FRESH BREEZE AFFORESTATION PROJECT

Document Prepared By CO2 Solutions

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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The Fresh Breeze afforestation project covers 4,269.82, hectares of land, which are adjacent to cattle, on which forest plantations for obtaining high-value, long-lived timber products and for sequestering large amounts of carbon dioxide from the atmosphere will be established. The project activity is established in the states of Tabasco, Nayarit and Chiapas, Mexico. According to Proteak information for this verification are confirmed a total of 3,958.67 hectares of land.

In the case of Fresh Breeze Afforestation Project the date of July, 2009[1] correspond to the date when started the plantations of the Plantation Tintal, this event correspond to the first activity that lead the GHG removal of the project, since this day the project start the operation and every year new plantation were added as is described below.

The land selected for plantation of Tectona grandis, commonly called "Teak" has optimal conditions for the development of this kind, which are:

- Height: between 0 and 800 masl (meters above sea level)
- Soil: rich in calcium, flat and well drained.
- In the rainy season: between 1,500 and 2,500 mm annual rainfall or older.
- Dry season: with a minimum of 10 to 50 mm of rain, with a maximum of 3 months.
- Requires climates with a distinct dry season (3-5 months), with annual average temperatures between 22 and 28°C, an average annual rainfall of 1.250 to 2.500 mm and altitudes between 0 and 1,000 meters

For this monitoring period the GHG emission removals generated by the project activity are equal to 245,652 tons of CO2-eq (after risk tool).

1.2 Sectoral Scope and Project Type

The project is classified as a grouped project because new areas will be included in the future, according to Proteak expansion plan.

The sectoral scope of this project is Agriculture, Forestry and Other Land Uses (AFOLU). Within this category the project is of the Afforestation, Reforestation, Revegetation (ARR) type.

- The voluntary project activity, although being applied at the voluntary market, shall make use of the following approved CDM methodology:
  - AR-ACM0003: Afforestation and reforestation of lands except wetlands v 1.0.0
- Being developed within the forestall sector, the proposed project activity can be classified on the sectoral scope No.14: “Agriculture, Forestry, Land Use”, AFOLU project category ARR (afforestation, reforestation and re-vegetation), activity type: Afforestation.

[1] The exact date is not available, the document of CONAFOR only establish month and year. Could be considered as a conservative date the 1 of July 2009.

1.3 Project Proponent

Organization name	Proteak UNO S.A.B. de C.V.
Contact person	Kristina Diaz
Title	Environmental and Social Responsibility
Address	Paseo de la Reforma No. 725, Col. Lomas de Chapultepec, C.P. 11000, México, D.F.
Telephone	+52 6235 1504
Email	kdiaz@proteak.com

1.4 Other Entities Involved in the Project

Organization name	Carbon Solutions de México S.A. de C.V.
Role in the project	Environmental Consulting in charge of Monitoring Report (MR) preparation and the delivery to the Validation/Verification body according to VCS guidelines and procedures.
Contact person	Alejandro Eliud Araizaga Esquivel
Title	Environmental Consultant
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1.5 Project Start Date

According to the VCS AFOLU Requirement version 3.5, in section 3.2 is stated that the project star date of an AFOLU project is the date when activities that lead to the GHG emission removals are implemented.

In the case of Fresh Breeze Afforestation Project the date of July 1st, 2009[2] correspond to the date when started the plantations of the Plantation Tintal, this event correspond to the first activity that lead the GHG removal of the project.

1.6 Project Crediting Period

The total project crediting period will be of 54 years from July 1 2009 to June 30 2062, considered as a grouped project activity.

[2] The exact date is not available, the document of CONAFOR only establish month and year. Could be considered as a conservative date the 1 of July 2009.

According to the VCS Standard version 3.5, the crediting period of AFOLU projects will have a minimum of 20 years and a maximum of 100 years, therefore, the project activity is in line with the length of the crediting period.

1.7 Project Location

In this section is stated each plantations that is part of the project activity (from the years 2009-2013), for each plantation it is stated the year that the plantation started and the plantation hectare.

The next figure shows the information of the following properties[3]:

1. Libertad – This property is not part of the project activity because the plantation started in the year 2002.
2. Capitan – The plantation of this property included in the project activity is:
    a. Plantation year: 2009 – Total Area: 19.42 ha
3. Desenredo – This property is not part of the project activity because the plantation started in the year 2002

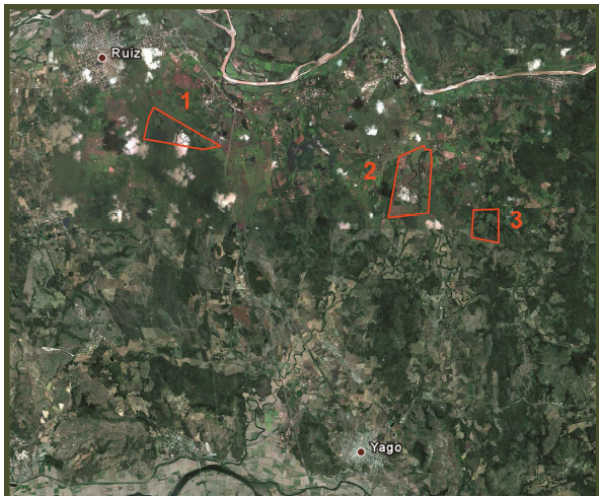


Figure 1. Capitan property.

The next figure shows the information of the following properties:

1. Victoria 7 – The plantation of this property included in the project activity is:
    a. Plantation year: 2009 – Total Area: 11.06 ha

[3] Estudio Ambiental de Impacto al Suelo por la Ejercición del Proyecto de Plantaciones Forestales de la Empresa Proteak UNO S.A.B. de C.V. elaborated by the Registro Nacional Forestal. Pages 2-8 to 2-27.

Figure 2. Victoria 7 property.

The next figure shows the information of the following properties:

1. Esperanza – This property is not part of the project activity because the plantation started in the year 2004 to 2007.
2. Ardillas – This property is not part of the project activity because the plantation started in the year 2008.
3. Pediatra– This property is not part of the project activity because the plantation started in the year 2008.
4. Empeño – This property is not part of the project activity because the plantation started in the year 2008.
5. Cascada – The plantation included in the project activity is:
    a. Plantation year: 2009 – Total Area: 18.92 ha
6. Empeño 8 – The plantation of this property included in the project activity is:
    a. Plantation year: 2009 – Total Area: 13.03 ha

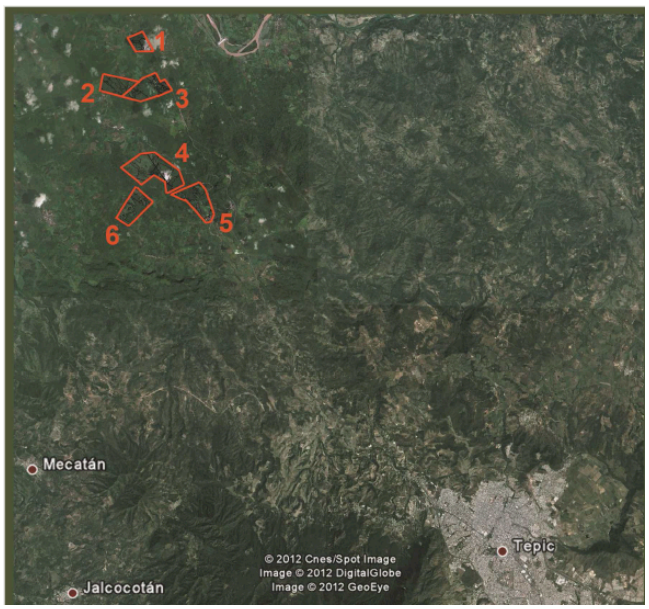


Figure 3. Empeño, Cascada, Empeño 8 properties.

The next figure shows the information of the following properties:

1. Tintal – The plantation of this property included in the project activity is:
    a. Plantation year: 2009 – Total Area: 347.13 ha
2. Pocito (La Reforma) – The plantation of this property included in the project activity is:
    a. Plantation year: 2009 – Total Area: 528.29 ha
3. Caobas - The plantations of this property included in the project activity are:[4]:
    a. Plantation year: 2010 – Total Area: 231.10 ha
    b. Plantation year: 2011 – Total Area: 78.52 ha
    c. Plantation year: 2011 – Total Area: 424.42 ha
    d. Plantation year: 2012 – Total Area: 167.33 ha
4. Cedros - Part of Caobas (considered the value in Caobas Plantation)
5. Brasiles – Part of Caobas (considered the value in Caobas Plantation)
6. Amapas – Part of Caobas (considered the value in Caobas Plantation)
7. San Pablo - The plantations of this property included in the project activity are:
    a. Plantation year: 2010 – Total Area: 168.94 ha
    b. Plantation year: 2011 – Total Area: 8.06 ha
8. Santa Rosa - The plantations of this property included in the project activity are:
    a. Plantation year: 2010 – Total Area: 93.00 ha

[4] The Caobas property is constituted in Brasiles, Amapas , Cedros y Caobas.

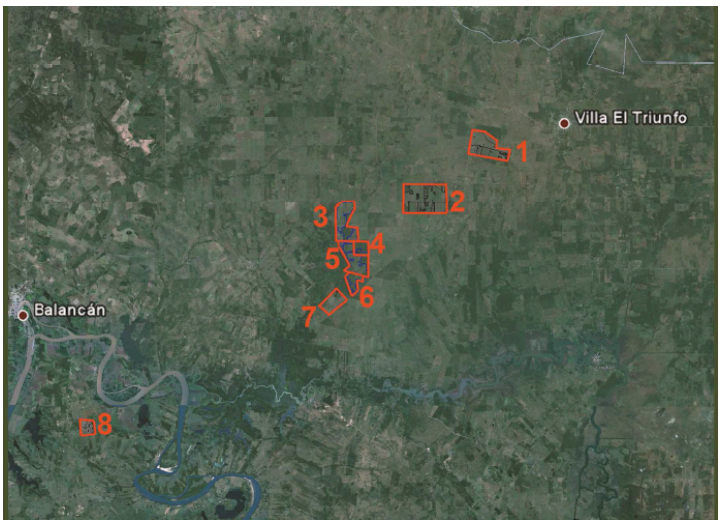


Figure 4. Tintal, Pocito (La Reforma), Caobas, San Pablo and Santa Rosa properties.

The next figure shows the information of the following properties:

1. El Diamante – The plantations of this property included in the project activity are:
    a. Plantation year: 2011 – Total Area: 33.90 ha
    b. Plantation year: 2012 – To6tal Area: 22.00 ha
2. Don Justi – The plantation of this property included in the project activity is:
    a. Plantation year: 2011 – Total Area: 67.00 ha

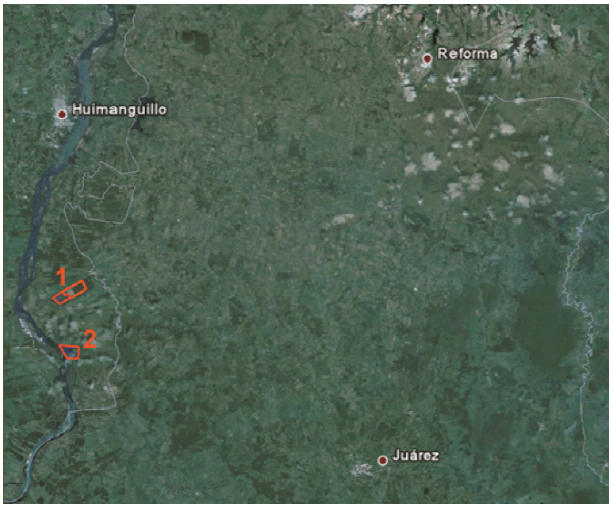


Figure 5. Diamante and Don Justi properties.

The next figure shows the information of the following properties:

1. Cuvadonga – The plantations of this property included in the project activity are:
    a. Plantation year: 2011 – Total Area: 40.00 ha
    b. Plantation year:2012 – Total Area: 113.00 ha
2. Piedra Santa – The plantations of this property included in the project activity are:

a. Plantation year: 2011 – Total Area: 73.98 ha
b. Plantation Year: 2013 – Total Area: 160.00 ha

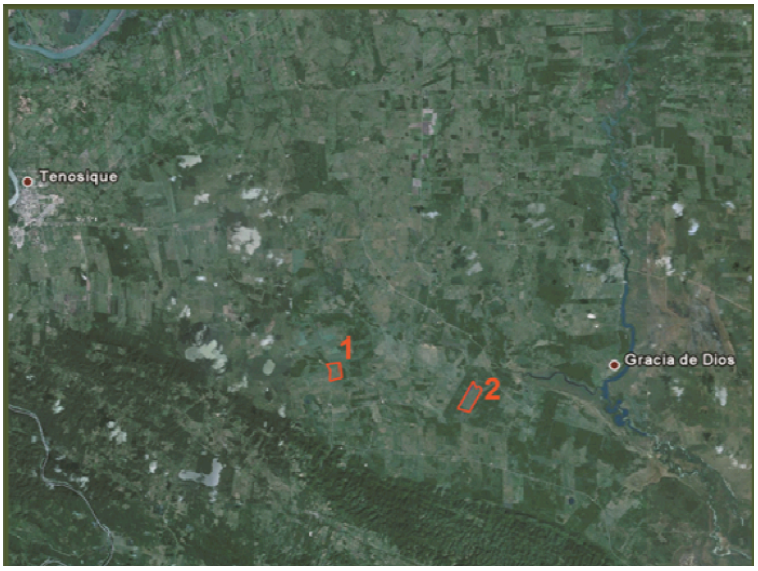


Figure 6. Cuvadonga and Piedra Santa properties.

The next figure shows the information of the following properties:

1. San Juan – The plantation of this property included in the project activity is:
    a. Plantation year: 2010 – Total Area: 89.11 ha

Figure 7. San Juan property.

The next figure shows the information of the following properties:

1. El Rincon – The plantations of this property included in the project activity are:
    a. Plantation year: 2010 – Total Area: 75.00 ha
2. La Estrella - The plantations of this property included in the project activity are:
    a. Plantation year: 2010 – Total Area: 40.88 ha
    b. Plantation year: 2011 – Total Area: 86.29 ha
    c. Plantation year: 2012 – Total Area: 43.90 ha

Figure 8. El Rincon and La Estrella properties.

The next figure shows the information of the following properties:

1. San Agustin – The plantations of this property included in the project activity are[5]:
    a. Plantation year: 2011 – Total Area: 54.86 ha
    b. Plantation year: 2013 – Total Area: 5.00 ha
2. Nueva Pezuña - The plantation of this property included in the project activity is:
    a. Plantation year: 2011 – Total Area: 18.47 ha
3. El Milagro - The plantations of this property included in the project activity are:
    a. Plantation year: 2011 – Total Area: 96.00 ha
    b. Plantation year: 2013 – Total Area: 5.00 ha

[5] The San Agustin property is constituted of El Primor and San Agustin.

Figure 9. San Agustín, Nueva Pezuña and El Milagro properties.

Other plantations:

- El Porvenir
  - Plantation year: 2012 – Plantation Area: 53.65 ha
- La Laguna
  - Plantation year: 2012 – Plantation Area: 367.50 ha
- El Abuelo
  - Plantation year: 2012 – Plantation Area: 84.06 ha
  - Plantation year: 2013 – Plantation Area: 350.00 ha
- El Establo
  - Plantation year: 2013 – Plantation Area: 35.00 ha.
- El Zombie
  - Plantation year 2013 – Plantation Area: 151.50 ha
- Capri
  - Plantation year 2013 – Plantation Area: 13.50 ha

The following table summarizes the localization of each of the properties mentioned in this section.

Property name	Municipality	State	Latitude Coordinates	Longitude Coordinates
Capitán	Ruiz	Nayarit	21°54'17.2565"-21°55'21.5073"	105°03'17.0963"-105°02'28.0062"
Cascada	Tepic	Nayarit	21°38'49.1112"-21°42'03.0225"	105°03'25.6161"-105°01'49.1458"
Cuvadonga	Tenosique	Tabasco	17°22'56.0356"-17°53'55.9316"	91°17'44.1994" - 91°16'18.3666"
Don Justi	Huimanguillo	Tabasco	17°40'37.0655"-17°41'07.7419"	93°23'35.8057"-93°22'50.4187"
Diamante	Huimanguillo	Tabasco	17°42'44.5892"-17°43'17.5565"	93°23'51.2254"-93°22'59.6898"

El Milagro	Tapachula	Chiapas	14°44'26.8438" - 14°45'11.7028"	92°16'52.6361"- 92°15'43.2899"
El Rincon	Palenque	Chiapas	17°35'58.2534"- 17°36'04.2561"	91°67'20.0981"-92°06'25.8007"
Empeño 8	Tepic	Nayarit	21°38'43.3131"- 21°39'51.2910"	105°05'02.3323"- 105°03'51.7371"
La Estrella	Palenque	Chiapas	17°25'20.6780"- 17°25'59.3793"	91°36'33.3775"-91°35'08.3561"
La Nueva Pezuña	Tapachula	Chiapas	14°46'38.7759" - 14°47'04.3799"	92°14'46.1324" - 92°14'33.0988"
Las Caobas	Balancan	Tabasco	17°50'49.5002"- 17°52'18.9842"	91°19'21.9424"-91°18'29.1293"
Los Cedros (Part of Caobas)	Balancan	Tabasco	17°50'17.9392" - 17°50'49.9673"	91°18'39.4440" - 91°18'04.3277"
Los Brasiles (Part of Caobas)	Balancan	Tabasco	17°49'26.9733" - 17°50'48.9856"	91°19'14.0551"-91°18'03.6577"
Las Amapas (Part of Caobas)	Balancan	Tabasco	17°48'35.9505"- 17°49'45.5614"	91°19'57.4902"-91°18'04.2594"
Piedra Santa	Tenosique	Tabasco	17°22'03.8508"- 17°23'50.7209"	91°13'25.5748"-91°11'13.4305"
Pocito (La Reforma)	Balancan	Tabasco	17°51'55.8142"- 17°53'01.3608"	91°16'40.4222"-91°14'54.8428"
San Agustin	Tapachula	Chiapas	14°44'26.8438"- 14°45'11.7028"	92°16'52.6361"-92°15'43.2899"
Primor (Part of San Agustín)	Tapachula	Chiapas	14°55'52.8174"- 14°56'30.3493"	92°25'51.6704"- 92°25'27.6366"
San Juan	Frontera Hidalgo	Chiapas	14°45'02.2866"- 14°45'32.2536"	92°14'49.6422"-92°13'47.7973"
San Pablo	Balancan	Tabasco	17°48'00.8786"- 17°49'02.0946"	91°20'04.4037"-91°18'55.7802"
Santa Rosa	Balancan	Tabasco	17°43'24.5522"- 17°44'00.4863"	91°29'41.0416"-91°29'05.6074"
Tintal	Balancan	Tabasco	17°53'56.8192"- 17°53'01.3608"	91°16'40.4222"-91°14'54.8428"

Victoria 7	San Blas	Nayarit	21°38'26.7938"- 21°39'05.3962"	105°09'59.3570"- 105°09'31.9502"
El Porvenir	Tenosique	Tabasco	17°23'0.0390"- 17°23'30.0710"	91°17'12.3080"- 91°16'18.8130"
La Laguna	Huimanguillo	Tabasco	17°47'56.8660" - 17°50'5.4220"	93°46'24.2140" - 93°45'8.4370"
El Abuelo	Huimanguillo	Tabasco	17°48'21.6400" - 17°49'58.6030"	93°44'39.5000" - 93°43'26.1820"
El Zombie	Ostuacan	Chiapas	17°32'17.5980" - 17°33'32.6600"	93°27'5.3280" - 93°26'25.4580"
El Establo	Tapachula	Chiapas	14°44'17.4130"- 14°44'44.2860"	92°16'34.8700" - 92°15'51.6800"
El Capri	Huimanguillo	Tabasco	17°42'55.885" – 17°43'11.099"	93°23'3.193" – 93°22'42.865"

Table 1. Indicators for identification of all project properties.

1.8 Title and Reference of Methodology

The CDM consolidated methodology AR-ACM0003: "Afforestation and reforestation of lands except wetlands" v1.0.0 is applied to this project activity.

The following methodological tools, to which the selected methodology refers to, are used:

- "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities" Version 02
- "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" Version 03
- "Estimation of non-CO2 greenhouse gas (GHG) emissions resulting from burning of biomass attributable to an A/R CDM project activity" Version 04.0.0
- "Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity" Version 01
- "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities" Version 1.1
- Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities", version 01
- VCS AFOLU Non-Permanence Risk Tool Version 3.2
- "Calculation of the number of sample plots for measurements within A/R CDM project activities" version 02.1.0.

1.9 Other Programs

The project activity is not registered in other GHG program or trading system.

This section is not applicable to the project activity.

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

During this first monitoring period the status of the advance in the plantations proposed is described in the following table, in some case there is a 100% of Teak planted and in other cases there are advancing in the plantation process.

Plantation	Plantation year	Area Registered in the PDD	Actual Area Planted (Conservative Area)	Thinning Time
Capitán	2009	19.42 ha	0.0 ha	N.A.
Cascada	2009	18.92 ha	18.92 ha	28/11/2014-16/12/2014
Cuvadonga	2011	40.00 ha	40.00 ha	March 2015
Don Justi	2011	67.00 ha	60.25 ha	February 2015
El Diamante	2011	33.90 ha	33.90 ha	March 2015
El Milagro	2011	96.00 ha	93.34 ha	02/07/2015-11/08/2015
El Rincon	2010	75.00 ha	74.96 ha	April-May 2015
Empeño 8	2009	13.03 ha	0.0 ha	N.A.
La Estrella	2010	40.88 ha	40.88 ha	April-May 2015
La Estrella	2011	86.29 ha	86.28 ha	July-October 2015
La Nueva Pezuña	2011	18.47 ha	18.47 ha	16/08/2015-28/08/2015
Las Caobas	2010	231.10 ha	231.10 ha	June-September 2015
Las Caobas (Brasiles, Amapas)	2011	424.42 ha	424.42 ha	December 2015-continues
Las Caobas	2011	78.52 ha	77.51 ha	December 2015-

(Cedros)				continues
Piedra Santa	2011	73.98 ha	73.86 ha	November 2015- Continues
Pocito (La Reforma)	2009	528.29 ha***	377.35 ha	February-May 2015
Pocito (La Reforma)*	2010	528.29 ha	42.24 ha	February-May 2015
Pocito (La Reforma)**	2011	528.29 ha	80.41 ha	June 2015
San Agustín (Primor included)	2011	54.86 ha	54.19 ha	20/12/2014-18/02/2015
San Juan	2010	89.11 ha	74.04 ha	03/11/2014-18/12/2015
San Pablo	2010	168.94 ha	168.90 ha	November 2015
San Pablo	2011	8.06 ha	8.06 ha	November 2015
Santa Rosa	2010	93.00 ha	69.17 ha	May-June 2015
Tintal	2009	347.13 ha	70.00 ha	March-May 2015
Tintal****	2010	347.13 ha*****	264.80 ha	March- May 2015
Victoria 7	2009	11.06 ha	0.0 ha	N.A.
Asterisco	2012	81.00	71.18 ha	Not harvest yet
El Diamante	2012	22.00 ha	18.87 ha	March 2015
La Estrella	2012	43.90 ha	43.90 ha	Not harvest yet
Las Caobas (Brasiles, Amapas)	2012	167.33 ha	167.33 ha	Not harvest yet
Cuvadonga	2012	113.00 ha	113.00 ha	Not harvest

				yet
El Porvenir	2012	53.65 ha	53.65 ha	Not harvest yet
La Laguna	2012	367.50 ha	367.50 ha	Not harvest yet
El Abuelo	2012	84.06 ha	84.06 ha	Not harvest yet
Piedra Santa	2013	160.00 ha	0.00 ha	Not harvest yet
El Abuelo	2013	350.00 ha	350.00 ha	Not harvest yet
El Zombie	2013	151.50 ha	151.50 ha	Not harvest yet
El Establo	2013	35.00 ha	33.13 ha	Not harvest yet
El Milagro	2013	5.00 ha	5.00 ha	Not harvest yet
San Agustín (included Primor)	2013	7.02 ha	5.00 ha	Not harvest yet
Carpi	2013	13.50 ha	11.50 ha	Not harvest yet

** Pocito 2010: Is added to the project activity as part of the Plantation Pocito.*

***Pocito 2011: Is added to the project activity as part of the Plantation Pocito.*

****The area described contemplate all the Pocito Plantation (2009,2010 and 2011), this can verify in the inventory map of Pocito*

***** Tintal 2010: Is added to the project activity as part of the Plantation Tintal.*

******The area described contemplate all the Tintal Plantation (2009 and 2010), this can verify in the inventory map of Tintal.*

The variation of the area of the registered PD and the area is due to some variances in the registered information, rounding. However, in order to be conservative, the less value will be applied for the emission reduction calculations.

In this monitoring period the PP shows the evidence of each plantation map, in order to demonstrate the value of the total area that was measured and considered as part of the project activity.

The plantations have passed the first thinning process, were the tree density was reduced from 1,100 to an estimated value of 650/600 trees per ha, for each plantation it was calculated the plantation density and the CO2 sequestrated; In order to reduce the uncertainty of the monitoring process.

Since the leakage has been demonstrated that is zero due to the fact that the lands where not used for agricultural activities before the project activity, therefore is not necessary to verify this.

In the cases of the Natural Risk Factors, since the project registration in 2013, there is a new risk factor analysis in order to demonstrate the actual risk of the project activity, which is attached to this Monitoring Report.,

The other detail is that the project activity continues with the certification of the FSC Forest Stewardship Council, this certification is valid until December 2018; therefore there is no change in these criteria.

2.2 Deviations

2.2.1 Methodology Deviations

There are no methodology deviations applied during this monitoring period, nor to criteria and procedures for monitoring or measurement, neither to other part of the methodology. Thus, there are no negatively impacts to the conservativeness of the quantification of GHG removals.

2.2.2 Project Description Deviations

Height

Reason of change: The variable was measured for each species; however, it was found that the way to the field inventory was complicated and imprecise.

Therefore tables that the values of the heights, depending DBH given were obtained. These values were obtained by using a quadratic regression with more than 3000 data.

The change took place on February 17, 2015, through the publication of the evaluation of biological assets.

Change: According to PD, measurements of height and DBH forest would be under national procedures.

Proteak, according to comply with these procedures, performed some experiments and development a complete procedure for the efficient measurement of a plantation. Therefore, Proteak design a new Policy related to the “Procedures for the valuation of biological assets”.

This policy describes the procedure to measure the DBH and perform a calculation for the estimation of the Height. In the case of height, there are some tables showing the height of the species, which depend on the value of the DBH. These values were obtained through quadratic regressions; however, these data are values of commercial height.

Proteak used that measuring procedure to obtain a formula that can estimate the real height based on the DBH measured. The evidence of the set of data used to obtain the formula and the equation correlation is available. This document can show the difference between commercial height and actual height, there is in many cases a significant difference between these two values.

The use of a formula to estimate the height of the species was validated by an investigation made by the Forestry Engineer José Rogelio Reyes, in his thesis explain that due to the time, cost is not a common practice to measure the height of the species. He explains that there is a straight relation between the diameter and the height. Therefore, the way to determine the height is by using a regression.

Proteak made a the regression with more than 3,000 trees measure and this equation follows the Methodological Tool to Demonstrate appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities"

The condition that is satisfied is that the equation was derived from a data set of at least 30 sample trees and the value of coefficient of determination (R^2) obtained was not less than 0.85. In this case the sample trees are from about 3,000 and the coefficient of determination is 0.86.

The decision on changing the height measurement was evaluated by three parts of Proteak, General Manager Executives, Corporate Comptroller, and Internal Audit Department. It is important to state that Proteak is a Company listed in the Mexican Stock Exchange, because of this commitment; Proteak has a great responsibility in making an inventory of quality.

The change in the Height variable will be described in section 3.2.

In compliance with Section 3.6.1 of the VCS standard, it's confirmed that the deviation of the measurement of height doesn't affect the applicability of the methodology, additionality or the appropriateness of the baseline scenario, saying that it's confirmed that the project remains in compliance with the applied methodology. The applicability conditions of the methodology are not related to the measurement of the heigh

The new formula using a valid formula according the Methodological Tool to Demonstrate appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities, therefore there is not any change in the baseline scenario.

According to the same standard every subsequent monitoring period will demonstrate that the change doesn't affect the methodology,

Plot size

Reason of change: By the time of the validation there wasn't set an official procedure for the measuring, therefore, the plot size was established considered an example in the methodology.

The change took place on February 17, 2015, through the publication of the evaluation of biological assets.

The registered P.D. shows a plot size of 0.1 ha, however, the PP used a different plot size, according to the Procedures for the valuation of biological assets there is a change of the Plot Size, the new plot has a form of a circle with a radio of 10 m, which means that the area per plot is 0.0314 ha.

That change will be applied in the calculation of the sampling plots in order to obtain the value applied.
In compliance with Section 3.6.1 of the VCS standard, it's confirmed that the deviation of the change of the plot size doesn't affect the applicability of the methodology, additionality or the appropriateness of the baseline scenario, saying that it's confirmed that the project remains in compliance with the applied methodology. The applicability conditions are not related to the plot size.

However, the plot size and the number of Plot are related to a methodological tool, Proteak demonstrated that the change of the plot size is affected in the number of plots required. And using the procedure they demonstrate that the measurement complies this data, additionally the uncertainty of the project measurements confirms that the project is overvalued.

According to the same standard every subsequent monitoring period will demonstrate that the change doesn't affect the methodology, with a new calculation of required plots and the uncertainty

Thinning Period.

As was established in the registered PD, the project established that the first thinning period will be on the year 7, however, some plantations during the third year made the first thinning process.

The reason for this change is because they have noticed that they each species were affected by species around preventing the growth is completely.

Thinning main objective is to preserve the species can achieve optimum growth and that is not affected by species around.

With regard to the requirements of the standard, the project's additionality is not affected by two points:
a) The additionality is based on the analysis of common practice by species and capacity where it was shown that the project is unique in its class with such dimensions and commitment.
b) The wood obtained from thinning, has no commercial value, therefore there is no benefit.

It has developed a descriptive document, which describes in more detail the change in the process.

In conclusion, the change in the period does not affect the applicability conditions or additionality. On the issue of emissions from baseline values are used for posting post thinning, therefore, the loss of carbon already been taken into account in this monitoring report.

Plantation plan.

There is a deviation in the planting program, in some cases, it has made significant progress but has not been 100%, as management plans.

These changes have affected directly affect the calculation of the LTA, therefore, this calculation has to be updated based on current plantings.

The variations are due to certain adjustments of the place that did not allow to carry out completely the plantation. In other cases, the weather conditions have affected the area, which has decided to stop the planting process. (For example Piedra Santa and some other areas of plantations).

The following table summarizes the changes in planting plan against the actual planting.

- Don Justi: Planted 60.25 ha instead 67.00 ha
- El Milagro: Planted 93.34 ha instead 96.00 ha
- El Rincon: Planted 74.96 ha instead 75.00 ha
- La Estrella 2011: Planted 86.28 ha instead 86.29 ha
- Piedra Santa: Planted 73.86 ha instead 73.98 ha.

- Pocito (La Reforma) described as one plantation of 528.29 ha in the year 2009, the plantation program was rescheduling for the following: Pocito (La Reforma) 2009 (377.35 ha), Pocito (La Reforma) 2010 (42.24 ha) and Pocito (La Reforma) 2011 (80.41 ha).
- San Agustin 2011: Planted 54.19 ha instead 54.86 ha.
- San Juan: Planted 74.04 ha instead 89.11 ha.
- San Pablo 2010: Planted 168.90 ha instead 168.94 ha.
- Santa Rosa: Planted 69.17 ha instead 93.00 ha.
- Tintal described as one plantation of 347.13 ha in the year 2009, the plantation program was rescheduling for the following: Tintal 2009 (70.00 ha), and Tintal 2010 (264.80 ha).
- Asterisco: Planted 71.18 ha instead 81.00 ha.
- El Diamante 2012: Planted 18.87 ha instead 22.00 ha.
- El Establo: Planted 33.13 ha instead 35.00 ha
- Capri: Planted 11.50 ha instead 13.50 ha.
- Piedra Santa 2013: 0 ha planted instead 160 ha.
- Capitan 2009: 0 ha planted instead 19.42 ha.
- Empeño 8: 0 ha planted instead 13.03 ha.
- Victoria 7: 0 ha planted instead 11.06 ha.

There are very particular cases there is a significant variation, these cases have been reprogrammed planting stage for subsequent years (as was the case Tintal and Pocito – La Reforma).

With regard to the requirements of the standard, the project's additionality is not affected by two points:
a) The additionality is based on the analysis of common practice by species and capacity where it was shown that the project is unique in its class with such dimensions and commitment.
b) The change of the area affects the emission removals and those changes have been applied to ER calculation.

In conclusion, the change of the plantation process does not affect the applicability conditions or additionality. The project activity contemplates these areas for the calculation of the ER, additionally the calculation of LTA has been updated with this values and this value is described before on this PD.

2.3 Grouped Project

The project activity is considered as a grouped project, however, by this monitoring period, the project participant decided to not incorporate any new instance to the project activity during this monitoring period.

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Data / Parameter	Dj
Data unit	T d.m. m^{-3}
Description	Density (overbark) of tree stem for tree species *j*
Source of data	The value is estimated by the following formula:

	$D_j = D_{wood,j} * (1 - \%Bark_{volume}) + D_{bark,j} * \%Bark_{volume}$ Where: **D_j** = Density (overbark) of tree species *j*; t d.m. m^{-3} **$D_{wood,j}$** = Basic wood density of tree species *j*; t d.m. m^{-3} Values from Table 3A.1.9 of IPCC GPG-LULUCF 2003 are used unless transparent and verifiable information can be provided to justify different values **$\%Bark_{volume}$** = Volume of tree trunk that is made of bark; percent. Default value of 15% is used unless Transparent and verifiable information can Be provided to justify a different value. **$D_{bark,j}$** = Density of bark of species *j*; t d.m. m^{-3}. Default value of 0.4 is used unless transparent and verifiable information can be provided to justify a different value
Value applied:	0.485 t.d.m/m3
Justification of choice of data or description of measurement methods and procedures applied	This Data/Parameter is used in Equation (1) of the Methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"
Purpose of the data	Calculation of project removals
Comments	-

Data / Parameter	$BEF_{2,j}$
Data unit	Dimensionless
Description	Biomass expansion factor for conversion of stem biomass to above-ground biomass for tree species or group species j
Source of data	IPCC default values (Table 3A.1.10 of IPCC GPG-LULUCF 2003)
Value applied:	1.3
Justification of choice of data or description of measurement methods and procedures applied	The data is chose according the climate zone (tropical) and forest type (pines). It is considered the value of pines due to is the most conservative value (lowest value of the table) the other value of the table 3A.1.10 is 3.4 for Broadleaf forest type.
Purpose of the data	Calculation of project removals
Comments	-

Data / Parameter	R_j
Data unit	Dimensionless
Description	Root-shoot ratio for species or group of species j
Source of data	The value of Rj is calculated as Rj = exp[-1.085+0.9256*ln(A)]/A, where A is above-ground biomass (t d.m. ha-1) [Source: Table 4.A.4 of IPCC GPG-LULUCF 2003] The value of the above-ground biomass is obtained with the information of Proteak.
Value applied:	0.31
Justification of choice of data or description of measurement methods and procedures applied	The value calculated was using the most conservative value of above-ground biomass. The calculation model shows the conservative approach.
Purpose of the data	Calculation of project removals
Comments	-

Data / Parameter	$SOC_{REF,i}$
Data unit	t C ha^{-1}
Description	Reference SOC stock corresponding to the reference condition in native lands (i.e. non-degraded, unimproved lands under native vegetation normally forest) by climate region and soil type applicable to stratum *i* of the areas of land
Source of data	Tables 3 of "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project" activities. The value selected is taking into account the High Activity Clay soil and the tropical wet weather.
Value applied:	44
Justification of choice of data or description of measurement methods and procedures applied	For the calculation of this value is used official information of the INEGI[6]. The main soils related to the project plantations are: Gleysol, Rendzine, Regosols, Cambisols In the case of Regosols and Cambisols the tool classifies these soils as High Activity Clay (HAC), in the case of the Gleysol and

[6] INEGI. Instituto Nacional de Estadistica y Geografía. Principales Tipos de Suelo. Available at: http://mapserver.inegi.gob.mx/geografia/espanol/datosgeogra/fisigeo/suelos.cfm

	Rendzine is considered as lands where the clay percentage is 24 and 29%, respectively[7], those lands can be considered as LAC. However in order to be conservative it is considered the default reference soil organic C stock to be as tropical wet and HAC soil due to the reference value is the lowest (conservative assumption).
Purpose of the data	Calculation of project removals
Comments	-

Data / Parameter	$F_{IN,i}$
Data unit	Dimensionless
Description	Relative stock change factor input regime (e.g. crop reside retruns, manure) in stratum I of the areas of land.
Source of data	Tables 6 of "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project" activities. The grassland is considered without input of fertilizers, according to the tool it is assigned an input factor of 1.
Value applied:	1
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of the data	Calculation of project removals
Comments	The value is considered with a low use of manure.

Data / Parameter	$f_{MG,i}$
Data unit	Dimensionless
Description	Relative stock change factor for baseline management regime in stratum *i* of the areas of land; dimensionless
Source of data	Tables 6 of "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project" activities. It is considered as a severy degraded level, the lands are identified as degraded lands using the The "Tool for the identification of

[7] INEGI. Instituto Nacional de Estadística y Geografía. Perfiles de Suelo. Page 18. Available at: http://mapserver.inegi.gob.mx/geografia/espanol/prodyserv/prods-geograficos/perfiles/perf.pdf

	degraded or degrading lands for consideration in implementing A/R CDM project activities" Stage 1 of the tool requires the PP to screen the lands of the project to determine whether the area has been classified as "degraded" under any verifiable local, regional, national or international land classification system or credible study produced within the last ten years. In this case is used the report of SEMARNAT (National Environmental Agency) that demonstrates the soil degradation of the country[8]. The maps 3-2 (page 118), 3-3 (page 119) and 3-4 (122), show that the regions of the project activity falls in the category of degraded and the causes of the degradation is overgrazing[9].
Value applied:	0.70
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of the data	Calculation of project removals
Comments	-

Data / Parameter	$f_{LU,i}$
Data unit	Dimensionless
Description	Relative stock change factor for baseline land use in stratum i of the areas of land
Source of data	Tables 6 of "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project" activities. According to the tool, all permanent grassland is assigned a land-use factor of 1.
Value applied:	1
Justification of choice of data or description of measurement methods	-

[8] SEMARNAT. Chapter 3. Soil. Available at: http://app1.semarnat.gob.mx/dgeia/informe_2008_ing/03_suelos/cap3_2.html
[9] SEMARNAT. Oficial Document Chapter 3. Available at: http://app1.semarnat.gob.mx/dgeia/informe_2008_ing/pdf/cap_3_suelos.pdf

and procedures applied	
Purpose of the data	Calculation of project removals
Comments	-

Data / Parameter	Volume table or equation
Data unit	m^3
Description	Volume table or volume equation that predicts stem volume on the basis of one or more measurements of the tree.
Source of data	Publication of University of Bangkok
Value applied:	NA
Justification of choice of data or description of measurement methods and procedures applied	The equations are the following and depend of the Diameter and the High of the tree. For Stem biomass (W_S) : Log W_S = 0.9797 log (D^2H) – 1.6902; r^2 =0.9930 For Branch biomass (W_B) : Log W_B = 1.0605 log (D^2H) – 2.6326; r^2 =0.9567 For Leaf biomass (W_L) : Log W_L = 0.7088 log (D^2H) – 1.7383; r^2 =0.8523 According to the tool “Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities” For ex ante estimation of aboveground tree biomass in project scenario any allometric equation can be used.
Purpose of the data	Calculation of project removals
Comments	-

3.2 Data and Parameters Monitored

Data / Parameter	$A_{p,i}$
Data unit	Ha
Description	Area of sample p in stratum i
Source of data	Field measurement
Description of measurement methods and procedures to be applied	The center of the plot was marked with the assistance of a GPS. One staff member stayed at the center of the plot taking notes of the diameters and heights measured while the other expert of the team walked inside the plot measuring them. Both experts were always connected with a measuring tape in order to determine a radio of 10 meters.

Frequency of monitoring/recording	Prior the verification process, total of plot measured: 2,938 plots measured.
Value monitored:	92.30 ha measured.
Monitoring equipment	NA
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures prescribed under national forest inventory are applied. In the absence of these, QA/QC procedures from published handbooks, or from the IPCC GPG LULUCF 2003, may be applied.
Purpose of the data	Calculation of project emissions
Calculation method	The area of a plot is the area of a circle, pi()*10^2 = 314.16 square meters.
Comments	Sample plot location is registered with a GPS and marked on the project map.

Data / Parameter	DBH
Data unit	Cm
Description	Diameter at Breast Height of tree
Source of data	Field measurement
Description of measurement methods and procedures to be applied	DBH is measured at 1.3 m above ground, over the bark. In case of stem deformation at this level (knots, forked trees, etc.), measurement was done over the deformation once the stem takes its normal shape, with the purpose of being conservative. DBH was measured in all trees within the plots.
Frequency of monitoring/recording	Prior the verification process, measured all the DBH within the plots.
Value monitored:	A total of 55,138 trees where measure. The DBH has several values.
Monitoring equipment	Rule to measure the height of 1.3 meter, once it has the height, a tape (forest type) is used for the circumference of each tree.
QA/QC procedures to be applied	A quality control procedure consisted in staff member periodical training. The staff members were trained to make DBH measurements without errors: using firstly a rule (to determine exactly where 1.3 meters height is located in their own bodies). Afterwards, they measured DBH in front of experts and member´s staff to achieve procedures consistency.

	There is a responsibility for the field coordinator to verify that the measures and the registration of the information is consistent.
Purpose of the data	Calculation of project emissions
Calculation method	To obtain the diameter is calculated with the formula Circunference= pi()*Diameter Diameter = Circumference/pi()
Comments	-

Data / Parameter	H
Data unit	M
Description	Height of trees
Source of data	The equation was obtained using a regression; the set of data was measured in the year 2013.
Description of measurement methods and procedures to be applied	The PP determines the equation using field measurements, over 3000 data are used to obtain the equation. The value of the correlation coefficient meets the requirements of the standard. The Equation to obtain the H is: $H = -0.0077*DBH^2+0.8971*DBH+0.2663$ Where: H: Height (meters) DBH: Diameter Breast Height (cm)
Frequency of monitoring/recording	Prior the verification process.
Value monitored:	Variable depends of the value of DBH.
Monitoring equipment	Hypsometer was used during the field measurements in order to obtain the data. Excel spreadsheet was used to obtain the quadratic regression.
QA/QC procedures to be applied	When referring to this electronic device, it was checked the correct visualization of the display. The hypsometer was always kept in safe places in order to avoid display rupture. The equipment was always full charge of batteries and back up batteries was always available in case of emergency. Make control measurements using all involved equipment (human error should be minimized at minimum with well training and cross-checked control measurement activities).
Purpose of the data	Calculation of project emissions

Calculation method	NA
Comments	-

Data / Parameter	T
Data unit	Year
Description	Time period elapsed between two successive estimations of carbon stock
Source of data	Recorded time
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value monitored:	Plantation from 1 July 2009 to 22 December 2014 Total of 5.48 years.
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of the data	Calculation of project emissions removals
Calculation method	NA
Comments	-
Data / Parameter	Volume table or equation
Data unit	m3
Description	Volume table or volume equation that predicts stem volume on the basis of one or more measurements of the tree.
Source of data	Publication of University of Bangkok
Description of measurement methods and procedures to be applied	The equations are the following and depend of the Diameter and the High of the tree. For Stem biomass (WS) : Log WS = 0.9797 log (D2H) – 1.6902; r2 =0.9930 For Branch biomass (WB) : Log WB = 1.0605 log (D2H) – 2.6326; r2 =0.9567 For Leaf biomass (WL) : Log WL = 0.7088 log (D2H) – 1.7383; r2 =0.8523 According to the tool “Demonstrating appropriateness of

	allometric equations for estimation of aboveground tree biomass in A/R CDM project activities" For ex post estimation of aboveground tree biomass an allometric equations is valid if: • The equation was derived from a data set of at least 30 sample trees, and the value of coefficient of determination (R2) obtained was not less than 0.85.
Frequency of monitoring/recording	Before every verification event.
Value applied:	N/A
Monitoring equipment	N/A
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures prescribed under national forest inventory are applied. In the absence of these, QA/QC procedures from published handbooks, or from the IPCC GPG LULUCF 2003, may be applied.
Purpose of data	Calculation of project removals
Calculation method	N/A
Comments	These formulas are considered as globally applicable data, therefore, are valid for the project activity.

3.3 Monitoring Plan

The aim of the Monitoring Plan is to record and monitor a number of different parameters in order to ensure that the project followed the corresponding methodology in the validated and registered PD and that the inputs to the carbon calculations are both accurate and up-to-date.

Monitoring stage comprised gathering information, performing calculations and making estimations of GHG removals. In this monitoring event, it is ensured that commonly established principles of forest inventory and management were put into practice. All data gathered as part of the monitoring plan was archived electronically and in hard copies, and will be kept at least for two years after the end of the crediting period.

Monitoring events were conducted in the period of time comprised between the months of December 2014/September 2015. The research management represented by the engineer Juan Ramon Aguilar is the manager of the Inventory Department; he is in charge of the coordination of the field crews to perform measurements as planned. He is responsible for the training of personnel and review the measurements are made according the "Procedure for assessment of biological assets". As manager of the department, he is responsible for the achievement of all the information that is collected during the measurement process.

Sampling design and stratification.

Project boundaries will be defined at the beginning of project activity and updated along the crediting period. Boundaries may vary or new strata may be created after disturbances effects (pests, droughts, fire) and boundaries will be redefined. Geographic coordinates are established, recorded and archived. A Geographic Information System will be implemented with the following basic layers:

- Project boundaries
- Soils map
- Projected land-use map
- Roads, fences, firebreaks, wood stocking areas, buildings, etc.
- Permanent sampling plots

Permanent sampling plots will be used for sampling over time to measure and monitor changes in carbon stocks of above and below ground biomass. The location of samples within the plot has been decided randomly to avoid any bias. The project boundary will be supervised by monitoring parcels using GPS. Any changes in project boundary will be accounted for in all calculations of actual net GHG removals by sinks. The monitoring methodology uses permanent sample plots to monitor carbon stock changes in above- and below-ground biomass pools. To reach the targeted precision level of about ±10% of the mean at the 90% confidence level in a cost-effective manner, the number of plots needed in each stratum has been determined following the equation 1 and 4r of the Methodological tool "Calculation of the number of sample plots for measurements within A/R CDM project activities" version 02.1.0.

$$n = \frac{N * t_{VAL}^2 * \left(\sum_i w_i * s_i \right)^2}{N * E^2 + t_{VAL}^2 * \sum_i w_i * s_i^2}$$

Where:

n = Number of sample plots required for estimation of biomass stocks within the project boundary; dimensionless

N = Total number of possible sample plots within the project boundary (i.e. the sampling space or the population); dimensionless

t_{VAL} =Two-sided Student's t-value, at infinite degrees of freedom, for the required confidence level; dimensionless

w_i = Relative weight of the area of stratum i (i.e. the area of the stratum i divided by the project area); dimensionless

s_i = Estimated standard deviation of biomass stock in stratum i; t d.m. (or t d.m. ha-1)

E = Acceptable margin of error (i.e. one-half the confidence interval) in estimation of biomass stock within the project boundary; t d.m. (or t d.m. ha-1), i.e. in the units used for i

The number of sample plots calculated is 289, according to the Tool due the first iteration is more than 30, then no further iteration is carried out and the value of n obtained in the first iteration is the final value of n, thus n= 289[10].

After obtain the total number of sample plots of the project activity it was used the equation 4 to obtain the samples plots allocated to a stratum with the following formula:

[10] According to the tool the value for E is 10%, a t_{VAL} value is used with 90% of confidence level.

$$n_i = n * \frac{w_i * s_i}{\sum_i w_i * s_i}$$

The results of the calculation of plots are summarized in the following table:

Strata	Year of Plantation/ Growth curve	Area (ha)	ni
Strata 1	2009/ México 2 (México Tabasco)	447.35	33
Strata 2	2009/ México 1 (México Nayarit	18.92	2
Strata 3	2010/ México Clon (México Premium)	259.05	19
Strata 4	2010/ México 2 (México Tabasco)	707.04	52
Strata 5	2011/ México Clon (México Premium)	677.51	50
Strata 6	2011/ México 2 (México Tabasco)	373.18	28
Strata 7	2012/ México Clon (México Premium)	806.49	59
Strata 8	2012/ México 2 (México Tabasco)	113.00	9
Strata 9	2013/ México Clon (México Premium)	556.13	41

*The calculation of ni was rounded, in order to be conservative.

The measurement process was made with the last procedure of Proteak, for this case this consist to the document named “Activo Biologico Teca” with the Code POL-01-01-02. In case of a change of the procedure the new procedure will follow the methodology conditions.

As a comparison of the requirements of the methodology and the highest effort of the PP to have an excellent monitoring process, they have an internal politic to make two types of measuring:

- Intensive measuring: For those plantations that have their first monitoring (3 years of age), the measuring program establishes that the measuring rate will be 1 plot per ha.
- Less intensive measuring: For those plantations that have their second monitoring and have at least 5 years of age, the measuring program establishes that the rate of measuring will be 1 plot per 5 ha.

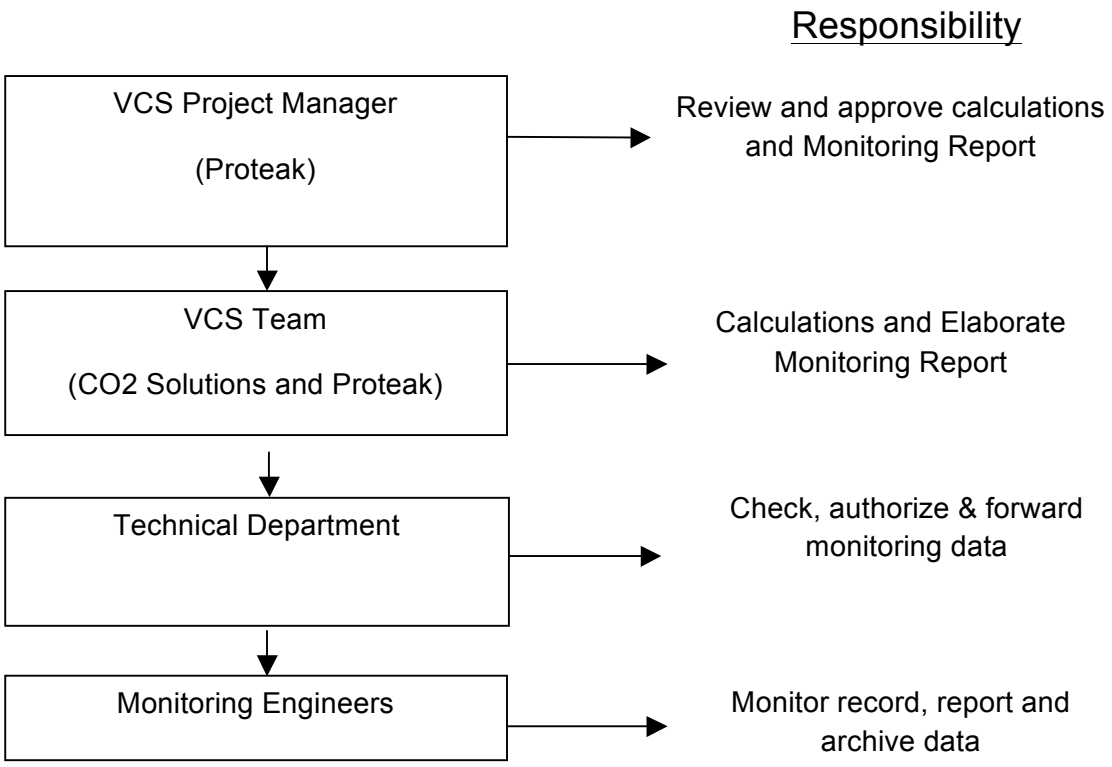
The comparison of the Plots is showing in the next table. The Strata 9 plantations has not enough data, due to the age of most of the plantations is less than 3 years. However, the individual analysis demonstrates that the quantities of plots measured for each plantation of the Strata 9 is enough to validate the results.

Strata	Plot Required	Plot measured
1.00	33.00	451.00
2.00	2.00	6.00
3.00	19.00	266.00
4.00	52.00	724.00
5.00	50.00	345.00
6.00	28.00	280.00
7.00	59.00	734.00
8.00	9.00	113.00
9.00	41.00	19.00

Responsibilities

The planned operational and management structure that will monitor emission reductions of the project will include:

- Person(s) responsible for monitoring, recording, reporting and archiving measured data.
- Person(s) responsible for performing the emission reduction calculations based on the methodology and preparing the Monitoring Report as appropriate.
- Person(s) responsible for reviewing and approving the calculations and Monitoring Report.



It is important to state that Proteak is a Company listed in the Mexican Stock Exchange, because of this commitment, Proteak has a great responsibility in making an inventory of quality.

In summary, the measuring process and the information obtained is evaluated by an internal group within the company and any decision affecting the measurements and the results must be approved by a special committee.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

Since continuation of an activity that has been applied without changes for more than 20 years has been selected as the baseline scenario, it is assumed, in agreement with IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry (2003) that the net GHG removals by sinks in the baseline equals zero.

4.2 Project Emissions

According to the methodology AR-ACM0003 version 01.0.0 is stated that if biomass distribution over the project area is not homogeneous, stratification should be carried out to improve the precision of biomass estimation.

In the case of the project activity there different conditions of the plantations such as the weather conditions (there are variations in the state of Nayarit and Tabasco-Chiapas), the type of seed used (clone seed or normal seed) and the year of plantation. Both variables affect directly the biomass distribution of the project activity, the type of seed and weather conditions are involved in the variable of growth curve.

The actual net GHG removals by sinks shall be calculated as follows:

$$\Delta C_{ACTUAL,t} = \Delta C_{P,t} - GHG_{E,t} \qquad \text{Equation (1)}$$

Where:

$\Delta C_{ACTUAL,t}$ = Actual net GHG removals by sinks, in year t; tCO_{2-e}

$\Delta C_{P,t}$ = Change in the carbon stocks in project, occurring in the selected carbon pools, in year t; tCO_{2-e}

$GHG_{E,t}$ = Increase in non-CO_2 GHG emissions within the project boundary as a result of the implementation of the A/R project activity, in year t, as estimated in the tool "Estimation of non-CO_2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity"; tCO_{2-e}

Estimation of GHG emissions within the project boundary

The increase in GHG emissions as a result of the implementation of the proposed A/R CDM project activity within the project boundary can be estimated as:

$$GHG_E = \sum_{t=1}^{t^*} GHG_{E,t} \qquad \text{Equation (2)}$$

Where
GHG_E = Increase in GHG emissions as a result of the implementation of the proposed A/R CDM project activity within the project boundary; t CO_2-e
$GHG_{E,t}$= Increase in non- CO_2 emissions due to burning of biomass of existing woody vegetation as part of site preparation in year t, as estimated in the tool "Estimation of non CO_2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity"; tCO_2-e
t= 1,2,3,….t* years elapsed since the start of the A/R CDM project activity

As mentioned before Proteak UNO S.A.B. DE C.V. through a document named "Programa de Manejo de Plantación Forestal Simplificado" show the process of land preparation and demonstrates that no biomass is burned during site preparation, so there will be no GHG emissions from biomass burning.

Si $GHG_E = 0$

Change in the carbon stocks in project, occurring in the selected carbon pools in year *t* shall be calculated as follows:

$$\Delta C_{P,t} = \Delta C_{TREE\_PROJ,t} + \Delta C_{SHRUB\_PROJ,t} + \Delta C_{DW\_PROJ,t} + \Delta C_{LI\_PROJ,t} + \Delta SOC_{AL,t} \quad \text{Equation (3)}$$

$\Delta C_{P,t}$ = Change in the carbon stocks in project, occurring in the selected carbon pools, in year t; tCO_{2-e}

$\Delta C_{TREE\_PROJ,t}$ = Change in carbon stock in tree biomass in project in year t, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; tCO_{2-e}

$\Delta C_{SHRUB\_PROJ,t}$ = Change in carbon stock in shrub biomass in project in year t, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; tCO_{2-e}

$\Delta C_{DW\_PROJ,t}$ = Change in carbon stock in dead wood in project in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities"; tCO_{2-e}

$\Delta C_{LI\_PROJ,t}$ = Change in carbon stock in litter in project in year *t*, as estimated in the tool "Estimation of carbon stocks due to the implementation of A/R CDM project activities", as estimated in the same tool; tCO_{2-e}

$\Delta SOC_{AL,t}$ = Change in carbon stock in SOC in project, in year t, in areas of land meeting the applicability conditions of the tool "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities", as estimated in the same tool; tCO_{2-e}

The baseline net GHG removals by sinks shall be calculated as follows:

$$\Delta C_{BSL,t} = \Delta C_{TREE\_BSL,t} + \Delta C_{SCHRUB\_BSL,t} + \Delta C_{DW\_BSL.t} + \Delta C_{LI\_BSL,t} \quad \text{Equation (4)}$$

Where:

$\Delta C_{BSL,t}$= Baseline net GHG removals by sinks in year *t*; t CO2-e

$\Delta C_{TREE\_BSL,t}$= Change in carbon stock in baseline tree biomass within the project boundary in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO2-e

$\Delta C_{SHRUB\_BSL,t}$ = Change in carbon stock in baseline shrub biomass within the project boundary, in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO2-e

$\Delta C_{DW\_BSL,t}$ = Change in carbon stock in baseline dead wood biomass within the project boundary, in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities"; t CO2-e

$\Delta C_{LI\_BSL,t}$ = Change in carbon stock in baseline litter biomass within the project boundary, in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities"; t CO2-e

Estimation of tree biomass using the BEF technique.

In this technique volume tables or volume equations are used to convert tree dimensions to stem volume of trees. Stem volume of trees is converted to above-ground tree biomass using density and biomass expansion factors, and the above-ground tree biomass is expanded to total tree biomass using root-shoot rations. This is estimated as:

$$B_{TREE,j,p,i,t} = V_{TREE,j,p,i,t} \times D_j \times BEF_{2,j} \times (1 + R_j)$$ Equation (5)

Where:

$B_{TREE,j,p,i,t}$ = Biomass of trees of species j in sample plot p of stratum I at a point of time in year t, t dry matter (d.m.)

$V_{TREE,j,p,i,t}$ = Stem volume of trees species j in sample plot p of stratum i at a point of time in year t, estimated by using the tree dimension(s) as entry data into a volume table or volume equation; m^3

D_j = Density (overbark) of tree species j; t.d.m. m^{-3}

$BEF_{2,j}$ = Biomass expansion factor for conversion of stem biomass to above-ground tree biomass, for tree species j; dimensionless

R_j = Root-shoot ratio for tree species j; dimensionless

j = 1,2,3, …. Tree species in plot p

p = 1,2,3, …. Sample plots in stratum i

i = 1,2,3, …. Tree biomass estimation strata within the project boundary

t = 1,2,3, …. Years counted from the start of the project activity

The calculation of the teak biomass was calculated by the following equations of Petmark and Sahunalu published in the research article of the University in Bangkok[11]. The equations are the following:

- For Stem biomass (W_S) :
  $\text{Log } W_S = 0.9797 \log (D^2H) - 1.6902$; $r^2 = 0.9930$ Equation (6)
- For Branch biomass (W_B) :
  $\text{Log } W_B = 1.0605 \log (D^2H) - 2.6326$; $r^2 = 0.9567$ Equation (7)
- For Leaf biomass (W_L) :
  $\text{Log } W_L = 0.7088 \log (D^2H) - 1.7383$; $r^2 = 0.8523$ Equation (8)

The sum of each formula will correspond to the mass per three.

Above and below ground biomass have been estimated according to the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity”. A summary of the main factors used and each source of data are presented in the table below. Estimations are archived as part of the project documentation and will be available for the validation team. Data used for estimating tree biomass are shown in the next table.

Parameter	Symbol	Tectona Grandis	Source
Basic density for teak tree (tonnes dry matter/m^3)	$D_{wood,j}$	0.5	Obtained from the IPCC. Table 3A.19 (Tectona Grandis).[12]
Density of teak calculated with the formula of the tool (tonnes dry matter/m^3)	D_j	0.485	Using the formula of the Methodological tool: Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R project activities

[11] Petsri,S. et al. Aboveground carbon content in mixed deciduous forest and peak plantations. September 2003, page 4

[12] IPCC. Wood density. Table 3A.19. Available at: http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf

Biomass expansion factor (dimensionless)	$BEF_{2,j}$	1.3	Values from Table 3A.1.10 of IPCC GPG-LULUCF 2003. As the weather of the activity is tropical and is considered a forest type of pines.
Carbon Fraction (dimensionless)	CF	0.47	According the tools, this is the conservative value obtained from the IPCC.
Root-to-shoot ratio (dimensionless)	R_j	0.31	Obtained from the IPCC table 3A.1.8 of IPCC GPG LULUCF 2003. Used the lowest value as a conservative approach.

Soil organic carbon

Estimations of soil organic carbon (SOC) stocks were done in accordance to the "Tool for the change in soil organic carbon stocks due to the implementation of A/R CDM project activity". As suggested by the tool, it is assumed that the implementation of the project activity increases the SOC content of the lands from the pre-project level to the level that is equal to the steady-state SOC content under native vegetation. The increase in SOC content in the project scenario takes place at a constant rate over a period of 20 years from the year of planting.
The project meets the applicability conditions of this tool since:

- The areas of land to where the tool is applied do not fall into wetland category and are not subject to any of the land management practices and application of inputs listed in Tables 1 and 2 of the tool;

  The three applicability conditions can be demonstrated with the photos of each plantation, which demonstrate that the lands do not fall in wetland category and that the plantation had no inputs, in the same way the validation team could corroborate in the visit that the plantations follow the applicability conditions of the tool.

  Additionally, in this section details the type of land or category that the project plantations fall into, with this it's also demonstrated that the project plantations don't fall in wetland category. The main soils related to the project plantations are: Gleysol, Rendzine, Regosols, Cambisols[13]

  In the case of Regosols and Cambisols the tool classifies these soils as High Activity Clay (HAC), in the case of the Gleysol and Rendzine they're considered as land where the clay percentage is 24 and 29%, respectively[14], those lands can be considered as LAC. With this it's demonstrated that the project land do not fall in wetland category.

[13] INEGI. Instituto Nacional de Estadistica y Geografía. Principales Tipos de Suelo. Available at: http://mapserver.inegi.gob.mx/geografia/espanol/datosgeogra/fisigeo/suelos.cfm
[14] INEGI. Instituto Nacional de Estadística y Geografía. Perfiles de Suelo. Page 18. Available at: http://mapserver.inegi.gob.mx/geografia/espanol/prodyserv/prods-geograficos/perfiles/perf.pdf

- Since the land use prior to project start is grassland, only Table 2 applies. For the tropical wet and tropical moist climate region corresponding to the project activity, none of the three combinations included in Table 2 are applicable;

- Litter remains on site and is not removed and soil disturbance is in accordance to appropriate conservation practices, limited to site preparation and not repeated within 20 years.

Parameter	Symbol	Value	Source (SOC estimation tool V01.1.0)
Reference SOC (tC/ha)	$SOC_{REF,i}$	44	Table 3 HAC Soil, Tropical, wet climate which is the most predominant.
Land use factor	$f_{LU,i}$	1	All permanent grassland is assigned a land-use factor of 1
Management	f_{MG}	0.70	As was demonstrated land is considered a degraded land
Input	f_{IN}	1	All grassland without input fertilizers is assigned the input value of 1.

SOC at the beginning of the project ($SOC_{INITIAL,i}$) is estimated by multiplying the factors in Table by the reference SOC. As per the tool, a loss in SOC ($SOC_{LOSS,i}$) is applied in the case that soil disturbance occurs on more than 10 per cent of the land area, for the case of the project activity this is not the case, therefore $SOC_{LOSS,i}$ is zero. The following methodological formula is used for calculating the annual change in SOC stock

$$dSOC_{t,i} = \frac{SOC_{REF,i} - (SOC_{INITIAL,i} - SOC_{LOSS,i})}{20\ years}$$

Equation (9)

Where:

$dSOC_{t,I}$ = The rate of change in SOC stock in stratum i of the area of land, in year t; tC/ha/year

$SOC_{REF,i}$ = Reference SOC stock corresponding to the reference condition in native lands by climate region and soil types applicable to stratum i of the area of land; tC/ha

$SOC_{INICIAL,I}$ = SOC stock at the beginning of the A/R project activity in stratum i of the areas of land

$SOC_{LOSS,i}$ = Loss of SOC caused by soil disturbance attributable the A/R project activity, in stratum I of the areas of land ; tC/ha

The result of $dSOC_{t,i}$ is 0.66 t C/ha/year, therefore this is the value of the increase of the soil organic carbon.

4.3 Leakage

Leakage shall be estimated as follows:

$$LK_t = LK_{AGRIC,t}$$ Equation (10)

Where:
LK_t = GHG emissions due to leakage, in year *t*; t CO_2-e
$LK_{AGRIC,t}$ = Leakage due to the displacement of agricultural activities in year *t*, estimated in the tool "Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R project activity"; t CO_2-e

The calculation of the leakage emissions is the following equation.

$$LK_{Agric,t} = \frac{44}{12} * \frac{f}{T_{cred}} * \Delta Cd_t$$ Equation (11)

Where:
$LK_{Agric,t}$ = Leakage due to displacement of agricultural activities in year t (tCO_2-e)
f = Fraction of land covered by forest (according to the national definition of forest) in the region containing the project activity (dimensionless)
T_{cred} = Number of year in the first crediting period (dimensionless)
DCdt = Sum of annual changes in carbon stock in all selected carbon pools since the start of the project activity to the year of verification t_{ver} attributable to the area subject to pre-project agricultural activities that are displaced during year t since the start of the project activity (t C).
t = 1,2,3, t year elapsed since the start of the project activity.
44/12 = Ratio of molecular weight of CO_2 to carbon ($tCO2\text{-}e\ tC^{-1}$)

All the plantations are grassland, therefore these emissions are not considered in the project activity, this assumption is supported with the photo of each plantation

According the AFOLU requirements state that the Methodologies shall establish procedures to quantify all significant sources of leakage. Leakage is defined as any increase in GHG emissions that occur outside the project boundary (but within the same country), and is measurable and attributable to the project activities. All leakage shall be accounted for, in accordance with this Section 4.6. The three types of leakage are:

1) Market leakage occurs when projects significantly reduce the production of a commodity causing a change in the supply and market demand equilibrium that results in a shift of production elsewhere to make up for the lost supply.

The land of the project activity didn't have any forestry/agricultural use before the project activity; therefore, there wasn't any production of a commodity or something that can be involved with the leakage condition.

2) Activity-shifting leakage can result from, inter alia, the shifting of grazing animals, shifting of households or communities, shifting of aquacultural or agricultural activities or shifting of fuelwood collection (from non-tree sources). Leakage emissions may also result from transportation and machinery use.

The project activity is not related with the shifting of grazing animals or households or communities, therefore, this condition is neglected.

3) Ecological leakage occurs in WRC projects where a project activity causes changes in GHG Emissions or fluxes of GHG emissions from ecosystems that are hydrologically connected to the project area.

The project activity is not involved with a Wetland Restoration and Conservation project; therefore, this leakage is not included.

4.4 Net GHG Emission Reductions and Removals

The net anthropogenic GHG removals by sinks shall be calculated as follows:

$$\Delta C_{AR-CDM,t} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t \quad \text{Equation (12)}$$

Where:

$\Delta C_{AR-CDM,t}$ = Net anthropogenic GHG removals by sinks, in year *t*; tCO_{2-e}

$\Delta C_{ACTUAL,t}$ = Actual net GHG removals by sinks, in year *t*; tCO_{2-e}

$\Delta C_{BSL,t}$ = Baseline net GHG removals by sinks, in year *t*; tCO_{2-e}

LK_t = GHG emissions due to leakage, in year *t*; tCO_{2-e}

The actual net GHG removals by sinks shall be calculated as follows:

$$\Delta C_{ACTUAL,t} = \Delta C_{P,t} - GHG_{E,t} \quad \text{Equation (13)}$$

Where:

$\Delta C_{ACTUAL,t}$ = Actual net GHG removals by sinks, in year t, t CO_2-e

$\Delta C_{P,t}$ = Change in the carbon stocks in project, occurring in the selected carbon pools, in year t, t CO_2-e

$GHG_{E,t}$ = Increase in non-CO2 GHG emissions within the project boundary as a result of the implementation of the project activity in year t, as estimated in the tool "Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity", t CO_2-e,

The change in the carbon stocks in project, occurring in the selected carbon pools in year t shall be calculated as follows:

$$\Delta C_{P,t} = \Delta C_{TREE\_PROJ,t} + \Delta C_{SHRUB\_PROJ,t} + \Delta C_{DW\_PROJ,t} + \Delta C_{LI\_PROJ,t} + \Delta CSOC_{AL,t}$$

Equation (14)

Where:

$\Delta C_{P,t}$ = Change in the carbon stocks in project, occurring in the selected carbon pools, in year t; tCO_{2-e}.

$\Delta C_{TREE\_PROJ,t}$ = Change in carbon stock in tree biomass in project in year t, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; tCO_{2-e}

$\Delta C_{SHRUB\_PROJ,t}$ = Change in carbon stock in shrub biomass in project in year t, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; tCO_{2-e}

$\Delta C_{DW\_PROJ,t}$ = Change in carbon stock in dead wood biomass in project in year t, as estimated in the tool "Estimation of carbon stocks and change in dead wood and litter in A/R CDM project activities"; tCO_{2-e}

$\Delta C_{LI\_PROJ,t}$ = Change in carbon stock in litter in project in year t, as estimated in the tool "Estimation of carbon stocks and change in dead wood and litter in A/R CDM project activities"; tCO_{2-e}

$\Delta SOC_{AL,t}$ = Change in carbon stock in SOC in project, in year t, in areas of land meeting the applicability conditions of the tool " Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities", as estimated in the same tool; tCO_{2-e}

Correction for large maximum allowable relative error.

The maximum allowable relative error of the mean tree biomass is calculated using the following equation:

$$RE_{\max} = u_{bTREE,t} \qquad \text{Equation (15)}$$

Where:
REmax = Maximum relative error, %
$U_{bTREE,t}$ = Uncertainty of the mean tree carbon per hectare within the project boundary at time t; %.
T = 1, 2, 3 … years counted from the start of the A/R CDM project activity

The PP demonstrates that the relative error is 0.03%, therefore, since this value is less than 10%, the deduction rate is 0%.

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2009	0	4,378	0	4,378
2010	0	26,962	0	26,962
2011	0	51,897	0	51,897
2012	0	67,155	0	67,155
2013	0	68,469	0	68,469
2014	0	66,781	0	66,781
Total	0	285,642	0	285,642

Year	Net GHG emission reductions or removals (tCO_2e) After Risk Tool	AFOLU pooled buffer account
2009	3,765	612.90
2010	23,187	3,774.64
2011	44,632	7,265.63
2012	57,753	9,401.66
2013	58,884	9,585.71
2014	57,432	9,349.35
Total	245,652	39,989.89

Round up AFOLU pooled buffer account = 39,990

Net VCUs to be issued 245,652

Due the project activity contemplates the project with harvesting. It was necessary to calculate the Long-Term Average Carbon.

The results of the validation show that the LTA is 5,383,752. By the time the project activity reaches the LTA value no more VCU credits can be issued, since this period compromises the first verification period and the value doesn't reach the LTA all the VCU's can be issued.

APPENDIX A: RESULTS OF EMISSION REMOVALS PER PLANTATION

	Plantation	Growth Curve	Strata	Area Planted	Change in C stock tCO2/yr
2009	Pocito (La Reforma)	2009/ México 2 (México Tabasco)	1.00	377.35	35,935.12
	Tintal	2009/ México 2 (México Tabasco)	1.00	70.00	4,180.74
	Capitán	2009/ México 1 (México Nayarit)	2.00	0.0	0.00
	Cascada	2009/ México 1 (México Nayarit)	2.00	18.92	1,383.34
	Empeño 8	2009/ México 1 (México Nayarit)	2.00	0.0	0.0
	Victoria 7	2009/ México 1 (México Nayarit)	2.00	0.0	0.0
2010	El Rincon	2010/ México Clon (México Premium)	3.00	74.96	8,001.96
	La Estrella	2010/ México Clon (México Premium)	3.00	40.88	4,554.55
	San Juan	2010/ México Clon (México Premium)	3.00	74.04	13,920.14
	Santa Rosa	2010/ México Clon (México Premium)	3.00	69.17	7,357.23
	Las Caobas	2010/ México 2 (México Tabasco)	4.00	231.10	22,827.17
	San Pablo	2010/ México 2 (México Tabasco)	4.00	168.90	7,616.64
	Pocito (La Reforma)	2010/ México 2 (México Tabasco)	4.00	42.24	1,940.13
	Tintal	2010/ México 2 (México Tabasco)	4.00	264.80	13,203.18

2011	Don Justi	2011/ México Clon (México Premium)	5.00	60.25	11,716.16
	El Diamante	2011/ México Clon (México Premium)	5.00	33.90	5,588.65
	La Estrella	2011/ México Clon (México Premium)	5.00	86.28	8,095.80
	La Nueva Pezuña	2011/ México Clon (México Premium)	5.00	18.47	2,625.79
	Las Caobas (Brasiles, Amapas)	2011/ México Clon (México Premium)	5.00	424.42	26,637.80
	San Agustín (Primor included)	2011/ México Clon (México Premium)	5.00	54.19	9,571.55
	Cuvadonga	2011/ México 2 (México Tabasco)	6.00	40.00	3,454.85
	El Milagro	2011/ México 2 (México Tabasco)	6.00	93.34	9,776.37
	Las Caobas (Cedros)	2011/ México 2 (México Tabasco)	6.00	77.51	2,966.67
	Piedra Santa	2011/ México 2 (México Tabasco)	6.00	73.86	3,736.60
	San Pablo	2011/ México 2 (México Tabasco)	6.00	8.06	293.69
	Pocito (La Reforma)	2011/ México 2 (México Tabasco)	6.00	80.41	4,743.26
2012	Asterisco	2012/ México Clon (México Premium)	7.00	71.18	6,713.98
	El Diamante	2012/ México Clon (México Premium)	7.00	18.87	1,997.70
	La Estrella	2012/ México Clon (México Premium)	7.00	43.90	2,791.96
	Las Caobas (Brasiles, Amapas)	2012/ México Clon (México Premium)	7.00	167.33	5,224.06

	El Porvenir	2012/ México Clon (México Premium)	7.00	53.65	921.81
	La Laguna	2012/ México Clon (México Premium)	7.00	367.50	13,188.16
	El Abuelo	2012/ México Clon (México Premium)	7.00	84.06	3,887.01
	Cuvadonga	2012/ México 2 (México Tabasco)	8.00	113.00	3,712.40
2013	Piedra Santa	2013/ México Clon (México Premium)	9.00	0.00	0.00
	El Abuelo	2013/ México Clon (México Premium)	9.00	350.00	0.00
	El Zombie	2013/ México Clon (México Premium)	9.00	151.50	0.00
	El Establo	2013/ México Clon (México Premium)	9.00	33.13	0.00
	El Milagro	2013/ México Clon (México Premium)	9.00	5.00	222.85
	San Agustín / Primor	2013/ México Clon (México Premium)	9.00	5.00	198.05
	Capri	2013/ México Clon (México Premium)	9.00	11.50	0.00