Verification Report

ACR114 GreenTrees ACRE (Advanced Carbon Restored Ecosystem)

June 30, 2021

Ruby Canyon Environmental, Inc.

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1 INTRODUCTION

GreenTrees, LLC (GreenTrees) contracted with Ruby Canyon Environmental, Inc. (RCE) to perform the verification of the ACR114 GreenTrees ACRE (Advanced Carbon Restored Ecosystem) project (Project) for the reporting period of January 1, 2020 through December 31, 2020 under the American Carbon Registry (ACR) program. The goal of the verification is to ensure that the GHG assertion is materially correct, that the data provided to RCE is well documented and that if GreenTrees has made any material errors, that these errors be corrected.

1.1 PROJECT BACKGROUND

The GreenTrees ACRE Project is a programmatic afforestation/reforestation project (A/R). Project lands are located within the Mississippi Alluvial Valley (MAV) in the US Forest Service South Central and Southeast Regions. The project uses site preparation and tree planting to establish trees on lands that had previously been used for agriculture.

1.2 CONTACT INFORMATION

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1.3 VERIFICATION TEAM

Lead Verifier: Zach Eyler

Team Members: Christian Eggleton (FRST), Tim Facemire (FRST), Andrea Eggleton (FRST), Noam Knopf-Boyer (FRST)
Internal Peer Reviewer: Phillip Cunningham

1.4 OBJECTIVES

The goal of this GHG emission reduction verification is to ensure that the GHG assertion made by the Project is materially correct, that the data provided to RCE can be documented and that the Project is in compliance with all ACR standards and requirements.

2 VERIFICATION CRITERIA

2.1 STANDARDS AND PROCESS

- ISO 14064-3:2006 "Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions"
- Validated Project Plan "Advanced Carbon Restored Ecosystem (ACRE), December 13, 2011
- ACR Standard, October 2010, v2.1
- ACR Forest Carbon Project Standard, November 2010, v2.1 (Forest Standard)
- ACR Validation and Verification Guideline for GHG Projects, May 2018, v1.1
- Afforestation and Reforestation (A/R) methodological tool "Tool for testing significance of GHG emissions in A/R CDM project activities, Version 01"
- ACR Risk Buffer Rating Tool, v1.0
- ACR Methodology for Afforestation and Reforestation of Degraded Land, Version 1.0, March 2011 (Methodology), together with the following procedures and tools:
    - Approved CDM "Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities"
    - Approved CDM tool "Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity"
    - Approved CDM "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities, Version 01"
    - Approved CDM "Combined tool to identify the baseline scenario and demonstrate the additionality in A/R CDM project activities"

2.2 LEVEL OF ASSURANCE

This verification was conducted to a reasonable level of assurance.

2.3 MATERIALITY

This verification was conducted to ACR's required materiality threshold of +/-5% of the GHG project's emission reductions or removal enhancements.

3 SCOPE OF VERIFICATION

- Organizational Boundaries
  - ~115,000 acres located in Mississippi, Louisiana, and Arkansas
- Infrastructure, Technologies, Processes
  - The Project is considered a programmatic afforestation/reforestation project (A/R). The Project uses site preparation and tree planting to establish trees on lands that have been in continuous agricultural use for decades.
- GHG SSRs
  - Carbon Pools: aboveground biomass, belowground biomass and soil organic carbon
- Types of GHGs Reported
  - CO_2
- Reporting Period
  - January 1, 2020 – December 31, 2020
- Assessment Areas
  - Project lands are located within the Mississippi Alluvial Valley (MAV) in the US Forest Service South Central and Southeast Regions.

4 VERIFICATION PROCESS

4.1 VERIFICATION ACTIVITIES

The verification process consisted of the following activities as outlined in the verification plan:

- RCE completed a COI form on December 7, 2020 to identify any potential conflict of interest with the Project or Project Developer. No conflicts of interest were found.
- RCE and FRST held a verification kick-off meeting with GreenTrees on December 9, 2020. During the kick-off meeting RCE reviewed the verification objectives and process, reviewed the verification schedule, and submitted an initial document request.
- RCE performed a strategic review and risk assessment of the received data and support documents to understand the scope and areas of potential risk in the GHG emissions reductions.
- RCE developed a risk-based sampling plan based upon the strategic review and risk assessment. The verification plan and sampling plan were used throughout the verification and were revised as needed based upon additional risk assessments.
- FRST conducted a site visit to the Project areas on January 26-28, 2021. The site visit included performing a paired T-Test per ACR guidance on at least 5% of the project plots, reviewing project boundaries, qualitatively assessing stratification, and conducting interviews with key personnel and foresters.
- RCE and FRST performed a risk-based desktop review of the submitted verification documents. The desktop review included an assessment of the GHG calculation methods and inputs, source data completeness, GHG management and monitoring systems and eligibility documentation.
- RCE submitted requests for additional documentation, clarifications and recommendations for improvement as necessary to GreenTrees throughout the verification.

- RCE and FRST conducted interviews with Project personnel during the verification. RCE and FRST spoke with the following individuals:
    - GreenTrees
        - Chandler Van Voorhis
        - Katherine Sarich
        - Bickham Crooks
        - Avery Hughes
        - John Firestein
    - EcoFor
        - Gordon Smith
- RCE's internal peer reviewer conducted a review of the verification sampling, report, and statement.
- RCE issued a final verification report, verification statement, and list of findings.
- RCE and FRST held an exit meeting with GreenTrees.

4.2 ACR Forestry Standard and Requirements

4.2.1 Eligibility

RCE and FRST reviewed the Project against all ACR Forest Standard and Methodology eligibility requirements and confirmed the following:

- Project is implemented on degraded lands.
- Project is not implemented on organic soils.
- Project land is not considered wetlands.
- Litter remains on site.
- Plowing, ripping or scarification is only done within the first five years of the initial site preparation.
- All lands were planted after November 1, 1997, meeting ACR start date requirements.
- GreenTrees has committed to a minimum project term of 40 years, meeting the ACR project term requirements.
- The Project crediting period is confirmed as 40 years.
- GreenTrees as the project developer has direct control over the emission reductions.
- GreenTrees has clear title to the emissions reductions.
- The ownership titling of land within the Project boundary is clear.
- Project lands were not cleared of trees within 10 years before the project start date.

Crediting past 15 years

The original PD states that the Project was only planning to claim credits on the first 15 years of growth after planting, so that if landowners completed commercial forest harvesting in the future, the net carbon stocks under forestry would remain at or above the amount that previously generated credits. However, ACR provided guidance during the last verification that these trees are permitted to remain in the Project with the following guidance: "This is permissible for instances/stands that are demonstrably growing slowly relative to comparable stands within the project. Please ensure that the annual monitoring report provides an updated year/or target for these stands/instance for which offset counting will stop so future verifiers can track this." RCE discussed this with GreenTrees during the previous reporting period

verification as well as for this current verification. GreenTrees confirmed that trees are still not growing as fast as originally anticipated. In addition, lands that are part of the CRP (and WRP) programs have an obligation to not harvest and commit to conservation practices. GreenTrees confirmed that no harvesting has occurred during this reporting period and in addition that very few tracts are near carbon stock levels that would make economic sense for harvesting.

4.2.2 Additionality

RCE and FRST confirmed that the Project meets the applicable additionality requirements including the CDM A/R methodological Tool "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities" and ACR's three-pronged test. Land enrolled was previously validated and verified as meeting the additionality requirements. RCE and FRST reviewed a sample of new tracts to confirm land enrolled for this reporting period are similar to previous tracts and meet all requirements. The Project exceeds enforced laws and regulations, exceeds common practice in the geographic region and forest type and the Project faced a financial implementation barrier.

4.2.3 Permanence

The Project has committed to a 40-year agreement with ACR. A few owners decided to leave the Project and RCE/FRST confirmed that these tracts have been removed from Project crediting. These tracts are still monitored to ensure no reversals have occurred.

The Project uses the ACR risk assessment tool. RCE and FRST reviewed the tool and agree with the risk rating of 16.60%

4.2.4 Leakage

The ACR Forest Standard states that A/R projects do not typically need to account for leakage. Discussions with GreenTrees confirm that the Project is typical of an A/R project and that there is no leakage.

4.2.5 Community and Environmental Impacts

RCE and FRST confirmed that positive impacts and co-benefits from the Project potentially include income to landowners, new jobs associated with Project activities, water quality, reduction of soil erosion, and increased biodiversity.

4.3 Project Inventory

RCE assisted FRST with the review of the Project's inventory. A variety of areas of the inventory were reviewed and discussed with GreenTrees. Overall, FRST and RCE confirmed that the Project inventory meets the ACR requirements and is conservative in nature. A variety of recommendations for improvement were suggested for GreenTrees to implement in the future to make the Project more transparent and less difficult to verify.

RCE and FRST confirmed that the Project's 90% confidence interval was no more than 10% of the mean carbon stocks, thus the Project does not need to take an uncertainty deduction.

4.4 GHG Assertion

RCE and FRST reviewed the GHG assertion calculation as well as supporting documentation for the assertion. After careful review and discussion, with GreenTrees' assistance, the calculations were

confirmed to be accurate and commensurate with their reported GHG equations and methods. RCE and FRST made recommendations on their calculation process for future verifications.

5 VERIFICATION FINDINGS

RCE and FRST developed a list of findings notifying GreenTrees of requests for additional documentation, clarification and recommendations for improvements. All issues were closed with appropriate responses by GreenTrees. A complete list of the issues and responses can be found in Appendix A.

6 VERIFICATION RESULTS AND CONCLUSION

This verification of the GreenTrees ACRE Project for the reporting period January 1, 2020 to December 31, 2020 was completed in a manner consistent with ISO 14064-3:2006 and in conformance with all ACR standards and guidelines. The table below is a summary of the emission reduction or removals.

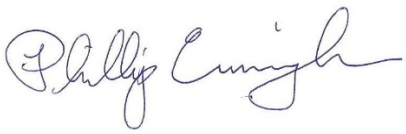
Vintage	GHG Reductions and Removals ($mtCO_2e$)	Risk Buffer ($mtCO_2e$)	Emission Reductions ($mtCO_2e$)
2020	1,179,164	195,714	983,450
Total	**1,179,164**	**195,714**	**983,450**

Note: Values might not sum correctly due to rounding.

Lead Verifier Signature

Zach Eyler

Internal Peer Reviewer Signature



Phillip Cunningham

7 APPENDIX A

Corrective Action Request, Non-material finding, Additional Documentation Request, or Clarification Request ID#	Finding	Client response	RCE response	Additional client response	Additional RCE response	Additional client response	Additional RCE response	Additional client response	Additional RCE response	Open or Closed
CAR 1										
NM 1	The lbs to kg conversion for sweetgum trees with a DBH 11-17.2 inches is missing.	The lbs to kg conversion is added and new carbon numbers have been provided to the verifier.	This has been confirmed. Thank you for the update.							Closed
NM 2	There is a small error in TPA used for a transposed DBH/HT tree (170_4).	Correct. The plot size in the calculations is 0.1 and should be 0.02, so the tree biomass is underweighted by a factor of five. Thus this slightly underscounts the carbon stock, and the error is both de minimus and conservative.	GT actually did update this. The verifier's TPA will also reflect a TPA of 50.							Closed
ADR 1	With the addition of new tracts, please provide updated documentation which supports the calculation of a new risk reversal rating including the "AcreslyProgram" document.	The "Risk rating v01.xlsx" file has been uploaded to the shared verification drive, and includes the tab "Conservation Easement" which shows program and whether the easement is permanent. Note the WRP tracts that have permanence class "Not" are 30 year contracts.	Thank you for providing this document, the GIS source data for the "AcreslyProgram" / "Conservation Easement" document/tab is requested to confirm the easement classification and acreage.	The GIS source data is the same GIS shape file that you already have. The acres for each tract come from the GIS. The classification of whether or not the tract has a permanent conservation easement is from the planting contracting documents. These documents are stored in the FileMaker database in the section documenting carbon rights. If you want to check our classifications, the strongest way to do that is to select a sample of tracts and examine the documents stored in the carbon rights section of the FileMaker database.	The verifier spot checked a selection of easements. We noted that some easements have a discrepancy of up to one acre less than in the project area, but assumes this is due to mapping differences and is immaterial. Other easements are equivalent or greater than the acreage of the participating tract. This item may be closed.					Closed
ADR 2	Please provide the calculation for uncertainty.	Values from the uncertainty calculation are in the "...Variance..." output of the carbon module.	We are calculating a sampling error of 7.40% using the same methods as last year and are having trouble identifying where this value can be found in the Variance workbook.	You are correct. We are correcting the value. With the other changes described below, the new uncertainty is 7.42%.	We concur that the Uncertainty Cx is: check 2021-05-24.					Closed
ADR 3	Please provide documentation for the QA/QC procedures used for the latest inventory plots (fall 2020).	The file "Field Data QA QC Procedures 2020-9-1.docx" has been uploaded to the shared drive.	Thank you for providing this clarifying document. Please provide evidence of the application of these procedures in the field.	The tree by tree results of the GreenTrees audits of field work are reported in T402-PLOT data (Excel file) previously provided, in the "Audits" tab, and the summary results by plot are reported in the "Audit Summary" tab.	Thank you. It appears that a subsample of plots were QA/QC'ed at a rate meeting the stated procedures.					Closed
ADR 4	Please provide a list of all project tracts, acreage, and status such as active, monitor, removed, etc. Please also provide a list of tract changes including monitor only by year, removed, and new 2020 tracts. Additionally, if there are other categories of tract status change, for example, tracts 105, 106, and 195 were split into two records, please including clarifying notes.	Provided in spreadsheet "Tracts_Active_20210202 and compare to 2019.xlsx" There are four tracts that went from active in 2019 to monitor in 2020: 201, 230, 233 and 265. No tracts went from monitor to active. New tracts are shown in column L of the "Tracts" tab. Monitor tracts for 2019 and 2020 are in the "Monitor" tab. If a tract has split, can be seen in the "Monitor" tab by finding blank rows in the 2019 tract list, and looking across to see the new tract numbers in the columns for 2020.	Thank you for providing this clarifying document. This item may be closed.							Closed
ADR 5	Please provide a plot list that identifies the original 2019 plot allocation and the new 2020 plot allocation. Please also clarify why it appears new 2020 plots (Plot no >315) are allocated in tracts that are not new for 2020, for instance plot 321 in GRT0150.	All lands were re-stratified in Aug-Sept 2020 using the most recent available data. If an acre with a plot moved to a different stratum, that plot moved to the new stratum. Plots measured in May 2020 were at a lower density than plots measured in fall 2019. Plots were added to this "low density" area to bring the plot density up to the density sampled in fall 2019. New plots were added to new acres, at the same density of plots as in the 2019 acres.	Thank you for the explanation. We are trying to assess the number of plots allocated by stratum over time to verify that all acres within a stratum have an equal chance of being sampled. Please correct our understanding if need be: the original plot allocation from 2019 (plots numbered <315) appears to include 309 plots. 67 plots were added in the fall of 2020 of which 44 were on new 2020 tracts. Please clarify the reason to add 23 plots to existing tracts. In addition, it was expected that plots on the new tracts would be added at the same strata-density (acres per plot) of the 309 + 23 = 332 plots that are on the pre-2020 existing tracts (column K on Sheet2 tab of this worksheet). However, strata 0, 2, and 3 have more plots than expected and stratum 1 less plots than expected. A concern is that Stratum 3 had 1 plot per 198 ac in the previous RP and is represented by 1 plot per 17 ac of new tracts; it would seem that the new tracts are represented >10x the older tracts in the inventory. Would it be appropriate to weight the plots in the new tracts to match the plot density of the previous RP by stratum? Please clarify the allocation of plots to existing and new 2020 tracts. It was observed that Plots 165-172 are on Monitor only tracts. Please confirm that all Monitor tracts had the potential to be allocated a plot.	The plots should be at fairly constant density within each stratum (though it is a bit unclear what "constant density" would mean because the plots are randomly located, not located on a grid). In 2019 we allocated plots at constant density within each stratum. We did not measure all plots in the last verification. In this verification we went back and measured all the plots were allocated in 2019 but that had not been measured, and we used all the plots in this analysis. For the newly enrolled acres, new plots were allocate at the same density as plots on the pre-existing acres. The exception is stratum 0 which did not have plots allocated in 2019; the plots in stratum 0 are new or got there because the stand the plot is within was re-stratified to stratum zero in the fall of 2020. For strata 1-4 the densities we used to assign plots were very close to the densities you have in column I of Sheet2. We are not sure how you get the densities you report in column M; see our spreadsheet "Plots to estimate v04.xlsx" for the number of new acres in each stratum and our calculations of plot densities.	New weighting plot calculation method confirmed. Sampling error confirmed <10.0%. Note that other adjustments may be require pending CR1 response. Previous response noted below and discussed via phone calls: I have followed the logic in the Plots to sample v04.xlsx: the 2019 plot allocation (313 plots on the 2019 stratification) sets the plot per acre density in Column C. Plots to be added in Column J are based on the difference between the 2020 acres and the 2019 acres of each stratum, regardless of whether or not a tract is new for 2020. One issue is that the plot assignment to stratum (Column F) is based on the 2020 stratification (I believe, because my numbers do not match my numbers in Sheet2 Col G), but then divides 2019 strata acres, so this does not correctly represent the acres density in Column C because many of the plots changed stratum: plot assignment and acres of stratum are not from the same year. Please see my calculations beginning in Cell F26 on Sheet 2. I see how this aims at keeping the plot density within a stratum constant over time, but disregards whether a tract has been added or not and also gives older tracts multiple chances at being sampled. My main concern is consistently having every acre within a stratum have equal chance of being sampled. I am unclear on how the existing vs new tracts were allocated (44 of 67) the new plots if the above method was used. Please identify how the plots were allocated spatially between new and old tracts and address my concerns above. Regarding my previous analysis, I have updated the tab to show how my calculations are done for expected plot density when taking into account existing vs new tract acres. Plots allocated to 2019 tracts with 2020 stratification set the plots per acre sampling density. The intent was that the areas that are part of the existing population (2019 tracts) should be represented within the complete population (2019 + 2020 tracts) at the same rate or plot per acre density as the new 2020 tracts. The 23 new plots added to 2019 tracts in 2020 only augment the sample intensity of the 2019 portion of the population, and should not contribute to the sampling intensity of the new 2020 tracts because my concern is that all acres have an equal chance of being sampled. The new tracts then get the same sampling intensity at this rate.						Closed
ADR 6	Please provide the ACR Attestation for 2020-2021.	Chandler will provide		ACR now incorporates the attestation into the Monitoring Report. The monitoring report is provided.	The ACR Attestation is captured in Section IX of the Monitoring Report Template Version 3.0 per the Arc website. The "Monitoring Report GreenTrees 2020 v01 signed does not include this section at this time as the Version 2 ACR template is currently being used.	The monitoring report has been put into the v3 format, including the attestation language, and reorganization specified by version change.	Monitoring report updated with signature and completion of the attestation section.			Closed
ADR 7	Please provide the most current Risk Mitigation Agreement.	Chandler will provide		My apologies. I thought this had been provided to you. I have uploaded the file "ACR risk mitigation agreement signed October 2020.pdf" to the verification folder.	Thank you for providing this document. This item may be closed.					Closed
CR 1	Comparing the shapefiles 'Tract_Stratified_Boundaries_2020' and 'GreenTrees_TractStratified' (2019) there are minor changes in acreage (within 1 acre) for dozens of tracts, what prompted these changes?	These differences appear to be a rounding issue with the GIS software.	This does not appear to be the case in all instances. For example, GRT0025 is approximately 1 acre less in 2020. This appears to be a boundary shift and cutout for access to a windmill or other structure. In addition, after filtering out tracts 003, 420 (see CR 6), and 422, there appear to be 486.2 acres in 2019 that are not included in 2020 and 483.5 ac in 2020 among 2019 tracts that are not in the 2019 shapefile. Overall, the changes amount to <1 ac total change, but this represents a significant area that has been shifted or eliminated from the project area. Please account for these changes which are detailed on Sheet2 tab of this worksheet. Were areas from 2019 tracts that were newly included (483.5 ac) in 2020 available for plot sampling during the plot allocation? Additionally, why were tracts 105, 106, 195, 200, 200R, and 211 split?	Responding separately to your three questions: (1) acreage: Upon further examination, yes you are right that many of these are changes. My apologies for not investigating this more thoroughly before I made my previous response. The changes are mapping corrections, mostly corrections in registration, and some more accurate delineation of area of surviving trees. Note that the while the total additions and losses removals are both about 484 acres each, the total gains are within an acre of the total removals. To check for aberrations and errors, we selected all tracts that had either an addition or removal of more than 10 acres. For each tract, when the removals were subtracted from the additions to the tract, only one tract had a change in acreage of more than 1.64%. The tract with a larger change is GRT0081. GRT0081 has a 6.6 percent planting acreage of 494.4 acres. Previously we had not counted some of these acres because we could not identify lines of growing trees in aerial images. With more recent aerial images we can see growing trees occupying the entire contract area and we have mapped that, and now the GIS area is within 0.1 acre of the contract area. See the tab "Sheet3" of this issues log responses for these calculations. (2) All tracts in the 2020 verification were eligible to get plots, and all acres mapped as planted at the time plots center locations were assigned were eligible to get plots. If the mapping changed after the date plots were assigned, those changes clean up mapping errors so the plots should be better representation of the complete mapped population than before the mapping was corrected. (3) the tracts you mention were split because part of the original tract was transferred to a different owner. GRT numbers are our way to tracking contractual relationships between GreenTrees and landowners. Thus, if a tract is split and different owners own different parts of the former tract, we create a new "child" tract with a decimal point number.	1. Remaining concern is the carbon that was previously applied to these acres are no longer in the project. ACR has confirmed that acres removed under these circumstances do not constitute a reversal. 2. The verifier makes the assumption that there is not potential for a material misstatement if the added acres (483.5) do not have the potential to have sampling performed on them because they are <0.5% of the total project area. However, ACR has provided guidance stating that "ACR will not allow the newly added 483.5 acres to receive credits if they were not part of the sampling frame and eligible for plot allocation." Please provide a more detailed description of the plot allocation performed for the 66 new 2020 plots. Specifically, we would like to know, because it appears multiple allocations of plots were performed on the project area, 1) what acres were eligible to receive plots in each plot allocation effort including specifically addressing the "new" 483.5 ac on 2019 tracts from mapping adjustments, 2) what was the allocation method (grid, what density/different densities, random) for each allocation effort, 3) we were under the impression all plots were always allocated randomly; please see the screenshots to the right which reveal a systematic allocation; please address that the plot spacing does not appear consistent in the two examples, 4) please clarify how 5 of 23 new plots on 2019 tracts ended up on a single landowner (example to right). 3. Thank you for this clarification. This aspect of the rl. item may be closed.	Responding to item 2.1, the stratum zero acres were eligible to receive plots when we added plots to stratum 0 this verification. However, the mapping corrections in other strata were not eligible to receive plots (strata 1-4). We will drop these strata 1-4 acres for this verification. In our mapping, there were a total of 498.3 acres in 2020 that were not in the 2019 map, and of these 60.4 acres are in stratum 0, for a net result that we will drop 438.9 acres from this verification, although we find this judgment by ACR that we should use less accurate delineation to be nonsensical. We have recalculated credits. Regarding 2.2 and 2.3, we have contacted the makers of the software that we used to assign plot locations. You are correct that the software uses a grid. We load the multipart polygon for a particular stratum into the software, and tell it how many plots to assign, and it constructs a grid and adjusts the spacing on the grid to achieve the target number of plots. The starting point of the grid is random, as far as we know. Responding to 2.4, the plots 367-371 are in stratum 4. Stratum 4 has a density of about 55 acres per plot. The tract has about 261 acres in stratum 4. Thus the number of plots is the expected number given the density and the size of the tract.	Please note the response from G Smith via email from 6/8/21 regarding item 1: *Rather than discuss the mapping further, we think the fastest way to resolve the issue of mapping corrections is for us to take out of this verification the acres that were not in the 2019 verification that are parts of tracts that are in the 2019 verification. This year we allocated new plots to stratum 0 and all stratum zero acres were eligible to receive plots, and we retain the map delineation corrections in stratum 0. The adjustments in tracts that were in the 2019 and that are in strata 1-4 were not eligible to receive new plots. We have removed those acres (on the soil and biomass tons they have sequestered) from the analysis.* In response: thank you for the clarification on item 1. This has been confirmed. Please review Credit calculation v03.xlsx. It appears subtraction of cell H9 occurs twice In response to item 2: Thank you for the explanation. We looked at the proportion of plots to tract vs acres per tract in stratum 4 and they are reasonably commensurate. Can you provide a description of when/how the plots were allocated for this round? We are not necessarily concerned with the use of a grid allocation, just that each grid for each stratum was laid out uniformly across the stratum. Can you provide a list of how many plots were assigned in the software to be allocated to each stratum and which tracts (2019 or 2020 or both) were available for the allocation? We are still trying to understand how new plots got allocated on 2019 tracts and if all 2019 tract acres within a stratum had equal potential for these additional new plots.	Updated discussion had on plot allocation and weighting. Documentation provided for multipart polygon for stratum 0.	Verifier has confirmed the described updates and has assessed the plot weighting based on responses provided in the document "Plot allocation description 2021-06-22.docx." This document provides additional discussion between GreenTrees and the verifier. The verifier has updated plot weighting in their calculations to reflect: 1) weighting as previously discussed for strata 1-3 2) weighting as previously discussed for plot 375, and plots 376 - 381 3) 10 plots (317, 318, 320, 321, 322, 323, 325, 327, 328, and 329) represent 24,228.2 acres of stratum 0 (including all monitor only acres in stratum 0) as indicated by the file provided by Bickham this afternoon 4) 12 plots (40, 43, 54, 55, 110, 111, 134, 135, 136, 137, 138, and 139) reflect 3628.6 acres of stratum 0 (this serves as the basis for weighting the 10 plots in item 3 above, plot 375, and the 6 new plots on new 2020 tracts) After weighting our calculations in this manner, our calculations result in a <1% difference in overall calculations.	Closed
CR 2	Comparing the shapefiles 'Tract_Stratified_Boundaries_2020' and 'GreenTrees_TractStratified' (2019) tract GRT0422 has actually lost overall acreage (~190 acres) from 2019 to 2020. We have a NM finding from last year on this tract. Please refresh our memory as to why the acres are reduced.	The planting contract is for 1232 acres, so we reduced the tract acreage to that area. See "GRT0422_AcreageChange_Explanation_20210222.pdf"	Thank you for this explanation, this item may be closed.							Closed
CR 3	Comparing the shapefiles 'Tract_Stratified_Boundaries_2020' and 'GreenTrees_TractStratified' (2019) there have been changes in stratum classification from higher strata in 2019 to less stocked strata in 2020. Has there been a change in stocking range for stratification? Please clarify the process to update stratification. Is it consistent with the methods used for the original stratification? For example, tract GRT0105 has 24 acres in strata 0 and 172 acres in strata 2 in 2019. The same tract GRT0105 has 19 acres in strata 0 and 177 acres in strata 1 in 2020, despite being the exact same area.	All acres were re-stratified in August-September 2020. Stratification is by human interpretation of aerial photos. Change in stratum assignment can be from: (1) growth, (2) new imagery with greater detail (can raise or lower stratum), (3) change in calibration of the human interpreter. Please recall that stratification is to gain statistical power by grouping acres with similar carbon stocks, and there is no wrong way to stratify, only way that give little increase in statistical power for the same number of plots. The stratum definitions are the same in 2019 and 2020 (though plots are added in stratum 0 in 2020).	Was the 2019 stratification or the 2019 plot data used to inform the 2020 stratification? Our concern, especially in the areas that moved to a lower stratum, is the consistent application of the stratification methods. It appears 139 areas encompassing 5,472 ac went from a higher to a lower stocked stratum (including 16 plots) and 324 areas encompassing 14,332 ac (including 29 plots) moved from a lower to higher stratum. Please provide specific examples with the rationale for a particular tract to move from a higher to lower stratum. Additionally, it appears that 7 areas encompassing 41 ac went from stratum 9 in 2019 to an in-project stratum in 2020; did these have the potential to be allocated a plot in 2020?	Please recall that stratification is to gain more statistical precision from a given number of plots (and the worst stratification only gives the same amount of statistical precision as an unstratified, simple random sample. The stratum weighting by area in the stratum keeps the estimate of the total carbon stock unbiased, regardless of how plots are arranged within strata. For example, if a plot with zero carbon is moved from a low carbon stratum to a high carbon stratum, the average tCO2/ac on the high carbon stratum will go down, the average tCO2/ac on the low carbon stratum will go up, and the statistical power of the entire sample will go down. At the same time, if a plot is moved from a stratum with lower acres per plot to a stratum with a more acres per plot, it will apply to more acres, but if the stratum has more plots it will have less effect on the average tCO2/ac estimated for that stratum. Photos used as reference tree sizes and densities for stratification are uploaded to the shared verification folder, in subfolder named "Stratification". The same reference photos and categories were used in the 2019 and 2020 stratifications. These reference photos are provided. Because trees grow (and die) and we were using the same criteria for stratification in 2020 as 2019, we expect some stratum changes to result from changes in the forest. Regarding your question about stratum 9 being sampled, acres in stratum 9 can never have carbon credits so they are not sampled and they get no credits.	NOTES FROM CALL WITH GORDON SMITH 5/13/21 The provided response describes the effects of re-stratification, but please address the following:) we are looking to confirm that 2019 plot data was not used to specifically assign the stratum for a tract in which a plot is located. Not all tracts have a plot and it would be inconsistent to use plot data to inform stratification. ONLY AERIAL IMAGERY WAS USED FOR STRATIFICATION (NO 2019 PLOT DATA) 2) We are looking to address the rationale and occurrences where a tract went from a higher stocked stratum to a lower stocked stratum because trees are presumably growing over time. We are seeking clarification because the ranges on the strata categories are consistent between 2019 and 2020. The concern would be a plot moving into a lower stratum that may be at the higher end of the range for that stratum is increasing that stratum's average. It is understood that the 2019 and 2020 stratification was done independently, but this is an unexpected result. CONFIRMED THAT THIS IS ESSENTIALLY DUE TO VARIATION AS A RESULT OF HUMAN INTERPRETATION. OTHER REASONS MAY INCLUDE: NEWER IMAGERY AVAILABLE IN SOME AREAS, MORE GRANULAR ASSESSMENT, ETC. CONSISTENT APPLICATION OF THE STRATIFICATION METHODOLOGY WAS CONFIRMED. THIS PORTION OF THE ITEM MAY BE CLOSED. 3)The question regarding areas that were in stratum 9 that went to forested strata is of the same concern as part 2 of CR 3: all acres within a forested stratum should have the same potential to be sampled and contribute to the stocking estimate. CONFIRMATION OF THIS PORTION OF THIS ITEM MOVED TO CR1. OLDER ACRES MOVING TO NON-FORESTED STRATUM DUE TO MAPPING UPDATES CONFIRMED NOT A REVERSAL WITH ACR. ALL ITEMS CLOSED.						Closed
CR 4	Comparing a spatial join between the shapefiles 'Plots2020' and 'GreenTrees_TractStratified' there are plots that have changed stratification from a higher stocked strata in 2019 to a lower stocked strata in 2020. Some go from stocked to non-stocked: 40, 43, 54, 134, and 327. Others move from a higher stocked strata to a lower stocked strata: (2 to 1) 158, 160, 240, 244, or (3 to 2) 315. This change in stratification effects average carbon per strata, and thus final carbon quantification. What is the justification for moving these plots to a lower stocked strata?	See response to CR3.	See CR3. This item may be closed.							Closed
CR 5	Please clarify why plots 149, 178, 179, 286, and 287 are not included in the dataset.	Plots 178,179,286 and 287 were located on property that was scheduled to be in this verification, but had some problems so we pulled it out. So the tract is not in the project. Plot 149 was supposed to be measured but it got lost in the shuffle and we forgot to give the plot to the field foresters that plot.	To confirm, plots 178, 179, 286, and 287 were allocated to a tract that was not included in this reporting period? Also, Plot 149 (Stratum 2) should be accounted for in the inventory since it was missed. ACR has provided guidance that this plot should be added as a zero-carbon plot and measured during the next inventory effort.	Correct, plots 178, 179, 286 and 287 are on a tract that is not in this verification. We will revise the carbon calculations counting plot 149 as having no trees.	These plots are not included within the quantification, plot 149 is confirmed as null. This item may be closed.					Closed
CR 6	Tract GRT0420 is listed in "Tracts_Active_20210202 and compare to 2019.xlsx" as an existing tract, however, does not appear in last year's dataset. Was this a tract last year and was it possible for a plot to potentially be allocated to this tract?	GRT 420 should have been on the list of tracts that are new this verification. Apologies for that oversight. When tracts were classified as new during allocation of plots on new acres in fall of 2020, GRT 420 was included as a new tract and was eligible to receive plots.	Confirmed tract is now captured within the shapefile and in the carbon quantification. This item may be closed.							Closed

CR 7	It appears GRT0086 - GRT0002 are listed as 2019 monitor tracts. However, these are included as "in" tracts last year. We have a note from last year stating "Going to monitor only" – should they have contributed to active carbon stocks last year? Additionally, recent Google Earth imagery does not reveal evident planting in all areas of GRT0060 - 92. Please clarify.	As a reminder, ACR requires us to continue to monitor tracts that previously got credits but that are no longer participating and getting new credits. This means that the tracts being monitored are sampled just like active acres. If we don't continue to monitor a tract, we must classify old credits as reversed even if trees remain growing on the tract. Thus all tracts, including "monitor only" tracts are included in sampling to calculate the average carbon stock per acre in each stratum (the only exception is stratum 9 which can never earn or have carbon credits, and stratum 5 acres are not sampled). Although all acres are sampled (except stratum 9), when we calculate the creditable carbon stock for a verification, the creditable carbon stock includes only the biomass and soil carbon stocks as of the end of the verification period on tracts that are currently active, plus the previously issued credits on tracts that are "monitor only." Tracts 86-92 received no new credits in the last verification (vintage 2018-19) and only were counted as having the earlier credits that were issued when the tracts are active. This is consistent with ACR policy and their status of being monitor only during last verification. Regarding th patchy tree cover on these tracts, please note that two of these tracts are stratum zero and one is stratum 1. Stratum zero is the classification given to areas that appear to have no trees, or few trees, or trees with canopy diameters less than about 3' in aerial photos. Also, generally areas less than about 4 acres that are different from the rest of a stand generally are not typed as a separate stand. The imagery is consistent with the typing guidelines.	Thank you for this clarification. Confirmed stocking is very low. This item may be closed.								Closed
CR 8	In comparing new tracts to old imagery, there are areas that have established trees prior to planting and are being counted towards reforested acreage totals. Please clarify how this is accounted for. Please see screenshots to the right. GRT0534 planting 2004, image from 2004 [redacted]. It appears there are ~2 acres in the SW corner of the southern tract that are heavily forested prior to planting. GRT0590 (planting 2004, image from 2004 [redacted]) appears there are over 2 acres in both the southern and northern areas that were previously forested that are included in the reforested acreage totals. GRT0596 (planting 2005, image from 2004 [redacted]) there are over 3.5 acres in the southern section that are forested and being included in reforested acreage totals.	We agree with your assessment and these areas have been re-classified as stratum 9 stands that get no carbon credits, and the carbon calculations have been revised. The acreage changes are listed in this spreadsheet in the tab "TractsStands with Acre Changes". The updated shape files are provided in the shared dropbox folder.	GRT0534 - confirmed. GRT0590 - confirmed. GRT0596 - confirmed. This item may be closed.								Closed
CR 9	Please clarify the following for new tracts: -Tract 597: noted as planted in March 2007, but [redacted] reporting [redacted]. Also, documents not [redacted] not [redacted] as owner. -Tract 519: Please provide the Start Date documentation, it was not accessible from FileMaker. -Tract 556: Please provide the Start Date documentation, it was not accessible from FileMaker.	GRT 597: Flooding occurred and planting was extended over 2-3 years. To be conservative, GreenTrees chose the last possible year, 2007, to count as the planting year. The planting contracts are with the legal owner at the date of planting; GreenTrees is required to keep track of ownership and maintain a valid contract with the current owner, so the owner listed by GreenTrees is the current owner. Planting documentation for GRT 519 should now be available in FileMaker. The planting evidence is an 848b document. There is no date planting evidence for GRT 556 so to be conservative, we used the latest legal date for planting under the planting contract for this tract, 2004.	Tract 597 - thank you for this clarification. This part of the item may be closed. Tract 519 - Start date appears to be February of 2018. Tract 556 - Planting date appears to be March 2004. This item may be closed.								Closed

Original GT document in black 6/22/21
FRST comments in blue 6/22/21
GT responses in green 6/22/21
FRST responses in purple 6/23/21
GT response via email in orange 6/28/21

Assignment of Plots used in the Verification of GreenTrees Vintage 2020 Credits

October 2019 stratum plot allocation
For each 2019 stratum, one multi-part polygon was created.

Stratum 1
135 plots assigned to polygon in ez-plots (Plots 16-150)

Stratum 2
105 plots assigned to polygon in ez-plots (151-255)

Stratum 3
60 plots assigned to polygon in ez-plots (256-315)

Stratum 4
15 plots assigned to polygon in ez-plots (1-15)

Plot 33 is now in the child tract GRT0096.01. This child tract was the result of a land ownership transfer that occurred in November, 2019 and was found out by GreenTrees after the October 2019 plot allocation. When the child tract was mapped as separate from GRT0096, the new tract was stratified as stratum 2, a change from stratum 1, and moving this plot to stratum 2.

This accounts for the 1 additional new "2020" plot added to a "2019" tract for stratum 1. Because this change was unintentional, the verifier is considering any effect to not bias the current calculations.

Plots 251 and 252 were "spare" plots in the fall of 2019 and were not measured in the 2019 measurement cycle. Before additional plots were measured in May 2020, we got updated aerial imagery and began updating stratification, using the same stratification criteria as in 2019. The stands containing plots 251 and 252 were re-assigned from stratum 2 to stratum 1 based on review of updated aerial imagery.

Same as above.

October 2020 stratum plot allocation
For each 2020 stratum one multi-part polygon was created, except excluding GRT0597-0599. Additional Stratum 1 & 2 plots were assigned, at the same density as the 2019 plots in the respective stratum. GRT0597-0599 were added before the 2020 field work began but after the original plot assignments. GRT0597-0599 contain stratum 1 and 2 acres, and plots were assigned using the same procedure and at the same density as the other tracts in the earlier 2020 plot assignment.
The plots allocated to tracts GRT0597-0599 are plots 376-381.

It appears plots 376 – 381 were allocated all to GRT0597 and none to 598 or 599, however, the respective acreages are GRT0597 = 3500, 186, and 34, respectively or 94%, 5%, and 1%.

Tract	Stratum	Plots	Acres	Plot Density	Stratum Plot Density from Current Proj Calcs	Comment/Question
GRT0597	0	0	861	N/A	N/A	See below
GRT0597	1	4	2125	586.25	430	See below
GRT0597	2	2	513	256.5	234	See below
GRT0598	1	0	186	586.25	430	Reasonable for no plot since 186<586
GRT0599	1	0	34	586.25	430	Reasonable for no plot since 34<586

Questions:

1. **Were the Stratum 0 portions of GRT0597 eligible to receive plots since this allocation occurred after the initial 2020 plot allocation?**

Yes. GRT0597 is divided into three stands, with one stand in stratum 0, one in stratum 1 and one in stratum 2. Each stand was included in the multi-part polygon for that stratum, and the multi-part polygon was the aera eligible to receive plots.

Thank you for the confirmation. This issue can be closed.

2. **The density set for Stratum 1 is 430 ac per plot and for Stratum 2 is 234 ac per plot. If plots 376-381 were from an additional round of allocation, should two sets of adjustment factors in the calculations be used for plots 316-375 and one for 376-381 and their respective associated acres? We believe that any discrepancies will be immaterial, but we are updating our recalculation based on this new information and clarification provided. If confirmed as immaterial, then your clarification responses to these questions will close the issue.**

Actually, each stratum with plots assigned in 2019 (strata 1-4) has its own weighting of plots assigned in 2020, to give the 2020 plots the same weights as the 2019 plots in the stratum. This weighting was requested by the verifiers in their May 11 comments. The weighting calculations are in the Dropbox folder "Files responding to Verifier Qs 2021-05-11" filename "Weighting plots on new acres 2021-05-26 tCO2 per acre by stratum" tab "biomassPerStratum" and this weighting was agreed to by the verifiers in the issues log.

I think we had a disconnect here: since plots 376-381 were allocated separately on the distinct acres of GRTs 597-599, I weighted these according to the 2019 plot allocation (and adjusted the plot weighting for plots 316 – 374). The results are immaterial.

GT agrees

Apologies for my misunderstanding. I thought that plots 376 – 381 were allocated with a second 2020 plot allocation effort. I did not realize this was simply a clarification

Stratum 0
Stands in stratum 0 were combined into one multi-part polygon, except stands in the 2020 Stratum 0 that had previously assigned plots were excluded from the polygon. These excluded stands contained plots 40,43,54,55,110,111,134,135,136,137,138, and 139.

Please clarify: Were the Stratum 0 stands with a plot excluded at a tract level or tract-stratum level (I believe each record in "Tracts eligible to get plot 2019 and 2020.xlsx" is the tract-stratum level)? If at the tract-stratum level, we will update our stratum 0 target plot density in our calculations as they are currently based by tract. We believe that any discrepancies will be immaterial, if confirmed, then your clarification responses to these questions will close the issue.

No response provided. In order to ascertain materiality, the verifier recalculated plot weighting based on tract-stratum level acreage.

15 plots assigned to the stratum 0 multi-part polygon, using ez-plots software. These plots are 316-330. After these 15 plots were assigned but before field work was done, an ownership question was resolved on tract GRT0312 and this tract was added to the verification. To maintain consistent plot density, plot 375 was allocated to tract GRT0312.

Please clarify: GRT0312 is only 110 acres; plot density was established at 1 plot per 1211 ac. Should we consider this a single tract plot allocation and plot 375 should be weighted individually? We believe that any discrepancies will be immaterial, but we are updating our recalculation based on this new information and clarification provided. If confirmed as immaterial, then your clarification responses to these questions will close the issue.

GRT0312 is in stratum 0 and encompasses 110 acres. We expect that with either grid or random allocation some tracts that are smaller than the average ac/plot will get a plot. This must be the case for these smaller parcels to be eligible to be sampled; it is tautological that if small parcels were not eligible to get plots they would not be eligible to be sampled. Another way of thinking about this is that a bunch of small parts of the multi-part polygon totaling 1211 acres would, on average, be allocated one plot. One of the parts would have the plot, and the rest of the parts would not have any plots.

Similar to plots 376-381, weighted plot 375 according to the 2019 plot allocation for representing this individual 110 acre tract. The results are immaterial.

Stratum 1
7 plots assigned to polygon in ez-plots (Plots 331-337).
Through the summer of 2020, GreenTrees increased the rate of site visits by foresters to tracts, assessing site conditions by on-the-ground observations, including tree health, tree density and codominant tree height and diameter. Based on one of these forestry assessments, the tract containing plot 332 was assigned to stratum 0.

It would appear biased to change stratum based on field observation (all tracts are not visited), but this is most likely immaterial because the tract in which this plot is contained is only 46 ac.

Stratum 2
13 plots assigned to polygon in ez-plots (338-350)

Stratum 3
13 plots assigned to polygon in ez-plots (351-363)

Stratum 4
11 plots assigned to polygon in ez-plots (364-374)