

U.S. FOREST OFFSET PROJECT DATA REPORT INITIAL REPORTING PERIOD - IMPROVED FOREST MANAGEMENT				
<i>OPR Staff Use Only</i>	Date Report Received:	OPR Tracking Number:	Date Report Reviewed:	<i>OPR Staff Use Only</i>
<i>Entities submitting the project's first Offset Project Data Report must submit the information requested in both Initial Reporting Period and the Annual Reporting forms to the appropriate Offset Project Registry. For every reporting year thereafter, submit only the information requested in the Annual Reporting form.</i>				
PART I. ENTITY SUBMITTING REPORT				
Is this form being submitted by the Offset Project Operator (OPO) or by the Authorized Project Designee (APD)? <i>Note: The person completing this form should be an OPO/APD employee.</i>				☐ OPO ☒ APD
Report Version Number: 3.1.2.2	Date Report Completed: January 27, 2026	Date Report Submitted: January 27, 2026		
Person Completing Report: James D. Clark	Phone Number: (707) 485-7211	Email Address: jimclark@ncrm.com		
PART II. OFFSET PROJECT INFORMATION				
Offset Project Name: Richardson Ranch		OPR Project ID#: CAR2043	ARB Project ID# (if known): CAFR7043	
Offset Project Commencement Date: 10/01/2024	First Reporting Period Start Date: 10/01/2024	First Reporting Period End Date: 3/31/2025		
Provide an explanation and justification for the commencement date. Specify the action(s) that identify the offset project commencement date. Submittal of the Project's offset project listing information is the basis for the Project's commencement date.				
Optional: Provide the nearest town/city to the Project Area: Cazadero, CA				
PART III. OPO/APD/TECHNICAL CONSULTANT INFORMATION				
A. OPO				
OPO Name: Richardson Ranch, LLC			OPO's CITSS ID#: CA 3 9 2 1	
Mailing Address: P.O. Box 98		City: Stewarts Point	State Zip: CA 95480	
Contact Person: Daniel Falk	Phone Number: (707) 367-0312	Email Address: falkforestry@gmail.com		
B. APD (if applicable) ☐ No APD/Not Applicable				
APD Name: James D. Clark			APD's CITSS ID#: CA 1 5 6 9	
Mailing Address: 2501 North State St.		City: Ukiah	State Zip: CA 95482	
Contact Person: James D. Clark	Phone Number: (707) 485-7211	Email Address: jimclark@ncrm.com		
C. Technical Consultant (if applicable) ☐ No Technical Consultant/Not Applicable				

Technical Consultant Name: NCRM, Inc		Technical Consultant's CITSS ID# (if applicable): CA _____	
Mailing Address: 2501 North State St.		City: Ukiah	State: CA
Contact Person: James D. Clark		Phone Number: (707) 485-7211	Email Address: jimclark@ncrm.com

PART IV. LAND OWNERSHIP

A. Is the Offset Project Operator (OPO) the owner in fee for the Project Area? <i>Further documentation is required for all projects. Submit as attachment labeled "Attachment A." See Part X of this OPDR document for more information.</i> If "no," explain how the entity identified as the OPO has the right to undertake and list the project.	☒ Yes ☐ No
B. Optional: List all Forest Owners. This includes owners in fee as well as third parties with existing property interests within the Project Area that affect the trees and standing timber located in the Project Area (e.g. mineral rights, timber rights, easements, rights of way, leases, etc.). See Addendum to Initial OPDR IV.B.	
C. Does the offset project occur on public or private lands? <i>If the project occurs on public lands, proceed to questions C1 and C2. Otherwise, skip to question D.</i> <i>Further documentation is required if project occurs on public lands. Submit copies of documentation demonstrating explicit approval of the project's management activities and baseline, as well as the public vetting process used; attachment should be labeled "Attachment B." See Part X of this document for more information.</i>	☒ Private ☐ Public
1. Describe the public process that was used to evaluate the forest management activities and policy decisions concerning the offset project.	
2. Describe the explicit approval process used by the public entity to initiate and maintain this offset project, including the offset project's management activities and baseline.	
D. Does the project employ a Qualified Conservation Easement (QCE)? <i>If employing a QCE, proceed to questions D1, D2, and D3. Otherwise, skip to question E.</i> <i>Supporting documentation for a QCE is required. Submit as attachment labeled "Attachment C." See Part X of this document for more information.</i>	☐ QCE ☐ Public Ownership
1. Date that the QCE was recorded.	
2. Optional: Is the project located in a state that requires third-party beneficiaries to sign the easement (i.e., to "accept and record that acceptance"), such as Arizona, Pennsylvania, or West Virginia?	☐ Yes ☐ No
3. Provide the terms within the easement that affect forest management.	
E. Does the offset project occur on any of the following categories of land? (check all that apply) ☐ Land that is owned by, or subject to, an ownership of possessory interest of a Tribe ☐ Land that is "Indian lands" of a Tribe as defined by 25 U.S.C. §81(a)(1) ☐ Land that is owned by any person, entity, or Tribe, within the external borders of such Indian lands ☒ None of the above <i>If "none of the above," skip to Part V. Otherwise, proceed to Optional questions E1 and E2.</i> <i>Further documentation is required for projects occurring on land listed in the first three categories. Submit supporting documents as attachments labeled "Attachment D." See Part X of this document for more information.</i>	
1. Optional: Does a limited waiver of sovereign immunity between ARB and the governing body of the Tribe exist?	☐ Yes ☐ No
2. Optional: Provide a description of land ownership within the Project Area.	

PART V. OFFSET PROJECT AREA

Maps depicting specific elements of the Project Area are required for all projects. <i>Submit supporting documentation as attachments labeled "Attachment E." See Part X of this document for more information.</i>

Latitude of Offset Project Location: See Addendum V	Longitude of Offset Project Location: See Addendum V	Project Area Total Acreage: 6,083.81
A. Identify the assessment area (or assessment areas, if project crosses more than one) that contain Project Area lands and list the acreage of project lands within each assessment area. See Addendum to Initial OPDR V.A.		
B. Identify and describe the governing jurisdiction(s) applicable to the Project Area. See Addendum to Initial OPDR V.B.		
C. Describe how the Project Area was determined. See Addendum to Initial OPDR V.C.		
D. Describe the existing land cover, and land use of the Project Area. See Addendum to Initial OPDR V.D.		
E. Describe the forest vegetation types within the Project Area boundary. See Addendum to Initial OPDR V.E.		
F. Describe the site classes within the Project Area boundary. See Addendum to Initial OPDR V.F.		
G. Describe the land pressures and climate zone/classification applicable to the Project Area. See Addendum to Initial OPDR V.G.		
H. Describe the historical land uses, current zoning, and projected land use within the Project Area and surrounding areas. See Addendum to Initial OPDR V.H.		
I. Describe the forest conditions within the Project Area, including species composition, age class distribution, and management history. See Addendum to Initial OPDR V.I.		
PART VI. OFFSET PROJECT ELIGIBILITY		
A. Does the Project Area have a canopy cover that is greater than 10 percent? <i>Supporting documentation is required. Submit as attachment labeled "Attachment F." See Part X of this document for more information.</i> See Addendum to Initial OPDR VI.A.		☒ Yes ☐ No
B. Optional: Are the associated project lands currently in compliance with all local, state, and federal regulatory requirements?		☒ Yes ☐ No
Optional: If no, provide an explanation of the non-compliance.		
C. Does the entity submitting this report declare that the offset project <u>has not</u> and <u>does not</u> employ broadcast fertilization?		☒ Yes ☐ No
D. Indicate how the offset project meets the definition of Natural Forest Management per Table 3.2 in the U.S. Forest protocol:		
1. Native species:		
a) Does the project consist of at least 95% native species based on the estimated sum of carbon in the standing live carbon pool? Improved Forest Management Projects are assessed using estimates of basal area per acre. <i>If "no," proceed to question 1b. Otherwise, skip to question D2.</i>		☒ Yes ☐ No
b) Describe how the project will meet this requirement.		
2. Composition of native species:		
a) Does the Project Area naturally consist of a mixed species distribution where no single species' prevalence, measured as the percent of basal area of all live trees in the Project Area, exceeds the percentage value of standing live carbon shown under the heading 'Species Diversity Index' in the Assessment Area Data File? <i>If "no," proceed to questions 2b and 2c. Otherwise skip to question D3.</i>		☒ Yes ☐ No
b) Explain how the project will demonstrate a trend toward achieving the Species Diversity Index of native species and meet this requirement within 25 years.		

c) If the Project Area does not naturally consist of a mixed species distribution: Will or have you provided a written statement from the government agency in charge of forestry regulation in the state where the project is located stipulating that the Project site is not capable of meeting the requirement of mixed species distribution?	☐ Yes ☐ No
3. Distribution of age classes/sustainable management: a) Indicate how the project will meet the requirement for sustainable management if regeneration or commercial harvesting is either planned or initiated within the Project Area demonstrating sustainable long-term harvesting practices. This applies to all forest landholdings of the Forest Owner(s) (check one of the boxes). ☐ Not applicable; no commercial harvesting is occurring within the Project Area. ☐ Third party certification under the Forest Stewardship Council, Sustainable Forestry Initiative, or Tree Farm System, whose certification standards require adherence to and verification of harvest levels which can be permanently sustained over time. ☐ Adherence to a renewable long-term management plan that demonstrates harvest levels which can be permanently sustained over time and that is sanctioned and monitored by a state or federal agency. ☒ Employ uneven-aged silvicultural practices and maintain canopy retention averaging at least 40% across the forest, as measured on any 20 acres within the entire forestland owned by the Forest Owner, including land within and outside of the Project Area (areas impacted by Significant Disturbance may be excluded from this test).	
b) On a watershed scale up to 10,000 acres (or the Project Area, whichever is smaller), projects must maintain, or make progress toward maintaining, a maximum of 40% of the project's forest lands in ages that are less than 20 years old. (Areas impacted by Significant Disturbance are exempt from this test until 20 years after reforestation of such areas.) Does the acreage within this project meet this requirement? <i>If "no," proceed to question 3c. Otherwise, skip to question D4.</i>	☒ Yes ☐ No
c) If the project does not meet the age class requirement at this time, explain how the project intends to demonstrate progress to meet this requirement over time; such that forest lands in ages less than 20 years old are reduced and make up no more than 40% of the Project Area.	
4. Structural elements (standing and lying dead wood): How does the project ensure that structural elements are retained in sufficient quantities throughout the project life? See Addendum to Initial OPDR VI.D.4.	
E. Describe the management activities that will result in increased carbon stocks in the Project Area, compared to the baseline. See Addendum to Initial OPDR VI.E.	
F. Is this project being implemented and conducted as the result of any law, statute, regulation, court order, or other legally binding mandate? If "yes," explain:	☐ Yes ☒ No
G. Does the offset project take place on land that was part of a previously listed and registered Forest Offset Project? <i>This question is applicable to both voluntary and compliance markets. If "yes" proceed to questions G1 and G2. Otherwise, skip to Part VII.</i>	☐ Yes ☒ No
1. Optional: Was the previous Forest Offset Project terminated due to an Unintentional Reversal?	☐ Yes ☒ No
2. Optional: Has this project transitioned to the Compliance Offset Protocol U.S. Forest Projects after previously being listed as an early action offset project?	☐ Yes ☒ No
PART VII. CARBON STOCK INVENTORY	
A. Provide a description of the inventory methodology used to quantify carbon stocks for each required carbon pool in the forest project's offset boundary. The inventory methodology must describe the information required in Appendix A.3 of either the Compliance Offset Protocol U.S. Forest Projects, October 20, 2011 or the Compliance Offset Protocol U.S. Forest Projects, November 14, 2014. IFM-1 Standing Live: See the Inventory Methodology included as Attachment N. IFM-3 Standing Dead: See the Inventory Methodology included as Attachment N. IFM-6 Soil (if applicable): See the Inventory Methodology included as Attachment N.	

IFM-7 Carbon in in-use forest products:

See the Inventory Methodology included as Attachment N.

IFM-8 Forest product carbon in landfills (if applicable):

See the Inventory Methodology included as Attachment N.

IFM- 9 Biological emissions from site preparation:

See the Inventory Methodology included as Attachment N.

IFM-14 Biological emissions/removals from change in harvesting on forestland outside project area:

See the Inventory Methodology included as Attachment N.

IFM-17 Biological emissions from decomposition of forest products:

See the Inventory Methodology included as Attachment N.

B. Describe the calculation methodologies used to determine metric tons per acre for each of the carbon pools included in the Offset Project Data Report.

IFM-1 Standing Live:

See the Inventory Methodology included as Attachment N.

IFM-3 Standing Dead:

See the Inventory Methodology included as Attachment N.

IFM-6 Soil (if applicable):

See the Inventory Methodology included as Attachment N.

IFM-7 Carbon in in-use forest products:

See the Inventory Methodology included as Attachment N.

IFM-8 Forest product carbon in landfills (if applicable):

See the Inventory Methodology included as Attachment N.

IFM- 9 Biological emissions from site preparation:

See the Inventory Methodology included as Attachment N.

IFM-14 Biological emissions/removals from change in harvesting on forestland outside project area:

See the Inventory Methodology included as Attachment N.

IFM-17 Biological emissions from decomposition of forest products:

See the Inventory Methodology included as Attachment N.

C. Provide a summary of the inventory of carbon stocks for each carbon pool (or approach used, if inventory is not applicable).

IFM-1 Standing Live:

See Addendum to Initial OPDR VII.C.

IFM-3 Standing Dead:

See Addendum to Initial OPDR VII.C.

IFM-6 Soil (if applicable):

See Addendum to Initial OPDR VII.C.

IFM-7 Carbon in in-use forest products:

See Addendum to Initial OPDR VII.C.

IFM-8 Forest product carbon in landfills (if applicable):

See Addendum to Initial OPDR VII.C.

IFM- 9 Biological emissions from site preparation:

See Addendum to Initial OPDR VII.C.

IFM-14 Biological emissions/removals from change in harvesting on forestland outside project area:

See Addendum to Initial OPDR VII.C.

IFM-17 Biological emissions from decomposition of forest products:

See Addendum to Initial OPDR VII.C.

D. Provide a summary of inventory confidence statistics.

See Addendum to Initial OPDR VII.D.

E. Provide the calculation of the offset project's reversal risk rating and contribution to the Forest Buffer Account.

See Addendum to Initial OPDR VII.E.

PART VIII. OFFSET PROJECT BASELINE

A. Required for ALL Improved Forest Management Projects

1. Describe the project's modeling plan, following the requirements and methods in Appendix B, Section B.3 of the U.S. Forest protocol.

Please see the Modeling Plan included as Attachment M.

2. Describe and estimate the project's baseline onsite carbon stocks. Explain any annual changes in baseline carbon stocks over time. <i>A graph of the baseline onsite carbon stocks, labeled "Attachment G," must be portrayed depicting time on the x-axis and metric tons CO₂-e on the y-axis. Include a written characterization describing any annual change in baseline carbon stocks over time. See Part X of this document for more information. A diagram of the baseline incorporating all required carbon stocks, labeled "Attachment H," is also required.</i> Please see the Modeling Plan included as Attachment M.		
3. Optional: Identify the approved growth model that will be used for the project. FORSEE		
4. Harvest Planning a. Is harvesting planned in the Project Area? <i>If "yes," proceed to question 4b. Otherwise, skip to question A5.</i>		☒ Yes ☐ No
b. Optional: Does the project use a harvest schedule model? <i>If "yes," proceed to question 4c. Otherwise, skip to question A5.</i>		☐ Yes ☒ No
c. Optional: Explain how you are addressing age class and stratification as part of your harvest scheduling?		
5. Provide an estimate of carbon that will be stored long-term in harvested wood products in the baseline. See Addendum to Initial OPDR VIII.A.5.		
6. Provide a projection of baseline and actual harvesting volumes from the Project Area over 100 years. <i>A projection may be provided in an attachment, labeled "Attachment I". Include a narrative with a clear explanation of how the OPO/APD arrived at the baseline and actual harvest volumes is determined</i>		
B. Required for Improved Forest Management Projects on Private Lands ONLY		
1. Provide the initial above ground standing live carbon stock (per acre) for the project. 373.57		
2. Provide the Common Practice statistic (per acre) associated with the Project Area. 205.15		
3. Summarize how the Project's initial above-ground standing live carbon stock compares to Common Practice. At the Project's commencement date, the Project's initial above-ground standing live carbon stocks were above the Common Practice statistic listed above. Are the initial above-ground standing live carbon stocks above or below Common Practice? If below Common Practice, what is the High Stocking Reference for the Project Area? Describe the Project Area's live tree carbon stocks over the previous 10 years. <i>Further documentation is required if project is below Common Practice. Submit supporting documents as attachments labeled "Attachment J." See Part X of this document for more information. An affidavit must be submitted testifying that the inventory depicted over the past 10 years is reasonably accurate.</i>		☒ Above ☐ Below
4. Optional: Does the Forest Owner(s) and its affiliate(s) own land in fee or hold timber rights on land outside the Project Area? If "no," skip to question B.5.		☒ Yes ☐ No
Optional: If "yes" does the Protocol require the use of a weighted average carbon stock on lands in the same Logical Management Unit (LMU, as defined in Section 6.2.1.1)? If "no," skip to question B.5.		☒ Yes ☐ No
Optional: If "yes," is inventory data available for the LMU or will the OPO use a stratified vegetation analysis? If "no," skip to question B.5.	☒ Data available for LMU ☐ Stratified Vegetation Analysis	
Optional: Identify the Minimum Baseline Level for above-ground standing live carbon stocks for the Project Area: See Addendum to Initial OPDR VIII.B.4		
5. Provide a description of any and all legal constraints affecting forest management activities in the Project Area. Include documentation of legal constraints and a description of each constraint (referring to Section 6.2.1.2); for each constraint provide a narrative that constraint has on forest management. <i>Submit supporting documents as attachment labeled "Attachment K". See Part X of this reporting document for more information.</i> This information is contained in the Modeling plan included as Attachment M.		
6. Provide a description of the modeling techniques used to simulate the effect of any constraints on carbon stocks. This information is contained in the Modeling plan included as Attachment M.		

Optional: Provide a description of the modeling techniques used to simulate forest management activities that may affect carbon stocks.

7. How does the OPO demonstrate financial feasibility of the growth and harvesting regime assumed for the baseline? (check one of the boxes)

- ☒ **Conducting a financial analysis of the anticipated growth and harvesting regime that captures all relevant costs and returns, taking into consideration all legal, physical, and biological constraints, using regional norms or documented costs and returns for the project area or other properties in the Forest Project's Assessment Area**
- ☐ **Providing evidence that activities similar to the proposed baseline growth and harvesting regime have taken place on other properties within the Forest Project's Assessment Area within the past 15 years**

Supporting documentation is required. Submit as attachment labeled "Attachment L." See Part X of this listing document for more information.

C. Required for Improved Forest Management Projects on Public Lands ONLY

1. Provide a projection of future changes to Project Area forest carbon stocks extrapolating from historical trends.

2. Explain how current public policy affects onsite carbon stocks and how the baseline modeling incorporates constraints imposed by all applicable statutes, regulations, policies, plans, and activity-based funding.

3. Have carbon stocks in the Project Area been increasing or declining over the preceding ten-year period?

☐ Increasing
☐ Declining

PART IX. OTHER OFFSET PROGRAMS

A. Have any GHG reductions or GHG removal enhancements associated with the Project Lands ever been listed or registered with, or otherwise claimed by, another registry or program, or sold to a third party prior to listing?

If "yes," identify the registry or program and provide details on the issued credits below.

☐ Yes
☒ No

B. Have any lands within the Project Area ever been listed or registered with an offset project registry or program in the past?

If "yes," identify the registry or program and provide details on the issued credits below.

☐ Yes
☒ No

C. Have greenhouse gas emission reductions or removal enhancements associated with lands within the Project Area been credited or claimed for the purpose of greenhouse gas mitigation or reduction goals, whether in a voluntary or regulatory context?

If "yes," identify the goal(s) and provide details on the reductions and removal enhancements (under "Number of Credits Issued") below.

☐ Yes
☒ No

Registry/Program/Goal(s):

Reporting Period(s):

Vintage(s):

Number of Credits Issued:

PART X. ATTACHMENTS

A. If the answer to Part IV.A is "yes," provide documentation (e.g., deed of trust, title report, etc.) showing the OPO's ownership interest in the property and its interest in the trees and standing timber on the property. If the answer to Part IV.A is "no," provide documentation supporting the explanation of the OPO's right to undertake and list the project.

B. If the answer to Part IV.C is "public," provide documentation demonstrating explicit approval of the offset project's management activities and baseline including any public vetting processes necessary to evaluate management and policy decisions concerning the offset project. If the project is a private lands project, mark "N/A" in the box below. The OPO may provide an "Attachment B" page with a "This Page Left Intentionally Blank - Private Lands Project" notation on the page.

☒ N/A

C. If a Qualified Conservation Easement (QCE) has been recorded, provide a copy. The information contained in this form and the documents attached to it will be submitted to ARB so submitting a copy of the QCE as an attachment to this document fulfills the requirement in 9.1.1.1(18)(a) of the U.S. Forest protocol to provide ARB with a copy.

☒ N/A

D. If the project is located on one of the categories of Tribal land listed in Part IV.E, provide documentation demonstrating that the land within the Project Area is owned by a tribe or private entity. Also provide documentation that demonstrates the existence of a limited waiver of sovereign immunity between ARB and the governing body of the Tribe entered into pursuant to section 95975(l) of the Cap-and-Trade Regulation.

☒ N/A

E. Attach map(s) of the Project Area including:
1. Public and private roads

2. Towns
 3. Major watercourses (4th order or greater), water bodies, and watersheds
 4. Topography
 5. Townships, ranges, and sections or latitude and longitude
 6. Existing land cover and land use (optional)
 7. Forest vegetation types (optional)
 8. Site classes (optional)
 9. Land pressures and climate zone/classification (optional)
 10. Historical land uses, current zoning, and projected land use within the Project Area (optional)
 11. A georeferenced shape file (or other electronic file that can be read in a geographic information system) that clearly identifies the Project Area and boundaries. *Note that the georeferenced shape file may constitute the required map if it includes the required map information listed above.*
- F. Provide supporting documentation demonstrating that the offset project takes places on land that has greater than 10 percent tree canopy cover.
- G. Attach a graph portraying the baseline onsite carbon stocks with time depicted on the x-axis and metric tons CO₂e depicted on the y-axis.
- H. Attach a diagram of the final baseline incorporating all required carbon stocks.
- I. Provide a projection of baseline and actual harvesting volumes from the Project Area over 100 years.
- J. For IFM projects on private lands ONLY: If the Project Area's initial above-ground standing live carbon stocks are below Common Practice, submit an affidavit testifying that the inventory depicted over the past 10 years (used to determine the High Stocking Reference for the Project Area) is reasonably accurate. Also include a summary of volume harvested over the past 10 years. ☒ N/A
- K. For IFM projects on private lands ONLY: Attach supporting documentation identifying the legal constraints within the Project Area. A 'constraints' table with the following categories may be provided for simplicity with the following information: narrative of legal constraint, identification of specific governing law guiding the constraint, acreage, silviculture method, retention strategy. ☐ N/A
- L. For projects on private lands ONLY: Provide a description and supporting evidence, if applicable, that the growth and harvesting regime assumed for the baseline is financially feasible based on the qualifications in Section 6.2.1.3 of the Protocol. ☐ N/A

PART XI. OPO SIGNATURE

Note: The person signing this Initial Reporting Period report should be the same person signing the accompanying U.S. Forest Offset Project Data Report Annual Reporting Period – All Project Types report.

In signing this form, I certify under penalty of perjury of the laws of California that the information contained in this form is true, accurate, and complete. I further certify that I am an Account Representative of the Offset Project Operator (OPO).

SIGNATURE:



PRINTED NAME:

James D. Clark

TITLE:

Authorized Project Designee

DATE:

January 27, 2026

Background for U.S. Forest Offset Project Data Report Initial Reporting Period – Improved Forest Management

Section 95976(d) of the Cap-and-Trade Regulation specifies reporting requirements for offset projects participating in the Compliance Offset Program. Offset Project Operators (OPO) or Authorized Project Designees (APD) are required to submit an Offset Project Data Report (OPDR) within four months of the end of each (annual) Reporting Period. The Compliance Offset Protocol U.S. Forest Projects, October 20, 2011 and Compliance Offset Protocol U.S. Forest Projects, November 14, 2014 both require additional information to be included with the initial OPDR. This form is designed to help OPOs and APDs provide the extra information required for an initial OPDR by U.S. Forest offset projects. (However, this form may be insufficient for reporting all information required by the Compliance Offset Protocol U.S. Forest Projects, June 25, 2015.) The information in this form is submitted to the approved Offset Project Registry that is listing the offset project and should also be provided to the ARB-accredited verification body that will be verifying the Offset Project Data Report.

The information to be provided in this form closely mirrors information provided in the application for listing a U.S. Forest offset project. OPOs and APDs may wish to copy the information in their project's application for listing to the extent that the information provided at the time of that application has not changed.

Where to Submit Information Contained in This Form

Please complete the information on the form using your computer. Then print, sign, and scan the form. The completed and signed information and all supporting documentation should be submitted to the appropriate [Offset Project Registry](#).

Copies of this form can be downloaded from the ARB website at:
<http://www.arb.ca.gov/cc/capandtrade/offsets/forms/forms.htm>

Detailed Instructions for U.S. Forest Offset Project Data Report Initial Reporting Period – Improved Forest Management

This form is protected with restricted editing to facilitate completing the form. If the applicant wishes to unprotect the form, the password is "form".

Part I. Entity Submitting Report:

- Indicate whether the Offset Project Operator (OPO) or Authorized Project Designee (APD) is submitting the Offset Project Data Report.
- Regulatory amendment in section 95976(d)(10) requires that each version of the OPDR specifies the version number and the date submitted. Moreover, the protocol requires that each OPDR include the date of completion. Please include the OPDR version number, the date of OPDR completion, and the date of OPDR submission to the Offset Project Registry.
- The person submitting the information should indicate the date the form is completed.
- List the name, phone, and email address of the person submitting the information. This person should be an employee of the OPO or APD. The person submitting the information need not be the contact person listed for the OPO or APD in Part III and also need not be the OPO's CITSS account representative signing the OPDR in Part XI.

Part II. Offset Project Information:

- Provide the name for the offset project. Also provide the project's identification number from the approved Offset Project Registry listing the project. The ARB project identification number may also be provided if known.
- Indicate the offset project commencement date and the start and end dates of the first reporting period. Unlike with the listing form, approximations are no longer acceptable for these dates since precise dates should be known.
- Project commencement for an Improved Forest Management Project must be linked to a discrete, verifiable action that delineates a change in practice that increases sequestration and/or decreases emissions relative to the forest project's baseline. This date could be triggered by the transfer of property ownership, recordation of a conservation easement on the Project Area, or when submitting the offset project listing information.

Part III. OPO/APD Information:

- Enter contact information for the OPO and APD submitting the report. Every offset project will have an OPO. If an offset project does not have an APD, please mark the box indicating the Offset Project does not have an APD and leave the remaining fields blank.
- For both the OPO and, if applicable, the APD, enter the entity's name, its mailing address, and the name, phone number, and email address of a contact person for the entity. Also include its CITSS ID number. The CITSS ID is six characters in length, with two letters followed by four numbers (e.g., "CA1234"). **DO NOT PROVIDE THE CONFIDENTIAL CITSS ACCOUNT NUMBER**, which begins with the CITSS ID number followed by a hyphen and more numbers.

Part IV. Land Ownership:

- This part includes questions regarding land ownership and property interests.
- Further documentation is required based on the responses to some questions. See Part X of this report for more information on the precise requirements.

Part V. Offset Project Area:

- This part asks for qualitative descriptions of the offset Project Area.
- Maps are required to complement the descriptions provided in this part. See Part X of this report for more information on the precise requirements.
- The Project Area should be determined following the requirements of Section 4 of the U.S. Forest protocol.
- Assessment areas shall be determined by referencing the Assessment Area Data File available at: <http://www.arb.ca.gov/cc/capandtrade/protocols/usforestprojects.htm>

Part VI. Offset Project Eligibility:

- The questions in this part are designed to facilitate the determination of project eligibility for Improved Forest Management Projects.
- Further documentation is required based on the responses to some questions. See Part X of this report for more information on the precise requirements.
- Details on the eligibility requirements for Improved Forest Management Projects can be found in Sections 2.1.2, 3.1, and 3.8 of the U.S. Forest protocol.
- Details on the Natural Forest Management criteria can be found in Table 3.2 in the U.S. Forest protocol.

Part VII. Carbon Stock Inventory:

- Projects are required to have completed a full carbon stock inventory for the initial Offset Project Data Report. Unlike the inventory provided at the time of listing, a general description of the project's inventory methods with preliminary best estimates is no longer sufficient to meet the regulatory requirements. If the project's inventory methodology changed between the time of listing and submission of the initial OPDR, this change should be reported as a change to the information submitted at project listing when submitting the first OPDR.
- Section 6.2 of either the Compliance Offset Protocol U.S. Forest Projects, October 20, 2011 or the Compliance Offset Protocol U.S. Forest Projects, November 14, 2014 outlines the approved quantification methodologies for Improved Forest Management Projects. Further details on completing a forest project carbon inventory can be found in Appendix A of the Protocol. (There are some differences in section 6.2 and Appendix A between the two versions.)
- Follow the steps in Appendix D of the U.S. Forest protocol to quantify the project's reversal risk rating.
- The project's expected contribution to the Forest Buffer Account is determined annually based upon the project's risk of reversal and is calculated by multiplying the project specific reversal risk rating by the total net GHG reductions/removals achieved by the project. Unlike the listing application, for this OPDR an approximation of the contribution to the Forest Buffer Account is not acceptable.

Part VIII. Offset Project Baseline:

- For this OPDR, unlike the project listing application, projects are required to have a finalized baseline. A modeling plan with preliminary best estimates is no longer sufficient to meet the regulatory requirements. If the project's modeling plan or baseline estimates changed between the time of listing and submission of the initial OPDR, this change should be reported as a change to the information submitted at project listing when submitting the first OPDR.
- Note that IFM projects located on public land must present documentation demonstrating explicit approval of the offset project's management activities and baseline. These projects may report changes to the baseline within the initial OPDR if the changes have gone through a public review process and meet the Protocol requirements regarding explicit approval of the project's baseline.

- This part is divided into three sections: questions required for all Improved Forest Management Projects; questions for Improved Forest Management Projects on private lands; and questions for Improved Forest Management Projects on public lands. Answer the questions applicable to the project.
- A diagram and graph are required to complement the descriptions provided in this part. See Part X of this report for more information on the precise requirements.
- Section 6.2 of either the Compliance Offset Protocol U.S. Forest Projects, October 20, 2011 or the Compliance Offset Protocol U.S. Forest Projects, November 14, 2014 outlines the approved quantification methodologies for Improved Forest Management Projects. Instructions for considering legal and financial constraints can be found in Sections 6.2.1.2 and 6.2.1.3, respectively. Further details on modeling carbon stocks can be found in Appendix B. (There are some differences in section 6.2 and Appendix B between the two versions.)
- ARB approved growth models can be found in Appendix B, Section B.1 of either the Compliance Offset Protocol U.S. Forest Projects, October 20, 2011 or the Compliance Offset Protocol U.S. Forest Projects, November 14, 2014. (There are some differences in Appendix B between the two versions.)

Part IX. Other Offset Programs:

- Answer all questions. If the answer to any question is "yes," identify the registry or program and provide details on the issued credits in the space provided.

Part X. Attachments:

- Provide each attachment on a separate sheet of paper and submit along with the completed Initial Reporting Period-Offset Project Data Reporting Form.
- To aid with tracking each attachment, it is recommended that the attachments are labeled to correspond with the letter in Part X that they refer to (e.g. "Attachment B").
- When an attachment is not applicable to the project being listed, please select the "N/A" (Not Applicable) checkbox next to the requirement so that it is clear that the attachment was not inadvertently left off.

Part XI. OPO Signature:

- The individual signing the document must be registered in CITSS as the OPO's Primary Account Representative or Alternate Account Representative for the entity submitting the information. The individual signing the document may be an APD employee and/or representative; but to sign the document, the individual must be an Account Representative on the OPO's CITSS account.
- Please provide the individual's signature, printed name, corporate title, and date signed.
- There are no attestations within this form. The attestations required for the Offset Project Data Report are included in the form U.S. Forest Offset Project Data Report Annual Reporting Period – All Project Types.

Please contact your Offset Project Registry with any questions regarding the OPDR.



Richardson Ranch

CAR2043, CAFR7043

Addendum to OPDR for the Initial Reporting Period Form

Under Air Resources Board

Compliance Offset Protocol – U.S. Forest Projects, Adopted: June 25, 2015

Prepared January 27, 2026

Version 3.1.2.2

Offset Project Operator

Richardson Ranch, LLC
P.O. Box 98
Stewarts Point, CA 95480
(707) 367-0312

Authorized Project Designee

James D. Clark
2501 North State St, Ukiah, CA 95418
(707) 485-7211

Reporting Period

The first reporting period for this Project is from 10/1/2024 to 3/31/2025.

Protocol Version

Air Resources Board
Compliance Offset Protocol – U.S. forest Projects
Adopted: June 25, 2015

The submission of this OPDR and all other project documentation and reports that reference carbon stocks have been overseen by James D. Clark, California Registered Professional Forester (No. 2528).

Introduction

The Richardson Ranch project is an Improved Forest Management (IFM) Project that is seeking registration under the California Air Resources Board Compliance Offset Protocol – U.S. Forest Projects Adopted: June 25, 2015. The Offset Project Operator is Richardson Ranch, LLC. The Project is approximately 6,083.81 acres in size and includes approximately 128.71 acres associated with roads, landings, developed areas and non-timbered areas which are excluded from the calculation of the Project's carbon stocks. The timbered project area is 5,955.10 acres in size.

II.

Tract	Physical Address
Richardson Ranch	36250 Tin Barn Rd. Cazadero, CA 95421

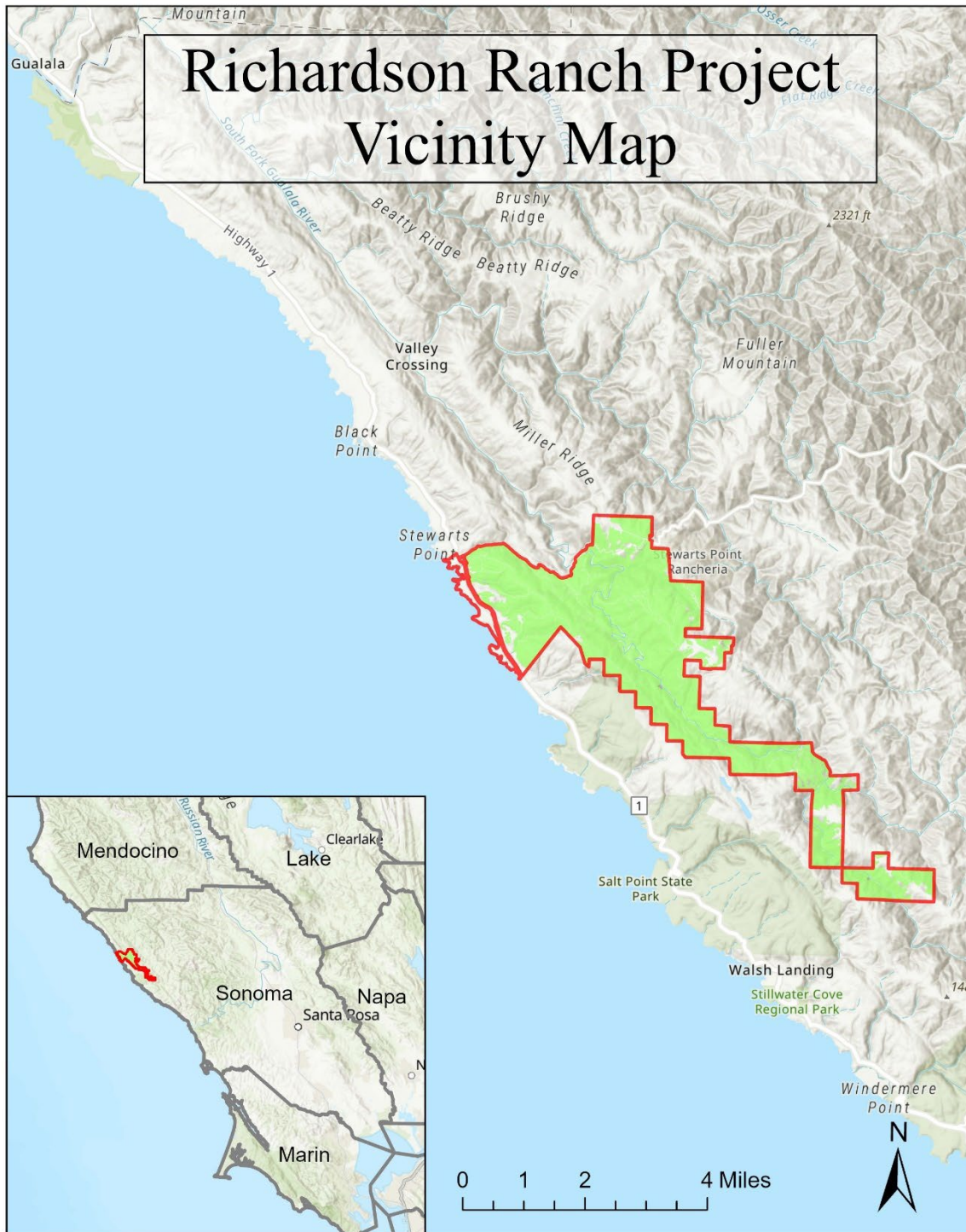
IV.B.

Richardson Ranch, LLC is the sole owner in fee of the real property which is enrolled in the Richardson Ranch Carbon Project. Timber rights for the Joint Timber portion of the Project Area are owned in part by Richardson Timber, LLC, 15 Jupes Ct. Sacramento, CA 95817. The timber interest on the Joint Timber portion of the project area has a 50% ownership split between Richardson Ranch, LLC and Richardson Timber, LLC. Additionally, The Sonoma Land Trust, 966 Sonoma Avenue Santa Rosa, CA 95405, holds the Rocky Point conservation easement on 100.09 acres of the Project Area. Attachment O contains a map displaying approximate ownership tracts of Joint Timber, Rocky Point, and the remaining fee land.

V.

Project Location (approximate):

Tract	Latitude	Longitude	Acres
Richardson Ranch	38.626521	-123.336467	6,083.81



Esri, NOAA, NGA, USGS, Earthstar
Geographics, Esri, CEI, USGS
Sources: Esri, Garmin, GeoEye,
PNO, NOAA, USGS, ©
OpenStreetMap contributors, and
the GIS User Community

V.A.

The entire timbered portion of the project area is located within the Northern California Coast Supersection, and within the Coast Redwood/Douglas-fir Mixed Conifer Assessment Area and is classified as high site class timberland, and as such is within the "High" "Site Class" portion of the Assessment Area.

Supersection	Assessment Area	Site Class	Common Practice - Above Ground Carbon Mean (Metric Tonnes CO2e)	Acres
Northern California Coast	Coast Redwood Douglas-fir Mixed Conifer	High	205.15	5,955.10
	Coast Redwood Douglas-fir Mixed Conifer	Low	165.00	0.00
	Mixed Oak Woodland		108.00	0.00
Total			205.15	5,955.10

V.B.

The Project Area is subject to the governing jurisdiction of Sonoma County, the State of California, and the United States of America.

V.C.

The Project Area has been determined based on the best available data representing the legal description of the property and with the aid of recorded survey information relative to the parcels described in the documents included as Attachment A. The Project Area boundary is described and represented by the maps included as Attachment E, and the GIS data file supplied as a part of this OPDR. For the purpose of calculating GHG stocks, the Project Area acreage is taken from the GIS data provided with the OPDR.

V.D.

The existing land cover on the Richardson Ranch Project Area is conifer dominated forestlands composed mainly of Coastal redwoods and Douglas-fir forests. Land use is commercial forestry.

V.E.

The Project Area consists of Conifer dominant forests (86% conifer and 14% hardwood) which are predominantly made up of redwood (*Sequoia sempervirens* (Lamb. ex D. Don) Endl.), Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco var. *menziesii*), and Tanoak (*Notholithocarpus densiflorus* (Hook. & Arn.) P.S. Manos, C.H. Cannon, & S.H. Oh var. *densiflorus*) species.

V.F.

The entire Project Area is classified as high site class timberland. Please see the Modeling Plan included as Attachment M for a more detailed description of the determination of site index.

V.G.

The Richardson Ranch Project Area as well as much of the surrounding land is utilized for timber production, recreation, agriculture and rural residential uses. Land pressures associated with these uses are typically conversion of timberland to home sites or agricultural uses such as vineyards. Residential uses would involve the development of home sites while road use and human activity on the property would increase. Historically, increased human activity has resulted in the disruption and displacement of native plants and animals. The Richardson Ranch Project Area consists of both Maritime & Mediterranean climates influenced by the proximity to the Pacific Ocean and topography. Summers are warm and winters are mild and wet. Temperatures range from an average low of 41 degrees F to an average high of 84 degrees F. Average annual rainfall for the project area is approximately 40 inches per year.

V.H.

There is a long history of human occupation and use within the Project Area. Historic land use began in the late 1800's with homesteading activities on and in the vicinity of the Project Area. These uses included ranching, farming, and timber harvesting.

The Richardson Ranch has been in the family name for over a century now. Herbert Richardson arrived in California in 1876 and soon after purchased what is now the Richardson Ranch. The Richardson Ranch has been practicing sustainable forestry through generations of family lineage since Herbert Richardsons time. Current uses of the Property generally include rural residential, recreation, beef and lamb ranching, lumber milling, and timber production. These uses are expected to continue into the foreseeable future.

V.I.

The Richardson Ranch Project Area is characterized by a mix of predominantly redwood, Douglas-fir, and tanoak. Other species components include grand fir, Pacific madrone, interior live oak, and other native hardwoods and conifers. It is estimated that, as of 3/31/2025, the Project Area is composed of approximately 58% redwood, 25% Douglas-fir, 10% tanoak, 1% grand fir, 1% Pacific madrone, and 5% other hardwoods and conifers by basal area. The OPO intends to manage to reduce the hardwood component and increase the component of conifers.

Several age classes of timber stands exist across the Project Area as the result of past land management activities with age classes ranging from well over 100 years to 1 year. Timber harvesting on the Project Area occurs from time to time. Currently, there are four active timber harvest permits on the Project Area. Portions of these harvest plan tracts were harvested during the initial reporting period.

VI.A.

The Richardson Ranch Project Area meets condition 3 under section 2.2(b)(3) (page 13) of the Compliance Offset Protocol by maintaining greater than 10% tree canopy cover. Compliance is substantiated by the Orthophoto map of the Project site, that may be found in Attachment F, clearly showing canopy closure for the Project Area greater than 10%.

VI.D.4.

The Richardson Ranch does not remove incidental lying dead wood as a part of its stand management activities. It is expected that the accumulation of lying dead wood will be commensurate with recruitment from standing dead trees, or as the result of harvest activities which result in increased lying dead wood following harvest. The Richardson Ranch project is committed to maintaining if not increasing, the number of standing dead trees within the Project Area as a component of its forest management objectives. Richardson Ranch has a policy of allowing standing dead trees to remain and recruiting large specimen trees across its ownership as components of its overall timber management strategy.

The Richardson Ranch Project Area has not recently undergone any salvage harvesting. Therefore, all that must be demonstrated is that the greater of one metric ton of carbon per acre or 1% of standing live carbon stocks is present in standing dead wood, or that progress towards these targets is ongoing. The project currently contains an average of 2.49 Mg C per acre and 2.00% of standing live carbon stocks in standing dead wood. The project will continue to make progress towards the above mentioned standing dead wood target.

VI.E.

The OPO intends to allow conifer stocking levels to develop on the Project Area in excess of the minimum requirements of the California Forest Practice Rules. At a minimum, management activities conducted on the Project Area must exceed the minimum standards which define the baseline, while also conforming to specific requirements of the Forest Project Protocol. Changes in Project carbon stocks over time will also be governed by economic decisions such

that more or less carbon may be sequestered over any given period. Therefore, a combination of economic decisions by the forest owners as to whether or not to commercially harvest the Project Area combined with the constraints imposed by the California Forest Practice Rules, and the specific terms of the Forest Project Protocol will guide carbon stock levels over time.

VII.C.

IFM-1 Standing Live: This carbon pool will be calculated each year as described in the Inventory Methodology (Attachment N). The current standing live carbon pool is [2,723,642](#) MgCO₂e.

IFM-3 Standing Dead: This carbon pool will be calculated each year as described in the Inventory Methodology (Attachment N). The current standing dead carbon pool is [54,423](#) MgCO₂e.

IFM-6 Soil (if applicable): N/A

IFM-7 Carbon in in-use forest products: This carbon pool will be calculated each year as described in the Inventory Methodology (Attachment N). As timber harvesting occurred during this initial reporting period, this carbon pool is calculated as [81](#) MgCO₂e for the initial reporting period.

IFM-8 Forest product carbon in landfills (if applicable): This carbon pool will be calculated each year as described in the Inventory Methodology (Attachment N). As timber harvesting occurred during this initial reporting period, this carbon pool is calculated as [52](#) MgCO₂e for the initial reporting period.

IFM-9 Biological emissions from site preparation: N/A

IFM-14 Biological emissions/removals from change in harvesting on forestland outside Project Area: This carbon pool will be calculated each year as described in the Inventory Methodology (Attachment N). As timber harvesting occurred during this initial reporting period, this carbon pool is calculated as -3,651 MgCO₂e for the initial reporting period.

IFM-17 Biological emissions from decomposition of forest products: This is quantified as a component of IFM-7 and IFM-8 as described in the Inventory Methodology (Attachment N).

VII.D.

Stratified random sampling formulas taken from Shiver and Borders (1996) were used to calculate the sampling error for the Richardson Ranch Project once mean standing live and standing dead pools had been determined for the 2024-2025 inventory. Estimates of the inventory confidence statistics, based on the confidence statistics as of 3/31/2025, are as follows:

Mean standing live and standing dead pools	127.22	Mg C per acre
SE of mean	3.49	Mg C per acre
SE of mean as %	2.75	3.49 ÷ 127.22
Sampling Error of 90% CI	4.52	(2.75%) * 1.645
Inventory Confidence Deduction	0%	4.52% - 5.0%

VII.E.

The risk rating calculated below assumes that the Project will not employ a Qualified Conservation Easement.

Project Area Reversal Risk Rating:

<i>Risk Category</i>	<i>Contribution to Reversal Risk Rating</i>
Financial Failure	5.0%
Conversion	2.0%
Over-harvesting	2.0%
Wildfire	4.0%
Disease/Insect	3.0%
Other Catastrophic	3.0%
Total Buffer Pool Contribution	17.59%

The Project's reversal risk rating is calculated as follows:

$$100\% - (((1-0.05)*(1-0.02)*(1-0.02)*(1-0.04)*(1-0.03)*(1-0.03)*100)) = 17.59\%$$

The contribution to the Forest Buffer Account during the initial reporting period is [214,168](#) ROCs.

VIII.A.5.

Following the calculation methodologies described in the Inventory Methodology (Attachment N), the baseline modeling presented in the Modeling Plan (Attachment M) generates an average annual value for each of the above described wood products carbon pools. Actual wood products values for In-use, Landfill, and Prior to Delivery to the Mill (“PDM”) are calculated based on a flow of wood products over the 100-year planning period. The table below presents an estimate of the average wood products stored long-term values that will be generated by the baseline analysis.

Woods Products Class	Mg C/ acre	Total Mg CO2e
Average Annual Carbon 100-year In-Use	0.269	5,874
Average Annual Carbon 100-year Landfill	0.174	3,795
Average Annual Carbon in Harvested Trees Prior to Delivery to the Mill	1.724	37,651

Baseline Wood Products for the Initial Reporting Period (RP1)

Woods Products Class	Annual Total Mg CO2e	Total Mg CO2e
Carbon 100-year In-Use	2,929	5,874
Carbon 100-year Landfill	1,892	3,795
Carbon in Harvested Trees Prior to Delivery to the Mill	18,774	37,651

III.B.4.

The Minimum Baseline Level (MBL) for the Richardson Ranch project is calculated using Equation 5.5 which has as its inputs Initial above-ground standing live tree carbon stocks (ICS), Common Practice (CP), and the weighted average above-ground standing live tree carbon stocks per acre for all forest owner and affiliate landholdings within the same logical management unit (LMU) as the Project Area (WCS).

Per the definition of Logical Management Unit, the Project Area as delineated represents a portion of the OPO's ownership. Portions of the larger Richardson Ranch ownership have been excluded from the Project Area due to estate settlement proceedings in the near future. Attachment O includes the rationale for excluding portions of the Richardson Ranch ownership from the Project Area. As the Project Area is a portion of the larger LMU, WCS is calculated using Equation 5.7 using inventory data collected for those portions of the LMU outside the Project Area.

$$\text{Equation 5.7: } \text{WCS} = \text{ICS} * \text{PA} + \text{ECS} * \text{EA} / \text{PA} + \text{EA}$$

$$\text{ICS} = 373.57$$

$$\text{ECS} = 388.72$$

$$\text{CP} = 205.15$$

$$\text{PA} = 5,955.10$$

$$\text{EA} = 269.32$$

$$\text{WCS} = 373.57 \text{ MgCO}_2\text{e/ac}$$

$$\text{Equation 5.5: } \text{MBL} = \text{MAX} (\text{CP}, \text{MIN} (\text{ICS}, \text{CP} + \text{ICS} - \text{WCS}))$$

$$\text{MBL} = \text{MAX} (205.15, \text{MIN} (373.57, 205.15 + 373.57 - 373.57))$$

$$\text{MBL} = \text{MAX} (205.15, 205.15)$$

$$\text{MBL} = 205.15 \text{ MgCO}_2\text{e/ac, or CP}$$

VIII.B.7.

In modeling the baseline for standing live carbon stocks, the Forest Owner must incorporate financial constraints that could affect baseline growth and harvesting scenarios. The Richardson Ranch Project will utilize a financial analysis of the baseline harvesting regime that captures all relevant costs and returns, taking into account all legal, physical, and biological constraints. This financial analysis is included as Attachment L of this OPDR. Cost and revenue variables included in the financial analysis are based on documented costs and returns for the Project Area, and on other properties in the Assessment Area and costs have been increased as a means of providing a more conservative analysis. This financial analysis illustrates that the baseline harvest scenario is financially feasible.

X Attachments

The following attachments are included as a part of this OPDR:

Attachment A – Ownership Interest Documents (Confidential)

Attachment E – Maps of the Project Area, including a geodatabase file that represents the
Project Area

Attachment F – Orthophoto Maps of the Project Area

Attachment G – A Graph Portraying the Project's Baseline

Attachment H – A Diagram of the Project's Baseline

Attachment I – Baseline and Actual Harvest Volumes

Attachment K - Legal Constraints Affecting Forest Management Activities on the Project Area

Attachment L – Financial Analysis of the Baseline Scenario

Attachment M – Modeling Plan

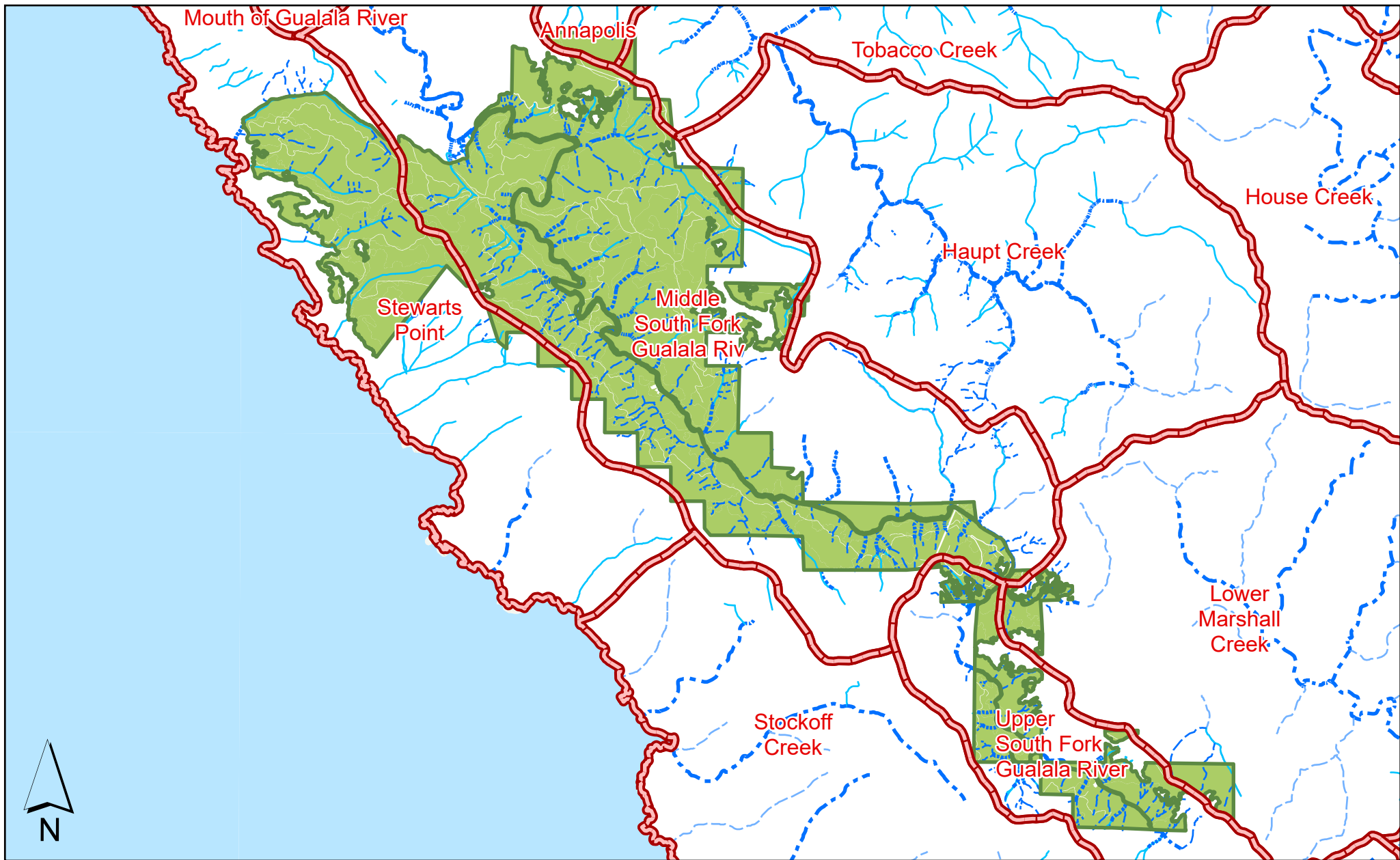
Attachment N – Inventory Methodology

Attachment O – Documentation of LMU Determination (Confidential)

ATTACHMENT E

Richardson Ranch Project Vicinity Map





Richardson Ranch Carbon Project

Legend

Watercourses

- Class 1
- Class 2
- Class 2 Large

Class 2 Standard

Class 3

Unclassified Intermittent

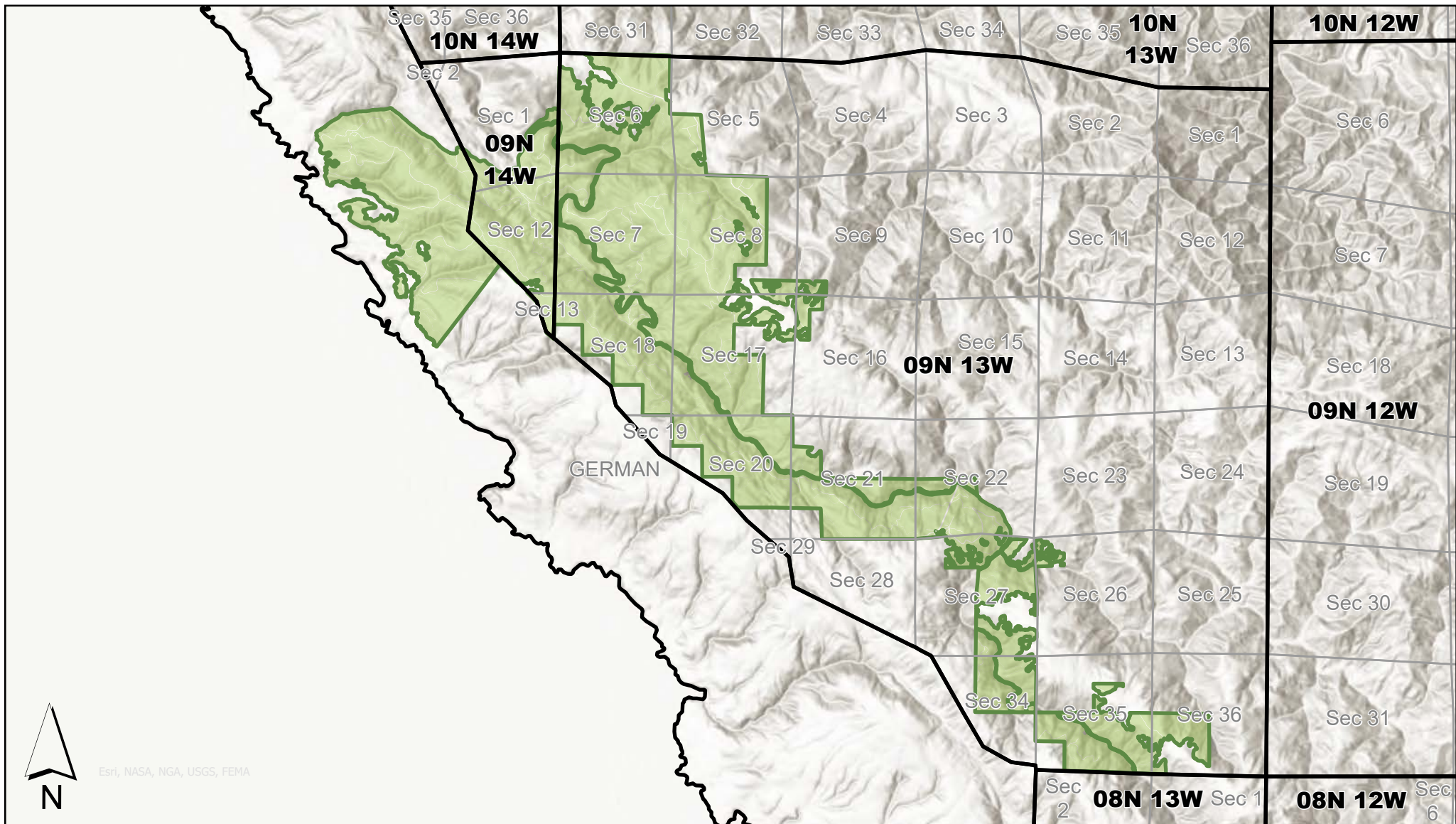
Watersheds

Project Area

Project Boundary

Scale: 1:65,000





Richardson Ranch Carbon Project

Scale: 1:75,000

Legend

- Townships
- Sections
- Project Area
- Project Boundary

0 0.5 1 2 Miles

ATTACHMENT F

Richardson Ranch Carbon Project

Legend

 Project Boundary

0

0.25

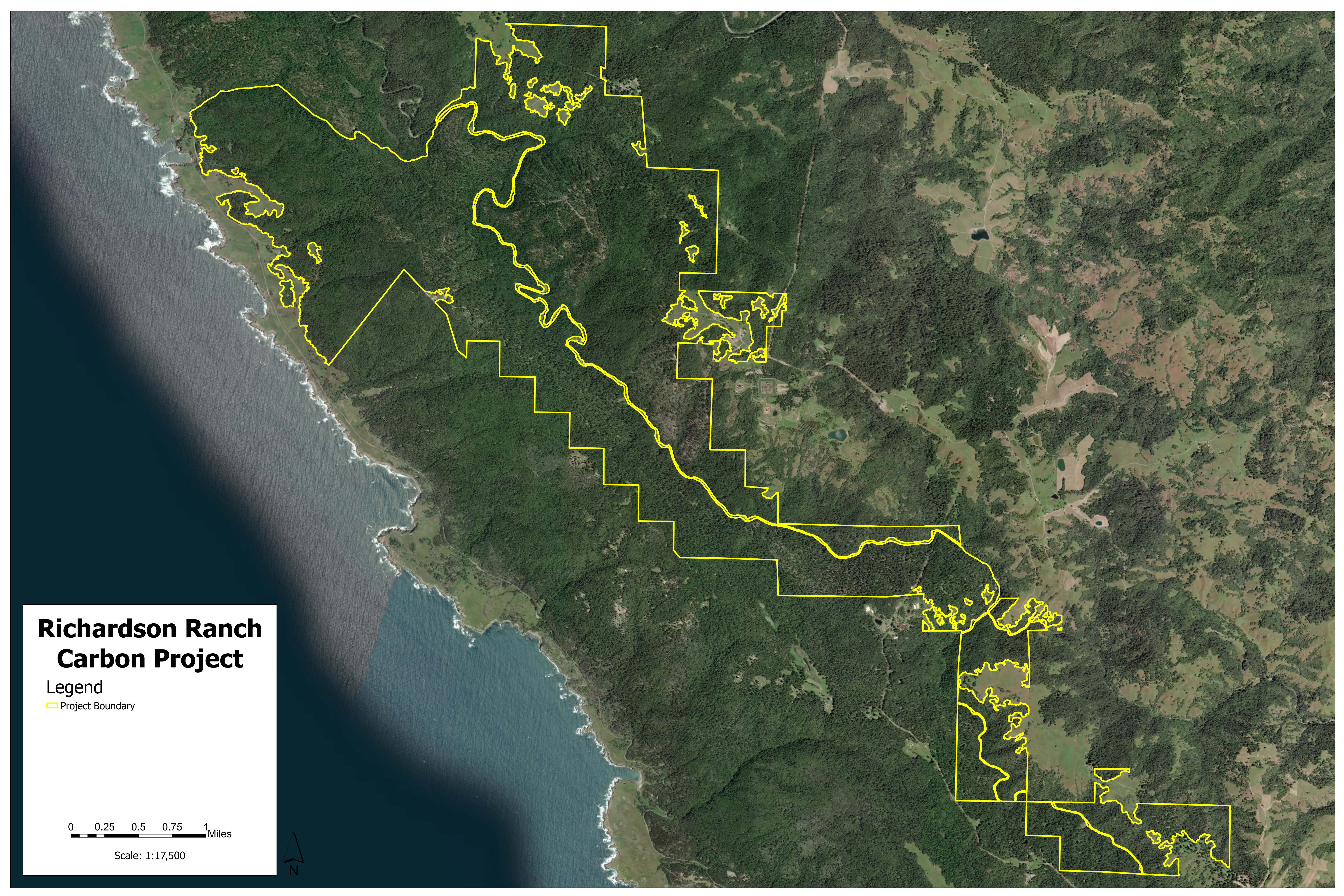
0.5

0.75

1

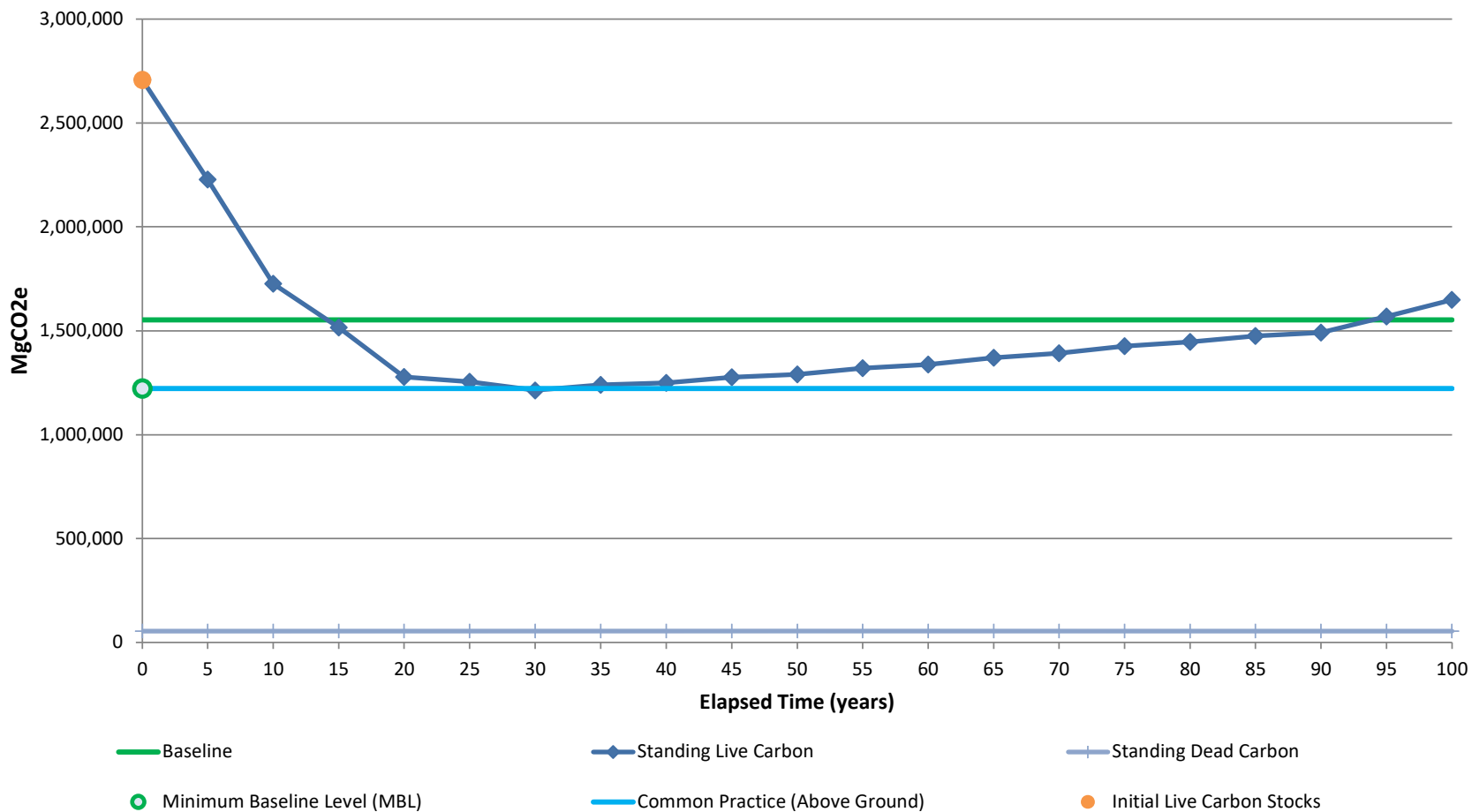
Miles

Scale: 1:17,500



ATTACHMENT G

Attachment G Baseline Graph



Baseline Carbon Stocks (MgCO₂e Total)

Elapsed Time	Standing Live Carbon Pool IFM-1	Standing Live Above Ground	Standing Live Below Ground	Standing Dead Carbon Pool IFM-3	Baseline	MBL	Above-Ground Common Practice	Initial Live Carbon Stocks
0	2,707,590	2,224,620	482,970	54,431	1,553,110	1,221,690	1,221,690	2,707,590
5	2,228,844	1,824,835	404,020	54,604	1,553,110	0	1,221,690	0
10	1,726,553	1,404,196	322,381	54,826	1,553,110	0	1,221,690	0
15	1,515,848	1,231,869	284,002	55,030	1,553,110	0	1,221,690	0
20	1,277,498	1,035,629	241,893	55,208	1,553,110	0	1,221,690	0
25	1,255,499	1,018,740	236,781	55,264	1,553,110	0	1,221,690	0
30	1,213,609	985,050	228,579	55,310	1,553,110	0	1,221,690	0
35	1,239,665	1,007,202	232,482	55,315	1,553,110	0	1,221,690	0
40	1,249,537	1,015,882	233,673	55,315	1,553,110	0	1,221,690	0
45	1,276,554	1,038,609	237,962	55,312	1,553,110	0	1,221,690	0
50	1,290,261	1,050,205	240,073	55,304	1,553,110	0	1,221,690	0
55	1,320,206	1,075,300	244,922	55,296	1,553,110	0	1,221,690	0
60	1,336,717	1,089,215	247,518	55,287	1,553,110	0	1,221,690	0
65	1,370,977	1,117,942	253,049	55,276	1,553,110	0	1,221,690	0
70	1,392,665	1,136,191	256,487	55,263	1,553,110	0	1,221,690	0
75	1,425,112	1,163,382	261,743	55,247	1,553,110	0	1,221,690	0
80	1,446,611	1,181,420	265,203	55,230	1,553,110	0	1,221,690	0
85	1,474,321	1,204,813	269,518	55,221	1,553,110	0	1,221,690	0
90	1,491,039	1,218,989	272,061	55,209	1,553,110	0	1,221,690	0
95	1,568,643	1,282,684	285,969	55,129	1,553,110	0	1,221,690	0
100	1,649,114	1,348,762	300,363	55,050	1,553,110	0	1,221,690	0
Average	1,497,961	1,221,692	276,269	55,149	1,553,110	0	1,221,690	

Baseline Carbon Stocks

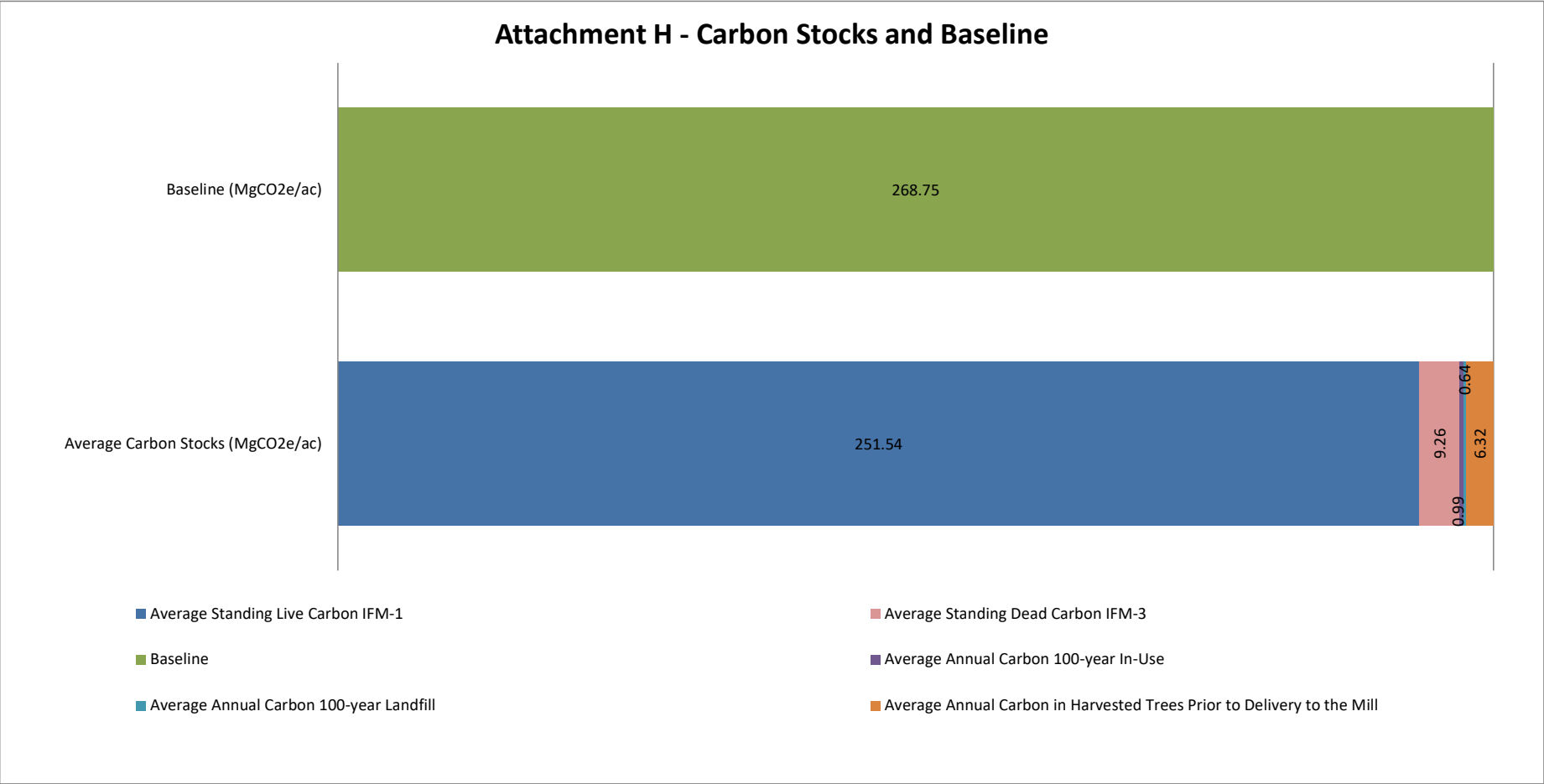
The baseline modeling scenario presented in this graph follows the guidelines presented in section 5.2 of the Compliance Offset Protocol U.S. Forest Projects, June 25, 2015.

Key components of the calculated baseline are as follows:

1. Initial Project live carbon stocks are above Common Practice.
2. The Project is not subject to the High Stocking Reference calculation.
3. Initial live carbon stocks have been modeled subject to all legal and financial constraints for a 100-year period.
4. The average carbon stocks of the 100-year baseline growth and yield modeling scenario have been calculated.
5. The average stocks of standing dead carbon over the 100-year period have been calculated.
6. The average production of In-Use carbon, landfill carbon, and harvested carbon prior to delivery to a mill have been calculated from the 100-year baseline growth and yield scenario.

ATTACHMENT H

Attachment H - Carbon Stocks and Baseline



Attachment H

Baseline Carbon Stocks (MgCO₂e per Acre)

Elapsed Time	Standing Live Carbon Pool IFM-1	Standing Dead Carbon Pool IFM-3	Baseline
0	454.67	9.14	260.80
5	374.27	9.17	260.80
10	289.93	9.21	260.80
15	254.55	9.24	260.80
20	214.52	9.27	260.80
25	210.83	9.28	260.80
30	203.79	9.29	260.80
35	208.17	9.29	260.80
40	209.83	9.29	260.80
45	214.36	9.29	260.80
50	216.66	9.29	260.80
55	221.69	9.29	260.80
60	224.47	9.28	260.80
65	230.22	9.28	260.80
70	233.86	9.28	260.80
75	239.31	9.28	260.80
80	242.92	9.27	260.80
85	247.57	9.27	260.80
90	250.38	9.27	260.80
95	263.41	9.26	260.80
100	276.92	9.24	260.80
Average	251.54	9.26	260.80

Carbon Pool	Mg C/ acre	Total Mg CO ₂ e
Average Standing Live and Standing Dead Pools	71.122	1,553,110
Average Annual Carbon 100-year In-Use	0.269	5,874
Average Annual Carbon 100-year Landfill	0.174	3,795
Average Annual Carbon in Harvested Trees Prior to Delivery to the Mill	1.724	37,651

ATTACHMENT I

Attachment I

Per section 9.2.1 of the protocol, the following table represents the projected actual harvesting volumes from the Project Area over 100 years.

Elapsed Time (Years)	Average Decadal Harvest (Board feet per acre per year)
10	750
20	750
30	800
40	800
50	900
60	900
70	900
80	900
90	900
100	900

The baseline projection is provided in the Modeling plan included as Attachment M.

ATTACHMENT K

Legal Constraints Affecting Forest Management Activities on the Project Area

Constraint Description	Geographic Range	Agency	Effect on Forest Management	Modeling of Constraint
Z'Berg-Nejedly Forest Practice Act of 1973 (California Public Resources Code – Division 4, Chapter 8): Designed to protect, enhance & restore California's timberland.	California	CALFIRE	Provides guidelines regarding forest management.	Not specifically modeled.
California Forest Practice Rules (Title 14, California Code of Regulations, Chapter 4): Regulations used to implement the Forest Practice Act that govern timber operations. (FPRs)	California	CALFIRE	Places limits on silviculture activities. This includes the requirements for minimum basal area retention, rotation ages, harvest adjacency restrictions, watercourse buffer widths and sustained yield requirements.	Baseline harvest strategy complies with silvicultural requirements, and watercourse protection standards per the FPRs.
California Timberland Productivity Act of 1982 (Gov.C. 51100 et seq.): The intent of this Act is to <i>"encourage investment in timberlands based on reasonable expectation of harvest"</i> , and to <i>"discourage premature or unnecessary conversion of timberland to urban and other uses"</i> .	California	CALFIRE	Guides general land use associated with timberlands.	Not specifically modeled.
California Environmental Quality Act (CEQA) (Pub.Res.C. 21000 et seq.): statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.	California	CALFIRE, California Fish and Wildlife	Guides the development of projects in California, including Timber Harvest Plans.	Not specifically modeled.

Constraint Description	Geographic Range	Agency	Effect on Forest Management	Modeling of Constraint
Porter-Cologne Water Quality Control Act (California Water Code, Division 7. Water Quality): This is the primary vehicle for implementation of California's responsibilities under the federal 1972 Clean Water Act.	California	Water Quality Control Board	Provides guidelines for the protection of beneficial uses of water. Limits harvesting adjacent to watercourses.	Modeled through the retention of sufficient basal area and canopy retention per the FRPs.
Clean Water Act of 1972 (33 U.S.C. §1251 et seq.): The Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.	USA	Water Quality Control Board	Provides protection of water resources.	Not specifically modeled.
California Endangered Species Act (Fish & G.C. 2050 et seq.): Protects and Preserves all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, that are threatened with extinction.	California	CALFIRE, California Fish and Wildlife	Limits harvesting associated with the retention of sufficient habitat for endangered species.	Habitat retention standards designed to retain sufficient habitat for the Northern Spotted Owl and other protected species.
Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884): The Act provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend.	USA	US Fish and Wildlife Service	Limits harvesting associated with the retention of sufficient habitat for endangered species.	Habitat retention standards designed to retain sufficient habitat for the Northern Spotted Owl and other protected species.

Constraint Description	Geographic Range	Agency	Effect on Forest Management	Modeling of Constraint
Rocky Point Conservation Easement	100.09 acres within Project Area in the German Rancho Township 9 North, Range 14 West	The Sonoma Land Trust	Commits to preserve conservation values with the goal that the property be maintained in its relatively natural condition. Prohibits residential development and restricts forest management.	Modeled as a let grow with no harvesting applied.

ATTACHMENT L

The Richardson Ranch Improved Forest Management Project

Financial Analysis of Baseline Scenario

This analysis is provided per section 5.2.1 (e)(2)(A) of Compliance Offset Protocol U.S. Forest Projects, June 25, 2015, and is designed to demonstrate that the baseline growth and harvest regime is financially feasible. This analysis is overly conservative given that the test is simply financial feasibility. If herbicide treatments, tree planting and logging costs were significantly increased, the analysis would still demonstrate that the baseline growth and harvest is financially feasible. Delivered log values are below trended values based on Board of Equalization values, yet still demonstrate financial feasibility.

Model Inputs:

Discount Rate	8.0%
Inflation	0.0%
Real price appreciation for delivered log values	0.0%
Yield Tax	2.9% MBF

Production Costs:

Item	Cost per acre	Quantity	Total Cost	Cost per MBF
THP Preparation				see below
Logging Supervision				\$15.00
Property Management				\$15.00
Logging and Hauling (Derived from BOE Stumpage Values)				\$0.00
Total				\$30.00

Herbicide Treatment of Hardwoods:

Period	Cost per acre	% of Acres Treated	Total Cost	Cost per MBF
1	\$ 230.00	35%	\$479,386	\$2.75
2	\$ 230.00	25%	\$342,419	\$3.22
3	\$ 230.00	10%	\$136,967	\$3.02
4	\$ 230.00	10%	\$136,967	\$4.89
5	\$ 230.00	10%	\$136,967	\$4.46
6	\$ 230.00	10%	\$136,967	\$4.74
7	\$ 230.00	10%	\$136,967	\$5.02
8	\$ 230.00	10%	\$136,967	\$5.00
9	\$ 230.00	10%	\$136,967	\$4.67
10	\$ 230.00	10%	\$136,967	\$9.24

Tree Planting: (\$1 per tree cost)

Period	Cost per acre	% of Acres Treated	Total Cost	Cost per MBF
1	\$ 200.00	20%	\$238,204	\$1.37
2	\$ 200.00	15%	\$178,653	\$1.68
3	\$ 200.00	10%	\$119,102	\$2.62
4	\$ 200.00	10%	\$119,102	\$4.25
5	\$ 200.00	10%	\$119,102	\$3.88
6	\$ 200.00	10%	\$119,102	\$4.12
7	\$ 200.00	10%	\$119,102	\$4.36
8	\$ 200.00	10%	\$119,102	\$4.35
9	\$ 200.00	10%	\$119,102	\$4.06
10	\$ 200.00	10%	\$119,102	\$8.04

THP Preparation

Period	Cost per acre	Quantity	Total Cost	Cost per MBF
1	\$ 175.00	5,955	\$1,042,143	\$5.98
2	\$ 175.00	5,955	\$1,042,143	\$9.80
3	\$ 175.00	5,955	\$1,042,143	\$22.94
4	\$ 175.00	5,955	\$1,042,143	\$37.22
5	\$ 175.00	5,955	\$1,042,143	\$33.91
6	\$ 175.00	5,955	\$1,042,143	\$36.03
7	\$ 175.00	5,955	\$1,042,143	\$38.17
8	\$ 175.00	5,955	\$1,042,143	\$38.04
9	\$ 175.00	5,955	\$1,042,143	\$35.54
10	\$ 175.00	5,955	\$1,042,143	\$70.33

Richardson Ranch Project

Financial Analysis of Baseline Scenario
Calculation of Net Present Value of Harvest Stream

Assumptions: Harvest levels are based on Baseline Harvest Scenario

Logging sytem mix estimated as 50% tractor, 50% cable.

Production costs per MBF are estimates based upon logging system mix.

0% Real price appreciation applied to delivered log values.

All calculations in constant dollars without inflation.

Discount Rate 8.0% Real.

Year	Annual Harvest Volume				Stumpage Values per MBF				Production	Herbicide	Tree	Yield	Net	Total	Present
	RW MBF	DF MBF	OC MBF	Totals MBF	RW \$/ MBF	DF \$/ MBF	OC \$/ MBF	Camprun \$/ MBF	Costs \$/ MBF	Treatment \$/ MBF	Planting \$/ MBF	Taxes \$/ MBF	Value \$/ MBF	Net Value	Net Value
2024	12,574	4,700	166	17,440	400.00	50.00	0.00	301.87	35.98	2.75	1.37	8.75	253.03	4,412,903	4,086,022
2025	12,574	4,700	166	17,440	400.00	50.00	0.00	301.87	35.98	2.75	1.37	8.75	253.03	4,412,903	3,783,353
2026	12,574	4,700	166	17,440	400.00	50.00	0.00	301.87	35.98	2.75	1.37	8.75	253.03	4,412,903	3,503,105
2027	12,574	4,700	166	17,440	400.00	50.00	0.00	301.87	35.98	2.75	1.37	8.75	253.03	4,412,903	3,243,616
2028	12,574	4,700	166	17,440	400.00	50.00	0.00	301.87	35.98	2.75	1.37	8.75	253.03	4,412,903	3,003,348
2029	12,574	4,700	166	17,440	400.00	50.00	0.00	301.87	35.98	2.75	1.37	8.75	253.03	4,412,903	2,780,878
2030	12,574	4,700	166	17,440	400.00	50.00	0.00	301.87	35.98	2.75	1.37	8.75	253.03	4,412,903	2,574,887
2031	12,574	4,700	166	17,440	400.00	50.00	0.00	301.87	35.98	2.75	1.37	8.75	253.03	4,412,903	2,384,154
2032	12,574	4,700	166	17,440	400.00	50.00	0.00	301.87	35.98	2.75	1.37	8.75	253.03	4,412,903	2,207,550
2033	12,574	4,700	166	17,440	400.00	50.00	0.00	301.87	35.98	2.75	1.37	8.75	253.03	4,412,903	2,044,028
2034	6,192	4,337	104	10,633	400.00	50.00	0.00	253.32	39.80	3.22	1.68	7.35	201.27	2,140,132	917,866
2035	6,192	4,337	104	10,633	400.00	50.00	0.00	253.32	39.80	3.22	1.68	7.35	201.27	2,140,132	849,876
2036	6,192	4,337	104	10,633	400.00	50.00	0.00	253.32	39.80	3.22	1.68	7.35	201.27	2,140,132	786,922
2037	6,192	4,337	104	10,633	400.00	50.00	0.00	253.32	39.80	3.22	1.68	7.35	201.27	2,140,132	728,631
2038	6,192	4,337	104	10,633	400.00	50.00	0.00	253.32	39.80	3.22	1.68	7.35	201.27	2,140,132	674,659
2039	6,192	4,337	104	10,633	400.00	50.00	0.00	253.32	39.80	3.22	1.68	7.35	201.27	2,140,132	624,684
2040	6,192	4,337	104	10,633	400.00	50.00	0.00	253.32	39.80	3.22	1.68	7.35	201.27	2,140,132	578,411
2041	6,192	4,337	104	10,633	400.00	50.00	0.00	253.32	39.80	3.22	1.68	7.35	201.27	2,140,132	535,566
2042	6,192	4,337	104	10,633	400.00	50.00	0.00	253.32	39.80	3.22	1.68	7.35	201.27	2,140,132	495,894
2043	6,192	4,337	104	10,633	400.00	50.00	0.00	253.32	52.94	3.22	1.68	7.35	188.13	2,000,410	429,184
2044	2,513	1,938	92	4,543	400.00	50.00	0.00	242.59	52.94	3.02	2.62	7.04	176.97	803,917	159,703
2045	2,513	1,938	92	4,543	400.00	50.00	0.00	242.59	52.94	3.02	2.62	7.04	176.97	803,917	147,873
2046	2,513	1,938	92	4,543	400.00	50.00	0.00	242.59	52.94	3.02	2.62	7.04	176.97	803,917	136,919
2047	2,513	1,938	92	4,543	400.00	50.00	0.00	242.59	52.94	3.02	2.62	7.04	176.97	803,917	126,777
2048	2,513	1,938	92	4,543	400.00	50.00	0.00	242.59	52.94	3.02	2.62	7.04	176.97	803,917	117,386
2049	2,513	1,938	92	4,543	400.00	50.00	0.00	242.59	52.94	3.02	2.62	7.04	176.97	803,917	108,691
2050	2,513	1,938	92	4,543	400.00	50.00	0.00	242.59	52.94	3.02	2.62	7.04	176.97	803,917	100,640
2051	2,513	1,938	92	4,543	400.00	50.00	0.00	242.59	52.94	3.02	2.62	7.04	176.97	803,917	93,185
2052	2,513	1,938	92	4,543	400.00	50.00	0.00	242.59	52.94	3.02	2.62	7.04	176.97	803,917	86,282
2053	2,513	1,938	92	4,543	400.00	50.00	0.00	242.59	52.94	3.02	2.62	7.04	176.97	803,917	79,891
2054	1,574	1,178	48	2,800	400.00	50.00	0.00	245.89	67.22	4.89	4.25	7.13	162.40	454,720	41,842
2055	1,574	1,178	48	2,800	400.00	50.00	0.00	245.89	67.22	4.89	4.25	7.13	162.40	454,720	38,742
2056	1,574	1,178	48	2,800	400.00	50.00	0.00	245.89	67.22	4.89	4.25	7.13	162.40	454,720	35,872
2057	1,574	1,178	48	2,800	400.00	50.00	0.00	245.89	67.22	4.89	4.25	7.13	162.40	454,720	33,215
2058	1,574	1,178	48	2,800	400.00	50.00	0.00	245.89	67.22	4.89	4.25	7.13	162.40	454,720	30,755
2059	1,574	1,178	48	2,800	400.00	50.00	0.00	245.89	67.22	4.89	4.25	7.13	162.40	454,720	28,477
2060	1,574	1,178	48	2,800	400.00	50.00	0.00	245.89	67.22	4.89	4.25	7.13	162.40	454,720	26,367
2061	1,574	1,178	48	2,800	400.00	50.00	0.00	245.89	67.22	4.89	4.25	7.13	162.40	454,720	24,414
2062	1,574	1,178	48	2,800	400.00	50.00	0.00	245.89	67.22	4.89	4.25	7.13	162.40	454,720	22,606
2063	1,574	1,178	48	2,800	400.00	50.00	0.00	245.89	67.22	4.89	4.25	7.13	162.40	454,720	20,931
2064	1,821	1,204	48	3,073	400.00	50.00	0.00	256.59	63.91	4.46	3.88	7.44	176.91	543,735	23,175
2065	1,821	1,204	48	3,073	400.00	50.00	0.00	256.59	63.91	4.46	3.88	7.44	176.91	543,735	21,458
2066	1,821	1,204	48	3,073	400.00	50.00	0.00	256.59	63.91	4.46	3.88	7.44	176.91	543,735	19,869
2067	1,821	1,204	48	3,073	400.00	50.00	0.00	256.59	63.91	4.46	3.88	7.44	176.91	543,735	18,397
2068	1,821	1,204	48	3,073	400.00	50.00	0.00	256.59	63.91	4.46	3.88	7.44	176.91	543,735	17,034
2069	1,821	1,204	48	3,073	400.00	50.00	0.00	256.59	63.91	4.46	3.88	7.44	176.91	543,735	15,772
2070	1,821	1,204	48	3,073	400.00	50.00	0.00	256.59	63.91	4.46	3.88	7.44	176.91	543,735	14,604
2071	1,821	1,204	48	3,073	400.00	50.00	0.00	256.59	63.91	4.46	3.88	7.44	176.91	543,735	13,522
2072	1,821	1,204	48	3,073	400.00	50.00	0.00	256.59	63.91	4.46	3.88	7.44	176.91	543,735	12,521
2073	1,821	1,204	48	3,073	400.00	50.00	0.00	256.59	63.91	4.46	3.88	7.44	176.91	543,735	11,593
2074-2124															129,989
														Total	37,991,136

ATTACHMENT M

Richardson Ranch Modeling Plan

By James Clark, RPF #2528

January 27, 2026

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Growth and Yield Modeling:

The growth and yield modeling described in this modeling plan is performed using the FORSEE model and the AllCA_ResLib resource library, and is based on the following:

Plot Data:

The modeling presented in this document is based on 312 inventory plots installed in 2024-2025 across the Richardson Ranch Project Area, (the “2025 Inventory”). This inventory design is described in the Inventory Specifications included as Attachment N to the initial OPDR.

Updating the Inventory:

The inventory methodology included as Attachment N to the OPDR provides a detailed description of the methods that will be used to maintain and update the Richardson Ranch inventory. FORSEE will be used to project inventory data either forward or backward as needed so that inventory plot data can be adjusted to the appropriate date for reporting of carbon stocks in future OPDRs. The following procedures will apply to inventory updates using average diameter and height increment data derived from 5-year FORSEE projections:

Procedure 1:

1. Inventory data gathered less than 3 months from the end of the reporting period will not be adjusted to the reporting period date.
2. Inventory data gathered between 3 months and 6 months from the end of the reporting period will be adjusted for one-half year's growth to represent the reporting period date.
3. Inventory data gathered between 6 months and 12 months from the end of the reporting period will be adjusted for one year's growth to represent the reporting period date.

Procedure 2:

At the discretion of the OPO, new plot data may be grown to the end of the reporting period by adjusting the height and diameter of each tree in the inventory database based on the number of days from the date the plot on which the tree is located was cruised to the end of the reporting period and applying a calculated height and diameter

increment developed from data produced by growing the plot data five years forward in FORSEE.

Within a reporting period, only one of the procedures described above will be applied to all new plot data. Alternatively, if the inventory data needs to be adjusted in whole year increments, the inventory update feature of FORSEE may be utilized.

Volume Calculations:

Conifer board foot volume calculations presented in Table 5a below utilize the standard FORSEE volume equations. Reported volumes are in board feet Scribner Scale for all conifers 10 inches DBH and larger. The FIA volume and biomass equations described in the Initial OPDR are used for the calculation of all carbon stock values presented below.

Biomass Calculations:

Biomass calculations utilized in the modeling are described in detail in the Initial OPDR.

Adjusting the 2025 Inventory Data to the Offset Project Commencement Date:

The cruise data was adjusted to the Offset Project Commencement date by adjusting the height and diameter of each tree in the inventory database based on the number of days from the Offset Project Commencement date to the date the plot on which the tree is located was cruised and applying a calculated height and diameter increment developed from data produced by growing the plot data five years forward in FORSEE.

Harvesting has occurred on the project since the Project Commencement date of 10/01/2024. Plots within the harvested areas were installed post-harvest and stratification was done post-harvest. However, the harvesting was light and did not impact the stratification. Thus, no adjustments were required to produce pre-harvest carbon stocking estimates in harvested areas as of the start date, apart from adjusting inventory data backwards several months to the start date.

Projecting the 2025 Inventory Data to the end of the Initial Reporting Period:

The inventory data used to estimate carbon stocking as of the end of the first reporting period, on 03/31/2025, was constructed in a manner similar to the adjustment to the start date described above; however, the height and diameter of each tree was increased or decreased based on the number of days since the plot was cruised and the end of the reporting period.

Any plots which fell in harvested or treated areas were measured or remeasured following the treatment, and then adjusted as described above. Thus, inventory data accurately represents the stocking as of the end of the initial reporting period.

Calibration:

The FORSEE model allows the assignment of ‘calibration’ factors to each species for height, DBH, and crown growth and mortality. The harvest regimes described in Table 3c below do not use calibration.

Missing Volume:

The inventory data, upon which the baseline growth and yield analysis is based, gathered data on missing volume from trees with broken tops, or from trees that included defects that reduced the tree’s net carbon value. FORSEE outputs all growth and yield results in terms of gross volume or biomass. The carbon stock values presented in the OPDR as of the project commencement date, and the end of the initial reporting period are net of the missing volume recorded in the inventory data. To represent this missing volume in the baseline analysis, the average percentage of missing standing live carbon stocks as of the Project start date is used to reduce the baseline growth and yield output from FORSEE.

Ingrowth:

Ingrowth in FORSEE is handled through the sprouting of species such as tanoak, madrone, live oak and bay laurel, and the addition of regeneration to bring the stand up to a minimum Forest Practice point count. The sprouting function in FORSEE (FSE.fsprout) was set to sprout 20% of sprouting species, as well as bringing the point count up to at least the minimum point count defined by the Forest Practice Rules (150 points per acre for sites IV and V and 300 points per acre for site III). This is done by calculating the minimum TPA needed to reach the minimum point count and applying the FORSEE TPA regeneration function (FSE.fRegen_PtCount). Redwood was

not included in sprouting species because the FORSEE point count regeneration function was used to moderate ingrowth.

Tables 1 and 2 below represent the regeneration tree list, and sprout tree list used by FORSEE as a part of the regeneration functions.

Table 1: Regeneration Tree List

SpeciesID	SpNum	DBH	TotalHT	CRatio	RegenYears	Relative Weight
DF	3	1	7	80	5	30
RW	22	1	7	80	5	70

Table 2: Sprout Tree List

SpeciesID	SpNum	DBH	TotalHT	CRatio	RegenYears	Relative Weight
hOCH	65	1	7	80	5	2
hLO	63	1	7	80	5	2
hMD	64	1	7	80	5	6
hTO	69	1	7	80	5	88
hOWO	67	1	7	80	5	2

Site Index:

To conduct growth modeling for the property, it was necessary to develop an estimate of average 50-year base age site index by species for the Project Area. FORSEE calculates 50-year base age site index for all species on the project area based on estimated 50-year site index for Douglas-fir.

Average site index values by soil type were used to calculate an average site index for each stratum found on the Richardson Ranch Project by calculating the weighted average site index based on the acres of each soil type in a given stratum. Average site index by soil type was used as a method of capturing the variability of site potential across each stratum. Douglas-fir 50-year site index for the project area is calculated from site index data provided by the Sonoma County Soils Survey (United States Department of Agriculture, Soil Conservation Service, 2002) as described below:

Site index was estimated at the stand level using soil survey data and site index data for associated soil components. Soils were categorized by map unit symbol. For those with Douglas-fir site index data (DFSI) for major components, average DFSI was calculated by weighting major component site index data by their relative percentages within the map unit symbol. Minor component DFSI data could not be used because no soils on the property

without a major component site index had a minor component site index. Some soil map unit symbols on the property lacked both major component and minor component DFSI data. These soil map unit symbols were reassigned to others that had DFSI data based on similarities assessed using orthographic photos and a canopy height model derived from Sonoma County LiDAR data. Site indices for each map unit symbol in a stand were weighted by the relative acreage of that symbol's area within the stand to calculate average stand site index.

Individual site class assignments by plot were calculated using a method similar to the one described above. Plots were assigned a soil map unit symbol and its associated site class if they are within its bounds. These site class assignments were used in assigning silvicultural prescriptions only. Site indices used to grow plots forward or to apply regimes are consistent with the site indices at the stand level.

Site index estimates from soil data are reported as 100-year base age from McARDLE and MEYER, Bulletin 201. These site indices were converted to the King 50-year base age values using table 1 from Research Note No 10 (Krumland and Wensel, 1979). The proportional difference between a stand's 100-year site index and the upper and lower bounds of its class according to Bulletin 201 were applied to the site index ranges of that class according to King to yield an estimate of each plot's 50-year base site index. The average Douglas-fir 50-year base age site index for each stand type are shown in Table 3a below.

Table 3a: Average Douglas-fir 50-year base age Site Index by Stand

Strata	Site Index	Site Class
1	104	III
2	103	III
3	105	III
4	103	III
5	104	III
6	105	III

Project Acreage:

The Richardson Ranch Project Area is 6,083.81 acres and is comprised of approximately 5,955.10 acres of timberland. The topographic maps included in Attachment E of the Initial OPDR show the Project Area boundary.

Attachment E also includes GIS data in the form of a geodatabase that includes the Project Area boundary.

Baseline Modeling:

The baseline modeling utilizes the above-described plot dataset, and an uneven-aged management harvesting strategy employing selection, transition and rehabilitation of understocked stands combined with small group openings not exceeding 20% of the group selection units. Portions of Richardson Ranch timber stands are dominated by hardwood species or are in an understocked condition. The baseline modeling assumes the treatment of hardwood species in order to release existing conifer regeneration, and convert areas dominated by hardwoods to conifer occupation. This reduction is accomplished through rehabilitation and hardwood release treatments.

At the Project's initiation on 10/01/2024 there was one approved Timber Harvest Plan (THP) on the Project Area. Table 3b shows the allocation of Silviculture within the existing THP. The baseline modeling has been designed to incorporate the operational and silvicultural constraints imposed by this approved THP for the first reporting period. Silvicultural constraints include retention standard for the first period harvest as listed in Table 3c below. The approved THPs also include watercourse WLPZ buffers for class 1 and 2 watercourses. This constraint was modeled by treating these acreages as a R3 WLPZ regime.

Table 3b: Acreage of Silviculture by THP

	Silviculture
THP ID	Selection
1-22-00041-SON	274.21
Grand Total	274.21

Baseline Harvest Strategy:

The baseline harvest strategy relies on the application of a series of harvest regimes across the Project Area timber stands. The regimes are modeled at the plot level and the growth and yield data is converted to stand level data. Table 3c below describes the harvest regimes applied across the Richardson Ranch timber stands. The final baseline growth and yield analysis is determined by applying a percentage of each regime to each timber stand type.

The silvicultural prescriptions incorporated into the regimes are designed to best accommodate local timber stand conditions, while complying with the

Forest Practice Rules as well as all other legal requirements. To accomplish this, a harvest strategy has been developed that evaluates each plot's stocking status in square feet of basal area per acre and point count stocking. Tables 4a-4c below illustrate the silviculture decision matrix upon which the growth and yield modeling is based. Harvesting under selection-transition, utilizes a BDq harvest strategy.

The “Bdq” formula is commonly used to describe the stand structure of uneven-aged forest stands and has been described extensively in the scientific literature. BDq refers to the stand structure with, in order of relative importance: B, the residual basal area; D, the maximum retained diameter class; and q, the ratio of the number of trees in adjacent (one inch) diameter classes.

Table 3c: Harvest Regime Descriptions

Regime	Harvest Scenario Description
R1	This regime applies the silvicultural parameters outlined in tables 4a through 4c below. Simulates group selection by assigning plots to be group-selected in a given decade.
R9	No-harvest prescription applied to each NSO Core Area, WLPZ core zones, the conservation easement, and THP no cut areas.
R3	WLPZ harvest prescription. Performs selection harvest every decade while retaining a minimum of 107 square feet of conifer and hardwood basal area per acre. The largest 13 conifer trees per acre are retained, as is 80% canopy retention.
R2	NSO Foraging Habitat prescription. Performs selection harvest every decade while retaining a minimum of 82 square feet of conifer and hardwood basal area per acre and 40%-100% canopy.
R10	NSO Nesting/Roosting prescription. Performs selection harvest every decade while retaining a minimum of 107 square feet of conifer and hardwood basal area per acre, and 60% canopy retention.
R1_SEL	This regime is the same as that of R1 with the exception that the 1 st period retention standards are modeled to match the Selection retention requirements of the approved THPs. Retains 40 square feet of conifer basal area over 16" DBH, and 75 square feet of conifer basal area. Hardwood retention is 15 square feet.
STA	Special Treatment Area prescription. Performs selection harvest every decade while retaining a minimum of 100 square feet of conifer basal area per acre, at least 50% of initial conifer TPA, and 50%-100% canopy in conifers 1" and larger.

General Harvest Constraints:

Harvest on the Richardson Ranch Project is constrained by several factors. Firstly, the California Forest Practice Rules (FPR) create a minimum set of silvicultural standards below in which harvest cannot occur.

Legal requirements include all laws, regulations, and legally binding commitments applicable to the Project Area at the time of the project's initiation that could affect standing live carbon stocks. Attachment K to the Initial OPDR lists all legal constraints affecting forest management and generally describes how those constraints are incorporated into timber harvest plans across the Project Area. This modeling plan provides specific detail as to how legal constraints are modeled.

The Richardson Ranch project is subject to the Z'berg- Nejedly Forest Practice Act of 1973 (FPA) and the corresponding Forest Practice Rules (FPR). The rules that specifically affect the determination of baseline are those that include limits to silviculture activities. This includes the requirements for minimum basal area retention, rotation ages, harvest adjacency restrictions, watercourse buffer widths and sustained yield requirements.

The pertinent rules include the following:

- 14 CCR 913.11(a): Maximum Sustained Production of High Quality Timber Products;
- 14 CCR 913.2: Minimum basal area retention standards for Uneven aged Regeneration Methods;
- 14 CCR 913.2 (a)(2)(B): Group selection harvest limitations;
- 14 CCR 913.2 (b)(6): Minimum post-harvest residual basal area retention standards for the Transition method;
- 14 CCR 913.4 (b): Standards for rehabilitation of Understocked Areas;
- 14 CCR 913.1 (c): Standards for Seed Tree Seed Step;
- 14 CCR 916.5: Procedure for Determining Watercourse and Lake Protection Zone (WLPZ) Widths and Protective Measures;
- 14 CCR 916.9: Details harvest limitations for Watercourse and Lake Protection Zones around Class 1, 2 and 3 streams;
- 14 CCR 919.9: Northern Spotted Owl
- 14 CCR 912.7(b): Resource Conservation Standards for Minimum Stocking

The methods by which the Forest Practice Rule constraints listed above as well as other legally binding constraints listed in Attachment K to the Initial OPDR are incorporated into the baseline harvest scenario are described in the following sections.

Constraints Analysis:

Characterization:

Timber harvesting was modeled over 100 years for the baseline scenario, taking legal constraints, financial feasibility, and physical limitations into consideration while maintaining average live above-ground carbon stocks above the minimum baseline level. Forest stand development was projected using a combination of uneven-aged systems to create multi-aged conditions depending on the arrangement of treatment types over space and time. Forest stands were subject to treatment types based primarily on their forest structure and site attributes as it relates to the California Forest Practice Rules, e.g. Timber Site III vs. Timber Site II or designated northern spotted owl (NSO) habitat vs. non-designated NSO habitat.

Baseline Legal Constraints:

Constraints that affect land-use specific to forest management activities have been incorporated into the carbon modeling. For this project, legal constraints have the greatest effect on timber harvesting levels, as opposed to what is financially feasible or physically possible. These legal constraints dictate what types of silvicultural activities (treatment types) are allowed, and where (spatial) and when (temporal) they are allowed, that is, there are different legal constraints for different locations of the project area. There are four general constraint types that determine what treatments are operable for any given area: 1) Timber Site; 2) NSO designated habitat; 3) Watercourse and Lake Protection Zones; and 4) Watercourse core zones. Each constraint, and how it is applied in the modeling, is described below by constraint class.

Special Treatment Areas:

The Project Area includes Special Treatment Areas as 200' buffers associated with the surrounding State Parks. Harvest levels within the Special Treatment Areas are designed to meet FPR standards for shade canopy retention, requirements for basal area retention, and 50 percent conifer retention above 12", pursuant to 14 CCR 921.3(a)(2) and 921.4(a). Some Special Treatment Areas are coincident with WLPZ core zone no-harvest areas, there the R3 and R9 regimes are used. The STA regime is used in the other Special Treatment Areas.

Northern Spotted Owl:

For NSO activity centers associated with the Richardson Ranch Project Area, harvest activity is restricted using the following parameters taken from guidance from the US Fish and Wildlife Service “Northern Spotted Owl Take Avoidance Analysis and Guidance For California Coast Forest District”, (“Attachment A”), March 15, 2011.

These restrictions are summarized as follows:

Within the 0.7 mile radius (985 acres) of each Activity Center:

- 1) Retain habitat to maximize attributes desirable for NSO.
- 2) Retain at least 500 acres of suitable (Nesting /Roosting/Foraging) NSO habitat, post-harvest, as follows:
 - a) Retain 200 acres of Nesting/Roosting habitat within a 0.7 mile radius of the Activity Center consisting of:
 - i) 100 acres of the 200 acres of Nesting /Roosting habitat retained should be contiguous, or contiguous as possible with the Activity Center.
 - ii) An Additional 100 acres of Nesting/Roosting habitat within the 0.7 mile radius:
 - 1) If the second 100 acres of Nesting/Roosting habitat is also contiguous with the Activity Center, or within the same drainage, operations should retain a minimum of 66% of the pre-harvest basal area per acre of trees at least 11” DBH.
 - 2) If the remaining 100 acres of Nesting/Roosting habitat is not contiguous with the Activity Center, retain at least Nesting/Roosting habitat.
 - b) Retain at least 300 acres of Suitable NSO habitat, post-harvest, of at least Foraging quality.
- 3) Remove no more than 1/3 of the remaining suitable habitat in excess of 500 acres within 0.7 miles of an Activity Center during the life of timber operations.

NSO Habitat Definitions:

Activity Center (AC): Area of concentrated activity of either a pair of NSO or a single territorial NSO, represented by a mapped location (e.g., usually a

nest tree) that occurs within, but not necessarily in the exact center of, the "Core Area," defined below.

Core Area: 100 acres of the 200 acres of Nesting/Roosting habitat retained within a 0.7 mile radius contiguous with the Activity Center. If 100 acres of contiguous Nesting/Roosting is not available, then the highest quality habitat available shall be included.

Foraging Habitat: Habitat that contains $\geq 40\%$ canopy cover of trees that are $\geq 11"$ DBH (diameter at breast height), and have a basal area ≥ 75 square feet per acre of trees $\geq 11"$ DBH. Trees may be conifer or hardwood.

Nesting/Roosting Habitat: Forested habitat that supports successful nesting and associated roosting behavior by NSO. Habitat with $\geq 60\%$ canopy cover of trees that are $\geq 11"$ DBH, and have a basal area ≥ 100 square feet per acre of trees $\geq 11"$ DBH. Trees may be conifer or hardwood.

Regimes R2, R9, and R10 have been designed to retain the required basal area and tree sizes as described in tables 4a-4c below for each respective NSO habitat type description. A buffer analysis around the NSO activity centers was conducted to ensure that the required acreage of each type of NSO habitat was retained in the required quantity (summarized in the Constraints tab of the carbon calculation workbook).

In general, areas designated as WLPZ were adjacent to stands selected as R2 or R10. 100-acre NSO Core Areas were created surrounding NSO activity centers, where no harvest was modeled, and stratum acreage were assigned to the R9 regime. Within a 0.7 mile radius of the AC, acreage was assigned to either the R2 or R10 regime while considering proximity to the NSO activity center. Areas classified as the R10 regime were selected from stands in proximity to the NSO Core Area in order to create a contiguous core zone for each NSO. Areas classified as the R2 regime were selected from the remaining acreages of strata with the best available habitat, based on BA/acre, within the 0.7 mile AC buffer. Stands classified as WLPZ buffer within the 0.7 mile buffer were not included in the assignment of R2/R10 regimes, but were spatially considered in the selection of stands to be retained as either R2 or R10.

These constraints are modeled by calculating the constrained acreage by timber stand, and the plot data is run with a 100-year no-harvest regime (Regime R9 in Table 3c above). The yield stream from this no-harvest regime is weighted by the constrained acreage and combined with the baseline harvest regime weighted by the unconstrained acreage to determine the final baseline carbon stocks through the 100-year analysis period.

Class I and II no Harvest Zone:

Utilizing the Richardson Ranch GIS watercourse layers, areas located within Class I or II core zones, where harvesting is restricted, will be identified pursuant to 14 CCR916.9 as indicated in tables 3d through 3g from the Forest Practice Rules, shown below. Class II-L watercourse segments were identified as those Class II watercourse segments within 1000 feet of a Class I watercourse. Class I, Class II, and Class II-L segments were given a 30-foot core zone on either side of the watercourse, and Class II-S watercourse segments were given a 15-foot core zone on either side of the watercourse. This analysis identified 382.64 acres within the core zone of Class I or Class II watercourses where harvesting is restricted. In some instances, NSO no-harvest areas are coincident with watercourse core-zones.

These constraints are modeled by calculating the acreage by timber stand and applying a 100-year no-harvest regime (Regime R9 in Table 3c above). The yield stream from this reduced harvest is weighted by the constrained acreage and combined with the baseline harvest regime weighted by the unconstrained acreage to determine the final baseline carbon stocks through the 100-year analysis period.

Harvesting WLPZ Areas:

Utilizing the Richardson Ranch GIS the acreage associated with Class I and II WLPZs was determined. These WLPZ acres are harvested using selection silvicultural prescription R3. Harvest levels within the WLPZ are designed to meet FPR standards for shade canopy retention. FPR requirements for the retention of the largest trees, and restrictions on harvests within the channel zone are addressed by adhering to harvest methods allowed by zone and slope pursuant to 14 CCR 916.9 as indicated in tables 3d through 3g from the Forest Practice Rules, shown below.

An analysis of the potential distribution of WLPZ areas by slope class was performed. Based on this analysis, it was determined that the greatest horizontal distance for a Class II-S WLPZ would be approximately 85 feet, approximately 100 feet for a Class II-L WLPZ, approximately 100 feet for a Class II WLPZ, and approximately 100 feet for a Class I WLPZ. Given a reasonable distribution of slope classes within any one of the watercourse class designations, the average WLPZ buffer distance would be less than the calculated maximum. The baseline modeling has been revised to include an 85-foot WLPZ buffer on Class II-S watercourses, and a 100-foot buffer on Class II-L and Class I watercourses. These buffer distances are felt to meet the definition of “Conservative” per Section 95802 of the Regulation in that

these modeled buffer distances meet the largest potential buffer that would need to be applied per the Forest Practice Rules.

Across the Richardson Ranch Project Area, this buffer analysis resulted in 465.24 acres located within Class I or II WLPZs. WLPZ areas represent 7.81% of the total timbered acreage.

As with Class I and II core zones, in some instances, NSO no-harvest areas are coincident with WLPZ zones.

No Harvest Conservation Easement:

A conservation easement exists within a portion of the Richardson Ranch project area. As a conservation measure, this area was modeled as a no harvest area under the R9 regime. The Rocky Point conservation easement is 222.99 acres, with 100.09 acres within the Project Area.

Table 3d: Acres by Regime following NSO, Core Zone, Special Treatment Area, and WLPZ buffer analysis.

Strata	R10	R2	R9	R3	STA	Constrained Acres
1	-	-	19.51	25.91	0.19	45.61
2	5.85	65.74	61.14	53.24	32.55	218.52
3	1.73	60.14	53.34	85.42	2.63	203.27
4	-	0.85	73.95	30.98	2.91	108.69
5	-	6.70	129.89	122.61	-	259.19
6	-	1.72	196.59	122.20	-	320.51
Total	7.58	135.15	534.42	440.36	38.28	1,155.79

Table 3d.1: Acres by Regime following THP constraint analysis.

Strata	R1_SEL	THP-Constrained Acres
1	94.97	94.97
2	72.32	72.32
3	261.27	261.27
4	85.94	85.94
5	71.40	71.40
6	86.62	86.62
Total	672.53	672.53

Table 3e: Procedure for Determining WLPZ Widths and Protective Measures Class I WLPZs - Confined Channels - Coastal Anadromy Zone

Pursuant to 14 CCR 916.9 (f)(2)						
Zone Designation	Zone width (ft.)	Overstory Canopy Cover		Large Tree Retention	Silviculture Requirements	Operational Requirements
Channel Zone	Variable	Retain all trees except per 916.9 [936.9, 956.9](e)(1) A-F or 916.9 [936.9 956.9] (v)		Retain all trees except per 916.9 [936.9, 956.9](e)(1) A-F or 916.9 [936.9 956.9] (v)	Retain all trees except per 916.9 [936.9, 956.9] (e)(1) A-F or 916.9 [936.9, 956.9](v)	No timber operations except per 916.9 [936.9, 956.9] (e)(1)A-F or 916.9 [936.9, 956.9](v);
Core Zone per 916.9 [936.9 956.9] (f)(2)(A)	30 ft.	Retain all trees except per 916.9 [936.9, 956.9](e)(1)A-F or 916.9 [936.9 956.9] (v)		Retain all trees except per 916.9 [936.9, 956.9](e)(1) A-F or 916.9 [936.9 956.9] (v)	Retain all trees except per 916.9 [936.9, 956.9] (e)(1) A-F or 916.9 [936.9, 956.9](v); no sanitation salvage except 916.9 (s)(t)and (u).	No timber operations except per 916.9 [936.9, 956.9] (e)(1) A-For 916.9 [936.9, 956.9](v);
Inner Zone per 916.9 [936.9 956.9] (f)(2)(B)	70 ft.	80% Coast and Southern Forest District of Coastal Anadromy Zone per 916.9 [936.9 956.9] (f)(2)(B)3.	70% in Northern Forest District of Coastal Anadromy Zone per 916.9 [936.9 956.9] (f)(2)(B)3.	13 largest trees /ac. per 916.9 [936.9 956.9] (f)(2)(B)4.	Increase QMD; No sanitation salvage except 916.9 (s)(t)and (u); commercial thinning or single tree selection only.	Preferred Management Practices in 916.9[936.9, 956.9] (f)(2)(D)
Outer Zone per 916.9 [936.9 956.9] (f)(2)(C) Outer Zone applicable only where even-aged regeneration used adjacent to the WLPZ	50 ft.	50% per 916.9 [936.9 956.9] (f)(2)(C).1.		NA	Commercial thinning or single tree selection only; Retain wind firm trees.	Preferred Management Practices in 916.9[936.9, 956.9] (f)(2)(D)
Special Operating Zone per 916.9 [936.9 956.9] (f)(2)(E)	50 ft.	NA		NA	SOZ applicable only where even-aged regeneration used adjacent to the WLPZ . Retain understory and midstory trees per 916.9 [936.9, 956.9] (f)(2)(E)	All other Forest Practice Rules

Table 3f: Procedure for Determining WLPZ Widths and Protective Measures Class I WLPZs – with flood prone areas or channel migration zones						
Pursuant to 14 CCR 916.9 (f)(3)						
Zone Designation	Zone width (ft.)	Overstory Canopy Cover		Large Tree Retention	Silviculture Requirements	Operational Requirements
Channel Zone or Channel Migration Zone per 916.9 [936.9 956.9] (f)(3)(A)	Variable	Retain all trees except per 916.9 [936.9, 956.9](e) (1)A-F or 916.9 [936.9 956.9] (v)		Retain all trees except per 916.9 [936.9, 956.9](e) (1)A-F or 916.9 [936.9 956.9] (v)	Retain all trees except per 916.9 [936.9, 956.9] (e) (1) A-F or 916.9 [936.9, 956.9](v)	No timber operations except per 916.9 [936.9, 956.9] (e)(1) A-For 916.9 [936.9, 956.9](v);
Core Zone per 916.9 [936.9 956.9] (f)(3)(B)	30 ft.	Retain all trees except per 916.9 [936.9, 956.9](e) (1)A-F or 916.9 [936.9 956.9] (v)		Retain all trees except per 916.9 [936.9, 956.9](e) (1)A-F or 916.9 [936.9 956.9] (v)	Retain all trees except per 916.9 [936.9, 956.9] (e) (1) A-F or 916.9 [936.9, 956.9](v); no sanitation salvage except 916.9 (s)(t)and (u).	No timber operations except per 916.9 [936.9, 956.9] (e) (1)A-For 916.9 [936.9, 956.9](v);
Inner Zone A per 916.9 [936.9 956.9] (f)(3)(C)	Minimum 70 ft. Maximum 120 ft.	80% Coast and Southern Forest District of Coastal Anadromy Zone per 916.9 [936.9 956.9] (f)(3)(C)3.	70% in all other watersheds per 916.9 [936.9 956.9] (f)(3)(C)3.	13 largest trees /ac. per 916.9 [936.9 956.9] (f)(3)(C)4.	Increase QMD; No sanitation salvage except 916.9 (s)(t)and (u); commercial thinning or single tree selection only.	Preferred Management Practices in 916.9 [936.9, 956.9] (f)(3)(E)
Inner Zone B per 916.9 [936.9 956.9] (f)(3)(D)	Variable: distance from Inner Zone A to end of FPA.	50%		13 largest trees /ac. per 916.9 [936.9 956.9] (f)(3)(D)1.	Increase QMD; No sanitation salvage except 916.9 (s)(t)and (u); commercial thinning or single tree selection only.	Preferred Management Practices in 916.9[936.9, 956.9] (f)(3)(E)
Outer Zone per 916.9 [936.9 956.9] (f)(3)(F) Applicable only where even-aged regeneration used adjacent to the WLPZ	50 ft.	50%		NA	Commercial thinning or single tree selection only; Retain wind firm trees.	Preferred Management Practices in 916.9[936.9, 956.9] (f)(3)(E)

Table 3g: Core and Inner Zone widths.								
Water Class	Class II-S (feet)				Class II-L (feet)			
Geographic location	Watersheds in the coastal anadromy zone		Watersheds outside the coastal anadromy zone		Watersheds in the coastal anadromy zone		Watersheds outside the coastal anadromy zone	
Slope class	Core Zone (feet)	Inner Zone (feet)	Core Zone (feet)	Inner Zone (feet)	Core Zone (feet)	Inner Zone (feet)	Core Zone (feet)	Inner Zone (feet)
≤30%	15	35	10	40	30	70	20	80
30-50%	15	60	10	65	30	70	20	80
>50%	15	85	10	90	30	70	20	80

Table 3h: Procedures for Determining Watercourse and Lake Protection Zone Widths and Protective Measures ¹								
Pursuant to 14 CCR 916.5								
Water Class Characteristics or Key Indicator Beneficial Use	1) Domestic supplies, including springs, on site and/or within 100 feet downstream of the operations area and/or 2) Fish always or seasonally present onsite, includes habitat to sustain fish migration and spawning.		1) Fish always or seasonally present offsite within 1000 feet downstream and/or 2) Aquatic habitat for nonfish aquatic species. 3) Excludes Class III waters that are tributary to Class I waters.		No aquatic life present, watercourse showing evidence of being capable of sediment transport to Class I and II waters under normal high water flow conditions after completion of timber operations.		Man-made watercourses, usually downstream, established domestic, agricultural, hydroelectric supply or other beneficial use.	
Water Class	Class I		Class II		Class III		Class IV	
Slope Class (%)	Width Feet	Protection Measure	Width Feet	Protection Measure	Width Feet	Protection Measure	Width Feet	Protection Measure
					[see 916.4(c)] [see 936.4(c)] [see 956.4(c)]		[see 916.4(c)] [see 936.4(c)] [see 956.4(c)]	
<30	75	BDG	50	BEI	See CFH		See CFI	
30-50	100	BDG	75	BEI	See CFH		See CFI	
>50	150 ²	ADG	100 ³	BEI	See CFH		See CFI	
1 - See Section 916.5(e) for letter designations application to this table.								
2 - Subtract 50 feet width for cable yarding operations.								

Unevenaged Silviculture:

All forest stands in the project area are subject to retention standards for uneven-aged silviculture based on their “Timber Site” or site class. Forest stands in the project area of this constraint class must follow these terms at a minimum:

All forest stands where uneven-aged silviculture is applied shall maintain the minimum basal area retention thresholds of 125 square feet per acre for Site I stands and 75 square feet per acre for Site II and III stands and 50 square feet per acre for Site IV and V stands for selection silviculture, and 50 square feet per acre for transition silviculture for Site II and III stands.

Selection:

14 CCR 913.2: Minimum basal area retention standards for Unevenaged Regeneration Methods:

Unevenaged management is utilized to establish and maintain an unevenaged stand structure. Unevenaged management attributes include the establishment and/or maintenance of a multi-aged, balanced stand structure, promotion of growth on leave trees throughout a broad range of diameter classes, and encouragement of natural reproduction.

a) Selection Under the selection regeneration method, the trees are removed individually or in small groups sized from .25 acres to 2.5 acres.

A) Trees to be harvested or trees to be retained shall be marked by or under the supervision of the RPF prior to felling operations. When openings greater than .25 acres will be created, the boundaries of the small group(s) may be designated in lieu of marking individual trees within the small group areas. A sample area must be marked prior to a preharvest inspection for evaluation. The sample area shall include at least 10% of the harvest area up to a maximum of 20 acres per stand type which is representative of the range of conditions present in the area.

B) Post harvest stand stocking levels shall be stated in the THP. The level of residual stocking shall be consistent with maximum sustained production of high quality timber products. In no case shall stocking be reduced below the following standards:

1. Selection System.

1. On Site I lands at least 125 square feet per acre of basal area shall be retained.
2. On Site II and III lands at least 75 square feet per acre of basal area shall be retained.
3. On Site IV and V lands at least 50 square feet per acre of basal area shall be retained.
4. Unless the plan submitter demonstrates how the proposed harvest will achieve MSP pursuant to 14 CCR § 913.11 (a) or (b), the residual stand shall contain sufficient trees to meet at least the basal area, size, and phenotypic quality of tree requirement specified under the seed tree method.

B. Group Selection.

1. At least 80% of the stocked plots must meet the Basal Area stocking standards of 14 CCR 913.2(a)(2)(A).
2. Not more than 20% of the stocked plots may meet stocking standards utilizing the 300 point count standard with trees that are at least 10 (ten) years old.
3. An RPF or supervised designee may offset up to 8 plots per 40 plots where those plot centers are initially placed within small group clearings created during the current harvest. Unless substantially damaged by fire, the RPF or supervised designee shall not exclude small group clearings created by previous timber harvesting from the stocking survey.
4. Unless the plan submitter demonstrates how the proposed harvest will achieve MSP pursuant to 14 CCR 913.11 (a) or (b), the residual stand shall contain sufficient trees to meet at least the basal area, size, and phenotypic quality of tree requirements specified under the seed tree method.

- 3) Within any THP, small group clearings under the selection method shall be separated by a logical logging area.
- 4) Following completion of timber operations (including site preparation) not more than 20 percent of the THP area harvested by this method shall be covered by small group clearings.

Transition:

14 CCR 913.2: Minimum basal area retention standards for Unevenaged Regeneration Methods:

- b) Transition.** The transition method may be used to develop an unevenaged stand from a stand that currently has an unbalanced irregular or evenaged structure. The transition method involves the removal of trees individually or in small groups from irregular or evenaged stands to create a balanced stand structure and to obtain natural reproduction.
- A)** Area for determination of preharvest seed tree retention levels shall be no greater than 20 acres in size.
 - B)** This method is to be used to increase stocking and improve the balance of age classes so as to allow the residual stand to be managed by the selection regeneration method. This method shall not be used more than two times for a stand. The RPF shall delineate areas previously treated by the transition method on the plan map.
 - C)** Stands suitable for the transition method contain adequate quantity and quality of seed producing trees to provide adequate regeneration for new age classes. Stands suitable for this method shall have no more than 50 sq. ft. of basal area greater than the selection basal area standards.
 - D)** Trees to be harvested or trees to be retained shall be marked by or under the supervision of a RPF before felling operations. A sample area must be marked before the preharvest inspection for evaluation. The sample area shall include at least 10% of the harvest area up to a maximum of 20 acres per stand type which is representative of the range of conditions present.

- E) Immediately following the completion of timber operations, the minimum basal area standards in 14 CCR 912.7(b)(2) shall be met.
- F) The post harvested residual stand shall contain at least 15 square feet of basal area per acre of seed trees at least 12 inches dbh or greater for timber sites I, II or III; or 12 square feet of basal area per acre of seed trees 12 inches dbh or greater for timber sites IV or V. Unless obviously stocked, these basal area requirements will be determined from sampling averaged across each harvested area required in 14 CCR § 913.2(b)(1). Unless the plan submitter demonstrates how the proposed harvest will achieve MSP pursuant to 14 CCR § 913.11(a) or (b) [953.11(a) or (b)], where present in the preharvest stand, disease free, undamaged seed trees 18 inches dbh or greater shall be retained post harvest until the stand exceeds the minimum seed tree requirements of 14 CCR § 913.1(c)(1)(A). The seed trees shall be full crown, capable of seed production and representative of the best phenotypes available in the present stand.
- G) Following completion of timber operations (including site preparation) not more than 20 percent of the Plan area harvested by this method shall be occupied by small group clearings.

14 CCR 912.7: Resource Conservation Standards for Minimum Stocking:

The following resource conservation standards constitute minimum acceptable stocking in the Coast Forest District after timber operations have been completed.

- b)** An area on which timber operations have taken place shall be classified as acceptably stocked if either of the standards set forth in (1) or (2) below are met within five (5) years after completion of timber operations unless otherwise specified in the rules.
 - 2)** The average residual basal area measured in stems 1 inch or larger in diameter, is at least 85 square ft. per acre on Site I lands, and 50 square ft. per acre on lands of Site II classification or lower. Site classification shall be determined by the RPF who prepared the plan.

Commercial Thinning:

14 CCR 913.3: Intermediate Treatments:

a) Commercial thinning. Commercial thinning is the removal of trees in a young-growth stand to maintain or increase average stand diameter of the residual crop trees, promote timber growth, and/or improve forest health. The residual stand shall consist primarily of healthy and vigorous dominant and codominant trees from the preharvest stand.

- 1) Post harvest stand stocking levels shall be stated in the THP. The level of residual stocking shall be consistent with maximum sustained production of high quality timber products. Generally stands will develop stand structures with considerably higher levels of basal area than provided in these minimum standards as stand age increases. In no case shall stocking be reduced below the following standards:
 - A. Where the preharvest dominant and codominant crown canopy is occupied primarily by trees greater than 14 in. DBH:
 1. On Site I lands, at least 125 sq. ft. per acre of basal area shall be left.
 2. On Site II and III lands, at least 100 sq. ft. per acre of basal area shall be left.
 3. On Site IV lands, at least 75 sq. ft. per acre of basal area shall be left.
 4. On Site V lands, at least 50 sq. ft. per acre of basal area shall be left.
 - B. Where the preharvest dominant and codominant crown canopy is occupied primarily by trees less than 14 in. DBH, a minimum of 100 trees per acre over 4 in. DBH shall be retained for site I, II and III. For site IV and V - 75 trees per acre over 4 in. dbh shall be retained.

Rehabilitation of Understocked Areas:

14 CCR 913.3: Special Prescriptions:

The following special harvesting methods are appropriate under certain conditions:.

b) Rehabilitation of Understocked Area Prescription. For the purposes of restoring and enhancing the productivity of commercial timberlands which do not meet the stocking standards defined in 14 CCR 912.7 prior to any timber operations on such lands, an area may be harvested provided it is restocked in accordance with Subsections (1) or (2). To facilitate restocking, a regeneration plan must be included in the THP. The regeneration plan shall include site preparation, method of regeneration, and other information appropriate to evaluate the plan.

- 1) If the area meets the standards of 14 CCR 912.7 within five years of completion of timber operations, the area shall be considered acceptably stocked, or shall be considered acceptably stocked if it contains at least 10 planted countable trees for each tree harvested on sites I, II, and III, and 5 planted countable trees for each tree harvested on site IV and V.
- 2) On understocked timberlands where no countable conifer trees are to be harvested and the broadleaf species are not designated for management, the area shall be planted to equal or exceed the stocking standards of 14 CCR 912.7(b)(1) [932.7(b)(1), 952.7(b)(1)] and shall be considered acceptably stocked if within five years of completion of timber operations it contains at least an average point count of 150 of Group A species on all site classifications.

MSP:

All forest stands and baseline activities in the project area are subject to the Maximum Sustained Production (MSP) of High Quality Timber Products section of the California Forest Practice Rules. It is assumed in the baseline model that MSP is achieved pursuant to 14 CCR 913.11(c)(2), paraphrased below:

For unevenaged management, meeting minimum stocking and basal area standards for the selected silvicultural methods as contained in these Rules, and protecting the soil, air, fish and wildlife, water resources and other public trust resources through the application of these Rules.

Hardwood Harvest:

The Project's hardwood reduction program calls for the manipulation of hardwood stocking levels through, manual or mechanical treatments or commercial harvest, or basal herbicide treatments as appropriate.

Baseline Harvest Summary:

Treatment types, or silviculture systems, were applied to forest stands in the baseline model such that they followed the silvicultural method objectives in Article 3 of the Forest Practice Rules and as additionally described in this section. Treatments were selected and scheduled in the baseline based on legal constraint(s) and stocking.

Non-Commercial Treatments:

Portions of the Richardson Ranch Project Area's timberlands exist in a condition that does not permit current commercial timber harvest. These stands are composed of advanced conifer regeneration with varying levels of hardwood competition. The stands with the heaviest hardwood component are targeted for a "Release" treatment during the first decade of the planning period. For stands with lesser amounts of hardwood competition, or those stands where the hardwood component is too small to treat economically, no treatment is modeled in the baseline growth and yield analysis; however, Richardson Ranch may, at its discretion, undertake stand improvement treatments in these non-commercial stands. Non-commercial treatments may include hardwood reduction treatments and pre-commercial thinning of conifers.

The arrangement of these treatments over time and space create timber product value in both yields and appreciation and provide NSO habitat that is in line with the baseline scenario characterization and legal constraints. By the end of the baseline model, 535.33 acres remain un-treated as a result of being protected NSO habitat or restricted WLPZ areas. The application of the silvicultural regimes described below at the landscape level, yield an acceptable return on investment for the forest owner while maintaining compliance with the California Forest Practice Rules and NSO Take Avoidance protection measures. Overall, the baseline regime reflects maximum sustained productivity and a harvest and growth pattern that indefinitely serves multiple management objectives.

Standing Dead

The standing dead carbon pool represents approximately 2.00% of the total carbon found on the Project Area, and exceeds the one metric ton or 1% of live carbon test in the structural elements evaluation criteria under section 3.1 (Table 3.1) of the protocol. The standing dead carbon pool is treated as a static pool. As the baseline analysis involves ongoing forest management and maintenance of young and vigorous stands, standing dead levels are expected to be maintained at the estimated level. It could be argued that the baseline harvesting scenario would remove poorly formed and suppressed trees, thus capturing mortality that would have otherwise occurred under a harvest scenario that removed fewer trees and less volume over time.

Silvicultural Prescriptions

The following tables show the silvicultural constraints designed to demonstrate conformance with the requirements of the Forest Practice Rules. Table 4b contains the parameters used to assign first period (decade) silviculture. Harvests in following decades is guided by the minimum retention values shown in table 4c.

Table 4a: Silvicultural Prescriptions used by the Richardson Ranch Project

Regime	Prescription	Description
R1	Selection	The goal of this prescription is to create and maintain, multistoried, uneven-aged stands with varied diameter classes. Trees are harvested individually, or in small groups up to 2.5 acres in size.
	Transition	The goal of this prescription is to develop uneven-aged stands from stands that have an even-aged or irregular stand structure. Trees are harvested individually, or in small groups up to 2.5 acres in size.
	Rehabilitation	The goal of this prescription is to regenerate stands that are primarily experiencing excessive hardwood competition, and that also do not meet minimum stocking standards. Successive harvests will utilize uneven-aged silviculture.
	Hardwood Release	The goal of this prescription is to improve growth in stands that are primarily experiencing excessive hardwood competition, and that are also well stocked with conifer seedlings. Successive harvests will utilize uneven-aged silviculture.
	Commercial Thinning	To promote timber growth and improve forest health through the harvest of trees in a manner that results in a stand capable of being managed using single tree or group selection.

R1_SEL	THP Selection	The goal of this prescription is to create and maintain, multistoried, uneven-aged stands with varied diameter classes. Trees are harvested individually, or in small groups up to 2.5 acres in size. THP acres assigned Group Selection were modeled as Selection.
R9	No Harvest	This prescription is used to account for those portions of the Project Area where harvesting is prohibited.
R3	Single Tree Selection (WLPZ)	The goal of this prescription is to create and maintain dense, multistoried, uneven-aged stands with varied diameter classes.
R10	Single Tree Selection (NSO Nest Roost Habitat)	The goal of this prescription is to create and maintain dense, multistoried, uneven-aged stands with varied diameter classes while meeting the retention standards for NSO Nesting/Roosting Habitat.
R2	Single Tree Selection (NSO Foraging Habitat)	The goal of this prescription is to create and maintain dense, multistoried, uneven-aged stands with varied diameter classes while meeting the retention standards for NSO Foraging Habitat.
STA	Single Tree Selection (Special Treatment Area)	The goal of this prescription is to create and maintain dense, multistoried, uneven-aged stands with varied diameter classes while meeting the retention standards for Special Treatment Areas.

Table 4b: Pre-harvest Stand Conditions by Silvicultural Prescription

Regime	Prescription	Pre-Harvest Conifer Basal Area (Square Feet per Acre)		Other Pre-Harvest Considerations
		Lower Limit	Upper Limit	
R1	Selection Site Class II and III	125	None	Retain at least 15 square feet of basal area in trees 18" or larger.
	Selection Site Class IV	70	None	Retain at least 12 square feet of basal area in trees 18" or larger.
	Transition Site Class II and III	70	125	Retain at least 15 square feet of basal area in trees 18" or larger.
	Rehabilitation Site Class II and III	0	<50	Less than 300 point count., at least 35 square feet of hardwood basal area.
	Rehabilitation Site Class IV	0	<50	Less than 150 point count., at least 35 square feet of hardwood basal area.
	Hardwood Release Site Class III	0	70	Stocked per FPR, and at least 35 square feet of hardwood basal area.
	Hardwood Release Site Class IV	0	70	Stocked per FPR, and at least 35 square feet of hardwood basal area.
R9	No Harvest	None	None	
R3	Single Tree Selection (WLPZ)	None	None	At least 100 square feet of basal area
R10	Single Tree Selection (WLPZ/NSO Nest Roost Habitat)	None	None	At least 100 square feet of basal area in trees 11" or larger.
R2	Single Tree Selection (NSO Foraging Habitat)	None	None	At least 75 square feet of basal area in trees 11" or larger.
STA	Single Tree Selection (Special Treatment Area)	None	None	

Table 4c: Post-harvest Stocking by Silvicultural Prescription

Regime	Prescription	Stocking Considerations	Conifer Basal Area Retention (sq. ft. per acre)	Hardwood Basal Area Retention (sq. ft. per acre)	Regeneration Assumptions	Time to Next Treatment
R1	Selection Site Class II and III	Less than 20% of stand in group openings, at least 15 sq. ft. >18" DBH	≥75	7	300 Point Count, Sprout 20%	At Least 10 Years
	Selection Site Class IV	Less than 20% of stand in group openings, at least 12 sq. ft. >18" DBH	≥50	7	300 Point Count, Sprout 20%	At Least 10 Years
	Transition Site Class II and III	Less than 20% of stand in group openings, at least 15 sq. ft. >18" DBH	≥50	7	300 Point Count, Sprout 20%	Selection within 10-20 Years
	Rehabilitation Site Class II and III		≥10 where conifer ≥10 pre-harvest	7	300 Point Count, Sprout 20%	Selection within 30-40 Years
	Rehabilitation Site Class IV		≥10 where conifer ≥10 pre-harvest	7	300 Point Count, Sprout 20%	Selection within 30-40 Years
	Hardwood Release	No Commercial Conifer Harvest	No Commercial Conifer Harvest	7	None	Selection within 20-40 Years
R9	No Harvest	None	None		None	
R3	Single Tree Selection (WLPZ)	Retain at least 100 square feet of basal area, and 13 largest conifers	100	7	150 – 300 Point Count, Sprout 20% Hardwoods	At Least 10 Years
R10	Single Tree Selection (WLPZ/NSO Nest Roost Habitat)	Retain at least 100 square feet of basal area in trees 11" or larger and 60% canopy.	100	7	150 – 300 Point Count, Sprout 20% Hardwoods	At Least 10 Years
R2	Single Tree Selection (NSO Foraging Habitat)	Retain at least 75 square feet of basal area in trees 11" or larger and 40% canopy	75	7	150 – 300 Point Count, Sprout 20% Hardwoods	At Least 10 Years
STA	Single Tree Selection (Special Treatment Area)	At least 100 square feet of basal area. Retain 50% canopy closure in conifers. Retain at least 50% conifer TPA 12" and larger. Retain at least 15 square feet of basal area in trees 18" or larger.	100	7	40 TPA, Sprout 20% Hardwoods	At Least 10 Years

Growth and Yield Analysis:

The baseline growth and yield analysis was modeled using the FORSEE model utilizing the harvest strategy described above. Table 5a shows the results of the growth and yield analysis in terms of conifer yields, while table 5b shows the results in terms of tons of live carbon for all species. Table 6 shows the results in terms of average basal area per acre over the 100-year planning horizon.

Table 5a: Average Annual per Acre Conifer Growth and Yield through the Planning Horizon (Scribner Board Feet per Acre)

Elapsed Time (years)	Beginning Inventory (board feet)	Average Decadal Growth (board feet)	Average Decadal Harvest (board feet)	Ending Inventory (board feet)
10	61,910	749	2,930	40,101
20	40,101	650	1786	28,743
30	28,743	628	763	27,391
40	27,391	658	470	29,271
50	29,271	653	512	30,681
60	30,681	668	489	32,470
70	32,470	661	459	34,497
80	34,497	648	459	36,393
90	36,393	648	490	37,971
100	37,971	692	246	42,426

Table 5b: Average Annual per Acre Total Live Carbon Growth and Yield through the Planning Horizon (Mg C per Acre)

Elapsed Time (year)	Beginning Inventory (Mg Carbon)	Average Decadal Growth (Mg Carbon)	Average Decadal Harvest (Mg Carbon)	Ending Inventory (Mg Carbon)
10	132.84	1.38	5.96	87.13
20	87.13	1.29	3.41	65.92
30	65.92	1.25	1.57	62.71
40	62.71	1.23	1.08	64.19
50	64.19	1.21	1.03	65.95
60	65.95	1.18	0.98	67.94
70	67.94	1.15	0.91	70.38
80	70.38	1.15	0.90	72.87
90	72.87	1.14	0.94	74.87
100	74.87	1.25	0.47	82.69

Table 5c: Average Annual per Acre Total Live Carbon Growth and Yield through the Planning Horizon (Total MgC)

Elapsed Time (year)	Beginning Inventory (Mg Carbon)	Average Decadal Growth (Mg Carbon)	Average Decadal Harvest (Mg Carbon)	Ending Inventory (Mg Carbon)
10	791,050	8,242	35,463	518,846
20	518,846	7,658	20,288	392,544
30	392,544	7,459	9,366	373,473
40	373,473	7,302	6,424	382,258
50	382,258	7,199	6,149	392,754
60	392,754	7,027	5,844	404,585
70	404,585	6,870	5,414	419,142
80	419,142	6,824	5,344	433,939
90	433,939	6,785	5,594	445,847
100	445,847	7,437	2,781	492,412

Table 6: Average Basal Area per Acre through the Planning Horizon

Elapsed Time (years)	0	10	20	30	40	50	60	70	80	90	100
Conifer	282	205	154	143	145	147	149	152	155	159	178
Hardwood	48	17	15	15	13	13	13	13	13	13	13
Total	330	222	168	158	158	160	162	165	168	172	191

Table 7a presents the percentage of each silvicultural regime applied to the various timber stratum for the entire baseline modeling analysis. No plots were treated as group selection for the baseline analysis period.

Table 7a: Application of Silvicultural Regimes through the 100-year Planning Horizon

Strata	Regime							
	R10	R2	R9	R3	STA	R1_SEL	R1	Total
1	0%	0%	3.9%	5.2%	0%	0.0%	90.9%	100%
2	0.6%	6.5%	6.1%	5.3%	3.2%	0.0%	78.3%	100%
3	0%	4.2%	3.7%	5.9%	0%	9.3%	76.6%	100%
4	0%	0%	10.9%	4.5%	0%	2.9%	81.2%	100%
5	0%	0.6%	11.6%	11.0%	0%	2.6%	74.2%	100%
6	0%	0%	16.3%	10.1%	0%	4.8%	68.6%	100%

Table 8 below shows the modeled standing live carbon stocks over the 100-year baseline analysis period, the projected standing dead carbon pool, and the resulting average baseline carbon stocks on a per acre basis. These figures are plotted in Figure 1 as well.

Table 8: Average Baseline Carbon Stocks per acre Generated by the Baseline Harvest Scenario (Mg CO₂e per Acre).

Elapsed Time	Standing Live Carbon Pool IFM-1	Standing Live Above Ground	Standing Live Below Ground	Standing Dead Carbon Pool IFM-3	Baseline
0	454.67	373.57	81.10	9.14	260.80
5	374.27	306.43	67.84	9.17	260.80
10	289.93	235.80	54.14	9.21	260.80
15	254.55	206.86	47.69	9.24	260.80
20	214.52	173.91	40.62	9.27	260.80
25	210.83	171.07	39.76	9.28	260.80
30	203.79	165.41	38.38	9.29	260.80
35	208.17	169.13	39.04	9.29	260.80
40	209.83	170.59	39.24	9.29	260.80
45	214.36	174.41	39.96	9.29	260.80
50	216.66	176.35	40.31	9.29	260.80
55	221.69	180.57	41.13	9.29	260.80
60	224.47	182.90	41.56	9.28	260.80
65	230.22	187.73	42.49	9.28	260.80
70	233.86	190.79	43.07	9.28	260.80
75	239.31	195.36	43.95	9.28	260.80
80	242.92	198.39	44.53	9.27	260.80
85	247.57	202.32	45.26	9.27	260.80
90	250.38	204.70	45.69	9.27	260.80
95	263.41	215.39	48.02	9.26	260.80
100	276.92	226.49	50.44	9.24	260.80
Average	251.54	205.150	46.39	9.26	260.80

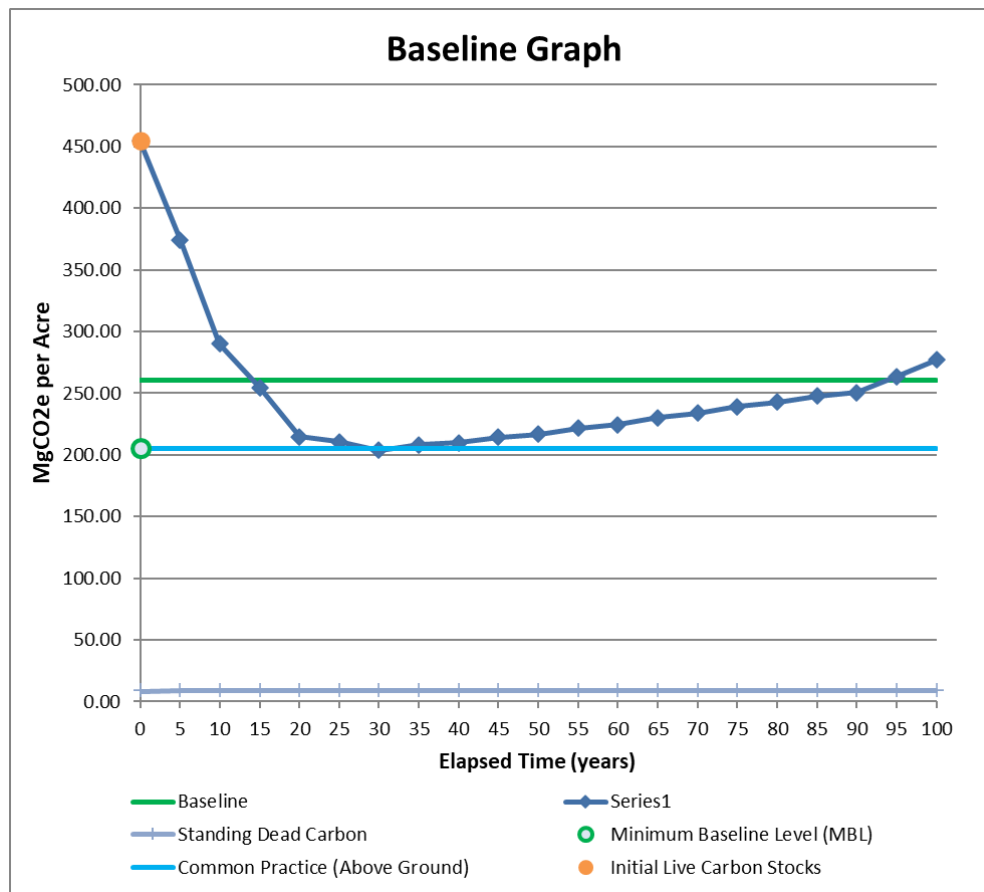
Baseline Carbon Stocks

The baseline modeling scenario defined in this document follows the guidelines presented in section 5.2 of the Compliance Offset Protocol U.S. Forest Projects, June 25, 2015.

Key components of the calculated baseline are as follows:

1. Initial Project live carbon stocks are above Common Practice.
2. The Project is not subject to the High Stocking Reference calculation.
3. Initial live carbon stocks have been modeled subject to all legal and financial constraints for a 100-year period.
4. The average carbon stocks of the 100-year baseline growth and yield modeling scenario have been calculated.
5. The average stocks of standing dead carbon over the 100-year period have been calculated.
6. The average production of In-Use carbon, landfill carbon, and harvested carbon prior to delivery to a mill have been calculated from the 100-year baseline growth and yield scenario.

Figure 1: Baseline Carbon Stocks



Wood Products

The baseline growth and yield modeling produces a flow of wood products over the 100-year planning period. Table 9 below shows the average wood products generated over the 100-year period. Three average wood products numbers are presented: average wood products In-use, average wood products stored in landfills, and the average amount of carbon in standing live carbon stocks prior to delivery to a mill.

Table 9: Average Wood Products Carbon per acre Generated by the Baseline Harvest Scenario.

Wood Products		Mg C/ acre	Total Mg CO2e
Average Annual Carbon 100-year In-Use		0.269	5,874
Average Annual Carbon 100-year Landfill		0.174	3,795
Average Annual Carbon in Harvested Trees Prior to Delivery to the Mill		1.724	37,651

ATTACHMENT N

THE RICHARDSON RANCH CARBON PROJECT INVENTORY METHODOLOGY

This document contains specifications for the collection of data in the field for The Richardson Ranch Carbon Project inventory, as well as the data to be collected and the standards for data collection and processing. The Project includes timberland characterized by Coastal Redwood, Douglas-fir, Tanoak, Pacific Madrone, true oak, and associated conifer and hardwood species. The Project Boundary includes the following GHG emission sources, GHG sinks, and GHG reservoirs (SSRs or Carbon Pools) as defined in table 4.2 of the Compliance Offset Protocol U.S. Forest Projects, June 25, 2015:

- IFM-1 Standing live carbon (carbon in all portions of living trees)
- IFM-3 Standing dead carbon (carbon in all portions of standing dead trees)
- IFM-7 Carbon in in-use forest products
- IFM-8 Forest product carbon in landfills
- IFM-14 Biological emissions/removals from changes in harvesting on forestlands outside the Project Area
- IFM-17 Biological emissions from decomposition of forest products

This Forest Carbon Inventory at its core consists of a systematic sampling of the timber stands found on The Richardson Ranch Project. Sampling has been conducted through the installation of sampling points on a systematic rectangular plot grid 594 feet by 1320 feet. The final inventory design resulted in the installation of 312 plots across the Project Area.

The standard procedures for collecting field measurements are detailed below and are generally aimed at the collection of tree data pertaining to the quantification of the IFM-1 and IFM-3 carbon pools. Carbon in carbon pools IFM7, IFM-8, IFM-14, and IFM-17 are calculated as described in the calculation methodologies section below.

Inventory Methodologies

The following inventory methodology was used to quantify carbon stocks for each of the carbon pools listed above. The data collection procedures for IFM-1 and IFM-3 SSRs are described in detail in the attached Richardson Ranch Carbon Project Inventory Specification included as Appendix B.

IFM-1 Standing Live:

Standing live carbon was inventoried based on sample plots installed as part of a forest inventory installed in 2024 and completed in early 2025. The cruise design includes 312 plots on a systematic 9 chain by 20 chain (594-ft by 1320-ft) grid across the Project Area.

The sample design includes the installation of fixed area plots to measure both live and

dead conifers and hardwoods. Three nested circular plots are installed at each sample point; a 1/100th acre plot to sample trees 1.0" to 3.5" DBH, a 1/50th acre plot to sample trees 3.6" to 10.5" DBH, and a 1/10th acre plot to sample trees 10.6" DBH and larger.

The Richardson Ranch Inventory Specification (attached as Appendix B) describes the procedures for collecting field measurements, specific criteria pertaining to data collection, stratification rules, and documentation on quality assurance and quality control. Documentation of analytic methods and biomass equations used to translate field measurements into volume or biomass carbon estimates are included in the carbon stock calculation methodologies below.

The inventory data gathered by this inventory methodology has been entered into an Access database as described in the attached Richardson Ranch Inventory Plot Data Entry Procedures (Appendix C). Plot data within the database has been extensively sorted and queried to look for data entry errors. This process has resulted in a final data set for cruise data processing. The Access database will serve as the repository for inventory data and is accessed by the growth and yield model during growth and yield simulations.

The inventory database will be utilized to process the inventory data through the growth and yield model FORSEE. The calculation of volume, biomass and the ultimate conversion to carbon utilizes the inventory data and growth and yield output data and applies the volume formulas and biomass conversion factors described below in the Calculation Methodologies section.

Management of inventory data over the life of the Project will include archiving retired inventory data as the data exceeds the maximum plot life requirements prescribed by the Protocol. Archived inventory data will also include a copy of each inventory database used to develop those carbon stock estimates reported in each OPDR submitted for the Project. This series of archived inventory database files will serve as the repository of inventory data as it existed for each reporting period.

As timber management activities take place on the Richardson Ranch Project Area, or disturbances such as fire or mortality resulting from pathogens or other factors occur, plots installed in 2024 and 2025 will be relocated and remeasured within areas that have been harvested, treated for hardwood reduction, or subject to disturbance. By 2036, all of the plots installed between 2024 and 2025 will have been remeasured regardless of whether or not the plot had been harvested, treated for hardwood reduction, or subject to other disturbance. On this basis, the Richardson Ranch Project will maintain a forest inventory system that will meet the inventory specifications and requirements contained in Appendix A of the Protocol, with plots which are no more than 12 years old.

IFM-3 Standing Dead:

As described above, standing dead trees will be sampled in conjunction with standing live trees.

IFM-6 Soil (if applicable):

This pool has been excluded because the conditions in Table 4.2 of the Protocol that would require inclusion of this pool (site preparation involving deep ripping, furrowing, or plowing where soil disturbance exceeds 25 percent of the Project Area over the Project Life, or mechanical site preparation activities not conducted on contours) are not planned.

IFM-7 Carbon in in-use forest products:

Carbon in in-use forest products have been generated by the Project as harvesting has occurred since the Offset Project Commencement Date. The Calculation Methodologies below include documentation of analytic methods and biomass equations used to translate current and future harvest volumes delivered to the mill into appropriate carbon in in-use forest products values.

IFM-8 Forest product carbon in landfills (if applicable):

Carbon in landfills is a component of carbon related to forest products. Forest products have been generated by the Project since the Offset Project Commencement Date. The Calculation Methodologies below include documentation of analytic methods and biomass equations used to translate current and future harvest volumes delivered to the mill into appropriate forest products carbon in landfill values.

IFM-9 Biological emissions from site preparation:

As IFM-6 is an excluded carbon pool, IFM-9 is also an excluded pool.

IFM-14 Biological emissions/removals from change in harvesting on forestland outside Project Area:

The Calculation Methodologies below include documentation of analytic methods and biomass equations used to translate current and future harvest volumes delivered to the mill into appropriate values for the calculation of this carbon pool.

IFM-17 Biological emissions from decomposition of forest products:

This is quantified as a component of IFM-7 and IFM-8 per Appendix C of the Protocol.

Carbon Stock Calculation Methodologies

The calculation methodologies used to determine metric tons per acre of each of the carbon pools listed above has been described below; including the analytic methods and biomass equation references used to translate field measurements into volume and biomass carbon estimates.

IFM-1 Standing Live:

Above-ground standing live carbon in trees 1" DBH and larger will be calculated using the appropriate biomass equation by species taken from the Compliance Offset Protocol U.S. Forest Offset Projects page on ARB's website. The current biomass equation documentation provided by ARB is included in the ARB document "Volume Estimation for Species in Projects Located in CA, OR, WA (Last updated: 09/19/2014)." Specific gravities for bark and live branch equations were obtained from approved ARB document "Biomass equations for species in projects located in CA, OR, WA (updated: 09/19/2014)." These equations are used to generate biomass estimates for the above-ground portion of standing live trees, and hard snags. These equations will be referred to as the "FIA equations" herein.

Tonnes of standing live biomass per sample plot are calculated as follows:

For equations that use total tree height in meters, tree height is calculated by multiplying the trees total height in feet by 0.3048. Trees per hectare are calculated by multiplying trees per acre by 2.471. Tree diameter at breast height ("DBH") in centimeters (cm) is calculated by multiplying its DBH by 2.54.

Bole Biomass:

The cubic foot volume of each tree is calculated as the volume of the total stem from ground to tip (includes the top and stump). FIA refers to this value as CVTS. Bole biomass is calculated by multiplying the cubic volume by the wood density, and then dividing by 2.20462 to calculate weight in kilograms (kg). Above-ground biomass in kilograms (Kg) per acre is calculated by multiplying the FIA calculated kg per tree by each tree's per acre value.

Bark and Live Branches Biomass:

The above referenced FIA equations produce biomass in kg for the various parts of the above-ground portion of each tree. Above-ground biomass in kilograms (Kg) per acre is calculated by multiplying the FIA calculated kg per tree by each trees per acre value.

Missing volume of each tree is recorded as a percentage missing by 1/3rd segment of the tree (top, middle, bottom) as adapted from the Climate Action Reserve's "Quantification Guidance for Use with Forest Carbon Projects" dated November 15, 2012. The total heights of trees with broken tops were estimated in the field as a phantom height. If 1/3rd of the calculated tree height was less than the measured top height, then the break was assumed to be above the bottom 3rd of the tree. Likewise, if 2/3rds of the calculated tree

height was less than the measured tree height, the break was assumed to be in the top 3rd of the tree.

Missing volumes of damaged trees that were recorded in the field were then added to the estimated volume missing if there was a broken top. The total missing percentage of each tree is calculated based on 65% of the trees biomass being in the bottom 1/3rd, 25% in the middle 1/3rd, and 10% in the top 1/3rd. The total percentage of the tree that is missing is then calculated and multiplied by various biomass components of the tree as calculated above to calculate the net biomass of each component.

The net Kg per acre value of each tree on the plot is summed to derive above-ground live biomass Kg per acre for the plot. This value is used to calculate the respective below-ground live biomass component for the plot.

Below-ground live carbon is calculated at the plot level using the model provided by Cairnes et. al. specified on page 111 of Appendix A of the Protocol. The formula has as its input, above-ground live and dead biomass in Mg per hectare, and outputs below-ground biomass in Mg per hectare. Total net above-ground live carbon in Kg per acre for each plot is converted to Mg of biomass per hectare by multiplying by 2.471, and then dividing by 1000. After calculating the below ground component in Mg per hectare using the Cairnes model and the ratio of above-ground live biomass to above-ground dead biomass, the results are converted to Kg per acre by multiplying by 1000 and dividing by 2.471.

Total standing live biomass for each plot is the sum of the above-ground and below-ground live biomass Kg per acre. Mg of carbon (Mg C) per acre per plot is then calculated by multiplying by 0.5 to estimate carbon biomass. Mg C per acre is converted to CO₂-equivalent by multiplying by 3.667.

IFM-3 Standing Dead:

Data on standing dead trees has been collected as a part of the Richardson Ranch Project inventory. In general, the amount of carbon stored in a standing dead tree is based on the proportion of the tree remaining standing, and the condition of the tree, or its decay class. The standing dead carbon pool includes trees 5" DBH and larger, with a minimum height of 15'.

Standing dead trees from the inventory data are classified into five decay classes based on descriptions contained in Research Paper NRS-15 (Harmon et al, 2011). These decay classes are generally described as follows:

Class 1 All limbs and branches are present; the top of the crown is still present; all bark remains; sapwood is intact, with minimal decay; heartwood is sound and hard.

- Class 2 There are few limbs and no fine branches; the top may be broken; a variable amount of bark remains; sapwood is sloughing with advanced decay; heartwood is sound at base but beginning to decay in the outer part of the upper bole.
- Class 3 Only limb stubs exist; the top is broken; a variable amount of bark remains; sapwood is sloughing; heartwood has advanced decay in upper bole and is beginning at the base.
- Class 4 Few or no limb stubs remain; the top is broken; a variable amount of bark remains; sapwood is sloughing; heartwood has advanced decay at the base and is sloughing in the upper bole.
- Class 5 No evidence of branches remains; the top is broken; <20 percent of the bark remains; sapwood is gone; heartwood is sloughing throughout.

Biomass for standing dead trees includes the bole and bark components calculated using the FIA biomass equations described above and following the same procedures as for live trees other than the manner in which missing volume is calculated.

Missing volume of each tree is recorded as a percentage missing by 1/3rd segment of the tree (top, middle, bottom) as adapted from the Climate Action Reserve's "Quantification Guidance for Use with Forest Carbon Projects" dated November 15, 2012. The total heights of trees with broken tops were estimated in the field as a phantom height. If 1/3rd of the calculated tree height is less than the measured top height, then the break is assumed to be above the bottom 3rd of the tree. Likewise, if 2/3rds of the calculated tree height is less than the measured tree height, the break is assumed to be in the top 3rd of the tree.

Missing volumes of damaged trees that are recorded in the field are then added to the estimated volume missing if there was a broken top. The total missing percentage of each tree is calculated based on 65% of the tree's biomass being in the bottom 1/3rd, 25% in the middle 1/3rd, and 10% in the top 1/3rd. The total percentage of the tree that is missing is then calculated and multiplied by various biomass components of the tree as calculated above to calculate the net biomass of each component.

Once the net biomass of each tree has been calculated, a relative density is applied by species and decay class. The relative density is in relation to the green density of sound wood, or the tree's wood density. The table below lists the relative densities applied by species and decay class taken from Differences Between Standing and Downed Dead Tree Wood Density Reduction Factors (Harmon et al, 2011).

Biomass components by Decay Class included in the calculation of standing dead carbon stocks are listed in the table below. Classes 3 through 5 are considered "Highly Decayed", and only bole volume is included.

Decay Class	Conifers	Hardwoods
1	All Aboveground tree portions	All Aboveground tree portions
2	Bole and Bark only	Bole and Bark only
3	Bole only	Bole only
4	Bole only	Bole only
5	Bole only	Bole only

Below-ground standing dead carbon is calculated at the plot level using the model provided by Cairnes et. al. specified on page 111 of Appendix A of the Protocol. The formula has as its input, above-ground live and dead biomass in Mg per hectare, and outputs below-ground biomass in Mg per hectare. After calculating the below ground component in Mg per hectare using the Cairnes model and the ratio of above-ground live biomass to above-ground dead biomass, the results are converted to Kg per acre by multiplying by 1000 and dividing by 2.471.

Total standing dead biomass for each plot is the sum of the above-ground and below-ground standing dead biomass Mg per acre. Mg of carbon (Mg C) per acre per plot is then calculated by multiplying by 0.5 to estimate carbon biomass. Mg C per acre is converted to CO₂- equivalent by multiplying by 3.667.

IFM-6 Soil (if applicable):

Excluded because the conditions in Table 4.2 of the Protocol that would require inclusion of this pool (site preparation involving deep ripping, furrowing, or plowing where soil disturbance exceeds 25 percent of the Project Area over the Project Life, or mechanical site preparation activities not conducted on contours) are not planned.

IFM-7 Carbon in in-use forest products:

Baseline wood products delivered to the mill in any period is calculated beginning with the cubic volume of harvested conifer trees 10" DBH and larger. Conifers smaller than 10" DBH are not included as they are too small to be delivered to the mill. The dry weight of wood products in pounds is calculated by multiplying the wood density in lbs/cubic foot by the cubic volume for each softwood species harvested based on the CV6 values derived from the FIA equations listed above. Bark and branch biomass are not included in the volume harvested. The wood densities utilized are those specified in the FIA equation for biomass and volume equations.

Actual wood products delivered to the mill in any period is calculated beginning with the volume of harvested conifer and hardwood trees as reported from mill receipts. Reported volumes are converted to cubic feet using the multipliers listed in the following table. The dry weight of wood products in pounds is calculated by multiplying the wood density in lbs/cubic foot by the cubic volume for each species harvested. Bark and branch biomass are not included in the volume harvested. The wood densities utilized are those specified in the FIA equation for biomass and volume equations.

Multipliers for converting volume units to cubic feet

Unit	Factor
Cords	75
Cubic Feet	1
Cubic Meters	35.3
Cunits-Chips (CCF)	100
Cunits-Roundwood	100
Cunits-Whole tree chip	126
MBF-Doyle	222
MBF-International 1/4"	146
MBF-Scribner ("C" or "Small")	165
MBF-Scribner ("Large" or "Long")	145
MCF-Thousand Cubic Feet	1000

Source: American Forest & Paper Association, Sustainable Forestry Initiative Program Annual Progress Reporting Form

The dry weight is multiplied by 0.5 to convert the weight to carbon weight only. The weight of carbon in lbs is divided by 2,204.6 to get the carbon weight in metric tonnes (Mg).

Mg of carbon by species is then multiplied by either 0.675 for softwoods, or 0.568 for hardwoods to account for mill efficiencies, taken from the Compliance Offset Protocol U.S. Forest Offset Projects page on ARB's website.

The resulting Mg carbon value after accounting for milling efficiencies is then passed to the wood products worksheets for calculating long-term in-use wood products storage. The wood products carbon is separated into product classes and multiplied by the respective 100-year average storage factor. The tables below list the assignment of wood products by class per the most current Assessment Area Data File taken from the Compliance Offset Protocol U.S. Forest Offset Projects page on ARB's website, as well as the 100-year average storage factors applied to each wood product class per table C.1 (Baseline) or C.3 (Actual) of Appendix C of the Protocol.

Wood Products by Class

% Softwood Lumber	97.0671%
% Hardwood lumber	0.0022%
% Softwood Plywood	1.8742%
% Oriented Strandboard	0.000%
% Non Structural Panels	0.2443%
% Miscellaneous Products	0.0948%
% Paper	0.7175%

100-year Storage Rates Average Values from Appendix C, In-Use

Softwood Lumber	0.463
Hardwood lumber	0.250
Softwood Plywood	0.484
Oriented Strandboard	0.582
Non Structural Panels	0.380
Miscellaneous Products	0.176
Paper	0.058

Average carbon stored in in-use wood products is calculated using equation C.4 (Baseline) or C.13 (Actual). Carbon is converted to CO₂-equivalent by multiplying by 3.667. This value is combined with IFM-8 using equation C.9 (Baseline) or C.18 (Actual) to represent $BC_{WP,y}$ or $AC_{WP,y}$ respectively for the reporting period.

Average in-use wood products produced by the baseline analysis ($BC_{wp,y}$) are deducted from actual wood products produced each reporting period ($AC_{wp,y}$) in equation 5.1 and the resulting calculation is multiplied by 80% to account for the “Market Response”.

IFM-8 Forest product carbon in landfills (if applicable):

Baseline wood products delivered to the mill in any period is calculated beginning with the cubic volume of harvested conifer trees 10” DBH and larger. Conifers smaller than 10” DBH are not included as they are too small to be delivered to the mill. The dry weight of wood products in pounds is calculated by multiplying the wood density in lbs/cubic foot by the cubic volume for each softwood species harvested. The wood densities utilized are those specified in the FIA equation for biomass and volume equations.

Actual wood products delivered to the mill in any period is calculated beginning with the volume of harvested conifer and hardwood trees as reported from mill receipts. Reported volumes are converted to cubic feet using the multipliers listed in the table under IFM-7 above. The dry weight of wood products in pounds is calculated by multiplying the wood density in lbs/cubic foot by the cubic volume for each species harvested. Bark and branch biomass are not included in the volume harvested. The wood densities utilized are those specified in the FIA equation for biomass and volume equations.

The dry weight is multiplied by 0.5 to convert the weight to carbon weight only. The weight of carbon in lbs is divided by 2,204.6 to get the carbon weight in metric tonnes (Mg).

Mg of carbon by species is then multiplied by either 0.675 for softwoods, or 0.568 for hardwoods to account for mill efficiencies, taken from the Compliance Offset Protocol U.S. Forest Offset Projects page on ARB’s website.

The resulting Mg carbon value after accounting for milling efficiencies is then passed to the wood products worksheets for calculating long-term landfill wood products storage. The wood products carbon is separated into product classes and multiplied by the respective 100-year average storage factor. The tables below list the assignment of wood products by class per the most current Assessment Area Data File taken from the Compliance Offset Protocol U.S. Forest Offset Projects page on ARB's website, as well as the 100-year average storage factors applied to each wood product class per table C.2 (Baseline) or C.4 (Actual) of Appendix C of the Protocol.

100-year Storage Rates Average Values from Appendix C, In Landfill

Softwood Lumber	0.298
Hardwood lumber	0.414
Softwood Plywood	0.287
Oriented Strandboard	0.233
Non Structural Panels	0.344
Miscellaneous Products	0.454
Paper	0.178

Average wood products carbon stored in landfills is calculated using equation C.7 (Baseline) or C.16 (Actual). Carbon is converted to CO₂-equivalent by multiplying by 3.667. This value is combined with IFM-7 using equation C. 9 (Baseline) or C.18 (Actual) to represent $BC_{WP,y}$ or $AC_{WP,y}$ respectively for the reporting period.

Average in-use wood products produced by the baseline analysis ($BC_{wp,y}$) are deducted from actual wood products produced each reporting period ($AC_{wp,y}$) in equation 5.1 and the resulting calculation is multiplied by 80% to account for the "Market Response".

IFM-9 Biological emissions from site preparation:

As IFM-6 is an excluded carbon pool, IFM-9 is also an excluded pool.

IFM-14 Biological emissions/removals from change in harvesting on forestland outside Project Area:

The Protocol refers to this carbon pool as Secondary Effects which are calculated using equation 5.10 of the Protocol. Secondary Effects of harvesting less than the average wood products produced by the baseline growth and yield analysis are calculated by subtracting the average carbon in harvested trees prior to delivery to a mill (PDM) generated by the baseline analysis from the actual carbon in harvested trees prior to delivery to a mill, and then multiplying the difference by 20%. As Secondary Effects are only calculated in years when actual wood products produced are less than the annual average under the baseline analysis, the resulting calculation is either zero, or a negative number.

The PDM calculation each annual reporting period will be calculated based on a ratio between the average volume of wood delivered to the mill generated by the baseline

analysis, and the average PDM value generated by the baseline analysis. Each reporting period, this ratio will be applied to the actual volume of wood delivered to a mill.

IFM-17 Biological emissions from decomposition of forest products:

This is quantified as a component of IFM-7 and IFM-8 as described above.

Stratification Methodology

The Richardson Ranch Project Area has been stratified based on a canopy height model derived from Sonoma County LiDAR data, species composition, and relative carbon stocking. Strata boundaries were hand digitized based on aerial imagery and visually field verified. Stratification has been performed post-sampling utilizing aerial photos with GIS system raster and polygon overlays. The Project Area is dominated by Coastal redwood and Douglas-fir with varying levels of hardwood species. A map of the timber stand boundaries and inventory plot locations is included as Appendix D.

Quality Assurance/Quality Control (QA/QC)

Procedures for ensuring quality control of collected data are explained in the attached Richardson Ranch Carbon Project Inventory Specification document under the “Check Cruising” heading. Data processing quality control is further described in the attached Richardson Ranch Inventory Plot Data Entry Procedures (Appendix C).

Inventory Monitoring

Updating the Inventory

As timber management activities take place on the Richardson Ranch Project Area or disturbance such as fire or mortality resulting from pathogens or other factors occurs, cruise plots installed in 2024 and 2025 will be relocated and remeasured within areas that have been harvested, treated for hardwood reduction, or subject to disturbance. The Richardson Ranch will maintain a forest inventory system that will meet the inventory specifications and requirements contained in Appendix A of the Compliance Offset Protocol U.S. Forest Projects, with plots which are no more than 12 years old.

Updating the Project's carbon stocks from the end of the last reporting period to the end of the current reporting period will involve the following steps:

1. Any newly installed inventory plots will be incorporated into the inventory estimate. Newly installed plots will be grown forward to the end of the reporting period utilizing FORSEE as described in the modeling plan.
2. Existing inventory plots that are less than 12 years old will be updated using FORSEE as described in the modeling plan. This update process will involve adjusting the plot data one year forward either by using FORSEE's "Inventory Update" tool, or through the application of average annual increment based on diameter and height increment predicted by FORSEE over the next-five-year period.
3. Plots older than 12-years will be replaced in the database by new plot data collected at the same plot location. Retired plot data will be archived as described in the Data Management Systems section above.
4. Updating the forest inventory for harvests or disturbances will involve either the installation of new plots, or adjustments to previous plot data.
 - a. If new inventory plots are installed, they will be installed at the existing plot grid locations within the harvested or disturbed portion of the Project Area.
 - i. Existing inventory plot data within the harvested or disturbed area will be removed from the inventory database.
 - ii. Harvested or disturbed areas will be stratified based on the current inventory stratification or may be placed into a new stratum representing the harvested or disturbed area.
 - b. At the discretion of the OPO, inventory updates may involve adjustments to existing plot data (depletions) that will involve the following steps:
 - i. The carbon in harvested wood products delivered to the mill will be calculated using a methodology similar to the "Harvested Wood Products Worksheet" provided by CAR and included as Appendix E herein for reference.
 - ii. Using the ratio of harvested wood carbon to harvested tree carbon calculated in Table 8 of the CAR worksheet. The carbon in harvested wood products will be multiplied by this ratio to determine the total amount of carbon subject to harvest. This carbon will be subtracted

from the carbon stock estimate derived through the inventory stock estimate generated by updating the existing inventory data as described above.

5. Disturbances related to fire, insect or disease, and unauthorized harvest will be monitored through annual inspections of the Project Area by the OPO. Portions of the Project Area affected by fire, insect or disease, or unauthorized harvest will be mapped and reported in the OPDR. If the mapped disturbed portion of the Project Area is less than 5 acres in cumulative size, no adjustment to the carbon stock inventory will be performed. For mapped disturbances between 5 and 40 acres of cumulative size, a depletion of the inventory based on the average stocking and acreage of each stratum disturbed will be calculated, or at the discretion of the OPO, new inventory plots may be installed following the procedures described in step 4(a) above. For mapped disturbances larger than 40 acres in cumulative size, new inventory plots will be installed following the procedures described in step 4(a) above.
6. The field collection of updated inventory data following harvest, hardwood reduction or disturbance will be conducted prior to the next field verification, and at a minimum within 36 months of the harvest or disturbance.
7. A revised inventory confidence deduction will be calculated each year following the update process but will only be revised following a site visit verification.
8. Any other ARB approved growth model may be used in place of FORSEE to project inventory data over time as a part of this inventory update procedure.

Appendices:

- A. Inventory Change Log
- B. The Richardson Ranch Carbon Project Inventory Specification
- C. The Richardson Ranch Inventory Plot Data Entry Procedures
- D. Plot and Strata Map
- E. CAR Harvested Wood Products Worksheet

Appendix A

Inventory Change Log

[illegible]

Appendix B

The Richardson Ranch Carbon Project Inventory Specification

(Confidential)

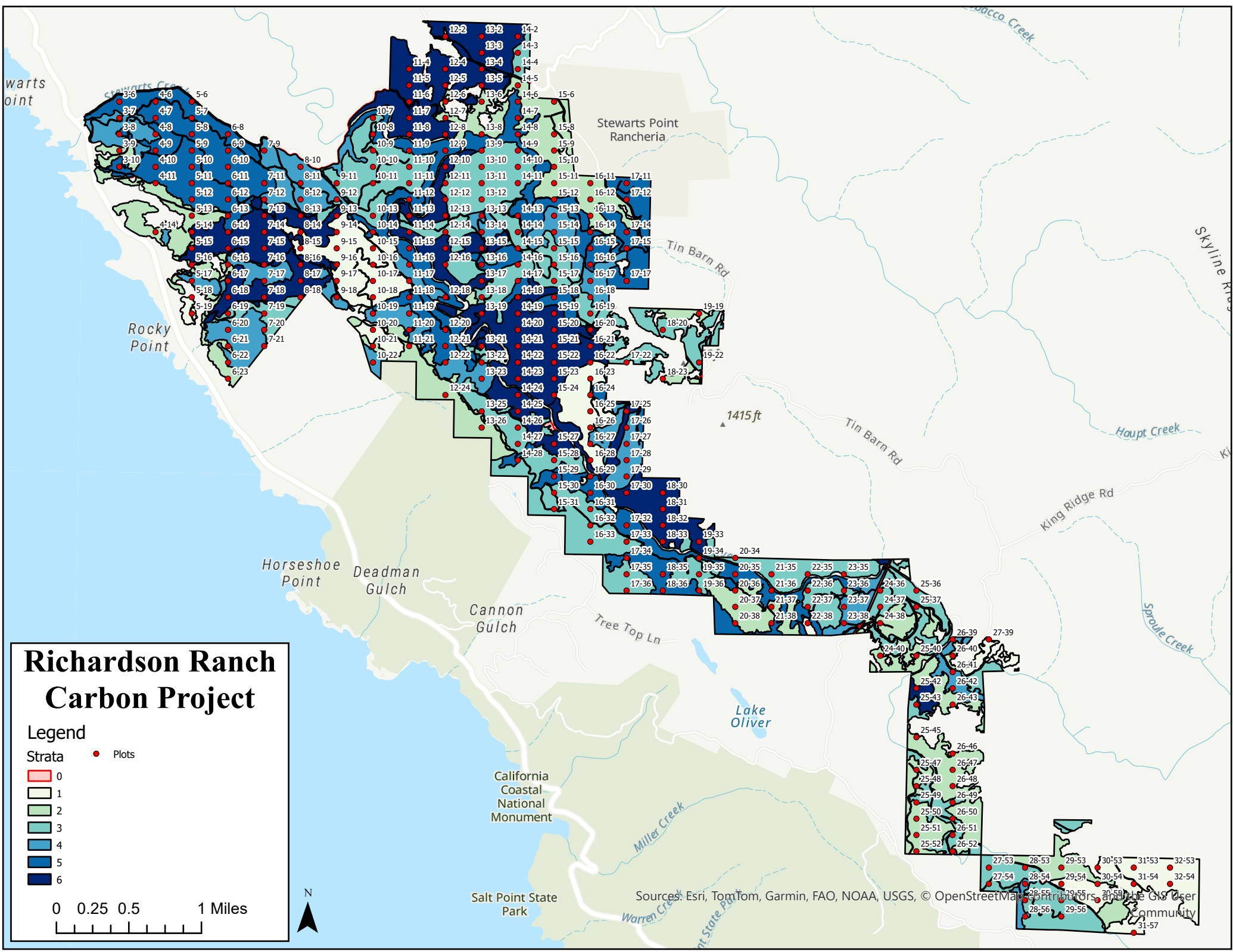
Appendix C

The Richardson Ranch Inventory Plot Data Entry Procedures

(Confidential)

Appendix D

Plot and Strata Map



Richardson Ranch Carbon Project

- Legend
- Strata
- 0
 - 1
 - 2
 - 3
 - 4
 - 5
 - 6
- Plots

0 0.25 0.5 1 Miles



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Appendix E

CAR Harvested Wood Products Worksheet

Harvested Wood Products Worksheet

The Harvested Wood Products (HWP) Worksheet is designed to standardize and facilitate the reporting of harvested wood products for each Reporting Period in the Calculation Worksheet. The HWP worksheet produces standardized outputs that Project Developers must insert into the Calculation Worksheet for the following areas:

- 1) Actual Project Carbon in Harvested Wood Delivered to Mill (tCO₂e)
- 2) Actual Project Carbon in Trees Harvested for Wood Products (tCO₂e)
- 3) Actual Project Carbon Stored Long-term in Wood Products (tCO₂e) - Excl Landfill
- 4) Actual Project Carbon Stored Long-term in Wood Products (tCO₂e) - Incl Landfill
- 5) Baseline Carbon Stored Long-term in Wood Products (tCO₂e) - Excl Landfill
- 6) Baseline Carbon Stored Long-term in Wood Products (tCO₂e) - Incl Landfill

The default values (conversions, mill efficiencies, etc) must be used unless the Project Developer can provide verifiable alternatives. The HWP worksheet is divided into 3 sections (Data Inputs, Estimates of Carbon Storage in Wood Products and Emissions associated with Harvested Trees, and Conversion Assumptions). Project Developers must make a separate copy of the HWP worksheet for each Reporting Period and submit it as part of the Annual Monitoring Report.

Section 1. Data Inputs

Table 1. Key to worksheet inputs			Table 2. Project Characteristics			Table 3. Default Wood Products Classes; Volume Totals								
The key below provides a color-coded reference to cells in this worksheet. User action is required wherever a 'Step' is mentioned.			Step 1. Using the pull-down menus where provided, enter the current reporting period project data into Table 2. If multiple hardwood and/or softwood harvest units were recorded, consolidate into one hardwood and one softwood harvest unit using the values in Table 9.			Step 2. If the default wood products classes are being used, enter the appropriate values from the Assessment Area data file and proceed to Step 3 if harvesting occurred or Step 5 if there was no harvest. If the actual distribution of wood products generated from the reporting period harvest is known, skip this step and proceed to Step 4.								
Step Guidance			Region*:	Pacific Southwest (PSW)	Softwood Lumber	Hardwood Lumber	Plywood	Oriented Strandboard	Non Structural Panels	Miscellaenous	Paper			
Project data entered by Project Developer			Reporting Period:		0%	0%	0%	0%	0%	0%	0%			
Assumptions and/or data populated automatically			Hardwood Harvest Units:	Cubic Feet	Step 3. If the default wood products classes are being used, enter the total amount of wood delivered to the mill(s) and proceed to Step 5.				Hardwood		Softwood			
Default Values			Softwood Harvest Units:	MBF-Scribner ("Large" or "Long")					Total		0	Total		
Data calculated automatically for input into the Calculation Worksheet			*From the Reserve's Assessment Area Data File.						%		#DIV/0!	%		#DIV/0!

Table 4. Volume in Logs Delivered to Mill

Step 4. Enter the name of the mill(s) and the volume of harvested wood sent to the mill(s) during the current reporting period in Table 4. Both the hardwood and softwood volumes must be categorized based on the wood product classes shown below. If wood products class data is only partially available, categorize the unknown wood products as "miscellaneous". If wood products class data is unavailable or no wood products were harvested in the current reporting period, refer to Steps 2 and 3. Default mill efficiencies are listed in Table 12. These default values may be overwritten if mill-specific data is available and verifiable.

	Hardwood							Softwood							
	Wood Product Classes							Wood Product Classes							
	Mill Efficiency	Lumber	Oriented Strandboard	Non Structural Panels	Misc Products	Mill Efficiency	Paper	Mill Efficiency	Lumber	Plywood	Oriented Strandboard	Non Structural Panels	Misc Products	Mill Efficiency	Paper
	56.8%	N/A	N/A	N/A	N/A	56.8%	N/A	67.5%	N/A	N/A	N/A	N/A	N/A	67.5%	N/A
	56.8%	N/A	N/A	N/A	N/A	56.8%	N/A	67.5%	N/A	N/A	N/A	N/A	N/A	67.5%	N/A
	56.8%	N/A	N/A	N/A	N/A	56.8%	N/A	67.5%	N/A	N/A	N/A	N/A	N/A	67.5%	N/A
	56.8%	N/A	N/A	N/A	N/A	56.8%	N/A	67.5%	N/A	N/A	N/A	N/A	N/A	67.5%	N/A
	56.8%	N/A	N/A	N/A	N/A	56.8%	N/A	67.5%	N/A	N/A	N/A	N/A	N/A	67.5%	N/A
	56.8%	N/A	N/A	N/A	N/A	56.8%	N/A	67.5%	N/A	N/A	N/A	N/A	N/A	67.5%	N/A
	56.8%	N/A	N/A	N/A	N/A	56.8%	N/A	67.5%	N/A	N/A	N/A	N/A	N/A	67.5%	N/A
Gross Total:		-	-	-	-		-		-	-	-	-	-		-
Net Total:		-	-	-	-		-		-	-	-	-	-		-

Section 2. Estimates of Carbon Storage in Wood Products and Emissions Associated with Harvested Trees

Table 5. Estimates of CO₂-equivalent (CO₂-e) in Harvested Wood Products associated with Project Activities

Units	Hardwood					Softwood						Sum
	Lumber	Oriented Strandboard	Non Structural Panels	Misc Products	Paper	Lumber	Plywood	Oriented Strandboard	Non Structural Panels	Misc Products	Paper	
Project carbon in harvested wood delivered to mills (Cubic Feet)	-	-	-	-	-	-	-	-	-	-	-	-
Project carbon in harvested wood delivered to mills (tCO ₂ e)	-	-	-	-	-	-	-	-	-	-	-	-
Project carbon transferred to wood products (Cubic Feet)	-	-	-	-	-	-	-	-	-	-	-	-
Project carbon transferred to wood products (tCO ₂ e)	-	-	-	-	-	-	-	-	-	-	-	-
% Product												0%
Long-term storage in in-use wood products (tCO ₂ e)	-	-	-	-	-	-	-	-	-	-	-	-
Long-term storage in wood products in landfills (tCO ₂ e)	-	-	-	-	-	-	-	-	-	-	-	-

Table 6. Estimates of CO₂-equivalent (CO₂-e) in Harvested Wood Products associated with Baseline Activities

Units	Hardwood					Softwood						Sum
	Lumber	Oriented Strandboard	Non Structural Panels	Misc Products	Paper	Lumber	Plywood	Oriented Strandboard	Non Structural Panels	Misc Products	Paper	
tCO2e	-	-	-	-	-	-	-	-	-	-	-	-
% Product	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long-term storage in in-use wood products (tCO2e)	-	-	-	-	-	-	-	-	-	-	-	-
Long-term storage in wood products in landfills (tCO2e)	-	-	-	-	-	-	-	-	-	-	-	-

Table 7. Calculation Worksheet Information

Table 7. Calculation Worksheet Information			Table 8. Ratio of Harvested Wood Carbon to Harvested Tree Carbon		
Calculation Sheet Inputs (for Current Reporting Period)		Row Location in Calculation Worksheet	Step 5. Enter the 100-year baseline data to calculate a ratio of carbon in trees harvested for wood products to carbon in harvested wood delivered to the mill.		
Actual Project Carbon in Harvested Wood Delivered to Mill (tCO ₂ e)	-	11 (Excel 22)	Baseline Carbon in Trees Harvested for Wood Products (tCO ₂ e) (from Excel Row 21 of the Monitoring Calculation Worksheet)		
Actual Project Carbon in Trees Harvested for Wood Products (tCO ₂ e)	-	9 (Excel 20)	Baseline Carbon in Harvested Wood Delivered to Mill (tCO ₂ e) (from Row 23 of the Monitoring Calculation Worksheet)		
Actual Project Carbon Stored Long-term in Wood Products (tCO ₂ e) - Excl Landfill	-	13 (Excel 24)	Multiplier of Carbon in Wood Delivered to Mill to Carbon in Trees Harvested for Wood Products		
Actual Project Carbon Stored Long-term in Wood Products (tCO ₂ e) - Incl Landfill	-	14 (Excel 25)			
Baseline Carbon Stored Long-term in Wood Products (tCO ₂ e) - Excl Landfill	-	15 (Excel 26)			
Baseline Carbon Stored Long-term in Wood Products (tCO ₂ e) - Incl Landfill	-	16 (Excel 27)			

Section 3. Conversion Assumptions

Table 9. Volume multipliers for converting timber and chip units to Cubic Feet		Table 10. Conversion Factors: to convert volume estimates to CO2-e		Source	Table 11. 100-year average storage factors			
		Cubic Feet / Hardwood Harvest Unit	1		Table 9.	Wood Product Class	In-Use	Landfills
Unit	Factor	Cubic Feet / Softwood Harvest Unit	145	Table 9.	Softwood Lumber	0.463	0.298	
Bone Dry Tons	71.3	SG of Softwoods by Region	0.399	Table 12.	Hardwood Lumber	0.250	0.414	
Bone Dry Units	82.5	SG of Hardwoods by Region	0.51	Table 12.	Softwood Plywood	0.484	0.287	
Cords	75	Tree Carbon:Wood Carbon	0.00	Table 8.	Oriented Strandboard	0.582	0.233	
Cubic Feet	1	Pounds to Metric Tons	0.0004535970	-	Non Structural Panels	0.380	0.344	
Cubic Meters	35.3	Portion of Carbon in Biomass	0.5	-	Miscellaneous Products	0.176	0.454	
Cunits-Chips (CCF)	100	Carbon to CO2-e	3.67	Reserve FPP	Paper	0.058	0.178	
Cunits-Roundwood	100	Density of water (lbs/cf)	62.43	-	Source: Reserve Forest Project Protocol, Appendix C.3 & C.4			
Cunits-Whole tree chip	126	Table 12. Average regional factors: specific gravity (SG) and mill efficiencies (ME)						
Green tons	31.5							
MBF-Doyle	222	Hardwoods		Softwoods				
MBF-International 1/4"	146	Region	SG	Saw Log ME	Pulp ME	SG	Saw Log ME	Pulp ME
MBF-Scribner ("C" or "Small")	165	Northeast (NE)	0.518	0.614	0.650	0.371	0.569	0.513
MBF-Scribner ("Large" or "Long")	145	Northern Lake States (NLS)	0.473	0.585	0.685	0.360	0.630	0.514
MCF-Thousand Cubic Feet	1000	Northern Prairie States (NPS)	0.537	0.585	0.685	0.434	0.630	0.514
Oven Dried Tonnes	75.8	Pacific Northwest, East (PWE)	0.424	0.568	0.568	0.396	0.637	0.637
Source: American Forest & Paper Association, Sustainable Forestry Initiative Program Annual Progress Reporting Form		Pacific Northwest, West (PWW)	0.415	0.531	0.531	0.426	0.740	0.500
		Pacific Southwest (PSW)	0.510	0.568	0.568	0.399	0.675	0.675
		Rocky Mountain, North (RMN)	0.389	0.568	0.568	0.394	0.704	0.704
		Rocky Mountain, South (RMS)	0.353	0.568	0.568	0.369	0.704	0.704
		Southeast (SE)	0.508	0.609	0.591	0.462	0.636	0.553
		South Central (SC)	0.529	0.587	0.581	0.463	0.629	0.570
		Sources: USDA Forest Service, Forest Inventory and Analysis Program database of forest surveys (SG) andTechnical Guidelines for Voluntary Reporting of Greenhouse Gas Program (ME). Average wood specific gravity is the density of wood divided by the density of water based on wood dry mass associated with green tree volume.						