FIRST ASSESSMENT REPORT FOR THE "REWETTING OF DRAINED TROPICAL PEATLANDS IN SOUTHEAST ASIA" METHODOLOGY ELEMENT

Document Prepared By Zane Haxtema

Methodology Element Title	Rewetting of drained tropical peatlands in Southeast Asia	
Version	Version 12	
Methodology Element Category	Methodology	X
	Methodology Revision	
	Module	
	Tool	
Sectoral Scope(s)	Sectoral scope 14 (AFOLU)	

Report Title	First assessment report for the "Rewetting of drained tropical peatlands in Southeast Asia" methodology element

Report Version	V2.0
Assessment Criteria	VCS Version 3
Client	WWF Germany
Pages	129
Date of Issue	27-May-2014
Prepared By	SCS Global Services (SCS; formerly Scientific Certification Systems)
Contact	2000 Powell Street, Suite 600, Emeryville, CA 94608, USA http://www.scsglobalservices.com/ Email: CPollet-Young@scsglobalservices.com Telephone: +1 (510) 452-8000
Approved By	Todd Frank
Work Carried Out By	Lead assessor: Zane Haxtema Technical expert: Dr. Carly Green Technical reviewer: Christie Pollet-Young

Summary:

This report describes the first assessment of the “Rewetting of drained tropical peatlands in Southeast Asia” methodology element (the “methodology element”), which was developed for the purpose of providing a methodological framework for the quantification and reporting of GHG emission reduction and removals from peatland rewetting projects involving drained ombrogenous tropical peatlands in Southeast Asia. The purpose of the assessment is to assess the conformance of the methodology element to the VCS rules and current best practices for quantification of GHG emission reductions and removals. The assessment was performed through a desk review of the methodology element and other relevant documents. The methodology element complies with all of the assessment criteria, and the assessment team has no restrictions or uncertainties with respect to the compliance of the methodology element with the assessment criteria. The assessment team recommends that the VCSA approve the methodology element.

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1 INTRODUCTION

1.1 Objective

The purpose of the audit activity was to conduct a first assessment of the methodology element "Rewetting of drained tropical peatlands in Southeast Asia" ("the methodology element") in accordance with the guidance documents listed in Section 1.2 of this report.

1.2 Scope and Criteria

In accordance with the VCS Methodology Approval Process, the scope of the assessment included the following:

- Applicability conditions: Assessment of whether the proposed methodology's applicability conditions are appropriate, adequate and in compliance with the VCS rules.
- Project boundary: Assessment of whether an appropriate and adequate approach is provided for the definition of the project's physical boundary and sources and types of GHGs included.
- Procedure for determining the baseline scenario: Assessment of whether the approach for determining the baseline scenario is appropriate, adequate and in compliance with the VCS rules.
- Procedure for demonstrating additionality: Assessment of whether the approach/tools for determining whether the project is additional are appropriate, adequate and in compliance with the VCS rules.
- Baseline emissions: Assessment of whether the approach for calculating baseline emissions is appropriate, adequate and in compliance with the VCS rules.
- Project emissions: Assessment of whether the approach for calculating project emissions is appropriate, adequate and in compliance with the VCS rules.
- Leakage: Assessment of whether the approach for calculating leakage is appropriate, adequate and in compliance with the VCS rules.
- Quantification of net GHG emission reductions and/or removals: Assessment of whether the approach for calculating the net GHG benefit of the project is appropriate, adequate and in compliance with the VCS rules.
- Monitoring: Assessment of whether the monitoring approach is appropriate, adequate and in compliance with the VCS rules.
- Data and parameters: Assessment of whether the specification for monitored and not monitored data and parameters is appropriate, adequate and in compliance with the VCS rules.
- Adherence to the project principles of the VCS Program: Assessment of whether the methodology adheres to the VCS Program principles set out in the VCS Standard.

- Relationship to approved or pending methodologies: Assessment of whether any existing methodology could reasonably be revised to serve the same purpose as the proposed methodology.

The proposed revision was assessed for conformance against the VCS Version 3, including the following documents:

- VCS Standard
- VCS Agriculture, Forestry and Other Land Use Projects (AFOLU) Guidance
- VCS Methodology Approval Process
- VCS Methodology Template

Unless otherwise indicated, the assessment was performed against the most recent version of the relevant VCS guidance document.

1.3 Summary Description of the Methodology Element

The methodology element provides criteria and procedures for the quantification of emission reductions and removals attributable to rewetting projects affecting ombrogenous tropical peatlands of Southeast Asia that were drained as a result of past land use.

2 ASSESSMENT APPROACH

2.1 Method and Criteria

The primary method used for this assessment was document review, as described in Section 2.2 of this report. In addition, the assessor took into consideration two sets of comments received during the public comment period from December 13, 2011 to January 12, 2012.

2.2 Document Review

The assessment activity included a detailed review of the methodology element against the criteria of the guidance documents listed in Section 1.2 of this report. In addition, the proposed methodology was assessed for logical coherence, internal consistency, completeness, and consistency with current best practices for quantification of emission reduction and removals.

Review of the methodology element was complemented by a review of the published literature relevant to the development of the methodology element. The following articles were reviewed in order to ensure the conformance of the proposed revision with the guidance documents listed in Section 1.2 of this report:

- Couwenberg, J. 2009. Methane emissions from peat soils (organic soils, histosols): Facts, MRV-ability, emission factors. Wetlands International.

- Couwenberg, J, Dommain, R, Joosten, H. 2009. Greenhouse gas fluxes from tropical peatlands in south-east Asia. Global Change Biology, 16: 1715–1732.

- Intergovernmental Panel on Climate Change (IPCC). 2003. Good practice guidance for land use, land-use change and forestry.

- Hooijer, A, Page, S, Canadell, JG, Silvius, M, Kwadijk, J, Woster, H, Jauhiainen, J. 2010. Current and future CO2 emissions from drained peatlands in Southeast Asia. Biogeosciences, 7: 1505-1514.

- Jaenicke, J, Rieley, JO, Mott, C, Kimman,P, and Siegert ,F. 2008. Determination of the amount of carbon stored in Indonesian peatlands. Geoderma, 147: 151-158.

- Jaenicke, J, Wösten, H, Budiman, A and Siegert, F. 2010. Planning hydrological restoration of peatlands in Indonesia to mitigate carbon dioxide emissions. Mitigation and Adaptation Strategies for Global Change, 15: 223-239.

- van Walsum, PEV., Veldhuizen, AA, , van Bakel, PJT, van der Bolt, FJE, Dik, PE, Groenendijk, P, Querner, EP, Smit, MFR. 2007. SIMGRO 6.0.2, Theory and model implementation. Wageningen, Alterra. http://www.alterra.wur.nl/UK/research/Specialisation+water+and+climate/Integrated+Water+Management/SIMGRO/

- Wösten, JHM, Clymans, E, Page, SE, Rieley, JO, Limin, SH. 2008. Peat – water interrelationships in a tropical peatland ecosystem in Southeast Asia. Catena, 73: 212-224.

2.3 Interviews

Background information regarding the development of the proposed methodology and the hydrology of the areas for which the proposed methodology is applicable was provided by Sarah Walker during a conference call on October 19, 2011.

2.4 Use of VCS-Approved Expert

Dr. Carly Green, a VCS-approved AFOLU expert in the Peatland Rewetting and Conservation project category, provided the assessment team with specific expertise in peat science. Dr. Green was provided with a list of questions regarding the validity of the approach of the methodology. Dr. Green provided answers to these questions in writing and during a conference call.

2.5 Resolution of Any Material Discrepancy

Potential material discrepancies identified during the assessment process were resolved through the issuance of findings. The types of findings issued by SCS were characterized as follows:

Non-Conformity Reports (NCRs) were issued in response to material discrepancies in the proposed revision. A material discrepancy could be defined as one of the following:

- An instance of nonconformance to the guidance documents listed in Section 1.2 of this report;

- An instance where the language of the methodology element required clarification in order to avoid ambiguity;
- An instance where the proposed methodology lacked internal consistency; or
- An instance where formulae in the proposed revision were not consistent with mathematical convention.

An adequate response for each issued NCR, including evidence of corrective action, was required before an assessment opinion could be reached.

New Information Requests (NIRs) were issued to the client when more information was needed to determine whether a material discrepancy existed. Issuance of an NIR did not necessarily signify the presence of a material discrepancy. However, an adequate response to all issued NIRs was required before an assessment opinion could be reached.

Opportunities for Improvement (OFIs) were issued to the client when an opportunity for improvement in the proposed revision was identified. Such opportunities for improvement did not constitute material discrepancies. OFIs were considered resolved on issuance, and therefore a response to issued OFIs was not required before an assessment opinion could be reached.

All issued findings have been resolved. All issued findings are described in Appendix A of this report.

2.6 Internal Quality Control

Internal quality control was maintained in accordance with SCS' quality control system.

As an important component of this system, a single workbook (the Findings Presentation Workbook) was used for the issuance, tracking and closure (if applicable) of all findings issued. In addition to containing all of the information on the findings, the Findings Presentation Workbook contains client responses to the findings (if applicable) and allows for multiple iterations of client and assessor responses. Finally, the Findings Presentation Workbook contains the assessor's comments at the closure of every finding. Therefore, the workbook provides a transparent record of the identification and resolution of material discrepancies identified throughout the assessment process.

In addition, all methodology assessments performed by SCS are required to undergo an internal technical review by an independent party who was not involved with the assessment activity. From review of the methodology element, the draft assessment report, and the assessment findings, as documented in Appendix A of this report, the technical reviewer determined that the assessment was conducted according to the VCS rules and that the decision of the assessment team was justified.

3 ASSESSMENT FINDINGS

3.1 Applicability Conditions

An assessment of how each applicability condition is appropriate, adequate and in compliance with the VCS rules follows.

Applicability condition	Assessor comments
"To be eligible for VCS crediting…"	Appropriately restricts the geographic scope of the methodology.
"Baseline and with-project water levels are modeled…"	Clarifies that the methodology cannot be deemed applicable to projects for which SIMGRO does not produce valid results. Given the importance of SIMGRO in the GHG quantification procedures, this condition is appropriate.
"Mean annual water level below peat surface…"	Ensures that drainage depth remains within the range for which reliable emissions estimates exist, as insufficient data currently exists for the purpose of accurate prediction of CO_2 emissions at drainage depths greater than one meter.
"In order to be eligible for the development of…"	Enforces the requirement of Section 3.1.6 of the VCS AFOLU Requirements.
"Project activity must not convert a native ecosystem"	Enforces the requirement of Section 3.1.5 of the VCS AFOLU Requirements.
"The Watershed(s) of Interest that include…"	Places appropriate bounds on the potential for ecological leakage to occur.
"It must be demonstrated that the hydrology…"	Ensures that projects are appropriate Rewetting of Drained Peatland projects in accordance with Section 4.2.18(1) of the VCS AFOLU Requirements.
"The project activity cannot include the creation…"	Ensures that a failure to identify all waterways is always conservative, as discussed in Section 8.1.1.5.2.
"The project activity cannot include any…"	As the methodology does not contain procedures for accounting for change to the soil carbon pool due to agricultural activities, this condition appropriately removes the possibility of such activities.
"The project activity is carried out only in areas where…"	Ensures that project activities exceed legal requirements or incentives for rewetting.
"Peatland restoration occurs through technical means…"	A basic condition to ensure the applicability of the methodology.
"As a consequence of the project activity there is an increase…"	Helps to ensure that projects actually create a net GHG benefit.
"The project demonstrates a significant difference …"	Enforces the requirement of Section 4.5.27 of the VCS AFOLU Requirements.

"The project demonstrates that baseline conditions in the…"	Helps to ensures that emissions from the aboveground and belowground biomass pools do not result from rewetting of the Watershed(s) of Interest, and therefore this potential source of ecological leakage may be ignored.
"The project proponent must be able to demonstrate…"	Helps to ensure the permanence of the GHG emission reductions and removals.
"Baseline land use activities in the project boundary…"	Minimizes the potential for activity shifting and market leakage, such that the leakage accounting procedures employed by the methodology are appropriate.
"Baseline land use activities taking place…"	Minimizes the potential for activity shifting and market leakage, such that the leakage accounting procedures employed by the methodology are appropriate.
"Current and/or potential future land use activities…"	Assessor has no comments.
"Current and/or potential future land use activities…"	Minimizes the potential for activity shifting leakage, such that the leakage accounting procedures employed by the methodology are appropriate.
"Carbon pools and GHG sources that cause project…"	In accordance with Section 4.3.3 of the VCS AFOLU Requirements.
"The Watershed(s) of Interest does not…"	Negates the need to account for project and leakage emissions from use of N-based fertilizers.
"Baseline shall be renewed every 10 years…"	Enforces the requirement of Section 3.1.9 of the VCS AFOLU Requirements.

In summary, the applicability conditions are appropriate, adequate and in compliance with the VCS rules.

3.2 Project Boundary

The procedures for definition of the project's spatial boundary are appropriate. The methodology element requires that the project boundary encompass one or more complete watersheds, and specifies a procedure for determining the spatial extent of all watersheds included in the project boundary through the use of a digital terrain model. In addition, the methodology element requires that all land within the project boundary be demonstrated to sit on tropical peat, in conformance with the VCS AFOLU Requirements, Section 4.2.16, and the applicability conditions of Section 4 of the methodology element.

The methodology element's specification for the historic reference period, project crediting period, monitoring period duration, and period during which the baseline is valid are in accordance with the VCS rules.

The carbon pools included in the project boundary have been selected in accordance with the VCS rules, as described below.

Carbon pool	Included?	Assessor comments
Aboveground tree biomass	Yes	Required for inclusion by the VCS AFOLU Requirements, Section 4.3.1. As the applicability conditions require that "baseline conditions in the project area can be expected to result in equal or lower aboveground tree biomass compared to the project scenario", the pool can be conservatively excluded from accounting in accordance with Section 4.3.4.
Aboveground non-tree biomass	No	The VCS AFOLU Requirements, Section 4.3.1, indicates that this pool may be excluded from the project boundary for PRC projects.
Belowground biomass	No	The VCS AFOLU Requirements, Section 4.3.1, indicates that this pool may be excluded from the project boundary for PRC projects.
Litter	No	The VCS AFOLU Requirements, Section 4.3.1, indicates that this pool may be excluded from the project boundary for PRC projects.
Deadwood	No	The VCS AFOLU Requirements, Section 4.3.1, indicates that this pool may be excluded from the project boundary for PRC projects.
Soil	Yes	Required for inclusion by the VCS AFOLU Requirements, Section 4.3.1.
Wood Products	No	The VCS AFOLU Requirements, Section 4.3.1, indicates that this pool may be excluded from the project boundary for PRC projects.

The GHG sources included in the project boundary have been selected in accordance with the VCS rules, as described below.

Source		Gas	Included?	Assessor comments
Baseline	Peat oxidation	CO_2	Yes	See above table.
		N_2O	No	Required for inclusion within the project boundary by the VCS AFOLU Requirements, Section 4.3.24, but conservatively excluded from accounting in the baseline scenario in accordance with Section 4.3.4.
	Anaerobic decomposition	CH_4	No	Required for inclusion within the project boundary by the VCS AFOLU Requirements, Section 4.3.23, but conservatively excluded from accounting in the baseline scenario in accordance with Section 4.3.4.
Project	Peat oxidation	CO_2	Yes	See above table.

		N_2O	Yes	Required for inclusion within the project boundary by the VCS AFOLU Requirements, Section 4.3.24.
	Anaerobic decomposition	CH_4	Yes	Required for inclusion within the project boundary by the VCS AFOLU Requirements, Section 4.3.23.

In summary, the procedures for the definition of the project's physical boundary and sources and types of GHGs included are appropriate, adequate and in compliance with the VCS rules.

3.3 Procedure for Determining the Baseline Scenario

The methodology element uses a project method for identifying the baseline scenario. The procedure for determining the baseline scenario requires that the most current version of the VCS Tool "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" be used to identify potential alternative land use scenarios. The methodology then contains a stepwise procedure for identifying the most plausible baseline scenario. While this procedure is essentially a reiteration of the relevant applicability criteria from Section 4 of the methodology element, it is sufficient to satisfy the requirement of the VCS additionality tool that "The baseline methodology that would use this tool shall provide for a stepwise approach justifying the selection and determination of the most plausible baseline scenario" (Section 2.1.3).

In conformance with Section 4.4.11 of the VCS AFOLU Requirements, the methodology element requires that potential non-human rewetting, the current and historic layout of the drainage system, the long-term average climate variables influencing water levels prior to project start, and progressive subsidence are accounted for in determining the baseline. Although the criteria and procedures in Section 6 do not take these factors into account, they are directly accounted for in Section 8.1 of the methodology element. Section 8.1.1.5 of the methodology element contains procedures to account for the current and historic layout of the drainage system, as well as the potential for non-human rewetting, in determining the baseline scenario. Section 8.1.1.4 of the methodology element contains procedures to account for the long-term average climate variables influencing water levels prior to project start. Section 8.1.1.3 contains procedures to account for progressive subsidence when determining the baseline at each verification event. These procedures require that the above factors be considered to a far greater degree of specificity in the identification of alternative baseline scenarios than is required by Section 4.4.11 of the VCS AFOLU Requirements, and therefore they are considered to meet, and exceed, the requirements of that section even though they appear in Section 8, rather than Section 6, of the methodology element.

In summary, the procedures for determining the baseline scenario are appropriate, adequate and in compliance with the VCS rules.

3.4 Procedure for Demonstrating Additionality

The methodology element uses a project method for the demonstration of additionality. The procedure for demonstrating additionality requires that the most current version of the VCS Tool "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities, v3.0" be used to demonstrate additionality. The tool is appropriately referenced in this context, and its use is in conformance with the Section 4.6.2 of the VCS Standard, which states that "Methodologies shall use a project method, performance method and/or activity method

to determine additionality... New methodologies developed under the VCS shall meet this requirement by doing one of the following: Referencing and requiring the use of an appropriate additionality tool that has been approved under the VCS or an approved GHG program."

In summary, the procedures and/or tools for demonstrating additionality are appropriate, adequate and in compliance with the VCS rules.

3.5 Baseline Emissions

Baseline emissions are calculated through the use of several distinct procedures, as follows.

First, a land cover map is generated for the project area (Section 8.1.1.1). The procedure for this is adequately set out and in accordance with common remote sensing practice.

Secondly, a digital terrain model (DTM) is created for the project area (Section 8.1.1.2). The methodology element allows the DTM to be created through the use of either LiDAR data or radar data. Where LiDAR data are used, the methodology element does not require wall-to-wall LiDAR coverage, but rather allows the collection of LiDAR data in discrete transects, with height data from those transects imputed to areas that contain no data through the use of mathematical modelling. The reduced coverage requirements have been adequately justified by the methodology developer on the basis that ombrogenous peat domes typically have very smooth and predictable topography. Nonetheless, the methodology element does contain technical specifications that ensure that the LiDAR data that are collected are in conformance with the accuracy requirements of the VCS program.

For those users opting to create a DTM through the use of radar data, the methodology element contains reasonable procedures that can be implemented for this purpose. These procedures involve collection of radar data to produce a Digital Surface Model (DSM), collection of field measurements of average vegetation height, and subtraction of average vegetation height from the DSM to produce a DTM. This methodology was implemented by Jaenicke et al. (2008; see Section 2.8 of this report for full reference) to estimate the amount of carbon stored in Indonesian peatlands, and may be feasible across large areas. However, it is the opinion of the assessor that this method may lead to a considerable reduction in accuracy of the DTM in comparison to the LiDAR method described previously. However, both radar- and LiDAR-derived DTMs are subject to an accuracy assessment, as described in the next paragraph, that should be sufficiently rigorous to ensure that any DTM produced is of reasonable quality.

The methodology element requires that the accuracy of the DTM be assessed through the use of field elevation measurements that are taken to a high degree of accuracy. Where the accuracy requirements cannot be met, the methodology element contains a procedure for offsetting the data collection point appropriately. Alternatively, where radar data are used to produce the DTM, the DTM can be assessed using LiDAR data, provided that the accuracy of the LiDAR data is independently assessed. The criteria and procedures for assessing the accuracy of the DTM are sufficiently rigorous to ensure a degree of accuracy in the DTM that is reasonable, given the intended purpose.

Once the DTM is created, a peat thickness model is produced through the use of drilling data obtained in the field (Section 8.1.1.3). If drilling locations are established on a systematic grid, a peat thickness model can be produced through direct spatial interpolation. If some areas are "highly inacessible", the methodology element permits peat thickness for these areas to be interpolated using the DTM, and

establishes an appropriate procedure for such. This procedure is similar to that used by Jaenicke et al. (2008) for the same purpose. Finally, the methodology establishes a procedure for an independent accuracy assessment of the peat thickness model.

Section 8.1.1.4 contains criteria and procedures for the collection of precipitation data, and establishes a default value for transpiration.

Section 8.1.1.5 contains criteria and procedures for the delineation and ground truthing (described as "field verification" by the methodology) of waterways. By requiring ground truthing of all identified waterways, these procedures and criteria ensure that all identified waterways are actually verified to exist, thus eliminating the possibility that baseline emissions are estimated on the basis of waterways that do not actually exist. As stated by the methodology element, failure to identify any waterway within the project boundary can be expected, in the vast majority of cases, to result in an underestimate of the baseline emissions and, thus, an underestimate in the quantified emission reductions and removals. Therefore, failure to identify all waterways in the project area is conservative. In addition to identification and ground-truthing of waterways, the user is required to characterize a sample of identified waterways in order to estimate the overall percentage of damming of waterways that could be expected to occur naturally in the baseline scenario. The assessor received communication from Henk Wosten, a recognized expert in tropical peatlands, indicating that he agreed that the approach taken by the methodology element is "sufficiently accurate and conservative to adequately model water levels without overestimating emission reductions generated by rewetting drained peatlands".

Section 8.1.1.6 requires that the SIMGRO model be validated for the project area through the measurement of water level at a sample of points within the project area. As established in Section 4 of the methodology element, the methodology element cannot be used unless SIMGRO meets the accuracy requirements set by the methodology element. This serves as yet another check to ensure that the emission reductions and removals are quantified as accurately as possible.

Next, the user is required to stratify the project area by peat depletion time (Section 8.1.2), using the peat thickness model produced in Section 8.1.1.3, in conformance with Section 4.5.24 of the VCS AFOLU Requirements. The criteria and procedures for quantification of the peat depletion time assume a default value that is discussed in Section 3.10 of this report. The peat depletion time is required to be reassessed at the time of baseline reassessment, in accordance with Section 4.5.24 of the VCS AFOLU Requirements. As set out in Section 8.1 of the methodology element, no baseline emissions are quantified for a given stratum once the peat depletion time for that stratum has been reached.

Sections 8.1.3 and 8.1.4 provide criteria and procedures for the ex ante estimation of baseline water levels, and baseline emissions, over the crediting period and over 100 years. Because the aboveground tree biomass carbon pool is conservatively excluded from accounting (see Section 3.2 of this report for a discussion), the only emissions quantified in the baseline scenario are those due to peat oxidation. The methodology element quantifies these emissions as a function of drainage depth and an assumed default value that is discussed in Section 3.10 of this report, correcting appropriately for subsidence (in conformance to Section 4.4.11(2)) using the default subsidence value discussed earlier.

In summary, all criteria and procedures described in this section are clear, complete and conservative. The procedures for calculating baseline emissions are appropriate, adequate and in compliance with the VCS rules.

3.6 Project Emissions

The procedures for calculating project emissions are very similar to those for calculating baseline emissions. However, the following differences hold:

- In the project scenario, emissions may occur from peat oxidation throughout the crediting period, as the concept of peat depletion time does not apply.
- Waterway damming measures that are implemented in the project scenario are modeled in the SIMGRO model for ex post and ex ante estimation of project water levels.
- CH_4 and N_2O emissions in the project scenario are estimated using default values that are described in Section 3.10 of this report.

As with the criteria and procedures for baseline emissions, all criteria and procedures in Section 8.2 of the methodology element are clear, complete and conservative. In summary, the procedures for calculating project emissions are appropriate, adequate and in compliance with the VCS rules.

3.7 Leakage

The procedures for calculating the three types of leakage as defined by the VCS rules are discussed below.

According to the VCS AFOLU Requirements, Section 4.6.20, the accounting requirements for market leakage in REDD projects have been applied. As Section 4 of the methodology element indicates that baseline land use activities cannot include deforestation or planned forest degradation, the only baseline activity that supplies timber markets is illegal (unplanned) harvest. The VCS AFOLU Requirements, Section 4.6.16 indicates that "Where the project baseline includes illegal logging activities that supply regional, national and/or global timber markets, domestic market leakage shall be quantified using the market leakage discount factors for IFM projects set out in Sections 4.6.13 and 4.6.14. The market leakage effects associated with stopping illegal logging need not be considered where GHG emissions are not included in the baseline and GHG credits from stopping such activities are not claimed." As GHG emissions from illegal logging are not included in the baseline and GHG credits from stopping such activities are not claimed, the market leakage effects associated with stopping illegal logging need not be considered by the methodology element, and market leakage can be assumed to be 0.

According to the VCS AFOLU Requirements, Section 4.6.20, the accounting requirements for activity shifting leakage in REDD projects have been applied. As Section 4 of the methodology element indicates that baseline land use activities cannot include deforestation or planned forest degradation, no activity shifting leakage of this type can occur and it is not required that the methodology contain procedures to quantify such emissions. However, baseline land use activities can include illegal timber harvest, and therefore Section 8.3 of the methodology contains adequate procedures for quantifying emissions due to activity shifting leakage associated with stopping illegal timber harvest. These procedures require that a participatory rural appraisal (PRA) be conducted periodically to determine the potential for illegal timber harvest in and around the project area under the project or baseline scenarios. If the PRA results indicate potential for activity shifting leakage, such leakage is quantified by under the assumption that a certain volume of timber is available for extraction, that such timber has a certain average wood density, and that

a certain factor can be used to estimate the carbon stock loss associated with the removal of that volume. The default values suggested for use in this analysis are discussed in Section 3.10 of this report.

In addition, the methodology contains adequate procedures to account for ecological leakage in accordance with the requirements of the VCS AFOLU Requirements, Section 4.6.21. Because the project activity may lead to higher water levels outside the project boundary, as discussed in Section 3.1 of this report, Section 8.3 of the methodology contains procedures to account for the GHG emissions attributable to the project activity. This is done by multiplying all areas outside of the project area(s), but inside the watersheds that comprise the project area(s) (termed "Excluded Area of Watershed(s) within the methodology), by a factor that conservatively accounts for methane emissions in these areas. The methodology developer produced expert testimony from Dr. Henk Wösten, an internationally recognized peat expert, that indicated that methane emissions constituted the only significant source of emissions from such leakage, and this testimony was found to be acceptable to the assessment team.

In summary, the procedures for calculating leakage are appropriate, adequate and in compliance with the VCS rules.

3.8 Quantification of Net GHG Emission Reductions and/or Removals

The procedures for calculating the net GHG benefit of the project conform to Sections 4.7.1 and 4.7.2 of the VCS AFOLU Requirements. In accordance with Section 4.1.4 of the VCS Standard, the methodology element accounts for uncertainty by estimating a 95% confidence interval. Where this interval exceeds 30%, an appropriate deduction is made for uncertainty. In the context of the methodology element, uncertainty is calculated based on the uncertainty of the SIMGRO-derived estimates for water level, as quantified in comparison with measured water levels. The approach taken is reasonable, as the uncertainty in the SIMGRO-derived estimates may be a primary cause of uncertainty in the quantified GHG emission reductions and removals. Uncertainty in the peat thickness model is accounted for directly in Section 8.1.3 of the methodology element.

In accordance with Section 4.5.27 of the VCS AFOLU Requirements, the methodology element requires that the project demonstrate that a significant quantity of total net GHG emission reductions will be produced over 100 years. As set out in Section 4 of the methodology element, projects that cannot demonstrate such are not permitted to use the methodology.

In summary, the procedures for calculating the net GHG benefit of the project are appropriate, adequate and in compliance with the VCS rules.

3.9 Monitoring

The methodology element requires monitoring of the following:

- Precipitation, which is monitored on a daily basis. The methodology element contains criteria for selection of an appropriate climate station.

- The location and condition of all established dams. The methodology element requires that all established dams be monitored on a yearly basis, and that dams that are compromised be repaired or removed from within the SIMGRO model.

- Water levels within the project area. The methodology contains criteria and procedures for ongoing assessment of the accuracy of the SIMGRO model, which are similar to those set out by the methodology element for assessment of the accuracy of the SIMGRO model at the project start.

- The project boundary, to confirm that the project proponent maintains control over the entire project area and that any dams that are constructed are located within the project boundary.

Ex post procedures for quantification of project and baseline emissions are identical to the ex ante procedures except that N_2O emissions are only quantified for areas that have not been rewetted.

In summary, the monitoring procedures are appropriate, adequate and in compliance with the VCS rules.

3.10 Data and Parameters

The specification for monitored and not monitored data and parameters are set out in Sections 9.1 and 9.2 of the methodology element. For data and parameters that require measurement, the methodology element provides appropriate procedures for measurements. The assessment team's comments on the more crucial default values provided by the methodology element are as follows:

Parameter	Description	Assessment team comments
S_p	Peat subsidence rate	The methodology element suggests a default subsidence rate of 4.5 centimeters per year, which generally appears to be a conservatively high value according to the research of Couwenberg et al. (2009) and Wosten et al. (1997). However, the methodology element states that "an alternative rate may be used as justified as conservative and supported by scientific literature."
EF_{peat}	t CO_2 ha^{-1} yr^{-1} m^{-1} of water level relative to the peat surface	The methodology element suggests a default emission factor of 91. As is documented in NIR 2011.28 in Appendix A, the methodology developer justified that this factor was based on the best available knowledge at this time. However, the methodology element states that "an alternative emission factor may be used as justified as conservative and supported by scientific literature."
EF_{CH4}	Emission factor for CH_4 in rewetted peatlands.	The methodology element suggests a default value of 1.26, which is the "highest emission coefficient for rewetted organic soil covered by forest in tropical conditions mentioned by the IPCC Good Practice Guidance for LULUCF". The

		value has been appropriately sourced from the referenced document, which states the following: "According to literature, the CH4 source by rewetting organic soil covered by forest is estimated in a first approximation in a range of 0 to 60 kg CH4 ha-1 yr-1 in temperate and boreal climate, and 280 to 1260 kg CH4 ha-1 yr-1 in tropical conditions (Bartlett and Harriss 1993)." (IPCC 2003, page 3.273). On this basis, the assessment team agrees that the value is an appropriately conservative default value. Alternatively, the methodology element states that another emission factor may be used "if available from published and peer-reviewed research for ombrogenous tropical peatlands".
EF_{N2O}	Emission factor for N_2O in rewetted peatlands.	The methodology element suggests a default value of 0.008, which is the "highest emission coefficient for rewetted organic soil covered by forest in tropical conditions mentioned by the IPCC Good Practice Guidance for LULUCF". The value has been sourced from the referenced document (IPCC 2003, page 3.275), although it is not necessarily clear that the value is indisputably conservative. Alternatively, the methodology element states that another emission factor may be used "if available from published and peer-reviewed research for ombrogenous tropical peatlands".
Evapotranspiration	Evapotranspiration	The methodology allows a default value of 3.5 mm per day. The methodology developer's justification for the use of this default value is acceptable, and is documented in NCR 2011.31 of Appendix A.
V_{EXT}	The volume of timber assumed to be extracted from tropical peatland forest.	The methodology element permits a default value of 31 m^3 per ha to be used in place of project-specific data. While the actual volume of timber available for extraction in the project area may be different from this default, it is likely to be a conservative value in most cases, as it is not likely that all timber available for removal actually would be removed by illegal logging.

CF	Carbon fraction of biomass	The methodology element requires a default value of 0.47 t C t-1 d.m., which conforms to IPCC common practice.
LDF	Logging damage factor	The methodology element permits a default value of 0.67 t C m^{-3}, which is derived from "the slope of the regression equation between carbon damaged and volume extracted based on 774 logging gaps measured by Winrock International in Bolivia, Belize, the Republic of Congo, Brazil, and Indonesia (Annex I)." While this is a broad average across many studies that may not directly correspond to the logging damage factor that would be most appropriate for the project area, it will still likely lead to conservative estimates of activity shifting leakage, for the same reason discussed for parameter V_{EXT} above.
D	Average wood density of tropical peatland forest	The mandated default value of 0.57 is a reasonable average value to use for the given context, which will likely result in conservative estimates for the reasons discussed above.

In summary, the specification for monitored and not monitored data and parameters is appropriate, adequate and in compliance with the VCS rules.

3.11 Use of Tools/Modules

The following tools are referenced by the methodology element:

The tool "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" is referenced by the methodology element for the determination of additionality. The usage of that tool is discussed in Sections 3.3 and 3.4 of this report.

The tool "Tool for testing significance of GHG emissions in A/R CDM project activities" is not referenced, although not mandated, for the determination of whether carbon pools and GHG sources that cause project and/or leakage emissions may be deemed de minimis in Section 4 of the methodology element. The use of this tool in this context is explicitly suggested by Section 4.3.3 of the VCS AFOLU Requirements, and can therefore be assumed to be appropriate for the stated use.

In summary, the use of the referenced tools is appropriate, adequate and in compliance with the VCS rules.

3.12 Adherence to the Project Principles of the VCS Program

The methodology element adheres to the VCS Program principles set out in the VCS Standard, as described below for each principle.

The methodology element adheres to the principle of relevance by selecting the GHG sources, GHG sinks, GHG reservoirs, data and methodologies appropriate to the needs of the VCS program.

The methodology element adheres to the principle of completeness by including all relevant GHG emissions and removals, and including all relevant information to support criteria and procedures.

The methodology element adheres to the principle of consistency by enabling meaningful comparisons in GHG-related information.

The methodology element adheres to the principle of accuracy by reducing bias and uncertainties as far as is practical.

The methodology element adheres to the principle of transparency by disclosing sufficient and appropriate GHG-related information (i.e. providing sufficient and appropriate justification of procedures and criteria) to allow intended users to make decisions with reasonable confidence.

The methodology element adheres to the principle of conservativeness by using conservative assumptions, values and procedures to ensure that net GHG emission reductions or removals are not overestimated.

3.13 Relationship to Approved or Pending Methodologies

As of the date of release of this report to the client in accordance with Section 3.4.3 of the VCS Methodology Approval Process, no methodologies have been approved by the VCSA for use by Rewetting of Drained Peatland projects. However, another methodology currently in the double approval process, entitled “Baseline and Monitoring Methodology for the Rewetting of Drained Peatlands used for Peat Extraction, Forestry or Agriculture”, also falls within the Rewetting of Drained Peatland activity type.

Several substantive differences exist between the two pending methodologies. The geographic scope of the methodology element is restricted to ombrogenous tropical peatlands occurring at less than 100m above sea level within Southeast Asia. The geographic scope of the “Baseline and Monitoring Methodology for the Rewetting of Drained Peatlands used for Peat Extraction, Forestry or Agriculture” methodology is restricted to temperate climatic regions. Furthermore, the quantification approaches taken by the two pending methodologies are quite distinct, and it is unclear whether the quantification approach taken by the “Baseline and Monitoring Methodology for the Rewetting of Drained Peatlands used for Peat Extraction, Forestry or Agriculture” could be reasonably applied to ombrogenous tropical peatlands in Southeast Asia. This is especially doubtful as a footnote in Section 4 of the version of that methodology that was submitted for public comment states “The GEST approach has, so far, only been developed for temperate climates.”

In summary, no existing or pending methodology could reasonably be revised to serve the same purpose as the methodology element.

3.14 Stakeholder Comments

The following table indicates the public comments were received during the public comment period, as well as the methodology developer's response and the assessor's description of how the methodology developer has taken due account of such comments.

No.	Commenter	Comment	Developer Response	Reviewer Response
1	Peter Schlesinger, Carbon Decisions International	The method doesn't take into consideration, and therefore monitor, any potential impacts of natural disaster or accidental fire. Canopy height measurement is faulty, p. 13. Says SRTM DSM to be analyzed with remote sensing image with same time range as SRTM +/- 6 months, yet SRTM was created in Feb. 2000. Also the profile spacing for the interpolation of a suitable terrain model is suggested to be just under 5 km; this seems much too far to me to be adequate.	Accounting and therefore monitoring of the impacts of natural disasters or accidental fire is implicit in the requirements of the VCS AFOLU Non-Permanence Risk Tool that sets out the procedure for conducting non-permanence risk analysis and buffer determination for AFOLU projects. Therefore the comment is not significant. The requirements for the date of the SRTM creation have been modified to remove the timeframe requirements. The profile spacing for interpolation of the DTM needs to be adjusted most importantly to the size of the project area and homogeneity of the terrain. Ombrogenous peatlands, although dome shaped, are relatively flat with very small elevation changes from the highest point in the dome to the edges of the dome. Nonetheless, although 5 km is the maximum acceptable threshold, the methodology states "Spacing must be adjusted to terrain heterogeneity, i.e. the	The methodology does not permit GHG crediting on the basis of avoided fire-related emissions, and therefore there is no need to monitor for potential emissions from the project scenario. Given the quantity of emissions that are produced from peat fires in Southeast Asia on an annual basis, the decision on the part of the methodology developer not to permit crediting of avoided fire-related emissions is indisputably conservative. The same applies for monitoring of other natural disasters. As the statement "Canopy height measurement is faulty, p. 13" is not adequate to allow the assessor to identify the discrepancy that

			number of profiles must be increased with increasing complexity."	was identified, the comment the methodology developer could not be expected to take due account of the comment. The discrepancy relating to the date of SRTM creation has been adequately addressed by the methodology developer. The methodology developer adequately demonstrated the insignificance of the last comment made, as is documented in NCR 2011.68, Appendix A.
2	Igino Emmer, Silvestrum; John Couwenbert, Greifswald University	No applicability conditions are formulated for land use in the baseline or project scenario. The type of land use will affect the choice of pools to be included, however. The assumption that ABG tree biomass will always be lower in the BSL than in the WPS as well as the assumption that HWPs can conservatively be omitted, are dependent on land use. The methodology should include applicability conditions to address the type of land use	The following applicability condition has been added to the methodology: The project demonstrates that baseline conditions in the project area can be expected to result in equal or lower aboveground tree biomass compared to the project scenario. Therefore, under the applicability condition, it is conservative to assume that change in aboveground	The methodology developer has taken due account of the comment. With respect to the comment pertaining to harvested wood products, the assessment team notes that the Section 4.3.1 of the VCS AFOLU Requirements does not require harvested wood products to be considered within

		and (in general) provide criteria to judge applicability.	biomass is zero in the baseline and project case. Under the applicability condition "Baseline land use activities taking place within project boundary will not be displaced by project activities" HWP stocks would not be expected to be lower in the project case compared to the baseline as a result of project activities, therefore it is conservative to omit HWP.	the project boundary for PRC projects.
	Igino Emmer, Silvestrum; John Couwenbert, Greifswald University	The modeling of water level can be done using other tools than SIMGRO. The methodology should establish parameters and equations for forecasts of water levels. The methodology should allow other tools than SIMGRO for the required calculations.	Although modeling of water levels can be done using other tools than SIMGRO, the methodology cannot be required to allow other tools for the required calculations or include non-modeling approaches such as "parameters and equations for forecasts of water levels."	The assessment team agrees that the methodology cannot be required to allow the use of models other than SIMGRO. If other models are also acceptable for the modeling task, the option is always open for a future revision to expand the scope of the methodology to include the use of additional models.
	Igino Emmer, Silvestrum; John Couwenbert, Greifswald University	There is no justification in the methodology or the literature that SIMGRO can be applied to tropical peats. The absence of the calibration results challenges the review of the methodology. Will public review be reopened once this material is available? No justification or monitoring of hydrological input parameters (notably hydraulic conductivities) is required by the methodology. These input parameters seriously affect the	SIMGRO has been used to model water levels in tropical peatlands in a peer-reviewed publication: Wosten, JHM, Clymans, E, Page, SE, Rieley, JO, Limin, SH. 2008. Peat-water interrelationships in a tropical peatland ecosystem in Southeast Asia. *Catena* 73: 212 – 224.	This comment has been adequately responded to. The assessment team reviewed the literature cited by the methodology developer and agrees that the applicability of SIMGRO, and the suggested default hydraulic input parameters, within

		outcome of the modeling, however.	Furthermore the methodology provides guidance on validation of the SIMGRO model to determine whether SIMGRO is adequate for modeling water levels in the project area Therefore the comment that there is no justification in the methodology or the literature that SIMGRO can be applied to tropical peats is not valid. We cannot comment on whether the public review will be reopened. Hydraulic input parameters for SIMGRO provided by the methodology have been calibrated for peatlands in Southeast Asia: Jaenick, J, Wosten H, Budiman, A, Seigert, F. 2010. Planning hydrologic restoration of peatlands in Indonesia to mitigate carbon dioxide emissions. *Mitigation and Adaptation Strategies for Global Change* 15: 223 – 239. Therefore the comment that there is no justification of these parameters is not valid. As these parameters are provided as defaults by the methodology, monitoring is not required.	the context of the methodology element has been adequately established. In addition, the assessment team notes that the methodology element requires the water level predictions made by SIMGRO to be assessed at project start and on an ongoing basis.

4 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS

Please see Appendix A for a record of the findings issued, responses by the methodology developer and the assessment team, and justification for resolution of all findings.

5 ASSESSMENT CONCLUSION

The assessment team concludes that the methodology element is in full compliance with the assessment criteria as described in Section 1.2 of this report. The assessment team strongly recommends that the VCSA approve the methodology element.

6 REPORT RECONCILIATION

Several substantive changes were made to the methodology element following issuance of Version 1.0 of the assessment report. The findings of the assessment team with respect to each of these changes are as follows. Full citations of the peer-reviewed articles cited in this section can be found in Section 10 of the methodology element. For purposes of this section, the version of the methodology element approved by Version 1.0 of the assessment report is denoted “version A”, and the version of the methodology element approved by this version of the assessment report is denoted “version B”.

6.1 Methane and Nitrous Oxide Emissions Not Accounted For

While version A contained procedures to account for emissions of methane and nitrous oxide (see Section 3.10 above), such procedures have been removed from version B. The findings of the audit team are as follows.

- **Methane emissions**. The assessment team was provided with an analysis demonstrating conclusively methane emissions are de minimis (and, thus, may be excluded in accordance with Section 4.3.23 of the AFOLU Requirements V3.4). The analysis relied on values sourced appropriately from Rieley et al. (2008) and was correctly carried out. As further evidence that such emissions are de minimis, the assessment team carried out the same analysis using values sourced from Jauhianen et al. (2012). Using both sets of values, the contribution of methane was far less than 5% of total emissions in both drained and undrained forests; the contribution was also far less than 5% of hypothetical emissions reductions (taking the methane emission from the undrained forest as a percentage of the difference between total emissions in the drained and undrained forests). Thus, the assessment team agrees that this emission source may be deemed de minimis, in accordance with Section 4.3.23, both as a source of emissions within the project boundary and as a source of ecological leakage outside the project boundary.

- **Nitrous oxide emissions**. The assessment team was provided with a detailed justification for the assertion that such emissions will always be greater in the baseline scenario than in the project scenario in any situation compliant with the applicability conditions of the methodology (and, therefore, the assertion that such emissions may be conservatively excluded in accordance with Section 4.3.24 of the AFOLU Requirements V3.4). The main points of this justification were as follows.

1. Some uncertainty exists in the literature regarding the nature of nitrous oxide emissions from tropical peat soils. Page 1338 of Jauhianen et al. 2012 states the following: "Maximum emissions of N2O are typical when intermediate conditions between aerobic and anaerobic states in soil prevail (Davidson et al., 2000). The source of N2O often remains uncertain because denitrification and nitrification processes can occur simultaneously in the same soil aggregate (Davidson et al., 1986)". However, it was indicated to the assessment team that "N2O emissions would nevertheless be higher in the baseline scenario than in the project scenario, as these intermediate conditions are more frequent and intense under a drained condition, then under an undrained or less drained condition. The blocking of drainage canals will lead to higher water levels during the dry season than in the baseline condition, and therefore decrease the amplitude of the water level fluctuations over the year. Consequently, the intermediate conditions between aerobic and anaerobic conditions are reduced."

2. The assessment team was provided with a report edited by Hans Joosten and others, entitled "Peatlands - guidance for climate change mitigation through conservation, rehabilitation and sustainable use" and published jointly by the Food and Agriculture Organization of the United Nations and Wetlands International, which clearly indicates that such emissions can be expected to be higher in the baseline scenario. The report states the following: "The rewetting of drained peatland involves the partial or entire reversal of former anthropogenic drainage by elevating the average annual water table. The aim is to achieve permanent water saturation of the entire peat body by raising the water table to close to or above the peat surface and by reducing the amplitude of water level fluctuations [page 14]… N2O is formed in peatlands when inorganic nitrogen is made available through peat decomposition (mineralization), through fertilizer application or through nitrogen deposition. N2O emissions are associated with lowered water tables [page 37 box 9]… peatland rewetting reduces the emissions from drained peatland. CO2 and N2O emissions strongly decrease [page 37 box 9], (…)". Given the qualifications of the lead editor (ascertained through an internet search) and the fact that the report was published by two reputable entities, the assessment team agrees that the report serves as appropriate evidence for the conservative exclusion of nitrous oxide emissions.

The assessment team agrees that the exclusion of methane and nitrous oxide emissions from the project boundary is appropriate and in conformance with the assessment criteria.

6.2 Different Emission Factor Suggested for Carbon Dioxide Emissions

While version A suggested a default value of 91 t CO_2 ha^{-1} yr^{-1} m^{-1} of water level relative to the peat surface, as sourced from Hooijer et al. (2010), version B suggests a default value of 98 t CO_2 ha^{-1} yr^{-1} m^{-1}, which is sourced from Hooijer et al. (2010). The value from Hooijer et al. (2012) was constructed from a meta-analysis of prior studies which specifically excluded "forest and improductive degraded peatlands" and "sites where average water depth is reported to be within 0.3 m". Hooijer et al. (2012) specifically attempted to investigate "in detail the parameters involved in subsidence and carbon loss from tropical peatlands, aiming to reduce uncertainties by better quantifying the oxidation component", and the study (which was not published until a few months prior to submission of Version 1.0 of the assessment report) appears to utilize best available monitoring practices to increase the accuracy of the estimates. Therefore, the assessment team agrees that Hooijer et al. (2012) represents the best currently available

research on this topic area. Hooijer et al. (2012) present several different equations for estimation of carbon dioxide emissions, but the equation related to the default factor suggested by the methodology was the most conservative (i.e., resulted in the lowest emissions) up to a drainage depth of one meter. Therefore, the assessment team agrees that the default factor suggested in version B has been appropriately and conservatively sourced, even though it is somewhat higher than the default factor suggested in version A. The assessment team agrees that the emission factor described above is appropriate, adequate and in conformance with the assessment criteria.

6.3 Change in Allowable RMSE and ME Thresholds

Version B contains, in several sections, higher threshold values (i.e., maximum allowed values) for root mean square error (RMSE) and mean error (ME) values than did version A. The assessment team has been provided with a justification to the effect that the threshold values in version A were so low as to be unworkable, and that the procedures to account for uncertainty will ensure a conservative result even if uncertainty exceeds the threshold values set out in version A. The assessment team did not request or require the particular threshold values that were contained within version A of the methodology, and agrees that the change in values has been appropriately justified and that the values contained within version B are appropriate to ensure a minimum accuracy in the data used for quantification of GHG emission reductions. The assessment team agrees that the allowable RMSE and ME thresholds as set out in version B are appropriate, adequate and in conformance with the assessment criteria.

6.4 Peat Depletion Time Extended to Project Scenario

Version A stated that “It is conservatively assumed that subsidence due to peat drainage does not take place under the project scenario”. However, version B contains procedures to ensure that emissions from a given grid cell in the project scenario are not quantified for a period of time longer than the peat depletion time; the peat depletion time in the project scenario is calculated using the same procedures used to calculate the peat depletion time in the baseline scenario. While particular assumption that “subsidence due to peat drainage does not take place under the project scenario” is indisputably conservative within the context of the methodology element, the assessment team agrees that the modification made within version B is appropriate. It is logical, as there is no reason to expect the concept of peat depletion time to function any differently with respect to the project scenario. It is also consistent with the principle of consistency, as set out in Section 2.4.1 of the VCS Standard. Finally, it does not violate the principle of conservativeness, as set out in Section 2.4.1 of the VCS Standard, because it could only result in a non-conservative outcome in the highly unlikely case that drainage depth within a given grid cell is lower in the project scenario than in the baseline scenario (in which case no GHG emission reductions could be claimed for that grid cell anyway). The assessment team agrees that the extension of the peat depletion time to the project scenario is appropriate and in conformance with the assessment criteria.

6.5 Leakage Procedures Removed

While version A contained procedures to account for activity shifting leakage and ecological leakage, such procedures have been removed from version B. The assessment team agrees that accounting for leakage from shifting of illegal logging not necessary, as such logging primarily impacts the aboveground biomass carbon pool and the methodology element does not contain procedures for quantification of GHG emission reductions from this pool. The assessment team was provided with evidence that this

judgment was supported by VCSA personnel through the submission of written comments regarding the methodology. The assessment team also agrees that the removal of procedures to account for ecological leakage is appropriate, given the findings discussed in Section 6.1 above. The assessment team agrees that the procedures for quantification of leakage area appropriate, adequate and in conformance with the assessment criteria.

6.6 Project-Specific Subsidence Rate

Version A indicated that the value of 4.5 centimeters per year "or most recently published applicable rate" should be used for the peat subsidence rate, as used in Sections 8.1.1.3, 8.1.2 and 9.3.4. This value was not necessarily the most accurate in all circumstances, but was approved by the assessment team as a conservatively high value, as it was one of the highest values (if not the highest value) recorded with respect to drained peat swamps in Southeast Asia. (The predominate impact of the subsidence rate on the quantification of GHG emission reductions is to decrease the peat depletion time and, thus, lower the amount of time over which baseline emissions are quantified. Thus, a higher value is generally more conservative and therefore compliant with the principle of conservativeness, as set out in Section 2.4.1 of the VCS Standard.)

In contrast, version B does not suggest or require a specific rate, but rather states the following in Section 8.1.2: "Subsidence rates under drained conditions are differing and are dependent on conditions at the project site in regards to land-use history, water table, current land cover, fire history, microtopography and several other factors. As the subsidence rate under drained conditions is strictly dependent on the conditions at the project site, a value for subsidence rate must be used by the project proponent, which meets the VCS requirements with respect to the selection of appropriate default factors." The assessment team agrees, based on a review of the relevant literature, that subsidence rates do differ based on the factors set out in the methodology. Therefore, the assessment team agrees that, unless an unequivocally conservative (i.e., high) value is to be required by the methodology (as was the case with respect to version A), it is appropriate for a subsidence rate to be selected and justified on a project-specific basis. Section 4.5.6 of the VCS Standard V3.4 (as accessed through Sections 3.1.5 and 4.1.7(1) of that document) contain appropriate criteria for selection of said value.

Therefore, the audit team agrees that the guidance regarding selection of the subsidence rate, as set out in version B, is appropriate, adequate and in conformance with the assessment criteria.

6.7 Applicability Conditions Modified

Substantive changes were made to the applicability conditions of the methodology. All of the changes appear appropriate to the assessment team. The assessment team was provided with evidence changes to the applicability conditions was requested, in some cases, by VCSA personnel through the submission of written comments regarding the methodology. The assessment team agrees that the applicability conditions in version B are appropriate, adequate and in conformance with the assessment criteria.

7 EVIDENCE OF FULFILMENT OF VVB ELIGIBILITY REQUIREMENTS

The following evidence of fulfillment of SCS' eligibility requirements is presented in accordance with Section 4.2 of the VCS Methodology Approval Process.

SCS has completed ten project validations under sectoral scope 14 (AFOLU). A summary of the first ten project validations performed by SCS is as follows:

Project and Project ID	Date validation report issued	Date project registered	Name of GHG program under which project registered
INFAPRO Rehabilitation of logged-over dipterocarp forest in Sabah, Malaysia (672)	8/31/2011	9/2/2011	Verified Carbon Standard
Natural High Forest Rehabilitation Project on degraded land of Kibale National Park (673)	9/6/2011	9/6/2011	Verified Carbon Standard
Protection of a Tasmanian Native Forest (Project 3: Peter Downie) (587)	3/18/2011	4/7/2011	Verified Carbon Standard
Redd Forests Grouped Project: Protection of Tasmanian Native Forest (641)	5/13/2011	7/1/2011	Verified Carbon Standard
Protection of a Tasmanian native forest – Project 1 – REDD Forests Pilot (605)	3/18/2011	5/3/2011	Verified Carbon Standard
Boden Creek Ecological Preserve Forest Carbon Project (647)	6/24/2011	7/18/2011	Verified Carbon Standard
Peri-urban bamboo planting around South African townships (Project ID confidential)	8/8/2011	12/8/2011	Verified Carbon Standard
Tree planting in South African townships (Project ID confidential)	9/2/2011	12/8/2011	Verified Carbon Standard
Rimba Raya Biodiversity Reserve Project (674)	8/31/2011	9/7/2011	Verified Carbon Standard
Reforestation Across the Lower Mississippi Valley (774)	4/20/2011	2/14/2012	Verified Carbon Standard

Note that the above is not necessarily an exhaustive list of all validations performed by SCS.

The identity and role of the VCS expert utilized in the course of the assessment are described in Section 2.4 of this report.

8 SIGNATURE

Signed for and on behalf of:

Name of entity: Scientific Certification Systems (SCS)

Signature: 

Name of signatory: Todd Frank

Date: July 16, 2012

APPENDIX A: LIST OF FINDINGS

NCR 2011.1 dated 11/21/2011

Standard Reference: VCS Standard V3.1, Section 4.3

Document Reference: proposed methodology (10/28/11), Section 4

Finding: The VCS Standard requires that "The methodology shall identify the project activities to which it applies and shall establish criteria that describe the conditions under which the methodology can (and cannot, if appropriate) be applied." The following items must be added to the list of applicability conditions given in Section 4 of the proposed methodology:

1) The VCS AFOLU Requirements, Section 3.1.5, states that "Project activities that convert native ecosystems to generate GHG credits are not eligible under the VCS Program. Evidence shall be provided in the project description that any ARR, ALM, PRC or ACoGS project areas were not cleared of native ecosystems to create GHG credits (eg, evidence indicating that clearing occurred due to natural disasters such as hurricanes or floods). Such proof is not required where such clearing or conversion took place at least 10 years prior to the proposed project start date." This must be an applicability condition.

2) Section 8.1.4.1 of the proposed methodology states that "Under the baseline scenario, the carbon stocks in aboveground tree biomass are expected to be lower, due to increased chance of burning or tree death due to low water table levels or the same as the aboveground tree biomass in the project scenario. Therefore it is conservative to assume that the change in aboveground tree biomass in the baseline is equal to zero." While it may be conservative in some cases to assume that the change in aboveground tree biomass in the baseline and project scenarios is equal to zero, the assessment team can conceive of situations where a lower water table will result in increased tree growth in a given situation. Therefore, in order to justify the assumption of no change in this carbon pool in the baseline and project scenarios, an additional applicability condition must be added, stating that it must be justified at validation that this assumption is conservative in a given situation.

3) Section 4.5.26 of the VCS AFOLU Requirements states that "The maximum quantity of GHG emission reductions that may be claimed by the project shall not exceed the net GHG benefit generated by the project 100 years after its start date... To determine this long-term net GHG benefit, projects shall estimate the remaining peat carbon stock adjusted for any project emissions and leakage emissions in both the baseline and project scenarios at the 100-year mark, taking into account uncertainties in modeling and using verifiable assumptions. Projects unable to establish and demonstrate a significant difference in the net GHG benefit between the baseline and project for at least 100 years are not eligible." The proposed methodology must contain a framework by which the user is required to demonstrate, ex ante, that a "significant difference in the net GHG benefit" is likely to occur between the baseline and project scenarios. This must be an applicability condition.

Proponent Response: Applicability conditions added:

• Project activity must not convert a native ecosystem to generate GHG credits. Evidence must be provided that the project area was not cleared of native ecosystems to create GHG credits or that clearing or conversion occurred 10 years prior to the proposed project start date.

• The project demonstrates a significant difference in the net GHG benefit between the baseline and project scenarios for at least 100 years.

• The project demonstrates that baseline conditions in the project area can be expected to result in lower aboveground tree biomass compared to the project scenario.

Text added to sections 8.1, 8.2, 8.4 stating that emissions must be estimated for 100 years:

The total net GHG emission reductions must be estimated per year for the crediting period and for a period of 100 years. If the ex-ante and/or ex-post estimate of total net GHG emission reductions over 100 years is insignificant, then the project activity is not an eligible project activity and the project may not be validated or verified credits produced.

Auditor Response: The required applicability conditions have been added to the proposed methodology.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.2 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 3.1.9

Document Reference: proposed methodology (10/28/11), Section 8.1

Finding: The VCS AFOLU Requirements requires that:

"For all IFM, REDD, PRC and ACoGS project types, the project proponent shall, for the duration of the project, reassess the baseline every 10 years and have this validated at the same time as the subsequent verification. Baseline projections for deforestation and/or degradation, land conversion, forest management plans and peatland drainage beyond a 10 year period are not likely to be realistic because rates of change in land-use and/or land management practices are subject to many factors that are difficult to predict over the long term, hence the need for periodic reassessment of the baseline. This reassessment will capture changes in the drivers and/or behavior of agents that cause the change in land use and/or land management practices and changes in carbon stocks, all of which shall then be incorporated into revised estimates of the rates and patterns of land-use change and estimates of baseline emissions."

The proposed methodology must address this requirement and provide guidance for baseline reassessment at every point at which it will be needed by the user.

Proponent Response: Guidance on baseline reassessment has been added.

-Section 6

-Section 8.1.1.3

-Section 8.1.1.2

-Section 8.1.2

There should not be any other sections where the baseline data will require updating.

Guidance on baseline reassessment has been added.

-Section 6

-Section 8.1.1.3

-Section 8.1.1.2

-Section 8.1.2

There should not be any other sections where the baseline data will require updating.

Guidance on baseline reassessment has been added.

-Section 6

-Section 8.1.1.3

-Section 8.1.1.2

-Section 8.1.2

There should not be any other sections where the baseline data will require updating.

Auditor Response: While the proposed methodology now indicates that the baseline must be reassessed subsequent to project initiation, it does not consistently require that the baseline be reassessed every 10 years. Stating that the baseline must be revised at least every 10 years is not consistent with a requirement that the baseline must be reassessed every 10 years. In addition, the proposed methodology states in Section 5.2 that "The baseline must be revised prior to each verification event", which (barring any specific requirements on the periodicity of verification events) is not consistent with the requirement that the baseline be reassessed every 10 years.

Proponent Response 2: At each verification event, the estimation of baseline emissions and project emissions as a function of water levels in the project area is updated with actual precipitation data. The period of time for which the emissions estimate is updated with actual precipitation data is now referred to as the 'baseline period' in the methodology. The 'baseline period' is distinct from 'baseline reassessment." To make this distinction clear, the following modifications have been made to the methodology. A definition for "baseline period" has been added to the definitions section. Text in Section 6 has been updated to read: "The baseline scenario must be reassessed every 10 years." The header "Baseline reassessment" has been changed to "Peat thickness reassessement" and text in 8.1.1.2 has been modified to read: "At each verification event peat thickness must be updated for the associated baseline period to update the estimate of baseline emissions." Text in 8.1.1.3 has been modified to read: "For each baseline period the historical climate data used must be updated to update the estimate of baseline emissions." Text in 8.1.2 has been updated to read: "The maximum number of years emissions can take place for a given grid cell must be reassessed at each verification event using updated peat thickness estimates calculated in section 8.1.1.2."

Auditor Response 2: The proposed methodology now clarifies that the baseline must be reassessed every 10 years.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.3 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.4.11

Document Reference: proposed methodology (10/28/11), Section 8.1.1.4

Finding: The proposed methodology states that "Precipitation data must be available... for 15-20 years prior to the project start date." This is not in conformance with the VCS AFOLU Requirements, which states that "The long-term average climate variables shall be determined using data from climate stations that are representative of the project area and shall include at least 20 years worth of data."

Proponent Response: Altered text of methodology in section 8.1.1.3:

Precipitation data must be available on the daily time step for a climate station within 100 km and within ±100 m elevation of the project boundary for 20 years prior to the project start date.

Auditor Response: The proposed methodology has been modified to clarify that precipitation data must be available for a period spanning 20 years prior to the start date.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.4 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.6.21

Document Reference: proposed methodology (10/28/11), Section 8.3

Finding: Section 8.3 of the proposed methodology states that "If the applicability conditions of this methodology are fulfilled, rewetting in the project area will not lead to higher water levels beyond the project boundary and therefore no leakage will occur as a consequence of the project activity." This is not necessarily in conformance with guidance for ecological leakage accounting in the VCS AFOLU Requirements, which states that "Where rewetting in the project area leads to higher water levels beyond the project boundary, the project shall be required to demonstrate that higher water levels caused by the project do not lead to increases in GHG emissions outside the project area. Otherwise, the affected areas shall be identified and the resulting leakage shall be quantified and accounted for in the GHG emissions."

As an applicability condition, Section 4 of the proposed methodology states that "The project area is not hydrologically connected to adjacent peatland areas outside the project boundaries or, where the area is hydrologically connected, a buffer zone is established in accordance to VCS V3." The "buffer zone exception" presumably points to Section 3.4.3, which discusses requirements for a different project type (CUPP). The third buffer zone requirement states that "Where the project activity causes an increase in GHG emissions in the buffer zone, such emissions shall be included in GHG accounting where above de minimis (as set out in Section 4.3.4)." As this allows leakage to occur in the buffer zone (merely requiring that it be accounted for), the proposed methodology could potentially allow leakage to occur while simultaneously containing no guidance for its accounting.

The proposed methodology must either contain requirements that prevent leakage from occurring or contain guidance to account for leakage in the event that it does occur.

Proponent Response: Altered text of methodology in section 4 Applicability Conditions to remove leakage buffer zone language:

The project area comprises one or more complete watersheds. The project area is not hydrologically connected to adjacent peatland areas outside the project boundaries.

Auditor Response: The VCS AFOLU Requirements states "Where rewetting in the project area leads to higher water levels beyond the project boundary, the project shall be required to demonstrate that higher water levels caused by the project do not lead to increases in GHG emissions outside the project area." The revised text now precludes ecological leakage to adjacent peatlands, but does not preclude ecological leakage to adjacent non-peatland areas. Therefore, the NCR remains open.

Proponent Response 2: Text of methodology in Section 4 Applicability Conditions has been altered to clarify that the project area is not hydrologically connected to adjacent peatland areas outside the project area nor is it connected to non-peatland areas outside the project area, thereby precluding ecological leakage to adjacent non-peatland areas. The applicability condition now reads: "The project area comprises one or more complete watersheds. The project area is not hydrologically connected to adjacent peatland and non-peatland areas outside the project boundaries.

Auditor Response 2: The applicability of the proposed methodology now precludes ecological leakage to all land, both peatland and non-peatland, that is adjacent to the project boundary.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.5 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.6.20

Document Reference:

Finding: The VCS AFOLU Requirements states that "RDP projects involving rewetting of forested peatlands are likely to reduce the productivity of the forest or make harvesting more difficult, which could lead to fewer forest products and thus result in leakage (ie, GHG emissions from logging and/or drainage elsewhere). The requirements for leakage in REDD project activities shall be applied to deal with this type of leakage, accounting for both activity shifting and market leakage including, where applicable, the expected GHG emissions from drainage."

While the proposed methodology discusses ecological leakage in Section 8.3, activity shifting and market leakage are not discussed. The proposed methodology must either contain accounting guidance for activity shifting and market leakage or justify in Section 8.3 why activity shifting and market leakage do not need to be accounted for.

Proponent Response: There is an applicability condition stating that any baseline activities cannot be displaced.

If required, we can add the applicability condition:

Baseline land use activities cannot include deforestation, selective logging, land use conversion, crop production, or grazing of animals.

Although we feel that this would limit the methodology to a greater degree than necessary, we will make the change if deemed necessary.

Auditor Response: The VCS AFOLU Requirements states that "The requirements for leakage in REDD project activities shall be applied to deal with [market and activity shifting] leakage, accounting for both activity shifting and market leakage including, where applicable, the expected GHG emissions from drainage." The requirements for leakage in REDD project activities are detailed in Section 4.6.15 of the VCS AFOLU Requirements. Neither the applicability condition cited by the methodology developer, nor the proposed additional applicability condition, constitute conformance to the requirements of Section 4.6.15. The NCR remains open.

Proponent Response 2: Under the applicability conditions of the methodology, the only potential source of leakage emissions is the temporary or permanent displacement of illegal logging activities to areas outside the project boundary as a result of the project activity. GHG emissions from illegal logging activities are not included in the baseline and reductions in GHG emissions from stopping illegal logging activities are not included in the project case, therefore as per VCS AFOLU V3 Seciton 4.6.16, GHG emission due to market effects leakage are not considered. Procedures for monitoring and accounting activity displacement leakage applying the requirements for leakage in REDD project activities have been added to Section 8.3 of the methodology.

Auditor Response 2: The proposed methodology now contains a mechanism to account for leakage in accordance with the requirements of the VCS AFOLU Requirements. Therefore, this NCR can be closed.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.6 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.3.25

Document Reference: proposed methodology (10/28/11), Section 5.4

Finding: The exclusion of N2O emissions from the project boundary is not in accordance with the VCS AFOLU Requirements, which states that "For RDP projects, N2O emissions shall be included in the project boundary."

Proponent Response: Altered text of methodology in section 5.4:

N2O emission from peat oxidation in the project scenario may be excluded if determined insignificant by application of most current version of the CDM/AR methodological tool “Tool for testing significance of GHG emission in A/R CDM project activities.”

Altered text of methodology in section 8.2:

Project emissions include N2O emissions from areas not rewetted.

Altered text of methodology 9.3.5.2

The ex post GHG emissions in the project scenario shall be calculated using the methods described in Section 8.2.3 except that N2O emission are calculated by multiplying project areas not rewetted by the highest emission coefficient for drained organic soil covered by forest in tropical conditions mentioned by the IPCC Good Practice Guidance for LULUCF or a lower emission factor, if it is justifiable from research for the area of interest.

Auditor Response: Sections 5.4 and 8.2.3.2 of the proposed methodology now indicate that N2O is included in the project boundary within the project scenario, but provides criteria and procedures by which the N2O source may be deemed insignificant. However, the proposed methodology has not established the criteria and procedures by which the N2O source may be conservatively excluded from accounting in the project scenario.

In addition, Section 5.4 indicates that the N2O source is included in the project boundary for baseline accounting, but this is not consistent with the statement on page 6 that "CH4 and N2O emissions in the baseline are conservatively not accounted for."

Finally, page 6 of the proposed methodology states that "N2O emissions are conservatively not accounted for as N2O emissions are expected to be higher in the baseline than in the project scenario." This is not consistent with the guidance provided elsewhere in the proposed methodology.

Proponent Response 2: The methodology now requires accounting of N2O and CH4 emissions in the project while N2O and CH4 emissions are conservatively not accounted in the baseline. Text has been added to 5.4 to indicated that inclusion of N2O emissions in the project are obligatory under VCS AFOLU Requirements. Text has been modified in section 8.2.3.2 to read: " ..N2O emissions may not be excluded from project accounting." This is conservative. De minimis criteria for neglecting N2O emissions in project accounting has been removed from the methodology. Text in section 2 has been modified to indicate that N2O emissions are accounted in the project.

Auditor Response 2: The proposed methodology indicates that N2O emissions cannot be excluded from accounting in the project scenario. This effectively constitutes "criteria and procedures by which the N2O source may be deemed de minimis... or conservatively excluded", as required by the VCS AFOLU Requirements.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.7 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Section 8.2.3

Finding: The proposed methodology does not preclude land use activities, such as timber extraction and agriculture, that could result in GHG emissions in the project scenario, nor does it contain accounting guidance for such GHG emissions.

Timber extraction is not precluded from the project scenario, and is in fact explicitly allowed under Section 4 of the proposed methodology, which states 'Emissions from any selective logging taking place in the project scenario must be demonstrated to be de minimis using the latest version of the CDM “Tool for testing significance of GHG emissions in A/R CDM project activities.'" However, the proposed methodology does not contain any guidance to account for change in the "above-ground tree biomass" pool due to timber extraction, and such guidance is required to successfully implement the tool. The proposed methodology must either contain specific guidance to account for changes in the "above-ground tree biomass" pool or preclude timber harvest or any other project activity that could affect the "above-ground tree biomass" pool.

Similarly, agricultural activities are not precluded from the project scenario, yet the proposed methodology only accounts for loss of soil organic carbon due to peat oxidization.

The proposed methodology must either expand guidance for GHG accounting in the project scenario or exclude land use activities from the project scenario that cannot be accounted for using existing guidance.

Proponent Response: There is an applicability condition stating that any baseline activities cannot be displaced.

If required, we can add the applicability condition:

Baseline land use activities cannot include deforestation, selective logging, land use conversion, crop production, or grazing of animals.

Although we feel that this would limit the methodology to a greater degree than necessary, we will make the change if deemed necessary.

An additional applicability condition has been included:

• Carbon pools and GHG sources that cause project and/or leakage emissions may be deemed de minimis according to guidance in VCS AFOLU 4.3. through use of peer reviewed literature (such as average AG biomass of SE Asia tropical peatland land cover) and the most current version of the CDM “Tool for testing significance of GHG emissions in A/R CDM project activities” .

Auditor Response: One aspect of this NCR has been effectively dealt with through the revised applicability condition of Section 4, which states "The project demonstrates that baseline conditions in the project area can be expected to result in equal or lower aboveground tree biomass compared to the project scenario." This places the express burden of proof on the project developer to provide evidence that carbon stocks in aboveground tree biomass can be expected to be lower in the baseline scenario. However, the potential loss to the soil carbon pool from agricultural activities in the project scenario have not been addressed. Therefore, this NCR remains open.

Proponent Response 2: Applicability conditions have been added to exclude agricultural activities from the project scenario.

Auditor Response 2: The applicability conditions now preclude project activities that could have the potential to cause loss of on-site carbon stocks in the project scenario, or require the proponent to demonstrate that on-site carbon stocks will be greater in the project scenario than in the baseline scenario.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.8 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.3.4

Document Reference: proposed methodology (10/28/11), Section 5.3

Finding: The VCS AFOLU Requirements, Section 4.3.4, requires that "Specific carbon pools and GHG sources, including carbon pools and GHG sources... may be deemed de minimis and do not have to be accounted for if together the omitted decrease in carbon stocks (in carbon pools) or increase in GHG emissions (from GHG sources) amounts to less than five percent of the total GHG benefit generated by the project. The methodology shall establish the criteria and procedures by which a pool or GHG source may be determined to be de minimis."

The proposed methodology must establish the criteria and procedures by which the carbon pool "above-ground tree biomass" can be determined to be de minimis. Furthermore, the proposed methodology must establish the criteria and procedures by which the carbon pool "soil" can be de minimus (although it is acknowledged that such a demonstration would be exceedingly unlikely).

*Footnote: The assessor understands that the VCS AFOLU Requirements, Section 4.3.2 states that the above-named pools "shall be included in the project boundary," in apparent contradiction to Section 4.3.4. However, Section 4 of the VCS AFOLU Requirements contains guidance for methodologies, not projects. The VCS AFOLU Requirements requires that methodologies contain accounting guidance for the required pools, but does not necessarily require individual projects to include the pools within the project boundary. This is a subtle point (in fact, it escaped the lead assessor for quite some time), but an important one.

Proponent Response: Altered methodology text in section 5.3, added the following text:

Monitoring of changes in aboveground tree biomass carbon shall be excluded through proof of insignificance, determined by application of most current version of the CDM A/R methodological tool “Tool for testing significance of GHG emissions in A/R CDM project activities.”

Changes in soil carbon may be excluded if determined insignificant by application of most current version of the CDM A/R methodological tool “Tool for testing significance of GHG emissions in A/R CDM project activities.”

Auditor Response: The "Applicability" section of the CDM/AR methodological tool "Tool for testing significance of GHG emissions in A/R CDM project activities" states "The tool shall be used in the application of an A/R CDM approved methodology to an A/R CDM project activity". Step I of the "Procedure" is as follows:

"Estimate the A/R CDM project GHG emissions by sources (per each source) and possible decreases in carbon pools (e.g. due to site preparation, grazing, harvesting) based on site/project specific data, scientific literature, or the most recent default emission factors provided by IPCC (e.g. IPCC 1997, 2003, 2006) and site/project specific activities. Estimation shall follow the approved methodology."

The "approved methodology" (in this case, the proposed methodology" contains no guidance for estimating the possible decrease in the "aboveground live tree biomass" pool, and therefore the referenced methodology cannot be effectively used.

Proponent Response 2: Deleted text in Section 5.3: Changes in aboveground tree biomass shall be excluded if determined insignificant by application of most current version of the CDM A/R methodological tool "Tool for testing significance of GHG emissions in A/R CDM project activities." Per applicability conditions aboveground biomass will be higher in the project case thant the baseline. The methodology elects in this situation to conservatively exlude the pool.

Auditor Response 2: A reasonable interpretation of Section 4.3.3 of the VCS AFOLU Requirements could be that the proposed methodology is only required to establish the criteria and procedures by which a pool may be determined to be de minimis in the event that an omitted decrease in the pool is possible. However, due to the applicability condition, a decrease in the above-ground tree biomass pool relative to the baseline is not possible. Therefore, the proposed methodology is not required to establish the criteria and procedures by which the above-ground tree biomass pool may be determined to be de minimis, and this NCR can be closed.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.9 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.3.5

Document Reference: proposed methodology (10/28/11), Section 5.3

Finding: The VCS AFOLU Requirements, Section 4.3.5, requires that "Specific carbon pools and GHG sources do not have to be accounted for if their exclusion leads to conservative estimates of the total GHG emission reductions or removals generated. The methodology shall establish criteria and procedures by which a project proponent may determine a carbon pool or GHG source to be conservatively excluded."

The proposed methodology must establish the criteria and procedures by which the carbon pool "above-ground tree biomass" can be conservatively excluded. Furthermore, the proposed methodology must establish the criteria and procedures by which the carbon pool "soil" can be conservatively excluded (although it is acknowledged that it would not be desirable for a project proponent to conservatively exclude soil as a carbon pool). This must be done.

*Footnote: See footnote for NCR 2011.8.

Proponent Response: Altered methodology text in section 5.3, added the following text:

Monitoring of changes in aboveground tree biomass carbon shall be excluded through proof of insignificance, determined by application of most current version of the CDM A/R methodological tool “Tool for testing significance of GHG emissions in A/R CDM project activities.”

Changes in soil carbon may be excluded if determined insignificant by application of most current version of the CDM A/R methodological tool “Tool for testing significance of GHG emissions in A/R CDM project activities.”

Added the applicability condition in section 4 to establish criteria by which aboveground tree biomass may be excluded in baseline:

Baseline conditions in the project area can be expected to result in lower aboveground tree biomass compared to the project scenario.

Auditor Response: The universal conservative exclusion of the "aboveground live tree biomass" pool has been justified through the cited applicability condition. However, the proposed methodology has still not established the criteria and procedures by which the carbon pool "soil" can be conservatively excluded. Therefore, the NCR remains open.

Proponent Response 2: The methodology does not elect conservative exclusion of the carbon pool soil. It is the main pool addressed by project activities and the proponent cannot foresee a situation where the project would elect to omit the soil carbon pool.

Auditor Response 2: Although the VCS AFOLU Requirements does appear to mandate that the proposed methodology establish criteria and procedures by which the soil carbon pool may be conservatively excluded, the assessor agrees with the methodology developer's assertion that a situation where the methodology user would wish to conservatively exclude the soil carbon pool cannot be foreseen. Therefore, this NCR is closed.

Closing Remarks: The Proponent's response adequately addresses the finding.

OFI 2011.10 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.5.23

Document Reference: proposed methodology (10/28/11), Section 8.1.2

Finding: The VCS AFOLU Requirements states that "The procedure for determining the peat depletion time shall conservatively consider peat depth and oxidation rate within the project boundary and may be estimated based on, for instance, the relationship between water level, subsidence, and peat depths in the project area." The proposed methodology proposes a uniform default subsidence value of 4.5 cm/year.

The finding that peat subsidence levels off at ~4.5 cm/year, as reported in the Couwenberg et al. (2009) study, was derived from only two data points. While it is agreed that this finding represents the best available knowledge at this time, future research may result in a more sophisticated understanding of the relationship between drainage depth and peat subsidence. Therefore, it is highly recommended (although not required) that the subsidence rate be given as an explicit parameter, and that the allowance is made for this parameter to be updated if justified through new research, similar to the approach taken for parameter EF(peat) in Section 8.1.4.1.1 of the proposed methodology.

Proponent Response: Altered methodology text:

Eq. 7 changed 4.5 to the parameter Sp, peat subsidence rate.

Set Sp to 4.5 cm yr-1

Added footnote: An alternative value for Sp may be used if the alternative value can be justified.

Auditor Response: Although a response to this OFI was not required, the methodology developer did make the "peat subsidence rate" its own parameter in (now) Equation 8, with a suggested default value of 4.5 cm/year.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.11 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11)

Finding: The proposed methodology does not always make it clear whether a prescribed action is required or merely preferred. If an action is required, the terms "should", "may" and "recommended" should be replaced with the unequivocal terms "must", "shall" and "required". For the following instances, if the action is required, please modify the language so that this is clear. If the action is not required, please clarify within the proposed methodology that this is the case:

Line 257: "...should be used to determine additionality"; change to "must" or "shall"

Line 304: "...The overall stratification may be based on..."; It appears that the intent of the proposed methodology is that stratification must be based on internationally recognized vegetation classification systems but further refinement is possible, in which case "may" should be changed to "must" or "shall"; otherwise, it must be clear in the proposed methodology that the statement in question refers to a suggestion rather than a requirement.

Line 341: "...a Digital Terrain Model (DTM) may be estimated..."; as it appears there are no other possibilities when LiDAR data are not available, "may" must be changed to "must" or "shall"

Line 344: "...may be used to estimate..."; see above, probably needs to be changed to "must" or "shall"

Line 361: "Canopy height should..."; change to "must" or "shall"

Line 388: "... criteria should be fulfilled"; change to "must" or "shall"

Line 400: "...should be in a range of..."; change to "must" or "shall"

Line 403: "...used for the validation of the DTM should have..."; change to "must" or "shall"

Line 409: "...it is recommended that the depth of peat..."; unless a method other than "direct drilling" is possible (in which case guidance for such a method should be provided), the word "recommended" should be changed to "required", and along similar lines, unless direct drilling can be done using a tool other than a peat auger, the phrase "e.g." should be stricken from the proposed methodology, as such phrase implies that there are other possibilities

Line 411: "...may be determined using..."; it is completely unclear whether this is required or not, and more clarification must be inserted regarding this matter

Line 420: "...may be applied to estimate peat thickness"; change to "must" or "shall"

Line 439: "...the selected time steps for each should match..."; change to "must" or "shall"

Line 442: "...the relevant station should be specified..."; change to "must" or "shall"

Line 443: "...data on climate variables maybe [sic] interpolated..."; it should be appropriately clarified whether this is a requirement or not

Line 454: "...should be used to delineate..."; change to "must" or "shall"

Line 459: "...remote sensing imagery should be verified..."; change to "must" or "shall"

Line 711: "...water levels in the project scenario should be projected..."; change to "must" or "shall"

Line 776: "...emissions from rewetting the project area should be estimated..."; change to "must" or "shall"

Line 858: "...the relevant station should be specified..."; change to "must" or "shall"

Proponent Response: Text updated in all locations

Auditor Response: The proposed methodology has been updated as required. However, the word "should" now appears in several locations where new text has been written. In each case, it is not clear whether the word refers to a requirement or an optional item. These locations are as follows:

Line 582: "The selected time steps for each should match..."

Line 1000: "Assessment of uncertainties should follow..."

Line 1058: "...no deduction should result..."

Therefore, the NCR remains open.

Proponent Response 2: Changed line in Section 8.1.1.3 "The selected time steps for each should match…" to "The selected time steps for each must match…" Changed line in Section 8.5 "Assessment of uncertainties should follow…" to "Assessment of uncertainties shall follow…" Changed line in Section 8.5 "...no deduction should result..." to "...no deduction shall result..."

Auditor Response 2: It is now reasonably clear throughout the proposed methodology whether a prescribed action is required or merely preferred.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.12 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Section 8.1.1.3

Finding: The proposed methodology states that "If drilling measurements are evenly distributed across the project area direct spatial interpolation, such as Kriging algorithm, may be applied to estimate peat thickness." The assessment team has the following comments:

The term "evenly distributed" is not precise. Please provide requirements for direct spatial interpolation that can be effectively audited against by a third party. It is important to keep in mind that random selection of sample point locations will (practically) never result in a spatial distribution that is truly "even" in the strict sense of the word. Therefore, if truly evenly distributed drilling locations are necessary for direct spatial interpolation, it will be necessary for some type of systematic sampling to be employed; if this is the case, it should be explicitly stated.

Under the current framework of the proposed methodology, Sections 8.1.1.1 and 8.1.1.2 only apply to projects where peat drilling measurements are not "evenly distributed across the project area." If drilling measurements are evenly distributed, direct spatial interpolation can be used and a DTM is not necessary. Therefore, please reorganize the proposed methodology so that the requirements in Sections 8.1.1.1 and 8.1.1.2 do not apply to projects that contain evenly distributed drilling data.

The proposed methodology does not prescribe the number of drilling locations to be installed. The proposed methodology must contain guidance that requires project proponents to install a number of drilling locations sufficient for high-quality interpolation of drilling depth across the landscape. This guidance must be defensibly rooted in statistical principles and/or practical knowledge of ombrogenous peatlands in southeast Asia.

Proponent Response: "Evenly distributed" was removed and rephrased to "systematically distributed across the project area", and "regularly spaced grid". Section 8.1.1.1 was removed and the LC stratification chapter was integrated into Option 2 of the DTM section. We disagree with the assessor concerning the statement that the DTM is not necessary if systematically distributed drillings are available, because the DTM is also used for the determination of the slope of the waterways in section 8.2.2.1 for the planning of project measures (dam locations).

Auditor Response: While a DTM may be necessary for implementation of the guidance of Section 8.2.2.1, it is the understanding of the assessor that Section 8.2.2.1 is completely optional. In that case, it fully logically that a DTM is not necessary if systematically distributed drilling measurements are available. If Section 8.2.2.1 is not completely optional (but is in fact completely required), the language of this section must be strengthened to indicate such. Otherwise, the assessor's initial point continues to stand. The methodology user should not be required to perform an activity whose only output leads to an optional activity. Therefore, the NCR remains open.

Proponent Response 2: The DTM is a required for determining the boundaries of the watershed(s) that comprise the project area as well as input to SIMGRO for simulating water flow to model baseline and project water levels in the project area since water flows from higher to lower elevations. Therefore generation of the DTM is required for application of the methodology. The following text has been added to section 8.1.1.2 to clarify that generation of the DTM is a required activity in the methodology: "The DTM is a required to determine the boundaries of the watershed(s) comprising the project area and is a required input to SIMGRO for modeling baseline and project water levels in the project area and must be generated."

Auditor Response 2: The methodology developer has provided a convincing argument for why a Digital Terrain Model is required even when systematically spaced peat depth measurements are taken. The requirement to create a Digital Terrain Model is clearly stated in Section 8.1.1.2.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.13 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Section 8.1.1.2

Finding: The guidance provided by the methodology developer in lines 398-404 of the proposed methodology must be considerably strengthened. The statement "The accuracy of the validation data should be in a range of ±10 cm relative accuracy" must be clarified. In addition to the clarification sought in NCR 2011.11, it is unclear what is meant by "±10 cm relative accuracy". Please clearly describe the metric that should be used to quantify accuracy, using mathematical formulae if necessary. In line 401, the proposed methodology allows for the use of "LiDAR derived elevation measurements" to validate an SRTM-derived DTM. This does not seem appropriate, given that the LiDAR data will not be completely accurate due to inherent uncertainty in filtering out vegetation returns from ground returns and, if full LiDAR coverage is not available, error in interpolation between swaths. Therefore, please require that SRTM-derived DTM data be validated with actual field measurements. The validation guidance must be identical between the two DTM creation methods unless there is a compelling reason to differentiate the guidance provided.

Please alter the proposed methodology to provide guidance on the following:

- Equipment required for validation (references to "dGPS, Tachymeter or Total station" are not sufficiently explicit), including the required accuracy of equipment used (e.g. it would probably not be appropriate to perform the validation using a consumer-grade GPS)

- The minimum number of validation points required

- The methodology used to locate validation points (this methodology should provide a good spatial distribution of points across the variety of terrain and canopy conditions that exist across the project area)

- Maximum PDOP and minimum number of satellites required to be in view of validation points when established

- For those points that cannot meet the PDOP and satellite visibility requirements as mentioned above, detailed guidance on the procedure used to determine offset from the validation point to a location where an acceptable PDOP value and number of satellites can be obtained

Proponent Response: The section on accuracy assessment was considerably strengthened and the assessor's comments were considered as far as feasible.

Auditor Response: The proposed methodology continues to allow SRTM-derived DTMs to be validated using LiDAR data (lines 521-522). As stated previously, this will not ensure the appropriate level of accuracy in reported emissions reductions and removals. As previously stated, identical validation guidance must be given for SRTM- and LiDAR-derived DTMs unless there is a defensible reason to do otherwise.

The number of validation points required is now stated to be "20 points per vegetation class"; this makes sense in the case of SRTM-derived DTMs but does not make sense for LiDAR-derived DTMs, which do not make use of vegetation classes.

A maximum position dilution of precision (PDOP) value has been provided; however, a PDOP value of 10 is not sufficient to ensure high-accuracy location data. A lower threshold must be chosen for this value.

It has been clarified that accuracy of LiDAR data should be quantified using the methods recommended by the ASPRS LiDAR Committee. However, the stated guidance is not consistent with the guidance of the document "Vertical Accuracy for LiDAR Data". The following discrepancies exist with respect to the guidance of the ASPRS LiDAR Committee:

1) The proposed methodology states "the errors (difference between DTM and field measured elevation) must be tested for normal distribution." However, unlike the ASPRS LiDAR Committee guidelines, the proposed methodology provides no indication of how this is to be done.

2) The proposed methodology instructs the user to calculate "the Random Mean Square Error (RMSE)" (a metric with which the assessor is not familiar), while the ASPRS LiDAR Committee instructs the user to calculate "the root mean square error".

3) While the ASPRS LiDAR Committee does not specify how root mean square error is to be calculated, Equation 4 contains a calculation of root mean square error that is not consistent with the standard calculation of root mean square error.

In addition, line 300 specifies vertical accuracy for LiDAR data in terms of RMSE, but it is later clarified that RMSE is not appropriate when errors diverge substantially from a normal distribution. It must be clarified whether RMSE is an appropriate statistic to use in all cases.

In all other respects the requirements of this NCR have been satisfied.

Proponent Response 2: The LC stratification was moved out of the SRTM section again, because it is required for the assessment of DTM accuracy as well. For areas with varying ground cover, supplemental accuracy of the DTM must be assessed (according to ASPRS), and this requires the availability of a LC stratification. Maximum PDOP was reduced to <5, which is considered as good for business applications. However, we like to point out that from practical experience, this value will be very difficult to obtain under dense forest cover typically found in Peat Swamp Forests, and thus, this requirement will be very difficult to fulfil. "Random" Mean Square Error was corrected into Root Mean Square error. The equation used was corrected. The LiDAR based validation of the SRTM was maintained, as this still is considered a valid, and most of all cost efficient option for validation data. However, we agree that "as is" the LiDAR-based validation can not account for the calculation of uncertainty in emission reductions. Therefore we suggest, in order to assess the uncertainty in emission reductions, the errors of the validation dataset and the validated (i.e. SRTM dataset) have to be combined (error propagation).

Auditor Response 2: The methodology developer's suggestion that LiDAR data can be used to validate a radar-derived DTM is acceptable, provided that the uncertainty of the LiDAR data is incorporated into the total uncertainty. However, in this case criteria and procedures need to be provided for performing the validation of the LiDAR data. The proposed methodology states that "if LiDAR data is used to validate the SRTM-derived DTM, the LiDAR data must be validated with topographic field measurements using dGPS devices. When using LiDAR as validation data, it must be assured that only data from the actual LiDAR swath is taken, and not from interpolated areas between different LiDAR swaths." However, it is unclear if the criteria and procedures for performing field measurements for the validation of LiDAR data are the same as those for performing field measurements for the validation of the radar-derived SRTM.

Proponent Response 3: We enhanced the section by stating that "The accuracy of the LiDAR data (AccuracyLiDAR) is assessed with topographic field measurements of elevation using the same methods described for assessment of the vertical accuracy of the DTM using topographic field measurements." However, in case a project uses LiDAR data which has already been validated by the data provider or a third party, it can not be guaranteed that the dataset has been validated with the exact same quality of validation data as described in the methodology. Therefore we added the requirements and procedures from the ASPRS guidelines to the methodology, and the remark that it must be assured that the accuracy of the data has been reported in accordance with the ASPRS guidelines. ASPRS requirements are less specific than the methodology requirements for validating the DTM (e.g. there is no minimum PDOP or satellite requirements for dGPS measurements), but it does require that the validation data is three times more accurate that the data that is tested.

Auditor Response 3: Additional guidance regarding accuracy assessment of the DTM was added to Section 8.1.1.2 of the proposed methodology. It has been clarified that this section applies to both LiDAR- and Radar-created DTMs. Additional guidance has been added to address the case where LiDAR data are validated (as is often the case) by the data provider and not the project proponent. This aspect of the proposed methodology is now in full conformance with the VCS rules.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.14 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Section 8.1.1.2

Finding: The proposed methodology states that "Due to the overall very flat topography of tropical peat swamps, it is justified to use regularly spaced LiDAR transects that uniformly cover the project boundary for the generation of the DTM within the project boundary." The assessor has verified, through an independent literature review, that ombrogenous peat swamps contain a dome structure. However, LiDAR-derived DTM data are not completely accurate, given the uncertainty inherent in filtering out vegetation returns from ground returns. In order to minimize this uncertainty, full LiDAR coverage of the project area will be necessary, unless the LiDAR data can be reasonably validated through the use of field measurements (see NCR 2011.13).

In the case that NCR 2011.13 can be satisfied, full LiDAR coverage will not be necessary. However, in this case it will be necessary for more guidance to be provided regarding the required level of LiDAR coverage, in order to ensure the provision of high-quality DTM data. Please provide additional guidance regarding the degree of LiDAR coverage necessary.

Furthermore, while the proposed methodology does provide some requirements to ensure high-quality LiDAR data, the given pulse density and return requirements are inadequate to ensure high-quality LiDAR data. The proposed methodology must provide requirements for the following attributes:

- Accuracy (as measured through comparison with ground control points and quantified in terms of Root Mean Squared Error)

- Maximum permissible scan angle

- Equipment required for ground control (references to "dGPS, Tachymeter or Total station" are not sufficiently explicit), including the required accuracy of equipment used (e.g. it would probably not be appropriate to install ground control points using a consumer-grade GPS)

- The minimum number of ground control points required

- The methodology used to locate validation points (this methodology should provide a good spatial distribution of points across the variety of terrain and canopy conditions that exist across the project area)

- Maximum PDOP and minimum number of satellites required to be in view of ground control points when established

- For those points that cannot meet the PDOP and satellite visibility requirements as mentioned above, detailed guidance on the procedure used to determine offset from the ground control point to a location where an acceptable PDOP value and number of satellites can be obtained

Finally, the LiDAR method does not make any use of the land cover map generated in Section 8.1.1.1. To avoid unnecessary effort on the part of the user, please revise the proposed methodology so that users of the LiDAR method are not required to generate a land cover map.

Proponent Response: The comments were considered, and full coverage LiDAR was mentioned as the best possible solution. For the transect based DTM generation, criteria were added for the placement of the transects. However, it is not possible to give a minimum coverage level which can be calculated by a mathematical formula, because the planning of transect must consider many criteria, most importantly the size of the area where the DTM is created. Further specifications for the LiDAR data were given, including scan angle, RMSE of vertical accuracy. Statements on point density were adjusted, however, our experience showed that 2 points per m² can already yield very high quality elevation data.

Auditor Response: Many aspects of this NCR were responded to by response to NCR 2011.13. In addition, methodology users who are able to use LiDAR data are no longer required to produce a land cover map.

However, specific guidance regarding coverage of LiDAR data has not been provided. As currently stated, the proposed methodology would allow the use of only two LiDAR transects to characterize a very large project area, which could result in a DTM of limited accuracy even on a "very even and smooth" peat dome. While a "mathematical formula" is not specifically requested, some specific guidance does need to be in place in order to ensure that the integrity of the quantified emissions reductions and removals is maintained.

Proponent Response 2: The guidance was strengthened in that ancillary information such as the SRTM should be consulted during planning in order to best possibly cover the terrain variations. Furthermore, the requirement was added that the transects must cover the whole elevation range present in the project area, i.e. the transects shall be oriented from the lowest to the highest part of the study area.

Auditor Response 2: The additional guidance is helpful but not sufficient to warrant closure of the NCR. As stated, the proposed methodology would still potentially allow the use of only two LiDAR transects to characterize a very large project area, which could result in a DTM of limited accuracy even on a "very even and smooth" peat dome.

Proponent Response 3: We now require a minimum of 4 transects, which is suffient for a high quality DTM in combination with the other requirements fulfilled.

Auditor Response 3: As stated, a minimum of four transects are now required for the generation of LiDAR data. This minimum requirement will help to ensure the accuracy of the resulting LiDAR-derived DTM.

Closing Remarks: The Proponent’s response adequately addresses the finding.

NCR 2011.15 dated 11/21/2011

Standard Reference: VCS Standard V3.1, Section 2.4

Document Reference: proposed methodology (10/28/11), Section 8.1.1.2

Finding: The VCS Standard requires that bias and uncertainties be reduced "as far as is practical."

The assessment team is skeptical as to the validity of "Option 2" of Section 8.1.1.2. The resolution of SRTM data appears to be too low to allow the required level of accuracy. Furthermore, the process of using field measurements (or, even less accurately, guesses based on canopy height at nearby forest/non-forest interfaces) to determine "average" canopy height in a given "land cover class" will likely inject further inaccuracy into the process.

If NCR 2011.13 cannot be satisfied (i.e. the field-based validation methods cannot be adequately supported), or another mechanism of validating SRTM-derived elevation data cannot be devised, "Option 2" must be removed from the proposed methodology. If NCR 2011.13 can be satisfied, this NCR is not applicable and will be withdrawn.

Proponent Response: We hope that NCR2011.13 can now be satisfied in the revised version, and this NCR will be withdrawn

Auditor Response: As NCR 2011.13 has been closed, this NCR can be withdrawn.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.16 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Section 8.1.1.2

Finding: This NCR is only relevant if the use of "Option 2" in the proposed methodology can be justified (see NCR 2011.15).

In lines 375-377, the proposed methodology states that "the SRTM digital surface model must be analyzed in conjunction with a remote sensing image which has been acquired in the same time range as the SRTM (+/- 6 months)." It is unclear what the purpose of the "remote sensing image" is in this case. Presumably the stratum boundaries are already known from Section 8.1.1.1 of the proposed methodology. If this is the case, it stands to reason that the borders between forest and non-vegetated or sparsely vegetated areas are also known as a result of application of Section 8.1.1.1. Please describe the use of the "remote sensing image" in a way that is clear to the user.

The proposed methodology requires that the user "...subtract the estimated vegetation height from the correspondent section of the elevation profiles using for example methods described in Jaenicke et al (2008)." The Jaenicke et al. (2008) study does not explicitly state how the DTM was created, only stating that "the canopy had to be considered and spatial interpolation between deforested patches was applied." This does not provide sufficient guidance to the user. The phrase "for example" is confusing in this context, as it is then not clear what is actually required. Please supplement the reference with a written description of the required action.

Proponent Response: This section was completely reorganized by including former section 8.1.1.1 into step 2.1 (the lc stratification). Required time period for the image was adjusted to Feb2000+-6 months, as also requested by the public reviewer (P. Schlesinger).

Auditor Response: The section on "Option 2" is now much clearer regarding the steps to be undertaken in the creation of a DTM from non-LiDAR data.

Closing Remarks: The Proponent’s response adequately addresses the finding.

NCR 2011.17 dated 11/21/2011

Standard Reference: VCS Standard V3.1, Section 4.7

Document Reference: proposed methodology (10/28/11), Section 8.1.1.3

Finding: In the event that drilling locations are not evenly distributed across the project area, the proposed methodology states that "...peat thickness is estimated over inaccessible areas using a binominal correlation function between the peat surface elevation derived from the DTM and bedrock elevation using methods such as those described in Jaenicke et al. 2008." This is not in conformance with the VCS Standard, which requires that "The methodology shall establish criteria and procedures for quantifying GHG emissions and/or removals for the selected GHG sources, sinks and/or reservoirs..." The proposed methodology must establish "criteria and procedures" for constructing the correlation function; a reference to Jaenicke et al. (2008) is helpful, but not sufficient.

The proposed methodology states that "The minimum acceptable model correlation between peat surface elevation and bedrock elevation is R^2 >0.7. The minimum acceptable correlation coefficient between peat surface and peat thickness is r >0.8." It is not clear why two different tests are being used here. The two variables of interest are peat surface elevation and peat thickness, so it is unclear why the correlation between "peat surface elevation and bedrock elevation" is relevant. Please clarify the intent of the proposed methodology or remove the apparently unnecessary test.

Proponent Response: Text was added to further detail the use of drilling data in conjunction with the DTM to derive the correlation function, including the required formulae. For assessing the model, correlation only R^2 was used, and r removed. Peat thickness remained as the modeled variable, and bedrock elevation removed.

Auditor Response: The text of this section is greatly improved. However, some issues remain. It is unclear over what "array" Equations 6 and 7 must be applied. It appears that perhaps Equations 6 and 7 are applied to each grid cell in the project area, but this must be clarified.

Proponent Response 2: The following text was added to section 8.1.1.3: "The peat depth model is then obtained by applying the correlation function to each grid cell of the normalized DTM."

Auditor Response 2: Although Section 8.1.1.3 of the proposed methodology could be clearer still on this point, there is now sufficient guidance to allow the astute methodology user to correctly implement the proposed methodology.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.18 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Section 8.1.1.5

Finding: The terms "canal", "river" and "waterway" are not consistently employed throughout the proposed methodology. For example, Section 8.1.1.5.1 of the proposed methodology repeatedly refers to "rivers and canals" or "canals and rivers" but then states "Where ever possible, the predicted location of smaller canals shall also be delineated in GIS", making it unclear to the user whether the guidance is also intended to apply to rivers or not. Similarly, Section 8.1.1.5.3 states "A representative subset of canals shall be selected (random or systematic with random start) to characterize each waterway class", leaving it unclear to the user as to what to do about rivers. The terminology employed must be clear to the user.

Proponent Response: Replaced all instance of canals and rivers with the word “waterway”.

Definition of “waterway” was added to Section 3 Definitions.

Auditor Response: All waterways (both canals and rivers) are now consistently referred to as "waterways" throughout the proposed methodology. The definition of the term "waterway" in Section 3 is also a helpful addition.

Closing Remarks: The Proponent’s response adequately addresses the finding.

NCR 2011.19 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Section 8.1.1.5.3

Finding: The proposed methodology states "A representative subset of canals shall be selected (random or systematic with random start) to characterize each waterway class." It is not clear how the user is actually intended to perform the sampling. Please provide additional guidance to help the user understand how this must be done. Also, please provide guidance regarding the number of canals to be selected. It is suggested that total sample size not be dependent on the number of "waterway classes" determined by the user, to avoid incentivizing users to determine as few waterway classes as possible.

With regards to the attributes to be measured, the parameters under "Natural Damming evidence" are all qualitative in nature, and therefore cannot be averaged. Please revise the guidance to enable appropriate use of this data.

Finally, in Equation 4 the parameter "Value of waterway characteristic A for waterway measured m at measurement point p for waterclass w" is symbolized as Ch(A,m,p) in the equation and Ch(A,w,m) in the text. Please make the symbolism consistent.

Proponent Response: Alterations and text added to methodology section 8.1.1.5.3:

Waterways shall be divided into size classes for sampling according to their physical characteristics.

Selection of canals for sampling shall be random or systematic with random start.

A minimum of 10% of total identified waterways shall be sampled.

The following text has been added to the methodology:

Some natural damming of canals may take place. The expected rate of such blocking must be estimated within the SIMGRO model. The field data collected shall be used to estimate the percentage of canals likely to experience natural damming before the end of the crediting period as follows. Any sampled waterway where at more than 50% of the measurement points slow water flow, presence of mud sedimentation within waterflow, presence of weed growth within flow of waterway, and presence of natural damming is observed is considered to undergo natural damming within the crediting period for projects with crediting periods of 100 years or less. The expected rate of natural damming estimated within the SIMGRO model is the proportion of sampled canals identified as undergoing natural damming within the crediting period.

Amended the parameter “Value of waterway characteristic A for waterway measured m at measurement point p for waterclass w” – changed to ChA,m,p,w in equation and in text

Auditor Response: The additional guidance provided is a helpful improvement. However, application of the guidance "a minimum of 10% of total identified waterways shall be sampled" could lead to 0 waterways being sampled if only a small number of waterways have been identified. The number of waterways to be sampled in the case where a small number of waterways have been identified must be clarified.

Proponent Response 2: Modified text in 8.1.1.5.3: A minimum of 10 waterways or 10% of total identified waterways shall be sampled, whichever is higher, unless fewer than 10 waterways are identified, in which case all waterways must be sampled.

Auditor Response 2: The guidance of the proposed methodology regarding the sampling of waterways is no sufficient to ensure adherence to the principles of the VCS.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.20 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.4.11

Document Reference: proposed methodology (10/28/11), Section 8.1.1.5.3

Finding: The VCS AFOLU Requirements states that "The criteria and procedures for identifying alternative baseline scenarios shall also consider non-human induced rewetting brought about by… Collapsing dikes or ditches that would have naturally closed over time." The proposed methodology states "Some natural damming of canals may take place. The expected rate of such blocking must be estimated within the SIMGRO model. The field data collected shall be used to estimate the percentage of canals likely to experience natural damming before the end of the crediting period." While this is a good start, the proposed methodology must contain explicit guidance regarding the estimation of the percentage of canals likely to experience natural damming before the end of the crediting period. This guidance must be rooted in scientific literature or professional expertise, and must be written so that a third party can adequately evaluate conformance. In addition, the procedure for specifying the natural blocking rate within SIMGRO must be described in accordance with NCR 2011.40.

Proponent Response: The following text has been added to the methodology:

Some natural damming of canals may take place. The expected rate of such blocking must be estimated within the SIMGRO model. The field data collected shall be used to estimate the percentage of canals likely to experience natural damming before the end of the crediting period as follows. Any sampled waterway where at more than 50% of the measurement points slow water flow, presence of mud sedimentation within waterflow, presence of weed growth within flow of waterway, and presence of natural damming is observed is considered to undergo natural damming within the crediting period for projects with crediting periods of 100 years or less. The expected rate of natural damming estimated within the SIMGRO model is the proportion of sampled canals identified as undergoing natural damming within the crediting period.

Auditor Response: Guidance regarding the estimation of the percentage of canals likely to experience natural damming before the end of the crediting period has now been provided. However it is not necessarily clear that the guidance is justifiable rooted in scientific literature or professional expertise. Therefore, NIR 2011.47 has been opened to seek this assurance.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.21 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Sections 4.5.24 and 4.5.11

Document Reference: proposed methodology (10/28/11)

Finding: Section 4.5.24 of the VCS AFOLU Requirements states that "Baseline emissions shall be estimated conservatively and consider that the water level in the project area may rise during the project crediting period due to any or all of the causes identified in alternative baseline scenarios as set out in Section 4.4.11." Section 4.4.11 states that "The criteria and procedures for identifying alternative baseline scenarios shall also consider non-human induced rewetting brought about by...Progressive subsidence, leading to raising relative water levels, increasingly thinner aerobic layers and reduced CO2 emission rates." Section 6 of the proposed methodology states "Progressive subsidence of peat in the baseline is accounted for by limiting projection of baseline emissions to peat subsidence time."

The proposed methodology appears to be referring to the requirement of Section 4.5.23 of the VCS AFOLU Requirements that the quantification of GHG emissions in the baseline scenario be constrained by the Peat Depletion Time. However, the requirement of Section 4.4.11 is different. This section refers to peat subsidence resulting in increased relative water levels and thus reduced CO2 emission rates. The proposed methodology is not currently in conformance with the requirements of Section 4.4.11 of the VCS AFOLU Requirements.

Proponent Response: A water table correction factor has been added to Section 8.1.3 to account for any potential subsidence.

Auditor Response: As stated, the water table levels in the baseline scenario are now adjusted on a yearly basis to account for progressive subsidence, as required by Section 4.4.11 of the VCS AFOLU Requirements.

Closing Remarks: The Proponent’s response adequately addresses the finding.

NCR 2011.22 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Section 8.1.1.5.2

Finding: The proposed methodology states "Field verification of major canals shall take place." The proposed methodology then states "Along all major and minor canals and rivers, GPS measurements shall be taken delineating all minor canals and rivers branching from the major waterways that can be identified." This is confusing because it is first implied that only major canals must be field-verified, while it is then stated that GPS measurements must be taken along all major and minor canals and rivers, which does seem to be a form of field verification. Regardless, because it is not conservative to over-estimate the length of waterways in the project area, it is the opinion of the assessment team that all waterways (both canals and rivers) must be verified in the field through GPS measurements. Please fix this apparent inconsistency and provide strong, clear guidance regarding field measurements to be taken on all waterways identified through remote sensing.

The proposed methodology states "The location and length of canals and rivers identified in remote sensing imagery should be verified by community members with high familiarity with the project area." While this is a good idea, it is not sufficient to verify canals identified by remote sensing entirely on the basis of interviews with community members. Although community members may be able to verify that a canal exists, they may not be able to verify the existence of the entire length of the canal based on memory alone. Therefore, as previously stated, field verification of the entire length of all identified waterways must occur.

Proponent Response: Altered text of methodology in section 8.1.1.4.2:

Field verification of all identified waterways shall take place.

Along all identified waterways, GPS measurements shall be taken delineating the waterway. All measurements shall be incorporated into a geodatabase of waterway locations.

Waterways shall be stratified into waterway classes (eg major river, minor river, major canal, medium canal, hand-dug canal) based on their physical parameters as described in 8.1.1.4.3.

It is conservative to assume a waterway does not exist while modeling baseline emissions, therefore, it is not necessary to ensure all rivers and canals have been identified. If an identified waterway cannot be field verified, then it must be assumed to not exist in the model.

Auditor Response: The proposed methodology now requires that field verification of all identified waterways take place, and provides procedures and criteria for this verification.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.23 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Section 8.1.1.5

Finding: The proposed methodology states "Where ever possible, the predicted location of smaller canals shall also be delineated in GIS." The proposed methodology then states "It is conservative to assume a waterway does not exist while modeling baseline emissions, therefore, it is not necessary to ensure all rivers and canals have been identified." This guidance is not consistent, while it may cause the user to believe it is not necessary to identify all smaller canals, while simultaneously causing a failure to identify a smaller canal "where ever possible" to be a nonconformity. The proposed methodology must be modified so that the identification of all waterways is either clearly required or clearly not required.

Proponent Response: Altered text of methodology section 8.1.1.4.1:

Waterways are delineated by combining high resolution satellite images with field surveys. High spatial resolution satellite imagery (10-m or better such as ALOS or SPOT) should be used to delineate the location, length, and outflow of waterways using visual interpretation and measurement tools in a Geographic Information System (GIS) or similar software. Waterways that cannot be delineated with high resolution satellite images and verified in the field may be delineated in the field as described in 8.1.1.4.2

Auditor Response: The revised guidance provided in response to this NCR is not clear. In contrast to the language provided in response to the NCR, the last sentence of Section 8.1.1.4.1 actually states "Where waterways that cannot be delineated with high resolution satellite images, the waterway may be delineated in the field as described in 8.1.1.5.2." As Section 8.1.1.5.2 does not contain requirements for field verification of waterways, the reference is confusing. In addition, it is not clear whether the guidance of Section 8.1.1.4.2 is intended to refer to waterways delineated using the guidance from Section 8.1.1.4.1 or not. Therefore, the NCR remains open.

Proponent Response 2: Updated text in Section 8.1.15.1. The last sentence of 8.1.5.1 now says "Where waterways cannot be delineated with high resolution satellite images, the waterways may be delineated in the field as described in 8.1.1.5.2. Modified text in Section 8.1.1.5.2: Field verification of all identified waterways delineated with high resolution satellite images in 8.1.1.5.1 shall take place. Field verification shall also be used to delineate identified waterways that cannot be delineated with high resolution satellite images.

Auditor Response 2: Consistent section referencing is now employed in Section 8.1.1.5 of the proposed methodology so that the guidance is consistent and clear to the methodology user.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.24 dated 11/21/2011

Standard Reference:

Document Reference: proposed methodology (10/28/11), Section 8.1.1.6.2

Finding: The proposed methodology states "A subset of the project boundary shall be delineated where field measurements will take place. It is allowable for this subset to be chosen based on accessibility to sampling locations. Although it is preferable for field measurements to have been taken within the project boundary, it also is allowable for field measurements from ombrogenous tropical peatlands outside the project boundary to be used." The proposed methodology must be modified so that validation measurements are required to be made within the project boundary.

The proposed methodology states "A subset of the project boundary shall be delineated where field measurements will take place... Within the area chosen for field measurements, sampling points must be located randomly or systematically with a random starting location." Upon several readings, it is now clear that it is intended that a single area within the project area must be chosen (by convenience, if desired) for field measurements, and that sampling points must be located within this area in a statistically valid fashion. However, it may be a little confusing to the reader. It is suggested that the term "subset" be replaced by another term such as "discrete area".

The proposed methodology must provide guidance regarding the number of validation sample points to be installed.

Proponent Response: The text in the Section 8.1.1.5.2 Validation of calibrated SIMGRO Model has been altered as requested.

However, we do feel that it is not necessary for validation points to have been collected in the project boundary if the conditions set out are true. Therefore, we would like to propose the following text replace what is currently lines 741-756:

Modeled water levels must be compared with actual field measurements of water levels to assess the accuracy of the model. A discrete area either within the project boundary or meeting the below conditions shall be delineated where field measurements to take place. It is allowable for this discrete area to be chosen based on accessibility to sampling locations. This discrete area must meet the following conditions:

• Sampling area must meet the applicability conditions set by the methodology

• All data required for SIMGRO modeling must have been collected using criteria within the methodology.

• SIMGRO model must be run for the sampling area for the time period when field measurements take place using actual climate data

• Yearly water table level range must be within ±50 cm of that within project boundary

• Minimum peat thickness in the area modeled must be greater than the minimum within the project boundary

• Density of major anthropogenically created canals in the area modeled must be within ±20% of that within total project boundary (only required where field measurements occur outside project boundary)

• Average annual precipitation must be within ±20% of that within project boundary (only required where field measurements occur outside project boundary)

• Average temperature must be within ±20% of that within project boundary (only required where field measurements occur outside project boundary)

Auditor Response: The client's response to the NCR is not consistent with the language that is currently located within the proposed revision. Therefore, the NCR will remain open until such time as a consistent response can be provided.

Proponent Response 2: Modified text in Section 8.1.1.6.2: Modeled water levels must be compared with actual field measurements of water levels to assess the accuracy of the model. A discrete area either within the project boundary or meeting the below conditions shall be delineated where field measurements to take place. It is allowable for this discrete area to be chosen based on accessibility to sampling locations. This discrete area must meet the following conditions:

• Sampling area must meet the applicability conditions set by the methodology

• All data required for SIMGRO modeling must have been collected using criteria within the methodology.

• SIMGRO model must be run for the sampling area for the time period when field measurements take place using actual climate data

• Yearly water table level range must be within ±50 cm of that within project boundary

• Minimum peat thickness in the area modeled must be greater than the minimum within the project boundary

• Density of major anthropogenically created canals in the area modeled must be within ±20% of that within total project boundary (only required where field measurements occur outside project boundary)

• Average annual precipitation must be within ±20% of that within project boundary (only required where field measurements occur outside project boundary)

• Average temperature must be within ±20% of that within project boundary (only required where field measurements occur outside project boundary)

Auditor Response 2: The proposed methodology does not require validation sampling to take place within the project area. It is the opinion of the assessor that allowing validation of the SIMGRO model using data collected outside the project area would negatively impact the integrity of the proposed methodology and the VCS Program as a whole. Therefore, in order to ensure that the principle of accuracy (VCS Standard, Section 2.4.1) is upheld, it is necessary that validation data be required to be collected from inside the project boundary. The same must be required in Section 9.3.5 of the proposed methodology.

Proponent Response 3: The methodology has been modified to require validation sampling to take place within the project area.

Auditor Response 3: As stated, the methodology has been modified to require validation sampling to take place within the project area. Therefore, this NCR can be closed.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.25 dated 11/21/2011

Standard Reference: VCS Standard V3.1, Section 2.4

Document Reference: proposed methodology (10/28/11), Sections 8.1.1.6.2 and 9.3.5.1

Finding: When evaluating the performance of SIMGRO for predicting water levels, the proposed methodology requires the user to calculate the Pearson correlation coefficient (incorrectly referred to as R2) to calculate the strength of the correlation between modeled and actual groundwater levels. This is not an appropriate metric for this purpose, as a strong correlation coefficient will result even if predicted water levels are horribly biased (for example, a correlation coefficient of 1.0 will result if predicted water levels are always exactly 100% greater than actual water levels). The performance of SIMGRO must be evaluated in terms of bias, which can be quantified as the arithmetic average of the deviations between the predicted and actual water levels.

RMSE is a useful statistic and can be retained as a descriptor of the performance of SIMGRO. However the requirement of an "RMSE less than or equal to 35%" does not make any sense, as Equation 6 will produce an RMSE value in meters. Please present the threshold value in the same units as the quantified RMSE value.

In both the case of bias and RMSE, thresholds must be designed so as to maintain the principle of accuracy in the VCS Standard: "Reduce bias and uncertainties as far as is practical."

Proponent Response: Altered text in section 8.1.1.5.2:

An RMSE less than or equal to 10 cm is required.

The metric used to test bias in the model is the mean error (ME).

Mean Error (ME)

ME= 1/G Σ▒〖(〖Meas〗_g 〗-〖Mod〗_g)

Where:

Measg Measured water level relative to the peat surface value g; m

Modg Model calculated water level relative to the peat surface value g; m

g 1,2,3…G sample number; dimensionless

An ME less than or equal to 10 cm is required.

Text referring to the Pearson correlation coefficient deleted.

Auditor Response: The required changes have been made to (now) Section 8.1.1.5.2 and Section 9.3.5. The stated thresholds for root mean square error and mean error (which are now stated in units of centimeters) are sufficient to ensure high accuracy in the water level predicted by SIMGRO.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.26 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11)

Finding: The parameter symbolized as i is variously described as "baseline stratum" (Equation 2 and 11) and "peat depletion time" (Equation 13) and "peat depletion time in the project scenario" (Equations 14, 15, 19 and 20). This inconsistency could be confusing to the user. In addition, the peat depletion time strata identified apply only to the baseline scenario (see NCR 2011.33). Therefore, please adopt a consistent terminology for parameter i that does not make reference to the project scenario.

Proponent Response: Text has been altered throughout to remove reference to project scenario.

Auditor Response: Parameter i is now consistently defined as "1, 2, 3 …I peat depletion time strata in the baseline" throughout the proposed methodology.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.27 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Section 8.1.4.1.1

Finding: There is no explicit link between parameter A(i) in Equation 10 and parameter A(i,j,m) in Equation 13. Such a link must be created so that the user can understand how one parameter feeds into another.

Equation 13 is supposed to quantify emissions from soil carbon in stratum i and year t. However, the link with year t is missing. Please fix the equation so that there is an explicit link to year t between the left and right sides of the equation.

Parameter j is defined below Equation 14 as "1,2,3 …J Water table level; m (maximum 1 m)". This strongly implies that j must be a non-zero integer, and requires that the maximum value of j be 1 meter. The only permissible value of j is therefore 1 meter. As this will obviously not provide helpful results, please correct the equation to allow drainage depth to be quantified to a reasonable level of precision. As SIMGRO is not likely to output drainage depth in even numbers, guidance is needed regarding how grid cells should be sorted into water table level classes.

Proponent Response: Eq 13 has been updated so the emissions from soil carbon pool resulting from peat oxidation in peat depletion time stratum I in year t is the sum of emissions from each stratum with mean monthly level of water table j in month m in peat depletion time stratum i in year t

Methodology text altered to clarify the relationship between A(i) and A(i,j,m,t) to try to make relationship between A(i) and A(I,j,m,t) clearer:

Ai,j,m,t Area of peat depletion time stratum I with a mean monthly level of water table j in month m in year t

Methodology text altered to allow flexibility in level of precision of water table level:

j 0…J Water table level; m (maximum 1 m)

Auditor Response: The first two points of the NCR have been adequately responded to through improvements in what is now Equation 12. However, two problems with (now) Equation 12 remain:

1) Variable j is now not defined below Equation 12

2) There continues to be a disconnect between the continuous nature of variable j and the fact that only a discrete variable can be used as the index of summation in summation notation. In Equation 12, the product of parameters A(i,j,m,t) and E(peat,i,j) is summed over every instance of variable j from 1 to J, which can only occur if j is a discrete variable.

Therefore, the NCR remains open.

Proponent Response 2: Updated equation in 8.1.4.1.1: changed 'j' to 'j_corr_t' - 'j' is defined in 8.1.3 text to the definition of j_corr_t in 8.1.4.1.1 "a discrete variable between 0 and 1..."

Auditor Response 2: Equation 24 continues to be inconsistent with best mathematical practice. Parameter j(corr,t) cannot be both a non-integer value and an index of summation. Therefore, the NCR must remain open.

Proponent Response 3: The units for the parameter j(corr,t) have been changed to cm so that the parameter can be an integer value and an index of summation.

Auditor Response 3: Equation 24 now conforms conceptually to best mathematical practice. On this point, the NCR may be closed. However, some inconsistencies still exist with respect to parameter A(i,jcorr,m,t), and therefore NCR 2011.69 has been issued.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.28 dated 11/21/2011

Standard Reference: VCS Standard V3.1, Section 2.4

Document Reference: proposed methodology (10/28/11), Section 8.1.4.1.1

Finding: The VCS Standard requires the use of "conservative assumptions, values and procedures to ensure that net GHG emission reductions or removals are not overestimated."

The definition of parameter EF(peat) suggests a default value of 0.91 t CO2e/ha/yr/m and references the Couwenberg et al. (2009) study as a source for this default value. However, a search of this document for "0.91" finds no matches. The closest match is in page 5 of the study where Couwenberg et al. (2009) state: "Assuming an oxidative component of secondary subsidence of 40%, which is at the lower end of the range presented above, CO2 emissions from drained tropical peat soils amount to 900 g CO2 m-2 a-1 (250 g C m-2 a-1) for each 10 cm of additional drainage up to a depth of 50 cm." However, this appears to be several orders of magnitude different from the default value provided by the proposed methodology. Please provide evidence that the default value for EF(peat):

a) Is appropriately sourced from scientific literature or expert judgment;

b) Is appropriate for tropical ombrogenous peatlands in southeast Asia; and

c) Is as accurate as possible while appropriately erring on the side of conservatism.

In addition, judging from Figure 5 of the Couwenberg et al. (2009) study, the relationship between water level and emissions from peat oxidization is linear only for a limited range (approximately 0 cm to -40 cm). It appears that, at deeper drainage depths, the increase in emissions levels off considerably, such that a linear relationship that is appropriate for shallower drainage depths will result in an over-estimate of emissions at deeper drainage depths. Although Figure 5 was developed using data from temperate European peatlands, the bounds on the linearity of the relationship also appear to apply to tropical peatlands, as the authors state on page 5, "CO2 emissions from drained tropical peat soils amount to 900 g CO2 m-2 a-1 (250 g C m-2 a-1) for each 10 cm of additional drainage up to a depth of 50 cm" (note the upper bound of 50 cm). Therefore, please provide evidence that the upper bound of 1 m that is proposed for use in the methodology will not lead to over-estimation of emissions (and thus a likely over-crediting of projects).

Proponent Response: This function is based on text in Section 8.2.1.4 of VM0004, pg 35. This text also refers to the fact that the data has been parameterized to a depth of 1 m.

Updated reference:

Hooijer, A, Page, S, Canadell, JG, Silvius, M, Kwadijk, J, Wosten, H, Jauhiainen. 2010. Current and future CO2 emissions from drained peatlands in Southeast Asia. Biogeosciences, 7: 1505-1514.

Relationship between groundwater depth and CO2 emission in this paper is: CO2 t/ha/yr = 91 * groundwater depth (m)

Text in methodology altered based on this change.

Auditor Response: Section 2.1.5 of the cited journal article does document the factor that is recommended for use in the proposed methodology. From review of the article, it does appear that the factor is derived from the best available knowledge regarding the relationship between peat drainage and CO2 emissions. In addition, the authors of the cited article state "The linear relationship is considered the best estimate currently available for determining CO2 emissions at water table depths between 0.5 and 1 m, which covers the range of the most common groundwater depths in the study region." Therefore, it appears that both the emission factor and its stated upper bound can be justified by the literature.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.29 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.5.23

Document Reference: proposed methodology (10/28/11), Section 8.2.1

Finding: The proposed methodology states that "The same peat depletion time strata shall be used for both the baseline and project scenario and shall remain static for the crediting period." The requirement that peat depletion time strata remain static for the crediting period is not consistent with the VCS AFOLU Requirements, which states "The [peat depletion time] is considered part of the baseline and thus shall be reassessed with the baseline in accordance with Section 3.1.9". The methodology must contain a framework within which the peat depletion time can be reassessed at such time as the baseline is reassessed (see also NCR 2011.2).

Proponent Response: Text added to reassess peat depletion time during baseline reassessment

Auditor Response: The proposed methodology no longer contains guidance indicating that the peat depletion time remains fixed throughout the crediting period. However, the proposed methodology still does not contain clear guidance for reassessing the peat depletion time at the time that the baseline must be reassessed.

Section 8.1.2 of the proposed methodology does state that "The maximum number of years emissions can take place for a given grid cell must be reassessed during baseline reassessment using updated peat thickness estimates". However, it is not necessarily clear to the user that this statement indicates that the peat depletion time strata must be updated during baseline reassessment. Furthermore, no mention of the need to update the peat depletion time stratification is made in Section 9.3.4, which presumably contains guidance on monitoring of baseline emissions. As the proposed methodology still does not contain clear guidance on how peat depletion time is to be updated at baseline revision, this NCR remains open.

Proponent Response 2: Modified text in section 8.1.2 and 9.3.4: "The maximum number of years emissions can take place for a given grid cell must be reassessed at each monitoring event using updated peat thickness estimates calculated in section 8.1.1.3."

Auditor Response 2: The proposed methodology now contains clear guidance indicating that the peat depletion time for each grid cell must be update at each verification event and baseline reassessment. This aspect of the proposed methodology is now in conformance with the VCS AFOLU Requirements.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.30 dated 11/21/2011

Standard Reference: VCS methodology template V3.0, Section 8.4

Document Reference: proposed methodology (10/28/11), Section 8.4

Finding: The VCS methodology template requires that Section 8.4 contain an equation which quantifies a project's emission reductions and/or removals in the following form: Reductions(y) = BaselineEmissions(y) - ProjectEmissions(y) - LeakageEmissions(y), where y is a given year of the project. Equation 20 in the proposed revision quantifies "total net greenhouse gas emission reductions associated with the PRC activity", which is not the same thing. Please re-write Equation 20 to meet the specifications of the VCS methodology template, noting that some of the parameters that feed into Equation 20 may then need modification.

Proponent Response: Time added to Equation 20.

Auditor Response: Equation 20 (now Equation 22) has been modified as required. However, parameter C(PRC,t) has been incorrectly symbolized as parameter C(PRC) in Equation 22. Therefore, the NCR remains open.

Proponent Response 2: The parameter C(PRC,t) has been updated in the equation in Section 8.4.

Auditor Response 2: Section 8.4 of the proposed methodology is now in conformance with the cited requirement of the VCS Methodology Template.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.31 dated 11/21/2011

Standard Reference: VCS Standard V3.1, Section 4.7

Document Reference: proposed methodology (10/28/11), Sections 8.1.1.4 and 9.3.2

Finding: In Sections 8.1.1.4 and 9.3.2, the proposed methodology states "...evapotranspiration rates of the dominant vegetation cover(s) must be measured in the field or available from the scientific literature." This is not in conformance with the VCS Standard, which states "The methodology shall establish criteria and procedures for quantifying GHG emissions and/or removals for the selected GHG sources, sinks and/or reservoirs..." The proposed methodology must contain "criteria and procedures" for estimating evapotranspiration rates in both sections.

Proponent Response: Evapotranspiration in humid, tropical areas is fairly constant and variation in rainfall is much higher, therefore the SIMGRO model is much more sensitive to precipitation data compared to evapotranspiration and a default value from scientific literature is an acceptable input for evapotranspiration to the SIMGRO model. Having measured evapotranspiration data inputs will not significantly improve the model outputs.

Altered the text in 8.1.1.3

Additionally, evapotranspiration rates of dominant vegetation cover(s) must be available as input to the SIMGRO model. Evapotranspiration rates from the scientific literature are acceptable.

Evapotranspiration can be assumed to be a constant daily value of 3.5 mm day-1, as evapotranspiration is fairly constant in humid tropical areas and yearly variations in evapotranspiration show low variance.

Altered the text in 9.3.2

Additionally, evapotranspiration rates of dominant vegetation cover(s) must be available as input to the SIMGRO model. Evapotranspiration rates from the scientific literature are acceptable.

The reference for the constant evapotranspiration rate provided by the methodology is:

Takahashi, H., Usup, A., Hayasaka, H., Kamiya, M., Limin, S.H., 2004. The importance of ground water level and soil moisture of subsurface layer on peat/forest fire in a tropical peat swamp forest. In: Päivänen, J. (Eds.), Wise Use of Peatlands. Volume 1. Proceedings of the 12th International Peat Congress, Tampere, Finland, 6-11 June 2004. International Peat Society, Jyväskylä, Finland, p. 760.

Auditor Response: The proposed methodology still does not contain the required "criteria and procedures" for quantifying evapotranspiration. The default value of 3.5 mm/day that is suggested by the proposed methodology is acceptable. However, the proposed methodology appears to allow the use of other values, stating "Evapotranspiration rates from the scientific literature are acceptable" (Sections 8.1.1.3 and 9.3.2). If values other than the default value of 3.5 mm/day are allowed, the proposed methodology has not provided criteria against which values from the literature can be judged. Therefore, the NCR remains open.

Proponent Response 2: Deleted the sentence "Evapotranspiration rates from scientific literature are acceptable." Section 8.1.1.4 and 9.3.2 now state" Evapotranspiration can be assumed to be a constant daily value of 3.5 mm per day or the most recently published applicable factor.

Auditor Response 2: The proposed methodology has adequately established the criteria and procedures for quantifying evapotranspiration in the project area. The methodology user will now have adequate guidance to make appropriate use of evapotranspiration data in accounting for GHG emissions and removals.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.32 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.5.23

Document Reference: proposed methodology (10/28/11), Section 8.2

Finding: The VCS AFOLU Requirements states that "The criteria and procedures for quantifying GHG emissions/removals in the baseline scenario shall… Determine the peat depletion time." It is literally and contextually clear from this language that the peat depletion time is an attribute of the baseline scenario only. It is intuitively inappropriate to cease accounting for oxidation-related emissions for a given grid cell in the project scenario just because that grid cell is modeled to become depleted in the baseline scenario, as is done in Equation 15. The proposed methodology must be modified so that emissions from peat oxidization in the project scenario are accounted for in all grid cells throughout the crediting period.

Proponent Response: The text has been altered to assume the peat depletion time is greater than the crediting period for the entire project area.

Auditor Response: Section 8.2.1 now states that "It is conservatively assumed that the peat depletion time will be larger than the crediting period for the entire project boundary. Therefore, the peat depletion time for all baseline strata are assumed to be greater than the crediting period." Upon several readings of this language in the context of this NCR, it is clear that it is intended that project scenario emissions be accounted for throughout all grid cells in the project area throughout the crediting period. However, this is not likely to be intuitively clear to the methodology user. Furthermore, Equation 14 continues to indicate that project emissions should only be summed for years from 1 to t(max), where t(max) was defined as an attribute of the baseline scenario in Equations 6 and 7.

Therefore, the NCR remains open.

Proponent Response 2: Modified text in Section 8.2.1: Therefore, the peat depletion time for all baseline strata are assumed to be greater than the crediting period, and project emissions must be accounted throughout all grid cells in the project area over the entire crediting period. Added equation to Section 8.2.3.1 to provide for accounting of emissions from peat oxidation over the entire crediting period for all grid cells in the project area.

Auditor Response 2: It is now clear from Section 8.2.1 that emissions from peat oxidation in the project scenario must be accounted for throughout the project crediting period. However, Section 8.2.1 does not contain clear guidance for the methodology user. No clear guidance is given for the methodology user to use in stratifying the project area by peat depletion time. The proposed methodology states that "the peat depletion time for all baseline strata are assumed to be greater than the crediting period" but does not state what the peat depletion time are assumed to be equal to. Furthermore, the methodology developer's insistence on using the phrase "peat depletion time" to refer to meanings that are independent of the definition of the phrase in the VCS AFOLU Requirements, Section 4.5.24(1), is likely to lead to continued confusion.

Proponent Response 3: Section 8.2.1 has been deleted from the methodology as the project area is not stratified by peat depletion time in the project scenario. To maintain clarity that emissions from peat oxidation in the project scenario must be accounted throught the project crediting period, Section 8.2.2.1 states "It is conservatively assumed that emissions from peat oxidation may occur over the entire project area over the entire crediting period, therefore emissions must be accounted throughout all grid cells in the project area over the entire crediting period."

Auditor Response 3: The deletion of Section 8.2.1 and the clarification of text in Section 8.2.2.1 have resolved the issue, and therefore the NCR may be closed.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.33 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11)

Finding: On several occasions, the proposed methodology invokes the CDM tool "Tool for testing significance of GHG emissions in A/R CDM project activities." However, the sourcing of the tool is not consistent throughout the methodology. Line 109 refers to the tool generically, and the footnote contains a link to Version 01 of the tool. Lines 165-166 require the latest version of the tool (note that this is different from allowing any version of the tool to be used), and provide a hyperlink to a CDM web page that contains all of the approved large-scale A/R methodologies but does not contain any reference to the tool in question. The Table in Section 5.4 requires application of the most current version of the tool, but does not provide a hyperlink. The assessment team has three comments:

1) To avoid unnecessary confusion, the proposed methodology must uniformly either require the latest version of the tool or not require the latest version of the tool, unless doing otherwise can be justified

2) All hyperlinks to internet sources must be current at time of methodology assessment

3) It is not required that hyperlinks to CDM tools be provided in the methodology, but if a hyperlink is provided for a given tool in more than one location in the methodology, the hyperlinks must be consistent

Proponent Response: Altered text of methodology so that all references to the tool require that the most current version of the tool is used.

All hyperlinks in footnote to tool point the current version of the tool.

Auditor Response: The required changes have been made.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.34 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.3.24

Document Reference: proposed methodology (10/28/11), Section 8.5.4

Finding: The VCS AFOLU Requirements states that "As transient peaks of CH4 may arise after rewetting peatland, PRC rewetting methodologies shall include CH4 emissions in the project boundary. The methodology shall establish the criteria and procedures by which the CH4 source may be deemed de minimis (as set out in Section 4.3.4) or conservatively excluded (as set out in Section 4.3.5)." The criteria and procedures by which the CH4 source may be deemed de minimis in the project scenario have been identified, but the criteria and procedures by which the CH4 source may be conservatively excluded in the project scenario have not been identified.

Proponent Response: Altered text in 8.2.3.2 of methodology:

CH4 missions in the project scenario are conservatively estimated by multiplying the project area by the highest emission coefficient for rewetted organic soil covered by forest in tropical conditions mentioned by the IPCC Good Practice Guidance for LULUCF or a lower emission factor, if it is justifiable from research for the area of interest. CH4…emissions may be excluded if deemed insignificant based on the application of the CDM A/R methodological tool “Tool for testing significance of GHG emissions in A/R CDM project activities.” .

Auditor Response: The proposed methodology has still not established the criteria and procedures by which the CH4 source can be conservatively excluded from project scenario accounting. Therefore, the NCR remains open.

Proponent Response 2: Added text to section 8.2.3.2: "CH4…emissions may not be excluded from project accounting." Because CH4 emissions are conservatively not accounted in the baseline by the methodology, CH4 emissions in the project cannot be lower in the project compared to the baseline, therefore the methodology does not elect conservative exclusion of CH4 emissions.

Auditor Response 2: The proposed methodology indicates that CH4 emissions cannot be conservatively excluded from accounting in the project scenario. This effectively constitutes "criteria and procedures by which the CH4 source may be... conservatively excluded", as required by the VCS AFOLU Requirements.

Closing Remarks: The Proponent’s response adequately addresses the finding.

NCR 2011.35 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Sections 4 and 5.1

Finding: As an applicability condition, Section 4 of the proposed methodology states "The project area is not hydrologically connected to adjacent peatland areas outside the project boundaries or, where the area is hydrologically connected, a buffer zone is established in accordance to VCS V3." This is not consistent with the statement in Section 5.1 that "As per the applicability conditions of the methodology, the project boundary must encompass complete watershed within a peat dome. Each watershed within the project boundary must be self-contained and thus the hydrology within the boundary of the project area does not impact the hydrology of other land areas." The proposed methodology must be consistent regarding whether, and under what conditions, the area may be hydrologically connected to areas outside the project boundary (see also NCR 2011.4).

Proponent Response: Altered text of methodology in Section 4 Applicability Conditions to remove leakage buffer zone language:

The project area comprises one or more complete watersheds. The project area is not hydrologically connected to adjacent peatland areas outside the project boundaries.

Auditor Response: The proposed methodology now exhibits internal consistency with respect to the requirements for hydrological connectivity to outside areas.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.36 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.4.1

Document Reference: proposed methodology (10/28/11), Section 6

Finding: The VCS AFOLU Requirements states that "The determination and establishment of a baseline scenario shall follow an internationally accepted GHG inventory protocol, such as the IPCC 2006 Guidelines for National GHG Inventories." Please identify the "internationally accepted GHG inventory protocol" that was followed in baseline determination and establishment, and provide a brief description of how the internationally accepted GHG inventory protocol was taken into account.

Proponent Response: Guidance in Chapter 3 Consistent Representation of Lands of the IPCC 2006 Guidelines for National GHG Inventories was followed in baseline determination and establishment. Guidance on land-use categories and land-use category conversions was followed to determine that the project area represents forest remaining forest in the baseline.

The following text was added to Section 2 the methodology:

Baseline determination and establishment is based on protocols in IPCC 2006 Guidelines for National GHG Inventories Chapter 3 Consistent Representation of Lands.

Auditor Response: Chapter 3, Volume 4 of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories does not contain any guidance with respect to the determination and establishment of a baseline scenario. This is indicated by, among other things, the failure of a word search of "baseline" to result in any hits. Furthermore, it is not clear that the project area is "forest remaining forest" in the baseline scenario, as there is nothing in the proposed methodology to prevent a different type of baseline land use from occurring. The requirement remains for it to be demonstrated that the determination and establishment of a baseline scenario has followed an internationally accepted GHG inventory protocol.

Proponent Response 2: Guidance in Chapter 4 Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol of the IPCC 2003 Good Practice Guidance for Land Use, Land-Use Change and Forestry was followed in baseline determination and establishment. Guidance in IPCC 2003 Chapter 4 was used to determine the scenario that reasonable represents the anthropogenic emissions by sources and anthropogenic removals by sinks of greenhouse gases that would occur in the absence of the project activities.

The following text was added to Section 2 the methodology:

Baseline determination and establishment is based on protocols in IPCC 2003 Good Practice Guidance for Land Use, Land-Use Change and Forestry Chapter 4 Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol.

Auditor Response 2: The determination and establishment of the baseline scenario can be seen to have followed the IPCC 2003 Good Practice Guidance for Land Use, Land-Use Change and Forestry, Section 4.3.3.1. Therefore, the referenced requirement of the VCS AFOLU Requirements has been met.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.37 dated 11/21/2011

Standard Reference: VCS AFOLU Requirements V3.1, Section 4.5.1

Document Reference: proposed methodology (10/28/11), Section 8

Finding: The VCS AFOLU Requirements states that "Methodologies shall establish procedures to quantify the GHG emissions or removals for the project and baseline scenario. The IPCC 2006 Guidelines for National GHG Inventories or the IPCC 2003 Good Practice Guidance for Land Use, Land-Use Change and Forestry shall be used as guidance for quantifying increases or decreases in carbon stocks and GHG emissions. The IPCC Guidelines shall also be followed in terms of quality assurance/quality control (QA/QC) and uncertainty analysis." Please identify which of the mandatory IPCC guidance documents was used to quantify GHG emissions or removals for the project and baseline scenarios. Please also provide a brief description of how guidance from the applicable IPCC document informed the following aspects of the GHG accounting process:

- Increases or decreases in carbon stocks and GHG emissions

- Quality assurance/quality control

- Uncertainty analysis

Proponent Response: Guidance in Chapter 7 Wetlands was followed in quantifying increases and decreases in carbon stocks, quality assurance/quality control, and uncertainty analysis taking into account the baseline and project land uses in the project area.

The following text was added to the Section 2 of the methodology:

Estimations of increases and decreases in carbon stocks, quality assurance/quality control measures, and uncertainty analysis is based on protocols in IPCC 2006 Chapter 7 Wetlands.

Auditor Response: The requested information has been provided. Upon reviewing Chapter 7, Volume 4 of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, it is clear that framework provided by the chapter informed the development of the proposed methodology.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.38 dated 11/21/2011

Standard Reference: VCS Standard V3.1, Section 4.8.2

Document Reference: proposed methodology (10/28/11), Section 9.3

Finding: The VCS Standard states that "The methodology shall establish criteria and procedures for monitoring, which shall cover the following… Monitoring frequency and measurement procedures." Monitoring frequency must be established for the following:

- Monitoring the project boundary

- Dam establishment

Proponent Response: The monitoring frequency of dam establishment was added to the monitoring of dam location in section 9.2

Monitoring of project boundary added to data monitored section 9.2

Auditor Response: Section 9.2 now contains guidance for the frequency with which the project boundary and established dams must be monitored.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.39 dated 11/21/2011

Standard Reference: VCS Standard V3.1, Section 4.8.2

Document Reference: proposed methodology (10/28/11), Section 9.3.3.1

Finding: The VCS Standard requires that "The methodology shall establish criteria and procedures for monitoring, which shall cover the following… Monitoring procedures, including estimation, modeling, measurement or calculation approaches."

The proposed methodology requires monitoring of the project boundary, and states the objective for this monitoring: "to confirm that the project proponent maintains control over the entire area included within the project boundaries." However, the criteria and procedures for monitoring the project boundary have not been established.

Proponent Response: Monitoring of project boundary added to data monitored section 9.2

Auditor Response: No additional guidance regarding criteria and procedures for monitoring of the project boundary appears to have been added to Section 9.2. Therefore, this NCR remains open.

Proponent Response 2: Added text to project boundary parameter table in Section 9.2: Documentation demonstrating project proponent maintains control of entire project boundary must be obtained. Such documentation could include legal land title. Project proponent must verify if project boundaries determined at monitoring event coincide with original project boundaries delineated in GIS.

Auditor Response 2: The proposed methodology now contains criteria and procedures for monitoring of the project boundary.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.40 dated 11/21/2011

Standard Reference: VCS Standard V3.1, Section 4.7

Document Reference: NA

Finding: The VCS Standard requires that "The methodology shall establish criteria and procedures for quantifying GHG emissions and/or removals for the selected GHG sources, sinks and/or reservoirs, separately for the project (including leakage) and baseline scenarios."

A review of the SIMGRO user's guide indicates that the methodology has not adequately established criteria and procedures for the use of SIMGRO to quantify GHG emissions and/or removals. For example, the user is presented with three possible methods to be used for estimation of evapotranspiration: 1. reference crop method, using 'Makkink';

2. reference crop method, using 'Penman-Monteith' with standard crop parameters;

3. Penman-Monteith with specific crop parameters.

At this point and every other point at which the user must make a decision regarding the model/method to be used within SIMGRO, the methodology must provide guidance regarding the method to be used. Sufficient detail must be provided so that the methodology can be used, and audited against, by individuals who are not experts in the use of SIMGRO. Sufficient detail must also be provided regarding the information that must be input into SIMGRO, including data formats and other technical details.

Proponent Response: For the three possible methods to be used for estimation of evapotranspiration rates the user input overrides the estimation of evapotranspiration within SIMGRO and selection of an estimation method is not necessary.

The following text was added to Section 8.1.1.5.1

Various modules within SIMGRO may be used for simulating surface water and drainage flow and module selection depends on ease of use. Use of ASCII output files are recommended for ease in analysis of results.

Auditor Response: This NCR has not been adequately responded to. Although it may be true that evapotranspiration can be set through user input, additional information is still necessary to ensure that high-quality output results from the use of SIMGRO. No actual guidance is provided within the proposed methodology for the use of SIMGRO, although some guidance is provided regarding appropriate inputs and outputs. More information should be provided, and ideally accompanied be a diagram that illustrates how the different modules are used.

Proponent Response 2: A diagram from the SIMGRO user model is included in Section 8.1.1.6.1

Auditor Response 2: A diagram (Figure 1) has been added to illustrate the various processes in the SIMGRO model, and the methodology user is referred to the SIMGRO user's guide for more information. Although ideally more guidance for the use of SIMGRO would exist within the proposed methodology, the VCS requirements are not prescriptive regarding the degree of guidance that methodologies must provide for operating specific software that is mandated for use by the methodology. Therefore, the issue has been appropriately resolved and this NCR can be closed.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.41 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Sections 8.1.1.4 and 9.3.2

Finding: Section 8.1.1.4 of the proposed methodology states that "Precipitation data must be available on the daily time step for a climate station within 100 km and within ±100 m elevation of the project boundary for 15-20 years prior to the project start date... Data for the project area may be supplied from more than one weather station falling within 100 km of the project boundary. In this case the relevant station should be specified for each of the SVAT-units in the model. Where more than one weather station data exists, data on climate variables maybe interpolated for the project area."

Section 9.3.2 of the proposed methodology states that "Precipitation data must be available on the daily time step for a climate station within 100 km and within ±100 m elevation of the project boundary over the monitoring period... Data for the project area may be supplied from more than one weather station falling within 100 km of the project boundary. In this case the relevant station should be specified for each of the SVAT-units in the model. Where more than one weather station data exists, data on climate variables maybe interpolated for the project area."

Two possible interpretations are possible regarding the language in both cases:

1) For the historical reference period prior to the project start date, and for the entire monitoring period, precipitation data must be available on a daily time step from at least one climate station located within 100km (horizontal distance) and 100m (vertical distance) from the project boundary. If more than one climate station meets the location requirements, the user may "mix and match" precipitation data from more than one climate station to fill gaps in the precipitation record (e.g., if climate station A is down for a week, the user can fill in with data from climate station B for all SVAT units).

2) Where more than one climate station meets the location requirements, different SVAT units may be assigned precipitation values from different climate stations, and values from different climate stations can be interpolated to provide data for a given SVAT unit. However, all climate stations must be operational at all times. It is not possible for the user to "mix and match" climate data to fill in the gaps where one climate station is not operational.

Please revise the proposed methodology so the correct interpretation is clarified for the user.

Proponent Response: Methodology text was altered so the following applies:

1) For the historical reference period prior to the project start date, and for the entire monitoring period, precipitation data must be available on a daily time step from at least one climate station located within 100km (horizontal distance) and 100m (vertical distance) from the project boundary. If more than one climate station meets the location requirements, the user may "mix and match" precipitation data from more than one climate station to fill gaps in the precipitation record (e.g., if climate station A is down for a week, the user can fill in with data from climate station B for all SVAT units).

Added the following text to 8.1.1.3 and 9.3.2

If more than one weather station meets the location requirements for a given SVAT-unit, for time periods where data from the selected weather station is not available, data from an alternate weather station that meets the location requirements of the SVAT-unit may be substituted.

Auditor Response: The proposed methodology effectively clarifies that interpretation #1 is correct. This interpretation should now be clearer to the user of the proposed methodology.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.42 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Section 9.3.3.4

Finding: The proposed methodology requires sampling points for ex post validation of modeled water levels to be located as follows: "The location of sampling points shall be determined using representative random sampling or systematic sampling with a random initiation point. It is allowable for sampling design to be based on accessibility to sampling points, however all sampling points must be within the project boundary." The sampling guidance is not consistent between the two sentences (i.e. sampling cannot be simultaneously "representative random sampling or systematic sampling with a random initiation point" and "based on accessibility to sampling points"). Please revise the sampling guidance so that it is consistent.

Proponent Response: Altered text of methodology in Seciton 9.3.3.4 to revise sampling guidance:

A discrete area may be selected for sampling points based on ease of access, and sampling points may be selected within the discrete area using systematic sampling. An alternative approach to sampling may be used if it can be justified that the sampling method does not create bias. All sampling points must be within the project boundary.

Auditor Response: The proposed methodology now provides clear and guidance regarding the location of sampling points for monitoring of water level.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.43 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Section 9.3.5.1

Finding: The proposed methodology states "In instances where these criteria are not met for the monitoring period, the modeled water table levels shall be altered to ensure a conservative estimate of water table levels. Where over 85% of modeled water level values are greater than field measured water level values, it can be assumed that the model is producing a conservative estimate, and SIMGRO water level output for all grid cells may be used to estimate monthly water level values. Where this condition is not met, all SIMGRO model estimates of water level must be decreased by a uniform percentage for all months and years until over 85% of modeled water level values are greater than field measured water level values." The audit team has the following comments:

1) It is unclear whether the term "water level" is meant to refer to vertical rise above the peat surface (in which case values where the water level is below the peat surface would be negative) or to the concept of drainage depth (in which case values where the water level is below the peat surface would be positive). The proposed revision must be amended to clarify this.

2) Underestimation of the GHG benefit of the project will result from positive bias in drainage depth in (i.e. negative bias in water level above the peat surface) in the project scenario. Therefore, if "water level" is meant to refer to vertical rise above the peat surface, the guidance presented by the proposed methodology will have to be revised, as a non-conservative error will result where modeled water level values are greater than measured water level values.

Proponent Response: Text has been updated to improve clarity on the definition of water level throughout document.

Section 9.3.5.1 text has been updated:

Where this condition is not met, all SIMGRO model estimates of water level relative to the peat surface values must be increased by a uniform percentage for all months and years until over 85% of modeled water level relative to the peat surface values are greater than field measured water level relative to the peat surface values.

Auditor Response: The proposed methodology now provides sufficient clarity to allow the user to ensure that error in modeled water level remains conservative.

Closing Remarks: The Proponent’s response adequately addresses the finding.

NCR 2011.44 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), page 29

Finding: As the area of parameter A(grid) dictates the spatial resolution used for the quantification of GHG emissions reductions in the baseline and project scenarios, the proposed methodology must define a maximum size threshold for parameter A(grid).

Proponent Response: Text updated to include: 90x90 m

Auditor Response: A maximum size threshold has been defined for the parameter.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.45 dated 11/21/2011

Standard Reference: VCS Standard V3.1, Section 4.1

Document Reference: proposed methodology (10/28/11), Section 8.4

Finding: The VCS Standard requires that "Where applicable, methodology elements shall provide a means to estimate a 90 or 95 percent confidence interval. Where a methodology applies a 90 percent confidence interval and the width of the confidence interval exceeds 20% of the estimated value or where a methodology applies a 95 percent confidence interval and the width of the confidence interval exceeds 30% of the estimated value, an appropriate confidence deduction shall be applied. Methods used for estimating uncertainty shall be based on recognized statistical approaches such as those described in the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories." Uncertainty in the GHG emission reductions and/or removals quantified in Section 8.4 of the proposed methodology will result from uncertainty in the following aspects of the proposed methodology:

- The prediction of water levels in the baseline and project scenarios using a model (SIMGRO) will produce a certain degree of error (otherwise there would be no need to validate it)

- The derivation of a digital terrain model through processes that produce some error (in the case of both LiDAR-based and SRTM-based modeling)

- Evapotranspiration rates of the dominant vegetation covers, unless sourced from an indisputably conservative default value

Therefore, it is not correct to state, as is stated in Section 8.4, that "Because the input data for the SIMGRO model and SIMGRO model outputs either are based on direct measurements or contain constraints on uncertainty, there is no requirement to calculate uncertainty of emissions." Uncertainty must be quantified using the guidance documentation referenced in the VCS Standard, and proposed methodology must contain the guidance necessary to compute and apply a confidence deduction if applicable.

Proponent Response: A section on estimation of uncertainty has been added.

Text on how to calculate uncertainty has been added for both

Water table levels and the DTM.

The evapotranspiration level has been switched to a conservative default value of 3.5 mm day-1 based on the following reference:

Takahashi, H., Usup, A., Hayasaka, H., Kamiya, M., Limin, S.H., 2004. The importance of ground water level and soil moisture of subsurface layer on peat/forest fire in a tropical peat swamp forest. In: Päivänen, J. (Eds.), Wise Use of Peatlands. Volume 1. Proceedings of the 12th International Peat Congress, Tampere, Finland, 6-11 June 2004. International Peat Society, Jyväskylä, Finland, p. 760.

Auditor Response: The guidance for quantification of uncertainty with respect to the DTM is reasonable, so long as NCR 2011.13 can be resolved. However, it is not clear how the user is intended to convert the uncertainty as calculated in units of meters in Equations 4 and 5 to uncertainty as calculated in units of percent, which is the input for Equations 26 and 27.

Equation 12, which is intended to quantify uncertainty in modeled water level, is not the most appropriate tool for uncertainty calculation. As the modeled water levels almost certainly incorporate some degree of bias, and as it is not necessarily guaranteed that the errors will be normally distributed, uncertainty would be more appropriately quantified through the use of the methods provided under "Accuracy Assessment of the DTM".

It is not clear how the percent uncertainty in water table levels for stratum i is intended to be quantified. In addition, water table measurements may be performed within a subset of strata. It is not clear how the uncertainty in the strata that are actually sampled is intended to be expanded to the strata that are not sampled.

Proponent Response 2: Equation for calculating uncertainty in DTM and expressing as a percent has been added to section 8.1.1.2. Modified section 8.1.1.6.2 to provide methods for quantifiying uncertainty using the methods provided for calculating uncertainty in DTM.

Auditor Response 2: It continues to be unclear how the percent uncertainty in water table levels for a given stratum i is intended to be quantified in the project and baseline scenarios. Section 8.1.1.6.2 provides guidance for the quantification of parameter U(WT), the "percentage uncertainty in water level estimate", but there is no indication of how this parameter should be related to parameters U(BSL,WT,i1) and U(Pr,WT,i1), which are defined as "Uncertainty in water table levels for stratum i in the baseline" and "Uncertainty in water table levels for stratum i in the project case", respectively.

Proponent Response 3: Section 8.5 Uncertainty Analysis has been modified. As stratification of the discrete area within the project boundary selected for collection of field measurement to assess the accuracy of the SIMGRO model is not required, the percent uncertainty in water table levels for a given stratum i is not quantified in the project and baseline scenarios; instead a single value for percent uncertainty in water level estimate in the baseline and project scenarios is determined in Section 8.1.1.6.2. The DTM is an input to the SIMGRO model, therefore uncertainty in water level estimate is the only source of uncertainty that must be assessed and quantified to quantify uncertainty in emissions from change in pools. As the calculated percent uncertainty in water level estimates generated by the SIMGRO model is assumed to be the same for the baseline and project scenarios, the total project uncertainty directly equals the uncertainty in the water level estimate as determined through validation of the SIMGRO model as described in Section 8.1.1.6.2. However, uncertainty in the peat thickness model is a source of uncertainty in the estimation of peat depletion time. The DTM is an input to the peat thickness model, therefore uncertainty in the peat thickness model is the only source of uncertainty that should be assessed and quantified to quantify uncertainty in the estimate of peat depletion time. The methodology elects to conservatively assume the lower bound of peat thickness in the calculation of peat depletion time in the baseline to address uncertainty in the peat thickness model and associated uncertainty in the estimation of peat depletion time.

Auditor Response 3: The proposed methodology's treatment of uncertainty is now in full conformance with Section 4.1 of the VCS Standard, as well as the principles of accuracy and conservativeness as set out in Section 2.4 of the VCS Standard.

Closing Remarks: The Proponent’s response adequately addresses the finding.

NCR 2011.46 dated 11/21/2011

Standard Reference: NA

Document Reference: proposed methodology (10/28/11), Sections 8.1.1.5 and 9.3.1

Finding: Section 9.3.1 of the proposed methodology states that "Over time additional information on the location and characteristics of waterways may be obtained." However, while substantial guidance exists in Section 8.1.1.5 regarding identification and field verification of waterways at validation, no guidance exists regarding the identification and field verification of waterways during subsequent monitoring events. Any guidance that exists for the initial identification and field verification of waterways must also apply at subsequent monitoring events. In addition, the proposed methodology must contain guidance for characterization of waterway classes where new waterway classes emerge during monitoring that were not identified at validation.

Proponent Response: Text in this section has been updated stating the same methods must be used as were used initially.

Auditor Response: The following sentence has been added to the text of the proposed methodology: "The methods delineated within Section 8.1.1.5 must be followed for any waterways to be added to the database and SIMGRO model. This would include location identification and characterization of waterway." However, Section 8.1.1.5 does not contain any information regarding identification of waterways. It appears that the text is intended to reference Section 8.1.1.4. If this is the case, the NCR can be closed when the proposed methodology is modified to reference Section 8.1.1.4.

Proponent Response 2: Section 9.3.1 now references the correct section.

Auditor Response 2: The correct section is now referenced by Section 9.3.1 of the proposed methodology.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.47 dated 02/10/2012

Standard Reference: VCS AFOLU Requirements V3.2, Section 4.4.11

Document Reference: proposed methodology (02/06/12), Section 8.1.1.4.3

Finding: The VCS AFOLU Requirements states that "The criteria and procedures for identifying alternative baseline scenarios shall also consider non-human induced rewetting brought about by… Collapsing dikes or ditches that would have naturally closed over time." The proposed methodology states "Any sampled waterway where at more than 50% of the measurement points slow water flow, presence of mud sedimentation within waterflow, presence of weed growth within flow of waterway, and presence of natural damming is observed is considered to undergo natural damming within the crediting period for projects with crediting periods of 100 years or less. The expected rate of natural damming estimated within the SIMGRO model is the proportion of sampled waterways identified as undergoing natural damming within the crediting period."

Please provide justification regarding the accuracy and conservativeness of the above approach.

Proponent Response: Based on the opinion of a peat expert familiar with tropical peat in Southeast Asia (Henk Wosten) the approach provided by the methodology to estimating the rate of natural damming within the SIMGRO model is sufficiently accurate and conservative to adequately model water levels without overestimating emission reductions generated by rewetting drained peatlands.

Auditor Response: The methodology developer provided an email, sent on February 29, 2012 by Henk Wosten, indicating his support for the methodology developer's assertion. Dr. Wosten has authored or co-authored at least four peer-reviewed publications relating to tropical peatlands of southeast Asia, and can therefore be considered to have some expertise on the subject. The assessor is therefore convinced that the criteria and procedures used to estimate the rate of natural blocking are in conformance with the VCS principles, as laid out in Section 2.4 of the VCS Standard.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.48 dated 02/10/2012

Standard Reference: VCS Standard V3.2, Section 4.1; IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, Section 6.3

Document Reference: proposed methodology (02/06/12), Section 8.5

Finding: The VCS Standard states that "Methods used for estimating uncertainty shall be based on recognized statistical approaches such as those described in the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories."

The IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, Section 6.3 states that Equation 6.3 is to be applied "Where uncertain quantities are to be combined by addition." However, Equation 28, which is used to quantify the total error in the RDP project activity, uses the equation form of Equation 6.4 to combine uncertainties. As the uncertain quantities (that is, the estimated emissions in the project and baseline scenarios) are combined by addition and not multiplication, the form of Equation 6.3 must be used to quantify the total error in the RDP project activity.

Proponent Response: Both uncertainty in the DTM and uncertainty in the modeled water levels result in change in emissions from the soil pool, therefore the uncertainties are multiplied together per strata and summed across the project area to determine baseline and project uncertainty.

Auditor Response: The nonconformity in what is now Equation 39 of the proposed methodology has not been addressed. Therefore, the NCR remains open.

Proponent Response 2: Section 8.5 Uncertainty Analysis has been modified. As stratification of the discrete area within the project boundary selected for collection of field measurement to assess the accuracy of the SIMGRO model is not required, the percent uncertainty in water table levels for a given stratum i is not quantified in the project and baseline scenarios; instead a single value for percent uncertainty in water level estimate in the baseline and project scenarios is determined in Section 8.1.1.6.2. The DTM is an input to the SIMGRO model, therefore uncertainty in water level estimate is the only source of uncertainty that must be assessed and quantified to quantify uncertainty in emissions from change in pools. As the calculated percent uncertainty in water level estimates generated by the SIMGRO model is assumed to be the same for the baseline and project scenarios, the total project uncertainty directly equals the uncertainty in the water level estimate as determined through validation of the SIMGRO model as described in Section 8.1.1.6.2. However, uncertainty in the peat thickness model is a source of uncertainty in the estimation of peat depletion time. The DTM is an input to the peat thickness model, therefore uncertainty in the peat thickness model is the only source of uncertainty that should be assessed and quantified to quantify uncertainty in the estimate of peat depletion time. The methodology elects to conservatively assume the lower bound of peat thickness in the calculation of peat depletion time in the baseline to address uncertainty in the peat thickness model and associated uncertainty in the estimation of peat depletion time.

Auditor Response 2: The error propagation approach referenced by this NCR is no longer used by the proposed methodology. Therefore, this NCR is no longer applicable and will be withdrawn.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.49 dated 02/10/2012

Standard Reference: VCS methodology template V3.1, Section 2

Document Reference: proposed methodology (02/06/12), Section 2

Finding: The VCS methodology template requires that Section 2 of the proposed methodology contain the following:

"Indicate in the table below [see table in template] whether the methodology uses a project, performance or activity method for determining additionality, and a project or performance method for determining the crediting baseline (see the VCS Standard for further information on these methods)." While the proposed methodology indicates in Section 2 that "This methodology uses a project method for determining both additionality and the crediting baseline", this is not indicated in the tabular format required by the VCS methodology template.

Proponent Response: Section 2 of the methodology has been updated to indicate that the methodology uses a project method for determining additionality and the crediting baseline in the tabular formate requred by the current VCS methodology template.

Auditor Response: The required information has now been added. Therefore, the proposed methodology now conforms with the requirements of the updated VCS Methodology Template dated February 1, 2012.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.50 dated 02/10/2012

Standard Reference: NA

Document Reference: proposed methodology (02/06/12), Section 4

Finding: The proposed methodology states that "Where validation of the [SIMGRO] model for project conditions using field measurements does not meet correlation coefficient requirements, this methodology is not applicable and cannot be used." This sentence is now confusing, as no "correlation coefficient requirements" now exist within the proposed methodology.

Proponent Response: Deleted "correlation coefficient requirements" from relevant applicability condition and inserted "accuracy requirements specified in Section 8.1.1.6 of this methodology"

Auditor Response: The referenced applicability condition now is now stated in a way that will be clear to the methodology user.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.51 dated 02/10/2012

Standard Reference: NA

Document Reference: proposed methodology (02/06/12), Sections 8.1.1.2 and 8.1.1.3

Finding: Section 8.1.1.3 of the proposed methodology states "Evapotranspiration can be assumed to be a constant daily value of 3.5 mm day-129", with the text "-122" in superscript. Although it appears likely that the numbers "22" are intended to refer to a footnote, the text could be logically read to mean that an evapotranspiration rate of 3.5 mm/(days^122) can be used. The same is true with Section 8.1.1.2 of the proposed methodology, which states "Sp = 4.5 cm yr-1 21", with the text "-1 21" in superscript.

The proposed methodology must avoid situations where footnote references can be confused with exponents.

Proponent Response: Altered relevant text subsituting "per year" and "per day" for "yr-1" and "day-1" respectively to avoid confusion of footnote references with exponents.

Auditor Response: Such alteration did take place in the referenced sections of the methodology. However, Section 8.1.3 still contains the language "(Sp =4.5 cm yr-1 31", with "-1 31" in superscript. Therefore, the NCR remains open.

Proponent Response 2: Altered relevant text in Section 8.1.3 subsituting "per year" for "yr-1" to avoid confusion of footnote references with exponents.

Auditor Response 2: The proposed methodology is now devoid of any situations in which footnotes could potentially be confused with exponents.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.52 dated 02/10/2012

Standard Reference: VCS AFOLU Requirements V3.2, Section 4.5.24(1)

Document Reference: proposed methodology (02/06/12), Section 8.1.2

Finding: Equations 5-7 compute the maximum number of remaining years, from whatever time the equations are used, in which emissions can be assumed to take place in the baseline. These equations are valid when applied at project initiation. However, when applied subsequent to project initiation (e.g. at baseline reassessment) they will produce values of parameter t(PDT,x) that are too low, because the input value PTH(x) will be lower than at project initiation. For times subsequent to project initiation, the resulting value of t(max,i), as applied to Equation 1, may result in the cessation of crediting for areas of the project at a time earlier than such cessation is warranted.

Proponent Response: In Section 8.1.2 I changed PThx to be "Peat thickness in grid cell x at the start of the monitoring period; meters

Auditor Response: PTh(x) is actually defined in Section 8.1.2 as "Peat thickness in grid cell x at the start of the baseline period; meters", which is the same definition that was provided in the previous iteration of the proposed methodology, dated February 6, 2012. In any case, the nonconformity has not been addressed. The nonconformity is that the parameter t(max,i), as calculated in what are now Equations 16-18, will become progressively lower at each verification event as an unintended consequence of the existing guidance provided by the proposed methodology. Because parameter t(max,i) is defined as the "Maximum number of years emissions can take place for stratum i in crediting period; years", such reduction in the value of the parameter will result in termination of crediting earlier than is warranted.

The initial statement that the equations now known as Equations 16-18 "compute the maximum number of remaining years, from whatever time the equations are used, in which emissions can be assumed to take place in the baseline" was incorrect.

Proponent Response 2: What are now Equations 18 and 19 have been modified such that t(max,i) as calculated will not become progressively lower at each verification event as an unintended consequence of the existing guidance provided by the proposed methodology. The sum of the parameter t which is defined as "1, 2, 3 ...t(crediting_period) years elapsed since the start of the project" is added to t(PDT,x) and compared to t(crediting_period) to determine t(max,i). Therefore the assumed number of years until all peat is depleted within grid cell x from the start of the baseline period is added to the years elapsed since the start of the project to determine the maximum number of years emissions can take place for stratum i starting from the crediting period at each verification event and during baseline reassessment, and t(max,i) will not become uneccesarily lower at each verification.

Auditor Response 2: As indicated, Equations 18 and 19 have been modified such that the peat depletion time will not inevitable and unnacountably decrease throughout the project crediting period. Therefore, the nonconformity has been resolved.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.53 dated 02/10/2012

Standard Reference: VCS Standard V3.2, Section 4.7.1

Document Reference: proposed methodology (02/06/12), Sections 8.2.2 and 8.2.3

Finding: Section 8.2.2 of the proposed methodology now states "It is conservatively assumed that subsidence due to peat drainage will also take place under the project scenario." It is not conservative to assume that subsidence due to peat drainage will also take place under the project scenario, as such an assumption will result in lower drainage depths in the project scenario and thus the possibility that project-scenario emissions will be underestimated.

Section 8.2.3 states that "The procedure to calculate CO2 emissions from peat oxidation in the project is implemented using the same method as in the baseline case, see Section 8.1.4." Because of the peat subsidence that is conservative to assume in the baseline scenario but not in the project scenario, as well as the peat depletion time in the baseline scenario, it is not appropriate to simply refer the user to Section 8.1.4. The proposed methodology must contain guidance for the quantification of emissions reductions and removals in the project scenario that is consistent with the VCS Standard, which states "The methodology shall establish criteria and procedures for quantifying GHG emissions and/or removals for the selected GHG sources, sinks and/or reservoirs, separately for the project (including leakage) and baseline scenarios."

Proponent Response: Updated text in 8.2.2 to: It is conservatively assumed that subsidence due to peat drainage does not take place under the project scenario. Also updated text and added new equation to 8.2.3.1 so progressive peat subsidence is not considered in estimation of project emissions.

Auditor Response: The text of Section 8.2.2 has been updated as stated. In addition, Section 8.2.3 no longer contains guidance indicating that subsidence be modeled in the baseline scenario. However, Section 8.2.3 now contains guidance indicating that "The procedure to calculate CO2 emissions from peat oxidation in the baseline is implemented as follows. For each stratum, it is conservatively assumed that the peat depletion time will be larger than the crediting period for the entire project boundary and project emissions must be accounted throughout all grid cells in the project area over the entire crediting period." This contains the following problems:

1) The reference to the baseline may confuse users, as the purpose of Section 8.2.3 is to "calculate ex ante GHG emissions in the project scenario".

2) The reference to the peat depletion time is not consistent with the usage of the term in the VCS AFOLU Requirements, and may therefore be confusing to users

Proponent Response 2: Altered text in what is now section 8.2.2 to correct reference to the baseline and deleted the term peat depletion time: "The procedure to calculate CO2 emissions from peat oxidation in the project case is implemented as follows. It is conservatively assumed that emissions from peat oxidation may occur over the entire project area over the entire crediting period, therefore emissions must be accounted throughout all grid cells in the project area over the entire crediting period.

Auditor Response 2: Section 8.2.2 of the proposed methodology now contains clear guidance with respect to quantification of GHG emissions in the project scenario, and the issues that necessitated issuance of this NCR have been resolved.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.54 dated 02/10/2012

Standard Reference: NA

Document Reference: proposed methodology (02/06/12), Sections 8.4 and 8.5

Finding: Section 8.4 of the proposed methodology states "Because the input data for the SIMGRO model and SIMGRO model outputs either are based on direct measurements or contain constraints on uncertainty, there is no requirement to calculate uncertainty of emissions." This is not consistent with Section 8.5, which contains requirements for the reporting of uncertainty.

Proponent Response: Deleted the text "Because the input data for the SIMGRO model and SIMGRO model outputs either are based on direct measurements or contain constraints on uncertainty, there is no requirement to calculate uncertainty of emissions."

Auditor Response: The conflicting statement has been removed from the proposed methodology.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.55 dated 02/10/2012

Standard Reference: NA

Document Reference: proposed methodology (02/06/12), Section 9.1

Finding: Parameters v(p) and d(p) do not exist within Equation 4 of the methodology.

Proponent Response: Equation for RMSE referred to in this finding has been corrected.

Auditor Response: The proposed methodology has been revised such that parameters v(p) and d(p) are no longer referred to.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.56 dated 02/10/2012

Standard Reference: NA

Document Reference: proposed methodology (02/06/12), Section 9.1

Finding: Parameter Ch(A,m,p) does not exist within Equation 9 of the methodology.

Proponent Response: Equation numbering and numbering in parameter tables has been corrected.

Auditor Response: Parameter Ch(A,m,p,w), which is an input to what is now Equation 12, is now appropriately defined in Section 9.1.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.57 dated 02/10/2012

Standard Reference: NA

Document Reference: proposed methodology (02/06/12)

Finding: Numbers assigned to equations are in some cases not unique throughout the proposed methodology, nor are equations always consecutively numbered as is common practice. This increases the difficulty of performing the assessment while also increasing the likelihood of an erroneous equation reference in Sections 9.1 and 9.2.

Proponent Response: Equation numbering and numbering in parameter tables has been corrected.

Auditor Response: The proposed methodology now employs consistent numbering and equation references throughout.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.58 dated 02/10/2012

Standard Reference: VCS Program Definitions V3.2

Document Reference: proposed methodology (02/06/12)

Finding: The proposed methodology now makes frequent use of the term "baseline period", which did not appear in the 10/28/11 version of the methodology. This term is not defined in the VCS Program Definitions, and it is not clear what it means. Therefore, this term must be defined in Section 3 of the proposed methodology.

Proponent Response: "Baseline period" has been defined in section 3.

Auditor Response: The term "baseline period" is now adequately defined in Section 3 of the proposed methodology.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.59 dated 02/17/2012

Standard Reference: VCS Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities, V1.0, Sections 1.2(b) and 2.1.3

Document Reference: proposed methodology (02/06/12), Section 6

Finding: Section 6 of the proposed methodology requires the use of the VCS Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities for demonstrating additionality. However, the VCS Tool requires that "The use of this tool to determine additionality requires the baseline methodology to provide for a stepwise approach justifying the determination of the most plausible baseline scenario" (Section 1.2(b)) and "The baseline methodology that would use this tool shall provide for a stepwise approach justifying the selection and determination of the most plausible baseline scenario" (Section 2.1.3). The baseline methodology has not provided for a stepwise approach justifying the selection and determination of the most plausible baseline scenario.

Proponent Response: We have added the requirement to the methodology that the baseline is determined by application of the most current version of the VCS Tool for the Demonstration and Assessment of Additionality in VCS AFOLU Project Activities. This approach has precedent in the approved VCS methodology VM0004.

Auditor Response: Section 2.1.3 of the VCS Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities requires that "The baseline methodology that would use this tool shall provide for a stepwise approach justifying the selection and determination of the most plausible baseline scenario." The Tool requires the baseline methodology to provide for a stepwise approach justifying the selection and determination of one "most plausible" baseline scenario from multiple alternative land-use scenarios that may emerge from application of the guidance of Section 2.1.2 of the Tool. See also Figure 1 of the Tool, which requires that the project proponent conduct "A stepwise approach for determination of the baseline land use scenario as provided by the baseline methodology". To merely refer the methodology user to the Tool in Section 6 of the proposed methodology would create a circular referencing error that is clearly not intended by the Tool.

The assessor is not aware of any VCS guidance indicating that treatment of the baseline scenario in other VCS-approved methodologies is considered precedent-setting.

Proponent Response 2: The methodology has been updated to require the use of the most current version of the CDM tool "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities" to identify the baseline scenario in section 6 and demonstrate additionality in section 7.

Auditor Response 2: As the Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities is no longer referenced by the proposed methodology, this finding is no longer applicable and will be withdrawn.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.60 dated 02/29/2012

Standard Reference: NA

Document Reference: proposed methodology (02/27/12), Section 8.1.1.1

Finding: The guidance within the proposed methodology for creating a land cover map has been moved to Section 8.1.1.1 and is now applicable to all methodology users, regardless of the method used to create the DTM. However, this section still contains references to "Radar data" and "the SRTM data used for creating the DTM". This language will be confusing for users who may not be using radar data for DTM creation.

Proponent Response: Altered text in Section 8.1.1.1 to clarify that the requirements for the land cover map relevant to correction of Radar data for vegetation height only apply if the project uses Radar data for DTM creation.

Auditor Response: The expectations for users who do not use Radar data for DTM creation are now appropriately clarified in Section 8.1.1.1 of the proposed methodology.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.61 dated 02/29/2012

Standard Reference: NA

Document Reference: proposed methodology (02/27/12), Equation 3

Finding: The following discrepancies exist between Equation 3 of the proposed methodology and the definitions below Equation 3:

- Parameters Z(val,a) and Z(DTM,a) exist within Equation 3, but these are not the same as parameters Z(val,q) and Z(DTM,q) which are defined below Equation 3 and also defined in Section 9.1.

- The squared difference between parameters Z(val,q) and Z(DTM,q) is summed over the array of index values g=1 to G, but it is not clear what these index values represent or how they relate to the quantity that is being summed.

Proponent Response: The indicated discrepencies between Equation 3 of the proposed methodology and the definitions below Equation 3 have been corrected.

Auditor Response: The indicated discrepancies have been resolved, and the application of Equation 3 should now be clear to the user.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.62 dated 02/29/2012

Standard Reference: NA

Document Reference: proposed methodology (02/27/12), Equation 5

Finding: Parameter U(DTM,Z), which is the output of Equation 5, is not defined below Equation 5. Instead, parameter U(DTM) is defined. However, Equations 6 and 8 clarify that parameter U(DTM) is distinct from parameter U(DTM,Z). The definition of parameter U(DTM) below Equation 5 is not consistent with the definition of parameter U(DTM) below Equations 6 and 8.

Proponent Response: Equation 5 has been deleted as the percent uncertainty in the vertical accuracy of the LiDAR derived DTM or SRTM is no longer a required input for other equations in the current version of the methodology.

Auditor Response: As the nonconforming element of the proposed methodology has been removed, this NCR is no longer applicable and can be withdrawn.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.63 dated 02/29/2012

Standard Reference: NA

Document Reference: proposed methodology (02/27/12), Equation 14

Finding: Parameter j(max) is defined below Equation 14 as "Maximum water depth; m". However, this definition is not very specific, and may be unclear to the methodology user.

Proponent Response: The text of the methodology has been updated: j(max) below what is now Equation 15 is defined as "Maximum absolute modeled value of water table relative to the peat surface; m"

Auditor Response: Parameter j(max) is now defined with appropriate clarity.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.64 dated 02/29/2012

Standard Reference: NA

Document Reference: proposed methodology (02/27/12), Equation 23

Finding: A discrepancy exists between parameter A(I,jcorr,t,m,t), as used in Equation 23, and parameter A(i,jcorr,m,t), as defined below Equation 23.

A discrepancy exists between parameter E(peat,i,jcorr,t), as used in Equations 23 and 24, and parameter E(peat,i,jcorr), as defined below Equations 23 and 24.

Proponent Response: The indicated discrepancies between parameters in what are now Equations 24 and 25 have been corrected.

Auditor Response: As stated by the methodology developer, the indicated discrepancies have been corrected.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.65 dated 02/29/2012

Standard Reference: NA

Document Reference: proposed methodology (02/27/12), Section 8.2.3.1

Finding: The proposed methodology states that "The procedure to calculate CO2 emissions from peat oxidation in the baseline is implemented as follows." The reference to peat oxidation in the baseline scenario is not consistent with the section in which the guidance is located, as the purpose of Section 8.2.3 is to "calculate ex ante GHG emissions in the project scenario."

Proponent Response: Text in what is now section 8.2.2.1 has been updated: "The procedure to calculate CO2 emissions from peat oxidation in the project case is implemented as follows."

Auditor Response: The reference to the baseline scenario in what is now Section 8.2.2.1 has bee removed from the proposed methodology.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.66 dated 02/29/2012

Standard Reference: NA

Document Reference: proposed methodology (02/27/12)

Finding: As stated in NCR 2011.32, it is inappropriate to cease accounting for GHG emissions in the project scenario after the peat depletion time has been reached for a given stratum in the baseline. The proposed methodology has provided modified language that no longer indicates this to be the case. However, the appearance of parameter t(max) as an upper limit in various locations throughout the proposed methodology will indicate to the methodology user that accounting should be ceased when the peat depletion time has been reached. The locations where this will occur are as follows:

- Equation 25

- Definition of variable t below Equations 28 and 29

- Definition of variable t below Equations 35 and 36

- Definition of variable t below Equation 37

Proponent Response: t(crediting_period) has been subsituted for t(max) in the equations indicated except for Equation 37 which refers to the baseline case where accounting must be ceased when the peat depletion time has been reached.

Auditor Response: As indicated, parameter t(crediting_period) has been substituted for parameter t(max) throughout Section 8.2, and it is therefore appropriately clear that emissions in the project scenario can take place throughout the crediting period.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.67 dated 02/29/2012

Standard Reference: VCS AFOLU Requirements V3.2, Sections 4.5.25 and 4.4.11

Document Reference: proposed methodology (02/27/12), Section 8.1.3

Finding: Section 4.5.25 of the VCS AFOLU Requirements states that "Baseline emissions shall be estimated conservatively and consider that the water level in the project area may rise during the project crediting period due to any or all of the causes identified in alternative baseline scenarios as set out in Section 4.4.11." Section 4.4.11 states that "The criteria and procedures for identifying alternative baseline scenarios shall also consider non-human induced rewetting brought about by...Progressive subsidence, leading to raising relative water levels, increasingly thinner aerobic layers and reduced CO2 emission rates." Equation 20 of Section 8.1.3 presumably adjusts water levels for each year to account for progressive subsidence in the baseline scenario. However, parameter t(b) is defined below this equation as "1, 2, 3, … tmax years elapsed since the start of the baseline period". Application of this definition would logically result in an error in the subsidence correction, since the baseline period, as defined in Section 3, cannot last longer than 10 years. Thus, subsidence would be underestimated, resulting in a non-conservative error in crediting.

Proponent Response: The definition of t(b) has been updated: "1, 2, 3, … tmax years elapsed since the start of the crediting period" to avoid underestimation of subsidence.

Auditor Response: The proposed methodology now appropriately deducts for peat subsidence in the baseline through each year of the project crediting period, resulting in the resolution of the identified nonconformity.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.68 dated 02/29/2012

Standard Reference: VCS Methodology Approval Process V3.3, Section 3.3.6

Document Reference: proposed methodology (02/27/12), Section 8.1.1.2

Finding: The VCS Methodology Approval Process states that "At the end of the public comment period, the VCSA shall provide all and any comments received to the developer. The developer shall take due account of such comments, which means it will need to either update the methodology or demonstrate the insignificance of the comment." During the public comment period, Peter Schlesinger stated "Also the profile spacing for the interpolation of a suitable terrain model is suggested to be just under 5 km; this seems much too far to me to be adequate."

In response to this comment, the methodology developer stated "The profile spacing for interpolation of the DTM needs to be adjusted most importantly to the size of the project area and homogeneity of the terrain. Ombrogenous peatlands, although dome shaped, are relatively flat with very small elevation changes from the highest point in the dome to the edges of the dome. Nonetheless, although 5 km is the maximum acceptable threshold, the methodology states “Spacing must be adjusted to terrain heterogeneity, i.e. the number of profiles must be increased with increasing complexity.”

It is the opinion of the assessor that the methodology developer has not demonstrated the insignificance of the comment. The existing language in the proposed methodology indicating that "Spacing must be adjusted to terrain heterogeneity" is not very specific and would be difficult for a third party to audit against. The methodology developer must update the proposed methodology in accordance with the comment from Mr. Schlesinger.

Proponent Response: Mr. Schlesinger's statement that "5 km […]seems much too far […]to be adequate" does not give any clue why this spacing seems too far for him. As of our experience with DTM generation, smaller peat domes with an extent up to 50 km (longest side) usually require a transect spacing of approx. 2-4 km in order for the model to yield a good quality result. For very large and homogeneous peat domes, with constant vegetation cover, no intersection of rivers, even higher profile spacings still yield good results. This is the case for the Sebangau, which has a very large spatial extent (160km N-S) but is very homogeneous over a very large area, so even 15 km profile spacing is adequate for achieving a good DTM result. This is due to the very small changes in elevation of only of only a few meters over tens of kilometers. The profile placement must consider also the distribution of vegetation strata, location of natural drainage network, location of watersheds, local depressions/elevations etc. Therefore, a denser profile spacing would be required for more complex shaped areas. More important than the profile spacing are the other placement criteria in the methodology, which are more of a qualitative nature (therefore less specific), but have significant influence on the DTM quality. Even though those qualitative criteria are more difficult to audit against than quantitative criteria, they can be checked whether they are fulfilled or not. And the resulting DTM will finally be tested in the accuracy assessment, which would reveal whether the placement of transects has been adequate or not. We would therefore remove the 5 km and put more emphasis on the three most important requirements on the profile placement.

Auditor Response: The information provided in response to this NCR has sufficiently demonstrated the insignificance of the public comment made by Peter Schlesinger. It is clear that a number of factors affect the minimum profile spacing needed, and so a fixed quantitative threshold for profile spacing may not be appropriate in this context. The assessor agrees with the methodology developer's assertion that the ultimate indication of the quality of the created DTM is its ability to accurately predict peat depth, and this is now directly accounted for in the proposed methodology. Therefore, this NCR can be closed.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.69 dated 03/21/2012

Standard Reference: NA

Document Reference: proposed methodology (03/14/12), Section 8.1.1.2

Finding: In the interior summation, Equation 24 sums the product of the values for parameters A(l,jcorr,m,t) and E(peat,l,jcorr,t) across values of parameter j(corr,t) from 1 to J. This is not consistent with the description of parameter j(corr,t) below Equation 24 and elsewhere in the proposed methodology, which indicates that the parameter may take a minimum value of 0.

Proponent Response: Equation 24 was altered to allow the paramter to have a minimum value of 0.

Auditor Response: The minimum value of parameter j(corr,t) in Equation 24 is now consistent with the minimum value as stated elsewhere in the methodology.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.70 dated 03/21/2012

Standard Reference: CDM A/R Methodological Tool "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities"

Document Reference: proposed methodology (03/14/12), Sections 6 and 7

Finding: The proposed methodology indicates that the most current version of the CDM tool “Combined 297 tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities” must be used to determine the baseline scenario (Section 6) and demonstrate additionality (Section 7). However, the referenced CDM tool is clearly applicable only to afforestation and reforestation projects. Therefore, the tool cannot be referenced in the context of an RDP project. There are numerous instances throughout the tool where confusion on the part of the methodology user would result from the use of the tool in the context of the proposed methodology.

Proponent Response: The text was altered to include the use of the VCS AFOLU tool for additionality and in Section 6 a decision tree was included to identify the moste plausible baseline scenario.

Auditor Response: Subsequent to the issuance of this NCR, the methodology developer opted to revert to use of the VCS "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" for the demonstration of additionality. Section 6 of the methodology now provides a stepwise approach for selection of the most plausible baseline scenario that is consistent with the requirement of the VCS additionality tool that "The use of this tool to determine additionality requires the baseline methodology to provide for a stepwise approach justifying the determination of the most plausible baseline scenario" (Section 1.2(b)). Therefore, the VCS additionality tool is appropriately referenced by the methodology, and this NCR can be closed.

Closing Remarks: The Proponent’s response adequately addresses the finding.

NCR 2011.71 dated 04/19/2012

Standard Reference: VCS AFOLU Requirements V3.2, Section 4.7.1

Document Reference: NA

Finding: The VCS AFOLU Requirements states that "Methodologies shall establish procedures for quantifying net GHG emission reductions and removals (the net GHG benefit), which shall be quantified as the difference between the GHG emissions and/or removals from GHG sources, sinks and carbon pools in the baseline scenario and the project scenario. The GHG emissions and/or removals in the project scenario shall be adjusted for emissions resulting from project activities and leakage. Methodologies shall also establish procedures for quantifying the net change in carbon stocks, so that the number of buffer credits withheld in the AFOLU pooled buffer account and market leakage emissions may be quantified for the project."

While the methodology has established procedures for quantifying net GHG emission reductions and removals, the methodology has not established procedures for quantifying the net change in carbon stocks.

Proponent Response: Text has been altered to allow for buffer calculation based on only net changes in carbon stocks.

Auditor Response: Section 8.6 of the methodology now contains procedures for quantifying the net change in carbon stocks in accordance with Sections 4.7.1 and 4.7.2 of the VCS AFOLU Requirements, and this NCR can be closed.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.72 dated 05/10/2012

Standard Reference: VCS AFOLU Requirements V3.2, Section 4.6.21

Document Reference: proposed methodology (05/04/12), Section 8.3

Finding: The VCS AFOLU Requirements states that "Where rewetting in the project area leads to higher water levels beyond the project boundary, the project shall be required to demonstrate that higher water levels caused by the project do not lead to increases in GHG emissions outside the project area. Otherwise, the affected areas shall be identified and the resulting leakage shall be quantified and accounted for in the GHG emissions." The updated methodology would allow a project area to comprise only a subset of a larger Watershed of Interest, therefore allowing the possibility for ecological leakage to the Excluded Area of Watershed(s). The methodology accounts for ecological leakage to the Excluded Area of Watershed(s) by multiplying the area of the Excluded Area of Watershed(s) by "the highest emission coefficient for rewetted organic soil covered by forest in tropical conditions mentioned by the IPCC Good Practice Guidance for LULUCF or a lower emission factor, if it is justifiable from research for the area of interest". Please provide justification, through reference to literature or professional judgment, that CH4 emissions will constitute the only source of increase in GHG emissions outside the project area, and that the approach taken by the methodology will result in conservative estimates of leakage emissions.

Proponent Response: The following applicability conditions prevent the occurrence of ecological leakage of CO2 in the Excluded Area of the Watershed beyond CH4:

• The project demonstrates that baseline conditions in the Watershed(s) of Interest can be expected to result in equal or lower aboveground tree biomass compared to the project scenario

• Current and/or potential future land use activities within the Excluded Area of Watershed(s) cannot include the creation of additional drainage waterways deforestation, land use conversion, crop production, or grazing of animals, but may include planned forest degradation. The project proponent must provide documented evidence demonstrating that current and/or potential future land use activities in the Excluded Area of Watershed(s) meet these requirements. Acceptable evidence could include land use plans, laws, or resource concession rights.

• Current and/or potential future land use activities taking place within the Excluded Area of Watershed(s) will not be displaced by project activities.

The following applicability condition was altered to ensure no fertilizer emissions in Excluded Area of Watershed:

• The Watershed(s) of Interest does not include areas where N-based fertilizers have been or plan to be applied. The project proponent must provide documented evidence demonstrating that current and/or potential future land use activities in the project boundary and the Excluded Area of Watershed(s) meet these requirements.

In addition, due to the natural physics and ecological processes of peat domes, the damming of one or more canals within one watershed would either result in the raising of water levels elsewhere in the watershed or have no impact on water levels elsewhere in the watershed. Therefore, damming the canals will not cause CO2 or N2O leakage from the soil pool in the Excluded Area of the Watershed (Personal communication with peat expert Henk Wosten).

Auditor Response: The audit team examined the evidence provided by the methodology developers and agreed that it is reasonable to conclude that methane emissions will constitute the only source of ecological leakage, given the applicability conditions imposed by the methodology. In addition, the default factor imposed by the methodology will conservatively account for such emissions. Therefore, the methodology's procedures for accounting for ecological leakage are in accordance with the requirements of the VCS AFOLU Requirements, and this finding can be closed.

Closing Remarks: The Proponent’s response adequately addresses the finding.

NCR 2011.73 dated 05/10/2012

Standard Reference: VCS AFOLU Requirements V3.2, Section 4.7.2

Document Reference: proposed methodology (05/04/12), Section 8.6

Finding: The VCS AFOLU Requirements states that "The buffer credits are calculated by multiplying the non-permanence risk rating (as determined by the AFOLU Non-Permanence Risk Tool) times the change in carbon stocks only." The procedure set out by the methodology for the quantification of buffer credits as the product of the non-permanence risk rating and the uncertainty-adjusted change in carbon stocks is not in conformance with the requirement to multiply the risk rating by the change in carbon stocks only.

Proponent Response: Equation 48 of the methodology has been amended. The buffer withholding for the PRC activity is calculated by multiplying the total net changes in carbon stocks by the buffer witholding percentage without adjusting the change in carbon stocks for uncertainty.

Auditor Response: Equation 48 has been modified so that the buffer withholding is based upon the change in carbon stocks without adjustment for uncertainty, as is required by the VCS AFOLU Requirements.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.74 dated 05/10/2012

Standard Reference: NA

Document Reference: proposed methodology (05/04/12)

Finding: It is unclear whether the entire Watershed(s) of Interest must be stratified by drainage depth, or whether only the project area must be stratified by drainage depth. The methodology is not consistent on this point, as in the following sections:

- Section 2: "The Watershed(s) of Interest is stratified by drainage depth. The application of this methodology requires the ex ante stratification of the Watershed(s) of Interest area by peat depth."

- Section 8.1.1.6: "To model water levels and stratify the Watershed(s) of Interest by drainage depth the project proponent must use the SIMGRO model calibrated for ombrogenous tropical peatlands in Southeast Asia. The project proponent must determine whether this model calibration adequately models water table level in the Watershed(s) of Interest."

- Section 8.1.2 is entitled "Stratify project area by Peat Depletion Time", and therefore the section only provides guidance on stratification of the project area.

- Section 8.1.2: "However, for locations where the depth of peat is smaller and therefore the peat is depleted prior to the end of the crediting period, the project area shall be stratified by the maximum number of years where emissions can be assumed to take place"

- Section 8.1.3: "The output of the SIMGRO model for the baseline scenario in the Watershed(s) of Interest area over the project crediting period shall be used to stratify the project area by drainage depth per month for each year of the project crediting period."

- Section 9.3.4: "The output of the SIMGRO model for the baseline scenario in the Watershed(s) of Interest over the project crediting period shall be used to stratify the project area by drainage depth per month for each year of the project crediting period."

- Section 9.3.5: "The output of the SIMGRO model for the project scenario in the Watershed(s) of Interest over the project crediting period shall be used to stratify the project area by water level relative to the peat surface per month for each year of the project crediting period."

Proponent Response: SIMGRO is used to model water levels in the entire Watershed(s) of Interest. The output of SIMGRO is a water level value relative to the peat surface for each grid cell in the model. Even though some areas in the Watershed(s) of Interest may be excluded from the project area (Excluded Area of Watershed(s)), the entire Watershed(s) of Interest must be modeled because the project area is hydrologically connected to any Excluded Area of Watershed(s) in the Watershed(s) of Interest that encompasses the project area. However, only the project area is stratified by water level and peat depletion time, because baseline and project emissions from peat oxidation are accounted and emission reductions are credited in the project area only. Emissions from peat oxidation are not accounted in the Excluded Area of Watershed(s). This is conservative because per the applicability conditions of the methodology the project activity will not lower water levels in the Excluded Area of Watershed(s) and thus will not increase emissions from peat oxidation in the Excluded Area of Watershed(s). The text of the methodology has been edited where indicated to clarify that only the project area is stratified by water level and peat depletion time.

Auditor Response: As indicated, the required changes have been made such that it is now clear that only the project area is stratified.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.75 dated 05/10/2012

Standard Reference: NA

Document Reference: proposed methodology (05/04/12)

Finding: The procedures for quantifying project (Equation 26) and baseline (Equation 1) emissions sum these emissions across each of i=1, 2, 3...I strata. Because the methodology contains some guidance indicating that the entire Watershed(s) of Interest should be stratified by drainage depth (see NCR 2011.74), the methodology does not contain a clear mechanism for precluding the quantification and crediting of GHG emission reductions that may take place outside the project area, but inside the Watershed(s) of Interest.

Proponent Response: The text of the methodology has been edited where indicated to clarify that only the project area is stratified by water level and peat depletion time. Therefore a mechanism for precluding the quantification and crediting of GHG emission reductions that may take place outside the project area, but inside the Watershed(s) of Interest is not needed.

Auditor Response: As indicated, the identified non-conformity has been resolved through the clarification that only the project area is stratified for the purposes of quantifying GHG emission reductions and removals, and the NCR can be closed.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.76 dated 07/12/2012

Standard Reference: VCS Standard V3.2, Section 4.1.4

Document Reference: proposed methodology (06/07/12), Section 8.5

Finding: The VCS Standard states that "Where applicable, methodology elements shall provide a means to estimate a 90 or 95 percent confidence interval. Where a methodology applies a 90 percent confidence interval and the width of the confidence interval exceeds 20 percent of the estimated value or where a methodology applies a 95 percent confidence interval and the width of the confidence interval exceeds 30 percent of the estimated value, an appropriate confidence deduction shall be applied." While the methodology contains guidance for estimation of a 90 or 95 percent confidence interval, it also states "Alternatively, instead of assessing uncertainty, the project may justify that it is using an indisputably conservative number and an uncertainty of 0% may be used for this component."

A 90 or 95 percent confidence interval is always applicable to the methodology, as the quantified GHG emission reductions and removals will always be based on water level predictions for which uncertainty can be assessed, and the methodology contains procedures for doing so. Therefore, as required by the VCS Standard, an appropriate confidence deduction must be applied. The VCS Standard, in this case, does not permit the project to "justify that it is using an indisputably conservative number" and thus not account for uncertainty.

Proponent Response: In Section 8.5 the sentence "Alternatively, instead of assessing uncertainty, the project may justify that it is using an indisputably conservative number and an uncertainty of 0% may be used for this component."

Auditor Response: Although not explicitly indicated in the proponent's response, the sentence in question has been removed from the methodology, thereby allowing the assessor to close the finding.

Closing Remarks: The Proponent’s response adequately addresses the finding.

NCR 2011.77 dated 07/12/2012

Standard Reference: NA

Document Reference: proposed methodology (06/07/12)

Finding: On several occasions, the proposed methdology invokes the VCS tool "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities". However, the citation of this tool is not consistent throughout the methodology, as in the following cases:

- Lines 109-111: Citation is of 'The most current version of the VCS Tool “Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities, v3.0”'

- Lines 116-117: Citation is of 'the most current version of the VCS “Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities”'

- Lines 308-309: Citation is of 'The most current version of the VCS Tool: “Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities, v3.0”'

- Lines 338-340: Citation is of 'The most current version of the VCS “Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities”'

The methodology must be consistent with the respect to the version of the VCS tool "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" that is cited.

Proponent Response: The citation of the VCS tool has been amended such that the tool is consistently cited as "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Uses (AFOLU) Project Activities".

Auditor Response: As indicated, the tool is now consistently cited as 'The most current version of the VCS Tool: “Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities”', and therefore the issue that necessitated the finding has been resolved.

Closing Remarks: The Proponent’s response adequately addresses the finding.

NCR 2011.78 dated 07/12/2012

Standard Reference: NA

Document Reference: proposed methodology (06/07/12), Section 4

Finding: The methodology states that 'Carbon pools and GHG sources that cause project and/or leakage emissions may be deemed de minimis according to guidance in VCS AFOLU 4.3. through the use of peer reviewed literature (such as average AG biomass of SE Asia tropical peatland land cover) and the most current version of the CDM “Tool for testing significance of GHG emissions in A/R CDM project activities”' This is not a grammatically correct sentence. The methodology refers to "VCS AFOLU 4.3." for guidance, but "VCS AFOLU 4.3." is not a valid reference to a VCS program document and, therefore, the user will not be able to follow the guidance of the methodology. All references to which the user is referred for guidance must be clearly and correctly stated.

Proponent Response: The sentence has been edited to correct grammar and the reference to "VCS AFOLU 4.3" has been changed to "the latest version of VCS AFOLU". The revised text reads: "Carbon pools and GHG sources that cause project and/or leakage emissions may be deemed de minimis follwoing guidance in the latest version of VCS AFOLU. Peer reviewed literature (suchas as average AG biomass of SE Asia tropical peatland cover) and the most current verison of the CDM "Tool for testing significance of GHG emissions in A/R CDM project activities" may be used to determine which carbon pools and GHG sources may be deemed de minimis."

Auditor Response: Although ideally the reference in question would be to the VCS AFOLU Requirements, as there technically is no VCS document entitled "VCS AFOLU", it is the opinion of the assessor that the document reference has been clarified sufficient to allow the user to determine the intent of the methodology, and therefore the finding can be closed.

Closing Remarks: The Proponent’s response adequately addresses the finding.