



Mexico Forest Protocol Version 2.0 ERRATA AND CLARIFICATIONS

The Climate Action Reserve (Reserve) published its Mexico Forest Protocol Version 2.0 (MFP V2.0) in March 2020. While the Reserve intends for the MFP 2.0 to be a complete, transparent document, it recognizes that correction of errors and clarifications will be necessary as the protocol is implemented and issues are identified. This document is an official record of all errata and clarifications applicable to the MFP 2.0.¹

Per the Reserve Offset Program Manual, both errata and clarifications are considered effective on the date they are first posted on the Reserve website. The effective date of each erratum or clarification is clearly designated below. All listed and registered forest projects must incorporate and adhere to these errata and clarifications when they undergo verification. The Reserve will incorporate both errata and clarifications into future versions of the protocol.

All project developers and verification bodies must refer to this document to ensure that the most current guidance is adhered to in project design and verification. Verification bodies shall refer to this document immediately prior to uploading any Verification Statement to assure all issues are properly addressed and incorporated into verification activities.

If you have any questions about the updates or clarifications in this document, please contact the Mexico team at: proyectomx@climateactionreserve.org or (213) 891-1444 x6.

¹ See Section 4.3.4 of the Reserve Offset Program Manual for an explanation of the Reserve's policies on protocol errata and clarifications. "Errata" are issued to correct typographical errors. "Clarifications" are issued to ensure consistent interpretation and application of the protocol. For document management and program implementation purposes, both errata and clarifications to the MFP are contained in this single document.

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Section 2

1. Agroforestry Definition (CLARIFICATION – April 5, 2021)

Section: 2.3

Context: The protocol provides the following definition for Agroforestry Activity Areas:

| Activities | Definition/Description | Examples of Management Actions |
|--------------------------------|---|---|
| Agroforestry and Silvopastoral | The primary human activity within the Activity Area is agriculture and/or grazing, and the land cover type is defined as agriculture or grassland. Trees are either planted or otherwise encouraged from natural regeneration. Trees may be harvested, according to law, within, or adjacent to the cultivated crops and grazing areas. Agroforestry and Silvopastoral activities may be carried out on protected areas if not prohibited by the regulation and management plan ⁹ of the protected area. | - Increasing trees within through intercropping and border planting - Planting of sparse shade trees or mast trees for livestock |

Clarification: The Reserve is providing the following modification to the definition (underlined text below) to clarify the trees that can be included in the standing live carbon for Agroforestry Activity Areas:

| Activities | Definition/Description | Examples of Management Actions |
|--------------------------------|--|---|
| Agroforestry and Silvopastoral | <p>The primary human activity within the Activity Area is agriculture and/or grazing, and the land cover type is defined as agriculture or grassland. Trees are either planted or otherwise encouraged from natural regeneration. Trees may be harvested, according to law, within, or adjacent to the cultivated crops and grazing areas. Agroforestry and Silvopastoral activities may be carried out on protected areas if not prohibited by the regulation and management plan⁹ of the protected area.</p> <p><u>Trees planted as an agricultural crop (i.e., orchards or coffee trees) are excluded from the Activity Area's baseline and standing live carbon primary effect quantification. Non-crop trees planted throughout or around the agricultural product are included (i.e., shade or border trees).</u></p> | - Increasing trees within through intercropping and border planting - Planting of sparse shade trees or mast trees |

2. Improved Forest Management Definition (CLARIFICATION – June 30, 2020)

Section: 2.3

Context: The protocol provides the following definition for Improved Forest Management activities:

| Activities | Definition/Description | Examples of Management Actions |
|----------------------------------|--|--|
| Improved Forest Management (IFM) | The primary land cover is forest, which may be present in varying densities and sizes, and the forest has an authorized forest management program for the purposes of commercial timber harvest. The Activity Area is limited to the area with the forest management program. Agriculture may be included as a secondary activity and most likely in varying intensity across the landscape over time and space. Reforestation within this Activity Area, if it occurs, generally follows a harvest or other disturbance event that has occurred within the past 5 years. IFM activities may be carried out on protected areas if the forest has a forest management program authorized by SEMARNAT and permitted by the regulation of the protected area. | <ul style="list-style-type: none"> - Increasing rotation ages - Management to maintain health and vigor - Stocking improvement - Removing impediments to natural forest regeneration |

Clarification: The Reserve is providing the following modification to the definition (underlined text below) to clarify the area allowed within Improved Forest Management Activity Areas:

| Activities | Definition/Description | Examples of Management Actions |
|----------------------------------|--|--|
| Improved Forest Management (IFM) | The primary land cover is forest, which may be present in varying densities and sizes, and the forest has an authorized forest management program for the purposes of commercial timber harvest. <u>The Activity Area is limited to areas that are included in a SEMARNAT Forest Management Program where there is no outright legal prohibition of commercial harvest. This may include areas that are not being considered for harvest in the current management program.</u> Agriculture and grazing may be included as secondary activities and most likely in varying intensities across the landscape over time and space. Reforestation within this Activity Area, if it occurs, generally follows a harvest or other disturbance event that has occurred within the past 5 years. IFM activities may be carried out on protected areas if the forest has a forest management program authorized by SEMARNAT and permitted by the regulation of the protected area. | <ul style="list-style-type: none"> - Increasing rotation ages - Management to maintain health and vigor - Stocking improvement - Removing impediments to natural forest regeneration |

3. Restoration Definition (CLARIFICATION – June 30, 2020)

Section: 2.3

Context: The protocol provides the following definition for Restoration activities:

| Activities | Definition/Description | Examples of Management Actions |
|-------------|---|--|
| Restoration | The sequestration associated with the protection and restoration of natural forests. All Restoration activities must meet the additionality requirements of this protocol outlined in Section 3.12. Ongoing commercial harvest operations is not a permitted use (activities that have ongoing commercial harvest operations may be included as Improved Forest Management activities). Restoration activities may include protected areas (where forest management is not allowed) and non-commercially viable forests that are degraded or at high risk of degradation and deforestation where forest carbon stocks may be increased through project activities such as planting or the removal of the causes of degradation to encourage natural regeneration. | <ul style="list-style-type: none"> - Planting tree seedlings directly - Removing impediments to natural forest regeneration - Enforcement against illegal harvest operations - Enforcement against illegal land use conversion |

Clarification: The Reserve is providing the following modification to the definition (underlined text below) to clarify the area allowed within Restoration Activity Areas:

| Activities | Definition/Description | Examples of Management Actions |
|-------------|--|--|
| Restoration | The sequestration associated with the protection and restoration of natural forests <u>that are not under a Forest Management Program and/or where commercial harvesting is prohibited due to a law, regulation, or norm. Areas included within a Forest Management Program where commercial harvesting is legally prohibited may be included within Restoration Activity Areas upon passing the performance standard test.</u> All Restoration activities must meet the additionality requirements of this protocol outlined in Section 3.12. Ongoing commercial harvest operations is not a permitted use (activities that have ongoing commercial harvest operations may be included as Improved Forest Management activities). Restoration activities may include protected areas (where forest management is not allowed) and non-commercially viable forests that are degraded or at high risk of degradation and deforestation where forest carbon stocks may be increased through project activities such as planting or the removal of the causes of degradation to encourage natural regeneration. | <ul style="list-style-type: none"> - Planting tree seedlings directly - Removing impediments to natural forest regeneration - Enforcement against illegal harvest operations - Enforcement against illegal land use conversion |

Section 3

4. Soil Disturbance During Site Preparation for Tree Planting (CLARIFICATION – February 17, 2021)

Section: 3.10

Context: The protocol includes the following environmental safeguard:

| Environmental Safeguard | Applicable Activities | Activity Area Guidance |
|---|-----------------------|--|
| 7. Soil disturbance during site preparation for tree planting | All | Site preparation using deep ripping is prohibited from affecting more than 1% of an Activity Area in any year as determined by the area encompassed by the channels produced by a single ripper. Such channels are defined by the width of the ripper tine used, plus 0.5 meter on each side. In cases where deep ripping does exceed 1% of an Activity Area in a given year, crediting for any increases in forest carbon stocks will be suspended for the number of reporting periods equivalent to the proportion of the Activity Area affected, rounded up to the nearest percentage point. For example, if deep ripping on a 100-hectare Activity Area is performed over a combined channel length of 22,000 meters using a ripper with a tine width of 0.1 meter, resulting in 2.4% of the Activity Area being affected, crediting would be suspended for the Activity Area for three reporting periods, including the reporting period during which deep ripping occurred. |

Clarification: To provide further clarity, the following definition for deep ripping is to be applied. Deep ripping mechanically breaks up compacted soil layers by using ripper tines reaching a minimum depth of 30 cm. Tillage that does not reach the minimum 30 cm depth is not considered deep ripping and is not prohibited under this environmental safeguard.

Tillage that meets the definition of deep ripping (i.e., minimum depth of 30 cm) is prohibited from affecting more than 1% of an Activity Area in any year as determined by the area encompassed by the channels produced by a single ripper. Such channels are defined by the width of the ripper tine used, plus 0.5 meter on each side. In cases where deep ripping does exceed 1% of an Activity Area in a given year, crediting for any increases in forest carbon stocks will be suspended for the number of reporting periods equivalent to the proportion of the Activity Area affected, rounded up to the nearest percentage point.

Section 4

5. Standing live carbon for Agroforestry Activity Areas (CLARIFICATION – April 5, 2021)

Section: 4

Context: The protocol provides the following guidance for the quantification of standing live carbon:

| SSR | Description | Type | Gas | Included or Excluded? | Quantification Method | Justification/ Explanation |
|--|---|------------------|-----------------|-----------------------|---|---|
| Primary Effect Sources, Sinks, and Reservoirs | | | | | | |
| 1 | Standing live carbon (carbon in all portions of living trees) | Reservoir / Pool | CO ₂ | Included | Baseline: Based on initial field inventory measurements; methodology outlined in Section 5.2 Project: Measured by field measurements and updating forest carbon inventory through remeasurement and growth projections | Increases in standing live carbon stocks are the Primary Effect of carbon enhancement projects. |

Clarification: The Reserve is providing the following modification (underlined text below) to clarify the standing live carbon for Agroforestry Activity Areas:

| SSR | Description | Type | Gas | Included or Excluded? | Quantification Method | Justification/ Explanation |
|--|---|------------------|-----------------|--|---|--|
| Primary Effect Sources, Sinks, and Reservoirs | | | | | | |
| 1 | Standing live carbon (carbon in all portions of living trees) | Reservoir / Pool | CO ₂ | Included; <u>For Agroforestry Activity Areas, trees planted as agricultural crops are excluded.</u> | Baseline: Based on initial field inventory measurements; methodology outlined in Section 5.2 Project: Measured by field measurements and updating forest carbon inventory through remeasurement and growth projections | Increases in standing live carbon stocks are the Primary Effect of carbon enhancement projects. <u>For Agroforestry Activity Areas, trees planted as agricultural crops do not meet additionality requirements.</u> |

Section 5

6. Secondary Effects for Improved Forest Management (CLARIFICATION – June 30, 2020)

Section: 5.5.3.1

Context: The protocol provides the following guidance for the quantification of a baseline for harvested wood products:

A baseline of harvested wood products is developed based on the six years' worth of harvest data prior to the Activity Area start date, or the longest set of harvest data available if records going back six years do not exist. Since harvest volume usually originates as volumetric reports, there are several steps to complete the conversion, using default conversion estimators. The process steps are provided below, followed by an example in Figure 5.2.

Step 1. Develop historical annual values of harvested wood products and develop an average.

The Forest Owner must be careful to align any harvested wood products reports or estimates with the boundaries of the Activity Area. Harvest that occurred outside of the Activity Area shall not be included in the dataset. Historical data shall be based on annual reports (submitted to SEMARNAT, if applicable). The dataset shall be presented by conifers and hardwoods in the Project Report on an annual basis for the past six full calendar years prior to the Activity Area start date, or the longest time in which data were collected if records going back six full years are not available. An average must be developed for both species groups.

Step 2. Convert the log volume to whole tree volume.

Since a shift in GHG emissions would affect whole tree volume, not just the portion associated with wood products, the value must be adjusted to estimate the whole tree volume associated with the reported log volume. This is done by dividing the log volume by 0.6. This default value is assumed to be the same for hardwoods and softwoods.

Step 3. Convert the whole tree volume to biomass.

Multiply the conifers by 0.53 and hardwood by 0.725 to develop a value for conifers and hardwoods of tonnes per cubic meter and sum the conifer and hardwood values.

Step 4. Convert the biomass values to CO₂e.

Multiply the summed biomass values by 0.5 to convert the biomass values to tonnes of carbon and multiply by 3.67 to calculate tonnes of CO₂e.

Step 5. Enter the tonnes CO₂e associated with baseline harvested wood products into the Secondary Effects worksheet provided by the Reserve.

Clarification: The Reserve has modified step 2 (see underlined text below) so that forest owners who already report whole tree volumes in their annual reports to SEMARNAT must use the reported whole tree volumes rather than convert the log volumes to whole tree volumes.

Step 2. Convert the log volume to whole tree volume.

Since a shift in GHG emissions would affect whole tree volume, not just the portion associated with wood products, the value must be adjusted to estimate the whole tree volume associated with the reported log volume. Forest owners that report whole tree

volume in annual reports to SEMARNAT must use the reported whole tree volume values.

Forest owners that do not report whole tree volume annually to SEMARNAT, must convert the log volume to whole tree volume by dividing the log volume by 0.6. This default value is assumed to be the same for hardwoods and softwoods.

7. Secondary Effects for Improved Forest Management (CLARIFICATION – June 30, 2020)

Section: 5.5.3.2

Context: The protocol currently provides the following guidance for the quantification of secondary effects for Improved Forest Management activities:

An annual report of harvested wood products must be calculated to compare to the baseline harvested wood products estimate developed using the guidance in Section 5.5.3.1. The inclusion of a harvested wood products value in the Reserve's Secondary Effects calculation tool only occurs when there is at least 365 days' (one year's) worth of harvest data to compare to the baseline estimate. Therefore, the project may be exempt from calculating Secondary Effects for the first reporting period of the Activity Area, unless the first reporting period happens to be one full year. Reported wood products are included from the last full calendar year's data for the Activity Area and based on the same annual reports submitted to SEMARNAT. As an example, a monitoring period that begins on 1-April-2017 and concludes on 31-March-2018 will use the harvest report from 2017 as the basis of the annual report of harvested wood products for the Secondary Effects calculations. In this example, the 2017 harvest data would only be included in the annual report of harvested wood products and would not be included in the historical average for the baseline harvested wood products. Do not prorate the harvested wood products values from two different calendar year reports.

Clarification: The Reserve is providing the following clarification for the quantification of secondary effects for Improved Forest Management Activity Areas that have a first reporting period of less than one full calendar year:

If the first reporting period is less than one full year, the baseline average must be used for the first reporting period annual report of harvested wood products. For all subsequent reporting periods, data based on the previous full calendar year (1-January to 31-December) must be used, unless the reporting periods going forward are aligned with the calendar year (1-January to 31-December), in which case the harvested wood products report from each calendar year must be used for the reporting period covering the same calendar year.

For example, a first reporting period that begins on 1-February-2017 and concludes on 31-October-2017 will use the baseline average for the first reporting period annual report and then use the 2017 harvested wood products volume for the second reporting period (1-November-2017 to 31-October-2018) annual report.

A first reporting period that begins on 1-February-2017 and concludes on 31-December-2017 will also use the baseline average for the first reporting period annual report; however,

the project will then use the 2018 harvested wood products volume for the second reporting period (1-January-2018 to 31-December-2018) annual report.

8. Secondary Effects for Improved Forest Management (CLARIFICATION – May 20, 2022)

Section: 5.5.3.2

Clarification: The Reserve is providing the following clarification for the quantification of secondary effects for Improved Forest Management Activity Areas that have a harvest cycle that does not align with the first reporting period or calendar year:

If the harvest cycle does not align with the reporting period or calendar year, then the last full harvest cycle should be applied for each baseline and project reporting period value. For example, if the harvest cycle is from October to September, and the project's first Reporting Period is February 1, 2020, to January 31, 2021, then the project would use the harvest data from the October to September harvest cycle for the years 2013-2019 as the six values averaged to determine the baseline harvest value. The Forest Owner would then apply the October 2019-September 2020 cycle as the actual harvest volume for the initial reporting period (February 1, 2020-January 31, 2021), against which the average baseline harvest value is compared in Equation 5.4.

Table 1. Example of Baseline Harvest Value with Harvest Cycle not Aligned with Reporting Period

| | Baseline Year -6 | Baseline Year -5 | Baseline Year -4 | Baseline Year -3 | Baseline Year -2 | Baseline Year -1 | RP1 Value | RP2 Value |
|------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------------|----------------------|
| Reporting Period (RP) | | | | | | | 2/1/2020 - 1/31/2021 | 2/1/2021 - 1/31/2022 |
| Baseline Harvest Cycle Value | Oct 2013-Sep 2014 | Oct 2014-Sep 2015 | Oct 2015-Sep 2016 | Oct 2016-Sep 2017 | Oct 2017-Sep 2018 | Oct 2018-Sep 2019 | | |
| Harvest Cycle | Oct 2013-Sep 2014 | Oct 2014-Sep 2015 | Oct 2015-Sep 2016 | Oct 2016-Sep 2017 | Oct 2017-Sep 2018 | Oct 2018-Sep 2019 | Oct 2019-Sep 2020 | Oct 2020-Sep 2021 |

Table 2. Example of Actual Harvest Volumes used for project Reporting Periods when RP1 is a full year (and Harvest Cycle not Aligned with Reporting Period)

| | Baseline Year -6 | Baseline Year -5 | Baseline Year -4 | Baseline Year -3 | Baseline Year -2 | Baseline Year -1 | RP1 Value | RP2 Value |
|-----------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------|----------------------|
| Reporting Period (RP) | | | | | | | 2/1/2020 - 1/31/2021 | 2/1/2021 - 1/31/2022 |
| Harvest Cycle | Oct 2013- | Oct 2014- | Oct 2015- | Oct 2016- | Oct 2017- | Oct 2018- | Oct 2019- | Oct 2020- |

| | Sep 2014 | Sep 2015 | Sep 2016 | Sep 2017 | Sep 2018 | Sep 2019 | Sep 2020 | Sep 2021 |
|--|----------|----------|----------|----------|----------|----------|----------|----------|
|--|----------|----------|----------|----------|----------|----------|----------|----------|

If the initial reporting period is less than a full calendar year, then the baseline value should be used for the initial reporting period value, followed by the last full harvest cycle value for the second reporting period, as previously described in the Clarification from June 30th, 2020. For example, if the harvest cycle is from October to September, and the initial reporting period is February 1, 2020, to December 31, 2020, then the project would use the harvest data from the October-September harvest cycles for the years 2013-2019 as the six baseline values averaged to determine the baseline harvest value. That baseline average would then be applied as the actual harvest volume for the initial reporting period value (2/1/2020-12/31/2020), and the October 2020-September 2021 harvest cycle data would be applied as the actual harvest volume for the second reporting period (1/1/2021-12/31/2021).

Table 3. Example of Actual Harvest Volumes used for project Reporting Periods when RP1 is *not* a full year (and Harvest Cycle not Aligned with Reporting Period)

| | Baseline Value 1 | Baseline Value 2 | Baseline Value 3 | Baseline Value 4 | Baseline Value 5 | Baseline Value 6 | RP1 Value | RP2 Value |
|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|-----------------------|
| Reporting Period (RP) | | | | | | | 2/1/2020 - 12/31/2020 | 1/1/2021 - 12/31/2021 |
| Harvest Cycle | Oct 2013-Sep 2014 | Oct 2014-Sep 2015 | Oct 2015-Sep 2016 | Oct 2016-Sep 2017 | Oct 2017-Sep 2018 | Oct 2018-Sep 2019 | Baseline Average | Oct 2020-Sep 2021 |

Section 7

9. Project Documentation (CLARIFICATION – August 4, 2020)

Section: 7.1

Context: The protocol currently provides the following requirement for the submittal of Annual Monitoring Reports:

The Forest Owner must provide the following monitoring reports to the Reserve for each reporting period, regardless of undergoing a verification. The only exception is for projects that wait to submit their Project Report until the end of the second reporting period. Such projects do not need to separately submit the following documents for the first reporting period. These projects would be required to submit the following documents for both reporting period 1 and 2 at the time of submitting the Project Report.

- Annual Monitoring Report (form provided on the Reserve website)
- Carbon Monitoring Worksheet (CMW)
- Social safeguard documentation (if applicable; see Section 7.2)

Clarification: The Reserve is providing the following clarification for the submittal of Annual Monitoring Reports:

The Forest Owner must provide the following monitoring reports to the Reserve for each reporting period, regardless of undergoing a verification. There are two exceptions to this requirement. First, the Annual Monitoring Report is not required during the project's initial verification, when a Project Report is submitted. The second exception is for projects that wait to submit their Project Report until the end of the second reporting period. Such projects do not need to separately submit the following documents for the first reporting period.

- Annual Monitoring Report (form provided on the Reserve website)
- Carbon Monitoring Worksheet (CMW)
- Social safeguard documentation (if applicable; see Section 7.2)

Section 8

10. Verification Cycle (CLARIFICATION – August 4, 2020)

Section: 8.2

Context: The protocol currently provides the following guidance for the verification of Annual Monitoring Reports:

Verification is required at specific intervals to ensure ongoing monitoring of forest carbon stocks, inventory confidence, and compliance with social and environmental safeguards. Optional verifications, known as desk verifications, are at the Forest Owner's discretion and may be conducted between required verifications for crediting and/or to adjust the project's confidence estimate, among other rationale, based on changed management circumstances. Submission of annual monitoring reports to the Reserve is required even if the Forest Owner chooses to forego an optional verification.

Clarification:

Verification is required at specific intervals to ensure ongoing monitoring of forest carbon stocks, inventory confidence, and compliance with social and environmental safeguards. Optional verifications, known as desk verifications, are at the Forest Owner's discretion and may be conducted between required verifications for crediting and/or to adjust the project's confidence estimate, among other rationale, based on changed management circumstances. Submission of annual monitoring reports to the Reserve is required even if the Forest Owner chooses to forego an optional verification, with the exception of the submittal of the Project Report during the initial verification. Verification of the annual monitoring report is not required with the submittal of the Project Report.

11. Verification of Secondary Effects for Improved Forest Management (CLARIFICATION – June 30, 2020)

Section: 8.3.6.4.1

Context: The protocol currently provides the following guidance for the verification of secondary effects for Improved Forest Management activities:

Table 8.11. Verification Requirements for Quantifying the Activity Area Secondary Effect: Improved Forest Management Activity Areas

| Section of MFP | Verification Items | Required at | Materials to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|--|-------------------|--|---|
| 5.5.3 | 1. Quantification of Secondary Effects | All Verifications | <ol style="list-style-type: none"> 1. The project's Secondary Effects calculations must be checked for completeness and accuracy. 2. Record of average volume of timber (historic and current) provided to SEMARNAT. | <p>Very Low</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> ▪ verifier confirms Forest Owner used the Reserve's CMW and the Reserve's Secondary Effects calculation tool. ▪ the input data are current and consistent with the leakage risk factor calculated using the methodology from Section 5.5.3. ▪ verifier is satisfied with the mathematical calculations. |

Clarification: The Reserve is providing the following modification to the verification guidance of secondary effects for Improved Forest Management activities (underlined text below) to ensure that the verifier confirms the appropriate use of whole tree volumes:

| Section of MFP | Verification Items | Required at | Materials to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|--|-------------------|--|--|
| 5.5.3 | 2. Quantification of Secondary Effects | All Verifications | <ol style="list-style-type: none"> 1. The project's Secondary Effects calculations must be checked for completeness and accuracy. 2. Record of average volume of timber (historic and current) provided to SEMARNAT. | <p>Very Low</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> ▪ verifier confirms Forest Owner used the Reserve's CMW and the Reserve's Secondary Effects calculation tool. ▪ the input data are current and consistent with the leakage risk factor calculated using the methodology from Section 5.5.3. ▪ <u>verifier confirms the use of whole tree volumes for the calculation of harvested wood products, either through annual reports to SEMARNAT or the methodology presented in Section 5.5.3.1.</u> ▪ verifier is satisfied with the mathematical calculations. |

12. Sequential Sampling for Verification (CLARIFICATION – June 30, 2021)

Section: 8.4.1

Context: The protocol currently provides the following guidance for sequential sampling:

The Mexico Forest Protocol utilizes a sequential sampling method for verification of Activity Area estimates that require a site visit as part of the full verifications. Sequential sampling is intended to provide an efficient sampling method for verifiers to determine if randomly selected Activity Area measurements are within specified tolerance bounds established by the protocol. The Reserve provides an online worksheet for verifiers to download to facilitate the sequential sampling analysis. Sequential sampling should be conducted independently for each Activity Area included in a Forest Project.

The purpose of sequential sampling is to demonstrate the quality of the forest carbon inventory for Activity Areas that employ the intensive inventory quantification methodology². Given that all such Activity Areas must employ the same standardized inventory methodology, a representative sample of plots throughout all Activity Areas in the Forest Project should provide the same level of certainty as separate samples from each Activity Area.

Clarification: For Forest Projects with multiple Activity Areas that implement the intensive inventory methodology, sequential sampling should be conducted for a minimum of three Activity Areas included in a Forest Project. If a project contains three or less Activity Areas, all Activity Areas must undergo sequential sampling independently. If a project has more than three Activity Areas, the verification body may determine whether three Activity Areas is sufficient. The verification body must use a risk-based approach to select Activity Areas considering various factors including, stocking levels, activity type, accessibility of plots, and field crews, amongst others. The verification body may present the risk-based selection to the Reserve for review prior to starting sequential sampling.

The project passes sequential sampling when each selected Activity Area achieves the minimum number of passing plots in sequence, or the first passing plot after a minimum of 12 plots have been measured – whichever is achieved first.

Appendix E

13. Aggregate Area Limitations (CLARIFICATION – August 13, 2021)

Section: E.1.3

Context: The protocol currently provides the following guidance:

In Aggregates formed by three or more Forest Projects, no single Forest Project may comprise more than 50 percent of the total combined area in an Aggregate, based on the hectares included in the Activity Areas for each Forest Project. This is to prevent any one Forest Project from disproportionately affecting the inventory statistics and having excessive influence on the composite sampling error. In the case of Aggregates formed from two Forest Projects, no single Forest Project may comprise more than 70 percent of the total

² Improved forest management, reforestation, restoration, and large urban forest activities must use the intensive inventory methodology (i.e., field sampling); small urban forests and agroforestry and Silvopastoral activities may opt to use the intensive inventory methodology or the canopy cover methodology (i.e., satellite imagery).

combined area in the Aggregate, based on the hectares included in the Activity Areas for each Forest Project.

Since the statistical requirements for forest carbon inventories is met at the Activity Area level, the Reserve is providing the following clarification.

Clarification: In Aggregates formed by three or more Activity Areas, no single Activity Area may comprise more than 50 percent of the total combined area in an Aggregate, based on the hectares included in each Activity Area. This is to prevent any one Activity Area from disproportionately affecting the inventory statistics and having excessive influence on the composite sampling error. In the case of Aggregates formed from two Activity Areas, no single Activity Area may comprise more than 70 percent of the total combined area in the Aggregate, based on the hectares included in each Activity Area.

14. Aggregate Accounts on the Reserve, Transfers of CRTs (CLARIFICATION – June 30, 2021)

Section: E.1.8

Context: Aggregators must maintain a Reserve account to which CRTs can be transferred from the accounts of Forest Owners participating in their Aggregate, and from which CRTs can be subsequently transferred to third parties. Currently CRTs from Forest Projects participating in an Aggregate may only be transferred to the account of the aggregator (i.e., not to other account holders) and retiring of CRTs can only be done in the account of the aggregator, named in their Aggregate Entry form or Aggregate Submittal Form.

Clarification: Increased functionality within the Reserve APX registry system now allows for CRTs to be retired within or transferred from Forest Owner accounts to any account on the Reserve registry. Aggregators must maintain a Reserve account under which all projects in the aggregate must be submitted and administered. CRTs from Forest Projects participating in an Aggregate may be retired directly from the Forest Owner account, transferred to the account of the aggregator, or transferred to other accounts on the Reserve registry.

Mexico Forest

Protocol | Version 2.0 | March 30, 2020



CLIMATE
ACTION
RESERVE

Climate Action Reserve
www.climateactionreserve.org

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The list of workgroup members below comprises all individuals and organizations who have assisted in developing and updating various versions of the protocol. Not all members were involved in every protocol revision process. For more information, see section 4.3 of the Reserve Offset Program Manual.

(Note: affiliations may have changed.)

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Abbreviations and Acronyms

| | |
|------------------|--|
| CH ₄ | Methane |
| CO ₂ | Carbon dioxide |
| CONAFOR | Comisión Nacional Forestal |
| CRT | Climate Reserve Tonne |
| GHG | Greenhouse gas |
| IFM | Improved Forest Management |
| IPCC | Intergovernmental Panel on Climate Change |
| MFP | Mexico Forest Protocol |
| MRV | Monitoring, Reporting, and Verification |
| N ₂ O | Nitrous oxide |
| PIA | Project Implementation Agreement |
| RAN | National Agrarian Registry |
| REDD+ | Reducing emissions from deforestation and forest degradation |
| Reserve | Climate Action Reserve |
| SEMARNAT | Secretaría de Medio Ambiente y Recursos Naturales |
| SSR | Source, sink, and reservoir |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VR | Verified removal |

1 Introduction

The initial release of the draft Version 1.0 of the Climate Action Reserve's (Reserve) Mexico Forest Protocol (MFP) followed 14 months of meetings, consultations, and conference calls among an expansive list of Mexican and American stakeholders. The participants in the stakeholder process included non-governmental organizations (NGOs), government agencies, project developers, and landowner representatives. Following a public comment period in January 2012, in which many important ideas were raised, the Reserve postponed further elaboration of the protocol while important activities were taking place in Mexico with regard to REDD+ initiatives and Mexico's Climate Change Law. The final draft of Version 1.0 was developed with improved clarity as to which activities will be eligible in Mexico and with a vision toward seeking synergies with a standard developed in Mexico (*Norma Mexicana – NMX-AA-173-SCFI-2015 – para el registro de proyectos forestales de carbon y la certificación del incremento en el acervo de carbono*) that will create an important infrastructure for all forest project activities.

The Reserve has developed Version 2.0 of the MFP in response to observations of project development and further discussions with stakeholders, government agencies, project developers and landowners to improve and clarify guidance and to improve the cost-effectiveness of project development and verification while maintaining the rigor of the Reserve program.

This protocol is focused on the crediting of activities that sequester CO₂ from the atmosphere through increasing carbon stocks in trees over time. The protocol provides project eligibility rules, methods to calculate a project's net removals of CO₂ from the atmosphere due to sequestration activities, procedures to address and compensate for the release of CO₂ back to the atmosphere (i.e., "reversals"), and approaches for long-term project monitoring and reporting. The goal of this protocol is to ensure that the net greenhouse gas (GHG) removals caused by a project are accounted for in a complete, consistent, transparent, accurate, and conservative manner and may therefore be reported to the Reserve as the basis for issuing carbon offset credits (called Climate Reserve Tonnes or CRTs). The protocol is designed to interface and reconcile with accounting strategies developed at jurisdictional levels, where the focus is expected to be on avoiding emissions from deforestation and degradation (REDD). The intention is for this protocol to be complementary to jurisdictional efforts by focusing on forest carbon enhancements.

The Reserve is an international offsets program working to ensure integrity, transparency, and financial value in the North American carbon market. It does this by establishing regulatory-quality standards for the development, quantification and verification of GHG emissions reduction projects in North America; issuing carbon offset credits generated from such projects; and tracking the transaction of credits over time in a transparent, publicly accessible system. Adherence to the Reserve's high standards ensures that GHG removals associated with projects are real, additional, and meet rigorous permanence standards, thereby instilling confidence in the environmental benefit, credibility, and efficiency of carbon markets.

A glossary of terms related to Forest Projects is provided in Section 9 of this protocol. Throughout the protocol, important defined terms are capitalized (e.g., "Forest Owner").

1.1 About Forests, Carbon Dioxide, and Climate Change

Forests¹ have the capacity to both emit and sequester carbon dioxide (CO₂), a leading GHG that contributes to climate change. Trees, through the process of photosynthesis, naturally absorb CO₂ from the atmosphere and store the gas as carbon in their biomass, i.e., trunk (bole), leaves, branches, and roots. Carbon is also stored in the soils that support the forest, as well as the understory plants and litter on the forest floor. Wood products that are harvested from forests can also provide long-term storage of carbon.

When trees are disturbed, through events like fire, disease, pests or harvest, some of their stored carbon may oxidize or decay over time releasing CO₂ into the atmosphere. The quantity and rate of CO₂ that is emitted may vary, depending on the particular circumstances of the disturbance. Forests function as reservoirs in storing CO₂. Depending on how forests are managed or impacted by natural events, they can be a net source of emissions, resulting in a decrease of carbon in the reservoir, or a net sink, resulting in an increase of carbon to the reservoir. In other words, forests may have a net negative or net positive impact on the climate.

Through sustainable management and protection, forests can play a positive and significant role to help address global climate change. The Reserve's MFP is designed to address the forest sector's unique capacity to sequester, store, and emit CO₂ and to facilitate the positive role that forests can play to address climate change.

1.2 Nested Projects in a Jurisdictional Framework

The development of the Reserve's protocol V1.0 occurred simultaneously with the development of Mexico's REDD+ Strategy (ENAREDD+). Since Version 1.0, national and sub-national governments have been moving forward with strategies to address climate change as well as biodiversity, social, and watershed issues through jurisdictional or REDD+ frameworks. Mexico has launched a National Monitoring, Reporting, and Verification System for the GHG removals and reductions in emissions in the forest sector, which has further supported the development of a national reference level for forest emissions. As part of the Emission Reduction Initiative, Mexico is promoting an integrated approach to land management in rural areas to develop low-carbon investment plans and help develop national and state policy instruments, institutional reforms, and capacity-building programs that promote climate-smart land sector transformation. In addition, Mexico has developed a REDD+ Safeguards Informational System, and has developed a project standard (Norma Mexicana, NMX-AA-173-SCFI-2015 – *para el registro de proyectos forestales de carbon y la certificación del incremento en el acervo de carbono*) that will ensure integrity and consistency in the accounting of all forest carbon project activities in Mexico.

These dynamics have shaped the discussions and the development of the protocol, since it is a key objective to produce a protocol that is respected in international frameworks and relevant to Mexico's REDD+ Strategy. Early on, the workgroup for Version 1.0 discussed the concept of developing a protocol that could function in the near term as standalone project guidance and be adaptable to REDD+ accounting systems. Ultimately, it is expected that the Reserve's MFP will provide guidance for sequestration projects that are reconciled to, or nested within, jurisdictional accounting systems either at the regional, state or federal level (or all).

¹ The General Law of Sustainable Forest Development establishes the difference between forests, jungles, and vegetation of arid zones, all of which are considered within forest ecosystems. The Protocol uses the term forests to include all forest ecosystems that meet the definition of forest under this protocol.

Jurisdictional programs cover an entire state, nation, province, or other jurisdiction, and incentivize changes in actions through policies that target the drivers of deforestation for the particular jurisdiction. A nested approach allows for project activities to be incorporated within the jurisdictional accounting framework to incentivize GHG reductions and removal enhancements at multiple scales.

The protocol is intended to help catalyze the development of carbon sequestration activities in Mexican forests. The guidance in this protocol provides:

1. Assurances that environmental and social safeguards are achieved where credited activities occur.
2. A resolute assessment of additionality where activities occur.
3. Accurate quantification methods, based on measurable benefits resulting from explicit management activities.
4. Practical methods for ensuring permanent carbon storage.

While the current guidance is designed to quantify GHG removals from enhanced sequestration at the project scale, the Reserve expects this guidance to evolve as broader accounting frameworks are developed and implemented at the national and sub-national level in Mexico. Addressing REDD+ activities at jurisdictional scales will provide opportunities to comprehensively address forest sector emissions and enhancements and improve the overall accuracy of forest carbon accounting. The ability to control and account for leakage, for instance, is proportional to the geographic scale of a program and monitoring efforts. Hence, the intent is to embed this protocol in jurisdictional mechanisms as they are developed and implemented and provide sound metrics for directing incentive programs for carbon enhancement activities. The ultimate objective is a system in which projects are reconciled to jurisdictional REDD+ frameworks in a way that is mutually reinforcing with respect to accounting, permanence, and safeguarding environmental and social values.

This protocol has been designed with conservative assumptions in order to minimize the risk of over-crediting and to facilitate the protocol's incorporation into jurisdictional programs. Incorporating the protocol in a jurisdictional REDD+ framework, however, may require reconsidering or revising a number of protocol elements in coordination with the governing bodies of jurisdictional systems as such systems are developed and implemented, including:

1. Crediting Pathway

The protocol has been designed with the assumption that credits will be issued directly to projects as described in CONAFOR's (2012) statement on carbon rights.² This allows owners and possessors managing the forest to be directly rewarded for activities that increase carbon sequestration. The protocol will be fully compatible with programs that issue credits at both the jurisdiction and project levels (or at the project level only), provided mechanisms are devised to reconcile project- and jurisdiction-level accounting. This protocol does not currently reference or incorporate such mechanisms, however, the protocol

² CONAFOR considers property rights as established on article 27 of the Mexican Constitution. Furthermore, it acknowledges what is established in article 5 of the General Law for Forest Sustainable Development that states that forest resources belong to the *ejidos*, communities, indigenous groups, individuals and others. As such, recognizing that CO₂ is a gas that can be absorbed by the vegetation and that carbon is incorporated to the biomass, CONAFOR states that it belongs to the landowners. In this sense, any additional carbon sequestered that complies with the specific market mechanism requirements will belong to the landowner.

assumes that any credits due to reduced deforestation (avoided emissions) will be assigned to the jurisdictional level only, and the forest enhancement credits (which can be concretely measured in situ at the level of individual parcels under management) to the owners/managers of such parcels only. This creates two clearly separate fields of crediting, avoiding the problem of how to settle accounts.

It is possible to design jurisdictional REDD+ frameworks for which credits are issued at the jurisdiction level, and not directly to projects. Such programs may still incorporate project-level activities and could rely on the accounting structures within this protocol to determine the relative contribution of projects to jurisdiction-wide performance.

2. Baselines and Reconciliation

In this protocol, baselines are a benchmark or reference for measuring increased sequestration. A baseline should be a representation of the future expected level of sequestration from the Project Area in the absence of carbon credit incentives (also known as business as usual). This protocol provides crediting for enhancement activities and conservatively requires that net forest-related emissions from the Project Area be discontinued prior to receiving credits. Project baselines are estimated as a standardized function of risk to the existing forest carbon stocks within the Project Area.

In a jurisdictional system, a jurisdictional reference level is set to measure performance in the jurisdiction as a whole. As long as jurisdictional reference levels are designed only to account for emissions from deforestation, project-level crediting of enhancement activities facilitates reconciliation of project- and jurisdiction-level crediting since the carbon inventories associated with enhancement activities and the location of Project Areas are known.

3. Scope

Jurisdictional programs may choose to monitor and account for reduced emissions from deforestation and/or degradation (RED and/or REDD), but may also include accounting for enhanced sequestration (typically called REDD+). This protocol accounts only for enhanced sequestration at the project level (see Section 2.3). A jurisdictional program that relies on this protocol may therefore need to include accounting for sequestration at the jurisdiction level (REDD+) or adopt methods for reconciling jurisdiction- and project-level accounting frameworks based on these different activities.

4. Liability and Risk-Sharing

Under this protocol, projects are credited for their individual performance against a project baseline, and issuance of credits to Forest Owners is adjusted to account for risk of reversals. At the project scale, unavoidable reversals of carbon sequestration are compensated by the Reserve out of a common Buffer Pool. Contributions to the Buffer Pool are required by projects at a rate determined by project risk. Avoidable reversals must be compensated for by the Forest Owner in cases where the credits have been contractually secured and have been issued based on a defined time commitment. Similarly, jurisdictional systems must define mechanisms to compensate for reversals at a jurisdictional level. However, since jurisdictional REDD+ performance will depend on the performance of both Project and non-Project Areas, a mechanism for sharing risk among projects and between projects and the jurisdiction must be defined. Conversely, the existence of a jurisdictional

program that performs well may decrease the risk of reversals to individual projects, and wall-to-wall jurisdictional monitoring may decrease the need for leakage discounting. The protocol is designed to recognize the benefits of jurisdictional monitoring as it relates to leakage. Thus, leakage discounting and project risk assessments in the current protocol may be adjusted over time.

5. Safeguards

Where possible, this protocol strives to incorporate safeguards at the project level by providing explicit social and environmental safeguards. Certain base criteria for social and environmental safeguards are embedded within this protocol. As jurisdictional systems for REDD+ are implemented, policy decisions regarding appropriate environmental and social safeguards will be determined.

The Reserve uses a rigorous, transparent, and comprehensive process for developing all of its protocols, focusing on accurate and conservative accounting to ensure that credits are issued only for GHG removals that are real, permanent, additional, verifiable, and enforceable by contract. The Reserve may update the MFP from time to time to reflect new scientific findings or policy decisions. For additional information about the update process and further news on future updates, please visit the Reserve website at www.climateactionreserve.org.

2 Stages of Project Development and Maintenance

The many key steps involved in developing a project credit are shown in Figure 2.1.³

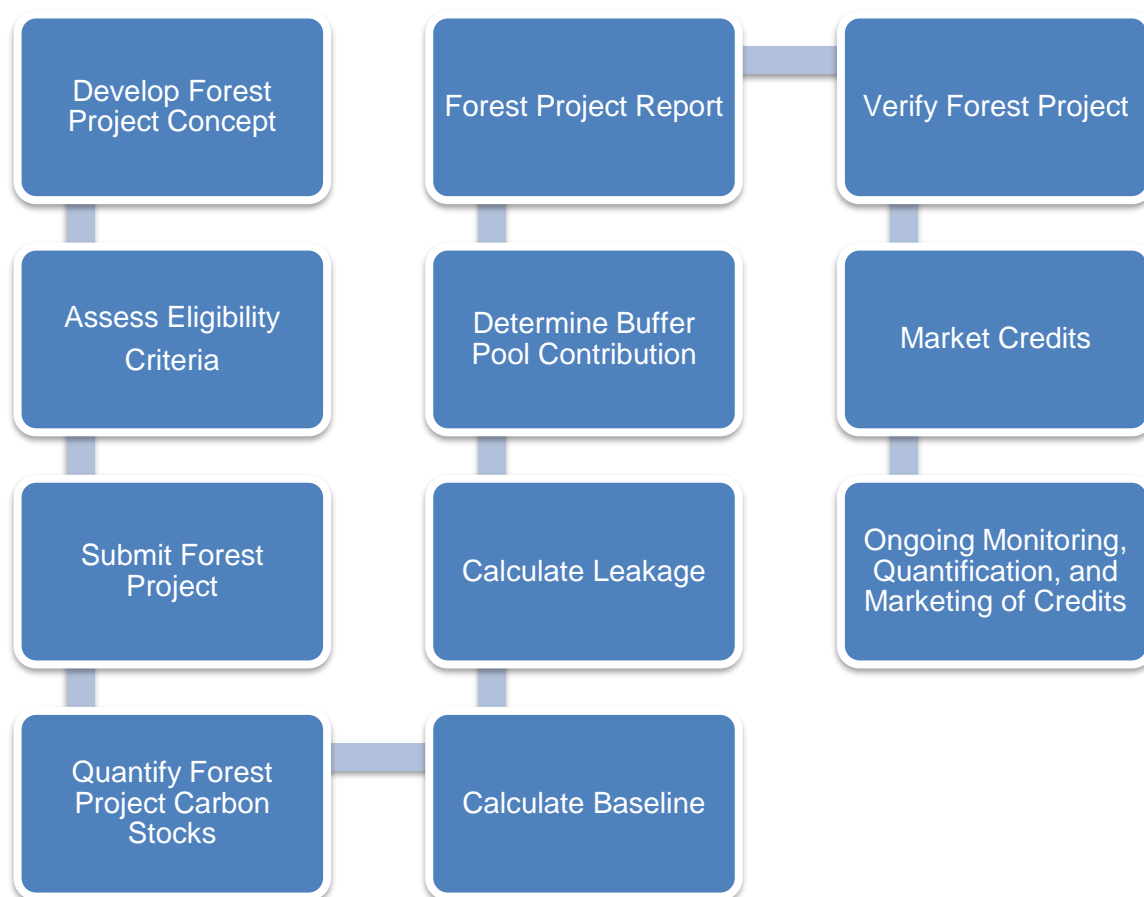


Figure 2.1. Key Steps Involved in Developing and Maintaining a Forest Carbon Project

2.1 Forest Projects

For the purposes of the MFP, a Forest Project is a planned set of defined activities designed to increase removals of CO₂ from the atmosphere through increasing forest carbon stocks on the communal lands of *ejidos* or communities, private lands, or public lands (except those under federal jurisdiction).

2.2 Project Areas and Activity Areas

Forest Projects have two distinct levels of monitoring: Project Areas and Activity Areas.

³ The Reserve's Guide for Project Development provides further detailed steps, which can be located on the Reserve's website at <http://www.climateactionreserve.org/how/protocols/mexico-forest/>.

2.2.1 Project Areas

Project Areas include all areas within an ownership, held either communally, privately, or publicly (limited to non-federal public lands), in which project activities within Activity Areas (defined below) may occur as part of the project, currently or in the future.

For privately owned lands, the Project Area must consist of the entire area included under all land title(s) that encompass planned Activity Areas. All included land titles must share a common ownership.⁴

For communally owned lands (known in Mexico as *comunidades* and *ejidos*), the Project Area must include the entire communal ownership at the project initiation, as defined by the Basic File (*Carpeta Básica*)⁵, including common use land and *ejidal* parcels that do not have *dominio pleno*.⁶ Parcels with *dominio pleno* at the start date should be excluded from the Project Area. If *ejidal* parcels later obtain *dominio pleno*, the Forest Owner (*ejido*) must remove the parcels with *dominio pleno* from the Project Area. The new Project Area would need to be verified through a full verification during the next reporting period (see Section 8).

Individual *ejidal* parcels with *dominio pleno* may alternatively participate as private owners. For *ejidal* parcels with *dominio pleno*, the Project Area is defined the same as for all privately-owned lands (see above).

For public lands (excluding those under federal jurisdiction⁷), the Project Area is considered to be the entire area included under all land title(s) that encompass planned Activity Areas. All included land titles must be under jurisdiction of the same government agency.

For all ownership types, multiple properties, contiguous or disparate, may be included in a common Project Area if the land titles demonstrate ownership by the same Forest Owner.

Project Areas cannot be redefined without approval by the Reserve following the initial verification. The geographic boundaries defining the Project Area must be described in detail at the time a Forest Project is listed on the Reserve.

The Project Area boundaries must be defined using a map. Major settlements (towns), roads and watercourses must be displayed on the map. The map should include a legend and a scale. A GIS shapefile or Google Earth KML file that includes the project boundary is required to be included with the project submission that matches project boundaries in the project document. The maps should be of adequate resolution to clearly identify the requested features.

⁴ Common ownership is defined by having the same landowner or landowners listed on the property title.

⁵ *La Carpeta Básica* is constituted of information that proves the creation and constitution of *ejidos* and communities. Documents include: *Resolución Presidencial*, *Acta de Posesión y Deslinde*, and *Plano Definitivo* and its publication in the Federation Official Journal (DOF). The information can be provided at the Agrarian Registry. The *Resolución Presidencial* (Presidential Resolution) is a decree issued by the President of the Republic where it is stated that the land is given to the corresponding community or *ejido*. This fact is stated on the *acta de posesión y deslinde* and a map of the community was drawn, called *Plano Definitivo*. Presidential resolutions are registered in the Agrarian Registry.

⁶ *Dominio pleno* is a legal mechanism that allows members of the *ejido* to acquire ownership over their land parcels, which will no longer be subject to the *ejido* regime but to the private property regime, governed by civil law (Article 82 of the Agrarian Law). Once a parcel obtains *dominio pleno*, it is no longer subject to agrarian law and is not distinguished from private property governed by civil law.

⁷ Property owned by federal institutions with their own legal rights to which the Political Constitution of the United Mexican States grants autonomy (see Article 6 of the General Law on National Goods for more details).

2.2.2 Activity Areas

Activity Areas are explicit areas within the Project Area where defined activities (Reforestation, Improved Forest Management, etc.) occur that lead to quantified increased sequestration compared to baseline levels. Activity Areas need not be contiguous and new Activity Areas can be added throughout the life of a project. In order to comply with project monitoring and documentation requirements, a shapefile or KML file and map of Activity Area boundaries is required (see Section 7).

2.2.3 Monitoring Requirements for Project and Activity Areas

Distinct monitoring guidance is provided for Project Areas and Activity Areas. The purpose of developing a two-tiered approach to monitoring is to ensure efficiency in addressing project safeguards and leakage at the larger, Project Area level, while allowing for adequate rigor in quantifying carbon stocks at the smaller, Activity Area level. In addition, by allowing for multiple Activity Areas within one Project Area, the protocol provides flexibility for adding new project activities without the need to create a new project.

Figure 2.2 displays the relationship between Activity Areas and the Project Area and outlines some of the general monitoring and reporting requirements associated with each area.

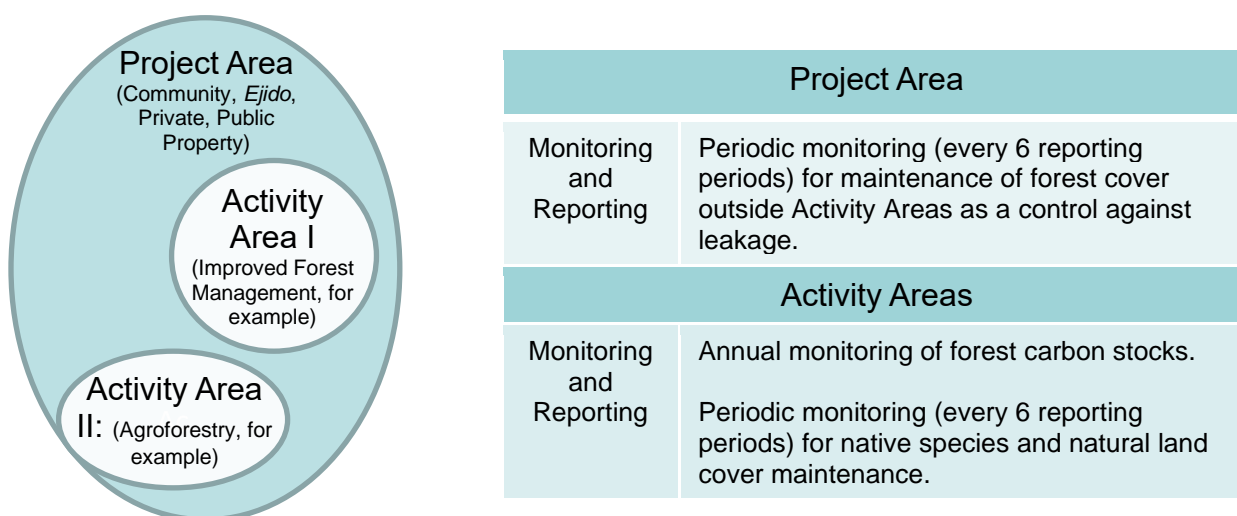


Figure 2.2. Relationship between the Project Area and Activity Areas (within a Project Area) and the General Monitoring Requirements Associated with Each Level

2.3 Activity Areas and Management Actions

The Reserve will register Forest Project activities for enhancement of forest carbon stocks that fall under the definition of the “+” of REDD+,⁸ specifically sustainable management of forests

⁸ Decision 2/CP.13. Bali Action Plan - reducing emissions from deforestation and forest degradation in developing countries. Decision 1/CP.16. Cancun Agreements, paragraph 70. Encourages developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities, as deemed appropriate by each Party and in accordance with their respective capabilities and national circumstances (a) Reducing emissions from deforestation; (b) Reducing emissions from forest degradation; (c) Conservation of forest carbon stocks; (d) Sustainable management of forests; (e) Enhancement of forest carbon stocks. The National REDD+ Strategy, ENAREDD+, defines REDD+ as the reduction of emissions from deforestation and forest degradation, and further includes the conservation and increase of forest carbon stocks and the sustainable management of forests.

and enhancement of forest carbon stocks, adopted by the United Nations Framework Convention on Climate Change (UNFCCC).

Within the Project Area boundaries, Activity Areas are identified as explicit areas where Forest Owners implement management actions. Each Activity Area must be identified as one of the activities in Table 2.1 and meet the associated definition at the Activity Area's initiation. While management actions may change over the course of the Activity Area's life, the activity designation is based on the activity definition that is met at the Activity Area's initiation. For example, a Restoration Activity Area may later obtain an authorized forest management program, however, the activity designation would remain Restoration since that was the activity established at the Activity Area's initiation. Specific management actions under each activity may be diverse. Some examples are shown in Table 2.1.

Table 2.1. Activity Area Designation

| Activities | Definition/Description | Examples of Management Actions |
|----------------------------------|--|--|
| Agroforestry and Silvopastoral | The primary human activity within the Activity Area is agriculture and/or grazing, and the land cover type is defined as agriculture or grassland. Trees are either planted or otherwise encouraged from natural regeneration. Trees may be harvested, according to law, within, or adjacent to the cultivated crops and grazing areas. Agroforestry and Silvopastoral activities may be carried out on protected areas if not prohibited by the regulation and management plan ⁹ of the protected area. | <ul style="list-style-type: none"> - Increasing trees within through intercropping and border planting - Planting of sparse shade trees or mast trees for livestock |
| Improved Forest Management (IFM) | The primary land cover is forest, which may be present in varying densities and sizes, and the forest has an authorized forest management program for the purposes of commercial timber harvest. The Activity Area is limited to the area with the forest management program. Agriculture may be included as a secondary activity and most likely in varying intensity across the landscape over time and space. Reforestation within this Activity Area, if it occurs, generally follows a harvest or other disturbance event that has occurred within the past 5 years. IFM activities may be carried out on protected areas if the forest has a forest management program authorized by SEMARNAT and permitted by the regulation of the protected area. | <ul style="list-style-type: none"> - Increasing rotation ages - Management to maintain health and vigor - Stocking improvement - Removing impediments to natural forest regeneration |
| Reforestation | Trees are planted manually or encouraged through site preparation activities on lands that are not in forest cover on the project start date and have not been in forest cover within the past 5-years, or on lands that have recently experienced a natural disturbance that reduced live tree stocking below 50% live canopy cover. The primary objective of the Forest Project activities being to convert the land cover to forest. Reforestation activities may be carried out on protected areas where forest cover may be recovered through the actions implemented as part of the Forest Project. | <ul style="list-style-type: none"> - Planting tree seedlings directly - Removing impediments to natural forest regeneration |
| Restoration | The sequestration associated with the protection and restoration of natural forests. All Restoration activities must meet the additionality requirements of this protocol outlined in Section 3.12. Ongoing commercial harvest operations is not a permitted use (activities that have ongoing commercial harvest | <ul style="list-style-type: none"> - Planting tree seedlings directly - Removing impediments to natural forest regeneration |

⁹ Management plan here refers to a government (i.e., SEMARNAT or CONANP) approved plan that establishes what activities are permitted and prohibited within a Natural Protected Area.

| Activities | Definition/Description | Examples of Management Actions |
|----------------------|---|---|
| | operations may be included as Improved Forest Management activities). Restoration activities may include protected areas (where forest management is not allowed) and non-commercially viable forests that are degraded or at high risk of degradation and deforestation where forest carbon stocks may be increased through project activities such as planting or the removal of the causes of degradation to encourage natural regeneration. | <ul style="list-style-type: none"> - Enforcement against illegal harvest operations - Enforcement against illegal land use conversion |
| Large Urban Forestry | The planting and management of trees within non-natural forests of more than 10 contiguous hectares of 10% canopy cover within the limits of urban areas as defined by the INEGI National Geostatistical Framework. ¹⁰ | <ul style="list-style-type: none"> - Planting trees in the urban zone - Management to maintain health and vigor - Stocking improvement |
| Small Urban Forestry | The planting and management of trees within the limits of urban areas as defined by the INEGI National Geostatistical Framework. Small Urban Forestry Activity Areas may consist of multiple non-contiguous areas with no one area greater than 10 contiguous hectares of 10% or more canopy cover. | <ul style="list-style-type: none"> - Planting trees in the urban zone |

Avoided emissions from deforestation and degradation (i.e., avoided emissions) are not eligible as project activities.

¹⁰ The INEGI National Geostatistical Framework defines an urban area as those with 2,500 or more inhabitants or municipal centers independent of their population:
<https://www.inegi.org.mx/app/biblioteca/ficha.html?upc=889463526636>.

3 Eligibility Criteria and Participation Requirements

Forest Projects must meet several criteria and conditions described below, to be eligible for registration with the Reserve, and must adhere to certain requirements related to their duration and crediting periods.

3.1 Project Location

This protocol is applicable to Forest Projects located anywhere in Mexico, provided they meet all other eligibility requirements described in this protocol.

3.2 Forest Owner

A Forest Owner can be any entity (excluding federal government agencies) that has undisputed legal ownership of or jurisdiction over the forest carbon through outright ownership or through rights granted to them from a state or federal entity. Ownership can be private, communal (including *ejidos* and communities), or public, excepting lands under federal jurisdiction. The Climate Action Reserve maintains the authority to determine which public agencies may be eligible to be Forest Owners per the definition of this Protocol.

The Forest Owner is responsible for undertaking a Forest Project and registering the Forest Project with the Reserve and is ultimately responsible for all Forest Project reporting. The Forest Owner may, however, engage a project developer to assist or consult with the Forest Owner and to implement the Forest Project. All information submitted to the Reserve on behalf of the Forest Owner shall reference the Forest Owner, who is ultimately responsible for the accuracy and completeness of the information submitted.

The following types of ownership are eligible for participation (following the Agrarian Law¹¹ and Civil Code):

3.2.1 Communal Land (*Ejidos* and Communities)

Eligibility includes communally owned land (both communities and *ejidos*). *Ejidal* parcels without *dominio pleno* may be included in Activity Areas along with the communally owned land through an agreement with the *ejido*.

Individual *ejidal* parcels with *dominio pleno*, governed under civil law, may alternatively participate as private owners (see below).

Ejidal and communal property includes those properties inscribed in the National Agrarian Registry (*Registro Agrario Nacional*, RAN).¹²

3.2.2 Private Property

Private property includes those properties inscribed on the Public Registry of Property (*Registro Público de la Propiedad*). Where multiple individuals or entities are listed on a property title, all individuals or entities listed must agree to participate in the Forest Project.

¹¹ Ejidos, Chapter I, article 9. Communities, Chapter V, article 98. Private Property, Fifth Title, article 115.

¹² Decentralized body of the Ministry of the Agrarian Reform responsible for communal land (*ejido*) tenure regulation through the provision of legal certainty.

Individual *ejidal* parcel owners with *dominio pleno* or with ownership certification may participate as private landowners where their land certificates are either registered in the National Agrarian Registry or inscribed in the Public Registry of Property.

3.2.3 Public Land

Government agencies (excluding federal government agencies) that voluntarily implement the defined activities in Table 2.1 to increase carbon stocks on public lands (excluding those under federal jurisdiction), such as municipal or state lands, may be a Forest Owner.

Land owned by or under jurisdiction of the federal government is not eligible for participation.¹³

For public land (excluding those under federal jurisdiction), government agencies must submit the legal document inscribed in the Public Registry of Property (*Registro Público de la Propiedad*) and/or the Decree or Ordinance that states that the land is destined for a specific use and/or management by a municipality or state.

3.3 Project Coordinator

A Project Coordinator must be identified through a process identified in the social safeguard section on governance for communally owned Forest Owners. The role of Project Coordinators is to be the main communication link between the Reserve and the Forest Owner and to ensure proper implementation of the protocol requirements. In communities and *ejidos*, the Project Coordinator must be a community/*ejido* member and must prove through a signed Assembly Act¹⁴ recognized by law that he/she has been chosen by the *ejido* or community as the Project Coordinator. In a private and public land (excluding those under federal jurisdiction), the Forest Owner can designate the Project Coordinator, including designating themselves. The Project Coordinator should serve as the Account Manager for the Project Owner (i.e., Forest Owner) account¹⁵ with the Reserve.

3.4 Project Developer

A project developer may be the Forest Owner or an independent third-party contracted by the Forest Owner to assist the Forest Owner and implement the Forest Project. The Forest Owner and project developer may decide the terms of the contract and division of work. However, the Forest Owner must give the project developer the authorization to administer the project on the Reserve website and submit all documentation for the project on behalf of the Forest Owner, by means of a Designation of Authority form (found on the Reserve website)¹⁶. The project developer must have an account on the Reserve in order to submit the documentation but is not the immediate owner or recipient of CRTs issued to the project by the Reserve (unless the Forest Owner acts as its own project developer, in which case the project developer account would be issued CRTs directly). In cases in which the Forest Owner contracts a third-party project developer, the Forest Owner would still be required to open a "Project Owner (Limited)" account on the Reserve software in order to receive any CRTs issued to the project.

¹³ Land owned by the federal government refers to land owned by the nation.

¹⁴ An Assembly Act is a document that describes all the resolutions that took place during an Assembly. The Assembly is the highest *ejido*/community body where decisions are made.

¹⁵ In the Reserve software, Forest Owners must open a "Project Owner (Limited)" account type. See the Reserve Offset Program Manual for further information regarding account types.

¹⁶ The Project Implementation Agreement, however, must be signed directly by the Forest Owner.

All information submitted to the Reserve on behalf of the Forest Owner shall reference the Forest Owner, who is responsible for the accuracy and completeness of the information submitted, and for ensuring compliance with this protocol.

3.5 Aggregation

The goal of aggregation is to alleviate transaction costs for individual landowners while upholding the Reserve's standards for quantification certainty and integrity. Participation in an Aggregate enables individual project activities to be combined with others to reduce costs associated with project administration and improve marketing opportunities by developing economies of scale. See Appendix E for further information on modified quantification and verification requirements for Forest Projects enrolled in an Aggregate as well as guidelines for entering and exiting an Aggregate.

An Aggregate is two or more individual Forest Projects and may be composed of any combination of eligible Forest Owners from any geographic location within Mexico.

The eligibility requirements for Forest Projects participating in an Aggregate are as follows:

- Only Forest Projects with less than 10,000 hectares included in Activity Areas may enroll in an Aggregate. No Forest Owner may enroll more than 10,000 hectares in Aggregates (single or multiple), based on the number of hectares included in the Forest Project's Activity Areas.
- Each Forest Project must register with the Reserve individually.
- Project Implementation Agreements (see Section 3.15) must be signed by each individual Forest Owner with the Reserve. Liability for reversals lies with each individual Forest Owner.

The aggregator may be a corporation or other legally constituted entity, city, county, state agency, individual or a combination thereof, which may then submit documentation on behalf of Aggregate participants (two or more Forest Owners). An aggregator must have an account on the Reserve and may also be a project developer for one or more of the Aggregate participants, and/or Forest Owner of one or more of the Forest Projects.

Forest Owners are ultimately responsible for submitting all required forms and complying with the terms of the MFP, even while participating in an Aggregate. Aggregators must, however, manage the flow of ongoing monitoring and verification reports to the Reserve as a service to Forest Owners. Aggregators may also engage in project development, provide inventory services, and provide other services for the Forest Owner. The scope of aggregator services may be negotiated between Forest Owners and the aggregator and reflected in contracts between the Forest Owners and the aggregator.

3.6 Required Documentation for Land Tenure Status

All Forest Owners must demonstrate proof of ownership of the Project Area.

Communities and *Ejidos*

1. Official identification of the members of the Agrarian Authority¹⁷ that could include: voter ID (*credencial de elector*), military ID (*cartilla militar*), passport, or certificate of naturalization.
2. Basic File (*Carpeta Básica*):¹⁸
 - a. Presidential Resolution (*Resolución Presidencial*) – For *ejidos* and communities constituted or recognized before 1992
 - b. Possession Act (*Acta de Posesión y Deslinde*)
 - c. Property Boundaries (*Plano Definitivo*)
 - d. Date when it was published under the Federation Official Journal (DOF)
 - e. For *ejidos*: Registration Proof (*Constancia Registral del ejido*)¹⁹
3. For certified *ejidos*: Delimitation, Destination, and Land Allocation Act (*Acta de Delimitación, Destino, y Asignación de Tierras Ejidales*, ADDATE).
4. Current communal bylaws (*Estatutos comunales*)²⁰ or Internal Rules of Procedure (*Reglamento Interno*).
5. Census of Agrarian Nuclei (*Padrón e Historial de Núcleos Agrarios*, PHINA), as available.
6. Official identification – Identification of the Project Coordinator responsible for the project that has the approval of the agrarian nucleus.²¹
7. Optional: Communal land use plan (*Ordenamiento Territorial Comunitario*).²²

Small Private Property (Including individual *ejidal* parcels participating as private owners)

1. Official identification of the owner that could include voter ID (*credencial de elector*), military ID (*cartilla militar*), passport, or certificate of naturalization.
2. Property titles inscribed under the Public Registry.

Public Lands

1. Legal document inscribed in the Public Registry of Property (*Registro Público de la Propiedad*) and/or the Decree or Ordinance that states that the land is destined for a specific use and/or management by a municipality or state.
2. Official identification of the individual authorized to represent the public agency.

¹⁷ The Agrarian Authority is the *Comisariado Ejidal* or *Bienes Comunales*, which in general is composed of three individuals elected by the General Assembly: president, secretary, and treasurer as well as a supervisory board comprised of a president and two secretaries, all with their alternates.

¹⁸ *La Carpeta Básica* is constituted of information that proves the creation and constitution of *ejidos* and communities. Documents include: *Resolución Presidencial*, *Acta de Posesión y Deslinde*, and *Plano Definitivo* and its publication in the Federation Official Journal (DOF). The information can be provided at the Agrarian Registry. The *Resolución Presidencial* (Presidential Resolution) is a decree given by the president where it is stated that the land is given to the corresponding community or *ejido*. This fact is stated on the *acta de posesión y deslinde* and a map of the community was drawn, called *Plano Definitivo*. Presidential resolutions are registered in the Agrarian Registry.

¹⁹ Document that refers to the land dimensions and number of current beneficiaries.

²⁰ Internal rules and regulations.

²¹ An agrarian nucleus refers to social property, communities and *ejidos*. Many times, the authority of the agrarian nucleus is the *Comisariado Ejidal* or *Bienes Comunales* who is the responsible body to execute and enforce the decisions taken in the General Assembly.

²² Defines land uses within a community or *ejido*.

3.6.1 Attestation of Title

Each time a Forest Project is verified, the Forest Owner or project developer²³ must sign the Reserve's standard Attestation of Title form indicating that the Forest Owner has an exclusive ownership claim to the GHG removals achieved by their Forest Project over the verification period. Copies of the Attestation of Title form are available on the Reserve's website. Please note that in requesting this form, the Reserve is not providing financial services or acting as a broker to trade any Forest Project CRTs.

3.7 Conflicts

Boundary disagreements may exist for Project Areas. The Reserve cannot issue credits for any lands where substantial disputes exist regarding property ownership. Therefore, all Activity Areas must be free of substantial conflict or dispute (at the Reserve's discretion) with regards to ownership. For all *ejidos* and communities, the Forest Owner must submit a document produced by the Agrarian Attorney (*Procuraduría Agraria*) that states that there are no agrarian conflicts within the Activity Areas as part of the Project Report. Private and public landowners must also attest that there are no boundary conflicts within the Activity Areas by submitting the signed Reserve Attestation of No Conflicts declaring that there are no lawsuits or claims on the property. Documentation must be signed by the Forest Owner or project developer²⁴ and submitted prior to each verification. *Ejidos* and communities may opt to use the Attestation of No Conflicts for annual monitoring after the initial verification. Copies of the Attestation of No Conflicts form are available on the Reserve's website.

3.8 Regulatory Compliance

Each time the Forest Project is verified, the Forest Owner or project developer²⁵ must sign the Reserve's Attestation of Regulatory Compliance form indicating that the project is in material compliance with all applicable laws, bylaws, regulations or norms²⁶ relevant to the project activity. Materiality is further discussed in the Reserve Offset Program Manual.²⁷ Forest Owners are required to disclose in writing to the verifier any and all instances of material non-compliance²⁸ of the project with any law. CRTs will not be issued for GHG removals that occurred for the monitoring period in which the material non-compliance occurred.

3.9 Social Safeguards

Forest Projects can create long-term climate benefits as well as other social and environmental benefits. Investment into forest carbon projects has the potential to improve quality of life for rural communities, both in terms of increased revenues and in terms of sustaining and improving forest ecosystems.

²³ The project developer may sign the Attestation of Title on behalf of the Forest Owner, only if the Forest Owner has signed a Designation of Authority granting the project developer such rights.

²⁴ The project developer may sign the Attestation of Regulatory Compliance on behalf of the Forest Owner, only if the Forest Owner has signed a Designation of Authority granting the project developer such rights.

²⁵ The project developer may sign the Attestation of Regulatory Compliance on behalf of the Forest Owner, only if the Forest Owner has signed a Designation of Authority granting the project developer such rights.

²⁶ Including the General Law of Environmental Equilibrium and Protection, Law for Sustainable Rural Development, General Law for Sustainable Forest Development, Agrarian Law, and The Political Constitution of the Mexican United States, among others.

²⁷ <http://www.climateactionreserve.org/how/program/program-manual/>

²⁸ Material non-compliance with the law, for purposes of this protocol, is any illegal act, for which the Forest Owner has been prosecuted, that impacts forest stocking, and/or conservation values.

For *ejidos* and communities, this protocol includes certain general social and environmental safeguards that must be considered in the project design and implemented throughout the project life to help guarantee that the project will have positive environmental and social outcomes. Private, public, non-communal and private *ejidal* landowners are not required to address the social safeguards outlined in this protocol, though they are required to address the environmental safeguards. The safeguards in the protocol are intended to respect internal governmental processes, customs, and rights of Forest Owners while ensuring projects are beneficial, both socially and environmentally. The sections on Monitoring, Reporting, and Verification (Sections 7 and 8) specify the criteria for verification of each of these safeguards and consequences for failure to achieve the minimum thresholds.

The social safeguard requirements for *ejidos* and communities include:

1. Free, Prior, and Informed Consent
2. Meeting Notification, Participation, and Documentation
3. Project Governance

The requirements for each of the categories are identified below.

| Free, Prior, and Informed Consent | |
|--|---|
| <p>Prior to project registration²⁹, Forest Owners must hold an Assembly³⁰ to discuss the themes addressed in this section. Provisions must be made to ensure non-Spanish speaking participants can understand the material and communicate during assemblies. Assemblies must be announced in a manner to ensure that the information reaches all community members, including vulnerable groups like women, <i>avecindados</i>³¹ and young people. The Assembly Acts and proof of the Assembly (through photographs or signatures) must be included in the Project Report.</p> <p>These assemblies must adhere to proper notification, participation, and documentation requirements in the section on Notification, Participation, and Documentation below.</p> | |
| Themes | Description |
| SS1 Forest Carbon Project Concepts | <p>The rationale behind the participation in a forest carbon project must be discussed prior to the initial approval of the Forest Project or approval to begin trainings and analysis for the Forest Project (see Section 3.11, Project Start Date). The Reserve has developed a presentation for Forest Owners to use during the initial Assemblies, which can be found on the Reserve's website.³² Presentations must address the following topics in order to understand the basics behind climate change and actions to mitigate it:</p> <ul style="list-style-type: none"> ▪ Concept of climate change associated with GHGs ▪ Role of forests in mitigating climate change ▪ Opportunities (economic and environmental) for participation in forest carbon project ▪ Methods to enhance forest carbon stocks ▪ Requirements associated with forest carbon projects, including additionality and permanence ▪ Importance of maintenance of native biodiversity ▪ General costs associated with Forest Projects and how project design may affect project profitability |

²⁹ Project registration occurs upon completing the initial verification and issuance of credits.

³⁰ The Assembly is the highest *ejido*/community body where decisions are made.

³¹ *Avecindados* are inhabitants of the *ejido* or community that are not *ejidatarios* or *comuneros*, and therefore they only have a voice but do not have a vote in the Assembly, nor do they have title to agrarian rights (parcel certificates or rights).

³² <https://www.climateactionreserve.org/how/protocols/mexico-forest/>.

| | |
|--|--|
| SS2 Anticipated Costs ³³ | <p>Anticipated costs of the forest carbon project must be discussed and documented in an Assembly Act prior to project registration. The Reserve has developed a Cost Benefit Analysis tool, which Forest Owners may use to estimate project profitability based on project characteristics. The analysis of costs must address the following:</p> <ul style="list-style-type: none"> ▪ Site preparation ▪ Provision of and planting of forest seedlings ▪ Inventory and monitoring ▪ Project governance ▪ Project verification ▪ Changes in land use and access to resources ▪ Administrative costs for the Forest Project |
| SS3 Anticipated Benefits | <p>Presentations must be provided that define economic benefits to Forest Owners due to involvement in a forest carbon project during a general Assembly prior to project registration. The Reserve has developed a Cost Benefit Analysis tool, which Forest Owners may use to estimate project profitability based on project characteristics. The analysis of anticipated benefits must address:</p> <ul style="list-style-type: none"> ▪ Local environmental benefits that are usually associated with biodiversity, water quality, soil conservation, and recreation ▪ Economic benefits associated with carbon and other forest resources (through market mechanisms) ▪ Distribution of benefits to the community and/or community members |
| SS4 Project Approval | <p>After the topics to comply with SS1-SS3 have been presented in a general Assembly, the project must be approved prior to project registration through:</p> <ul style="list-style-type: none"> ▪ Established formal and/or traditional authorities ▪ An Assembly Act with consensus (>50%) of all present community members in favor |
| SS5 Aggregate Approval | <p>When joining an Aggregate, the decision must be approved through:</p> <ul style="list-style-type: none"> ▪ Established formal and/or traditional authorities ▪ An Assembly Act with consensus (>50%) of all present community members in favor ▪ A contract³⁴ that determines the scope of aggregator services and the terms of credit payments must be made available to all participating community members. The contract must include all mandatory components as defined in Appendix E. |

| Notification, Participation, and Documentation | |
|--|--|
| <p>Assemblies (at least once a year) are held to discuss critical elements associated with project activities. Assemblies must prove that vulnerable groups are included, including <i>avecindados</i>³⁵. Each Assembly must include the following items on the agenda:</p> <ul style="list-style-type: none"> ▪ Forestry activities (management actions, environmental issues, grievances, other concerns and opportunities) ▪ Programmatic events (monitoring, reporting, and verification) ▪ Credits issued ▪ Benefit sharing arrangements ▪ Finances | |
| Themes | Description |
| SS6 Proper Notification | <ul style="list-style-type: none"> ▪ Each Forest Owner should describe how notices of assemblies take place in order to include as many people as possible |
| SS7 Participation | <ul style="list-style-type: none"> ▪ Assemblies must provide a sign-in sheet so that attendance can be monitored ▪ Opportunities for all community/<i>ejido</i> members to share opinions, both in writing and orally ▪ The Project Coordinator can request comment from community/<i>ejido</i> members during meetings if deemed pertinent |
| SS8 Assembly Documentation | <ul style="list-style-type: none"> ▪ Assembly Act must document the discussions associated with each required item on the agenda ▪ Forest Owners should describe how Assembly Acts will be publicly available as part of the project record |

| Project Governance | |
|--|---|
| <p>Forest carbon projects require an organizational structure that will endure for long periods of time. A Project Coordinator must be selected for the community to represent the project with community members, with verifiers, and with Reserve staff. The Project Coordinator is responsible for:</p> <ul style="list-style-type: none"> ▪ Ensuring all project-related documentation is in order and up to date ▪ Ensuring assemblies include the required elements above and providing the corresponding act ▪ Organizing logistics with verifiers and Reserve staff <p>The process for identifying the Project Coordinator is at the discretion of the community but must include the elements described below.</p> | |
| Themes | Description |
| SS9 Identification of a Project Coordinator | <ul style="list-style-type: none"> ▪ A description of the nomination process must be documented in the Project Report ▪ A description of the selection/election process must be documented in the Project Report ▪ Project Coordinator must be approved with a >50% vote of the community/<i>ejido</i> members present in the Assembly ▪ For <i>ejidos</i> and communities, must be a member |
| SS10 Term of a Project Coordinator | <ul style="list-style-type: none"> ▪ The length of the term of Project Coordinator must be defined in the Project Report ▪ The Project Report must identify whether the position of Project Coordinator can be renewed and, if so, for how many terms |
| SS11 Replacing the Project Coordinator | <ul style="list-style-type: none"> ▪ To address potential disputes associated with the Project Coordinator, a process in replacing the Project Coordinator from the position (which should take place during an Assembly) must be documented in the Project Report |

3.10 Environmental Safeguards

Environmental safeguards ensure that Forest Projects sustain and/or enhance forest ecosystem functions. The environmental safeguards are established by activity to take into consideration the different forest ecosystems and land cover types present within different Activity Areas.

Table 3.1 provides a summary of the environmental safeguards and their applicability to each activity type.

Table 3.1. Environmental Safeguards

| Environmental Safeguard | Applicable Activities | Activity Area Guidance |
|--|---------------------------------|---|
| 1. Maintenance of forest carbon stocks | All | Activity Areas must maintain or increase standing live and dead carbon stocks over the project life, as determined by a running 10-year average of carbon stocks within the Activity Areas. Exceptions may be granted by the Reserve for cases of natural disturbances or silviculture activities aimed at reducing an imminent risk of disease or pest infestation. |
| 2. Native Species | IFM, Restoration, Reforestation | IFM, Restoration, and Reforestation Activity Areas must demonstrate verified continuous progress towards achieving a goal of 95% native species within the Activity Areas, as measured by average trees per hectare. For the purposes of this protocol, native species are those found naturally in and around the Project Area. An affidavit from the appropriate regional SEMARNAT office |

³³ An Excel-based tool is available on the Reserve website to facilitate the assessment of anticipated costs and benefits.

³⁴ The contract should be negotiated between the Forest Owner and the aggregator.

³⁵ *Avecindados* are inhabitants of the *ejido* or community that are not ejidatarios or comuneros, and therefore, on several occasions they do not participate in decision making.

| Environmental Safeguard | Applicable Activities | Activity Area Guidance |
|---|--|--|
| | | <p>is required wherever a dispute arises as to whether a tree is native to the Project Area or not. The use of native species outside of their historic range is permitted if the use is intended as an adaptation strategy against climate change. In such cases, a letter stating the use of the particular species is required from the appropriate regional SEMARNAT office.</p> <ul style="list-style-type: none"> a. For IFM and Restoration: must be met within 50 years. b. For Reforestation: must be met immediately following the establishment of a new forest stand. |
| | Large Urban Forestry | Large Urban Forestry Activity Areas may not reduce the percent of native species throughout the project life. Large Urban Forestry Activity Areas are encouraged to use native species where possible; however, the Reserve acknowledges that the choice of species used in urban areas depends on various factors unrelated to the Forest Project. |
| 3. Composition of Native Species | IFM, Restoration, Reforestation | <p>IFM, Restoration, and Reforestation Activity Areas must demonstrate verified continuous progress towards meeting the composition of native species according to the Table 3.2. The native species composition requirements must be met by each Activity Area independently. Exceptions to the composition of native species are accepted through a letter signed by the appropriate regional SEMARNAT office that ecological rationale justifies an alternative composition of native species.</p> <ul style="list-style-type: none"> a. For IFM and Restoration: must be met within 50 years. b. For Reforestation: must be met immediately following the establishment of a new forest stand. |
| | Large Urban Forest | For Large Urban Forestry Activity Areas, if a single species comprises more than the proportion indicated under Table 3.2, the proportion of the dominant species may not be intentionally increased throughout the project life. |
| 4. Maintenance of forest land cover throughout the Project Area | IFM, Restoration, Reforestation, Agroforestry, Silvopastoral | <p>Forest land cover outside the Activity Areas but within the Project Area must not decrease as a result of human activities over the project life in relative proportion to the area in forest land cover at the start date. Monitoring forest land cover is a means of assessing the shifting of forest disturbance activities from the Activity Areas to the Project Area as a result of project activities.</p> <p>If a decline in forest land cover in excess of 5% is detected during a full verification, the project must rectify the forest cover loss through reforestation in the subsequent 6 reporting periods and commit to a full verification at the end of the 6th reporting period following the detection, regardless of whether the project is in an Aggregate or not. Declines in forest land cover resulting from wildfire or other natural disturbances that are not the result of gross negligence are exempt. An efficient method for estimating forest land cover is described in Appendix A. Forest Owners that are able to provide evidence that forest land cover declines in excess of 5% (by area) are planned and approved activities sanctioned by municipal, state, or federal agencies are also exempt from this requirement.</p> |
| 5. Sustainable harvesting practices | IFM | Where harvest occurs within the Activity Areas in a contiguous area larger than 5 hectares, a tree, or group of trees, representative of the age cohort that was harvested, can be no further than 100 meters from other trees, either within the harvest |

| Environmental Safeguard | Applicable Activities | Activity Area Guidance |
|---|-----------------------|---|
| | | <p>area or outside of the harvest area in order to provide refugia for plants and animals.</p> <p>Should these retained trees fall due to wind events, the fallen trees may be harvested. Retained trees may not be felled intentionally until the regenerated stand reaches 10-years of age. Exceptions, related to safety, ecological, or other rationale, to this requirement may be granted if the request is made to the Reserve in writing prior to the exception occurring.</p> |
| 6. Maintenance of natural land cover | Reforestation | Forest Projects should take into consideration the effects of project activities on ecological processes; where project activities result in the conversion of natural land cover, the Forest Owner must provide justification to be approved by the Reserve. See below for further information on determining natural land cover. |
| 7. Soil disturbance during site preparation for tree planting | All | <p>Site preparation using deep ripping is prohibited from affecting more than 1% of an Activity Area in any year as determined by the area encompassed by the channels produced by a single ripper. Such channels are defined by the width of the ripper tine used, plus 0.5 meter on each side. In cases where deep ripping does exceed 1% of an Activity Area in a given year, crediting for any increases in forest carbon stocks will be suspended for the number of reporting periods equivalent to the proportion of the Activity Area affected, rounded up to the nearest percentage point.</p> <p>For example, if deep ripping on a 100-hectare Activity Area is performed over a combined channel length of 22,000 meters using a ripper with a tine width of 0.1 meter, resulting in 2.4% of the Activity Area being affected, crediting would be suspended for the Activity Area for three reporting periods, including the reporting period during which deep ripping occurred.</p> |

Table 3.2 provides further guidance for the environmental safeguard related to the composition of native species for IFM, Reforestation, and Restoration activities.

Table 3.2. Requirements for the Proportion of Native Species within the Activity Areas (IFM, Reforestation, and Restoration).

| Project Activity Areas ¹ | Native Species Composition Requirements (Trees per Hectare) |
|-------------------------------------|--|
| Up to 10 hectares | Up to 100% can be in one species. |
| >10 to ≤50 hectares | Up to 90% can be in one species. |
| >50 to ≤100 hectares | No more than 80% can be in one species. The balance must be made up of at least two other species. |
| >100 to ≤1,000 hectares | No more than 70% can be in one species. The balance must be made up of at least two other species. |
| Greater than 1,000 hectares | No more than 60% can be in one species. The balance must be made up of at least three other species. |

¹ The area is determined by the sum of hectares in each Activity Area.

Conceptually, natural land cover includes areas dominated by native species that may exhibit complex age and structural variation and contain critical habitat niches to fully support natural ecosystem functions.

For the purposes of the protocol:

- Natural forest and shrub land cover (bosque, selva, zonas aridas) areas are identified where the dominant overstory vegetation is comprised of an overwhelming majority of native species, i.e., greater than 70% by CO₂e stocking.
- Natural grassland areas are identified where grassland plant communities (native or non-native species) exist due to natural environmental features (soil conditions, precipitation, etc.) and/or natural frequency of disturbance events. If the grasslands must be constantly grazed or burned more frequently than would be the case in a natural ecosystem, the grasslands would not meet the definition of natural.
- Wetlands are considered natural wherever they are found not being used for agriculture or intensive aquaculture and not part of a non-natural waterbody.

Crediting will be discontinued in the event a project fails to meet these requirements until the project develops a plan acceptable by the Reserve to return to compliance.

3.11 Project Start Date

The start date of a Forest Project is a date in which project activities commenced (see Section 2.3). The project start date can be no more than twelve months prior to the submittal date³⁶. The Forest Owner must be able to demonstrate project activities initiated on this date through a verifiable action or event. One of the following actions must be used to demonstrate the project start date:

1. A general Assembly (*ejidos* and communities) in which the Forest Project, or the commencement of initial trainings or analysis for the Forest Project, was approved. Proof must be provided to the verifier in the form of an official Assembly act (or similar documentation for private and public landowners), the meeting notes and agenda.
2. Submitting the project to the Reserve.

The Start Date of subsequent Activity Areas is based on the official approval of the added Activity Area and inclusion of that Activity Area in the annual monitoring, reporting and verification. Proof of official approval must be provided to the verifier in the form of an official Assembly act or similar documentation for private and public landowners.

3.12 Additionality

The Reserve only registers projects that yield GHG removals that are determined to be additional to what would have occurred in the absence of a carbon offset market (i.e., under “business as usual”). For a general discussion of the Reserve’s approach to determining additionality see the Reserve Offset Program Manual.³⁷

³⁶ The submittal date is the date in which the Forest Owner officially submits the Submittal Form to the Reserve. The Forest Owner will need to state the project start date on the Submittal Form.

³⁷ <http://www.climateactionreserve.org/how/program/program-manual/>.

To be considered additional, enhancement activities must be the result of defined investment rather than the result of natural activities. Projects that implement the defined activities in Table 2.1 meet this criterion. Defined investment for Reforestation/Agroforestry activities means an investment of labor or capital to establish tree seedlings, either directly (tree planting, site preparation, etc.) or indirectly (protecting regenerated stands against herbivory, conversion to agriculture or grazing, or other abrasive environmental elements). Direct investment for other enhancement activities includes investments in stocking improvements and opportunity costs associated with extended rotations. Indirect investment activities include investments into the protection of forested stands against environmental threats or manmade elements, including illegal harvesting.

Forest Projects must satisfy the following tests to be considered additional:

1. **Legal requirement test.** Forest Projects must achieve GHG removals above any GHG removals that would result from compliance with any law, statute, rule, regulation or ordinance. Legally-binding mandates entered into as part of the project and in support of project activities are not considered for the purpose of determining additionality under the legal requirement test.
2. **Performance standard test.** Forest Projects must achieve GHG removals above and beyond any GHG removals that would result from engaging in “business as usual” activities, as defined by the requirements described below (see Section 3.15).

3.12.1 Legal Requirement Test

Project activities must not be required by law. Each time a Forest Project undergoes verification, including the initial verification, the Forest Owner or project developer³⁸ must sign the Reserve’s Attestation of Voluntary Implementation form indicating that project activities are not legally required at the time of the start date or during the reporting period(s) being verified.

Documented stewardship activities within municipal development plans (if existing) are not considered legally binding for purposes of additionality determination. Instead, they are viewed as desired objectives which would have a better probability of implementation with funding that might occur with carbon sales.

3.12.2 Performance Standard Test

The performance standard test consists of standardized analyses based on activity type to determine whether a risk of forest cover loss to a specific Activity Area is sufficient to warrant recognition that forest carbon enhancements, protected over a long time (100-year permanence), are considered additional. Forest conversions to other uses, such as agriculture, grazing and urban use, are key drivers of forest carbon loss. Forest carbon loss due to natural disturbance is excluded from this analysis. The different approaches are detailed below for each activity type.

3.12.2.1 Improved Forest Management Activity Areas

Forest Management Programs are legal forest management documents authorized by SEMARNAT that permit harvesting at sustainable levels by ensuring that forest harvest does

³⁸ The project developer may sign the Attestation of Voluntary Implementation on behalf of the Forest Owner, only if the Forest Owner has signed a Designation of Authority granting the project developer such rights.

not exceed forest growth. Where landowners can demonstrate that the actual forest growth exceeds the allowable harvest identified in the Forest Management Program, SEMARNAT may accept an increase in the allowable harvest. Therefore, this protocol considers that all periodic growth is at risk under Forest Management Programs and, regardless of the current allowable harvest rate, any non-harvested periodic growth is additional. Since this protocol only credits for growth above the Activity Area baseline, or its initial carbon stocks (see Section 5.2), and all growth is considered at risk under Forest Management Programs, Activity Areas under Forest Management Programs or currently in the process of obtaining a Forest Management Program automatically pass the performance standard test.

Improved Forest Management activities thus automatically satisfy the performance standard test. Activities are considered additional to the extent they produce GHG removals in excess of those that would have under a “business as usual” scenario, as defined by the baseline (see Section 5.2).

3.12.2.2 Reforestation Activity Areas

Reforestation activities by definition (see Section 2.3) must occur on lands that are not in forest cover on the project start date and have not been in forest cover within the past 5-years, or have recently experienced a natural disturbance that reduced live tree stocking below 50% live canopy cover. Activities that comply with this definition of Reforestation automatically satisfy the performance standard test. Activities are considered additional to the extent they produce GHG removals in excess of those that would have occurred under a business as usual scenario, as defined by the baseline (see Section 5.2).

3.12.2.3 Restoration Activity Areas

The performance standard test for Restoration activities is based on evidence that risks to forest inventories are present at considerable levels within the Activity Area. The assessment of risk to carbon stocks across the Activity Area is based on an analysis of drivers of deforestation and degradation that may impact the land use within the Activity Area.

The Reserve has developed an analytical tool that provides a standardized assessment of risk to Activity Areas. The tool, referred to as the Forest Land Cover Risk Tool, is available on the MFP Website. The tool evaluates a variety of drivers that impact forest land cover and provides a score for a given Activity Area. Activity Areas with scores that exceed the risk threshold pass the performance standard test.

The Forest Land Cover Risk Tool is divided into three sections. The first section examines legal restrictions that may reduce the risk of deforestation. Projects must identify legal restrictions that would affect forest cover or canopy area within the Activity Area, particularly inclusion in a Natural Protected Area or other classification that restricts forest harvesting. Activity Areas that are included in such categories have an inherent lower risk of deforestation, however, under certain circumstances may experience persistent risks of degradation and deforestation. Projects may use the Reserve’s Forest Land Cover Risk tool to determine whether Activity Areas with legal restrictions may be considered additional.

The second section of the Forest Land Cover Risk Tool establishes the risk of deforestation, due to the presence of agricultural activities, biophysical characteristics of the Activity Area, urban development, and economic pressures affecting land management decisions. If an Activity Area demonstrates sufficient risk of deforestation, the Activity Area may pass the performance standard test.

If an Activity Area does not pass the performance standard test after completing the second section of the Forest Land Cover Risk Tool, the Activity Area would need to complete the third section, which assesses the presence of degradation through an analysis of historical canopy cover throughout the Activity Area. A forest canopy cover trend for the Activity Area is developed by calculating a historical estimate of canopy cover and a recent estimate of canopy cover. The historical trend analysis must compare the percent change normalized to 10 years between two historical estimates that are at least 10 years apart, with the recent estimate within five years of the start date, and with the earliest point no earlier than 1990. For instance, if an Activity Area commences in 2019, the historical estimates may be determined using aerial imagery from 2005 and 2018, since the recent estimate is within five years of the start date, and the two points pre-date the start date, are at least 10 years apart from one another, and do not pre-date 1990. Contact Reserve staff if no images fitting these requirements are available. Both estimates are developed by estimating canopy cover for each date from remotely sensed data. Appendix C.1.3 includes a standardized methodology for estimating canopy cover from remotely sensed data. If historical imagery is not available, more recent images may be used, subject to Reserve approval.

Activity Areas that have a decreasing trend of historical canopy cover of at least 10% demonstrate sufficient degradation to be eligible to pass the performance standard test. Activity Areas that do not have a decreasing trend of historical canopy cover of at least 10% do not demonstrate sufficient degradation to pass the performance standard test.

In addition to demonstrating sufficient degradation in section three of the Forest Land Cover Risk Tool, the Forest Owner must state in the Project Report (see Section 7.1.2) the cause of degradation and the project activities that will be implemented to increase forest carbon stocks (i.e., tree planting or the removal of the drivers of degradation/deforestation). This will be verified and reviewed by the Reserve and if accurate and satisfactory, the Activity Area will pass the performance standard test.

For Activity Areas that comply with the performance standard, activities are considered additional to the extent they produce GHG removals above the baseline.

3.12.2.4 Small Urban Forestry, Agroforestry, and Silvopastoral

Small Urban Forestry, Agroforestry, and Silvopastoral activities automatically satisfy the performance standard test. Activities are considered additional to the extent they produce GHG removals in excess of the Activity Area baseline (see Section 5.2).

3.12.2.5 Large Urban Forestry

The performance standard test for Large Urban Forestry activities is based on analysis of historical canopy cover throughout the Activity Area. A trend for the Activity Area is developed by calculating a historical estimate of canopy cover and a recent estimate of canopy cover. The trend analysis must compare the percent change normalized to 10 years between two historical estimates that are at least 10 years apart, with the recent estimate within five years of the start date, and with the earliest point no earlier than 1990. For instance, if an Activity Area commences in 2019, the historical estimates may be done using aerial imagery from 2005 and 2018, since the recent estimate is within five years of the start date, and the two points pre-date the start date, are at least 10 years apart from one another, and do not pre-date 1990. Contact Reserve staff if no images fitting these requirements are available. Both estimates are developed by estimating canopy cover for each date from remotely sensed data. Appendix

C.1.3 includes a standardized methodology for estimating canopy cover from remotely sensed data. If historical imagery is not available, more recent images may be used, subject to Reserve approval. If the historical canopy cover trend is decreasing, the Large Urban Forestry Activity Area passes the performance standard test. Activities are considered additional to the extent they produce GHG removals in excess of the Activity Area baseline (see Section 5.2).

3.13 Project Crediting Period

The baseline for any Forest Project registered with the Reserve under this version of the MFP is valid for 30 years. This means that a registered Forest Project will be eligible to receive CRTs for GHG removals quantified using this protocol, and verified by Reserve-approved verification bodies, for a period of 30 years following the project's start date. Credits that were generated during the crediting period must continue to be monitored to meet contractual obligations, if any, and for credits to be issued according to the tonne-year accounting guidance (see Section 5.6.1). Projects that have met all Monitoring, Reporting and Verification (MRV) requirements and maintained legal compliance throughout their first crediting period, can extend the crediting period for another 30-year period using the baseline developed for the initial crediting period. A project must demonstrate compliance with the requirements of this protocol through annual MRV to renew the crediting period. The Reserve has final approval of renewing the crediting period.

3.14 Minimum Time Commitment

Projects may commit to maintaining carbon sequestered due to project activities for any length of time. However, credits will be issued in an amount proportional to the length of the commitment relative to 100 years. Commitments must be secured through a contractual agreement referred to as a Project Implementation Agreement (see Section 3.15). Projects that are secured contractually for less than 100 years will be issued credits (CRTs) proportional to the atmospheric impact of maintaining the carbon out of the atmosphere for the period of time the CO₂ is secured, commensurate with the length of the contractual commitment relative to 100 years. This is discussed further in the section entitled Tonne-Year Accounting (see Section 5.6.1). Carbon secured through a contractual agreement must be monitored and verified for the duration of the agreement.

Forest Projects must submit annual monitoring reports and undergo periodic full verifications, at minimum every six reporting periods, for the duration of their contractually agreed time commitment.

There are three possible exceptions to this minimum time commitment:

1. A Forest Project automatically terminates if a significant natural disturbance occurs,³⁹ leading to an Unavoidable Reversal (see Section 6.2.1) that reduces the project's standing live or dead carbon stocks below the project's baseline standing live or dead carbon stocks. Once a Forest Project terminates in this manner, the Forest Owner has no further obligations to the Reserve. The project's credits are made whole through the Reserve's Buffer Pool (see Section 6.2.4).

³⁹ The natural disturbance shall not be the result of avoidable or grossly negligent acts of the Forest Owner.

2. A Forest Project may be voluntarily terminated prior to the end of its minimum time commitment if the Forest Owner retires⁴⁰ a quantity of CRTs equal to the total number of CRTs secured through contractual relationship.
3. A Forest Project may be automatically terminated if there is a breach of certain terms described within the Project Implementation Agreement. Such a termination will require the Forest Owner to retire⁴⁰ a quantity of CRTs, equal to the total number of CRTs secured.

3.15 Project Implementation Agreement

A Project Implementation Agreement (PIA) is a contract between the Reserve and the Forest Owner that effectively secures Verified Removals (see Section 5.6.1) for periods of time (up to 100 years).

The PIA ensures that the net quantity of carbon sequestered by a project will continue to be monitored and verified for the duration of the agreed-upon commitment period, specifies remedies in the event of a contract breach, and stipulates the number of credits to be issued for each net tonne of CO₂e sequestered due to project activities.

The PIA sets forth the Forest Owner's obligation (and the obligation of its successors and assignees) to comply with the monitoring and verification requirements of the Mexico Forest Protocol. The Forest Owner's responsibilities in the event of a reversal are also addressed in the PIA. For projects that secure carbon through a PIA (see Section 5.6.1), the PIA must be signed by the governance body of the *ejido*/community, the land owner(s) of private properties, or the appropriate authority for non-federal government agencies, notarized, and registered with the National Agrarian Registry (*Registro Agrario Nacional* or RAN) or Public Registry in accordance with the laws and requirements of the state and/or municipality. If registration is not allowed by the applicable laws of the state and/or municipality, the execution of the agreement before a notary public is adequate. The contract does not need to be recorded on the deed to the Forest Owner's property.

Contracts that bind actions of communal landscapes are currently limited by law to 30 years. The PIA can be renewed annually to allow Verified Removals associated with prior reporting periods to be issued as credits, such that projects can receive additional credits for previously stored carbon until the 100-year permanence commitment is reached.

3.16 Other Eligibility Criteria

An affidavit⁴¹ stating that there are no ongoing encumbrances or expectations for specific forest management activities is required in cases where a Reserve project is to be initiated in an area where a previous forest carbon project existed. Forest Projects may not be located on any part of a forest carbon project that was terminated as the result of an avoidable reversal.

⁴⁰ To retire a CRT means to transfer it to a retirement account in the Reserve's software system. Retirement accounts are permanent and locked, so that a retired CRT cannot be transferred or retired again. See the Reserve Offset Program Manual for further information.

⁴¹ Affidavit refers to a declaration under penalty of perjury.

4 GHG Assessment Boundary

The GHG Assessment Boundary encompasses all the GHG sources, sinks, and reservoirs that may be significantly affected by Forest Project activities, including forest carbon stocks, sources of biological CO₂ emissions, and GHG emissions from mobile combustion. For accounting purposes, the sources, sinks, and reservoirs included in the GHG Assessment Boundary are organized according to whether they are predominantly associated with a Forest Project's "Primary Effect" (i.e., the Forest Project's intended changes in carbon stocks, GHG emissions or removals) or its "Secondary Effects" (i.e., unintended changes in carbon stocks, GHG emissions or removals caused by the Forest Project).⁴² Secondary Effects may include increases in mobile combustion CO₂ emissions associated with site preparation, as well as increased CO₂ emissions caused by the shifting of harvesting activities from the Project Area to other forestlands (often referred to as "leakage"). Projects are required to account for Secondary Effects from leakage following the methods described in Section 5.5.

The following table provides a comprehensive list of the GHG sources, sinks, and reservoirs (SSRs) that may be affected by a Forest Project and indicates which SSRs must be included in the GHG Assessment Boundary depending on the project specifics. If an SSR is designated as a reservoir/pool, this means that GHG removals are accounted for by quantifying changes in carbon stock levels. For SSRs designated as sources or sinks, GHG removals are accounted for by quantifying changes in GHG emission or removal rates, as described in the tables.

⁴² The terms "Primary Effect" and "Secondary Effect" come from WRI/WBCSD, 2005. *The Greenhouse Gas Protocol for Project Accounting*, World Resources Institute, Washington, DC. Available at <http://www.ghgprotocol.org>.

Table 4.1. GHG Assessment Boundary

| SSR | Description | Type | Gas | Included or Excluded? | Quantification Method | Justification/Explanation |
|--|---|------------------|-----------------|--|---|--|
| Primary Effect Sources, Sinks, and Reservoirs | | | | | | |
| 1 | Standing live carbon (carbon in all portions of living trees) | Reservoir / Pool | CO ₂ | Included | Baseline: Based on initial field inventory measurements; methodology outlined in Section 5.2 Project: Measured by field measurements and updating forest carbon inventory through remeasurement and growth projections | Increases in standing live carbon stocks are the Primary Effect of carbon enhancement projects. |
| 2 | Shrubs and herbaceous understory carbon | Reservoir / Pool | CO ₂ | Included for estimating site preparation emissions | Baseline: N/A Project: Estimates based on change in carbon resulting from site preparation | For crediting purposes, shrubs and herbaceous understory carbon is excluded since changes in this reservoir are unlikely to have a significant effect on total quantified GHG removals. Furthermore, it is generally not practical to undertake measurements of shrubs and herbaceous understory that are accurate enough for crediting purposes. Clearing of shrubs and herbaceous understory for purposes of Reforestation activities may have significant emissions. |
| 3 | Standing dead carbon (carbon in all portions of dead, standing trees) | Reservoir / Pool | CO ₂ | Included | Baseline: Measured based on initial field inventory measurements Project: Measured by updating forest carbon inventory | Carbon enhancement projects may significantly increase standing dead carbon stocks over time. |
| 4 | Lying dead wood carbon | Reservoir / Pool | CO ₂ | Excluded | Baseline: N/A Project: N/A | Lying dead wood is difficult to obtain accurate measurements and it is most often conservative to not include them. |

| SSR | Description | Type | Gas | Included or Excluded? | Quantification Method | Justification/Explanation |
|-----|--|-------------------------|-----------------|-----------------------|-----------------------|--|
| 5 | Litter and duff carbon (carbon in dead plant material) | Reservoir / Pool | CO ₂ | Excluded | Baseline: N/A | Litter and duff carbon is excluded since changes in this reservoir are unlikely to have a significant effect on total quantified GHG removals. Furthermore, it is generally not practical to undertake measurements of litter and duff that are accurate enough for crediting purposes. |
| | | | | | Project: N/A | |
| 6 | Soil carbon | Reservoir / Pool/Source | CO ₂ | Excluded | Baseline: N/A | Soil carbon is anticipated to increase somewhat as a result of most carbon enhancement project activities that do not include intensive site preparation. Soil carbon cannot be included as a credited reservoir/pool as it is difficult to get accurate estimates. Deep ripping, as a site preparation practice, may not occur on more than 1% of an Activity Area on an annual basis. See Section 3.10 for further details. |
| | | | | | Project: N/A | |
| 7 | Carbon in in-use forest products | Reservoir / Pool | CO ₂ | Excluded | Baseline: N/A | While long-term harvested wood products may increase, along with onsite forest carbon, due to improved management, long-term wood products are not included as creditable data supporting long-term sequestration of harvested wood products is lacking. This may be modified in the future as data related to the fate of harvested wood products is developed. Additionally, Improved Forest Management activities will lead to increased production over medium to long-term. |
| | | | | | Project: N/A | |
| 8 | Forest product carbon in landfills | Reservoir / Pool | CO ₂ | Excluded | Baseline: N/A | No data has been obtained to suggest wood products remain in long-term storage in landfills in Mexico. This may be modified in the future as data related to the fate of harvested wood products is developed. |
| | | | | | Project: N/A | |

| SSR | Description | Type | Gas | Included or Excluded? | Quantification Method | Justification/Explanation |
|---|--|--------|------------------|-----------------------|---|---|
| Secondary Effects Sources, Sinks, and Reservoirs | | | | | | |
| 9 | Nutrient application | Source | N ₂ O | Excluded | Baseline: N/A | The use of broadcast fertilization is not an eligible activity. |
| | | | | | Project: N/A | |
| 10 | Mobile combustion emissions from site preparation activities | Source | CO ₂ | Included | Baseline: Assumed to be zero | Mobile combustion CO ₂ emissions from site preparation may be important when machinery is used to prepare areas for planting. |
| | | | | | Project: Accounted for by intensity of site preparation activities | |
| | | | CH ₄ | Excluded | Baseline: N/A | Changes in CH ₄ emissions from mobile combustion associated with site preparation activities are not considered significant. |
| | | | | | Project: N/A | |
| | | | N ₂ O | Excluded | Baseline: N/A | Changes in N ₂ O emissions from mobile combustion associated with site preparation activities are not considered significant. |
| | | | | | Project: N/A | |
| 11 | Mobile combustion emissions from ongoing project operation and maintenance | Source | CO ₂ | Excluded | Baseline: N/A | Mobile combustion CO ₂ emissions from ongoing project operation and maintenance are unlikely to be significantly different from baseline levels and are therefore not included in the GHG Assessment Boundary. |
| | | | | | Project: N/A | |
| | | | CH ₄ | Excluded | Baseline: N/A | CH ₄ emissions from mobile combustion associated with ongoing project operation and maintenance activities are not considered significant. |
| | | | | | Project: N/A | |
| | | | N ₂ O | Excluded | Baseline: N/A | N ₂ O emissions from mobile combustion associated with ongoing project operation and maintenance activities are not considered significant. |
| | | | | | Project: N/A | |

| SSR | Description | Type | Gas | Included or Excluded? | Quantification Method | Justification/Explanation |
|-----|---|--------|------------------|-----------------------|---|--|
| 12 | Stationary combustion emissions from ongoing project operation and maintenance | Source | CO ₂ | Excluded | Baseline: N/A | Stationary combustion CO ₂ emissions from ongoing project operation and maintenance could include GHG emissions associated with electricity consumption or heating/cooling at Forest Owner facilities or at facilities owned or controlled by contractors. These emissions are unlikely to be significantly different from baseline levels and are therefore not included in the GHG Assessment Boundary. |
| | | | | | Project: N/A | |
| | | | CH ₄ | Excluded | Baseline: N/A | CH ₄ emissions from stationary combustion associated with ongoing project operation and maintenance activities are not considered significant. |
| | | | | | Project: N/A | |
| | | | N ₂ O | Excluded | Baseline: N/A | N ₂ O emissions from stationary combustion associated with ongoing project operation and maintenance activities are not considered significant. |
| | | | | | Project: N/A | |
| 13 | Biological emissions from clearing of forestland outside the Activity Area for agriculture and/or grazing | Source | CO ₂ | Included | Baseline: N/A | Projects on land currently, or projected to be used for, grazing or growing crops may cause displacement of these activities to other lands, leading to a reduction in carbon stocks on those lands (e.g., due to clearing of trees and shrubs). The shift may be either a market response or physical response to the project activity. Emissions associated with shifting land uses are estimated using default "leakage" factors outlined in Section 5.4. |
| | | | | | Project: Estimated using default land use conversion factors for non-project land | |

| SSR | Description | Type | Gas | Included or Excluded? | Quantification Method | Justification/Explanation |
|-----|--|---------------|------------------|-----------------------|---|---|
| 14 | Biological GHG emissions or removals from changes in timber harvesting on forestland outside the Activity Area | Source / Sink | CO ₂ | Included/ Excluded | Baseline: N/A | If harvesting is reduced in the Activity Area, harvesting on other lands may increase to compensate for the lost production. This “leakage” effect is outlined in Section 5.4. Projects may also increase harvesting levels relative to the baseline, potentially causing other landowners to reduce harvesting in response to increased wood product supply. The reduction in harvesting may lead to increased carbon stocks on their lands. |
| | | | | | Project: Estimated using default land use conversion factors (Section 5.4) | |
| 15 | Combustion emissions from production, transportation, and disposal of forest products | Source | CO ₂ | Excluded | Baseline: N/A | The Primary Effect of Forest Projects in Mexico is to conserve and increase onsite forest carbon stocks, without substantially affecting the production, transportation, and disposal of wood products with regards to baseline levels. Therefore, these emissions are not included in the GHG Assessment Boundary of this protocol. |
| | | | | | Project: N/A | |
| | | | CH ₄ | Excluded | Baseline: N/A | Combustion-related CH ₄ emissions from changes in the production, transportation, and disposal of forest products are not considered significant. |
| | | | | | Project: N/A | |
| | | | N ₂ O | Excluded | Baseline: N/A | Combustion-related N ₂ O emissions from changes in the production, transportation, and disposal of forest products are not considered significant. |
| | | | | | Project: N/A | |

| SSR | Description | Type | Gas | Included or Excluded? | Quantification Method | Justification/Explanation |
|-----|--|--------|------------------|-----------------------|-----------------------|--|
| 16 | Combustion emissions from production, transportation, and disposal of alternative materials to forest products | Source | CO ₂ | Excluded | Baseline: N/A | The Primary Effect of Forest Projects in Mexico is to conserve and increase onsite forest carbon stocks, without substantially affecting the production, transportation, and disposal of wood products with regards to baseline levels. Therefore, these emissions are not quantified in the assessment boundary of this protocol. |
| | | | | | Project: N/A | |
| | | | CH ₄ | Excluded | Baseline: N/A | Combustion-related CH ₄ emissions from changes in the production, transportation, and disposal of alternative materials are not considered significant. |
| | | | | | Project: N/A | |
| | | | N ₂ O | Excluded | Baseline: N/A | Combustion-related N ₂ O emissions from changes in the production, transportation, and disposal of alternative materials are not considered significant. |
| | | | | | Project: N/A | |
| 17 | Biological emissions from decomposition of forest products | Source | CO ₂ | Excluded | Baseline: N/A | While long-term harvested wood products may increase, along with onsite forest carbon, due to improved management, long-term wood products are not included as creditable data supporting long-term sequestration of harvested wood products is lacking. |
| | | | | | Project: N/A | |
| | | | CH ₄ | Excluded | Baseline: N/A | In-use wood products will produce little to no CH ₄ emissions. CH ₄ emissions can result from anaerobic decomposition of forest products in landfills. Additionally, dimensional wood products are assumed to be in landfills in minimal quantities. Thus, changes in forest-product production are assumed to have no significant effect on future CH ₄ emissions from anaerobic decomposition of forest products in landfills. These emissions are therefore excluded from the GHG Assessment Boundary. |
| | | | | | Project: N/A | |
| | | | N ₂ O | Excluded | Baseline: N/A | Decomposition of forest products is not expected to be a significant source of N ₂ O emissions. |
| | | | | | Project: N/A | |

5 Quantifying Net GHG Removals and CRTs

This section provides requirements and guidance for quantifying a Forest Project's net GHG removals from within the Activity Areas. For Forest Projects with multiple Activity Areas, the quantification of net GHG removals is conducted separately for each Activity Area. The Reserve will issue CRTs to a Forest Project upon confirmation by an ISO-accredited and Reserve-approved verification body that the Forest Project GHG removals have been quantified and secured following the applicable requirements of this section (see Section 8 for verification requirements).

The quantification method proceeds in six steps:

1. **Quantifying the Activity Area live and dead standing carbon.** Each reporting period, the Forest Owner must determine the Activity Area carbon stocks in live and dead standing trees. There are two approaches to quantifying the Activity Area live and dead standing carbon discussed in Section 5.1 and Appendices B and C.
2. **Determining the Activity Area baseline onsite carbon stocks.** The baseline is determined for each Activity Area as the initial forest carbon stocks. Projects are eligible to receive credits to the extent they increase forest carbon inventories above baseline levels within the Activity Areas. The guidance for determining an Activity Area baseline is discussed in Section 5.2. and Appendices B and C. The baseline is established for renewable 30-year crediting periods.
3. **Calculating the Activity Area Primary Effect.** Each reporting period, the Forest Owner must quantify the actual change in GHG removals associated with the Activity Area's intended ("Primary") effect. For any given reporting period, the Primary Effect is calculated by:
 - a. Taking the difference between actual onsite carbon stocks for the current reporting period and actual onsite carbon stocks for the prior reporting period.⁴³
 - b. Subtracting from (a) the difference between baseline onsite carbon stocks for the current reporting period and baseline onsite carbon stocks for the prior reporting period.
4. **Quantifying the Activity Area Secondary Effects.** Each reporting period, the Forest Owner must quantify the actual change in GHG emissions or removals associated with the Activity Area's unintended ("Secondary") effects, as defined in Section 5.4. Requirements and guidance for quantifying Secondary Effects are provided below for each type of activity. Should the project activity result in Secondary Effects, only increased emissions as the result of the project activity will be included to ensure conservative accounting.
5. **Calculating total net GHG removals.** For each reporting period, total net GHG removals are calculated by summing an Activity Area's Primary and Secondary Effects. If the result is positive, then the Activity Area has generated GHG removals in the current year. If the result is negative, this may indicate that a reversal has occurred (see Section 6.1).
6. **Calculating total CRTs to be issued.** For years in which net GHG removals occur, the amount of CRTs issued is adjusted to reflect both how long the current inventory of

⁴³ For the purposes of calculating the project's Primary Effect, actual and baseline carbon stocks prior to the start date of the project are assumed to be zero.

additional carbon has been sequestered and how long it is secured into the future through the Project Implementation Agreement. This adjustment indicates the tonne-year value of the additional carbon (see Section 5.6.1) and represents the current climate benefit attributable to the project in lieu of a 100-year commitment to the maintenance of such additional carbon. The total CRTs issued for each Activity Area are then summed for the Forest Project for each reporting period.

The required formula for quantifying annual net GHG removals is presented in Equation 5.1. Net GHG removals must be quantified and reported in units of carbon dioxide-equivalent (CO₂e) metric tonnes. The results from Equation 5.1 are used as input for Equation 5.5, as outlined in Section 5.6, to determine the amount of CRTs to be issued for the reporting period.

Equation 5.1. Annual Net GHG Removals

| | | |
|--|--|--------------------|
| $QR_y = [(\Delta AC_{onsite} - \Delta BC_{onsite}) + \Delta AC_{shrub,init} + SE_y] + N_{y-1}$ | | |
| Where, | | |
| | | <u>Units</u> |
| QR_y | = Quantified GHG removals for reporting period y | tCO ₂ e |
| $\Delta AC_{shrub,init}$ | = Change in actual onsite carbon in shrubs resulting from site preparation for Reforestation, quantified only at the initiation of project activities in Reforestation Activity Areas where site preparation involves the removal of shrub cover | tCO ₂ e |
| SE_y | = Secondary Effect GHG emissions caused by the Activity Area activity in reporting period y | tCO ₂ e |
| N_{y-1} | = Any negative carryover from the prior reporting period (occurs when total quantified GHG removals are negative prior to the issuance of any CRTs for the Activity Area) | |
| And, | | |
| $\Delta AC_{onsite} = (AC_{onsite,y})(1 - CD_y) - (AC_{onsite,y-1})(1 - CD_{y-1})$ | | |
| Where, | | |
| $AC_{onsite,y}$ | = Actual onsite carbon in standing live and dead trees in Activity Areas as inventoried for reporting period y | tCO ₂ e |
| $AC_{onsite,y-1}$ | = Actual onsite carbon in standing live and dead trees in Activity Areas as inventoried for reporting period $y-1$ (if y is the first reporting period of the Activity Area, then the value for $AC_{onsite,y-1}$ will be zero) | tCO ₂ e |
| CD_y | = Appropriate confidence deduction for reporting period y , as determined in Appendix B | |
| CD_{y-1} | = Appropriate confidence deduction for reporting period $y-1$, as determined in Appendix B | |
| And, | | |
| $\Delta BC_{onsite} = BC_{onsite,y} - BC_{onsite,y-1}$ | | |
| Where, | | |
| $BC_{onsite,y}$ | = Baseline onsite carbon in standing live and dead trees in Activity Areas as estimated for reporting period y | tCO ₂ e |
| $BC_{onsite,y-1}$ | = Baseline onsite carbon in standing live and dead trees in Activity Areas as estimated for reporting period $y-1$ (if y is the first reporting period of the Activity Area, then the value for $BC_{onsite,y-1}$ will be zero) | tCO ₂ e |

5.1 Quantifying the Activity Area Live and Dead Standing Carbon

There are two different approaches to quantifying the Activity Area live and dead standing carbon based on activity. For projects with multiple Activity Areas, the quantification of live and dead standing carbon is conducted separately for each Activity Area.

5.1.1 Improved Forest Management, Restoration, Large Urban Forestry

For IFM, Restoration, and Large Urban Forestry Activity Areas an intensive inventory is required. An intensive inventory requires that field sample plots be installed, measurements acquired, and data input into the Reserve's Microsoft (MS) Access database, CALCBOSK, for analytical purposes. This does not require a re-measurement of the inventory each year, but does require that inventory estimates be updated using the guidance in Appendix B. The estimate of actual carbon stocks in live and dead standing trees must be adjusted by an appropriate confidence deduction, as described in Appendix B.

5.1.2 Reforestation

Reforestation Activity Areas must likewise use the intensive inventory methodology described in Appendix B. However, Reforestation Activity Areas may defer the inventory of carbon stocks that are not affected by site preparation until the second full verification, the scheduling of which is at the discretion of the Forest Owner. By the second full verification, the Forest Owner must provide an estimated inventory of all required carbon stocks by using the intensive inventory methodology. Activity Areas for which an initial inventory is deferred are not eligible to receive CRTs until after the second full verification where the inventory is verified.

5.1.3 Small Urban Forestry, Agroforestry, and Silvopastoral

Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas may use the canopy cover inventory methodology described in Appendix C. Nevertheless, Forest Owners always maintain the option to use the intensive inventory methodology for all Activity Areas as described in Section 5.1.1 and Appendix B.

The canopy cover inventory methodology includes deriving a measurement of the canopy area within the Activity Area, which are applied to ratio estimators to produce an estimate of CO₂e for the Activity Area. Ratio estimators represent a relationship between CO₂e in standing trees and canopy cover, providing the ability to estimate the CO₂e in standing trees across the Activity Area as a function of the Activity Area's overall canopy cover. For Activity Areas using the canopy cover inventory methodology, there is no confidence deduction. Appendix C provides further guidance for using the canopy cover inventory methodology.

5.2 Determining the Activity Area Baseline

A Forest Project can be issued credits to the extent forest carbon stocks within the Activity Area(s) have increased above and beyond baseline forest carbon stocks. A baseline for purposes of crediting is established separately for each Activity Area.

For all Activity Areas that comply with the additionality criteria, the initial baseline for the Activity Area is defined as the sum of carbon (CO₂e) in the required carbon pools at the start date. Once an Activity Area's baseline has been determined, the baseline is held steady throughout the Activity Area's crediting period.

The protocol allows for new Activity Areas to be added to the Project Area following the project start date. For additional Activity Areas added at a later time, the Forest Owner must calculate

the baseline for the new Activity Area. The Appendices B and C provides further instructions on how to calculate the baseline for each Activity Area depending on the activity and quantification approach used.

5.2.1 Consideration of Legal Constraints

Legal constraints include all laws, regulations, and legally-binding commitments applicable to the Project Area at the project initiation that could affect standing live or dead carbon stocks. Legal constraints are considered for determining eligibility and additionality rather than baseline quantification. Projects that comply with additionality criteria, including those related to legal requirements, may thus receive credits for carbon enhancements above the Activity Area baseline (i.e., initial carbon stocks).

5.2.2 Consideration of Financial Constraints

Financial constraints are considered for determining eligibility and additionality rather than baseline quantification. Projects that comply with additionality criteria may thus receive credits for carbon enhancements above the Activity Area baseline (i.e., initial carbon stocks).

5.3 Calculating Emissions from Site Preparation Activities

As identified in Section 4, emissions must be estimated for the release of carbon resulting from site preparation involving the removal of shrub cover for Reforestation Activity Area. Estimates of the loss of shrub carbon stocks resulting from the removal of shrub cover during site preparation activities in Reforestation Activity Areas must be calculated using the following steps:

1. Estimate pre-site preparation shrub carbon stocks for the Activity Area using the canopy cover inventory methodology, as described in Appendix C Quantifying Carbon Stocks in Activity Areas: Canopy Cover Quantification Methodology, based on a satellite image from a date close to but before the date that site preparation activities were initiated.
2. Estimate post-site preparation shrub carbon stocks using the canopy cover inventory methodology based on a satellite image from a date after the site preparation activities were completed.
3. Calculate the difference between pre- and post-site preparation shrub stocking by subtracting the results from Step 1 from Step 2.

The difference is the value used for the variable $\Delta AC_{shrub,init}$ in Equation 5.1. Contact Reserve staff if no image is available for either Step 1 or Step 2.

5.4 Calculating the Activity Area Primary Effect

For all Activity Areas, each reporting period, the Forest Owner must quantify the actual change in GHG removals associated with the Activity Area's intended ("Primary") effect. The Carbon Monitoring Worksheet facilitates the calculation of the Activity Area's Primary Effect each reporting period.

5.5 Quantifying the Activity Area Secondary Effects

The approach to Project Area monitoring, established by the fifth environmental safeguard (see Section 3.10), provides assurances that forest enhancement activities do not result in increased forest carbon emissions throughout the Project Area. Nevertheless, significant Secondary Effects can arise from mobile combustion emissions associated with machinery used in site preparation for Reforestation activities. It is also possible that forest enhancement activities

result in emissions on external sites. The approach to the calculation of Secondary Effects on external sites is split into an analysis conducted for Reforestation, Restoration, Agroforestry, and Silvopastoral activities and an analysis for Improved Forest Management activities. Large and Small Urban Forestry activities have an inherent low risk of Secondary Effects and thus are exempt from the Secondary Effects analysis.

5.5.1 Secondary Effects from Mobile Combustion for Reforestation Activities

To quantify combustion emissions associated with site preparation, Forest Owners must use the standard emission factor from Equation 5.2, as well as the level of brush cover associated with the site preparation area and the number of hectares treated for each forest type where site preparation activities occur. An estimate of percent brush cover can be determined through remote sensing. The Reserve has provided a methodology for this approach in Appendix C.

Forest Owners must only quantify these emissions for the areas where mechanical equipment, i.e., brush raking or mastication, is used for the removal of competing vegetation site preparation. Mobile combustion emissions must be added to any Secondary Effect emissions from external sites (SE in Equation 5.3) in the first reporting period for a Reforestation Activity Area.

Equation 5.2. Combustion Emissions Associated with Site Preparation

| | | |
|--|---|----------------------------|
| $SE_y = (-1) \times (1.61 \times BC_{PA} \times PA)$ | | |
| Where, | | <u>Units</u> |
| SE_y | = Secondary Effect emissions due to mobile combustion from site preparation | tCO ₂ e |
| 1.61 | = Mobile combustion emission factor, ⁴⁴ assuming diesel fuel use, 30.3 liters of fuel consumed per hour of equipment use, ⁴⁵ and 19.7 hours of equipment use to clear a hectare with 100% brush cover | tCO ₂ e/hectare |
| BC_{PA} | = Brush cover as a percentage of the site preparation area PA | |
| PA | = Size of the site preparation area | Hectares |

5.5.2 Secondary Effects from External Sites for Reforestation, Restoration, Agroforestry, and Silvopastoral Activities

Reforestation, Restoration, Agroforestry, and Silvopastoral activities may result in a shift of grazing or agricultural activities outside the Project Area. Forest Owners must analyze the effect of Reforestation, Agroforestry, and Silvopastoral activities for each Activity Area at the activity inception. This is a one-time assessment for this activity and the results are used throughout the project life. Using the decision matrix in Figure 5.1, the Forest Owner must determine the percentage associated with the risk of Secondary Effects. The percent identified is incorporated into Equation 5.3 below as the Leakage Risk Percentage (LR) to calculate the Secondary Effects value (SE_y) used in Equation 5.1 and the Reserve's Carbon Monitoring Worksheet

⁴⁴ From U.S. EPA Greenhouse Gas Inventory Guidance, Direct Emissions from Mobile Combustion Sources, https://www.epa.gov/sites/production/files/2016-03/documents/mobileemissions_3_2016.pdf.

⁴⁵ Based on upper end of fuel consumption range for "high" load factor application for D6 (175 HP) track-type tractor, from Caterpillar Performance Handbook #48, Caterpillar, Peoria, IL, https://wheelercat.com/wp-content/uploads/2018/07/SEBD0351_ED48.pdf.

(CMW). The percentage value is applied as a constant to each reporting period to adjust calculated GHG removals in the reporting period.

In the first reporting period for Reforestation Activity Areas, Secondary Effect emissions from external sites must be added to any mobile combustion emissions, as calculated in Equation 5.2.

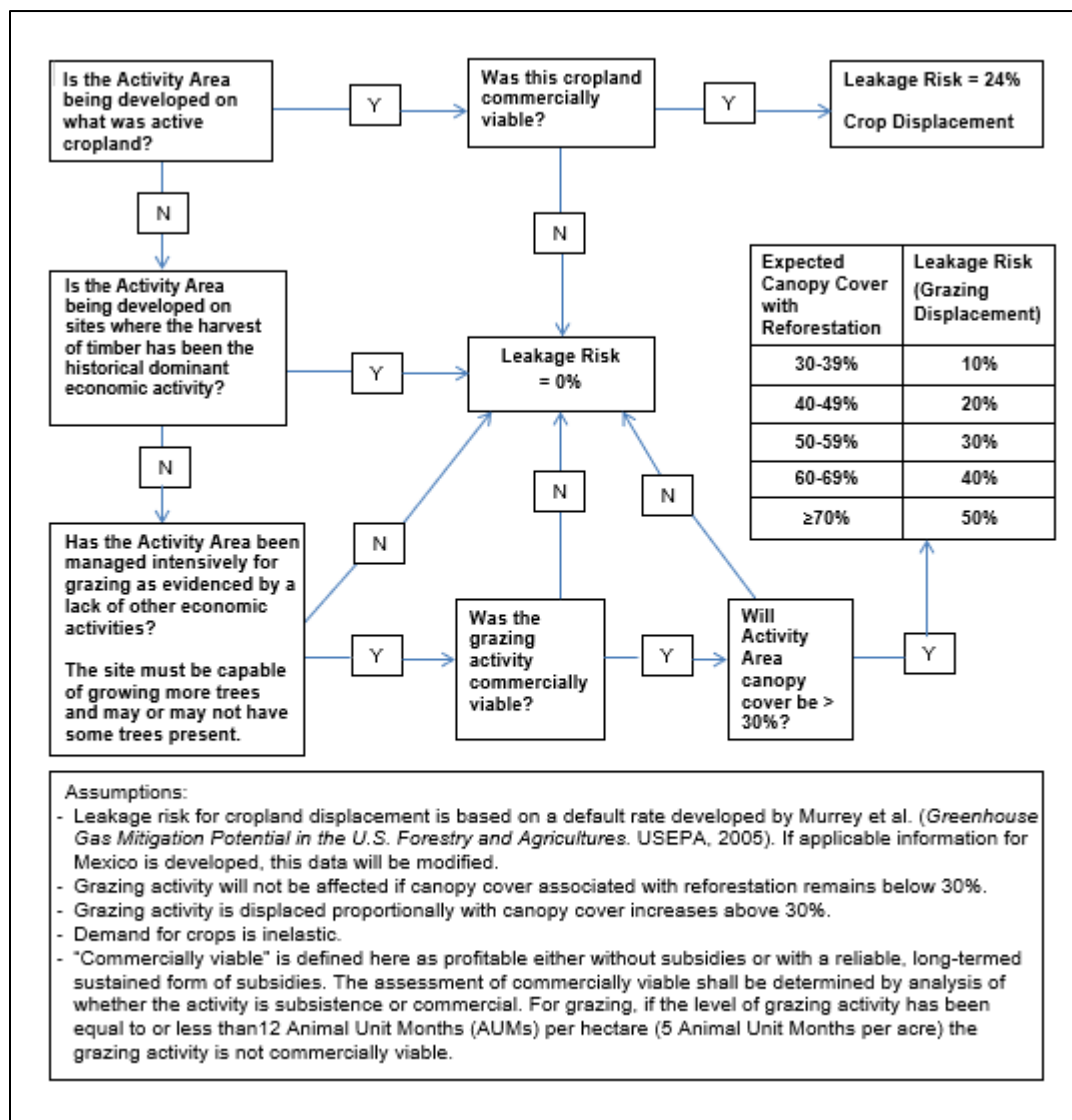


Figure 5.1. Risk Assessment for Reforestation, Restoration, Agroforestry and Silvopastoral Activity Areas

Equation 5.3. Secondary Effect Emissions for Reforestation, Restoration, Agroforestry and Silvopastoral Activities

| | | |
|--|--|--------------------|
| $SE_y = (\Delta AC_{onsite,y} - \Delta BC_{onsite,y}) \times LR \text{ or } 0, \text{ whichever is lower}$ | | |
| Where, | | <u>Units</u> |
| SE_y | = Secondary Effects due to shifting of cropland or grazing activities | tCO ₂ e |
| $AC_{onsite,y}$ | = Actual onsite carbon in standing live and dead trees in Activity Areas as inventoried for reporting period y | tCO ₂ e |
| $BC_{onsite,y}$ | = Baseline onsite carbon in standing live and dead trees in Activity Areas as estimated for reporting period y | tCO ₂ e |
| LR | = Leakage Risk Percentage (Figure 5.1) | % |

5.5.3 Secondary Effects for Improved Forest Management Activities

For Improved Forest Management activities, Secondary Effects can occur if a project reduces harvesting in the Activity Area(s), resulting in an increase in harvesting (along with associated emissions) outside the Activity Area(s).

The assumption under this protocol is that Secondary Effects may occur because of project activities. However, the amount of Secondary Effects is dependent on how much harvesting occurs on the Activity Area relative to the baseline scenario. This protocol considers the impacts of shifting harvest activities over the project life. Improved Forest Management activities, where harvesting is anticipated to be an ongoing activity over the project life, are anticipated to increase harvest levels over time compared to baseline management due to improved stocking and growth levels and harvesting closer to an optimal age to enhance forest productivity. However, Secondary Effects must be reported annually due to the risk that Secondary Effects may be occurring in any given year.

Equation 5.4 must be used to estimate the Secondary Effects risk for Improved Forest Management activities. Recognizing that Secondary Effects from projects may be influenced by long term harvesting trends, the evaluation in Equation 5.4 considers how actual cumulative harvest amounts vary from baseline cumulative harvest amounts since activity inception.

When baseline cumulative harvested carbon exceeds actual cumulative harvested carbon - *but actual onsite harvested carbon exceeds the baseline amount in a given reporting period* - net GHG reductions are increased (Equation 5.4.B). This allows for prior deductions for Secondary Effects to be recouped, because the risk has been lowered. However, once actual cumulative harvest amounts exceed baseline cumulative harvest amounts, Secondary Effects risk is zero, and will remain zero for as long as actual cumulative harvest amounts exceed baseline cumulative harvest amounts (Equation 5.4.A). Under no circumstance shall the net balance of Secondary Effects CRTs over the course of an Activity Area life be positive. However, maintaining actual cumulative harvest above baseline cumulative harvest will allow an Activity Area to accrue any uncredited positive carryover that can counteract the amount of future Secondary Effects deductions that would be applied if baseline cumulative harvested carbon were to exceed actual harvested carbon again (Equation 5.4.C). The Reserve provides a calculation workbook for quantifying Secondary Effects risk (in addition to the other calculations required by the protocol).

Values used for onsite carbon harvested in the Activity Area actual and baseline scenarios ($AC_{hv,n}$ and $BC_{hv,n}$) shall represent all harvested trees, not just merchantable species.

Equation 5.4. Secondary Effects Emissions for Improved Forest Management Activity Areas**Equation 5.4.A:**

$$\text{If } \sum_{n=1}^y (AC_{hv,n} - BC_{hv,n}) \geq 0, \text{ and } \sum_{n=1}^{y-1} SE_n \geq 0,$$

$$\text{then } SE_y = 0^\dagger$$

Equation 5.4.B:

$$\text{If } \left(\sum_{n=1}^y (AC_{hv,n} - BC_{hv,n}) < 0 \text{ and } \sum_{n=1}^{y-1} SE_n < 0 \right) \text{ or } \left(\sum_{n=1}^y (AC_{hv,n} - BC_{hv,n}) \geq 0 \text{ and } \sum_{n=1}^{y-1} SE_n < 0 \right),$$

$$\text{then } SE_y = \text{MIN} \left((AC_{hv,y} - BC_{hv,y}) \times 20\%, \left| \sum_{n=1}^{y-1} SE_n \right| \right)$$

Equation 5.4.C:

$$\text{If } \sum_{n=1}^y (AC_{hv,n} - BC_{hv,n}) < 0 \text{ and } \sum_{n=1}^{y-1} SE_n \geq 0,$$

$$\text{then } SE_y = \text{MIN} \left(\sum_{n=1}^{y-1} SE_n + ((AC_{hv,y} - BC_{hv,y}) \times 20\%), 0 \right)^\dagger$$

Where,

Units

| | | | |
|-------------|---|--|--------------------|
| SE_y | = | Estimated annual Secondary Effects in the current reporting period y | tCO ₂ e |
| SE_n | = | Estimated annual Secondary Effects in reporting period n | tCO ₂ e |
| $AC_{hv,n}$ | = | Actual amount of onsite carbon harvested in reporting period n (prior to delivery to a mill) | tCO ₂ e |
| $BC_{hv,n}$ | = | Estimated average baseline amount of onsite carbon harvested in reporting period n (prior to delivery to a mill), as determined above | tCO ₂ e |
| $AC_{hv,y}$ | = | Actual amount of onsite carbon harvested in current reporting period y (prior to delivery to a mill) | tCO ₂ e |
| $BC_{hv,y}$ | = | Estimated average baseline amount of onsite carbon harvested in current reporting period y (prior to delivery to a mill), as determined in Section 5.5.3.1 | tCO ₂ e |

[†] Secondary Effects are not awarded CRTs but may accrue as positive carryover. Annual accruals are calculated in the same way that Secondary Effects are calculated when baseline cumulative harvested carbon exceeds actual harvested carbon. Cumulative Secondary Effects as of the current reporting period are calculated by the following: $\sum_{n=1}^y SE_{as,n} = \sum_{n=1}^{y-1} SE_{as,n} + ((AC_{hv,y} - BC_{hv,y}) \times 20\%)$. Positive carryover reduces or negates future Secondary Effects deductions.

5.5.3.1 Developing the Baseline of Harvested Wood Products

A baseline of harvested wood products is developed based on the six years' worth of harvest data prior to the Activity Area start date, or the longest set of harvest data available if records going back six years do not exist. Since harvest volume usually originates as volumetric reports,

there are several steps to complete the conversion, using default conversion estimators. The process steps are provided below, followed by an example in Figure 5.2.

Step 1. Develop historical annual values of harvested wood products and develop an average.

The Forest Owner must be careful to align any harvested wood products reports or estimates with the boundaries of the Activity Area. Harvest that occurred outside of the Activity Area shall not be included in the dataset. Historical data shall be based on annual reports (submitted to SEMARNAT, if applicable). The dataset shall be presented by conifers and hardwoods in the Project Report on an annual basis for the past six full calendar years prior to the Activity Area start date, or the longest time in which data were collected if records going back six full years are not available. An average must be developed for both species groups.

Step 2. Convert the log volume to whole tree volume.

Since a shift in GHG emissions would affect whole tree volume, not just the portion associated with wood products, the value must be adjusted to estimate the whole tree volume associated with the reported log volume. This is done by dividing the log volume by 0.6. This default value is assumed to be the same for hardwoods and softwoods.

Step 3. Convert the whole tree volume to biomass.

Multiply the conifers by 0.53 and hardwood by 0.725 to develop a value for conifers and hardwoods of tonnes per cubic meter and sum the conifer and hardwood values.

Step 4. Convert the biomass values to CO₂e.

Multiply the summed biomass values by 0.5 to convert the biomass values to tonnes of carbon and multiply by 3.67 to calculate tonnes of CO₂e.

Step 5. Enter the tonnes CO₂e associated with baseline harvested wood products into the Secondary Effects worksheet provided by the Reserve.

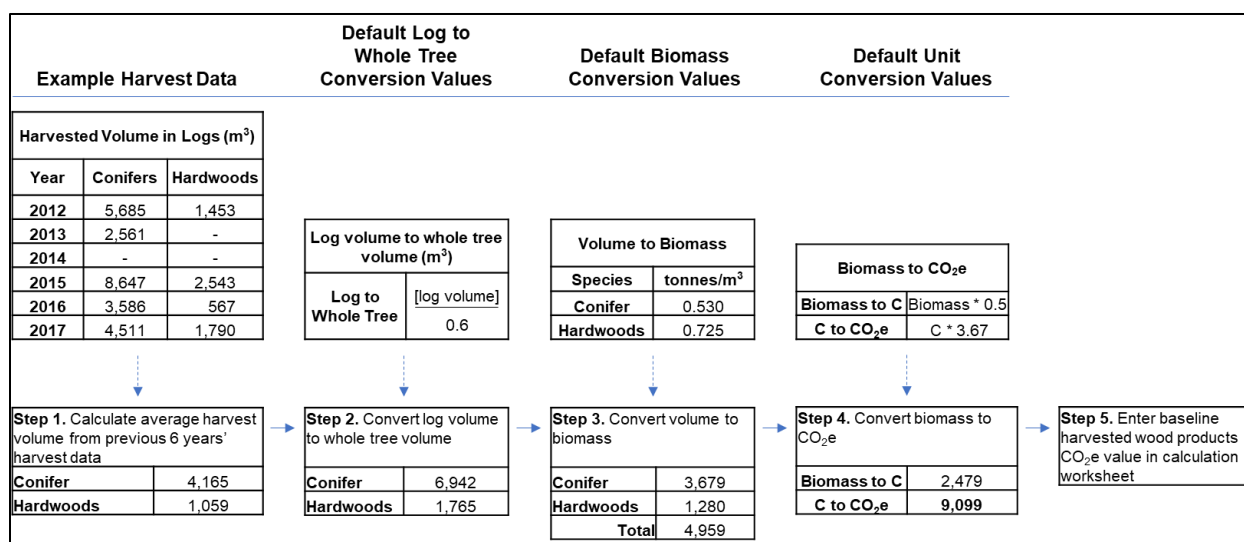


Figure 5.2. Example of the Computational Steps to Develop an Activity Area Baseline of Harvested Wood Products

5.5.3.2 Developing the Annual Report of Harvested Wood Products

An annual report of harvested wood products must be calculated to compare to the baseline harvested wood products estimate developed using the guidance in Section 5.5.3.1. The inclusion of a harvested wood products value in the Reserve's Secondary Effects calculation tool only occurs when there is at least 365 days' (one year's) worth of harvest data to compare to the baseline estimate. Therefore, the project may be exempt from calculating Secondary Effects for the first reporting period of the Activity Area, unless the first reporting period happens to be one full year. Reported wood products are included from the last full calendar year's data for the Activity Area and based on the same annual reports submitted to SEMARNAT. As an example, a monitoring period that begins on 1-April-2017 and concludes on 31-March-2018 will use the harvest report from 2017 as the basis of the annual report of harvested wood products for the Secondary Effects calculations. In this example, the 2017 harvest data would only be included in the annual report of harvested wood products and would not be included in the historical average for the baseline harvested wood products. Do not prorate the harvested wood products values from two different calendar year reports.

The annual calculation is conducted using the same approach to conversions that was used for the baseline calculation, excepting that the annual reporting is based on an actual single year's value rather than an averaged set of data.

5.5.3.3 Calculating Secondary Effects from Improved Forest Management Activities

Annual Secondary Effects (SE_y) are calculated as described in Equation 5.4, using baseline and actual annual harvest amounts as determined above. The results of this calculation are then applied to Equation 5.1.

Table 5.1. Examples: How Secondary Effects Can Be Recouped and Positive Carryover Can Be Applied Over Time

| a. Qualitative example | | | | | |
|--|-------------------------------|------------|-----------------------------|---|-------|
| Reporting Period | Greater of Actual or Baseline | | Protocol Equation Reference | Secondary Effect | |
| | Annual | Cumulative | | | |
| 1 | Baseline | Baseline | Equation 5.4.B | Negative Secondary Effect resulting in deduction applied to GHG reductions | |
| 2 | Actual | Baseline | Equation 5.4.B | Positive Secondary Effect resulting in recouping of previously deducted GHG reductions up until the cumulative Secondary Effect is zero | |
| 3 | Actual | Actual | Equation 5.4.A | No Secondary Effect, excepting any previous negative Secondary Effect deductions that have not been recouped and including any positive Secondary Effects that are carried over to the following year | |
| 4 | Baseline | Actual | Equation 5.4.C | No Secondary Effect, though adjusting any positive Secondary Effect carryover and carrying forward any remaining balance to the following year | |
| 5 | Baseline | Baseline | Equation 5.4.B | Negative Secondary Effect resulting in deduction applied to GHG reductions, with deduction lowered by any positive secondary effects carryover from when actual cumulative harvest carbon exceeded baseline cumulative harvested carbon | |
| b. Quantitative example | | | | | |
| Reporting Period | 1 | 2 | 3 | 4 | 5 |
| Annual actual carbon in harvested trees | 500 | 1,400 | 1,400 | 800 | 800 |
| Annual baseline carbon in harvested trees | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Cumulative actual carbon in harvested trees | 500 | 1,900 | 3,300 | 4,100 | 4,900 |
| Cumulative baseline carbon in harvested trees | 1,000 | 2,000 | 3,000 | 4,000 | 5,000 |
| Cumulative difference between actual and baseline CO ₂ in harvested trees | (500) | (100) | 300 | 100 | (100) |
| Annual difference between actual and baseline CO ₂ in harvested trees | (500) | 400 | 400 | (200) | (200) |
| Gross annual Secondary Effects | (100) | 80 | 80 | (40) | (40) |
| Adjusted gross annual Secondary Effects, not allowing positive cumulative Secondary Effects but not including positive Secondary Effects carryover | (100) | 80 | 20 | 0 | (40) |
| Carryover of positive Secondary Effects from prior year | NA | 0 | 0 | 60 | 20 |
| Net annual Secondary Effects | (100) | 80 | 20 | - | (20) |

5.6 Calculating Total CRTs to be Issued

Under this protocol, credits are issued based on the proportion of carbon that is stored or secured through contract over a 100-year permanence period. Tonne-year accounting principles are used to quantify the time-value of storing carbon as a relative proportion of the 100-year permanence. The longer that sequestered and verified carbon is maintained (or contractually secured), the more credits are issued. The full credit for all carbon sequestered will be issued 100 years after the date it was initially sequestered, or to the full temporal extent the sequestered carbon is secured through contractual agreement. If a contractual agreement guarantees the maintenance of carbon stocks for a period longer than one year (e.g., 30 years), then credits will be issued based on the time-value of storing carbon for the guaranteed period, relative to 100 years (e.g., the time-value for storing carbon for 30 out of 100 years).

5.6.1 Tonne-Year Accounting and Credit Issuance

In order to meet the permanence requirements of this protocol, one credit (CRT) is issued for each tonne of CO₂e removed from the atmosphere for a period of 100 years. Tonnes of CO₂e sequestered and stored for shorter periods will receive a fractional amount of credits according to the length of time the sequestered CO₂e is stored and/or contractually secured. Specifically, for each additional tonne of CO₂e that is stored and verified, credits will be issued proportional to the value of the atmospheric impact of sequestering and maintaining each tonne for the amount of time in which it is secured. This is achieved by multiplying the number of tonnes of sequestered CO₂e in a given reporting period by the simplified radiative forcing coefficient of 1% per year. If a Forest Owner commits to maintaining carbon for a period longer than one year, credits will be issued proportional to the length of the commitment – e.g., 0.3 credits per tonne that is secured for 30 years.

The commitment to secure CO₂e must be established through the PIA (see Section 3.15) with the Reserve. Equation 5.5, below, shows the formula for determining the number of credits that will be issued for a carbon sequestered in any given year.

Equation 5.5. Formula for Credit Issuance under Tonne-Year Accounting

| | | |
|---|--|--------------------|
| $CRT_y = \sum_{n=1}^y (QR_n \times (YR_n + CL_y) \times 0.01 - PC_n)$ | | |
| Where, | | <u>Units</u> |
| CRT_y | = Sum of credits to be issued in reporting period y | CRTs |
| QR_n | = Quantified GHG removals for reporting period n , for each reporting period in which additional carbon was sequestered | tCO ₂ e |
| YR_n | = Length of time since the initiation of reporting period n in which the additional carbon was sequestered, for each reporting period in which additional carbon was sequestered | Years |
| CL_y | = Length of contractual agreement into future from current reporting period y that secures all sequestered carbon | Years |
| PC_n | = Previous credits issued for reporting period n , for each reporting period in which credits were issued | CRTs |

The benefit of the approach is that projects develop an ongoing economic incentive to protect against reversals over time, based on an expected stream of future credits as long as carbon is maintained.

Quantified GHG removals that have been verified through full or desk verifications, but are not yet secured are recognized by the Reserve as Verified Removals (VRs) and are not issued as CRTs until they have been secured through contract or time (see Section 7.4.1). If a contractual commitment is extended or renewed, further CRTs may be released based on the length of the extension. The proportion of further CRTs issued is thus based on the length of time the VRs will be secured and the simplified radiative forcing coefficient of 1% per year.

For example, if 100 tonnes of CO₂e is sequestered in the first reporting period, (determined by the Forest Owner to be one year from the start date), and the Forest Owner submits the Project Report at the end of the first reporting period, and secures the 100 tonnes of CO₂e by contract against reversals for 30 years, then 31 CRTs will be issued upon verification. This is based on using the simplified radiative forcing coefficient of 1% per year multiplied by the combination of the 1 year for which the tonnes have already been maintained and the 30 years for which the tonnes are secured through contract :

$$CRT_p = (100 \times (1 + 30) \times 1\% - 0)$$

Alternatively, if the first reporting period were 12 months, the first Project Report was not submitted until 12 months later at the end of the second reporting period, and the project was thus not verified until after the second reporting period, then 32 credits would be issued following verification.

$$CRT_p = (100 \times (2 + 30) \times 1\% - 0)$$

In this second example, after the initial verification, the project would have 68 VRs that have not yet been issued as CRTs out of the initial 100 tonnes of CO₂e that were sequestered and verified. If, in the next year, the contract is extended by another year (so that the contract still has a term of 30 years total), using the simplified 1% radiative forcing coefficient, another 1 VR would be converted into a CRT in addition to the prior credits because the project has demonstrated another year toward the 100-year permanence requirement. Contracts may be extended in this way until the end of the contractual commitment reaches a date that is 100 years after the carbon was first sequestered. At that point, a total of 100 credits will have been issued for the 100 tonnes CO₂e sequestered in the first reporting period. An example is provided in Table 5.2, again using the simplified 1% radiative forcing coefficient.

Table 5.2. Example of CRT Issuance

| Assumptions | | | 1. Contract length = 30 years and is renewed annually. 2. Reporting period 1 ends one year from the start date. 3. Three years of reporting are shown below. | | | | | | |
|---|------------------------------------|----------------------------|--|------------------------------------|----------------------------|------------------------------------|------------------------------------|----------------------------|---|
| The amount of CRTs issued in any annual reporting period is determined by the amount of additional CO ₂ e sequestered in the reporting year multiplied by the length of the contract term that secures the CRTs plus 1/100th multiplied times the CRTs issued in the reporting period to account for the project having met 1% of its 100-year permanency requirement. | | | | | | | | | |
| Reporting Period 1 | | | Reporting Period 2 | | | Reporting Period 3 | | | |
| Quantified GHG Removals (QR_1) | | 100 | Quantified GHG Removals (QR_2) | | 300 | Quantified GHG Removals (QR_3) | | 100 | |
| Reporting Period | Previous Credits Issued (PC_n) | Credits Issued (CRT_1) | Reporting Period | Previous Credits Issued (PC_n) | Credits Issued (CRT_2) | Reporting Period | Previous Credits Issued (PC_n) | Credits Issued (CRT_3) | Total CRTs Issued Each Reporting Period |
| 1 | 0 | 31 | 1 | - | - | 1 | - | - | 31 |
| 2 | 31 | 1 | 2 | 0 | 93 | 2 | - | - | 94 |
| 3 | 32 | 1 | 3 | 93 | 3 | 3 | 0 | 31 | 35 |
| Total CRTs issued through Reporting Period 3 | | | | | | | | | 160 |

Forest Owners may also choose not to contractually secure carbon sequestered by a project. In this case, credits will be issued over time based on the quantity of carbon that remains stored (as determined through monitoring and verification) in any given year relative to the 100-year permanence period. For example, if 100 tonnes of CO₂e is sequestered and verified in year one, one credit would be issued in year one, based on the simplified radiative forcing coefficient of 1% per year. If the full 100 tonnes remains stored and is verified in year two, an additional one credit would be issued in year two, again based on the simplified 1% for the radiative forcing coefficient. The verifying and crediting would continue as such until the full 100 credits are issued by the end of the 100-year permanence period.

6 Ensuring the Permanence of Credited GHG Removals

The Reserve requires that all credited GHG removals be effectively “permanent.” For Forest Projects, this requirement is met by ensuring that the carbon associated with credited GHG removals remains stored for at least 100 years. However, as discussed in Section 3.15, under the MFP, projects may commit to maintaining carbon sequestered due to project activities for any length of time. Under the MFP, credits are issued based on the proportion of carbon that is stored or secured through contract over a 100-year permanence period. Tonne-year accounting principles, as described in Section 5.6 are used to quantify the time-value of storing carbon as a relative proportion of the 100-year permanence.

6.1 Definition of a Reversal

A GHG removal can be “reversed” if the carbon stored because of the removal is subsequently released to the atmosphere. Under tonne-year accounting, reversals need to be compensated for if they affect CRTs that are contractually secured against reversal. A reversal occurs if the quantified GHG removals for a given reporting period (QR_y in Equation 5.1) are negative, and a contractual obligation to retain carbon sequestered by the project has not yet expired.

Under this protocol, credits are considered reversed in the opposite order to which the credit was quantified and verified. For example, suppose a project was credited 100 tonnes of carbon in year 1 and another 50 tonnes in year 2. In year 3, a reversal occurs that releases 75 credits to the atmosphere. In this situation, the 50 credits issued in year 2 are considered reversed, along with 25 of the credits issued in year 1.

Reversals are considered avoidable if they are the direct result of human activities through acts of gross negligence. Reversals are considered unavoidable if they are the result of natural events, such as wildfire, insect-related mortality or wind.

6.2 Compensation Formula for Reversals

If a reversal affects secured CRTs, credits must be retired to fulfill the terms of the contract that secures the CRTs. Equation 6.1 shows the formula to determine how many CRTs to retire to compensate for a reversal affecting a specific vintage of sequestered carbon.

Equation 6.1. Formula to Determine the Number of CRTs to Retire to Compensate for a Reversal from a Specific Vintage

| | | |
|---|---|--------------------|
| $CRT_{ret} = RT_y \times s \times 0.01$ | | |
| <i>Where,</i> | | <u>Units</u> |
| CRT_{ret} | = Number of credits to be retired | |
| RT_y | = Quantity of secured tonnes in reporting period y that has been reversed | tCO ₂ e |
| s | = Number of years remaining in the term of any contract securing the CRTs in reporting period $y-1$ against reversals, including reporting period y | |

The quantity CRT_{ret} must be determined for each vintage of carbon affected by a reversal. As indicated above, carbon is considered reversed in the opposite order to which its sequestration was quantified and verified. Furthermore, for quantification purposes, a reversal is assumed to

have occurred at the start of the reporting period during which it occurred, regardless when during the reporting period it actually occurred.

6.2.1 Compensation of Unavoidable Reversals

An Unavoidable Reversal is any reversal that is not due to the Forest Owner's negligence, gross negligence or willful intent, including natural events like wildfires or disease. Requirements following an Unavoidable Reversal are as follows:

1. If the Forest Owner determines there has been an Unavoidable Reversal, the Annual Monitoring Report must clearly indicate that an Unavoidable Reversal has occurred.
2. The Forest Owner must explain the nature of the Unavoidable Reversal as part of the annual monitoring report and provide an estimate of onsite carbon stocks no later than 2 years following the occurrence (in units of CO₂-equivalent metric tons). Exceptions to this timing may be made if the Reserve agrees that an extension is warranted.
3. No transactions will be allowed until the reversal is verified.

If the Reserve agrees that the reversal is unavoidable in origin, the Reserve will retire a quantity of CRTs from its Buffer Pool (see below) for each vintage affected by the reversal, according to Equation 6.1. The tracking of carbon stocks and any reversals will be transparent within the Registry and clearly indicate that the compensation has occurred.

6.2.2 Compensation of Avoidable Reversals

An Avoidable Reversal is any reversal that is due to the Forest Owner's negligence, gross negligence or willful intent, including harvesting, development, or harm to the Activity Area. Reversals are detected during annual monitoring and verification events. Subsequent to the identification of a reversal, the following requirements apply:

1. A written description and explanation of the reversal must accompany the Annual Monitoring Report.
2. Within one year of receiving an Avoidable Reversal notice, the Forest Owner must provide the Reserve with an estimate of current onsite carbon stocks. The Forest Owner will then need to complete verification of those onsite carbon stocks within the following year. No transactions will be allowed until the reversal is verified.
3. Within two years of receiving the Avoidable Reversal notice, the Forest Owner must retire a quantity of CRTs determined according to the formula in Equation 6.1 for each vintage affected by the reversal. Project registration and transaction activities will be suspended until the required amount of CRTs is retired.
4. Failure to compensate within the stated time will result in restitution as defined within the contract securing the carbon.

6.2.3 Role of Monitoring, Reporting, and Verification in the Finding of a Reversal

A reversal can be identified through monitoring by Forest Owners and/or during full verifications by third-party verifiers. Since Forest Owners are responsible to maintain current inventories of onsite carbon stocks and submitting Annual Monitoring Reports, a reversal can be identified by a Forest Owner as part of updating their inventory estimates for growth, harvest, and any other disturbances. Third-party verifiers can identify a reversal by a finding that the inventory is incorrectly characterized in the monitoring report; verifiers should be observant to disturbances

while in the process of verifying inventory onsite and confirm that any noted disturbances have been properly reported.

6.2.4 The Reserve Buffer Pool

The Buffer Pool is a holding account for CRTs that is administered by the Reserve. All Forest Projects must contribute a percentage of CRTs to the Buffer Pool any time they are issued CRTs for secured carbon. Each Forest Project contribution is determined by Equation 6.2, as described in the following section. If a Forest Project experiences an Unavoidable Reversal of GHG removals, the Reserve will retire a number of CRTs as indicated in Section 6.2.1. Contributions are also required from each project for Avoidable Reversal risks to ensure the program remains whole in the event Avoidable Reversals are not compensated by a Forest Owner. The Buffer Pool acts as a general insurance mechanism against reversals for all Forest Projects registered with the Reserve.

6.2.4.1 Determination of Buffer Pool Contribution

Forest Owners must apply a risk reduction to their Forest Project to account for project risks associated with wildfire, disease or insects, and hurricanes or other natural disturbances. The credits associated with the Buffer Pool are used primarily for reversals associated with natural disturbances, but the Reserve may use the pool at its discretion for any reversal that may occur. The project's contribution to the Buffer Pool is a default deduction and is calculated as shown in Equation 6.2.

Equation 6.2. Contribution of Project Credits to Buffer Pool

| | | |
|------------------------------------|----------|---|
| Contribution to Buffer Pool | = | $0.08 \times \text{Net CRTs}_{y, \text{RP Y}}$ |
| <i>Where,</i> | | |
| Net CRTs _y | = | Carbon secured (through contractual agreement or maintenance, net of confidence deductions and leakage adjustments) and verified in reporting period y; refer to description in Section 5.6 |

6.3 Disposition of Forest Projects after a Reversal

If a reversal lowers the Forest Project actual standing live or dead carbon stocks below its approved baseline standing live or dead carbon stocks, the Forest Project will automatically be terminated. In this circumstance, the original approved baseline for the project would no longer be valid. If the Forest Project is automatically terminated due to an Unavoidable Reversal, another project may be initiated and submitted to the Reserve for registration on the same Project Area. New projects may not be initiated on the same Project Area if the Forest Project is terminated due to an Avoidable Reversal.

If the Forest Project has experienced a reversal and its actual standing live or dead carbon stocks are still above the approved baseline levels, it may continue without termination as long as any reversal of secured CRTs has been compensated. The project must continue contributing to the Buffer Pool in future years based on Equation 6.2.

7 Project Documentation, Monitoring, and Verification

This section provides requirements and guidance on project monitoring, reporting rules and procedures. Table 7.1 provides a summary of many of the documentation and monitoring reports and forms required by the protocol. The table displays the schedule associated with the reporting and submission requirements. Details related to project documentation, monitoring, and verification are described below.

Forest Projects participating in an Aggregate (see Section 3.5) have a less frequent verification schedule. For guidance on monitoring and verification of projects in an Aggregate, see Appendix E. Forest Projects participating in an Aggregate are still required to follow the annual reporting requirements outlined below.

Table 7.1. List of Important Documents and Activities by Timing of Requirement for Forest Carbon Projects

| Timing of Event | Project Submittal | Verification Preparation | Full Verification | | Annual Reporting between Full Verifications | |
|---|---|--|--------------------|--|---|---------------------------|
| | At least 2 months prior to verification | At least 1 month prior to first verification | Project Initiation | Generally, Every 6 Reporting Periods ⁴⁶ | With Desk Verification | Without Desk Verification |
| Document/Monitoring Report | | | | | | |
| Project Submittal Form | X | | | | | |
| Land Tenure Documentation | | X | | | | |
| Project Report | | X | | | | |
| Attestation of Title | | | X | X | X | |
| Attestation of Regulatory Compliance | | | X | X | X | |
| Attestation of Voluntary Implementation | | | X | X | X | |
| Attestation of No Conflicts/Government issued document attesting no conflicts | | | X | X | X | |
| Annual Monitoring Report | | | X | X | X | X |
| Carbon Monitoring Worksheet | | | X | X | X | X |
| Native Species Report from CALCBOSK (if applicable) | | | X | X | | |

⁴⁶ Full visit verifications are generally required at least every 6 Reporting Periods; however, there are some exceptions. Please see Section 8.2 for all site visit verification scheduling requirements and exceptions for standalone Forest Projects. For Forest Projects in an aggregate, full verifications may also be less frequent than every 6 Reporting Periods. The schedule for full verifications for Forest Projects in an aggregate depends on the number of Activity Areas in the aggregate. Please see Appendix E for further information on the verification schedule of aggregates.

| Timing of Event | Project Submittal | Verification Preparation | Full Verification | | Annual Reporting between Full Verifications | |
|---|---|--|--------------------|--|---|---|
| | At least 2 months prior to verification | At least 1 month prior to first verification | Project Initiation | Generally, Every 6 Reporting Periods ⁴⁶ | With Desk Verification | Without Desk Verification |
| Document/Monitoring Report | | | | | | |
| Monitoring Report for Maintenance of Forest Carbon Stocks in the Project Area (if applicable) | | | | X | | |
| Forest Carbon Project Concepts, Anticipated Benefits, and Project Approval (SS1-SS5)** | | | X | | | |
| Meeting Notification, Participation, and Documentation (SS6-SS8)** | | | X | X | X | X |
| Project Governance (SS9-SS11)** | | | X | In the event of a change in Project Coordinator | In the event of a change in Project Coordinator | In the event of a change in Project Coordinator |
| Verification Report | | | X | X | X | |
| Verification Statement | | | X | X | X | |
| Project Implementation Agreement (if applicable) | | | X | X | X | |

* Projects participating in an Aggregate have a less frequent verification schedule.

** Social safeguards (SS) are only required for projects on *ejidal* or communal lands.

7.1 Project Documentation

Each of the following documents is discussed in this section in greater detail, unless addressed in a different section as explained below. All documents are provided for the Forest Project unless stated to be required per Activity Area.

Forest Owners or project developers must provide the following documentation to the Reserve in order to list⁴⁷ a Forest Project.

- Project Submittal Form
- KML file displaying the general Project Area (does not need to be finalized)

Along with the documents required for all reporting periods and all verifications (see below), Forest Owners or project developers must provide the following documentation to the Reserve in order to register⁴⁸ a Forest Project (undergo initial verification and receive CRTs).

⁴⁷ The project is considered “listed” and made publicly available on the Reserve once a Project Submittal Form is accepted for filing.

⁴⁸ The project is considered “registered” the first time it is verified and accepted by the Reserve.

- Project Report
- Final KML file of Project Area
- Land Tenure Status (see Section 3.6)
- Native Species Report per Activity Area (if applicable; environmental safeguards 2 and 3; see Section 3.10)

The Forest Owner must provide the following monitoring reports to the Reserve for each reporting period, regardless of undergoing a verification. The only exception is for projects that wait to submit their Project Report until the end of the second reporting period. Such projects do not need to separately submit the following documents for the first reporting period. These projects would be required to submit the following documents for both reporting period 1 and 2 at the time of submitting the Project Report.

- Annual Monitoring Report (form provided on the Reserve website⁴⁹)
- Carbon Monitoring Worksheet (CMW)
- Social safeguard documentation (if applicable; see Section 7.2)

The Forest Owner must provide the following documentation each time a Forest Project is verified, including initial verification, all full verifications, and desk verifications, in order for the Reserve to issue CRTs for quantified GHG removals.

- Signed Attestation of Title form (see Section 3.6.1)
- Signed Attestation of Regulatory Compliance form (see Section 3.8)
- Signed Attestation of Voluntary Implementation form (see Section 3.12.1)
- Project Implementation Agreement (if applicable; see Section 3.15)
- Updated map of Activity Areas, which must delineate all areas affected by a natural disturbance in excess of 5 hectares or harvest during the reporting period being reported
- Verification Report (provided by verifier; see Section 8)
- Verification Statement (provided by verifier; see Section 8)

Along with the above documents, the Forest Owner must provide the following monitoring reports each time a Forest Project undergoes a full verification in order for the Reserve to issue CRTs for quantified GHG removals.

- Native Species Report per Activity Area (if applicable; environmental safeguards 2 and 3; see Section 3.10)
- Monitoring Report for Maintenance of Forest Carbon Stocks in the Project Area (if applicable)

7.1.1 Project Submittal Form

The Project Submittal Form is required to determine if the project meets general eligibility requirements of the protocol and to establish a relationship between the Forest Owner and the Reserve. The project is considered “listed” and made publicly available on the Reserve once a Project Submittal Form is accepted for filing.⁵⁰ The form is a template that provides a general description of the project’s environmental, social, and land tenure conditions to be outlined. It is

⁴⁹ <http://www.climateactionreserve.org/how/program/documents/>

⁵⁰ In order to submit a project, an account must first be set up with the Reserve. Account registration only needs to occur once; any number of projects can be registered under the same account. See the Reserve Offset Program Manual for further information.

intended to enable the Reserve staff to become familiar with the project's environmental and social aspects, project concepts for increasing carbon stores, and information related to eligibility requirements. It is also designed to highlight any potential challenging areas of the project that might require additional consideration prior to fully developing the project. A copy of the form is available at: <http://www.climateactionreserve.org/how/program/documents/>.

A KML file displaying the general Project Area is required along with the Project Submittal Form. The KML file is not considered final at project submittal. Revisions to the Project Area may occur up until the project is initially verified.

7.1.2 Project and Monitoring Reports

The Project Report is a required document for reporting project information. Project Reports are intended to serve as the main project document that thoroughly describes how the project meets eligibility requirements, the project's vegetative and social framework, and the current forest conditions, threats, and activities associated with the Project Area. The final KML file displaying the Project Area must be submitted with the Project Report along with a map of the Activity Area boundaries at the time of the initial verification (see Section 2.2). The map of Activity Area boundaries must be updated anytime the Forest Project adds additional Activity Areas. For *ejidos*, the Project Area map must be updated anytime *ejido* parcels obtain *dominio pleno* and are removed from the Project Area (see Section 2.2.1). The Project Report also outlines how the project complies with terms for additionality.

Project Reports are intended to communicate project information in a transparent manner and be available to the public. Project Reports must be of professional quality and free of incorrect citations, missing pages, incorrect project references, etc. The initial monitoring report submitted simultaneously with the Project Report establishes much of the project's base information.

The Project Report can be submitted any time after the project is listed but must be submitted within 12 months of the end of the second reporting period. The project can undergo initial verification as soon as the Project Report and the Annual Monitoring Report for the first reporting period is submitted. Alternatively, Projects can postpone their initial verification until the second reporting period Annual Monitoring Report has been submitted but must complete verification within 12 months of the second reporting period. A Project Report template has been prepared by the Reserve and is available on the Reserve's website. The template is arranged to help ensure that all requirements of the protocol are addressed.

Monitoring is the process of regularly collecting and reporting data related to a project's performance. Annual monitoring of Forest Projects is required to ensure up-to-date estimates of project carbon stocks and provide assurance that GHG removals achieved by a project have not been reversed. An updated map of Activity Areas demarcating all areas affected by a natural disturbance in excess of 5 hectares or harvest must also be included in the Annual Monitoring Report for any reporting period undergoing a verification. Additionally, monitoring ensures the project remains in compliance with environmental and social safeguards. Monitoring is required for a period of 100 years following the final issuance of CRTs to a project or for the length of time determined in the Project Implementation Agreement, or for the length of time the project remains active. Excepting the flexibility allowed in the submission of the monitoring report for the initial verification (as described below), Annual Monitoring Reports are required to be submitted within 12 months of each reporting period. Monitoring reports are subject to verification per the verification schedule in Section 8.

Figure 7.1 illustrates the optional and final deadline for monitoring reports. Each report must be submitted within 12 months of the given event. For example, project submittal must occur within 12 months of the project start date.

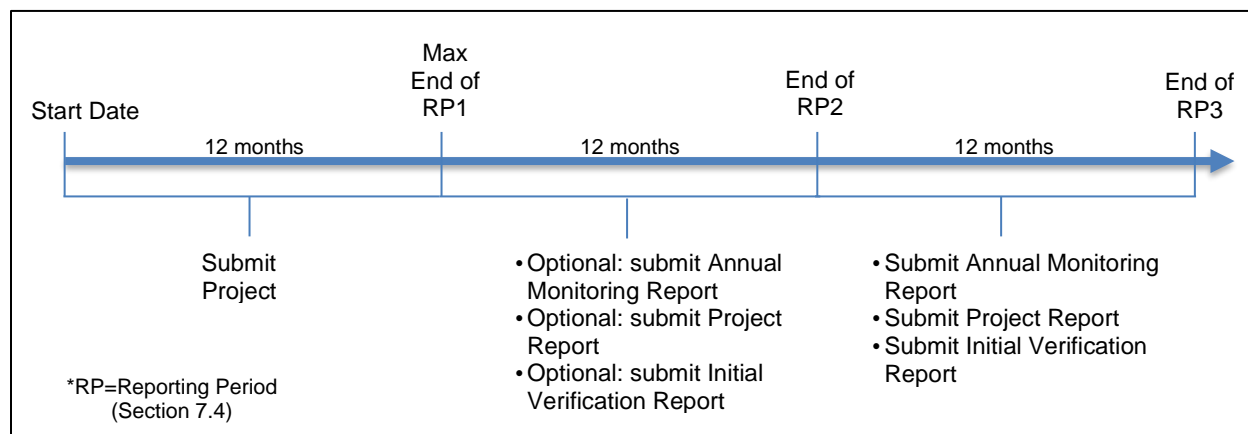


Figure 7.1. Schedule of Monitoring Report Requirements

The following documents related to forest carbon and environmental safeguards must be submitted prior to initial verification and subsequently on an annual basis:

- Annual Monitoring Report
- Carbon Monitoring Worksheet (CMW)

The following documents related to forest carbon and environmental safeguards must be submitted prior to initial verification and subsequently before each full verification for each applicable activity (see Section 3.10).

- Monitoring Report for Native Species (Presence and Composition) per Activity Area
- Monitoring Report for Maintenance of Forest Carbon Stocks in the Project Area

Many of the reports are automated from the Reserve's Microsoft (MS) Access database (CALCBOSK).

7.1.2.1 Annual Monitoring Report

The Annual Monitoring Report is a form that can be downloaded from the Reserve's website⁵¹ and must be submitted to the Reserve on an annual basis. The form is the basis for annual monitoring and requires the submittal of the CMW to be submitted as an attachment. The Annual Monitoring Report must be submitted within 12 months of each reporting period, with the exception of the first reporting period as discussed in Section 7.1.

7.1.2.2 Carbon Monitoring Worksheet

The Reserve will provide an example of the CMW used for tracking forest carbon within the Activity Areas. The CMW can be downloaded from the Reserve's website along with the Quantification Tools User Manual, which provides detailed instructions. For Forest Projects with multiple Activity Areas, Forest Owners should contact the Reserve for the appropriate CMW.

⁵¹ <http://www.climateactionreserve.org/how/program/documents/>

The CMW must be used by Forest Owners and submitted to the Reserve on an annual basis. Data entered into the CMW must be to two significant digits. The CMW is the basis for data reporting of:

1. Live and dead carbon in standing trees associated with baseline and project activity per Activity Area
2. Inventory sampling confidence and adjustments for uncertainty for Activity Area stocks (not applicable for Activity Areas that use the canopy cover inventory methodology)
3. Totaled Verified Removals per Forest Project
4. Contribution to reversal Buffer Pool per Forest Project

The CMW automates the calculation, or provides evidence of:

1. Carbon credits generated by vintage
2. Estimates of Secondary Effects
3. Reversals (if any)
4. Maintenance or increase of standing live and dead carbon stocks over the project life, as determined by a running 10-year average (environmental safeguard 1)

The CMW must be updated and submitted along with the Annual Monitoring Report on an annual basis to reflect changes in forest carbon stocks according to the protocol.

7.1.2.3 Monitoring Report for Native Species (Presence and Composition)

Monitoring is required within the IFM, Restoration, Reforestation, and Large Urban Forestry Activity Areas to ensure compliance with native species requirements and that harvest adheres to the retention requirements (see Section 3.10). The non-carbon requirements within Activity Areas include:

1. Demonstration of continuous progress toward a goal of 95% native species (environmental safeguard 2)
2. Demonstration of continuous progress towards meeting the composition of native species (environmental safeguard 3)

Inventory data from sampling activities provides the basis for monitoring compliance with the native species requirements (environmental safeguard 2 and 3). Inventory data must be updated annually according to guidance in Section 5 and Appendix B to reflect current conditions.

A report must be generated to display the distribution of native species based on percentage representation of trees per hectare within each Activity Area. Continuous progress means that the percentage of native species positively trends toward the targets on a running 10-year basis.⁵² Annual declines are allowed from year to year to address issues of uncertainty associated with inventory estimates. The Activity Area is out of compliance if the Activity Area exceeds a relapse of 3% in any year or if the 10-year rolling average does not show positive improvement of 5% or greater toward the target. CALCBOSK automates the required reports for each Activity Area. Submission of the report is required prior to all full verifications to facilitate verification of environmental safeguards 2 and 3.

⁵² The trend must be positive using a running 10-year average, which means annual fluctuations are allowed and that the metric cannot be calculated until the project has been engaged for 10 years.

7.1.2.4 Monitoring Report for Maintenance of Forest Carbon Stocks in the Project Area

Monitoring is required to ensure IFM, Restoration, Reforestation, Agroforestry, and Silvopastoral activities do not lead to increased harvest or conversion of forests throughout the entire Project Area. The monitoring strategy is based on the repeated estimates of land cover using the methodology described in Appendix A prior to each full verification. The Monitoring Report that must be provided prior to each full verification is generated through CALCBOSK. A carbon inventory of areas outside of Activity Areas is not required.

7.2 Monitoring Guidance for Social Safeguards

The monitoring requirements associated with social safeguards are designed to ensure the requirements specified in Section 3 are being followed for *ejidos* and communities. The schedule of monitoring varies depending on the monitoring theme. Table 7.2 displays the monitoring requirements and schedule for each monitoring theme.

Table 7.2. Monitoring Requirements and Schedule

| Monitoring Theme | Monitoring Requirement | Required Documentation | Schedule of Requirement |
|---|--|---|---|
| SS1 Forest Carbon Project Concepts | The Reserve has prepared a presentation that addresses the concepts of global warming and GHG accounting principles. The presentation must be presented to the community group prior to initial approval of the Forest Project or approval to begin trainings and analysis for the Forest Project (see Section 3.11). The required elements from Section 3, SS6 and SS7 apply to the Assembly. | <ol style="list-style-type: none"> 1. Assembly Act for assembly where presentation was made, including an agenda and any follow up questions and comments. 2. A list of the names of all attendees, along with contact information if available. 3. PowerPoint that presented concepts, if available, or summary of points reviewed. | Assembly must be held prior to initial approval of the Forest Project or approval to begin trainings and analysis for the Forest Project. Documentation must be included in the Project Report prior to initial verification. |
| SS2 Anticipated Costs | In a community Assembly a report that outlines the anticipated project costs is presented. The report and presentation must, at a minimum, include the themes specified in Section 3 (SS2). The required elements from Section 3, SS6 and SS7 apply to the Assembly. | <ol style="list-style-type: none"> 1. Assembly Act that indicates costs were discussed during the assembly, including an agenda and any follow up questions and comments. 2. A list of the names of all attendees, along with contact information if available. 3. PowerPoint that presented concepts, if available, or summary of points reviewed. | Assembly must be held prior to project registration. Documentation must be included in the Project Report prior to initial verification. |
| SS3 Anticipated Benefits | In a community Assembly a report that outlines the anticipated project benefits is presented. The report and presentation must, at a minimum, include the themes specified in Section 3 (SS3). The required elements from Section 3, SS6 and SS7 apply to the Assembly. | <ol style="list-style-type: none"> 1. Assembly Act that indicates benefits were discussed during the meeting(s), including an agenda and any follow up questions and comments. 2. A list of the names of all attendees, along with contact information if available. 3. PowerPoint that presented concepts, if available, or summary of points reviewed. | Assembly must be held prior to project registration. Documentation must be included in the Project Report prior to initial verification. |

| Monitoring Theme | Monitoring Requirement | Required Documentation | Schedule of Requirement |
|----------------------------|---|---|--|
| SS4 Project Approval | In a community Assembly the community approves/disapproves the project. The Assembly must result in an officially documented vote and/or Assembly Act and meet the voting requirements specified in Section 3 (SS4). The required elements from Section 3, SS6 and SS7 apply to the Assembly. | <ol style="list-style-type: none"> 1. A copy of the results of the vote specifically addressing project approval by the majority of community members (i.e., Assembly Act). 2. Assembly Act for the assembly where the presentation was made, including any follow up questions and comments. 3. A list of the names of all attendees, along with contact information if available. | Assembly must be held prior to project registration. Documentation must be included in the Project Report prior to initial verification. |
| SS5 Aggregate Approval | In an Assembly the community approves/disapproves joining an Aggregate. The Assembly must result in an Assembly Act and meet the voting requirements specified in Section 3 (SS5). The required elements from Section 3, SS6 and SS7 apply to the Assembly. | <ol style="list-style-type: none"> 1. A copy of the results of the vote specifically addressing Aggregate approval of the community members (i.e., Assembly Act). 2. Assembly Act for the Assembly where the presentation was made, including any follow up questions and comments. 3. A list of the names of all attendees, along with contact information if available. 4. If approved, the signed contract with the aggregator clearly stating all rights to credits and future payments of credits. | Assembly must be held prior to project registration. Documentation must be included in the Project Report prior to initial verification. |
| SS6 Proper Notification | <p>Required assemblies include:</p> <ul style="list-style-type: none"> ▪ Assembly(ies) prior to project submission to discuss SS1, SS2, and SS3. ▪ Annual Assembly that addresses the themes in Section 3 (Meeting Notification, Participation, and Documentation) ▪ Assembly(ies) for approval of project and, if applicable, approval of Aggregate per SS4 and SS5. <p>Posting requirements are specified in Section 3, SS6.</p> | <ol style="list-style-type: none"> 1. A description of how notices of assemblies took place in order to include as many people as possible. | Must be provided as part of the Project Report prior to initial verification and as part of annual reporting. |
| SS7 Participation | Assembly must be open for community member participation. Community leadership must actively encourage participation from community members. | <ol style="list-style-type: none"> 1. Copies of sign-in sheets must be attached to the Assembly Act. 2. Assembly Act that summarizes community comments must be prepared. | Must be provided as part of the Project Report prior to initial verification and as part of annual monitoring. |

| Monitoring Theme | Monitoring Requirement | Required Documentation | Schedule of Requirement |
|--|---|--|---|
| SS8 Meeting Documentation | Documentation of Assembly must occur as per Section 3, SS8. Assembly notes must address each item on the agenda and not on the agenda that were discussed. Assembly notes must be available to the public afterwards. | 1. Assembly Act, accompanied with a description of how and when the Assembly Act was made available to community members must be prepared. | Must be provided as part of the Project Report prior to initial verification and a part of annual monitoring. |
| SS9 Identification of a Project Coordinator | Section 3, SS9 requires that a description of the nomination and selection/election process for a Project Coordinator be included in the PR. | 1. The description of the nomination and election/selection process must be included in the Project Report. 2. Assembly Act that describes how the processes was reviewed in a public Assembly and approved with >50% vote. | Must be provided with the Project Report prior to initial verification and in the event of a change in Project Coordinator. |
| SS10 Term of a Project Coordinator | Section 3, SS10 requires that the length of the term of the Project Coordinator along with the mechanisms for term renewal be defined through a public process. | 1. A description of the term of Project Coordinator must be included in the Project Report. 2. The process for renewing the term of Project Coordinator must be addressed in the Project Report. 3. Assembly Act that describes how the terms were discussed in a public Assembly and approved with a >50% vote. | Must be provided with the Project Report prior to initial verification and in the event of a change in Project Coordinator. |
| SS11 Replacing the Project Coordinator | Section 3, SS11 requires that a provision be included in the PR describing the process for replacing a Project Coordinator, even prior to completion of a term. | 1. A description of the process for replacing the Project Coordinator must be included in the Project Report. 2. Assembly Act that describes how the terms were discussed in a public Assembly and approved with a ≥50% vote. | Must be provided with the Project Report prior to initial verification and in the event of a change in Project Coordinator. |

7.3 Monitoring Objectives and Results for Non-Compliance

Forest Projects must monitor forest carbon stocks and compliance with environmental safeguards. The schedule of monitoring varies depending on the monitoring theme. Table 7.3 displays the monitoring requirements and schedule for each monitoring theme.

Table 7.3. Monitoring Objectives and Results for Non-Compliance

| Activity | Monitoring Objective | Monitoring Tool | Programmatic Concerns and Rationale for Monitoring | Result of being Out of Compliance |
|----------|---|-----------------------------|--|--|
| All | Maintenance or Increase of forest carbon stocks in Activity Areas | Carbon Monitoring Worksheet | Reversal of credited carbon stocks and environmental safeguard 1 | Forest Owner must compensate for reversal. Project activity is suspended until reversal fully compensated. |

| Activity | Monitoring Objective | Monitoring Tool | Programmatic Concerns and Rationale for Monitoring | Result of being Out of Compliance |
|--|--|---|--|---|
| All | Credit Issuance by Vintage as determined by carbon stock estimates | Carbon Monitoring Worksheet | Over-/Under-issuance of forest carbon credits. Data are periodically verified for quality of input | Measurements, calculations and data input may need to be improved or enhanced. |
| IFM, Restoration, Reforestation | Continuous progress toward a goal of 95% native species in Activity Areas | Native Species (Presence) Report from CALCBOSK | Environmental safeguard 2 | Project activity suspended until project is brought into compliance and data used for determination are verified. |
| Large Urban Forestry | Maintain or increase the percent native species in Activity Areas | Native Species (Presence) Report from CALCBOSK | Environmental safeguard 2 | Project activity suspended until project is brought into compliance and data used for determination are verified. |
| IFM, Restoration, Reforestation | Continuous progress toward compositional diversity of native species in Activity Areas | Native Species (Composition) Report from CALCBOSK | Environmental safeguard 3 | Project activity suspended until project is brought into compliance and data used for determination are verified. |
| Large Urban Forestry | Maintain or increase species diversity in Activity Areas | Native Species (Composition) Report from CALCBOSK | Environmental safeguard 3 | Project activity suspended until project is brought into compliance and data used for determination are verified. |
| IFM, Restoration, Reforestation, Agroforestry, Silvopastoral | Maintenance of forest land cover throughout the Project Area | Monitoring Report prior to full verification | Environmental safeguard 4 | If a decline in forest carbon stocks since the previous full verification is detected during a full verification in excess of 5% and due to human activities, the project must rectify the forest cover loss through reforestation in the subsequent 6 reporting periods. If unable to rectify the forest cover loss in the following 6 reporting periods, project activity will be suspended until brought into compliance and data used for determination are verified. |

| Activity | Monitoring Objective | Monitoring Tool | Programmatic Concerns and Rationale for Monitoring | Result of being Out of Compliance |
|---------------|--|---|--|---|
| IFM | Retention trees for harvested areas exceeding 5 hectares | Monitoring Report prior to full verification | Environmental safeguard 5 | If no trees of the harvested age cohort are found within 100 meters from the area harvested, project activity will be suspended until project is brought into compliance and data used for determination are verified. |
| Reforestation | Maintenance of natural land cover | Project Report prior to initial verification | Environmental safeguard 6 | Project activity suspended until project is brought into compliance and data used for determination are verified. |
| All | Monitor soil disturbance from site preparation for tree planting | Project Report prior to initial verification and all Monitoring Reports | Environmental safeguard 7 | If deep ripping exceeds 1% of an Activity Area in a given year, crediting for any increases in forest carbon stocks will be suspended for the number of reporting periods equivalent to the proportion of the Activity Area affected, rounded up to the nearest percentage point. |

7.4 Reporting Periods

A “reporting period” is a period of time for which a Forest Owner quantifies and reports GHG removals (i.e., the length of time covered by the annual CMW) and submits monitoring reports for all required annual monitoring elements listed above. reporting periods for Forest Projects have a required duration of 12 months, with the exception of the first reporting period, which can be any length of time up to 12 months from the project’s start date.

All reporting periods after the first reporting period must be 12 months in duration and cover the same calendar period each year. reporting periods must be contiguous, i.e., there must be no gaps in reporting during the crediting period of a Forest Project once the first reporting period has commenced.

A Forest Project is considered automatically terminated if the Forest Owner chooses not to report data and undergo verification at required intervals.

7.4.1 Issuance and Vintage of CRTs

The Reserve will recognize Verified Removals (VRs) for quantified GHG removals that have been verified through either full or desk verifications. VRs are converted to CRTs and issued to Forest Owners when the VR is protected for permanence, either through contractual agreement for determined time-frames or by maintaining the VRs out of the atmosphere over time, in which

case CRTs are issued annually based on the tonne-year accounting values for each successive reporting period (see Section 5.6.1 for discussion of permanence and tonne-year accounting).

Vintages are assigned to CRTs based on the proportional quantity of CRTs in each calendar year within a reporting period.

Table 7.4. Issuance and Vintage of CRTs

| Project Start Date | First Reporting Period End Date | | Second Reporting Period End Date | |
|--------------------|--|--|--|---------------------------------|
| August 15, 2012 | February 15, 2013 | | February 15, 2014 | |
| | 1,000 Verified Removals converted to CRTs | | 2,000 Verified Removals converted to CRTs | |
| | Vintage CRTs at conversion of VRs to CRTs | | | |
| | 2012 | 2013 | 2013 | 2014 |
| | 137 days in 2012 / 185 total days = 74% | 46 days in 2013 / 185 total days = 26% | 319 days in 2013 / 365 days = 92% | 46 days in 2014 / 365 days = 8% |
| Vintage | 2012 | 2013 | | 2014 |
| CRTs | 740 | 260 | 1,840 | 160 |
| Note | First reporting period is 185 days and terminates on February 15. First reporting period can be less than 365 days to establish a desired reporting cycle. | | Second reporting period (and all subsequent reporting periods) must be one year in duration. | |

7.5 Transparency and Record Keeping

The Reserve requires data transparency for all Forest Projects, including data that displays current carbon stocks, reversals, and verified GHG removals, as well as verification reports. For this reason, all non-confidential project data reported to the Reserve will be publicly available on the Reserve's registry.

All documents and forms related to the project must be retained by the Forest Owner for the duration of the project. This information may be requested by the verification body or the Reserve at any time.

8 Project Verification

This section provides guidance to Reserve-approved verification bodies for verifying GHG removals associated with a planned set of activities to increase forest carbon stocks.

This section supplements the Reserve's Verification Program Manual, which provides verification bodies with the general requirements for a standardized approach for independent and rigorous verification of GHG removals. The Verification Program Manual outlines the verification process, requirements for conducting verification, conflict of interest and confidentiality provisions, core verification activities, content of the verification report, and dispute resolution processes. In addition, the Verification Program Manual explains the basic verification principles of ISO 14064-3:2006 which must be adhered to by the verification body.

Mexico Forest Project verification bodies must read and be familiar with the following International Organization for Standardization (ISO) and Reserve documents and reporting tools:

1. Mexico Forest Protocol (this document)
2. Reserve Offset Program Manual
3. Reserve Verification Program Manual
4. Reserve software
5. ISO 14064-3:2006 Principles and Requirements for Verifying GHG Inventories and Projects

Only Reserve-approved Mexico Forest Project verification bodies are eligible to verify Mexico Forest Project reports. To become a recognized Mexico Forest Project verifier, verification bodies must become accredited under ISO 14065 and be accredited under the Mexican Accreditation Body (EMA – Entidad Mexicana de Acreditación) and/or American National Standards Institute (ANSI). Information on the accreditation process can be found on the Reserve website at <http://www.climateactionreserve.org/how/verification/how-to-become-a-verifier/>.

8.1 Standard of Verification

The Reserve's standard of verification for Forest Projects is the Mexico Forest Protocol (this document), the Reserve Offset Program Manual, and the Reserve Verification Program Manual. To verify a Forest Owner's initial Project Report and annual monitoring reports, verification bodies apply the verification guidance in the Reserve's Verification Program Manual and this section of the MFP to the requirements and guidance described in Sections 2 through 7 of the MFP.

This section of the protocol provides requirements and guidance for the verification of Forest Projects under the MFP and describes the core verification activities and criteria that are necessary for a verification body to provide a reasonable level of assurance that the GHG removals quantified and reported by Forest Owners are materially correct.

Verification bodies will use the criteria in this section to determine if there exists reasonable assurance that the data submitted on behalf of the Forest Owner to the Reserve addresses each requirement in the MFP. Project reporting is deemed accurate and correct if the Forest Project is in compliance with the protocol.

Further information about the Reserve's principles of verification, levels of assurance, and materiality thresholds can be found in the Reserve's Verification Program Manual on the Reserve's website.⁵³

If material issues arise during verification of a participating project, the Forest Owner will need to independently address the issues and required corrective actions. These are described in this section of the protocol and the Reserve Verification Program Manual.⁵⁴

8.2 Verification Cycle

All Forest Projects must complete the initial verification and all subsequent verifications within 12 months of the end of the reporting period(s) being verified. For required verifications, failure to complete verification within the 12-month time period will result in account activities being suspended until the verification is complete. The project will terminate if the required verification is not completed within 36 months of the end of the reporting period(s) being verified. There is no consequence for failure to complete verification activities within 12 months for optional verifications.

Following the initial verification, subsequent verifications may include multiple reporting periods, referred to as the "verification period." The end date of any verification period must correspond to the end date of a reporting period.

While Forest Owners may depend on consultants or project developers to complete project requirements, responsibility for monitoring reports and verification compliance is assigned to the Forest Owner. It is the Forest Owner's responsibility to ensure that verifications are conducted according to the minimum required schedule specified in Table 8.1. A Verification Report, List of Findings, and Verification Statement must be submitted within 12 months of the end of any reporting period(s) being verified.

The Forest Owner is responsible for selecting a single verification body for any given year or set of years. The same verification body may be used up to six consecutive years (one regularly scheduled full verification). Other verification guidance is provided in the Verification Program Manual.

Verification is required at specific intervals to ensure ongoing monitoring of forest carbon stocks, inventory confidence, and compliance with social and environmental safeguards. Optional verifications, known as desk verifications, are at the Forest Owner's discretion and may be conducted between required verifications for crediting and/or to adjust the project's confidence estimate, among other rationale, based on changed management circumstances. Submission of annual monitoring reports to the Reserve is required even if the Forest Owner chooses to forego an optional verification.

Refer to the table below for minimum required full verifications, optional desk verifications, and any exceptions to the minimum requirements.

Projects participating in an Aggregate have a less frequent verification schedule. For guidance on verification of projects in an Aggregate, see Appendix E.

⁵³ <http://www.climateactionreserve.org/how/program/program-manual/>

⁵⁴ <http://www.climateactionreserve.org/how/program/program-manual/>

Table 8.1. Forest Project Verification Schedule

| Project Type | Verification Type | Required Timing |
|---|--|--|
| All Forest Projects | Initial verification of the first, or first and second reporting period(s) | Must be completed within 36 months of the project start date. |
| All Forest Projects | All verifications (full verifications, and desk verifications) | Must be completed within 12 months of the end of the reporting period(s) being verified. |
| All Forest Projects | Full Verifications | Required to be completed within one year of notifying the Reserve of an avoidable reversal. |
| | | Required to be completed within 2 years of notifying the Reserve of an unavoidable reversal. |
| | | Required upon adding a new Activity Area. |
| | | Required for the verification following the end of every 6 th reporting period. |
| | Desk Verification | Optional, between required full verification years. |
| All Forest Projects receiving under 4,000 CRTs/year | Full Verifications | Required for the verification following the end of every 12 th reporting period after a full verification has taken place, or once 48,000 CRTs have been accumulated across the unverified reporting periods. |
| | Desk Verification | Optional, between required full verification years. |
| Any Forest Project not seeking CRTs by the time a full verification is required | Desk Verification | If a forest project opts not to receive additional CRTs during a normal full verification year and has not experienced a reversal, they must undergo a desk verification of the monitoring reports submitted since the last verification. If canopy cover has declined on the Activity Area by more than 5%, then a full verification must be conducted. |

8.2.1 Initial Verification

All Forest Projects must be initially verified within 36 months of their start date. The initial verification must cover the initial reporting period and may also include the second reporting period. The initial verification must confirm the project's eligibility, compliance with applicable social and environmental safeguards, and that the included Activity Areas' initial inventory and baseline have been established in conformance with the MFP. The verification body must assess and ensure the completeness and accuracy of all required reporting elements for the Project Report (see Section 7.1.2), presented in Table 7.1.

While the initial verification must be conducted for the entire Forest Project, Forest Projects with multiple Activity Areas of different activities may have different requirements for the distinct activities.

8.2.1.1 Improved Forest Management, Restoration, and Large Urban Forestry Activity Areas

For IFM, Restoration, and Large Urban Forestry Activity Areas, the initial verification must include a site visit (see Section 8.4). Verifiers must confirm that the methodology for quantifying Activity Area baseline and current carbon stocks was implemented correctly following the guidance in Appendix B and complete sequential sampling (see Section 8.4).

8.2.1.2 Reforestation Activity Areas

For Reforestation Activity Areas, the initial verification must confirm the implementation of the Reforestation activity and that the activity commenced after the Activity Area start date. Verification of the activity may be conducted through the use of geotagged photos, documented evidence of the purchase or receipt of trees, or through an onsite confirmation by the verification body. If an onsite confirmation is required, the verification body does not need to complete the site visit requirements of Section 8.4, rather the verification body need only confirm the planting of the trees and the estimated date of activity commencement. In addition to confirming the implementation of the activities, the initial verification should confirm eligibility and compliance with the applicable social and environmental safeguards.

8.2.1.3 Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas

For Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas that use the canopy cover inventory methodology, the initial verification does not require a site visit. Verifiers must confirm that the methodology for quantifying Activity Area baseline and current carbon stocks was implemented correctly following the guidance in Appendix C. For Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas that use the intensive inventory methodology, a site visit is required following the guidance in Section 8.2.1.1.

8.2.2 Full Verification

A full verification involves review of the Forest Project's eligibility, quantification, and adherence to environmental and social safeguards (if applicable). After a Forest Project's initial verification, subsequent full verifications must assess and ensure accuracy in measurement and monitoring techniques and record keeping practices.

Requirements for the full verifications vary by activity (i.e., IFM, Reforestation, Small and Large Urban Forestry, etc.). While full verifications must be conducted for the entire Forest Project, Forest Projects with multiple Activity Areas of different activities may have different requirements for the distinct activities.

Forest Projects not in an Aggregate must undergo a full verification every six reporting periods or in the event of adding a new Activity Area. See Table 8.1 for other exceptions. Forest Projects participating in an Aggregate have a different verification schedule (see Appendix E).

8.2.2.1 Improved Forest Management, Restoration, and Large Urban Forestry Activity Areas

For IFM, Restoration, and Large Urban Forestry Activity Areas, a site visit is required as part of all full verifications (see Section 8.4).

During verifications with site visits the Forest Owner, including members of a participating community or *ejido*, may support the verification process by assisting in the monitoring activities to the extent that the verifier feels confident in the results of the verification process.

8.2.2.2 Reforestation Activity Areas

For Reforestation Activity Areas, a site visit is required as part of all full verifications. Reforestation activities may defer the second full verification indefinitely beyond the end of the sixth reporting period at the discretion of the Forest Owner. If deferred, the second verification must include a site visit and the verification body must confirm the Activity Area boundaries.

8.2.2.3 Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas

For Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas that use the canopy cover inventory methodology, site visits are not a required component of full verifications. Full verifications involve review of the Activity Area's eligibility, quantification, and adherence to environmental and social safeguards (if applicable). For Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas that use the intensive inventory methodology, a site visit is required following the guidance in Section 8.2.2.1.

8.2.3 Desk Verifications

For all Activity Areas, for reporting periods in between required full verifications, project verification activities may consist of a desk verification. Desk verifications are considered complete verifications, in that the verification body must review the data in the annual monitoring reports to check calculations and information for reasonability, accuracy, and completeness. Desk verifications do not include a field inspection of reported data unless the verifier determines a field visit is required to resolve a specific conflict.

The desk verification of reported data is a reasonableness inspection. Verifiers must compare changes in reported carbon stocks and carbon stock increment to previously reported carbon stocks and increment to assess whether reported changes are justified, taking into consideration harvest fluctuations, forest conditions, updates to plot inventories and growth as projected through CALCBOSK from one reporting period to the next. Verifiers must repeat calculations of reporting period carbon stocks using the Activity Area data in an independent version of CALCBOSK. Any major fluctuations compared to previous reporting period's reporting must be fully justified as part of the reporting period documentation. The verifier, with the Reserve's counsel, may make a determination that the reported data necessitates further review, including a site visit of updated inventory plots.

8.3 Project Verification Activities

Required verification activities for Forest Projects will depend on whether the verification body is conducting an initial verification for registration on the Reserve, a minimum required full verification, or an optional annual verification involving a desk verification. The following sections contain guidance for all of these verification activities.

8.3.1 Emission Sources, Sinks, and Reservoirs

For all verification activities, verification bodies review a project's reported sources, sinks, and reservoirs to ensure that all are identified properly and to confirm their completeness. Table 4.1 in Section 4 provides comprehensive lists of all GHG sources, sinks, and reservoirs that must be included in the quantification and reporting of GHG removals.

8.3.2 Project Area Definition

Verification bodies are required to review the geographic boundaries defining the Project Area and Activity Areas and their compliance with the requirements outlined in Section 2.2 and 2.3.

Table 8.2. Verification Requirements for Project Area Definition

| Section of MFP | Verification Items | | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|-----------------------------------|--|---|---|--|
| 2.2 | 1. Project Area and Activity Area | a. The Project Area has been presented according to requirements in Section 2.2.1. | Initial Verification | Maps, displaying Project Area that includes towns, roads, and major watercourses, and tenure documents demonstrating total hectares. | Low Verification is complete if maps, displaying towns, roads, and major watercourses, have been prepared, are legible, and appear to be an accurate depiction of the Project Area and the Project Area hectares correspond with land tenure documents. |
| | | b. Activity Areas are clearly defined. | 1. Initial Verification 2. Full verification when new Activity Areas are added | Maps display Activity Areas. Inventory sample points should be distributed within Activity Areas. | Low Verification is complete if the Activity Areas within the Project Area have been completed and appear to accurately depict the Activity Areas in the Project Area. |
| | | c. Proof that a description, shapefile, and maps of the geographic boundaries defining the Project Area and Activity Areas are on file at the Reserve. | 1. Initial Verification 2. Full verification when new Activity Areas are added | KML files have been uploaded to the project files and are publicly available. | None Verification is complete if legible maps of the Project Area and Activity Areas have been uploaded to the Reserve's site and are publicly available. |
| 2.3 | 2. Project Activities | | Initial Verification | The Project Report confirms how each Activity Area meets the defined activity definition and states the defined activities that will lead to increased carbon stocks over time and not avoided emissions. | Very Low Verification is complete if the Project Report correctly confirms how each Activity Area meets the defined activity definition and states the defined activities that the project will implement that will increase carbon stocks over time. |

8.3.3 Eligibility Criteria and Participation Requirements

Verification bodies are required to affirm the project's eligibility according to the rules in Section 3.

Table 8.3. Verification Requirements for Eligibility Criteria

| Section of MFP | Verification Items | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|------------------------------|---|--|--|
| 3.1 | 1. Project Location | Initial Verification | Map that shows that the project is located in Mexico | None Verification is complete if legible maps of the Project Area and Activity Areas have been uploaded to the Reserve's site and are publicly available. |
| 3.2 | 2. Forest Owner Type | Initial Verification | Land tenure documentation as defined in Section 3.6 | None Verification is complete if the verifiers review the land tenure status per requirements in Section 3.6 and confirms the Forest Owner is an individual or a collective legal person and that it is not a Federal public agency. |
| 3.5 | 3. Aggregation | All Verifications | Aggregate documentation (if any) | None Verifiers must identify if a project is part of an Aggregate and if so refer to Appendix E for the verification schedule requirements. |
| 3.6 | 4. Land Tenure Documentation | 1. Initial Verification 2. Full Verification | The verification body must conduct a review to confirm ownership and claims to GHG removals that have occurred over the verification period. | None Verification is complete if: <ul style="list-style-type: none"> ▪ verifier receives proof of ownership per requirements in Section 3.6. ▪ verifier confirms there have been no changes to land ownership. |
| 3.6.1 | 5. Attestation of Title | All Verifications | Proof that a signed Attestation of Title is on file at the Reserve for the dates of the verification period. | None Verification is complete if a current Attestation of Title is filed with the Reserve. Reserve personnel will provide confirmation. |

| Section of MFP | Verification Items | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|--------------------------|----------------------|--|---|
| 3.7 | 6. Conflicts | All Verifications | For <i>ejidos</i> and communities, document emitted by the Agrarian Attorney (<i>Procuraduria Agraria</i>) that states that there are no agrarian conflicts within the Activity Areas. For private and public landowners, proof that a signed Attestation of No Conflicts is on file at the Reserve. | <p>None</p> <p>Verification is complete if verifier confirms that the document emitted by the Agrarian Attorney or the Attestation of No Conflicts has been uploaded to the Reserve site and that Activity Areas are free of substantial conflicts or disputes with regards to ownership.</p> |
| 3.8 | 7. Regulatory Compliance | All Verifications | Proof that a signed Attestation of Regulatory Compliance form is on file with the Reserve for the reporting period. | <p>Very Low</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> ▪ a current Attestation of Regulatory Compliance form is on file with the Reserve. ▪ verifier has confirmed through communications with state CONAFOR and/or SEMARNAT personnel that the claim on the attestation is correct. <p>Verifier shall consult with Reserve personnel to determine the period of time the project was not in regulatory compliance and the effect the violation will have on project crediting.</p> |
| 3.11 | 8. Project Start Date | Initial Verification | Official approval of the project by the Forest Owner or project submittal to the Reserve. | <p>Low to Moderate</p> <p>Verification is complete when verifier is able to confirm the start date as defined in Section 3.11.</p> |

| Section of MFP | Verification Items | | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|-------------------------------|---|---|---|---|
| 3.12.1 | 9. Legal Requirement Test | | All Verifications | <ol style="list-style-type: none"> Any laws, statutes, rules, regulations, or ordinances from the federal to local level that may indicate whether project activities, including carbon stocking, are legally required at the time of the project start date. Any other binding requirements that may affect carbon stocks, e.g., trusts. Signed Attestation of Voluntary Implementation | <p>Very Low</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> all laws, statutes, rules, regulations, and legal requirements affecting carbon stocking within the Activity Areas are documented and justification is provided indicating the impact of the legal requirements on carbon sequestration. a current Attestation of Voluntary Implementation form is on file with the Reserve. Credits cannot be issued for sequestration that is required by law. |
| 3.12.2 | 10. Performance Standard Test | 1. Improved Forest Management | <ol style="list-style-type: none"> Initial Verification Full verification when new Activity Areas are added | <ol style="list-style-type: none"> Project Report Forest Management Program | <p>Very Low</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> Review demonstrates that the Activity Area is under a Forest Management Program, and the Forest Project and all included Activity Areas meet requirements defined in the protocol. Where uncertainty persists, the Reserve shall be consulted for a final decision. |
| | | 2. Reforestation, Small Urban Forestry, Agroforestry, and Silvopastoral | | Project Report | <p>Very Low</p> <p>Verification is complete if Activity Areas meet activity definitions and all requirements defined in the protocol. Where uncertainty persists, the Reserve shall be consulted for a final decision.</p> |
| | | 3. Restoration | | <ol style="list-style-type: none"> Project Report Forest Land Cover Risk Tool | <p>Very Low</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> review and investigation of the analysis demonstrates that the analysis was conducted correctly, and the Forest Project and all included Activity Areas meet requirements defined in the protocol. Where uncertainty persists, the Reserve shall be consulted for a final decision. |

| Section of MFP | Verification Items | | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|--------------------|-------------------------|-------------|---|---|
| | | | | | <p>In addition, if the Activity Area required the assessment of degradation, verification is complete if:</p> <ul style="list-style-type: none"> ▪ a review of the calculation confirms that the methodology for quantifying tree canopy area specified in Appendix C.1.3 was implemented correctly. ▪ Confirmation that the historical trend was developed by at least two historical images that are at least 10 years apart, and with the recent estimate within five years of the start date and the earliest point no earlier than 1990. ▪ The verifier must independently calculate the canopy area for each Activity Area using a randomized or systematic application of points used by the Forest Owner. The points must be overlaid on the remote sensing image the Forest Owner used to generate their estimate/measurement of canopy area. The verifier shall determine if each point 'hits' or 'misses' a tree crown. The verifier shall sample enough plots to arrive at a determination of canopy area with +/- 10% at 90% confidence interval. The percentage canopy area determined by the verifier must be within 10% of the estimate provided by the Forest Owner. <p>The verifier may repeat their effort if the Forest Owner is not in conformance with the verifier. Failure to find conformance after three efforts results in failure of the ability to verify the reported canopy area. The Forest Owner must resample/re-measure the canopy area prior to renewing verification activities.</p> <p>The i-Tree Canopy tool may be used to perform the analysis.</p> |
| | | 4. Large Urban Forestry | | <ol style="list-style-type: none"> 1. Project Report 2. Canopy Cover Trend Analysis | <p>Verification is complete if:</p> <ul style="list-style-type: none"> ▪ a review of the calculation confirms that the methodology for quantifying tree canopy area specified in Appendix C.1.3 was implemented correctly. ▪ Confirmation that the historical trend was developed by at least two historical images that are at least 10 years apart, and with the recent estimate within five years of the start date and the earliest point no earlier than 1990. ▪ The verifier must independently calculate the canopy area for each Activity Area using a randomized or systematic application of points used by the Forest Owner. The points must be overlaid on the remote sensing image the Forest Owner used to generate their |

| Section of MFP | Verification Items | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|------------------------------|----------------------|--------------------|--|
| | | | | <p>estimate/measurement of canopy area. The verifier shall determine if each point 'hits' or 'misses' a tree crown. The verifier shall sample enough plots to arrive at a determination of canopy area with +/- 10% at 90% confidence interval. The percentage canopy area determined by the verifier must be within 10% of the estimate provided by the Forest Owner.</p> <p>The verifier may repeat their effort if the Forest Owner is not in conformance with the verifier. Failure to find conformance after three efforts results in failure of the ability to verify the reported canopy area. The Forest Owner must resample/re-measure the canopy area prior to renewing verification activities.</p> <p>The i-Tree Canopy tool may be used to perform the analysis.</p> <ul style="list-style-type: none"> ▪ verifier confirms calculation of the historical trend is accurate. |
| 3.13 | 11. Project Crediting Period | Initial Verification | Project Report | <p>Low to Moderate</p> <p>Verification is complete when verifier is able to confirm the Project Crediting Period as defined in Section 3.13.</p> |

8.3.4 Project Social Safeguards

Verification bodies are required to review the Forest Owner's compliance with the social safeguards described in Section 3.9 and 7.2. The social safeguards must be checked for all *ejidal* and communal projects.

Table 8.4. Verification Requirements for Social Safeguards

| Section of MFP | Verification Items | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|---------------------------------------|----------------------|---|---|
| 3.9, 7.2 | 1. SS1 Forest Carbon Project Concepts | Initial Verification | <ol style="list-style-type: none"> 1. Assembly Act where presentation was made, including an agenda and any follow up questions and comments. 2. A list of the names of all attendees, and, if available, their contact information. 3. PowerPoint, if available, or summary of points reviewed | <p>Low</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> ▪ the Assembly Act has been archived following a community Assembly and included in the Project Report. ▪ the Assembly Act and PowerPoint (or summary of points reviewed) indicate costs and benefits were discussed at a community Assembly. ▪ an agenda for the Assembly has been included in the Project Report. ▪ a list of names of attendees and, if available, their contact information (verifier may interview attendees) has been included in the Project Report. |
| 3.9, 7.2 | 2. SS2 Anticipated Costs | Initial Verification | <ol style="list-style-type: none"> 1. Assembly Act that indicates that costs were discussed during the Assembly(ies), including an agenda and any follow up questions and comments. 2. A list of the names of all attendees, and, if available, their contact information. 3. PowerPoint, if available, or summary of points reviewed | |
| 3.9, 7.2 | 3. SS3 Anticipated Benefits | Initial Verification | <ol style="list-style-type: none"> 1. Assembly Act that indicates that benefits were discussed during the Assembly(ies), including an agenda and any follow up questions and comments. 2. A list of the names of all attendees, and, if available, their contact information. 3. PowerPoint, if available, or summary of points reviewed | |

| Section of MFP | Verification Items | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|----------------------------|---|---|--|
| 3.9, 7.2 | 4. SS4 Project Approval | Initial Verification | <ol style="list-style-type: none"> 1. Assembly Act that includes an agenda, a copy of the results of the vote of the community members and any follow up questions and comments. 2. A list of the names of all attendees, and, if available, their contact information. | <p>Low</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> ▪ a copy of the voting results is included in the Project Report. ▪ an agenda for the Assembly is archived and available for review. ▪ a list of attendees is included in the Project Report (verifier may interview attendees as part of the verification). ▪ Assembly Act is archived and available for review. |
| 3.9, 7.2 | 5. SS5 Aggregate Approval | Full verification required after entering or exiting an Aggregate | <ol style="list-style-type: none"> 1. Assembly Act that includes an agenda, copy of the results of the vote of the community members, and any follow up questions and comments. 2. A list of the names of all attendees, and, if available, their contact information. 3. Contract between Forest Owner and Aggregate. 4. Aggregate Entry or Exit form. | <p>Low</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> ▪ a copy of the voting results is archived and available for review. ▪ an agenda for the Assembly is archived and available for review. ▪ a list of attendees is archived and available for review (verifier may interview attendees as part of the verification). ▪ Assembly Act is archived and available for review. ▪ Copy of contract between Forest Owner and Aggregate is on file with the Reserve. ▪ Aggregate Entry or Exit form is properly filled out and on file with the Reserve. |
| 3.9, 7.2 | 6. SS6 Proper Notification | All Verifications | <ol style="list-style-type: none"> 1. A description of how notices of assemblies took place in order to include as many people as possible. | <p>Low</p> <p>Verification is complete if the Project Report or Annual Monitoring Report includes a description of Assembly notices indicating a high level of effort to communicate with the community regarding the Assembly in which the project was discussed and voted on.</p> |

| Section of MFP | Verification Items | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|--|---|--|---|
| 3.9, 7.2 | 7. SS7 Participation | All Verifications | <ol style="list-style-type: none"> 1. Copies of sign-in sheets that are attached to the Assembly agenda. 2. Assembly Act that summarizes community comments. | <p>Very low</p> <p>Verification is complete if :</p> <ul style="list-style-type: none"> ▪ copies of the sign-in sheets are included in the Project Report or Annual Monitoring Report. ▪ summary notes of any comments raised during the Assembly(ies) in which the project was discussed are included in the Project Report or Annual Monitoring Report. <p>Verifier may interview community members present at the Assembly(ies) to determine if notes are consistent with community members testimonies.</p> |
| 3.9, 7.2 | 8. SS8 Meeting Documentation | All Verifications | <ol style="list-style-type: none"> 1. Assembly Act, accompanied with a description of how and when the Assembly Act was made available to community members. | <p>Very low</p> <p>Verification is complete if a description of how and when the Assembly Act was made available to the community members is included in the Project Report or Annual Monitoring Report.</p> <p>Verifier may interview community members present at the Assembly(ies) to determine if notes are consistent with community members testimonies.</p> |
| 3.9, 7.2 | 9. SS9 Identification of a Project Coordinator | <ol style="list-style-type: none"> 1. Initial Verification 2. In the event of a change in Project Coordinator | <ol style="list-style-type: none"> 1. The description of the nomination and election/selection process included in the Project Report or Annual Monitoring Report. 2. Assembly Act that describes how the processes were reviewed in a public Assembly and approved. | <p>Low</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> ▪ a description of the nomination and election/selection process is included in the Project Report or Annual Monitoring Report. ▪ Assembly Act included in the Project Report indicates that the Project Coordinator was approved in a public Assembly. <p>Verifier may interview community members present at the meeting(s) to determine if notes are consistent with community members testimonies.</p> |

| Section of MFP | Verification Items | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|---|---|--|--|
| 3.9, 7.2 | 10.SS10 Term of a Project Coordinator | 1. Initial Verification 2. In the event of a change in Project Coordinator | 1. A description of the term of Project Coordinator included in the Project Report or Annual Monitoring Report. 2. The process for renewing the term of Project Coordinator as addressed in the Project Report or Annual Monitoring Report. 3. Assembly Act that describes how the terms were discussed in a public Assembly and approved. | Low Verification is complete if: <ul style="list-style-type: none"> ▪ a description of the term of the Project Coordinator is included in the Project Report or Annual Monitoring Report. ▪ the process of renewing the term of the Project Coordinator is addressed in the Project Report or Annual Monitoring Report. ▪ Assembly Act included in the Project Report or Annual Monitoring Report indicates that the term of the Project Coordinator was discussed and approved in a public meeting. Verifier may interview community members present at the meeting(s) to determine if notes are consistent with community members testimonies. |
| 3.9, 7.2 | 11.SS11 Replacing the Project Coordinator | 1. Initial Verification 2. In the event of a change in Project Coordinator | 1. The process for how the Project Coordinator will be replaced included in the Project Report or Annual Monitoring Report. 2. Assembly Act that describes how the terms were discussed in a public Assembly and approved. | Low Verification is complete if: <ul style="list-style-type: none"> ▪ the Project Report or Annual Monitoring Report includes a description of the public process used to fill the role of the Project Coordinator. ▪ Assembly Act demonstrates that the public process described was fully implemented. |

8.3.5 Project Environmental Safeguards

The verification body must evaluate the project against the environmental safeguards presented in Section 3.10. The environmental safeguards are established by activity (i.e., IFM, Restoration, Reforestation, etc.). Forest projects that do not initially meet these criteria but can demonstrate progress towards meeting these criteria within the required timelines are eligible to register and maintain that registration with the Reserve.

Table 8.5. Verification Requirements for Environmental Safeguards

| Section of MFP | Verification Items | Applicable Activities | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|---|---------------------------------|--|---|--|
| 3.10, 7.3 | 1. Environmental safeguard 1: Maintenance of forest carbon stocks | All | All Verifications | Carbon Monitoring Worksheet (CMW) must show maintenance or increase of Standing Live and Dead carbon stocks in Activity Areas as determined by a running 10-year average of carbon stocks within the Activity Areas. | None Verification is complete when verifier makes observation with CMW that annual monitoring is consistent with requirement. Verification cannot be completed if project does not meet this requirement prior to consultation from the Reserve. This condition is not evoked until the project has 10-years' worth of monitoring data. |
| 3.10, 7.3 | 2. Environmental safeguard 2: Native species | IFM, Restoration, Reforestation | 1. Initial Verification 2. Full Verifications | Project carbon stock inventories and site visit observation must demonstrate progress toward a goal of 95% native species from CALCBOSK. | None Verification is complete when data is queried within CALCBOSK and the project indicates that it is in compliance with the native species requirement. Verifiers must confirm that the correct species are identified as native. |
| | | Large Urban Forest | 1. Initial Verification 2. Full Verifications | Project carbon stock inventories must demonstrate that the percent of native species does not decrease throughout the project life. | If the application indicates that the project is not in compliance with this requirement, verifier shall notify the Reserve. |
| 3.10, 7.3 | 3. Environmental safeguard 3: Compositional diversity of native species | IFM, Restoration, Reforestation | 1. Initial Verification 2. Full Verifications | Project carbon stock inventories and site visit observations must demonstrate continuous progress toward a compositional diversity of native species from CALCBOSK. | None Verification is complete when data is queried within CALCBOSK and the project indicates that it is in compliance with the native species requirement. |
| | | Large Urban Forest | 1. Initial Verification 2. Full Verifications | Project carbon stock inventories must demonstrate that if a single species comprises more than the proportion indicated in Table 3.2, the proportion of the dominant species does not increase throughout the project life. | If the application indicates that the project is not in compliance with this requirement, verifier shall notify the Reserve. |

| Section of MFP | Verification Items | Applicable Activities | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|--|---------------------------------|--|--|--|
| 3.10, 7.3 | 4. Environmental safeguard 4: Maintenance of forest land cover throughout the Project Area | IFM, Restoration, Reforestation | 1. Initial Verification 2. Full Verifications | Monitoring Report for Maintenance of Forest Carbon Stocks in the Project Area | <p>None</p> <p>Verification is complete when:</p> <ul style="list-style-type: none"> verifier conducts an analysis of i-Tree points and confirms data attributes are appropriate. Verification proceeds on a 10%/1% basis (random selection of 10% of the points and must be within 99% agreement). If verification is not satisfied with initial selection of 10%, an additional new group of 10% points is selected and the cumulative values are assessed. This is repeated until the analysis is satisfied. The benefit of the doubt should go to the Forest Owner on point attribution. verifier confirms that the Monitoring Report for Maintenance of Forest Land cover in the Project Area was submitted and conducted accurately. |
| 3.10, 7.3 | 5. Environmental safeguard 5: Sustainable harvesting practices | IFM | 1. Initial Verification 2. Full Verifications | Site visit observations must demonstrate that the project complies with the requirements of the environmental safeguard. | <p>None</p> <p>Verification is complete when:</p> <ul style="list-style-type: none"> the verifier confirms that where harvest occurs within the Activity Areas in a contiguous area larger than 5 hectares, a tree, or group of trees, representative of the age cohort that was harvested, is no further than 100 meters from other trees, either within the harvest area or outside of the harvested area. The verifier confirms that the project meets one of the exceptions to this requirement, related to salvaged trees, safety, ecological, or other rationale. |

| Section of MFP | Verification Items | Applicable Activities | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|--|-----------------------|----------------------|---|--|
| 3.10, 7.3 | 6. Environmental safeguard 6: Maintenance of natural land cover | Reforestation | Initial Verification | Project Report and site visit observations must demonstrate that the project complies with the requirements of the environmental safeguard. | <p>None</p> <p>Verification is complete when the Project Report and site visit observations indicate that the project is in compliance with the environmental safeguard.</p> <p>If the Project Report or site visit observations indicate that the project is not in compliance with this requirement, verifier shall notify the Reserve.</p> |
| 3.10, 7.3 | 7. Environmental safeguard 7: Soil disturbance from site preparation for tree planting | All | All Verifications | Monitoring Reports and site visit observations must demonstrate that the project complies with the requirements of the environmental safeguard. | <p>None</p> <p>Verification is complete when the verifier confirms that no deep ripping occurred or that the area affected by deep ripping, as reported in the Monitoring Report and observed during a site visit, was less than 1% of the Activity Area where deep ripping was performed. If record of ripper tine width is not available, verifier is to assume a tine width of 0.2 meter.</p> <p>If the Monitoring Report or site visit observations indicate that the project is not in compliance with this requirement, verifier shall notify the Reserve.</p> |

8.3.6 Quantifying Net GHG Removals and CRTs

Verification bodies are required to confirm that the Forest Owner has quantified the net GHG removals and CRTs for each Activity Area according to the requirements in the MFP. The guidance provided below is separated by quantification step.

8.3.6.1 Calculating the Activity Area Baseline

Verification bodies are required to confirm that the Forest Owner has developed a baseline for each Activity Area according to the requirements in Section 5.2. The guidance is separated by activity.

8.3.6.1.1 Improved Forest Management, Restoration, Reforestation, and Large Urban Forestry Activity Areas

Table 8.6. Verification Requirements for Calculating the Activity Area Baseline: Improved Forest Management, Restoration, Reforestation, and Large Urban Forestry Activity Areas

| Section of MFP | Verification Items | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|-----------------|---------------------------|---|--------------------|---|
| 5.2, Appendix B | 1. Baseline Carbon Stocks | 1. Initial Verification 2. Full verification when new Activity Areas are added | 1. CALCBOSK | Moderate Verification is complete if: a review of the analysis shows they properly employed calculations from CALCBOSK and the inventory estimate calculated on the verifier's CALCBOSK is equal to the inventory estimate provided by the Forest Owner. |

8.3.6.1.2 Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas

For Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas that use the canopy cover inventory methodology, follow the below guidance; for Activity Areas that use the intensive inventory methodology, follow the guidance in Section 8.3.6.1.1.

Table 8.7. Verification Requirements for Calculating the Activity Area Baseline: Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas

| Section of MFP | Verification Items | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|-----------------|---------------------------|---|---|--|
| 5.2, Appendix C | 1. Baseline Carbon Stocks | 1. Initial Verification 2. Full verification when new Activity Areas are added | 1. Determination of the activity and Assessment Area 2. Selection of default ratio estimator 3. Estimate of canopy cover 4. Calculation of CO ₂ e | <p>Moderate</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> ▪ a review of the calculation confirms that the methodology for quantifying tree canopy area specified in Appendix C was implemented correctly. ▪ Confirmation that the remote sensing image the Forest Owner used to generate their estimate is dated within 12 months of the Activity Area start date ▪ The verifier must independently calculate the canopy area for each Activity Area using a randomized or systematic application of points used by the Forest Owner. The points must be overlaid on the remote sensing image the Forest Owner used to generate their estimate/measurement of canopy area. The verifier shall determine if each point 'hits' or 'misses' a tree crown. The verifier shall sample enough plots to arrive at a determination of canopy area at +/-10% at 1 standard error. The percentage canopy area determined by the verifier must be within 10% of the estimate provided by the Forest Owner. <p>The verifier may repeat their effort if the Forest Owner is not in conformance with the verifier. Failure to find conformance after three efforts results in failure of the ability to verify the reported canopy area. The Forest Owner must resample/re-measure the canopy area prior to renewing verification activities.</p> <p>The i-Tree Canopy tool may be used to perform the analysis.</p> |

8.3.6.2 Quantifying the Activity Area Actual Onsite Carbon Stocks

Verification bodies are required to review the Forest Project's carbon stock estimates as described in Section 5.1. The guidance is separated by activity.

8.3.6.2.1 Improved Forest Management, Restoration, Reforestation, and Large Urban Forestry Activity Areas

Table 8.8. Verification Requirements for Quantifying the Activity Area Actual Onsite Carbon Stocks: Improved Forest Management, Restoration, Reforestation, and Large Urban Forestry Activity Areas

| Section of MFP | Verification Items | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|-----------------|---|--|---|---|
| 5.1, Appendix B | 1. Estimates of Actual Onsite Carbon Stocks | 1. Initial Verification 2. Full Verifications | <ol style="list-style-type: none"> 1. The inventory of the Activity Area's carbon stocks in required and optional pools. 2. CALCBOSK 3. Updated map of Activity Areas delineating all areas affected by a natural disturbance in excess of 5 hectares or harvest event | <p>Low</p> <p>The verifier must copy the inventory data into a verification database (CALCBOSK; provided by the Reserve) prior to the tests described in this section.</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> ▪ the review of the plot layout and plot selection (for sampling) was conducted per Appendix B. ▪ plot protocols (stated in Appendix B) were adhered to in field. Verifiers should confirm that plot dates were accurately entered. ▪ verifier is satisfied with evidence that the reported harvested volume is accurate and that all plots affected by a natural disturbance or harvest event have been updated in the reported inventory⁵⁵. ▪ the error checks on the CALCBOSK application reveal no unexplained issues. ▪ the inventory estimate calculated on CALCBOSK is equal to the inventory estimate provided by the Forest Owner. ▪ sequential sampling is conducted with satisfactory findings as described in Section 8.4. |

⁵⁵ Up to 5% of the total inventory plots can be excluded for a given reporting period. Excluded plots are not used to calculate the reported inventory of CO₂e nor are they used to calculate the sampling error. Additionally, an excluded plot must be included in the next year's inventory, meaning the plot must be remeasured within the year prior to the next reporting period (see Section B.3.3).

| Section of MFP | Verification Items | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|--------------------|----------------------|---|---|
| | | 1. Desk Verification | <ol style="list-style-type: none"> 1. Evidence that reported onsite carbon stocks are reasonable given reported harvest, growth, and disturbance effects since the prior reporting period. 2. Updated map of Activity Areas delineating all areas affected by a natural disturbance in excess of 5 hectares or harvest event. | <p>Moderate</p> <p>Verification is complete when:</p> <ul style="list-style-type: none"> the estimates of forest carbon change, or the actual onsite carbon stocks relative to the previous year's onsite carbon stocks, are within a reasonable fluctuation that reflects growth, harvest and natural disturbances from the previous year. verifier is satisfied with evidence that the reported harvested volume is accurate and that all plots affected by a natural disturbance or harvest event have been updated in the reported inventory⁵². the error checks on the CALCBOSK application reveal no unexplained issues. the inventory estimate calculated on CALCBOSK is equal to the inventory estimate provided by the Forest Owner. verifier is satisfied with evidence that the volume of carbon stocks lost through natural disturbance, if any, is reasonably accurate. <ul style="list-style-type: none"> A high level of proof exists if the plots existing in the disturbed area have been completely re-measured prior to the end of the reporting period. A low level of proof exists if other approaches are used that may estimate the area affected multiplied by the average carbon stocks within the Activity Area. Such approaches would require more verification scrutiny. |

8.3.6.2.2 Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas

For Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas that use the canopy cover inventory methodology, follow the below guidance; for Activity Areas that use the intensive inventory methodology, follow the guidance in Section 8.3.6.2.1.

Table 8.9. Verification Requirements for Quantifying the Activity Area Actual Onsite Carbon Stocks: Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas

| Section of MFP | Verification Items | Required at | Material to Review | Level of Professional Judgment and Verification Review Guidelines |
|-----------------|---|-------------------|--|--|
| 5.1, Appendix C | 1. Estimates of Actual Onsite Carbon Stocks | All Verifications | 1. Estimate of canopy cover 2. Calculation of CO ₂ e | <p>Moderate</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> ▪ a review of the calculation confirms that the methodology for quantifying tree canopy area specified in Appendix C was implemented correctly. ▪ Confirmation that the remote sensing image the Forest Owner used to generate their estimate is dated within 12 months of the end of the reporting period ▪ The verifier must independently calculate the canopy area for each Activity Area using a randomized or systematic application of points used by the Forest Owner. The points must be overlaid on the remote sensing image the Forest Owner used to generate their estimate of canopy area. The verifier shall determine if each point 'hits' or 'misses' a tree crown. The verifier shall sample enough plots to arrive at a determination of canopy area at +/- 10% at 1 standard error. The percentage canopy area determined by the verifier must be within 10% of the estimate provided by the Forest Owner. <p>The verifier may repeat their effort if the Forest Owner is not in conformance with the verifier. Failure to find conformance after three efforts results in failure of the ability to verify the reported canopy area. The Forest Owner must resample/re-measure the canopy area prior to renewing verification activities.</p> <p>The i-Tree Canopy tool may be used to perform the analysis.</p> |

8.3.6.3 Quantifying the Activity Area Primary Effect

For all Activity Areas, verification bodies are required to review the Forest Project's primary effect as described in Section 5.4.

Table 8.10. Verification Requirements for Quantifying the Activity Area Primary Effect

| Section of MFP | Verification Items | Required at | Materials to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|-------------------------------------|-------------------|---------------------|--|
| 5.4 | 1. Quantification of Primary Effect | All Verifications | 1. CMW | <p>Very Low</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> verifier confirms Forest Owner used the Reserve's Carbon Monitoring Worksheet (CMW). inputted data are current and consistent with the inventory data calculated in CALCBOSK or following the canopy cover inventory methodology. verifier is satisfied with the mathematical calculations. <p>This may require the verifier to download the calculation worksheet from the Reserve's website and input project data to ensure the calculation worksheet has not been tampered with.</p> |

8.3.6.4 Quantifying the Activity Area Secondary Effect

Verification bodies are required to review the Forest Project's secondary effect as described in Section 5.5. The Secondary Effects guidance is divided by activity.

8.3.6.4.1 Improved Forest Management Activity Areas

Table 8.11. Verification Requirements for Quantifying the Activity Area Secondary Effect: Improved Forest Management Activity Areas

| Section of MFP | Verification Items | Required at | Materials to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|--|-------------------|--|---|
| 5.5.3 | 1. Quantification of Secondary Effects | All Verifications | <ol style="list-style-type: none"> The project's Secondary Effects calculations must be checked for completeness and accuracy. Record of average volume of timber (historic and current) provided to SEMARNAT. | <p>Very Low</p> <p>Verification is complete if:</p> <ul style="list-style-type: none"> verifier confirms Forest Owner used the Reserve's CMW and the Reserve's Secondary Effects calculation tool. the input data are current and consistent with the leakage risk factor calculated using the methodology from Section 5.5.3. verifier is satisfied with the mathematical calculations. |

8.3.6.4.2 Reforestation Activity Areas

Table 8.12. Verification Requirements for Quantifying the Activity Area Secondary Effect: Reforestation Activity Areas

| Section of MFP | Verification Items | Required at | Materials to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|--|----------------------|---|--|
| 5.5.1 | 1. Quantification of Secondary Effects | Initial Verification | 1. CMW: the project's Secondary Effects calculations must be checked for completeness and accuracy. | Very Low Verification is complete if: <ul style="list-style-type: none"> ▪ verifier confirms site preparation intensity indicated by Forest Owner is accurate. ▪ verifier confirms Forest Owner used the Reserve's CMW. ▪ the input data is accurate. ▪ verifier is satisfied with the mathematical calculations. |

8.3.6.4.3 Reforestation, Restoration, Agroforestry, and Silvopastoral Activity Areas

Table 8.13. Verification Requirements for Quantifying the Activity Area Secondary Effect: Reforestation, Restoration, Agroforestry, and Silvopastoral Activity Areas

| Section of MFP | Verification Items | Required at | Materials to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|--|-------------------|---|--|
| 5.5.2 | 1. Quantification of Secondary Effects | All Verifications | 1. CMW: The project's Secondary Effects calculations must be checked for completeness and accuracy. | Very Low Verification is complete if: <ul style="list-style-type: none"> ▪ verifier confirms Forest Owner used the Reserve's CMW. ▪ the input data are current and consistent with the leakage risk factor calculated using Figure 5.1 from Section 5.5.2. ▪ verifier is satisfied with the mathematical calculations. |

8.3.6.5 Calculating total CRTs to be issued

For all Activity Areas, verification bodies are required to review the Forest Project's calculation of total CRTs to be issued as described in Section 5.6.

Table 8.14. Verification Requirements for Calculating total CRTs to be Issued

| Section of MFP | Verification Items | Required at | Materials to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|--|-------------------|---|--|
| 5.6.1 | 1. Tonne-Year Accounting and Credit Issuance | All Verifications | 1. PIA (if applicable) 2. CMW 3. Project Report or Annual Monitoring Report | Low Verification is complete if: <ul style="list-style-type: none"> verifier affirms status (including length) of PIA with the Reserve coincides with the reported contract length in the Project Report or Annual Monitoring Report and used in the calculation of credits using Equation 5.5 and in the CMW. verifier affirms that an executed PIA (if applicable) is on file with the Reserve. verifier affirms that calculations in the CMW of credits issued by reporting period are correct. Verifier should ensure each vintage (year in which removal enhancements occurred) is correctly calculated. |

8.3.7 Permanence

Table 8.15. Verification Requirements for Ensuring Permanence

| Section of MFP | Verification Items | Required at | Materials to Review | Level of Professional Judgment and Verification Review Guidelines |
|----------------|---------------------------|-------------------|--|---|
| 6.2 | 1. Reversal determination | All Verifications | If a reversal has occurred, the verification body must check the type of reversal (avoidable or unavoidable), the extent of the reversal, and the compensation calculations. | Low to Moderate Verification is complete when: <ul style="list-style-type: none"> verifier confirms the source of the reversal is avoidable or unavoidable. If the reversal is avoidable the verifier must contact the Reserve for further action. |
| 6.2 | 2. Reversal Risk Rating | All Verifications | The calculation of the project's contribution to the Buffer Pool in the CMW. | None Verification is complete if the calculation for the Buffer Pool contribution has been correctly calculated by the CMW. |

Verification bodies are required to review the Forest Project's compliance with the permanence requirements described in Section 6.

8.4 Site Visit Activities: Verifying Carbon Inventories

For IFM, Restoration, Reforestation, and Large Urban Forestry Activity Areas, Verification bodies are required to verify carbon stock inventory estimates of all sampled carbon pools within the Activity Areas. Inventories of carbon stocks are used to determine the Activity Area baseline and to quantify GHG removals against the baseline over time. Verification of carbon inventories consists of ensuring the Forest Owner's sampling methodology conforms to requirements listed in the protocol and that the Activity Area's inventory sample plots are within specified tolerances when compared to the verifier's sample plots. Verification is effectively an audit to confirm that the inventory estimate is sound.

For IFM, Restoration, Reforestation, and Large Urban Forestry Activity Areas, a site visit is required to verify the project's onsite stocks at each full verification and focus on ensuring that the project's inventory methodology is technically sound and correctly implemented.

Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas that use the intensive inventory methodology must also follow the guidance in this section.

See Appendix D for specific requirements for verification bodies conducting full verifications with site visits.

8.4.1 Sequential Sampling for Verification

The Mexico Forest Protocol utilizes a sequential sampling method for verification of Activity Area estimates that require a site visit as part of the full verifications. Sequential sampling is intended to provide an efficient sampling method for verifiers to determine if randomly selected Activity Area measurements are within specified tolerance bounds established by the protocol. The Reserve provides an online worksheet for verifiers to download to facilitate the sequential sampling analysis. Sequential sampling should be conducted independently for each Activity Area included in a Forest Project.

Sequential approaches have stopping rules rather than fixed sample sizes. Verification is successful after a minimum number of successive plots in a sequence indicate agreement. Where the stopping rules indicate the potential presence of a bias, additional verification plots may be collected after that time if it is felt that random chance may have caused the test to fail and a convergence towards agreement is expected with additional verification samples.

The results of any additional verification plot may also be inconclusive and require additional verification plots for a determination to be made. For effective application of the sequential statistics in the field, the determination of when the stopping rule is met is conducted after a group of the randomly selected plots have been measured in the field. This can be conducted after the minimum number of plots has been measured by the verifier, or as frequently as needed. The data can also be entered in the field, if portable computers are available, where the most rapid conclusion to verification might be determined.

To increase efficiency in the verification process, three different levels of sequential sampling are performed by the verifier. All tests are performed with the same randomly selected plots and can only be completed by analysis of the plots in the sequential order they were selected. The data identified below used for each test are input into the appropriate sequential sampling tool. In the case of the test of CO₂e/hectare, the field data are input into a verifier's version of CALCBOSK to provide a CO₂e/hectare value.

- Diameter Test (optional): A comparison of diameter data between the verifier and the Forest Owner is conducted on a tree by tree basis until sequential sampling rules have been achieved, indicating that the verifier and Forest Owner measurements of diameter are aligned within acceptable tolerance levels. If and when the stopping rules are met, verifiers will use the diameter data provided for each tree from the Forest Owner's database for any additional data inputs needed for the CO₂e/hectare comparison.
- Height Test (optional): Like the diameter test, a comparison of height data is performed between the verifier and the Forest Owner until sequential sampling rules have been achieved, indicating that the verifier and Forest Owner measurements of height are aligned within acceptable tolerance levels. If and when the stopping rules are met, verifiers will use the height data provided for each tree from the Forest Owner's database for any additional data inputs needed for the CO₂e/hectare comparison.
- CO₂e/hectare (required): The testing of inventory data can only be satisfied when the CO₂e/hectare comparison between the verifier and Forest Owner is completed. This test is conducted on a plot by plot basis using estimates of CO₂e/hectare. The verifier's estimates of CO₂e/hectare are derived by measurements of diameter and height (measured by verifier or using Forest Owner's data, as described above), species determination, defect and decay determination, and a determination of the appropriate trees to be included in the sample ('in' or 'out' trees).

8.4.1.1 Inventory Estimates

The inventory estimate developed by the Forest Owner must meet the minimum precision threshold stated in Appendix B of +/- 20% at the 90% confidence interval. CALCBOSK provides for a quick check of the Activity Area's inventory confidence. The inventory confidence output from CALCBOSK should be input into the Reserve's calculation worksheet (CMW). Forest Owners can improve the precision of their estimates through additional inventory effort.

8.4.1.2 Measurement Specifics for Verifiers for Sequential Sampling

The following standards shall guide verifier measurements:

- Verifiers shall measure all diameters (DBH) to the nearest 1/10th of a cm of 'in' trees on plots until sequential sampling requirements for diameters are met. If and when met, verifiers can accept the diameter measurement data of the Forest Owner.
- Verifiers shall measure the heights to the nearest 1/10th of a meter of all trees until sequential sampling requirements for heights are met. If and when met, verifiers can accept the height data of the Forest Owner. The use of regressions to estimate heights is allowable for Forest Owners; verifiers must measure each height for comparison with Forest Owners' estimates (until sequential sampling requirements are met). In cases where distance measurements are used to determine height, it is recommended that the tools used to determine distance measurements be able to obtain an accuracy of +/- 10 cm for each 10 m of height.
- Verifiers shall measure plot boundaries where trees are not obviously 'in' or 'out' of the fixed area plots. Tools and methods used for distance measurements for plot boundaries should be able to obtain an accuracy of 1cm for each 10 m of distance.
- Special Rules for 'in'/'out' trees: Verifiers may encounter trees that are 'in', either in the

large tree plot or the small tree plot, that were not measured by the Forest Owner. The cause of the omission(s) may be that the trees were determined to be too small to be included, per sampling methodology criteria, at the time of the Forest Owner measurement. Similarly, trees that were determined to be too small in the large plot by the Forest Owner, i.e., less than 30 cm, may have grown and now exceed the 30 cm threshold for inclusion.

The verifier shall not include trees in the verifier measurements (for sequential sampling purposes) if the tree was omitted by the Forest Owner and the tree diameters, at time of verification audit, are less than 33 cm for the large plot and less than 8 cm for the small plot. Similarly, trees that were included by the Forest Owner in the small plot and, at the time of verifier audit, are less than 33 cm shall continue to be entered in the small tree plot, such that the expansion values are consistent with those of the Forest Owner. This applies a reasonable cushion to Forest Owners who apply the sampling methodology correctly, but through no fault of their own are penalized due to forest growth changing measurement parameters. It should be noted that the cushion is minimal and will not relieve Forest Owners from growth over long periods of time that would exceed the cushion allowances. Hence, Forest Owners need to base the re-measurement of the plots on an adequate timeframe to avoid verification problems with their inventory data. Any trees that do not meet the criteria of the standards listed above shall be included as part of the verifier's plot estimate for purposes of sequential sampling.

- Verifiers shall insert their own determination of species for each tree included in the verifier's inventory.
- For defect and decay (vigor classification), verifiers may first consider the inputs of the Forest Owner and determine whether or not they are reasonable. If considered reasonable, the verifier may insert the same classification as the Forest Owner for each tree included in the verifier's inventory. If, however, considered unreasonable, or not recorded by the Forest Owner, the verifier shall insert their own determination.

8.4.1.3 Selection of Inventory Plots

For each Activity Area, the verifier shall select the plots randomly, using CALCBOSK to produce a list of randomly output plots. The verifier shall upload a copy of the randomly selected plots, in the order selected by CALCBOSK, on their Reserve account prior to implementing field verification activities. It is required that the verifier apply the random order selection in the sequential sampling worksheets. The verifier is free to measure the set of plots that were randomly selected in any order that provides the greatest efficiency while sampling in the field, but when the verifier inputs data into the sequential sampling spreadsheets, the verifier must follow the random selection order to properly conduct the analysis and maintain the integrity of sequential analysis. This may provide significant efficiencies when selected stands and/or plots are in close geographic proximity and it is hypothesized that the stopping rules will require the additional plots that are in close proximity.

The main statistical test used to evaluate the Forest Owner's inventory is based on a comparison of the verifier's measurements of plots, calculated as CO₂e per hectare compared to the Forest Owner's measurements of plots, which may include adjustments from originally field-sampled data to account for growth. The inventory verification is complete when a minimum of 5 plots are identified as 'passing' in sequence in the Sequential Sampling Tool for plot CO₂e per hectare.

There are many factors that influence the quality of plot data developed by the Forest Owner, including, but not limited to:

- Diameter measurements
- Height measurements
- Species Identification
- Trees attributed to the wrong subplot, i.e., small trees included in the large plot or large trees entered in the small tree portion of the data entry form in CALCBOSK, leading to gross over-estimations of plot value
- Trees that are measured as inside the fixed area plot and the converse, trees included in the plot that shouldn't be
- Trees completely missed during the plot measurements
- Trees that are measured on the plot that have fallen

Additionally, plot data are 'grown' in CALCBOSK to adjust measurements for tree growth that may introduce further variation between verified measurements and project data.

8.4.1.4 Height and Diameter Sequential Sampling

The Reserve has developed tools that increase verification efficiencies where it can be justified to do so. Specifically, where verification findings are closely aligning with project data for diameters and heights for successive plots, according to quality control thresholds developed by the Reserve, verification of plot measurements may continue without further measurement of the Forest Owner's diameter and/or height measurements and proceed to evaluating other aspects of plot measurements. Passing of the diameter and height sequential sampling is not required.

A tool has been developed for verifiers to perform the comparison of diameter and height measurements and is available on the Reserve's website⁵⁶. The tool identifies at which point the verifier may discontinue measuring diameter and/or height measurements with stopping rules. The stopping rules require a minimum of 40 trees be measured which must come from plots that are in the sequential order produced from CALCBOSK. Additionally, the trees on the plots must be entered in the tool in the order the trees exist on the plot, beginning with the small trees (A-n) and proceeding to the larger trees (1-n). If, after 40 trees (or more) have been measured and the comparison of verifier and Forest Owner data are within the thresholds shown in Table 8.16, further measurements are discontinued, the verifier will accept the Forest Owner's measurements for the variable they have demonstrated adequacy, and the verifier will focus on other plot variables, as mentioned above.

⁵⁶ <http://www.climateactionreserve.org/how/protocols/mexico-forest/>

Table 8.16. Threshold Variables that Define the Stopping Rules for Verification of Diameters and Heights

| Variables | | Threshold |
|--|----------------|-----------|
| Minimum number of trees sampled | | 40 trees |
| Diameter | | |
| Mean average difference of measurements | High threshold | 0.635 cm |
| | Low threshold | -0.635 cm |
| Standard deviation of the difference of measurements | | 2.54 cm |
| Height | | |
| Mean average difference of measurements | High threshold | 0.32 m |
| | Low threshold | -0.32 m |
| Standard deviation of the difference of measurements | | 1.80 m |

The stopping rules are based on a comparison of diameters and heights that are measured by the Forest Owner. Missed trees are not included in the stopping rules used to assert adequacy of diameter and height measurements but must be included in the overall plot comparison of CO₂e in the main sequential sampling test. Trees that have been measured by the Forest Owner erroneously, that is they're not actually in the plot, will not be used as part of the stopping rules for diameters and heights. Verifiers may use professional judgement for trees that have fallen based on the ability to obtain accurate measurements.

8.5 Completing the Verification Process

After completing the core project verification activities for a Forest Project, the verification body must take the following steps. Each document listed is discussed in greater detail below.

1. Complete a Verification Report to be delivered to the Forest Owner (public document).
2. Complete a detailed List of Findings containing both immaterial and material findings (if any), and deliver it to the Forest Owner (private document).
3. Prepare a concise Verification Statement detailing the vintage and the number of GHG removals verified, and deliver it to the Forest Owner (public document).
4. Verify that the number of GHG removals, as well as the reversal risk rating, specified in the Verification Report and Statement match the number entered into the Reserve system.
5. Conduct an exit meeting with the Forest Owner to discuss the Verification Report, List of Findings, and Verification Statement and determine if material misstatements (if any) can be corrected. If so, the verification body and Forest Owner should schedule a second set of verification activities after the Forest Owner has revised the project submission.
6. If a reasonable level of assurance is successfully obtained, upload electronic copies of the Verification Report, List of Findings, Verification Statement, and optional Verification Activity Log into the Reserve system.
7. Return important records and documents to the Forest Owner for retention.

Verification bodies must produce a transparent Verification Report documenting the overarching verification activities for the Forest Project. The Verification report must be provided to the Forest Owner and project developer as well as made available to the Reserve and public. This document is a detailed summary and scope of verification activities undertaken and serves as the basis for the public and the Reserve to evaluate GHG projects registered on the Reserve. A positive Verification Report must provide positive assertion that the Forest Project meets all eligibility requirements, followed all monitoring requirements, appropriately applied the calculation methodologies provided, and is free of material errors. In addition, the Verification

Report must include a discussion of how the perceived areas of risk in the project were incorporated into verification activities and data review.

The Verification Statement is the official confirmation and final statement of findings during the verification process, detailing the number of CRTs issued, the vintages (if more than one) and the standard used to verify those CRTs for a Forest Project. The Verification Statement confirms the verification activities and outcomes for all stakeholders (Forest Owners, project developers, verifiers, the Reserve, and the public).

The Reserve relies on a Verification Statement provided by the verification body as the basis for issuing CRTs. A positive Verification Statement indicates that the Forest Project and reported GHG removals meet the Reserve standards and that the project successfully meets the verification standards contained in this protocol.

The Verification Statement must be signed by the designated Lead Verifier and Senior Internal Reviewer (also part of the verification team) on file with the Reserve. No deviations are allowed. An electronic version of the Verification Statement template is available on the Reserve website⁵⁷. Further guidance is provided in the Reserve's Verification Program Manual.⁵⁸

Verifiers may also complete an optional Project Verification Activity Log, which is designed to help verifiers understand the minimum requirements for verification activities specific to a project type. This document is private and only available for the Reserve, the Forest Owner and project developer to view. The logs may be uploaded to the Reserve when verification activities have been completed.

Finally, the List of Findings identifies and details all material and immaterial findings identified by the verifier throughout the verification. The List of Findings should be delivered first to the Forest Owner and project developer to allow them the opportunity to correct any issues found during the course of verification that might impact CRT registration. The List of Findings submitted to the Reserve should represent a summary of all findings and resolutions throughout the verification process. The document will remain private.

The Verification Report and Verification Statement shall be submitted at the conclusion of verification. If a project is deemed ineligible or noncompliant with a protocol to the extent that it can no longer move forward, verification bodies shall submit only their Verification Statement and List of Findings in the same manner noted above.

Further guidance for the Verification Report, Verification Statement, Verification Activity Log, and List of Findings can be found in the Reserve's Verification Program Manual. The Verification Program Manual also provides further guidance on quality assurance, negative verification statements, goals for exit meetings, dispute resolution, and record keeping.

⁵⁷ <http://www.climateactionreserve.org/how/verification/verification-documents>

⁵⁸ <http://www.climateactionreserve.org/how/program/program-manual/>

9 Glossary of Terms

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| Above-Ground Live Biomass | Live trees including the stem, branches, and leaves or needles, brush and other woody live plants above ground. |
| Activity Area | An Activity Area is a spatially discrete area within the Project Area where management activities are undertaken for the purpose of increasing forest carbon inventories for which the Forest Owner intends to generate offsets. Inventories within Activity Areas are held to a higher standard than inventories outside of Activity Areas. |
| Additionality | A criterion for Forest Project eligibility. A Forest Project is “additional” if it would not have been implemented without incentives provided by the carbon offset market, including the incentives created through the Reserve program. Under this protocol, Forest Projects meet the additionality criterion by demonstrating that they pass a legal requirement test and a performance test, as described in Section 3.13, and by achieving GHG reductions and removals quantified against an approved baseline, determined according to the requirements in Section 5.2. |
| Aggregate | An Aggregate must consist of two or more individual Forest Projects and may be comprised of any combination of the eligible project activities and Forest Owners from any geographic location within Mexico. |
| Aggregator | A corporation or other legally constituted entity, city, county, state agency, individual or a combination thereof, which may then submit documentation on behalf of Aggregate participants (two or more Forest Owners). |
| Allometric Equation | An equation that utilizes the genotypical relationship among tree components to estimate characteristics of one tree component from another. Allometric equations allow the below-ground root volume to be estimated using the above-ground bole volume. |
| Annual Monitoring Report | Form that serves as the basis for annual monitoring and requires the submittal of the CMW and Monitoring Report for Native Species to be submitted as attachments. The form can be downloaded from the Reserve’s website and must be submitted to the Reserve on an annual basis. |
| Avoidable Reversal | An avoidable reversal is any reversal that is due to the Forest Owner’s negligence, gross negligence or willful intent, including harvesting, development, and harm to the Project Area. |
| Assembly | The Assembly is the highest <i>ejido</i> /community body where decisions are made. |
| Assembly Act | An Assembly Act is a document that describes all the resolutions that took place during an Assembly. |

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| Attestation of Regulatory Compliance | Each time the Forest Project is verified, the Forest Owner must sign the Reserve's Attestation of Regulatory Compliance form indicating that the project is in material compliance with all applicable laws ⁵⁹ relevant to the project activity. Copies of the Attestation of Regulatory Compliance form are available on the Reserve's website ⁶⁰ . |
| Attestation of Title | Each time a Forest Project is verified, the Forest Owner or project developer must sign the Attestation of Title form indicating that the Forest Owner has an exclusive ownership claim to the GHG removals achieved by their Forest Project over the verification period. Copies of the Attestation of Title form are available on the Reserve's website ⁶⁰ . |
| Attestation of Voluntary Implementation | Each time a Forest Project undergoes verification, including the initial verification, the Forest Owner or project developer must sign the Reserve's Attestation of Voluntary Implementation form indicating that project activities are not legally required at the time of the start date nor during the reporting period(s) being verified. Copies of the Attestation of Voluntary Implementation form are available on the Reserve's website ⁶⁰ . |
| Baseline | The level of GHG emissions, removals, and/or carbon stocks at sources, sinks, and reservoirs affected by a Forest Project that would have occurred under a "business as usual" scenario. For the purposes of this protocol, a project baseline must be estimated following standard procedures in Section 5.2. |
| Biological Emissions | For the purposes of this protocol, biological emissions are GHG emissions that are released directly from forest biomass, both live and dead, including forest soils. For Forest Projects, biological emissions are deemed to occur when the reported tonnage of onsite carbon stocks, relative to baseline levels, declines from one year to the next. |
| Biomass | The total mass of living organisms in a given area or volume; recently dead plant material is often included as dead biomass. ⁶¹ |
| Bole | A trunk or main stem of a tree. |
| Buffer Pool | The Buffer Pool is a holding account for Forest Project CRTs administered by the Reserve. It is used as a general insurance mechanism against unavoidable reversals for all Forest Projects registered with the Reserve. If a Forest Project experiences an unavoidable reversal of GHG reductions and removals (see Section 6.2), the Reserve will retire a number of CRTs from the Buffer Pool equal to the total amount of carbon that was reversed (measured in metric tons of CO ₂ -equivalent). |

⁵⁹ Including the General Law of Environmental Equilibrium and Protection, Law for Sustainable Rural Development, General Law for Sustainable Forest Development, Agrarian Law, and The Political Constitution of the Mexican United States, among others.

⁶⁰ <https://www.climateactionreserve.org/how/program/documents/>

⁶¹ Metz, Davidson, Swart, & Pan, 2001.

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| Business as Usual | The activities, and associated GHG reductions and removals that would have occurred in the Project Area in the absence of incentives provided by a carbon offset market |
| CALCBOSK | CALCBOSK is a data management tool for users of the Reserve's Mexican Forest Protocol. The tool is built to complement the quantification methodology requirements for the protocol and its use is required. Project inventory data are entered in forms within CALCBOSK and automated reports can be generated. |
| Carbon Pool | A reservoir that has the ability to accumulate and store carbon or release carbon. In the case of forests, a carbon pool is the forest biomass, which can be subdivided into smaller pools. These pools may include above-ground or below-ground biomass or harvested wood products, among others. |
| Climate Reserve Tonne (CRT) | The unit of offset credits used by the Climate Action Reserve. Each Climate Reserve Tonne represents one metric ton of CO ₂ reduced or removed from the atmosphere, completing the Reserve requirements for permanence through a secured contract or time. |
| Community | A system of communal land tenure in Mexico. Community or communal is often used throughout the protocol to represent both systems of communal land tenure, communities (<i>comunidades</i>) and <i>ejidos</i> . |
| Confidence Interval | A range of values so defined that there is a specified probability that a population parameter lies within it. |
| Deforestation | The conversion from forestland use to another land use. |
| Degradation | From the point of view of climate change policy and the IPCC, it refers to loss of carbon stock within forests that remain forests. ⁶² |
| <i>Ejido</i> | A system of communal land tenure in Mexico. |
| Forest Management | The planning and implementation of actions on forestlands to meet specific environmental, economic, social and cultural objectives. |
| Forest Management Program | Legal documents authorized by SEMARNAT that enable Forest Management and ensure sustainable management by ensuring forest harvest does not exceed forest growth. |
| Forest Owner | A Forest Owner can be any non-federal entity that has undisputed legal ownership of the forest carbon through outright ownership or through rights granted to them from a state or federal agency. See Section 3.3 for further information. |
| Forest Project | A planned set of defined activities designed to increase removals of CO ₂ from the atmosphere through forest management that increases forest carbon stocks. |

⁶² UNFCCC, 2008.

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| Forestland | Land spanning more than 0.5 hectares with trees that have the potential to grow higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ and that allows for management of one or more forest resources, including timber, fish and wildlife, biodiversity, water quality, recreation, aesthetics, and other public benefits. |
| GHG Assessment Boundary | The GHG Assessment Boundary defines all the GHG sources, sinks, and reservoirs that must be accounted for in quantifying project GHG reductions and removals (see Section 4). The GHG Assessment Boundary encompasses all the GHG sources, sinks, and reservoirs that may be significantly affected by Forest Project activities, including forest carbon stocks, sources of biological CO ₂ emissions, and mobile combustion GHG emissions. |
| Greenhouse Gas (GHG) | Gas that contributes to global warming and climate change. For the purposes of this protocol, GHGs are the six gases identified in the Kyoto Protocol: carbon dioxide (CO ₂), nitrous oxide (N ₂ O), methane (CH ₄), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF ₆). |
| Lead Verifier | Must be designated as an active Lead Verifier on the COI Form, and must have successfully completed sector-specific project verifier training. |
| Listed | A Forest Project is considered “listed” when the Forest Owner has created an account with the Reserve, submitted the required Project Submittal Form and other required documents, paid the project submission fee, and the Reserve has approved and accepted the project for listing. |
| Litter | Any piece(s) of dead woody material from a tree, e.g., dead boles, limbs, and large root masses, on the ground in forest stands that is smaller than material identified as lying dead wood. |
| Lying Dead Wood | Any piece(s) of dead woody material from a tree, e.g., dead boles, limbs, and large root masses, on the ground in forest stands. Lying dead wood is all dead tree material with a minimum average diameter of 13 cm and a minimum length of 2.5 m. Anything not meeting the measurement criteria for lying dead wood will be considered litter. Stumps are not considered lying dead wood. |
| Metric Ton or “Tonne” (t) | A common international measurement for the quantity of GHG emissions, equivalent to about 2204.6 pounds or 1.1 short tons. |
| Natural Forest | Natural forests are identified where the dominant overstory vegetation is comprised of an overwhelming majority of native tree species, i.e., greater than 70% by CO ₂ e stocking. |
| Non-Forest Cover | Land with a tree canopy cover of less than 10 percent. |
| Non-Forest Land Use | An area managed for residential, commercial or agricultural uses other than for the production of timber and other forest products, or for the maintenance of woody vegetation for such indirect benefits as protection of catchment areas, wildlife habitat, or recreation. |

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| Onsite Carbon Stocks | Carbon stocks in living biomass, dead biomass, and soils within the Project Area. |
| Permanence | The requirement that GHGs must be permanently reduced or removed from the atmosphere to be credited as carbon offsets. For Forest Projects, this requirement is met by ensuring that the carbon associated with credited GHG reductions and removals remains stored for at least 100 years. |
| Primary Effects | The Forest Project's intended changes in carbon stocks, GHG emissions or removals. |
| Project Coordinator | Serves as the main communication link between the Reserve and the Forest Owner to ensure proper implementation of the protocol requirements. In communities and <i>ejidos</i> , the Project Coordinator must be a community/ <i>ejido</i> member and must prove through a signed Assembly Act recognized by law that he/she has been chosen by the <i>ejido</i> or community as Project Coordinator. |
| Project Implementation Agreement | A contract between the Reserve and the Forest Owner that effectively secures Verified Removals for periods of time (up to 100 years). |
| Project Life | The project life is time period that the Forest Project is obligated to monitoring and verification activities which is defined in the Project Implementation Agreement. |
| Project Report | Required document for reporting project information. Project Reports are intended to serve as the main project document that thoroughly describes how the project meets eligibility requirements, the project's vegetative and social framework, and the current forest conditions, threats, and activities associated with the Project Area. |
| Project Submittal Form | Required form to submit a forest project; located on the Reserve's website . See Section 7.1.1 for further information. |
| REDD+ | In policy texts currently in discussion under the UNFCCC, REDD+ is understood to include reduced deforestation and degradation, forest enhancement, sustainable management of forest, and forest conservation. |
| Reduction | The avoidance or prevention of an emission of CO ₂ (or other GHG). GHG reductions are calculated as gains in carbon stocks over time relative to a Forest Project's baseline (also see Removal). |
| Registered | A Forest Project becomes registered with the Reserve when it has been verified by a Reserve-approved and ISO-accredited verification body, all required documentation has been submitted by the Forest Owner to the Reserve for final approval, and the Reserve approves the project. |
| Removal | Sequestration ("removal") of CO ₂ from the atmosphere caused by a Forest Project. GHG removals are calculated as gains in carbon stocks over time relative to a Forest Project's baseline (also see Reduction). |

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| Reporting Period | A discrete period of time over which a Forest Owner quantifies and reports GHG removals to the Reserve. The length of the reporting period can be any amount of time up to 12 months for the first reporting period. Subsequent reporting periods must be exactly 12 months. |
| Reservoir | Physical unit or component of the biosphere, geosphere or hydrosphere with the capacity to store or accumulate carbon removed from the atmosphere by a sink or captured from a source. |
| Retire | To retire a CRT means to transfer it to a retirement account in the Reserve's software system. Retirement accounts are permanent and locked, so that a retired CRT cannot be transferred or retired again. |
| Reversal | A reversal is a decrease in the stored carbon stocks associated with quantified GHG reductions and removals that occurs before the end of the project life. Under this protocol, a reversal is deemed to have occurred if there is a decrease in the difference between project and baseline onsite carbon stocks from one year to the next, regardless of the cause of this decrease (i.e., if the result of $(\Delta AC_{\text{onsite}} - \Delta BC_{\text{onsite}})$ in Equation 5.1 is negative). |
| Safeguard | Policy or procedure that identifies, evaluates, minimizes, and mitigates direct and indirect impacts to communities and ecosystems. |
| Secondary Effects | Unintended changes in carbon stocks, GHG emissions, or GHG removals caused by the Forest Project. |
| Senior Internal Reviewer | The Senior Internal Reviewer must be an active Lead Verifier as designated on the COI Form, the form and has successfully completed sector-specific project verifier training. The Senior Internal Reviewer must remain independent of all verification activities and must perform a final quality assurance review on the data, the Verification Report, the List of Findings and must sign the Verification Statement attesting to the accuracy of reported data. The Senior Internal Reviewer must not participate in site visits as this would compromise their objectivity and independence in the final review. |
| Sequestration | The process of increasing the carbon (or other GHGs) stored in a reservoir. Biological approaches to sequestration include direct removal of CO ₂ from the atmosphere through land-use changes ⁶³ and changes in forest management. |
| Significant Disturbance | Any natural impact that results in a loss of least 20 percent of the above-ground live biomass that is not the result of avoidable or grossly negligent acts of the Forest Owner. |
| Sink | Physical unit or process that removes a GHG from the atmosphere. |
| Source | Physical unit or process that releases a GHG into the atmosphere. |

⁶³ Metz, Davidson, Swart, & Pan, 2001.

| | |
|-----------------------------|--|
| Standing Dead Carbon Stocks | The carbon in standing dead trees. Standing dead trees include the stem, branches, roots, or section thereof, regardless of species, with minimum diameter (breast height) of 13 cm and a minimum height of 15 m. Stumps are not considered standing dead stocks. |
| Standing Live Carbon Stocks | The carbon in the live tree pool. Live trees include the stem, branches, roots, and leaves or needles of all above-ground live biomass, regardless of species, with a minimum diameter (breast height) of 13 cm and a minimum height of 5 m (inventory methodology must include all trees 13 cm and greater). |
| Start Date | The start date of a Forest Project is a date in which project activities commenced. See Section 3.11. |
| Stocks (or Carbon Stocks) | The quantity of carbon contained in identified carbon pools. |
| Submitted | The Reserve considers a Forest Project to be “submitted” when all of the appropriate forms have been submitted and uploaded to the Reserve software system, and the Forest Owner has paid a project submission fee. |
| Tree | A woody perennial plant, typically large and with a well-defined stem or stems carrying a more or less definite crown with the capacity to attain a minimum diameter at breast height of 13 cm and a minimum height of 5 m. ⁶⁴ |
| Unavoidable Reversal | An unavoidable reversal is any reversal not due to the Forest Owner’s negligence, gross negligence or willful intent, including wildfires or disease that are not the result of the Forest Owner’s negligence, gross negligence or willful intent. |
| Verification | The process of reviewing and assessing all of a Forest Project’s reported data and information by an ISO-accredited and Reserve-approved verification body, to confirm that the Forest Owner has adhered to the requirements of this protocol. |
| Verified Removals | Quantified GHG removals that have been verified through either full or desk verifications. See Section 5.5.1 for further information. |
| Verification Report | This document is a detailed summary and scope of verification activities undertaken and serves as the basis for the public and the Reserve to evaluate GHG projects registered on the Reserve. The Verification report must be provided to the Forest Owner as well as made available to the Reserve and public. |
| Verification Statement | The official confirmation and final statement of findings during the verification process, detailing the number of CRTs issued, the vintages (if more than one) and the standard used to verify those CRTs. The Verification Statement confirms the verification activities and outcomes for all stakeholders (Forest Owners, verifiers, the Reserve, and the public). |

⁶⁴ Helms 1998.

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Appendix A Fourth Environmental Safeguard: Project Area Monitoring

To meet the requirements of the fourth environmental safeguard, Forest Projects with Improved Forest Management, Restoration, Agroforestry, Silvopastoral, and Reforestation activities must monitor forest land cover throughout the Project Area. Forest land cover outside of the Activity Areas within the Project Area must not decrease as a result of human activities over the project life. If a decline in forest land cover greater than 5% is detected relative to the project start date during a full verification, the project must rectify the forest cover loss in the subsequent 6 reporting periods.

The fourth environmental safeguard analysis is used to evaluate leakage within the Project Area, whereas the Secondary Effects analysis (see Section 5.5) is used to evaluate leakage outside of the Project Area.

Conducting ongoing Project Area monitoring is based on the development of estimates of area in various land cover classes using remotely sensed imagery. The methodology to assess compliance with the fourth environmental safeguard involves the following steps, further detailed in the sections below:

1. Select randomized points throughout the Project Area using the i-Tree Canopy Tool
2. Determine if each point is forest land cover using photo images (Google Earth)
3. Import the data into CALCBOSK and generate the Forest Land Cover Report

To comply with the fourth environmental safeguard, a review of the forest land cover within the Project Area must be conducted and the corresponding monitoring report must be prepared and submitted for every full verification.

A.1 Establishing Randomized Points

Randomized points are placed throughout the Project Area using the United States Forest Service's i-Tree Canopy Tool.⁶⁵ The Reserve will accept, and may approve, proposals of alternative methods of installing random points and/or measuring land cover and canopy cover.

The Project Area is input as the area of interest in the i-Tree Canopy Tool. The Project Area must be imported as a GIS shapefile into the i-Tree Canopy Tool. The i-Tree Canopy Tool will create random points on an aerial photo of the Project Area. The i-Tree Canopy tool automatically calculates the confidence of the estimate of canopy cover. The effort of sampling with random points must continue until the mean error estimate is within 10% of the calculated mean at one standard error (68% confidence interval). The points must be archived for the project life and made available to verifiers during verification.

For further guidance, see the MFP Quantification Tools User Manual.

⁶⁵ <http://www.itreetools.org/canopy/>

A.2 Determine Forest Land Cover

To determine the current forest land cover, the most recent photo image from publicly available sources (Google Earth, etc.) must be used; however, publicly available images from current and past years and other verifiable sources, such as local knowledge of management history, may be used to further inform the decision of land cover type. The analysis of current forest land cover is conducted using the random points established in the previous step. For further information on how to export the random points selected by i-Tree Canopy and import the points into Google Earth, see the MFP Quantification Tools User Manual.

For each point, the forest land cover should be classified using a reference area surrounding the point to provide context. The reference area for determining the land cover type of a random point is an approximate 1/10th of a hectare surrounding the point; the land cover type should be identified for the defined random point using a pattern in land cover within the reference area for context. It is advisable to use the Google Earth tool to draw a polygon around the point to determine the reference area. As the determination of the reference area and land cover will require a level of subjectivity, the determination will need to be verified; however, the Reserve's default will be to assume that the Forest Owner properly determined the reference area and land cover type and the verifier should only flag cases in which there are clear and certain errors by the Forest Owner.

Each point must be classified as forest land cover or other by the Forest Owner using the standardized land cover keys provided in Table A.1. The criteria listed in Table A.1 must be used when making land cover key assignments. The Forest Owner should enter the land cover classification into an excel spreadsheet. The MFP Quantification Tools User Manual provides further guidance on how to structure the spreadsheet to import the forest land cover classifications into CALCBOSK. The land cover key is used by CALCBOSK to calculate the distribution of forest land cover.

Table A.1. Criteria for Assignment of Land Cover Keys

| Land Cover | Definition | Land Cover Key |
|------------|---|----------------|
| Forest | Land spanning more than 0.5 hectares with trees that have the potential to grow higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ and that allows for management of one or more forest resources, including timber, fish and wildlife, biodiversity, water quality, recreation, aesthetics, and other public benefits. | FO |
| Other | All non-forest land cover types | OT |

A.3 Generate Forest Land Cover Report

The Forest Owner must import the data into CALCBOSK. The MFP Quantification Tools User Manual provides guidance on how to import the table into CALCBOSK. Once imported into CALCBOSK, the Forest Owner can produce the Forest Land Cover Report, which will state the percent forest land cover.

Appendix B Quantifying Carbon Stocks in Activity Areas: Intensive Inventory Quantification Methodology

Quantification of Activity Areas requires a forest inventory that produces accurate estimates of the included carbon pools,⁶⁶ monitors permanence, and evaluates compliance with environmental safeguards.

All activities that use the intensive inventory quantification methodology must use a database and application that facilitates inventory calculations and monitoring. The database and application is called 'CALCBOSK' and is accessible by contacting the Reserve. In addition, the MFP Quantification Tools User Manual includes further instructions on using CALCBOSK and the other quantification tools referred to throughout this section.

Large Urban Forestry, Reforestation, Restoration and Improved Forest Management Activity Areas must use the intensive inventory methodology. An intensive inventory requires that field sample plots be installed, measurements acquired, and data input into CALCBOSK for analytical purposes. Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas may alternatively use the inventory methodology in Appendix C.

B.1 Developing Initial Activity Area Inventories

Forest Projects must develop an initial inventory for each Activity Area. The initial inventory is then used to calculate the baseline by back-casting to the Activity Area start date (see Section B.2), and to calculate the actual carbon stocks for the end of each reporting period by growing the inventory forward and/or updating the inventory data through remeasurements (see Section B.3). CALCBOSK will automatically grow or degrow the inventory to a selected date (see Section B.3). The following steps are required to develop the initial inventory:

1. Develop inventory sample plots (see Section B.1.1)
2. Calculate the standing live and dead carbon in the sample plots and expand the carbon per plot to a per hectare basis (see Section B.1.2)
3. Calculate the confidence statistics (see Section B.1.3)

B.1.1 Sampling Methodology for Activity Areas (Standing Live and Dead Trees)

Inventory sample plots for developing a carbon inventory are only required in Activity Areas for the activities listed above. Inventory sample plots are not required to be measured for those areas within the Project Area but otherwise outside of any Activity Areas.

Where sampling is required, the sampling methodology must be designed to achieve an unbiased inventory estimate with a sample error that does not exceed +/- 20% of the mean at the 90% confidence level for standing live and dead trees based on CO₂e estimates at the Activity Area level. For Forest Projects with multiple Activity Areas, this targeted standard error is achieved across the entire Forest Project by "aggregating" the Activity Areas. Further guidance for projects with multiple Activity Areas is provided below in Section B.1.1.3.

⁶⁶ See Table 4.1 (GHG Assessment Boundary).

B.1.1.1 Inventory Sampling Plots

A 25-by-25 meter grid of plot locations must be randomly placed on the Activity Area. This must be conducted separately for each Activity Area that uses the intensive inventory methodology.

Plots are randomly selected from the pool of plots available in the Activity Area for sampling using the randomization utility within CALCBOSK (see the Quantification Tools User Manual for further information). Once the plots have been selected, the Forest Owner should inform the Reserve and send a copy of the plot selection to the Reserve. Achieving the overall sampling standard of the mean estimate being within $\pm 20\%$ of the calculated mean at the 90% confidence level will require a different number of plots based on the variability of stocking within the Activity Area as well as the number of Activity Areas included in the Forest Project.⁶⁷ Forest Owners are responsible for estimating the number of plots needed to achieve the confidence statistic minimum standard. Alternatively, plots can be sampled in the order of their random selection until the desired confidence statistic is achieved.

Once the plots have been selected, the inventory plots will be monumented for future re-measurement as part of ongoing monitoring. A map of the sampled plots should be submitted with the Project Report. Additional plots may be added in the future in the order of their random selection at the Activity Area initiation in order to improve confidence estimates. A plot cannot be removed once it is part of the basis of the inventory⁶⁸. CALCBOSK will calculate the inventory confidence from the Activity Area data. The Quantification Tools User Manual provides further guidance on how to generate the report to check the inventory confidence.

Data from inventory plots are valid for a period of 12 years following field sampling, during which time the plot data can be updated (using CALCBOSK) with estimates of annual growth increment to both diameter and height measurements. The process for updating plots is described in detail in Section B.3. Since plot data can be no older than 12 years, plots must be periodically re-measured or new plots installed for both annual monitoring and periodic field verification. Any time more plots are desired for improving inventory confidence, new inventory plots must be selected randomly for measurement from the grid of potential plots described above. Plot data (not plot location) must be removed or replaced from the inventory when an event substantially changes the forest cover surrounding the plot, e.g., harvest or forest fire.

Inventory plots are installed as fixed radius plots. The size of the radius varies depending on the attribute that is measured, as shown in Table B.1 below. Only the random plots selected for sampling need to be installed. Plot centers must be monumented so they can be relocated for future measurement or for verification. Monumenting plot locations so that they are available for re-measurement and/or verification can be challenging. GPS coordinates must be recorded for each plot at, or offset from, the plot center. Since GPS coordinates will only partially assist in relocating the plot center, additional navigational devices are necessary. It is recommended that an object be placed at plot center that is highly resistant to environmental features, including weather, animals, and fire. A small piece of metal rebar may be suitable. Relocating the plot center can be enhanced through the identification of bearing trees, or trees with aluminum tags affixed to them with a measured distance and compass bearing to the plot center etched or otherwise written on them. A minimum of two trees will assist in triangulating to the plot center. Marking these trees with highly visible paint will also be useful for plot center relocation.

⁶⁷ No projects are accepted if the standard error is greater than $\pm 20\%$ at the 90% confidence level.

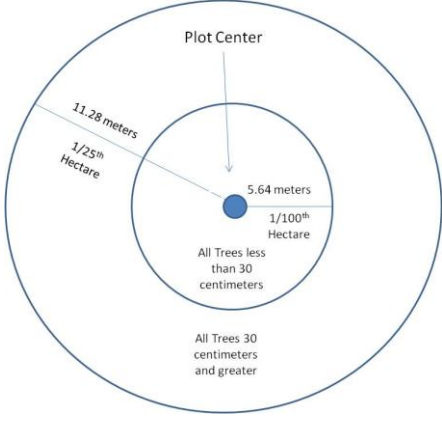
⁶⁸ The Reserve is contemplating future guidance to structure a randomized system of removing and replacing plots.

Table B.1 displays the data that are to be collected at each inventory plot. Forest Owners may use varying tools or sampling methods; however, all sampled data must be entered into CALCBOSK to calculate the carbon estimates for the Activity Areas and verifiers must use the sampling methodology as detailed in the protocol.

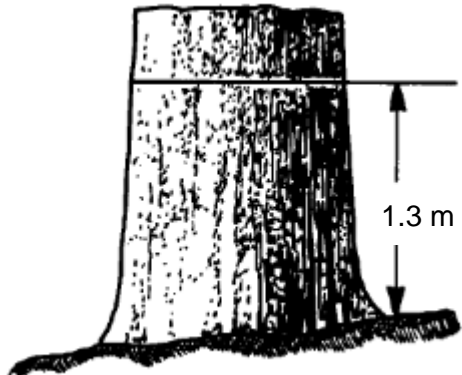
Special considerations are provided for mangrove forests, such that certain mangrove species do not require height measurements, including *Rhizophora mangle*, *Avicennia germinans*, *Laguncularia racemosa*, *Conocarpus erectus*, or *Avicennia bicolor*. In addition, the DBH for *Rhizophora mangle* (mangle rojo) should be taken 30 cm above the highest stilt root. Further exemptions or modifications may be made on a case-by-case basis to be approved by the Reserve.

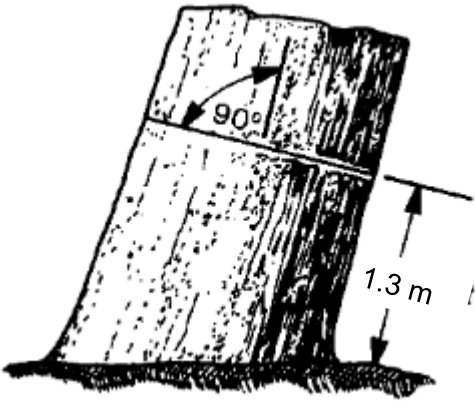
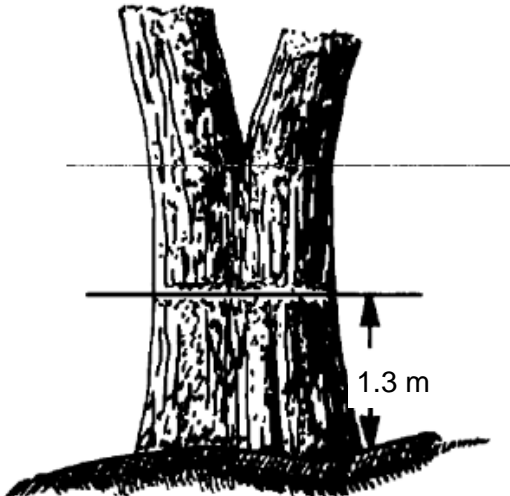
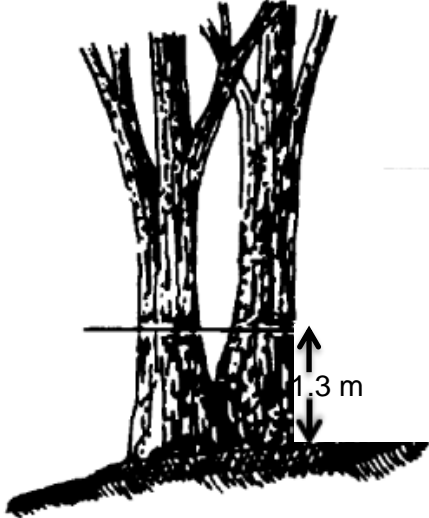
The Quantification Tools User Manual has further guidance on entering the data into CALCBOSK.

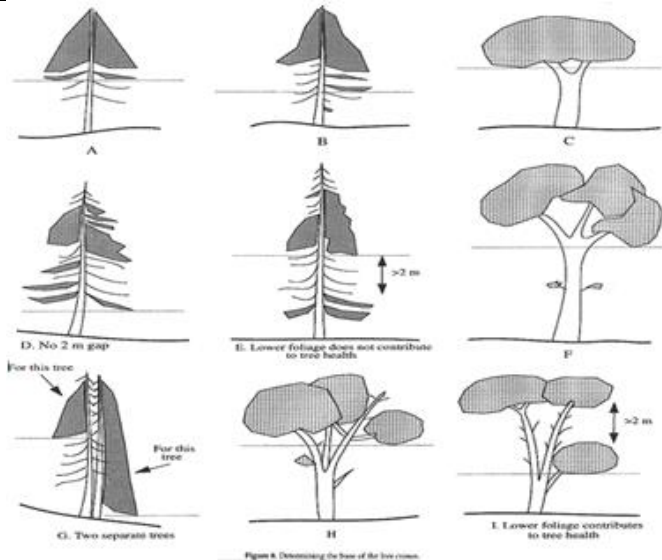
Table B.1. Inventory Plots


| For Each Plot | | |
|--|---------------------|---|
| Item | Attribute | Description |
| 1 | Date of Plot Visit | Day/Month/Year |
| 2 | Latitude | From GPS (in degrees) |
| 3 | Longitude | From GPS (in degrees) |
| 4 | Plot Number | Enter the plot number for the plot, as described in the section above. |
| 5 | Inventory Personnel | Enter the initials of the inventory technicians responsible for measuring and recording data on the plot. |
| 6 | Slope | Using the clinometer, average the slope measurements looking uphill and downhill to the nearest 5%. |
| 7 | Aspect | Enter the degrees (azimuth) looking directly downhill from plot center. If the plot slope is 0, aspect may be recorded as “-1”. |
| <p>On a Fixed 1/25th Hectare Radius (Radius = 11.28 m), all trees \geq 30 cm DBH and \geq 3m height</p> <p>On a Fixed 1/100th Hectare Radius (Radius = 5.64 m), all trees \geq 5 cm⁶⁹ and $<$ 30 cm DBH</p> <p>Radial measurements need to be corrected for horizontal distances based on the slope from plot center to each tree.</p> <p>Note: the radial measurements are based on distances from plot center to the base of the tree.</p> | |  |

⁶⁹ A minimum of 5cm DBH is recommended; however, projects may include trees with smaller diameters if the Forest Owner determines that the benefits of including smaller trees will outweigh the added costs. Forest Owners will need to clarify the adjusted minimum DBH in the Project Report, and verifiers will need to include trees of all sampled sizes in the verification.

| Item | Attribute | Description |
|------|-------------|--|
| 8 | Tree Number | <p>Trees are assigned a number 1 to X (for 'large' trees 30cm and greater) and a letter A to Z (for 'small' trees less than 30cm), starting from 0 degrees (North) and generally proceeding clockwise. The numbering convention in CALCBOSK facilitates the relocation and the verification of the trees. Over time, the numbering convention will breakdown as trees grow into plots and small trees with a letter designation grow into large trees with a numeric designation. The following procedures must be adhered to with the numbering convention:</p> <ol style="list-style-type: none"> 1. Previously measured small trees that are now measured as large trees must be re-numbered during the inventory update with a value 1 to X. Use a numeric value that has not been used for any tree previously. Put a note in the plot notes indicating that the change was made. 2. Small trees that become large trees that were not previously measured (i.e., outside of the 1/25th hectare plot) must be numbered with a value 1 to X. Use a numeric value that has not been used for any tree previously. <p>It is understood and acceptable that the tree identification system will not follow the original clockwise pattern over time. Other than previously measured small trees, never re-attribute a tree's identification.</p> |
| 9 | Species | Enter the species code for each species on the plot. The species code can be found for each species in the species list found on CALCBOSK. |
| 10 | DBH | <p>Measure and record Diameter at Breast Height (DBH) to the nearest tenth of a centimeter on every tree using a diameter tape and wrapping the tree at a height of 1.3 meters from the base of the tree on the uphill side. The guide here displays how uncommon trees should be measured (use uphill guidance).</p>  |

| Item | Attribute | Description |
|------|-----------|--|
| | |  |
| | | <p>Forked trees above DBH are counted as one tree. Forked trees below DBH are counted as two trees (or however many forked stems exist). Add minimum DBH to be included.</p>  <p>One Tree</p>  <p>Two Trees</p> |

| Item | Attribute | Description | | | | | | | | | |
|------|--|---|------|-------------|---|---|--|------|---|---|------|
| | | <i>Images via FSH 2409.12 USDA Forest Service Timber Cruising Handbook</i> | | | | | | | | | |
| 11 | Total Height | Measure of total height (height from base of tree to top) of all trees in the plot to the nearest tenth of a meter. If the angle from level to the point of measurement exceeds 45 degrees (i.e., 100% or 66 topo), the distance from the measured tree must be increased to reduce the angle. For dead trees with broken tops, estimate the total height (as if the tree were whole) to the nearest meter by comparing the tree to other live trees of similar diameters and species. | | | | | | | | | |
| 12 | Height to Crown Base |  <p>Measure the distance from the base of the tree to the ocularly balanced base of the tree's crown. See examples above.</p> | | | | | | | | | |
| 13 | Vigor | <p>For each tree, provide a rating of the tree's apparent vigor. Determination of vigor is based on consideration of color of foliage, crown proportion and appearance, retention of leaves/needles, appearance of apical growth, length between growth whorls, and presence of cavities and fungal growth. The code is assigned based on the following classes:</p> <table border="1"> <thead> <tr> <th>Code</th><th>Description</th><th>Decay Adjustment (adjustment to wood density)</th></tr> </thead> <tbody> <tr> <td>1</td><td>Very Healthy/Dominant: Crown is full on all sides and crown length is at least 30% of the tree's length, or the total height of the tree (measured in step 11) minus the height to crown base (measured in step 12) divided by the total height of the tree is at least 30%. Tree crown is generally above other trees around it and it is experiencing minimum competition.</td><td>100%</td></tr> <tr> <td>2</td><td>Healthy/Codominant: Crown may not be full on all sides due to competition with neighboring trees, but has some portion of its crown in full</td><td>100%</td></tr> </tbody> </table> | Code | Description | Decay Adjustment (adjustment to wood density) | 1 | Very Healthy/Dominant: Crown is full on all sides and crown length is at least 30% of the tree's length, or the total height of the tree (measured in step 11) minus the height to crown base (measured in step 12) divided by the total height of the tree is at least 30%. Tree crown is generally above other trees around it and it is experiencing minimum competition. | 100% | 2 | Healthy/Codominant: Crown may not be full on all sides due to competition with neighboring trees, but has some portion of its crown in full | 100% |
| Code | Description | Decay Adjustment (adjustment to wood density) | | | | | | | | | |
| 1 | Very Healthy/Dominant: Crown is full on all sides and crown length is at least 30% of the tree's length, or the total height of the tree (measured in step 11) minus the height to crown base (measured in step 12) divided by the total height of the tree is at least 30%. Tree crown is generally above other trees around it and it is experiencing minimum competition. | 100% | | | | | | | | | |
| 2 | Healthy/Codominant: Crown may not be full on all sides due to competition with neighboring trees, but has some portion of its crown in full | 100% | | | | | | | | | |

| Item | Attribute | Description | | |
|------|--|---|---|---|
| | | | sunlight. Crown is at least 20% of the tree's length. | |
| | | 3 | Suppressed: Crown is generally below other trees and has some live foliage, but is on decline. | 100% |
| | | 4 | Dead with moderate decay: Tree has no remaining foliage. Branches and top are mostly intact and bark is mostly attached to the tree. | 75% |
| | | 5 | Dead with advanced decay: Tree may exhibit missing top, fungal bodies, missing bark. No remaining foliage exists on the tree's crown. | 50% |
| 14 | Defect Estimate | Section of Tree | Standardized Portion of Biomass in each Section of Whole Trees | Actual portion of defect in each section of tree (Observed as applied to whole tree) Example: 100% if entire portion is missing (i.e., full defect), 0% if no portion is missing (i.e., no defect). 0% defect is the default in CALCBOSK. |
| |  | Top 1/3 | 10% | 0 – 100% |
| | | Mid 1/3 | 30% | 0 – 100% |
| | | Bottom 1/3 | 60% | 0 – 100% |
| 15 | Previous 5 years' radial increment | <p>These data are used to estimate growth in the forest. This is required in the absence of repeated plot measurements or a viable growth model for each species.</p> <p>Enter the measurement (millimeters) of the past 5-years' radial growth (from a ring count) on a 'highly or moderately vigorous' tree (vigor codes 1 or 2) and a 'low vigor' tree (vigor code 3; if present) in the plot; select the first feasible trees (some species may not be suitable for measurement) facing north and continuing clockwise.</p> | | |

B.1.2 Calculating the Carbon in Standing Live and Dead Trees

This section provides a step-by-step approach to calculating the CO₂e inventory in standing live and dead trees. This section applies only to the inventory estimates within the Activity Areas. Developing forest CO₂e estimates from sampling in the Activity Areas must be done according to the following general steps:

1. Calculating the net CO₂e tonnes for standing live and dead trees on a per hectare basis for each plot.
2. Determining the average net CO₂e tonnes for standing live and dead trees by summing the plots and dividing by the number of plots represented.
3. Summing the CO₂e tonnes for the Activity Area.
4. Calculating the Activity Area sampling error and confidence deduction.

The plot data used to calculate the inventories must represent current conditions at the time the inventory is created. The process for updating forest inventories is discussed in Section B.3. CO₂e is calculated for each tree sampled in the plots using equations provided in the Mexico Forest Protocol Equation File available on the MFP website, based on the measured plot data. The CO₂e estimates calculated for each tree are adjusted based on the defect noted for each tree during inventory sampling. The net CO₂e is expanded to a per hectare basis, following the detailed process outlined in Table B.2. These calculations are automated in CALBOSK.

Table B.2. Calculate the CO₂e Tonnes for each Plot on a per Hectare Basis

| Steps | Description | Tools/Process Required | |
|-------|---|--|--|
| 1 | Calculate the cubic volume and biomass (grams) in each tree. | CALCBOSK calculates volume and/or biomass directly from the input variables, usually DBH and total height, from the forest inventory. The equations used by CALCBOSK are published on the Reserve's website. | |
| 2 | Convert the biomass to CO ₂ e tonnes | The biomass estimates from Step 1 are converted to tonnes CO ₂ e by dividing the biomass estimate (in grams) by 1000, multiplying the quotient by .5 (to convert the value to carbon) and again by 3.67 (to convert the value to CO ₂ e). The product is tonnes CO ₂ e per tree. | |
| 3 | Adjust the tree's CO ₂ e tonnes based on defect percentages assigned to each tree. | Defect – Bottom 33% | 60% x CO ₂ e tonnes in gross tree (Step 2) x Defect% (Bottom 33%) |
| | | Defect – Middle 33% | 30% x CO ₂ e tonnes in gross tree (Step 2) x Defect% (Middle 33%) |
| | | Defect – Top 33% | 10% x CO ₂ e tonnes in gross tree (Step 2) x Defect% (Top 33%) |
| | | Sum Defect | Sum of CO ₂ e defect from each step above |
| | | Adjusted CO ₂ e | CO ₂ e tonnes (Step 2) – Sum Defect |
| 4 | Adjust CO ₂ e estimate for dead and dying trees | Dead trees are multiplied by .5 and dying trees are multiplied by .75 to account for decomposition that impacts wood densities. All other trees remain unchanged. | |
| 5 | Expand the CO ₂ e tonnes estimate in each tree to a per hectare basis. | Multiply the CO ₂ e tonnes estimate in each tree by the weight required to represent the plot estimate on a per hectare basis: 25 x CO ₂ e Tonnes (Step 5) for trees sampled in 1/25 th hectare radius 100 x CO ₂ e Tonnes (Step 5) for trees sampled in 1/100 th hectare radius. | |

The individual tree estimates within each Activity Area are summed within each plot and expanded to a per-hectare value. Subsequently, the plot estimates are averaged to obtain a mean estimate for each Activity Area, as shown in Table B.3.

Table B.3. Determine the CO₂e Tonnes for each Activity Area

| Steps | Description | Tools/Process Required |
|-------|--|--|
| 7 | Calculate the average CO ₂ e tonnes per hectare in Activity Area X | Sum the CO ₂ e estimates from each plot within Activity Area X on a per hectare basis and divide by the number of plots in Activity Area X. |
| 8 | Calculate the total CO ₂ e tonnes in Activity Area X | Multiply the average estimate of CO ₂ e tonnes per hectare by the total hectares represented by Activity Area X in the project. |
| 9 | Calculate the sampling error for the mean per hectare value of CO ₂ e tonnes for Activity Area X and determine confidence deduction | The sampling error, calculated at the 90% confidence level, is calculated automatically in CALCBOSK. Confidence deduction is determined as described in Section B.1.3. |

B.1.3 Calculating Confidence Statistics

Although Activity Area data will be accepted with sampling errors up to +/- 20% of the mean at the 90% confidence interval, deductions for uncertainty are applied to an Activity Area's inventory if the sampling error exceeds the Target Sampling Error (TSE).

Forest Projects that are not enrolled in an Aggregate, but that have multiple Activity Areas, benefit from the statistical principals applied to inventory standards for Aggregates (see Appendix E). The TSE varies depending on the number of Activity Areas involved, whether within a single Forest Project or as part of a project Aggregate, as further described below. The uncertainty deduction is applied directly to the inventory of live and dead trees reported as the actual project stocks for the Activity Area, but not to the baseline estimate, thus ensuring a conservative quantification of project benefits.

Credits that are withheld from transactions due to the uncertainty deduction can be recouped when increased sampling effort (usually the addition of more plots) improves the confidence estimate of the inventory. Likewise, inventory estimates that decrease in confidence will result in a reduction of credits available for transaction, which can result in an apparent reversal. In the event of an apparent reversal due to the application of a confidence deduction, the Forest Owner will have one year to improve the inventory estimate. If the sampling error has not been restored to or below the prior value in the course of the year, the project must compensate for the reversal per the guidance on reversals (see Section 6.2).

The confidence deduction depends on the number of Activity Areas included in the Forest Project and/or Aggregate. The following sections describe how the confidence deduction for a given Activity Area is determined based on the number of Activity Areas and projects involved.

B.1.3.1 Projects with One Activity Area

The TSE for an individual Forest Project (i.e., not participating in an Aggregate) with only one Activity Area is +/- 5% of the mean CO₂e per hectare at the 90% confidence level. If the sampling error is less than +/- 5%, no confidence deduction is applied. If the sampling error exceeds +/-5%, the confidence deduction is determined as outlined in Table B.4.

Table B.4. Determining the Confidence Deduction for an Individual Project with One Activity Area

| Actual Project Sampling Error at 90% Confidence Level | Confidence Deduction |
|---|--|
| ≤ 5% | 0% |
| > 5% - ≤ 20% | Actual sampling error % – 5% (to the nearest 1 percent) |
| > 20% | 100% (Account is suspended until corrections are made) |

B.1.3.2 Projects with Multiple Activity Areas

For Forest Projects with multiple Activity Areas, the TSE for inventory data associated with individual Activity Areas varies on a sliding scale based on the total number of Activity Areas. By recognizing the principle of an improved population-wide sampling error through combination of multiple sampling sub-populations, projects with multiple Activity Areas are able to reduce the sampling intensity, thereby reducing inventory costs, without compromising statistical integrity. Thus, while the TSE is increased for each Activity Area, achieving the adjusted TSE in all Activity Areas would achieve the overall project sampling error target of +/- 5% of the mean at the 90% confidence level. The underlying statistical rationale for this approach, including a description of how the sliding scale was determined, is provided in Appendix E.

The TSE for individual Activity Areas ranges between +/- 7 to 20 % of the mean at the 90% confidence level depending on the total number of Activity Areas using the intensive inventory methodology in the Forest Project as shown in Table B.5 below. The same TSE applies to all Activity Areas in a Forest Project.

Table B.5. Target Sampling Error at the 90 Percent Confidence Level for Activity Areas in a Forest Project with Multiple Activity Areas and for Forest Projects Participating in an Aggregate

| Number of Participating Activity Areas* in the Forest Project | Target Sampling Error (TSE) |
|---|-----------------------------|
| 2 | 7% |
| 3 | 8% |
| 4 | 9% |
| 5 | 10% |
| 6 | 11% |
| 7 | 12% |
| 8 | 13% |
| 9 | 14% |
| 10 | 15% |
| 11 | 16% |
| 12 | 17% |
| 13 | 18% |
| 14 | 19% |
| 15+ | 20% |

*Only Activity Areas that use the intensive inventory methodology are included.

The inventory for each Activity Area is evaluated (independent of the inventories for other Activity Areas) to determine if the sampling error exceeds the TSE. If the sampling error for a given Activity Area exceeds the TSE, a confidence deduction is applied to the inventory for that Activity Area. Confidence deductions are determined according to Table B.6 using the

appropriate TSE (from Table B.5). Regardless the TSE, Activity Area inventories with a sampling error greater than $\pm 20\%$ of the mean at the 90% confidence level will not be accepted.

Table B.6. Inventory Confidence Deductions for Activity Areas in a Forest Project with multiple Activity Areas and for Forest Projects Participating in an Aggregate

| Actual Sampling Error at 90% Confidence Level | Confidence Deduction |
|---|--|
| 0 - TSE% | 0% |
| TSE to 20% | (Actual sampling error – TSE %) to the nearest 1/10 th per cent |
| Greater than 20% | 100% |

B.1.3.3 Projects Participating in an Aggregate

As with individual projects containing multiple Activity Areas, Forest Owners enrolled in an Aggregate may submit project inventories with reduced sampling requirements based on the statistical principle that the overall TSE ($\pm 5\%$ of the mean at the 90% confidence level) is achieved across the entire Aggregate.

The guidance provided in Section B.1.1.2 for projects with multiple Activity Areas also applies to projects participating in an Aggregate. The TSE for all Activity Areas associated with projects in an Aggregate is based on the total number of Activity Areas using the intensive inventory methodology across all projects participating in the Aggregate. The inventory for each Activity Area is evaluated independently of other Activity Areas, whether associated with the same project or with another project participating in the Aggregate. See Table B.5 to determine the TSE applicable to Activity Areas for projects participating in an Aggregate. See Table B.6 to determine the confidence deduction to apply to each Activity Area.

Further guidance for Forest Projects included in an Aggregate is provided in Appendix E.

B.2 Determining Activity Area Baseline

For Activity Areas that pass the performance standard (see Section 3.12.2), the baseline is calculated as the sum of carbon inventories in the required pools (tCO₂e) at the start date.

Forest Owners have the flexibility to postpone their baseline development until their first verification by back casting an inventory developed within 2 years of the Activity Area start date. This gives the Forest Owner the flexibility to complete their initial inventory within the first two reporting periods (i.e., by the end of the second reporting period). The Forest Owner then develops an inventory that is representative of the Activity Area's start date by back casting the later developed inventory.

Plot data recorded for the development of the initial inventory may include radial increment data (in the absence of other growth data), which can be used to estimate DBH and tree height at an earlier time. CALCBOSK, the companion data management tool for the protocol, will back-cast inventory data to the selected start date.

B.3 Updating Activity Area Carbon Inventories and Determining Actual Onsite Carbon Stocks

Since Activity Area forest carbon stock estimates are constantly fluctuating due to additional inventory data, forest growth, harvest, and natural disturbances, estimates of forest carbon stocks must be updated and reported annually. The annual adjustments to inventory data are based on the inclusion of new information, adjusting existing data for forest growth and disturbances, and recalculating the carbon estimates and the confidence deduction.

The inventory of Activity Areas is based on modeling ('growing') the inventory data to the end-of-the reporting period date. The length of time in which the inventory plots are modeled is dependent on the most recent date plot measurements were acquired in the field and input into CALCBOSK. All plots are required to be remeasured within a 12-year timeframe. Each step is described in greater detail below.

B.3.1 Updating Forest Inventory Data Based on New Information

For the Activity Areas, any plots sampled or re-sampled in the past year must be incorporated into the project inventory. If a plot is re-measured, the old data must be replaced with the new data in terms of representing the plot's inventory. Plot data is valid for 12 years, at which point the plot must be re-measured. The Activity Area inventory therefore must be based on plots sampled within the 12-year period. Forest Owners may decide to perform all of their inventory sampling in a given year or distribute it throughout the 12-year timeframe. Forest Owners are advised to inspect the modeled growth estimates with actual field conditions and base their determination of the frequency of updating plots on how well the modeled data tracks with actual conditions. Poor alignment between actual data and modeled data would indicate the need for more frequent field sampling efforts, as full verifications with site visit activities place a high focus on the comparison of data managed in CALCBOSK and actual data measured in the field.

B.3.2 Updating Forest Inventory Data for Growth

The approach to 'growing' trees in CALCBOSK is through the use of near-term (less than 12 year) projections of inventory data based on recent historical growth. Historical radial increment samples are acquired initially from each plot, which are used as the basis for forward projections of diameter. Height measurements are projected forward based on conserving the proportion of diameter to height and adjusting the height based on the modified (grown) diameter. The steps involved are displayed in Table B.7. However, CALCBOSK automates these steps. See the Quantification Tools User Manual for further information on using the automated functionality in CALCBOSK to update the inventory data annually.

Where increment data cannot be acquired from the stated procedures in the inventory manual, the Reserve will work with the Forest Owner to develop an alternative solution. This is usually reserved for hardwoods where radial data cannot be acquired.

Where sufficient sample plots have been remeasured, the growth programming in CALCBOSK will switch to calculating diameter and height increment based on the subsample of remeasured inventory plots. This functionality will engage within 6 to 12 years following the first reporting period, depending on how many plots have been remeasured. This method is expected to provide improved growth estimates over the initial approach, since both diameter and height will be projected based on real measurements.

Table B.7. Steps used in CALCBOSK for Updating Tree Records

| Steps | Description | Tools/Process Required |
|-------|---|---|
| 1 | Querying data for analysis. | Query live tree records by species class (conifer and hardwood), and vigor class in the Activity Area that have been measured for increment. (CALCBOSK assigns size classes to inventory data.) |
| 2 | Determine annual diameter increment. | The previously collected data for diameter increment (see item 15 in Table B.1) represent the increment over the previous 5 years. This data must be divided by 5 to determine the average annual diameter increment. Note: In many cases, it is impossible to extract good increment samples from hardwoods. In such cases, the conifer increment is applied to the hardwood trees after adjusting the increment based on a comparison of average hardwood diameter to conifer diameter on a plot by plot basis, where tree ages are assumed to be equal. |
| 3 | Calculate average annual diameter increment. | The average annual diameter increment by species class and vigor class is calculated by summing the results from Step 2 for each species class and vigor class and dividing by the number of records summed. |
| 4 | Add diameter increment to tree records. | The average diameter increment for each species class and vigor class is multiplied by the number of days between the desired report date and the date the tree record was measured in the field. This adjusts the tree's diameter either forward or backward to a previous or future estimate. |
| 5 | Calculate a diameter-to-height regression estimator. | Height adjustments for each tree are based on the tree's diameter/height relationship from field measurements and applying the same relationship to trees with modified diameters from modeling. When the basis of modeled projections switches to an analysis of remeasured trees, whereby both the change in diameter and height can be determined, growth projections will be made by developing both diameter and height increment estimates for each species and vigor class combination. |
| 6 | Calculate the estimated height for each tree based on the increment determined from Step 5. | Apply the estimated height increment developed in Step 5 for each tree record to update the tree's height. Like the diameter 'growth', the height change can occur forward or backward looking to a specific desired reporting date. |

B.3.3 Updating Forest Inventory Estimate for Harvests and/or Disturbances

Due to real timing challenges in scheduling the development of monitoring reports and accomplishing the fieldwork associated with inventory management, plots that have been modified by harvest and/or natural disturbances since the previous reporting period must be excluded from the inventory analysis until the plots are updated with re-measured data from field visits. No more than 5% of the total inventory plots used to derive the inventory estimate can be excluded for a reporting period. Excluded plots are not used to calculate the reported inventory of CO₂e nor are they used to calculate the sampling error. Additionally, an excluded

plot must be included in the next year's inventory, meaning the plot must be remeasured within the year prior to the next reporting period. Forest Owners should submit a list of plots to be excluded for purposes of verification prior to the site visit portion of a full verification.

B.3.4 Completing the Annual Update Process

Upon updating the height and diameter increments, the land use and forest cover classes for disturbances, and the Activity Area (hectare) assignments in CALCBOSK, the forest carbon stocks can be recalculated using the methods identified in Appendix B.1.2. The Quantification Tools User Manual provides further guidance for updating the data in CALCBOSK. The confidence statistics and the associated confidence deduction for each Activity Area may only be updated in the Carbon Monitoring Worksheet for reporting periods undergoing a full verification during which the inventory updates are to be reviewed and approved by a verifier.

Appendix C Quantifying Carbon Stocks in Activity Areas: Canopy Cover Quantification Methodology

Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas may use the canopy cover inventory methodology to estimate carbon stocks in live trees. Nevertheless, Forest Owners always maintain the option to use the intensive inventory methodology to quantify live tree carbon for all Activity Areas.

For Forest Projects with multiple Activity Areas, quantification of carbon stocks should be conducted independently for each Activity Area. The canopy cover quantification methodology will be used to determine the Activity Area baseline as well as to quantify the actual onsite carbon stocks at the end of each reporting period. Section C.3 describes the process for updating the inventory to quantify the actual onsite carbon stocks for each reporting period. The canopy cover inventory methodology includes deriving a measurement of the canopy area within the Activity Area, which are applied to ratio estimators to produce an estimate of CO_{2e} for the Activity Area. Ratio estimators represent a relationship between CO_{2e} in standing trees and canopy cover, providing the ability to estimate the CO_{2e} in standing trees across the Activity Area as a function of the Activity Area's overall canopy cover.

In addition, the canopy cover inventory methodology must be used to estimate the emissions associated with site preparation activities that impact shrubs at the start of project activities on a Reforestation Activity Area. Such estimates are based on a comparison of pre- and post-site preparation shrub cover, as outlined in Section 5.3.

Large Urban Forest and some Restoration Activity Areas (see Section 3.12.2.3) are required to establish a historical trend of the Activity Area's canopy cover to complete the performance standard test and should refer to Section C.1.3 for guidance.

C.1 Developing Initial Activity Area Inventories

Default ratio estimators for live tree stocks for Agroforestry, Silvopastoral, and Small Urban Forestry Activity Areas, and for shrub stocks for Reforestation Activity Areas, are available on the Reserve's Mexico Forest Project webpage. Default ratio estimators are based on published values of above- and below-ground live tree or shrub pools from field studies and are organized by Assessment Area, which are defined geographic areas available on the Reserve's Mexico Forest Project webpage in the format of a map file and also as reference tables. These tables will be updated as new studies and data become available. Projects determine which Assessment Area(s) their Activity Areas fall in based on activity and a geographic comparison of the Activity Area polygons with the map file. Forest Owners must initiate their project using the most current version of the default values and must maintain these values for the project crediting period.

Default ratio estimators for all the activities included in this section are values representing the amount of CO_{2e} per hectare of canopy cover. Equation C.1 is used to estimate the total tonnes of CO_{2e} in onsite carbon stocks in Small Urban Forestry, Agroforestry, Silvopastoral and Reforestation Activity Areas.

Equation C.1. General Equation Used to Calculate Total CO₂e Stocks in Small Urban Forestry, Agroforestry, Silvopastoral, and Reforestation Activity Areas

| | | |
|---|---|--|
| $AC_{onsite,y} = \sum A_m \times (C_m \times RE_m)$ | | |
| Where, | | |
| $AC_{onsite,y}$ | = Onsite carbon stocks | Units tCO ₂ e |
| A_m | = Total area of Assessment Area m within the Activity Area | hectares |
| C_m | = Estimated canopy cover for Assessment Area m within the Activity Area | % |
| $RE_{urb,m}$ | = Default ratio estimator for activity and Assessment Area m | tCO ₂ e/hectare/% canopy cover |

The general approach to developing estimates of CO₂e through default ratio estimators for each Activity Area uses the following steps, all of which are described in more detail in this document:

1. Determine the activity and Assessment Area(s) applicable to the Activity Area – see Section C.1.1
2. Select the default ratio estimator appropriate for the activity and Assessment Area – see Section C.1.2
3. Develop an estimate of the canopy cover within the Activity Area – see Section C.1.3
4. Apply the canopy cover estimate to the default ratio estimator and multiply by the total hectares of the Activity Area to expand the CO₂e estimate to the Activity Area – see Section C.1.4

For Reforestation Activity Areas requiring an estimate of the impact on shrub carbon stocks resulting from site preparation activities that remove shrub cover, Steps 3 and 4 above are conducted twice—once using a satellite image from prior to the start of site preparation activities and a second time using a satellite image from after the completion of site preparation activities.

C.1.1 Determine the Appropriate Assessment Area Applicable to the Activity Area

Map layers of Assessment Areas (in .shp and .kml formats) applicable to Agroforestry and Silvopastoral Activity Areas, Small Urban Forestry Activity Areas, and Reforestation Activity Areas can be found on the Mexico Forest Project webpage. Forest Owners can determine the appropriate Assessment Area(s) by uploading the Activity Area shapefile to mapping software and performing an analysis (such as “Intersect” in ArcGIS) with the Assessment Area layer.

Forest Owners shall calculate the number of project hectares for each Assessment Area applicable to the Activity Area. If the Activity Area spans multiple Assessment Areas, identify all applicable Assessment Areas.

C.1.2 Select the Correct Default Ratio Estimator

Use the tables of Assessment Areas and their corresponding default ratio estimators to select the default ratio estimator that corresponds with the Assessment Area(s) applicable to your Activity Area. If the Activity Area spans multiple Assessment Areas, identify all applicable default ratio estimators.

As described in Equation C.1, default ratio estimators are simple coefficients that are multiplied by the area of canopy cover for each Activity Area.

C.1.3 Estimating Current Canopy Cover in Standing Trees within the Activity Area

The total canopy of trees for Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas, or shrubs for Reforestation Activity Areas must be estimated (via sampling) for each of the Assessment Areas using remotely sensed data throughout the Activity Area. A current satellite image or up-to-date remote sensing data must be used for sampling. The image should be dated within 12 months of the Activity Area start date and should be from a month where foliage is present and visible (spring or summer). Contact Reserve staff if no image is available.

Large Urban Forestry and some Restoration Activity Areas must use the following methodology to assess the Activity Area's canopy cover in order to pass the performance standard test (see Section 3.12.2.5 and 3.12.2.3). Section C.1.3.2 provides further guidance specific to Large Urban Forestry and Restoration Activity Areas that need to complete the historical canopy cover trend analysis.

For sampling the canopy layer, the sampled portion must be displayed as a layer in a GIS. The following methods are allowed for sampling canopy area:

1. Randomized points developed using the i-Tree Canopy tool derive a 'hit' or 'miss' (of tree canopy, or shrub canopy for Reforestation Activity Areas) and must be determined by the technician. The points superimposed on the Activity Area allow a percentage of canopy cover, total canopy area, and confidence statistics to be calculated. If a project spans multiple Assessment Areas, the i-Tree estimate process should be completed separately for each Assessment Area.

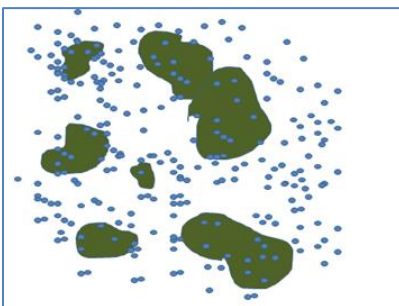


Figure C.1. Example of Overlaying Random Points in the Activity Area to Determine Canopy Percentage

2. A systematic sample can be conducted with a grid of points established in GIS and placed over the Activity Area for the purposes of estimating canopy area. The Forest Owner must determine the 'hit' and 'miss' of each point (in terms of being coincident with a tree/shrub crown or multiple tree/shrub crowns), which will enable a percentage of canopy cover to be determined and total canopy area to be determined (as described above). If an Activity Area spans multiple Assessment Areas, this process should be completed separately for each Assessment Area.

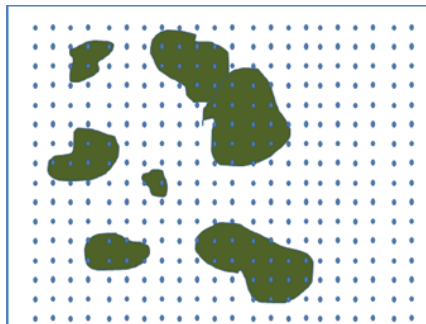


Figure C.2. Example of Overlaying a Systematic Grid in the Activity Area to Determine Canopy Percentage

3. Sampling can be conducted using remotely sensed data as a subset of the Activity Area. Again, the sampling must be designed to develop estimates for each Assessment Area independently. The sampling must incorporate randomized strips (two parallel lines with a known distance between them to calculate area) or randomized or systematic area plots. The Forest Owner must be able to calculate accurately the area within the strip or plot that is tree/shrub canopy and the area that is not tree/shrub canopy.

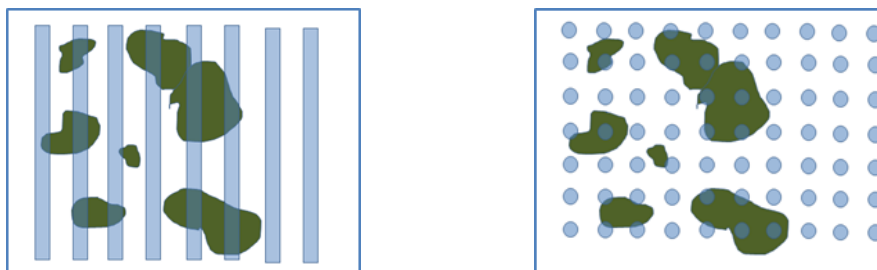


Figure C.3. Example of Overlaying Known Area Sampling Units (Strips and Fixed Radius)

Regardless of the method utilized:

1. The points, strips, or plots must be maintained for the project life and be available for verification.
2. Sampling for canopy cover must continue until the sampling error for the average canopy cover for each Assessment Area is achieved within $\pm 10\%$ at 1 standard error. Regardless of the sampling method used, a list of point/plots/strips and its corresponding geographic information estimated percentage of canopy cover relative to the Activity Area must be included the Project Report. For example, for projects utilizing randomized points developed using i-Tree Canopy, a table of cover class, description, latitude and longitude of each point shall be included in the Project Report, as well as a table of estimated percentage of canopy cover by cover class.

The Reserve does not require that a new set of random points be generated each year. The same points may be applied to an updated image. It is acceptable to augment the set of random points to maintain and/or augment the confidence in the canopy cover estimate. However, the confidence level achieved in the first reporting period must be met or exceeded in future reporting periods.

3. Data shall be carried out to one decimal point, for example, 17.3%. The mean percent canopy estimate from sampling is multiplied by the area within each Activity Area, corresponding to each Assessment Area, to estimate the canopy area.

C.1.3.1 Large Urban Forestry and Restoration Activity Areas: Developing a Historical Trend for the Performance Standard Test

Large Urban Forestry and some Restoration Activity Areas must use the methodology detailed in Section C.1.3 to develop the estimates of canopy cover for the Activity Area in order to pass the performance standard test. For these Activity Areas, a historical estimate of canopy cover must be compared to a more recent estimate of canopy cover in order to create a trend of canopy cover for the Activity Area. The trend analysis must compare the percent change normalized to 10 years between two historical estimates that are at least 10 years apart, with the recent estimate within five years of the start date, and the earliest point no earlier than 1990. For instance, if an Activity Area commences in 2019, the historical estimates may be done using aerial imagery from 2005 and 2018, since the recent estimate is within five years of the start date, and the two points pre-date the start date, are at least 10 years apart from one another, and do not pre-date 1990. Contact Reserve staff if no images fitting these requirements are available. Both estimates are developed by estimating canopy cover for each date from remotely sensed data as described in Section C.1.3.

Table C.1 demonstrates an example of how to determine the percent change normalized to 10 years for the historical canopy cover trend analysis. For Large Urban Forestry Activity Areas, if the percent change in canopy cover is decreasing, the Activity Area passes the performance standard test. For Restoration Activity Areas that have to complete the canopy cover trend analysis, if the percent change of historical canopy cover is decreasing by at least 10%, the Activity Area demonstrates sufficient degradation to be eligible to pass the performance standard test. See Section 3.12.2.3 for further guidance on how Restoration Activity Areas may pass the performance standard test.

Table C.1. Example of Canopy Cover Trend Analysis for a Large Urban Forestry or Restoration Activity Areas

| (A) Mean Estimate from Historical Image (2005)* | (B) Mean Estimate for More Recent Historical Image (2018)* | (C) Percent Change | (D) Timeframe (years) | (E) Percent Change Normalized to 10 years |
|---|--|--------------------|-----------------------|---|
| 65.4% | 56.3% | -13.9% | 13 | -10.7% |
| *Note that the canopy cover estimates, if sampled, must be derived from a sampling process with a sampling error within +/- 10% @ 1 standard error. | | | | |

C.1.4 Determining the Activity Area Estimate of CO_{2e}

With the average canopy cover estimated and ratio estimators selected for each of the applicable Assessment Areas, an estimate of CO_{2e} for the Activity Area can be estimated (see Table C.2 for example). The ratio estimators are applied to the canopy cover estimates in each Assessment Area and summed to determine the estimated CO_{2e} in the Activity Area, as described in Equation C.1.

Table C.2. Example of Expanding Ratio Estimators Based on Canopy Cover Area to Estimate Total CO_{2e} within an Activity Area

| Assessment Area | Total Area within Activity Area | Mean Estimate of Canopy Cover* | Ratio Estimators | Total CO _{2e} |
|---|---------------------------------|--------------------------------|--|------------------------|
| | (hectares) | (percent) | (CO _{2e} tonnes/ hectare/%canopy cover) | (tonnes) |
| Agroforestry Subtropical Dry Forest | 35 | 18.1% | 444 | 2,812.7 |
| Agroforestry Subtropical Mountain Systems | 65 | 35.0% | 301 | 6,847.8 |

*Note that the canopy cover estimates, if sampled, must be derived from a sampling process with a sampling error within +/- 10% @ 1 standard error.

C.1.5 Determining the Initial Change in Shrub CO_{2e} on Reforestation Activity Areas

The change in shrub carbon stocks at the start of project activities on a Reforestation Activity Area is estimated by calculating the difference between the amount of shrub carbon stocks before the initiation of shrub removal during site preparation and the amount remaining after the completion of site preparation activities. 'Before' and 'after' estimates are calculated using Equation C.1. Images used to derive canopy cover for such estimates should be as near to the Activity Area start date as possible while still appropriately representing the 'before' and 'after' conditions. Table C.3 provides an example of the calculation to be performed. The results from the calculation are entered as the value for the variable $\Delta AC_{shrub,init}$ in Equation 5.1 for the first reporting period for the Reforestation Activity Area.

Table C.3. Example of Calculating the Change in Shrub CO_{2e} Resulting from Site Preparation Activities within a Reforestation Activity Area

| Assessment Area | Total Area within Activity Area | Estimated Canopy Cover Area* | Ratio Estimators ⁷⁰ | Total CO _{2e} |
|---|---------------------------------|------------------------------|--|------------------------|
| | (hectares) | (percent) | (CO _{2e} tonnes/ hectare of canopy cover) | (tonnes) |
| Before Shrub Removal | | | | |
| Shrub Subtropical | 15 | 40.2% | 184 | 1,109.5 |
| Shrub Tropical | 85 | 55.0% | 195 | 9,116.3 |
| Total | | | | 10,225.8 |
| After Shrub Removal | | | | |
| Shrub Subtropical | 15 | 0.0% | 184 | 0 |
| Shrub Tropical | 85 | 5.1% | 195 | 845.3 |
| Total | | | | 845.3 |
| Change in Shrub CO_{2e} ('After' – 'Before') | | | | |
| Total Change ($\Delta AC_{shrub,init}$) | | | | -9,380.5 |

*Note that the canopy cover estimates, if sampled, must be derived from a sampling process with a sampling error within +/- 10% @ 1 standard error.

⁷⁰ Ratio estimators are maintained in the Assessment Area Data File and are subject to change. Refer to Assessment Area Data File for current ratio estimator(s).

C.2 Developing Activity Area Baseline

For Small Urban Forestry, Agroforestry, and Silvopastoral Activity Areas, the baseline is calculated as the sum of carbon inventories in the required pools (tCO₂e) at the start date. To calculate the carbon inventory at the start date, the total canopy of trees must be estimated (see Section C.1.3) using a current satellite image dated within 12 months of the Activity Area start date. Contact Reserve staff if no image is available.

For Reforestation Activity Areas, the baseline only includes tree carbon stocks at the start date, as indicated in Section 4, using the intensive inventory methodology, as indicated in Section 5.1.2 and described in Appendix B. Shrub carbon stocks are not included as a component of the baseline.

C.3 Maintaining and Updating Activity Area Inventories

Activity Area inventories must be reported to the Reserve on an annual basis for each reporting period. Activity Area inventories are in constant flux due to forest growth and mortality or removal and therefore must be updated on an annual basis for reporting. The inventory must be updated annually through a re-calculation of the canopy area and applying the ratio estimator(s) used for the initial inventory.

It is important to note that the basis of a successful verification depends on alignment (see Section 8.2.3) between verifier data and Forest Owner data for each randomly selected plot (selected by verifier), therefore these guidelines do not ensure successful project verification.

It is acceptable to use the previous points used to develop the canopy area and re-evaluate them with updated imagery. It is also acceptable to use newly generated random point to develop a revised estimate on the updated imagery. The image should be dated within 12 months of the end of the reporting period and should be from a month where foliage is present and visible (spring or summer). The image used for the end of a reporting period must be dated after the image used for the prior reporting period or the start date for the first reporting period. The Forest Owner may provide an attestation asserting that no new image update is available for the current year in which case the Reserve will accept the previous year's reported inventory.

Appendix D Verification Body Requirements for Site Visit Verifications

The verification team must always include a forester onsite during full verifications with site visits that is either contracted or employed directly by the verification body that meets one of the following qualifications:

| Option | Credentials | Experience |
|--------|---|--|
| 1 | CONAFOR certification – Forest Technical Advisor in Silviculture (see below) | At least two years of experience sampling, developing, and analyzing forest biomass or carbon inventories. |
| 2 | CONAFOR certification – <i>Promotor Forestal</i> /Forest Technician (see below) | |
| 3 | Demonstration of university training (12 semester or 16 quarter hours) or its equivalent (at the Reserve's sole discretion) in the following areas: <ul style="list-style-type: none"> ▪ Sampling design ▪ Implementing and analyzing forest biomass or carbon inventories ▪ Forest biometrics | |
| 4 | Registered professional forester in states (U.S. or Mexico) where professional registration exists or Certified Forester under the Society of American Foresters. | |

| | |
|---|---|
| CONAFOR Certification-Silviculture ⁷¹ | <ul style="list-style-type: none"> ▪ Coursework & evaluation through a CONAFOR approved entity ▪ Must demonstrate competence in the following: <ul style="list-style-type: none"> ○ Developing & implementing Forest Management Plans ○ Sampling methods ○ Technical studies for managing forests & forest resources ○ GIS ○ Treatments and techniques for forest management |
| CONAFOR Certification as a Promotor Forestal/ Forest Technician ⁷² | <ul style="list-style-type: none"> ▪ Coursework & evaluation through a CONAFOR approved entity ▪ Coursework must include: <ul style="list-style-type: none"> ○ Forest management plans & community-based silviculture ○ Basics of silviculture treatments ○ Forest inventories: objectives, characteristics and types of sampling, instruments and tools, establishing plots, measurement criteria, GPS ○ Process and systematization of data for forest inventories: recording data, processing information, calculating volumes at tree/plot/hectare/stand |

⁷¹ For further information please see: https://www.gob.mx/cms/uploads/attachment/file/195955/NICL_Silvicultura.pdf

⁷² For further information please see:

<http://www.conafor.gob.mx:8080/documentos/docs/7/3927Programa%20Capacitaci%C3%B3n%20T%C3%A9cnicos%20Comunitarios.pdf>

Appendix E Aggregation

As part of its efforts to encourage greater participation by forest landowners in the Climate Action Reserve's carbon offset program, the Reserve has developed rules and procedures under which smaller forest projects may be aggregated. The goal of aggregation is to alleviate transaction costs for individual landowners, while upholding the Reserve's standards for quantification certainty and integrity. Allowing smaller projects to register as part of a group, or "Aggregate," can help reduce costs by enabling economies of scale and supporting the marketing of offset credits at volume.

The Reserve's aggregation rules were first developed for the Reserve's Forest Project Protocol for the United States, and were prepared with assistance from a stakeholder workgroup, feedback from a public meeting (18-May-2010), and with a process of public comment and response.

By enrolling in an Aggregate, a Forest Project will:

- Require fewer sample plots for each included Activity Area that uses the intensive inventory methodology (Appendix B) to generate a forest carbon inventory of sufficient statistical certainty to avoid a confidence deduction. Greater statistical uncertainty associated with individual Activity Areas will be compensated through aggregation with other Activity Areas. Allowable standard errors for individual Activity Areas are established based on the total number of participating Activity Areas using the intensive inventory methodology in the Aggregate.
- Have a less frequent verification schedule than is required for standalone Forest Projects.

E.1 Aggregation Requirements

This model of aggregation enables small projects to participate in the Reserve by allowing the forest inventory and verification requirements to be applied at an Aggregate level rather than at the level of individual Forest Projects. However, each Forest Owner must retain a Reserve account and a separate Project Implementation Agreement (PIA) with the Reserve. Participation in an Aggregate in no way changes how a project meets environmental or social safeguards or meets requirements for submitting annual monitoring reports.

Detailed requirements for aggregating projects (also referred to as enrolling projects in an "Aggregate") are described below.

E.1.1 Eligible Project Types

Aggregates may be comprised of any combination of the eligible activity types (see Section 2.3) and Forest Owner type (see Section 3.2) from any geographic location within Mexico.

E.1.2 Number of Forest Owners

An Aggregate must consist of two or more individual Forest Projects. There is no limit to the number of Forest Projects or Activity Areas in an Aggregate. The inventory sampling for Activity Areas and verification requirements for Forest Projects within an Aggregate vary depending on the total number of Forest Projects and Activity Areas in the Aggregate (see Sections E.2 and E.3).

E.1.3 Area Limitations

There is no upper or lower limit on the total amount of forest area enrolled in an Aggregate. However, an individual Forest Owner may enroll only up to 10,000 hectares in Aggregates, whether in a single Aggregate or across multiple different Aggregates. Area owned by an individual Forest Owner may be enrolled in Aggregates as either a single Forest Project with one 10,000 hectares Activity Area, a single Forest Project with multiple Activity Areas that sum to no more than 10,000 hectares, or as multiple Forest Projects with their included Activity Areas adding up to 10,000 hectares. Any Activity Areas that would cause the Forest Owner to exceed the 10,000 hectares limit must be submitted as a standalone Forest Project.

In Aggregates formed by three or more Forest Projects, no single Forest Project may comprise more than 50 percent of the total combined area in an Aggregate, based on the hectares included in the Activity Areas for each Forest Project. This is to prevent any one Forest Project from disproportionately affecting the inventory statistics and having excessive influence on the composite sampling error. In the case of Aggregates formed from two Forest Projects, no single Forest Project may comprise more than 70 percent of the total combined area in the Aggregate, based on the hectares included in the Activity Areas for each Forest Project.

E.1.4 Qualifications and Role of Aggregators

An aggregator may be a corporation or other legally constituted entity, city, county, state agency, individual or a combination thereof. An aggregator must have an account on the Reserve. A Forest Owner may serve as its own aggregator or as an aggregator for a group of Forest Projects when it is the owner of one or more of the Forest Projects.

Once approved for an account on the Reserve, an aggregator must remain in good standing or all of the aggregator's account activities will be suspended until issues are resolved to the satisfaction of the Reserve. In order for an aggregator to remain in good standing, aggregators must:

- Execute contracts with Forest Owners that include the mandatory components as defined Section E.1.6. The contracts will be required at the time of the first verification of each Forest Project.
- Select a single verification body for all enrolled projects in any given year or set of years.
- Ensure the verification schedule for all Forest Projects in the Aggregate meets the verification standards according to the MFP (see Section 8 and Section E.3)
- Maintain a Reserve account to which CRTs will be transferred from the accounts of participating Forest Owners and from which CRTs must be transacted.

Forest Owners are ultimately responsible for complying with the terms of the MFP. Aggregators may, however, manage the flow of ongoing monitoring and verification reports to the Reserve as a service to Forest Owners. Aggregators may also engage in project development, provide inventory services, and provide other services for the Forest Owner. The scope of aggregator services may be negotiated between Forest Owners and the aggregator and reflected in contracts between the Forest Owners and the aggregator.

E.1.5 Forming an Aggregate

In order to form an Aggregate, aggregators are required to establish a "Project Developer" account on the Reserve. Only a "Project Developer" account may submit project documents on behalf of the Forest Owner upon completing a Designation of Authority Form.

Aggregators must also submit an “Aggregate Submittal Form” that includes the following information:

- The name, description, and contact information of the aggregator.
- A list of initial Forest Owner participants (which must be greater than one).

The Aggregate Submittal Form will be available to the public on the Reserve’s website and will require approval by Reserve staff. It must be modified any time a participant joins or leaves an Aggregate (triggered by the submission of an “Aggregate Entry” or “Aggregate Exit” form as described below).

All Forest Projects must likewise submit the Project Submittal Form (see Section 7.1.1). Each Forest Project participating in an Aggregate may have a distinct project start date, however all participating Forest Projects must synch their initial reporting period end-date.

E.1.6 Joining an Aggregate

To join an Aggregate after the initial Aggregate submittal, Forest Owners will be required to submit an Aggregate Entry form. This form may be included at the time of project submittal, or at any time thereafter. This form will require Reserve staff’s approval and will contain:

- Statement that the Forest Owner wishes to join a specific Aggregate with a specific aggregator. A participating project may only have one aggregator.
- Copies of any contract(s) between Forest Owner and aggregator. Forest Owners may decide whether or not contracts with aggregators are made available to the public. Contracts must establish the rights to CRTs and future credit payments, as well as terms for contract renewal, renegotiation, or termination. For *ejidos* and communities, the contract cannot define terms for a landowner beyond 5 years without requiring a new Assembly vote.

The Aggregate Submittal Form must also be updated by the aggregator to include the new Forest Project. All Forest Projects must likewise submit the Project Submittal Form (see Section 7.1.1).

Any projects that join the Aggregate must undergo a full verification before they will be allowed to join the Aggregate and must sync the end of their initial reporting period with the reporting period end-date of all participating Forest Projects.⁷³

⁷³ The purpose for each project participant to undergo a third-party full verification (whether initial or subsequent to an initial verification) at the time of entry into an Aggregate is to confirm that the project is in conformance with the MFP and the rules for inventory accuracy in the specific Aggregate are met. This is an important provision for the protection of the other participants in the Aggregate and for the integrity of the Aggregate system as a whole. An example of when this requirement is particularly critical is when a project is moved from one Aggregate to another and the two Aggregates have different sampling error targets.

E.1.7 Leaving an Aggregate or Termination of Contract between Forest Owner and Aggregator

To leave an Aggregate, the Forest Owner for a project is required to submit an Aggregate Exit form. This form includes:

- A statement that the Forest Owner intends to withdraw a project from a specific Aggregate and aggregator.
- If Forest Owner intends to retain a standalone project, a statement that the Forest Owner understands that they will be required to meet the standalone project inventory standards and that they will not be issued further CRTs until they have met those inventory standards and their new inventory has been verified.

If the Forest Owner intends to enroll the project in a different Aggregate, rather than switching to a standalone Forest Project, it will have 24 months to do so. During such time as the Forest Project is not enrolled in an Aggregate, account activities will be suspended. After 24 months, the Forest Project will be required to meet the requirements of a standalone Forest Project.

In the event that a Forest Project leaving an Aggregate changes the targeted standard error for the Forest Projects remaining in the Aggregate (because there are fewer than 15 Activity Areas remaining – see Section E.2), either (a) the same number of Activity Areas included in the exited Forest Project must be added to the Aggregate by already included Forest Projects or including a new Forest Project within 12 months of the departure date of the exiting Forest Project, or (b) new targeted standard error levels will apply to all of the remaining participants based on the number of remaining Activity Areas.

E.1.8 Accounts on the Reserve, Transfers of CRTs

Each Forest Owner with Forest Projects in an Aggregate must have a separate account with the Reserve to maintain transparency at the level of the individual Forest Owner. For each participating Forest Project, the Forest Owner must sign a PIA with the Reserve, meet all applicable social and environmental safeguards, and submit annual monitoring reports specific to that Forest Project. Each Forest Project is required to contribute to the Reserve's Buffer Pool and compensate for reversals as described in Section 6. Each Forest Project is independently responsible for meeting all reporting requirements described in Section 7. Many of these tasks, such as the transmission of annual documents, may be managed by the aggregator.

Aggregators must maintain a Reserve account to which CRTs can be transferred from the accounts of Forest Owners participating in their Aggregate, and from which CRTs can be subsequently transferred to third parties. Transfers from individual Forest Owner accounts to the aggregator's account are not subject to Reserve CRT transfer fees. Forest Owners maintain control of the timing of any transfer to the aggregator account. However, CRTs from Forest Projects participating in an Aggregate may only be transferred to the account of the aggregator named in their Aggregate Entry form or Aggregate Submittal Form. The timing, pricing, ownership and other details of the transfer of CRTs are up to arrangements between the Forest Owner and the aggregator. The requirement to transfer CRTs to the aggregator account is to maintain the statistical integrity of the Aggregate over time. In addition, this process provides transparency to CRT recipients that the CRTs were sourced from an Aggregate.

E.2 Inventory Standards for Participating Projects

For Activity Areas that use the intensive inventory methodology (Appendix B), the target sampling error is ± 5 percent of the mean at the 90 percent confidence level. Activity Areas that cannot meet this target level are still eligible but may have to take a confidence deduction that reduces their reported carbon stocks. To achieve a sampling error of ± 5 percent of the mean at the 90 percent confidence level can be prohibitive for smaller Activity Areas because it requires a large number of plots relative to the total area of the Activity Area. Under these aggregation rules, Forest Owners enrolled in an Aggregate may submit Activity Area inventories with reduced sampling requirements based on the statistical principle that the targeted sampling error (± 5 percent of the mean at the 90 percent confidence level) is achieved across the entire Aggregate.

For Aggregated projects, the sampling error allowed for inventory data associated with individual Activity Areas varies on a sliding scale based on the number of participating Activity Areas using the intensive inventory methodology. This sliding scale was determined through consultation with statisticians and affirmed by a model exercise as described in Section E.4. The target sampling error for the individual Activity Areas ranges between 7 to 20 percent of the mean at the 90 percent confidence level based on the total number of Activity Areas in the Aggregate using the intensive inventory methodology as discussed in Appendix B.1.1.3 and shown below in Table E.1. The same targeted sampling error applies to all Activity Areas in an Aggregate using the intensive inventory methodology.

Table E.1. Target Sampling Error at the 90 Percent Confidence Level for Activity Areas in an Aggregate

| Number of Activity Areas | Target Sampling Error (TSE) |
|--------------------------|-----------------------------|
| 2 | 7% |
| 3 | 8% |
| 4 | 9% |
| 5 | 10% |
| 6 | 11% |
| 7 | 12% |
| 8 | 13% |
| 9 | 14% |
| 10 | 15% |
| 11 | 16% |
| 12 | 17% |
| 13 | 18% |
| 14 | 19% |
| 15+ | 20% |

As discussed in Appendix B.1.1.3, for Activity Areas included in an Aggregate, confidence deductions are determined according to Table E.2 (using the appropriate TSE from Table E.1).

Table E.2. Inventory Confidence Deductions for Activity Areas in an Aggregate

| Actual Sampling Error at 90% Confidence Level | Confidence Deduction |
|---|--|
| 0 - TSE% | 0% |
| TSE to 20% | (Actual sampling error – TSE %) to the nearest 1/10 th per cent |
| Greater than 20% | 100% |

Using this approach, the Reserve's inventory standard remains essentially the same for single large Forest Projects and aggregated groupings of Forest Projects with smaller Activity Areas while allowing the Forest Projects in an Aggregate to benefit from reduced costs associated with the reduced number of plots required per Activity Area. The underlying statistical rationale for this approach is explained in Section E.4.

E.3 Monitoring and Verification

Each Forest Project is required to undergo a full verification at the Forest Project's initiation to confirm that the Forest Project's Activity Area(s) baseline(s) and initial inventory(ies) have been established in conformance with the MFP and that the rules for inventory accuracy have been met as outlined in this document. Subsequent verifications may follow a schedule where only a representative sample of Forest Projects in an Aggregate is verified each year, as described below.

The aggregator is responsible for selecting a single verification body for all enrolled Forest Projects in any given year or set of years. The same verification body may be used up to six consecutive years (the number of consecutive years allowed is from the Verification Program Manual). Verification bodies must pass a conflict-of-interest review against all enrolled Forest Owners and the aggregator.

The aggregator must also coordinate a verification schedule that meets the requirements described in this section. The aggregator must document the verification work and provide a report to the Reserve every 12-month period, from the date of its formation, showing how the verification schedule demonstrates compliance with these guidelines.

Required Full Verification Schedule for Aggregates

Full verifications must be conducted on a schedule such that at all times a minimum of 50 percent of the Forest Projects in the Aggregate (rounding up in the case of an uneven number of Forest Projects) have successfully completed a full verification within the previous six years, and that all Forest Projects in the Aggregate have successfully completed a full verification within the previous twelve years. These verification requirements are mandatory regardless of the mix of entry dates represented by the group of Forest Projects in the Aggregate. The initial full verification required for entry into the Aggregate may count to meet these full verification obligations.

On six-year intervals, beginning with the first year of the existence of the Aggregate, the verification body must select from the total group of Forest Projects those projects that will have scheduled full verifications in order to meet these obligations. The process must utilize random selection, while still meeting the six- and twelve-year completion requirements. For example, in the case where there are ten Forest Projects that joined the Aggregate in the first year, five of those projects must be chosen randomly to have a full verification sometime before the seventh year. The remaining five projects must then complete a full verification sometime before the thirteenth year. Projects must then be randomly selected again for the next twelve-year full verification cycle, such that five projects would be randomly selected to complete a full verification before the nineteenth year, and the remaining five would have to complete a full verification prior to the twenty-fifth year, and so on (see Table E.3 and Table E.4).

The full verifications may be spread out through each six-year interval or scheduled in a more concentrated manner that economizes on verification expenses. A verifier may submit one Verification Report for all Forest Projects within an Aggregate that undergo a full verification in a given year. A separate Verification Statement is required for each Forest Project. Forest Owners may be notified of a full verification prior to the year in which the verification is to take place.

Successful verification of the representative sample results in the crediting of all projects participating in the entire Aggregate.

Required Desk Verification Schedule for Aggregates

Between full verifications, each Forest Owner must submit annual project monitoring reports. The Aggregate may also opt to undergo a desk verification in order to receive additional credits prior to the next required full verification. If undergoing a desk verification, verification bodies must audit a sample of the annual monitoring reports, equivalent to the square root of the total number of participating Forest Projects in the Aggregate, or the total number of participating Forest Projects divided by 12, whichever is higher (when rounded to the next highest whole number). As an example, an Aggregate with 16 Forest Projects must have four project monitoring reports verified in a given reporting period. Audited Forest Projects must be selected randomly, and must not include projects undergoing full verification for the reporting period. Forest Owners will not know when their annual monitoring reports will require verification. Since this is a random process, a Forest Owner may have the annual report verified in consecutive years or not until the Forest Project is verified with a required full verification. A verifier may submit one Verification Report for all Forest Projects within an Aggregate that undergo a desk verification in a given reporting period. A separate Verification Statement is required for each Forest Project.

Successful verification of a representative sample results in the crediting of all Forest Projects participating in the entire Aggregate. If verification for a participating Forest Project is unsuccessful, the verification body must verify additional participating Forest Projects until the total number of successful verifications reaches the required number (as described above). If the required number of successful verifications has not been achieved within 12 months after the date the verification body submits a negative Verification Opinion and Report to the Reserve for a Forest Project in the Aggregate, crediting of all the participant Forest Projects in the Aggregate will be suspended until the required number of successful verifications has been achieved.

If material issues arise during verification of a participant Forest Project, the Forest Owner will need to independently address the issues and required corrective actions using the same process taken with standalone Forest Projects as described in Section 8 and the Reserve Verification Program Manual⁷⁴.

The Reserve will not issue CRTs for a Forest Project in an Aggregate that has an unsuccessful verification. If a participating Forest Project is not successfully verified within 24 months of a negative Verification Opinion, the Forest Project will be automatically terminated.

If during a given reporting period at least the square root of all participating Forest Projects undergoes a full verification, the remaining Forest Projects are not required to undergo a desk

⁷⁴ <http://www.climateactionreserve.org/how/verification/verification-documents/>

verification. The initial verifications of Forest Projects that join an Aggregate after the Aggregate's original start date do not count towards the minimum number of projects that must undergo a full verification in order to avoid incurring additional desk verifications (see Table E.3 and Table E.4).

Aggregators may assist the Forest Owner in preparing documents for verification and facilitate the verification process. The scope of these services is determined by the specific contract between the Forest Owner and the aggregator. The ultimate responsibility for monitoring reports and verification compliance is assigned to each participating Forest Owner.

Table E.3. Verification Schedule of an Aggregate

| RP* | Projects in Aggregate | IVs* | FVs* (not counting IVs) | Randomly Selected for FVs | Total FVs (including IVs) | % of Projects with FVs in the Past 6 Years | % of Projects with FVs in the Past 12 Years | DVs* Randomly Selected |
|-----|-----------------------|------|-------------------------|---------------------------|---------------------------|--|---|------------------------|
| 1 | 5 | 5 | | | 5 | 100% | 100% | 0 |
| 2 | 5 | | | | 0 | 100% | 100% | 3 |
| 3 | 5 | | | | 0 | 100% | 100% | 3 |
| 4 | 5 | | | | 0 | 100% | 100% | 3 |
| 5 | 5 | | | | 0 | 100% | 100% | 3 |
| 6 | 5 | | | | 0 | 100% | 100% | 3 |
| 7 | 5 | | 3 | 3 | 3 | 100% | 100% | 0 |
| 8 | 5 | | | | 0 | 60% | 160% | 3 |
| 9 | 5 | | | | 0 | 60% | 160% | 3 |
| 10 | 5 | | | | 0 | 60% | 160% | 3 |
| 11 | 5 | | | | 0 | 60% | 160% | 3 |
| 12 | 5 | | | | 0 | 60% | 160% | 3 |
| 13 | 5 | | 3 | 1 | 3 | 60% | 160% | 0 |
| 14 | 5 | | | | 0 | 60% | 120% | 3 |
| 15 | 5 | | | | 0 | 60% | 120% | 3 |
| 16 | 5 | | | | 0 | 60% | 120% | 3 |
| 17 | 5 | | | | 0 | 60% | 120% | 3 |
| 18 | 5 | | | | 0 | 60% | 120% | 3 |
| 19 | 5 | | 3 | 3 | 3 | 60% | 120% | 0 |
| 20 | 5 | | | | 0 | 60% | 120% | 3 |

*RP: reporting period; IV: initial verification; FV: full verification; DV: desk verification

Table E.4. Verification Schedule of an Aggregate with Forest Projects added during different Reporting Periods

| RP* | Projects in Aggregate | IVs* | FVs* (not counting IVs) | Randomly Selected for FVs | Total FVs (including IVs) | % of Projects with FVs in the Past 6 Years | % of Projects with FVs in the Past 12 Years | DVs* Randomly Selected |
|-----|-----------------------|------|-------------------------|---------------------------|---------------------------|--|---|------------------------|
| 1 | 5 | 5 | | | 5 | 100% | 100% | 0 |
| 2 | 10 | 5 | | | 5 | 100% | 100% | 3 |
| 3 | 15 | 5 | | | 5 | 100% | 100% | 4 |
| 4 | 20 | 5 | | | 5 | 100% | 100% | 4 |
| 5 | 20 | | | | 0 | 100% | 100% | 5 |
| 6 | 20 | | | | 0 | 100% | 100% | 5 |
| 7 | 20 | | | | 0 | 100% | 100% | 5 |
| 8 | 20 | | | | 0 | 75% | 100% | 5 |
| 9 | 20 | | | | 0 | 50% | 100% | 5 |
| 10 | 20 | | 10 | 10 | 10 | 25% | 100% | 0 |
| 11 | 20 | | | | 0 | 50% | 150% | 5 |

| RP* | Projects in Aggregate | IVs* | FVs* (not counting IVs) | Randomly Selected for FVs | Total FVs (including IVs) | % of Projects with FVs in the Past 6 Years | % of Projects with FVs in the Past 12 Years | DVs* Randomly Selected |
|-----|-----------------------|------|-------------------------|---------------------------|---------------------------|--|---|------------------------|
| 12 | 20 | | | | 0 | 50% | 150% | 5 |
| 13 | 20 | | | | 0 | 50% | 150% | 5 |
| 14 | 20 | | | | 0 | 50% | 125% | 5 |
| 15 | 20 | | | | 0 | 50% | 100% | 5 |
| 16 | 20 | | 10 | 0 | 10 | 50% | 75% | 0 |
| 17 | 20 | | | | 0 | 50% | 100% | 5 |
| 18 | 20 | | | | 0 | 50% | 100% | 5 |
| 19 | 20 | | | | 0 | 50% | 100% | 5 |
| 20 | 20 | | | | 0 | 50% | 100% | 5 |
| 21 | 20 | | | | 0 | 50% | 100% | 5 |
| 22 | 20 | | 10 | 10 | 10 | 50% | 100% | 0 |
| 21 | 20 | | | | 0 | 50% | 100% | 5 |

*RP: reporting period; IV: initial verification; FV: full verification; DV: desk verification

E.4 Rationale for Reduced Sampling Requirements

The underlying theory supporting the target sampling errors was determined through consultation with statisticians and affirmed with the use of the model described below. The model was originally developed for the Reserve's Forest Project Protocol for the United States, which requires the quantification of carbon stocks at the project level, but has since been applied to the MFP, which requires the quantification of carbon stocks at the Activity Area level. Thus, where the model refers to individual projects, for the MFP, this would relate to individual Activity Areas.

The model assumes that an aggregate would contain from 2 to 25 projects included with each participating project in the aggregate comprised of four inventory strata. Hypothetical inventory data were generated for each stratum using random numbers within a range as shown in Table E.5 below. This was assumed to encompass a significant range of potential variability at the stratum and project level.

Table E.5. Parameters Used to Generate Hypothetical Inventory Data

| | Min Value | Max Value |
|--|-----------|-----------|
| Mean live-tree carbon density (MgC/acre) | 20 | 100 |
| Standard deviation (% of mean) | 10% | 100% |
| Inventory stratum size (acres) | 50 | 1,000 |

Using the hypothetical inventory data generated, the weighted-average mean and standard deviation were calculated for each individual project in the aggregate (where a project is comprised of four strata) and at the total level for the equivalent standalone project (i.e., all inventory strata from all projects were assumed to represent distinct inventory strata in a single large project). These data were then used to calculate the required sample size for each individual project belonging to an aggregate and for an equivalent standalone project of the same total size. The analysis was repeated 1,000 times to get an average result for many different hypothetical inventory samples. The total number of plots required will vary significantly depending on the actual mean and standard deviation of each of the projects in question, but it

should be roughly the same number of plots that would be required if all of those projects were registered as a single (equivalent standalone) project.

Table E.6 shows the total sample size requirements for projects in an aggregate that are (a) treated individually, and (b) treated as an equivalent standalone project (i.e., made up of the combined individual projects) assuming ± 5 percent error at the 90 percent confidence level. Smaller individual projects will in general have a higher sampling requirement compared to larger individual projects. The results show that inventory costs would be 2 to 27 times higher (relative to an equivalent standalone project) if each individual project were required to meet the sampling error of ± 5 percent at the 90 percent confidence level.

Table E.6. Number of Inventory Plots Required for Aggregate vs. Equivalent Standalone Project for ± 5 Percent at 90 Percent Confidence

| Number of Projects in the Aggregate | Total number of plots required for all projects in the aggregate | | Difference in Total Number of Plots (and Cost) |
|-------------------------------------|---|---|--|
| | Treating the entire geographic area as one equivalent standalone project that meets $\pm 5\%$ sampling error in aggregate | Requiring each component project to meet $\pm 5\%$ sampling error | |
| 2 | 340 | 725 | 213% |
| 3 | 338 | 1080 | 320% |
| 4 | 337 | 1444 | 428% |
| 5 | 337 | 1797 | 533% |
| 6 | 336 | 2158 | 642% |
| 7 | 335 | 2506 | 748% |
| 8 | 334 | 2856 | 855% |
| 9 | 333 | 3223 | 968% |
| 10 | 333 | 3573 | 1073% |
| 11 | 331 | 3935 | 1189% |
| 12 | 331 | 4284 | 1294% |
| 13 | 331 | 4641 | 1402% |
| 14 | 331 | 4995 | 1509% |
| 15 | 330 | 5350 | 1621% |
| 16 | 329 | 5712 | 1736% |
| 17 | 329 | 6068 | 1844% |
| 18 | 329 | 6431 | 1955% |
| 19 | 330 | 6788 | 2057% |
| 20 | 330 | 7140 | 2164% |
| 21 | 330 | 7506 | 2275% |
| 22 | 330 | 7871 | 2385% |
| 23 | 330 | 8221 | 2491% |
| 24 | 330 | 8576 | 2599% |
| 25 | 330 | 8947 | 2711% |

The model was then used to affirm the target sampling error at 90 percent confidence level to apply at the individual project level for aggregates in Table E.1. Table E.7 shows the results of a Monte Carlo simulation of 1,000 iterations of the analysis using different random numbers to generate the initial inventory figures. It shows that using the target sampling errors suggested in the proposal for determining the required sample size of individual projects, the level of actual accuracy at the aggregate level is likely to be similar or better than the ± 5 percent currently required in the MFP and the number of total plots is not significantly higher than an equivalent standalone project.

Table E.7. Number of Inventory Plots Required and Equivalent Sampling Error for Aggregate vs. Standalone Project

| Number of Projects in the Aggregate | Target Sampling Error (TSE) at 90% Confidence for each Project in an Aggregate (Based on the Number of Projects in the Aggregate) | Sum of Plots Required for all Projects in the Aggregate: (mean of 1,000 Iterations) | | Percentage Increase of Plots Required for Aggregated Projects (Compared to Standalone Projects) (D-C) / C | Resulting Sampling Error if Plots from the Aggregate were Applied to a Single Standalone Project at 90% Confidence Interval * |
|-------------------------------------|---|---|--|---|---|
| | | With the Projects in the Aggregate Treated as One Project (+/-5% at 90%) | With the Projects in the Aggregate Treated as Aggregated Projects (TSE % at 90%) | | |
| A | B | C | D | E | F |
| 2 | +/- 7% | 351 | 365 | 4% | +/- 4.9% |
| 3 | +/- 8% | 343 | 416 | 21% | +/- 4.5% |
| 4 | +/- 9% | 339 | 439 | 29% | +/- 4.3% |
| 5 | +/- 10% | 338 | 446 | 32% | +/- 4.3% |
| 6 | +/- 11% | 338 | 440 | 30% | +/- 4.3% |
| 7 | +/- 12% | 335 | 431 | 29% | +/- 4.4% |
| 8 | +/- 13% | 335 | 420 | 25% | +/- 4.4% |
| 9 | +/- 14% | 334 | 407 | 22% | +/- 4.5% |
| 10 | +/- 15% | 333 | 393 | 18% | +/- 4.6% |
| 11 | +/- 16% | 332 | 380 | 14% | +/- 4.6% |
| 12 | +/- 17% | 332 | 368 | 11% | +/- 4.7% |
| 13 | +/- 18% | 331 | 357 | 8% | +/- 4.8% |
| 14 | +/- 19% | 331 | 345 | 4% | +/- 4.9% |
| 15 | +/- 20% | 331 | 333 | 1% | +/- 5.0% |
| 16 | +/- 20% | 331 | 355 | 7% | +/- 4.8% |
| 17 | +/- 20% | 331 | 377 | 14% | +/- 4.7% |
| 18 | +/- 20% | 331 | 399 | 21% | +/- 4.5% |
| 19 | +/- 20% | 331 | 421 | 27% | +/- 4.4% |
| 20 | +/- 20% | 332 | 443 | 33% | +/- 4.3% |
| 21 | +/- 20% | 331 | 465 | 40% | +/- 4.2% |
| 22 | +/- 20% | 331 | 487 | 47% | +/- 4.1% |
| 23 | +/- 20% | 331 | 509 | 54% | +/- 4.0% |
| 24 | +/- 20% | 330 | 532 | 61% | +/- 3.9% |
| 25 | +/- 20% | 330 | 555 | 68% | +/- 3.8% |

* This is the sampling error that would result if the total number of plots used for the equivalent standalone project were equal to the total number of plots listed in column D (i.e., the total number of plots required if each small project were treated individually, using the target sample error identified in column B).

Example

Using the data in Table E.7, an aggregate involving 9 projects in total (column A) requires a sampling error of +/- 14 percent (column B) to be used in inventory design for each individual property. For the example shown below, this translates to just over 45 plots per property, or a total of 407 plots at the aggregate level (column D). Conversely, the number of plots required to achieve +/- 5 percent sampling error on an equivalent standalone project would be 334 for the same example (column C). The number of plots required at the aggregate level is therefore 22 percent greater than the equivalent standalone project (column E).

The simple graphic below illustrates the distribution of plots to the properties within the aggregate group of 9 projects and in the equivalent standalone project.

| Aggregate | | | Standalone |
|---------------------|----|----|---------------------|
| (Total = 407 plots) | | | (Total = 334 plots) |
| 45 | 45 | 45 | 334 |
| 45 | 45 | 45 | |
| 45 | 46 | 46 | |

The two project areas are identical at the aggregate level, but because the aggregated project requires more total plots, it will theoretically achieve a sampling error of +/- 4.5 percent (column F in Table E.7) instead of +/- 5 percent for the equivalent standalone project.