concludes without any qualifications or limiting conditions that *Virginia Conservation Forestry Program - Rich Mountain (CAR 696)* meets the requirements of the Reserve.

The GHG assertion provided by TNC and verified by ESI has resulted in the GHG emission reduction or removal of 163,074 tCO₂ equivalents by the project during the verification period/reporting period (20 June 2002 – 31 December 2011).

7 VERIFICATION STATEMENT

This verification statement confirms that Environmental Services, Inc., has evaluated *Virginia Conservation Forestry Program – Rich Mountain* and its Project Design Document dated 28 March 2013, designed by TNC (Forest Owner) according to the criteria outlined by the Climate Action Reserve and that this verification statement is consistent with ISO 14064-3:2006 and ISO 14065:2007. The dates of the period evaluated for this verification are 20 June 2002 to 31 December 2011.

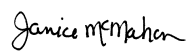
Environmental Services, Inc., confirms all verification activities including objectives, scope and criteria, level of assurance, project design documentations and project implementation adherence to the Climate Action Reserve Forest Project Protocol, Version 3.2, August 31, 2010 as documented in this verification report for the project entitled *Virginia Conservation Forestry Program – Rich Mountain* dated 28 March 2013 are complete. ESI concludes without any qualifications or limiting conditions that *Virginia Conservation Forestry Program – Rich Mountain* is without material discrepancy; the verification activities provide a reasonable level of assurance; the project meets the requirements of Climate Action Reserve; and the project produces 163,074 total CRTs before the 20.22 % buffer withholding. Total cumulative CRTs are 130,096, as 32,978 CRTs will be contributed to the buffer pool.

8 VERIFICATION RESULTS / CONCLUSION

ESI confirms all verification activities including objectives, scope and criteria, level of assurance and the PDD adherence to the Climate Action Reserve Forest Project Protocol, Version 3.2 as documented in this report are complete. ESI concludes without any qualifications or limiting conditions that *Virginia Conservation Forestry Program – Rich Mountain* meets the requirements of the Climate Action Reserve Forest Project Protocol, Version 3.2.

Report Submitted to:	The Nature Conservancy Climate Action Reserve
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Report Submitted by:	Environmental Services, Inc. Corporate Office 7220 Financial Way, Suite 100 Jacksonville, Florida 32256
ESI Lead Verifier Name and Signature:	 Shawn McMahon Lead Verifier
Senior Internal Reviewer Name and Signature:	 Cheryl Daniels Senior Internal Reviewer
ESI Regional Technical Manager Name and Signature:	 Janice McMahon Vice President and Forestry, Carbon and GHG Division Regional Technical Manager
Date:	14 May 2013

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APPENDIX A – Documents Received/Reviewed

During the project verification, ESI received and reviewed the following documents provided by TNC and the Reserve:

Project Listing Documents (downloaded from Car website)

- *Virginia Conservation Forestry Program - Rich Mountain (CAR 696) Submittal.pdf*
- *Ownership Interest Documentation-Rich Mountain.pdf*
- *Virginia Conservation Forestry Program - Rich Mountain (CAR 696) Map A.pdf*
- *Virginia Conservation Forestry Program - Rich Mountain (CAR 696) Map B.pdf*
- *064-Rich Mountain NOVA-COI-10-3-11.pdf*
- *064-Rich Mountain-NOVA-COI_Mitigation-Plan.pdf*
- *Rich Mtn - Attestation of Title.pdf*
- *Rich Mtn - Attestation of Voluntary.pdf*
- *Rich Mtn - Attestation of Regulatory Compliance.pdf*

The following documents were provided to the verifier via email, FTP or Dropbox on the following dates:

Submitted 8-18-2011

- *Virginia Conservation Forestry Program - Rich Mountain (CAR 696) Map B.pdf*
- *Virginia Conservation Forestry Program - Rich Mountain (CAR 696) Submittal.pdf*
- *Virginia Conservation Forestry Program - Rich Mountain (CAR 696) Map A.pdf*

Submitted 11-09-2011

- *RichMtn_Stand_Data.sbn*
- *RichMtn_Stand_Data.sbx*
- *RichMtn_Stand_Data.shp*
- *RichMtn_Stand_Data.shp.xml*
- *RichMtn_Stand_Data.shx*
- *Rich Mtn cruise methods.docx*
- *Rich_Plots_wAttributes.dbf*
- *Rich_Plots_wAttributes.prj*
- *Rich_Plots_wAttributes.sbn*
- *Rich_Plots_wAttributes.sbx*
- *Rich_Plots_wAttributes.shp*
- *Rich_Plots_wAttributes.shp.xml*
- *Rich_Plots_wAttributes.shx*
- *RichMtn_Stand_Data.dbf*
- *RichMtn_Stand_Data.prj*

Submitted 11-21-2011

- *HarvestScheduleRichMtnNov212011.xlsx*

Submitted 11-28-2011

- *Rich Mtn PDD Nov 28, 2011.pdf*



- HarvestScheduleRichMtnNov28, 2011.xlsx

Submitted 12-02-2011

- Rich Mtn Historic Harvest Info - Method 1.xlsx
- Rich Mtn Inventory Carbon Estimate.xls
- Historic Harvest Treatment & Backdating of Inventory.docx

Submitted 12-07-2011

- 2010-Decision-Ltr-TNC.pdf
- Ownership Interest Documentation-Rich Mountain.pdf
- Rich Mtn Inventory Carbon Estimate.xls
- Rich Mountain Plan w-Maps.doc
- Sustainable Harvesting Practices on TNC Land Email from CAR.pdf

Submitted 12-08-2011

- CAR Approval.msg
- Historic Fire Records 38-42.pdf
- Historic Fire Records 86.pdf

Submitted 12-09-2011

- Title Policy-Rich Mtn (Stuart 1&2).pdf
- Ownership Interest Documentation-Rich Mountain.pdf

Submitted 12-12-2011

- ID3973-RICH MTN-6-13-2002.pdf

Submitted 01-13-2012

- HarvestScheduleRichMtnJan 12, 2012.xlsx

Submitted 01-24-2012

- Legal Requirement Modeling Shapefiles
- Sustainable Timber Harvesting Shapefiles
- 2011-RESP-REQ2-Sustainable Harvesting Guidance-CAR686.pdf
- 2011-RESP-REQ-Wildfire RiskGuidance-CAR686.pdf
- Additional information requested from conference call on January 13.docx
- CAR approval of multi-assesment areas.pdf
- Rich Mtn PDDJan17,2012.pdf
- RICH MTN VOLUME AND VALUE.xls
- Rich_Mountain_Round1b_NCRs_TNC_ResponseJan172012.docx
- RichMountain_Round1a_NCRs_FINAL TNC Response.docx
- RichMtn_StandTypes_wNF Areas.pdf

Submitted 02-03-2012

- Rich Mtn PDDFeb2,2012.pdf
- RichMountain_Round2a_NCRs_FINAL_TNC_ResponseFeb2,2012.docx



Submitted 02-24-2012

- Rich Mtn PDDFeb2,2012.pdf

Submitted 03-16-2012

- Rich Mtn PDDMarch13,2012.pdf

Submitted 04-16-2012

- BiomassEquationValidation_TNC_VA.xlsx
- HarvestScheduleRichMtnV10.xlsx
- Rich Mtn Inventory Carbon EstimateV5.xls
- Updates to the Rich Mtn Project 04102012.docx

Submitted 05-07-2012

- HarvestScheduleRichMtnV12May7_2012.xlsx

Submitted 05-08-2012

- Updates to the Rich Mtn Project 05072012.docx

Submitted 05-11-2012

- RichMountainPDD.pdf

Submitted 05-17-2012

- HarvestScheduleRichMtnV12.xlsx

Submitted 05-18-2012

- HarvestScheduleRichMtnV12.xlsx

Submitted 05-29-2012

- TNC Responses to additional ESI questions from May 23.docx

Submitted 05-30-2012

- Rich Mtn PDD May 30, 2012.pdf

Submitted 06-25-2012

- Rich Mtn PDD June 25, 2012.pdf
- Updates to the Rich Mtn Project 06252012.pdf

Submitted 07-03-2012

- BiomassEquationValidation_TNC_VA.xlsx

Submitted 07-19-2012

- Rich Mtn PDD, July 19 2012.pdf

Submitted 08-10-2012

- Rich Mtn PDD August 8, 2012.pdf

Submitted 08-15-2012

- Rich Mtn PDD August 15, 2012.pdf



Submitted 01-17-2013

- Indemnification Agmt CAR 696 Rich Mtn signed.pdf
- Notice of Access CAR 696 Rich Mtn recorded Russell County.pdf
- Notice of Access CAR 696 Rich Mtn recorded Washington County.pdf
- PIA CAR 696 Rich Mtn recorded Russell County.pdf
- PIA CAR 696 Rich Mtn recorded Washington County.pdf

Submitted 02-27-2013

- HarvestScheduleRichMtnV13.xlsx
- Rich Mtn Inventory Carbon EstimateV6.xls
- Rich Mtn PDD Feb 27, 2013.pdf
- Updates to the Rich Mtn Project 02182013.docx

Submitted 03-28-2013

- HarvestScheduleRichMtnV14.xlsx
- Rich Mtn Inventory Carbon EstimateV6.xls
- Rich Mtn PDD March 28, 2013.pdf
- Updates to the Rich Mtn Project 02182013.docx

Submitted 03-29-2013

- Rich Mtn PDD March 29, 2013.pdf

Submitted 05-14-2013

- Rich Mtn PIA Amendment-Russell Co 2013.pdf
- Rich Mtn PIA Amendment-Wash Co 2013.pdf



APPENDIX B – Verification Plots

