



Verification Report:

Name of Verification company:	Date of the issue:
Scientific Certification Systems (SCS)	July 21, 2011
Report Title:	Approved by:
Verification Report: Boden Creek Forest Carbon Project	Todd Frank
Client:	Project Title:
Forest Carbon Offsets, LLC Boden Creek Ecological Preserve	Boden Creek Ecological Preserve Forest Carbon Project
Summary:	
<p>This report documents the verification of avoided emissions for the Boden Creek Forest carbon Project for the period from the project's initiation in 2005 to 2010. The project proponent is the Boden Creek Ecological Preserve, with support from Forest Carbon Offsets, LLC. The project utilized the approved Verified Carbon Standard (VCS) methodology VM 0007 – "REDD Methodology Modules." The project was both validated and verified by SCS. This report documents verification activities. Verification of the project included an assessment of monitoring activities and data collected and evaluation of compliance to the VCS standards and to the methodology selected. The verification process also involved an in-depth assessment of the ex-post calculation of VCUs generated by the project for the reporting period of 2005 (project initiation) through 2010.</p> <p>The audit conducted by Scientific Certification Systems included desk reviews of the project and supporting documentation, a site visit, and interviews with project proponents and technical service providers. It also included field work in which a sample of forest inventory plots were checked by the audit team. During the audit, an iterative exchange of requests for new information and corrections of non-conformances took place between the verifier and the project proponent. At this time, all nonconformities have been adequately resolved. The auditors conclude that the project meets all relevant requirements of the Verified Carbon Standard. SCS verified that the project generated 133,808 t CO₂ equivalent net emissions reductions during the present reporting period.</p>	
Work carried out by:	Number of pages:
Ryan Anderson (Lead Verifier) Zane Haxton (Verifier) Percival Cho (Technical Expert) Robert Hrubes (Technical Reviewer)	14

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1 Introduction

1.1 Objective

- Evaluate the verification scope, including the GHG project and baseline scenario; GHG sources, sinks, and reservoirs; and the physical infrastructure, activities, technologies and processes of the GHG project.
- Evaluate the monitoring plan and develop conclusions regarding the monitoring methodology and the collection and archiving of data relevant to GHG emissions estimation and baseline emissions.
- Assess conformance of the proposed Agriculture, Forestry and Other Land Use (AFOLU) Project Elements with the VCS Standard and VCS Program Guidelines;
- Evaluate the calculation of GHG emissions, including appropriateness of source, sink, and reservoirs; the correctness and transparency of formulae and factors used; assumptions related to estimating GHG emission reductions; and uncertainties.
- Determine if there have been any significant changes to the project procedures or criteria since the project validation.
- Determine if there have been any significant changes in the project and baseline emissions, removals, emission reductions and removal enhancements since the project validation.
- Develop conclusions based on verification standards, submitting any corrective action requests, as applicable.

1.2 Scope and Criteria

SCS assessed the completeness of the Project Monitoring Report to ensure that all requirements of the VCS standards and applicable methodology elements have been addressed. SCS assessed whether or not the Monitoring Report respects the principles of the VCS standards. The Project Design Document (PDD) was referenced during this assessment, but was not itself assessed, as that task was performed during the validation audit, which is documented in a validation report issued on June 24, 2011.

Assessment included but was not limited to evaluation of the project implementation, monitoring, and the calculation of GHG emissions. SCS assessed whether the project itself meets all of the requirements laid out in the VCS standards and is consistent with the PDD.

Criteria from the following standards and documents were used to assess the project:

- VCS 2007.1
- VCS Program Guidelines 2007.1
- VCS Guidance for Agriculture, Forestry and Other Land Use Projects (AFOLU)
- VCS Tool for AFOLU Methodological Issues
- VCS Program Updates: Updates to the Tool for AFOLU Methodological Issues and Guidance for AFOLU Project: Insignificant Emissions Sources and Pools, Carbon Pools, Avoided Planned Deforestation, Definition of Mosaic and Frontier Deforestation, Market Leakage
- Methodology: VM0007-REDD Methodology Modules

The assessment was performed using the client-supplied Monitoring Report, PDD, and other supporting documentation.

1.3 VCS project Description

As described in Section 1.5 of the PD, the Project consists of 3,980 ha of tropical forest located in the Toledo District of Belize. The objective of the Project is to prevent conversion of the area to agricultural use. As described in Section 1.6 of the PD, the start date of the project is January 1, 2005, and the crediting period extends from January 1, 2005 to December 31, 2029. The report describes the verification of project GHG benefits over the period from January 1, 2005 to December 31, 2010. As described in Section 1.15 of the PD, the Boden Creek Ecological Preserve (BCEP) is the project proponent. BCEP has retained Forest Carbon Offsets to “develop the strategy, implementation, and monitoring of the carbon credits generated by this project.” Forest Carbon Offsets has contracted SCS to provide validation services, and therefore Forest Carbon Offsets will be referred to as “the Client” hereafter.

1.4 Level of assurance

SCS provides reasonable assurance per section 7.3.1 of the VCS standard (“VCS 2007.1”) that the emission reduction estimations for the Boden Creek Forest Carbon Project are conservative and meet the VCS criteria and approved methodology, VM0007-REDD Methodology Modules.

To ensure complete transparency, SCS has included any clarification or corrective actions that were raised at the end of this validation report.

2 Methodology

2.1 Review of Documents

SCS received and reviewed the PDD and supporting documentation to assess initial conformance with the requirements of the VCS standard. Key factors that impact the reported emission reductions and removals were identified, and a Verification Plan was created to focus on the critical elements presenting potential risk for errors. These elements included inventory data collection and handling, evidence of conformance to the methodology, evidence of conformance to the monitoring plan, and implementation of calculations.

The desk review resulted in findings associated with lack of documentation of the remote sensing imagery and methods applied in project monitoring and incorrectly reported parameters. This report details the findings that led to one Non-Conformity Report (NCR) and one New Information Request (NIR) that the project proponents had to respond to in order to allow SCS to provide reasonable assurance that the emission reduction estimations meet the requirements of the VCS and the selected methodology. The client’s satisfactory responses are detailed, along with the verifier’s responses that lead to the closure of the identified NCR/NIRs.

Finally the document was technically reviewed for completeness by an SCS auditor for quality assurance purposes.

2.2 Site Visit

As part of a validation audit documented in a separate report, the auditors conducted an on-site audit of the project area on February 20-22, 2011. During the visit, the verification team

interviewed relevant personnel, toured the project area, and re-measured six carbon inventory plots. The validation team was accompanied by local technical expert Percival Cho during the site visit, as well as local tree identification expert Bonifacio Tut. As documented in the validation report, available under separate cover, the site visit resulted in concerns regarding the accuracy of carbon stock estimates that resulted from the carbon inventory plots measured by the project proponent. These concerns led to issuance of an NCR during project validation. In response to that NCR, the Project Proponent re-measured all plots. A sample of seven of the re-measured inventory plots were checked for accuracy by Percival Cho and Bonifacio Tut on May 23 and 24. That assessment indicated that the data collected met the accuracy standards of the VCS. Although these visits were initially conducted in support of project verification activities, the same inventory data is used in this first project verification as that presented for validation. These site visits were critical to SCS's ability to arrive at reasonable assurance that the project's stated emissions removals are conservative and in compliance with the requirements of the VCS standard and applicable methodology elements.

2.3 Quantitative Analysis

The third step of the verification process focused on the quantitative analyses undertaken by the Project Proponent to estimate the net greenhouse gas benefits of the project. This entailed generating carbon stock estimates from the field data collected by the audit team and comparing it to estimates made by the project proponent. Additionally, calculations made by the project proponent were reviewed by the audit team.

2.4 Final Review and Report Drafting

The last step in the verification process included a final review of the submitted data, and drafting of the VCS Verification Deed of Representation and supporting Verification Report. A draft Verification Deed of Representation and Report was completed based on the results of the verification assessment. The draft report was presented to an internal SCS Technical Reviewer who determined the Verification Opinion to be justified given the evidence presented. The report and opinions were then presented to the project proponent for review and comment.

2.5 Follow-up Interviews

The following personnel were interviewed during the audit process:

- Jeff Waldon, Forest Carbon Offsets: Interviewed during site visit and follow-up phone discussions
- Gabriel Thoumi, Forest Carbon Offsets: Interviewed during site visit
- Verl Emrick, Conservation Management Institute: Interviewed during site visit
- Kenneth Karas, Boden Creek Ecological Preserve: Interviewed during site visit

2.6 Resolution of any material discrepancy

Throughout the validation/verification process, there was an iterative exchange between SCS and the Project Proponent to gather additional information for review and examination. This exchange includes Findings—New Information Requests (NIR), Non-Conformity Reports (NCR) and Opportunities for Improvement (OFI)—that are issued by SCS to the Project Proponent. The Project Proponent must respond to NIRs and NCRs in order for SCS to render a verification opinion. At this time, all findings have been appropriately addressed by the project proponent and subsequently closed by SCS.

The Findings from the verification of the Boden Creek Project are compiled in Appendix A-“List of Findings” to this report.

3 Verification Findings

3.1 Remaining issues, including any material discrepancy, from previous validation

This is the first project verification. The verification was performed immediately following project validation by the same audit team. All issues related to validation have been resolved and are described in a validation report available under separate cover. As described in the site visit section, above, the inventory data collected by the Project Proponent was assessed during validation. This data is fundamental to verification, and the activities described in the validation report allowed the audit team to attain reasonable assurance of the accuracy of that data for verification purposes.

3.2 Project Implementation

During the site visit and by review of project documents, SCS verified that the project had been implemented as described in the validated project design document. We note that the project has been validated under the CCBA standard as the VCS. The scope of this verification audit was limited to assessment of the project against the VCS standard, and no activities were conducted to verify whether the project has been implemented as described in the CCB PD.

The PD describes a restrictive covenant attached to the property title to mitigate non-permanence risks. This restriction, as described in the monitoring report, has not yet been put into place. However, it is not required by the methodology.

3.3 Completeness of Monitoring

As described in section 3.3 of the validation report issued by SCS for the project, the following parameters are required to be monitored by the approved VCS methodology and are applicable to the project:

A_{sp}	Area of sample plots
N	Number of sample plots
DBH	Diameter at breast height of each tree in a sample plot
$A_{defLK,i,t}$	The total area of deforestation by the baseline agent or class of agent of the planned deforestation in stratum i at time t
<i>Project Forest Cover Monitoring Map</i>	Map showing the location of forest land within the project area at the beginning of each monitoring period. If within the Project Area some forest land is cleared, the benchmark map must show the deforested areas at each monitoring event
$Aburn,i,t$	Area burnt in stratum i at time t
$A_{DefPA,i,t}$	Area of recorded deforestation in the project area in stratum i at time t
A_i	Total area of stratum i
$U_{BSL,SS}$	Percentage uncertainty (expressed as 95% confidence interval as a percentage)

	of the mean where appropriate) for carbon stocks and greenhouse gas sources in the baseline case
$U_{P,SS}$	Percentage uncertainty (expressed as 95% confidence interval as a percentage of the mean where appropriate) for carbon stocks and greenhouse gas sources in the project case

The parameters A_{sp} , N , and DBH were obtained using a sample of forest inventory plots in the project area, while $A_{defLK,i,t}$, *Project Forest Cover Monitoring Map*, $Aburn,i,t$, $A_{DefPA,i,t}$, and A_i parameters resulted from remote sensing analysis. The uncertainty parameters and all other parameters used by the methodology’s calculations are either given in the methodology, held constant over the life of the project (i.e. assessed at validation only), or derived from these measurements. All monitoring required by the validated project document and applicable methodology elements has been conducted.

3.4 Accuracy of Emission Reduction Calculations

SCS reviewed all *ex-post* calculations used to derive the estimate of the project’s net emissions reductions. The project used the same framework for calculations that was reviewed during project validation. No additional calculation errors were discovered by the audit team during verification. Because there has been no observed deforestation in the project area, the project is being validated and verified several years after its start date, and the inventory data used in the present verification was available during validation, the verified *ex-post* net GHG benefits to date have not changed from the *ex-ante* estimates that were available at project validation.

3.5 Quality of Evidence to Determine Emission Reductions

Two main types of data were used to determine emission reductions: forest inventory data, and remote sensing based estimates of forest cover. The quality of the forest inventory was assessed during project validation with an on-site check cruise. The results of that assessment are given in the verification report for the project, available under separate cover. SCS was able to attain reasonable assurance that the inventory data upon which the emission reductions reported in the current monitoring report meet the accuracy requirements of the VCS standard.

Two issues related to the forest inventory arise because the project is back dated to 2005:

First, the current monitoring period covers six years, while the methodology requires monitoring of carbon stocks in the project area at least every five years. As back-dated projects are clearly permitted by the VCS standard, the project’s start date meets the requirements of the VCS standard and the selected methodology, the methodology provides no specific guidance on back-dated projects, and it is impossible to obtain data that would allow for a five year monitoring period, SCS determined that a six year initial monitoring period was permissible.

Second, the entire project area is accumulating biomass as it recovers from the hurricane that occurred before the project start date. Under the selected methodology, *ex-post* changes in carbon stocks that result from forest growth are to be accounted for as the difference in measured biomass at two points in time. For the project, no reliable estimate of forest biomass at the time of the initiation of the project was available, as no inventory had yet been conducted in the project area. The selected methodology does not provide any guidance for estimating initial carbon stocks for a back-dated project. The Client has

estimated the biomass for each year of the current monitoring period by subtracting an estimated growth rate of 6% per year from the carbon stock that resulted from the 2011 inventory. This rate comes from a study of a similar forest in Mexico, and, based on research conducted during project validation, appears to represent the best available published data for the forest type. However, the appropriateness of this growth rate as well as the adequacy of such a simple model is subject to high uncertainty. Nonetheless, more robust and better validated models do not appear to be available for the region and forest type applicable to the project area. The project, as validated, assumes eventual conversion of the entire project area to agriculture. The methodology does not permit crediting of more avoided emissions from loss of biomass than the biomass stocks that result from an inventory of the project area. Consequently, any inaccuracies in the estimated growth rate affect only the vintage of credits issued, and not the total number – the maximum avoided emissions credited do not exceed those actually measured in the recent inventory. Consequently, the audit team determined that the use of the estimated growth rate to back-date the inventory was a reasonably conservative approach to a situation not addressed by the methodology. The estimated growth rate should not be required in future monitoring periods, as data from multiple points in time will be available and thus should allow for estimation of carbon stock accumulation in strict conformance with the methodology.

After the issuance of NIR 2011.1, SCS received the remote sensing data used in project monitoring. The audit team reviewed the Landsat image provided and verified that appropriate methods had been applied and that the conclusions of remote sensing analysis as described in the monitoring report are consistent with the original data.

3.6 Management and Operational System

The technical capacity of the project developer is appropriate for performing the monitoring task. As described in Section 3.2 of the PD, it is intended that each permanent plot be re-measured on a yearly basis. Frequent monitoring should help to ensure that measurements are taken to a high standard of quality. Section 3.4 of the PD states that “The overall plan is that staff from BCEP will be trained by the Conservation Management Institute to measure each permanent plot each year.” The verification team observed that permanent staff employed by BCEP are very comfortable working in the forested areas of the property, and, with appropriate training, BCEP staff should be capable of performing yearly monitoring duties. However, it is unclear who will be tasked with data entry, compilation of inventory results, and remote sensing work. BCEP does not currently appear to have the technical expertise necessary to carry out these tasks. However, as otherwise documented in this report, it has been shown that the Conservation Management Institute has the capability to carry out this more technical work.

4 Verification conclusion

SCS was able to arrive at an opinion regarding the accuracy of the calculated emission reductions and removals from the Boden Creek Ecological Preserve Forest Carbon Project through a review of the Project Design Document and the supplementary documentation, additional requested information, and a site visit. SCS confirmed the soundness of the data regarding project eligibility, inventory procedures, baseline and project characterization, methodologies related to the calculation of carbon stocks and GHG reductions and removals. Through the risk based verification assessment, SCS has determined that the Boden Creek Ecological Preserve Forest Carbon Project, developed by the Boden Creek Ecological Preserve (project proponent), and Forest Carbon Offsets, LLC (project developer), is in conformance with the Voluntary Carbon Standard and meets the minimum quality standard.

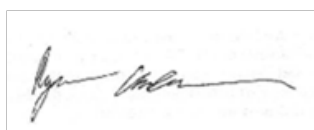
Furthermore, all issues identified during the verification were resolved and found to be in conformance with VCS standards. The monitoring report and data are considered accurate, transparent, and free of material misstatements. Therefore, SCS is able to issue a positive verification opinion for the 166,506 metric tonnes of CO₂e emission reductions and removals by the project for the monitoring period from 2005-2011. While all 166,506 VCUs will be issued, 15% of the project's CO₂e net carbon stock changes (32,696 metric tonnes CO₂e) will be set aside in the VCS's buffer pool. As such, the project will be issued a total of 133,808 VCUs for Emission Years 2005-2010. The VCUs in this Verification Report are consistent with those claimed by the project proponent in the 2011 monitoring report.

Reporting period: From *January 1, 2005 to December 31, 2010*

Verified Emission Reductions In The Above Reporting Period:

Year	Gross Emissions Reductions (t CO ₂ e)	Leakage Discount (t CO ₂ e)	Uncertainty Discount (t CO ₂ e)	Buffer Pool Contribution (t CO ₂ e)	Net VCUs to Project (t CO ₂ e)
2005	7,935	236	2,248	1,551	6,383
2006	14,876	485	4,227	2,915	11,961
2007	22,509	760	6,403	4,416	18,092
2008	30,894	1,062	8,793	6,067	24,827
2009	40,098	1,394	11,417	7,879	32,219
2010	50,195	1,758	14,295	9,869	40,326
TOTAL	166,506	5,695	47,383	32,697	133,808

Net emission reductions, after subtraction of buffer pool contribution: t CO₂ equivalents: 133,808 tonnes CO₂e.



Name: Ryan Anderson

Title: SCS Contractor

Company: Contractor to Scientific Certification Systems

VCS 2007.1 – FCO – Boden Creek Ecological Preserve – Verification Report

Date: July 21, 2011

A handwritten signature in black ink, appearing to read "Todd Frank". The signature is written in a cursive style with a large, stylized "F".

Name: Todd Frank

Title: Greenhouse Gas Program Manager

Company: Scientific Certification Systems

Date: July 21, 2011



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Forest Project Verification

Appendix A: List of Findings

Verification under the Verified Carbon Standard

Reporter/Member:

Forest Carbon Offsets

Project:

Boden Creek Ecological Preserve

New Information Requests:

NIR 2011.1

Finding: Insufficient information about the remote sensing imagery used in the current monitoring period was determined to evaluate whether it meets the requirements of the methodology. As required by page 13, Step 3, Documentation, of the M-Mon Module, please report the following information about the remote sensing imagery used in the current monitoring period:

(part a):

- Type, resolution, source and acquisition date of the remotely sensed data (and other data) used
- geometric, radiometric and other corrections performed
- spectral bands and indexes used (such as NDVI)
- projection and parameters used to geo-reference the images
- error estimate of the geometric correction
- software and software version used to perform tasks
- Definition of the classes and categories

(part b):

Because imagery was manually interpreted, rather than classified using an automated algorithm, many of the elements listed of part (b) of Step 3 do not apply. However, to ensure a consistent time series, the minimum mapping unit applied, definitions and descriptions of all classes used, and any keys applied in interpretation should be included.

(part c):

- Accuracy Assessment Technique used
- coordinates and description of the ground truth data collected for classification accuracy assessment
- final classification accuracy assessment

Additionally, please provide a copy of the images analyzed.

Proponent Response: The following has been added to the monitoring report:

A Landsat 5 TM, 30 meter, satellite image from April 28, 2011 was downloaded from the United States Geographic Survey's (USGS) Global Visualization Viewer (GloVis) (<http://glovis.usgs.gov>) for path 19, row 49. As the classification was a single-image photo-interpretive process no additional preprocessing was deemed necessary for the methodology. An NDVI was created for use as an ancillary dataset to aid the photo interpreter but was not used directly in the classification. Reprojection and georeferencing was not necessary. The NDVI was created in Erdas Imagine 9.1. The landcover classification and all additional analyses were done in ESRI's ArcGIS 9.3.1. Landcover was classified as forest/nonforest. The nonforest class consolidated all landcover classes, excluding forest, from the original landcover definitions used to define the project area.

Landcover was classified for the entire BCEP property through heads-up photointerpretation in a softcopy environment using ESRI's ArcGIS 9.3.1. Landcover was classified as either

forest or nonforest using a Minimum Mapping Unit of one hectare. The nonforest class combined the following classes from the original classification of the project area: cropland, grassland, riparian, settlements/clearing, and wetland. Classification was performed by experienced photo interpreters familiar with Landsat imagery and possessing a priori knowledge of Belizean landuse/landcover.

The accuracy assessment was performed using a high resolution satellite image from RapidEye (5 meter, color-infrared image from March 10, 2011). A random set of verification points was created in ArcGIS 9.3.1 using Hawth's Tools (<http://www.spatial ecology.com/htools/tool desc.php>). Points within 30 meters of landcover boundaries were removed. The resulting layer contained 50 nonforest and 99 forest points in the classified image.

The verification points were then compared to the high resolution image by a SME with extensive on-ground experience in the study area. The SME determined whether each point was forest or nonforest based on the imagery, knowledge of the project area, and the definition of forest under the project scope. The classified points were then compared back to the landcover map and an error matrix was developed. The overall accuracy of the classification was 96.6%.

Based on this analysis no reversals were detected.

Revised PDD, error matrix, accuracy assessment points attached. Images available if an ftp site address is provided.

Auditor Response: The requested information has been provided. The audit team reviewed the imagery itself to confirm that no material change in the forested area within the project boundary was detected. Sufficient documentation of the image analysis process was provided to allow for consistent data collection and analysis in future monitoring events. Calculations associated with error assessment were reviewed and determined to have been applied appropriately. Error assessment was performed against high resolution imagery, rather than on-the-ground observations. Though this is not in strict conformance with the methodology, it is a common remote sensing practice, and based on an independent review of the imagery provided, the simple forest/non forest classification scheme applied, and observations from a recent site visit, the audit team is reasonable confident that the analysis is materially accurate. The Proponent's response adequately addresses the finding in accordance with The VCS 2007.1 Protocol and selected methodology.

Non Conformance Reports::

NCR 2011.2

Finding:

The parameter SFINC is expressed as a number of grams in project calculation worksheets. Correct application of the tool requires the parameter to be expressed as a proportion.

Proponent Response: Spreadsheet and PDD are amended. See attached.

Auditor Response: The parameter has been corrected. The Proponent's response adequately addresses the finding in accordance with The VCS 2007.1 Protocol and selected methodology.