TENTH LEGISLATURE OF THE CHEYENNE AND ARAPAHO TRIBES REGULAR SESSION APRIL 13, 2024 LCR, CONCHO, OK

RESOLUTION: A Resolution to Authorize Governor Reggie Wassana to sign a

Four-year (FY2024-2028) contract with the USDA Partnership for Climate Smart Commodities – Verified Regenerative Bison

Products.

RESOLUTION NO: 10L-RS-2024-04-012

DATE INTRODUCED: March 4, 2024

SPONSOR: Kendricks Sleeper, A2 District CO-SPONSOR: Rector Candy, A4 District

SUBJECT: A Resolution to Authorize Governor Reggie Wassana to sign a Four-year (FY2024-2028) contract with the USDA Partnership for Climate Smart Commodities – Verified Regenerative Bison Products.

WHEREAS: The Cheyenne and Arapaho Tribes are duly recognized by the United States Secretary of the Interior as a self-governing, Sovereign Nation, that is a federally recognized Indian Tribe with all rights, privileges, and powers attended thereto as a sovereign government, and organized in accordance with Title 25 of the United States Code, Section 450, the "Indian Self-Determination and Education Assistance Act," and Article XVII of the Tribe's Constitution and By-Laws and Section 3 of the Oklahoma Indian Welfare Act of June 26, 1936 (49 Stat. 1967), under an amended Constitution ratified on August, 2006 and approved by the Secretary of Interior on May 17, 2006; and

WHEREAS: Article VI, Section 5(a) of the Constitution provides that the Legislative power shall be vested in the Legislature; and

WHEREAS: Article VI, Section 5(a) of the Constitution grants the Legislature the power to make laws and resolutions in accordance with the Constitution which are necessary and proper for the good of the Tribes; and

WHEREAS: Article VII, Section 4(d) of the Constitution requires that the Legislature or Tribal Council give prior authorization for the signing of contracts by the Governor; and

WHEREAS: The Legislature has the Constitutional obligation and public responsibility to the Tribes to oversee the Tribes' operations in order to establish and promote justice,

establish guidance and direction for the government and advance the general welfare of the Tribes; and

WHEREAS: The Tribes were awarded the USDA Partnerships for Climate Smart Commodities Grant in 2023 for \$7.0 million and will need to execute the project objectives in 2024-2028,

Program: Agriculture Program; and

WHEREAS: The Grant will develop a demonstration program on tribal lands, implementing and expanding multiple climate-smart practices in the production of American bison. This grant will showcase the benefits of regenerative bison production to rangeland, ranchers, and climate. It will also increase climate resilience of ranching operations, reduce net greenhouse gas (ghg) emissions, and direct the financial benefits of climate-smart commodity production to ranchers, including tribal groups and early adopters; and

WHEREAS: The Grant requires collaboration with multiple sub-awardees to complete the scientific research as defined by the project objectives. Per the budget narrative, these sub-awardees will work along with the Cheyenne and Arapaho Tribes' Agriculture program to develop the demonstration program within our tribal lands; and

NOW THEREFORE BE IT RESOLVED that the Tenth Legislature of the Cheyenne and Arapaho Tribe, pursuant to its Constitutional authority, determines that it is in the best interest of the Cheyenne and Arapaho Tribes to authorize Governor Wassana to sign these agreements with sub-awardees as well as any and all contracts related to the Climate Smart Grant.

Kendricks Sleeper, Speaker of the Tenth Legislature Cheyenne and Arapaho Tribes



ATTEST:

I, Jodi White Buffalo, Legislative Clerk, hereby certify that the foregoing is a True and Accurate Copy of the Original Bill No. 10L-RS-2024-04-012 which was acted upon by the Legislature of the Cheyenne and Arapaho Tribes in the Tenth Legislature Special Session, by a roll call vote on the 13th day of April 2024, by a vote.

VOTE RECORD:

DISTRICT	LEGISLATOR		YES	NO	ABSTAIN	ABSENT
A1	Diane Willis					
A2	Kendricks Sleeper					
A3	Travis Ruiz					
A4	Rector Candy					
C1	Bruce Whiteman, Jr.					
C2	George Woods					
C3	Thomas Trout					
C4	Byron Byrd					
	7	TOTAL				
	Passes () Fails () Ta	bled () Allowed	to Die () No Action	n ()

Jodi White Buffalo, Legislative Clerk Tenth Legislature, Cheyenne and Arapaho Tribes



ATTEST:

Pursuant to Article VI, Section 7, subsection (a)(iv) of the Tribes Constitution reads in part: "All Bills passed by the Legislature shall be presented to the Governor for signature or veto. All laws shall take effect thirty days after signature by the Governor or veto override by the Legislature unless any Member of the Tribes submits to the Coordinator of the Office of Tribal Council a petition signed by at least one hundred fifty Members of the Tribal Council seeking to repeal the law or resolution at the next Tribal Council meeting. If the Tribal Council fails to repeal such law or resolution at the next Tribal Council where the matter has been properly placed on the agenda for the Tribal Council meeting, such law or resolution shall become effective immediately."

Pursuant to Article VII, Section 4, subsection (g) of the Tribes Constitution reads: "The Governor shall have the power to sign any enactment passed by the Legislature into law or to veto any enactment passed by the Legislature within ten days of passage with a written explanation of any objections; and if the Governor takes no action within ten days, then the enactment shall become law in accordance with this Constitution."

{ } APPROV! { } VETOED		vritten explanation of any objections.	
On the	_ day of	_, 2024.	

Reggie Wassana, Governor Cheyenne and Arapaho Tribes



TRANSMITTAL OF DOCUMENTS:

From the Legislative Branch to the Office of Records Management

ATTEST:

Pursuant to Article VI, Section 7, subsection (a)(v), of the Tribes Constitution reads, "The Office of Records Management shall compile all Laws and Resolutions into a comprehensive Code in an orderly manner that shall be published annually."

Office of Records Management Staff, hereby certify that the foregoing is a True and Accurate Original Resolution No. 10L-RS-2024-04-012.

Space below is reserved for Stamp:

Received (Date) Office of Record Management

Signature:
Print Name:
Title:
Date:
Office of Records Management
Department of Administration, Executive Branch
Cheyenne and Arapaho Tribes





NOTICE OF GRANT AND AGREEMENT AWARD

Award Identifying Number 2. Amendment Number		nent Number	3. Award /Project Per	iod	4. Type of award instrument:	
NR233A750004G079			Date of final signate 08/07/2028	ure -	Grant Agreement	
5. Agency (Name and Address)			6. Recipient Organization (Name and Address)			
USDA Partnerships for Climate-Smart Commodities c/o FPAC-BC Grants and Agreements Division 1400 Independence Ave SW, Room 3236 Washington, DC 20250 Direct all correspondence to FPAC.BC.GAD@usda.gov			CHEYENNE ARAPAHO TRIBE PO BOX 8 CONCHO OK 73022-0008 UEI Number / DUNS Number: K26TL2SG17E7 / 145309993 EIN:			
7. NRCS Program Contact		Administrative ontact	9. Recipient Program Contact		10. Recipient Administrative Contact	
		rnie Wilson 01) 844-2916 rnie.Wilson@usda.	Name: Lorna Carter Phone: (405) 422-7711 Email: Icarter@cheyenneandarapaho-		Name: Lorna Carter Phone: (405) 422-7711 Email: Icarter@cheyenneandarapaho- nsn.gov	
11. CFDA	12. Author	ity	13. Type of Action		14. Program Director	
10.937 15 USC 7		14 et seq	New Agreement		Name: Lorna Carter Phone: (405) 422-7711 Email: Icarter@cheyenneandarapaho- nsn.gov	
15. Project Title/ Description: E rancher implementation and mo				nd Tribal a	reas and supports farmer and	
16. Entity Type: I = Indian/Nativ	ve Americar	n Tribal Government ((Federally Recognized))		
17. Select Funding Type						
Select funding type:		⊠ Federal	☐ Non		on-Federal	
Original funds total		\$6,999,356.00		\$0.00		
Additional funds total		\$0.00		\$0.00		
Grand total		\$6,999,356.00 \$0.00		\$0.00		
18. Approved Budget						

Personnel	\$1,267,999.00	Fringe Benefits	\$342,359.00
Travel	\$25,025.00	Equipment	\$0.00
Supplies	\$1,750,329.00	Contractual	\$17,443.00
Construction	\$0.00	Other	\$3,596,201.00
Total Direct Cost \$6,405,707.00		Total Indirect Cost	\$593,649.00
		Total Non-Federal Funds	\$0.00
		Total Federal Funds Awarded	\$6,999,356.00
		Total Approved Budget	\$6,999,356.00

This agreement is subject to applicable USDA NRCS statutory provisions and Financial Assistance Regulations. In accepting this award or amendment and any payments made pursuant thereto, the undersigned represents that he or she is duly authorized to act on behalf of the awardee organization, agrees that the award is subject to the applicable provisions of this agreement (and all attachments), and agrees that acceptance of any payments constitutes an agreement by the payee that the amounts, if any, found by NRCS to have been overpaid, will be refunded or credited in full to NRCS.

Name and Title of Authorized Government Representative	Signature	Date
KATINA HANSON Acting Senior Advisor for Climate-Smart Commodities		
Name and Title of Authorized Recipient Representative REGGIE WASSANA Govenor	Signature Julian	Date 8-11-2023

NONDISCRIMINATION STATEMENT

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW., Washington, DC 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

PRIVACY ACT STATEMENT

The above statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. Section 522a).

Statement of Work

Purpose

The purpose of this agreement, between the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) and Cheyenne and Arapaho Tribes (Recipient), is to build markets for climate-smart commodities and invest in America's climate-smart producers to strengthen U.S. rural and agricultural communities.

Objectives

The objectives of this project are to support the production and marketing of climate-smart commodities by providing voluntary incentives to producers and landowners, including early adopters, to implement climate-smart agricultural production practices, activities, and systems on working lands; measure/quantify, monitor and verify the carbon and greenhouse gas (GHG) benefits associated with those practices; and develop markets and promote the resulting climate-smart commodities.

Budget Narrative

The official budget summarized below and described in the attached Budget Narrative will be considered the total budget as last approved by the Federal awarding agency for this award.

Amounts included in this budget narrative are estimates. Reimbursement or advance liquidations will be based on actual expenditures, not to exceed the amount obligated.

TOTAL BUDGET \$6,999,356

TOTAL FEDERAL FUNDS \$6,999,356
PERSONNEL \$1,046,808
FRINGE BENEFITS \$282,638
TRAVEL \$20,660
EQUIPMENT \$0
SUPPLIES \$1,445,000
CONTRACTUAL \$14,400
CONSTRUCTION \$0
OTHER \$3,596,201 (includes PRODUCER INCENTIVES \$0)
TOTAL DIRECT COSTS \$6,405,707
INDIRECT COSTS \$593,649

TOTAL NON-FEDERAL FUNDS \$0
PERSONNEL \$0
FRINGE BENEFITS \$0
TRAVEL \$0
EQUIPMENT \$0
SUPPLIES \$0
CONTRACTUAL \$0
CONSTRUCTION \$0
OTHER \$0 (includes PRODUCER INCENTIVES \$0)
TOTAL DIRECT COSTS \$0
INDIRECT COSTS \$0

Recipient has an approved Negotiated Indirect Cost Rate Agreement (NICRA) with a rate of 21.13% and a base of Total direct costs, less capital expenditures and passthrough funds. Passthrough funds are normally defined as payments to participants, stipends to eligible recipients, or subawards, all of which normally require minimal administrative effort.

Ensure that equipment purchased with Federal funds is used until no longer needed as described in the General Terms and Conditions and 2 CFR 200. If the residual value of the equipment is \$5,000 or more at the time it is no longer needed, the recipient must request disposition instructions. The disposition instructions may direct the recipient to: 1) sell the equipment and return a proportionate share of the proceeds to the Federal agency; 2) transfer title to another eligible entity identified by the Federal agency; or 3) keep the equipment if desired and compensate the Federal agency for its proportionate share of the value.

Responsibilities of the Parties:

If inconsistencies arise between the language in this Statement of Work (SOW) and the General Terms and Conditions attached to the agreement, the language in this SOW takes precedence.

RECIPIENT RESPONSIBILITIES

Perform the work and produce the deliverables as outlined in this Statement of Work and attachments.

Ensure Paperwork Reduction Act (PRA) clearance is obtained prior to conducting data collection from producers or other project participants, including data collection performed by subrecipients.

Comply with the applicable version of the General Terms and Conditions.

Submit reports and payment requests to the ezFedGrants system as outlined in the applicable version of the General Terms and Conditions. Reporting frequency is as follows:

Performance Reports: Quarterly

SF425 Financial Reports: Quarterly

Detailed Progress Report: Quarterly

(The detailed progress report is in addition to the performance and financial reports referenced above and described in

the general terms and conditions)

Expected Accomplishments and Deliverables

See attached Benchmarks Table and associated Project Narrative.

Resources Required

See the Responsibilities of the Parties section for required resources, if applicable.

Milestones

See attached Benchmarks Table and associated Project Narrative.

GENERAL TERMS AND CONDITIONS

Please reference the below link(s) for the General Terms and Conditions pertaining to this award: https://www.fpacbc.usda.gov/about/grants-and-agreements/award-terms-and-conditions/index.html

Attachments:
Budget Narrative
Project Narrative
Benchmarks Table
Climate-Smart Practices List and Limitations
Data Dictionary
Climate-Smart Specific Terms and Conditions

BUDGET NARRATIVE

Demonstration, Expansion, and Quantification of the Benefits of a Climate Smart Commodity: Verified Regenerative Bison Products

Туре	Organization	Personnel	Fringe and benefits	Travel	Supplies	Equipment	Contractual	Indirect	Other	Total
Prime award	Cheyenne and Arapaho Tribes.	\$1,046,808	\$282,638	\$20,660	\$1,445,000	\$0	\$14,400	\$593,649	\$3,596,201	\$6,999,356
Subaward 1	Collaborative Earth	\$660,000	\$178,200	\$36,288	\$28,792	\$118,983	\$786,980	\$112,168	\$218,400	\$2,139,811
Subaward 2	Frasier Bison LLC	\$156,000		\$6,011			\$171,605	\$33,362		\$366,977
Subaward 3	TAMU	\$164,943	\$28,815	\$27,680	\$88,000			\$233,533	\$234,011	\$776,982
Subaward 4	Mad Ag	\$227,200		\$12,828	\$4,000		\$40,000	\$28,403		\$312,431

PERSONNEL \$1,046,808

The personnel listed below are for the applicant organization: Cheyenne and Arapaho Tribes.

Project Director – Ryan Long will oversee the overall project management, coordination, and reporting.

Salary	% Effort	Project Duration	Amount Requested
\$124,800	48.5	48 months	\$242,112

Communications and Outreach Specialist – This individual will design and conduct education and outreach efforts to bring other producers into the practices required for verified regenerative bison. Outreach will begin in year three of the project once progress has been made toward completion of the demonstration project on tribal lands.

•	Salary	% Effort	Project Duration	Amount Requested
	\$62,400	100	24 months	\$124,800

Regenerative Project Executive – This individual will implement regenerative work on the ground. They will work under the direction of Ryan Long, and with input from the regenerative bison advisory committee.

Salary % Effor		% Effort	Project Duration	Amount Requested		
	\$135,000	100	48 months	\$540,000		

Bison Ranch Manager – Randy Hawk manages tribal buffalo herds. He will work closely with the Project Executive to implement new practices of bison herd management and to transition fields.

Salary	% Effort	Project Duration	Amount Requested	
\$58,340	30	48 months	\$70,008	

Equipment Operator – this individual operates all heavy equipment required for regenerative work described in the proposal, including seeding and inter-seeding, invasive species removal, fence installation.

Salary	Salary % Effort		Project Duration	Amount Requested	
\$49,920	35		48 months	\$69,888	

FRINGE BENEFITS \$282,638

Calculated at 27% of salaries: \$282,638

TRAVEL \$20,660

The Cheyenne and Arapaho Tribes' travel policy will be used for the duration of the project.

- 1 person to travel to in person partnership meeting two times per year for the duration of the four-year project:
 - Airfare \$550/trip x 8 trips = \$4,400
 - Lodging for 24 nights @ \$114 = \$2,736
 - Meals for 24 days @ \$70/day = \$1,680
 - Car rental for 24 days @ \$55/day = \$1,320
 - Fuel for 24 days @ \$55/day = \$1,320
 - Total for trip = \$11,456
- Local travel for project director is calculated at \$0.65 through primary service area x 150 miles/month for 48 months \$4,680.
- Local travel for the bison ranch manager is calculated at \$0.65 through primary service area x 145 miles/month for 48 months \$4,524.

SUPPLIES \$1.445.000

Supplies are for the conversion of cropland to perennialized native grasslands, inter-seeding of Forbes, legumes, and native grass into existing pastures, perennializing land with invasive species to productive grasslands, and supplies for riparian restoration.

The below estimates are based on past experiences:

- \$550,000 Seed and nutrient for perennialization of acres transitioning from crop land to native grass. \$260 per acre x 2,115 acres.
- \$275,000 Forbes, legume, and native grass inter-seeding of existing pasture. \$150 per acre x 1,830 acres.
- \$300,000 Seed for planting riparian areas. \$200 per acre x 1,500 acres.
- \$160,000 Seed and nutrient for perennialization of acres transitioning from invasive trees and shrubs native grass. \$260 per acre x 615 acres.
- \$160,000 Fencing for bison operations to allow proper sequestration systems as required within prescribed tribal lands. The estimated cost for fencing materials and labor costs is \$30/linear foot to install approximately 5,330 linear feet of fencing for bison.

CONTRACTUAL \$14,400

The verified regenerative bison advisory panel will include four individuals who advise on our practices in implementing the demonstration project, and on the practice-based and outcome- based requirements under the new verification program. The panel will include: one representative from MadAg, who is budgeted as part of the MadAg subaward; Tim Fraser, who is budgeted as part of the Fraser Bison LLC subaward; one representative from the Intertribal Buffalo Council; and one representative from the Soil Health Academy. The advisory panel will meet twice per year in the first two years of the project, and once per year in years three and four.

- I.T.B.C. representative to the verified regenerative bison advisory panel. \$1,200 per meeting, fee for attending six two-day meetings = \$7,200.
- Soil Health Academy representative to the verified regenerative bison advisory panel. \$1,200 per meeting, fee for attending six two-day meetings = \$7,200.

INDIRECT CHARGES \$593,649

Indirect charges of 21.13% will be charged by the Cheyenne and Arapaho Tribes on the project categories below:

- personnel (\$1,046,808 x21.13%)
- fringe (\$282,638 x 21.13%)
- travel (\$20,660 x 21.13%)
- supplies (\$1,445,000 x 21.13%)
- contractual (\$14,400 x 21.13%)

OTHER- \$3,596,201

SUBAWARD#1: COLLABORATIVE EARTH (formerly called Earthshot Institute) \$2,139,811

Collaborative Earth (formerly known as Earthshot Institute) is a non-profit open-science and technology organization. We coordinate and support work among academic scientists and engineers from the technology sector. For three reasons, we can operate with significantly lower overhead costs than Universities: First, we are a distributed, remote-work organization taking full advantage of networking and coworking technologies. Second, we rely on open-source technologies for our work. And third, we receive significant in-kind donations of high-cost expert labor from the technology sector, among others.

Collaborative Earth, through its personnel and contractors, will be responsible for design of sampling and measurement systems to track GHG emissions and sequestration, data analysis, construction of models, preparation of scientific publications, and development of streamlined measurement and monitoring techniques for future adopters of Verified Regenerative Bison production.

Collaborative Earth will bring together three areas of advanced science and technology to measure the effects of regeneratively managed Bison on overall GHG emissions and to develop mrv methodologies for future adopters: i. soil biogeochemistry; ii. flux tower measurement of GHG flows; and iii. remote-sensing and machine-learning analysis to scale up on-the-ground measurements, lowering costs for future adopters.

Field work and laboratory will be performed by CE postdoctoral research fellows in the three areas of interest. These fellows will be overseen and supported by one recognized authority in each scientific area (soil biogeochemistry flux towers; and remote sensing and machine-learning), whom CE engages as independent contractors to oversee this work throughout the project.

PERSONNEL for Collaborative Earth \$660,000

The personnel listed below are for the subawardee Collaborative Earth (CE).

Project Director – Aaron Hirsh will be responsible for coordinating the research activities described here, involving three CE Postdoctoral Fellows, Dr. Stephen Porder, Dr. Paul Stoy, Dr. James Kellner, and the soil analysis laboratories Cquester and Haystack Ag. Dr. Hirsh will also collaborate on integrative data-analysis and modeling, combining soil analysis, flux-tower results, and remote sensing, and on preparation of results for publication.

Salary	% Effort	Project Duration	Amount Requested
\$150,000	20	48 months	\$120,000

Postdoctoral Fellow in Grassland Soil Science and Carbon Cycle Modeling – This individual will work with Dr. Porder to design sampling strategies. They will take soil cores, analyze lab results, and work with the other parts of CE to model and account for project wide GHG emissions and sequestration. The Fellow will also participate in devising guidelines and protocols for regenerative bison verification. The individual will be hired for the first two years of the grant period and will then return to the project for the final three months of the grant period (months 46 through 48), to participate in analysis and publication of final results.

Salary	% Effort	Project Duration	Amount Requested
\$80,000	100	27 months	\$180,000

Postdoctoral Fellow in Flux Towers and Carbon Cycle Modeling – This individual will deploy flux towers to directly measure net methane and carbon dioxide emissions in fields grazed by bison versus cattle. The Fellow will analyze flux tower results and work with other parts of CE to model and account for project wide GHG emissions and sequestration. The Fellow will also participate in devising guidelines and protocols for regenerative bison verification. The individual will be hired for the first two years of the grant period and will then return to the project for the final three months of the grant period (months 46 through 48), to participate in analysis and publication of final results.

Salary	% Effort	Project Duration	Amount Requested
\$80,000	100	27 months	\$180,000

Postdoctoral Fellow in Remote Sensing and Machine Learning – This individual will develop and use RS and ML methods to extrapolate from a limited number of field measurements to the total area of generated land. They will analyze the data provided by the soil sampling done for this project. In addition, they will incorporate data from other studies (not funded by this project) to contribute to best-available estimates of the overall ghg budget of different grazing practices. The methods they develop will reduce costs for future adopters of verified regenerative Bison

methodologies to estimate the net effects of their practices on ghg emissions. This individual will work with the other parts of CE to model and account for project-wide ghg emissions and sequestration. The Fellow will also participate in devising guidelines and protocols for regenerative bison verification. The individual will be hired for the first two years of the grant period and will then return to the project for the final three months of the grant period (months 46 through 48), to participate in analysis and publication of final results.

Salary	% Effort	Project Duration	Amount Requested
\$80,000	100	27 months	\$180,000

Fringe Benefits for Collaborative Earth \$178,200

Calculated at 27% of salaries: \$660,000 salaries @ 27% = \$178,200.

TRAVEL FOR COLLABORATIVE EARTH \$ 36,288

Travel Policy: Employees utilize their company credit card to pay directly for travel related expenses at the time of travel or booking. These direct costs will be recorded, and actual costs provided at time of claim-reimbursements and financial reporting. For budgeting, reimbursement, and determination of allowable costs, we use mileage and per-diem lodging, and meal estimates in accordance with Federal Guidelines. Per diem rates are calculated according to the GSA CONUS calculator: https://www.gsa.gov/travel/plan-book/per-diem-rates. And allowable mileage costs are determined in accordance with. https://www.gsa.gov/travel/plan-book/transportation-airfare-pov-etc/privately-owned-vehicle-pov-mileage-reimbursement-rates?gsaredirect=mileage.

Exceptions to these may be made in cases where different mileage, lodging, or meal costs can be justified based on documented local rates and expenses, including unusually difficult terrain for ground travel, or high average local rates for lodging and food, such as in major cities. Such Exceptions will be noted in budget line-items where they are made.

Collaborative Earth does not cover costs for entertainment or non-work-related meals.

Project Director Aaron Hirsh to travel to Concho, Oklahoma once a year, for two days, for the four-year project to coordinate MMRV and research activities with regenerative work on the ground (total 4 trips, total 8 days).

- Airfare @ \$550 x 4 trips = \$2,200
- Lodging @ \$98 per diem x 8 days = \$784 Meals @ \$59 per diem x 8 days = \$472 Car rental @ \$55 per day x 8 days = \$440
- Fuel @ \$55/day x 8 days = \$440 Total: \$4,336

The CE Postdoctoral Fellow in Grassland Soil Science will make two trips in year one of the project (one trip of four days for planning, a second trip of 28 days for taking soil cores), one trip in year two (four days for participation in planning of the verified regenerative bison program), and one trip in year four of the project (28 days for taking soil cores; a total of four trips) (total 4 trips, total 42 days).

- Airfare @ \$550 x 4 trips = \$2,200
- Lodging @ \$98 per diem x 64 days = \$6,272
- Meals @ \$59 per diem x 64 days = \$3,776
- Car rental @ \$55 per day x 64 days = \$3,520
- Fuel \$30 per day x 64 days = \$1,920
- Total: \$17.688

The CE Postdoctoral Fellow in Flux Towers and Carbon Cycle Modeling will take two trips in year one of the project (one will by air, for planning flux tower placement; a second will be by truck, transporting the flux towers), one trip in year two (for participation in planning of the verified regenerative bison program), and one trip, by truck, in year three or four (for relocation or removal of the flux towers). (Total 4 trips, total 22 days)

- Airfare @ \$550 x 2 trips = \$1,100
- Lodging @ \$98 per diem x 22 days = \$2,156
- Meals @ \$59 per diem x 22 days = \$1,298
- Car rental @ \$55/day x 22 days = \$1,210
- Fuel @ \$55/day x 22 days = \$1,210
- Total: \$6,974

Travel for Stephen Porder

Dr. Porder, who is listed below, in OTHER, will make one trip in each of the first two years of the project for on-the-ground planning of soil sampling and flux tower installation, and for meetings on the development of new standards and verification processes for verified regenerative bison (total 2 trips, total 8 days).

- Airfare @ \$550 x 2 trips = \$1,100
- Lodging @ \$98 per diem x 8 days = \$784
- Meals @ \$59 per diem x 8 days = \$472
- Car rental @ \$55 per day x 8 days = \$440
- Fuel @ \$55/day x 8 days = \$440
- Total: \$2.836

Travel for Paul Stoy

Dr. Stoy, who is listed below, in OTHER, will make one trip in each of the first two years of the project for on-the-ground planning of soil sampling and flux tower installation, and for meetings on the development of new standards and verification processes for verified regenerative bison (total 2 trips, total 8 days).

- Airfare @ \$550 x 2 trips = \$1,100
- Lodging @ \$98 per diem x 8 days = \$784

- Meals @ \$59 per diem x 8 days = \$472
- Car rental @ \$55 per day x 8 days = \$440
- Fuel @ \$55/day x 8 days = \$440
- Total: \$2,836

Travel for Gisel Booman

Dr. Booman, who is listed below, in OTHER, will make one trip in the second year of the project to participate in meetings on the development of new standards and verification processes for verified regenerative bison.

- Airfare @ \$550 x 1 trips = \$550
- Lodging @ \$98 per diem x 4 days = \$392
- Meals @ \$59 per diem x 4 days = \$236
- Car rental @ \$55 per day x 4 days = \$220
- Fuel @ \$55/day x 4 days = \$220
- Total: \$1,618

CONTRACTUAL FOR COLLABORATIVE EARTH \$786,980

The services listed below are engaged as independent contractors to Collaborative Earth. Procurement standards identified in CRF 200.318 to 327 will be followed.

Cquester Analytics and Haystack Ag

Soil analysis will be performed by Cquester Analytics and Haystack Ag. The analyses include bulk density, percent C and percent N, fizz test, Inorg C, Mid IR, SOM fractional (POM & MAOM by size), texture, pH, total organic carbon.

An important component of this project is the development of rigorous yet cost-effective methods for assessing soil-carbon stocks in grasslands. Only with such methods available to producers will it be possible to scale production and markets of products that command an augmented price because of their verified effects on ghg emissions. To advance the development of such methods, in this project we are comparing the gold standard of soil analysis, conducted by Cquester Analytics, with two different technologically advanced lower-cost options. One is MIR spectroscopic analysis, a leading-edge technology, which will be implemented by Cquester, in addition to more traditional analyses. The other is a new system for automated high-throughput soil carbon analysis, which will be implemented by HaystackAg. Through the comparison of these three methods brought to bear on the same soil samples, we will design sampling strategies that will be rigorous yet cost effective.

Cquester Analytics price list, by soil test, per unit

Unit price (including 8.8% profit)	2023	2024	2025	2026
core splitting	\$ 11.00			\$ 13.00
Bulk density	\$ 26.00			\$ 28.00
рН	\$ 6.00			\$ 7.00
texture (hydrometer)	\$ 12.50			\$ 14.00
Inorganic C	\$ 12.50			\$ 14.00
total %C	\$ 12.50			\$ 14.00
total %C & %N	\$ 18.50			\$ 20.00
Mid_IR	\$ 6.00			\$ 7.00
POM & MAOM by size	\$ 67.00			\$ 74.00
fizz test	\$ 1.00			\$ 1.20

Project units for analysis by Cquester Analytics

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project units		2023	2024	2025	2026				
#cores		600	0	0	600				
#depths		4	0	0	4				
# samples		2400	0	0	2400				
#fields	6								
# cores	100								

Total budget for Cquester Analytics

Budget		2023	2024	2025		2026
core splitting	\$	6,019.20	\$ -	\$ -	\$	7,114
Bulk density	\$	56,909	\$ -	\$ -	\$	61,286
EA (%C&%N)	\$	40,493	\$ -	\$ -	\$	43,776
fizz test	\$	2,189	\$ -	\$ -	\$	2,627
Inorg C	\$	13,680	\$ -	\$ -	\$	15,322
Mid IR	\$	13,133	\$ -	\$ -	\$	15,322
POM & MAOM by size	\$	146,650	\$ -	\$ -	\$	161,971
texture	\$	27,360	\$ -	\$ -	\$	30,643
pH	\$	13,133	\$ -	\$ -	\$	15,322
Sub-Total	\$3	19,564.80	\$ -	\$ -	\$3	53,381.76
Profit (8.8%)	\$	30,835.20	\$ -	\$ -	\$	34,098.24
Total	\$3	50,400.00	\$ -	\$ -	\$3	87,480.00

- Cquester Analytics 2023 = \$350,400
- Cquester Analytics 2026 = \$387,480
- Total Cquester Lab = \$737,880

Sole source justification: Cquester Analytics is an advanced, expert-led soil analysis laboratory that helps small and large organizations accurately and comprehensively analyze soil carbon (C) and other metrics essential to determine soil C stocks and overall soil health, and how they change in response to management, disturbance, or experimental treatments. Cquester Analytics is founded and managed by an established team with an expert background in soil organic matter and C sequestration research, soil sampling, lab processing, and analysis. At Cquester Analytics, analytical protocols derived from a long tradition of soil science research and published in peer- reviewed literature are performed with high scientific rigor and care.

Furthermore, the Cquester Analytics' team consists of world leaders in the separation of soil organic matter in physical fractions with unique behaviors, in terms of capacity of accrual, persistence and vulnerability. To our knowledge, Cquester Analytics is the only private analytical facility which provides the analyses of soil organic matter physical fractions, including particulate and mineral-associated organic matter, and their C and N stocks.

Additionally, Cquester Analytics is the only private analytical facility which provides the analyses of soil chemical features via Mid-Infrared Spectroscopy enabling also the application of prediction models for the estimation of a high number of soil characteristics.

HaystackAg price list, by soil test, per unit

Test/Unit by Year, including 9% profit	2023	2024	2025	2026
Core Splitting (if necessary)	\$ 10.00	\$ 9.00	\$ 8.00	\$ 7.00
Total Organic Carbon	\$ 6.00	\$ 5.00	\$ 4.00	\$ 3.00
POM/MAOM fractionation (size method	\$ 36.00	\$ 29.00	\$ 22.00	\$ 15.00
Bulk Density	\$ 7.00	\$ 6.00	\$ 5.00	\$ 4.00

Project units for analysis by HaystackAg

	2023	2024	2025	2026
Total Cores Taken	600			600
Cores used for A/B testing	100			300
Depth Layers per Core	4			4
Samples for A/B testing	400			1200

Total budget for HaystackAg

	 , 0 10.0.2 19			
Overall Costs	2023	2024	2025	2026
Core Splitting	\$ 910	\$ -	\$ -	\$ 1,911
Total Organic	\$ 2,184	\$ -	\$ -	\$ 3,276
POM/MAOM	\$ 13,104	\$ -	\$ -	\$ 16,380
Bulk Density	\$ 2,548	\$ -	\$ -	\$ 4,368
Sub-Total	\$ 18,746	\$ -	\$ -	\$ 25,935
Haystack Pro	\$ 1,854	\$ -	\$ -	\$ 2,565
Total	\$ 20,600	\$	\$ -	\$ 28,500

- Haystack Ag 2023 = \$20,600
- Haystack Ag 2026 = \$28,500
- Total Haystack Ag = \$49,100

Single-source justification for Haystack Ag: To fully unlock regenerative agriculture's potential at scale, we need a more cost-effective and accurate way to measure changes in carbon over time. Haystack Ag is solving this unmet need through the development of a high-accuracy, low-cost soil organic carbon verification service that allows for both sufficient grower incentives and increased sample density, improving scientific credibility, trust, credit value, and market scalability. Haystack's initial service offering is focused on a market leading lab measurement service (\$0.5-5/sample for

SOC, steadily decreasing over time), and as such it will be critical to validate their technology against rigorous gold standards (i.e., Cquester Analytics). This pairing of lab providers will deliver a strong proof of concept for lowering the cost of MRV by pairing one of the most scientifically rigorous traditional soil laboratories (Cquester) with an emerging automated analysis provider developing less expensive and higher-throughput carbon measurement approaches (Haystack).

EQUIPMENT FOR COLLABORATIVE EARTH \$118,983

Soil Core Sampling. One hydraulic earth drill, with tripod and hollow auger will be purchased to accelerate collection of soil core samples at scale. The quote we have received for this device is \$8,983. Given the large number of cores that will be taken in this study, use of such a tool will be an economical choice to accelerate collection.

Flux-tower methane sensors. Mobile flux towers equipped to measure CO2 are owned by project team members. Two flux-tower methane sensors will need to be purchased and equipped to the existing towers.

\$8,983 Hydraulic earth drill, tripod, and hollow auger

\$110,000 Flux-tower methane sensors (2 x \$55,000 each)

SUPPLIES FOR COLLABORATIVE EARTH \$28,792

- Computational resources (server time) used by the CE Postdoctoral Fellows for remote sensing analysis, machine learning, and carbon cycle modeling. \$300 per month for 27 months = \$8,100.
- Computers for all three CE Postdoctoral Fellows: \$1,300 per computer (\$1,300 x 3) = \$3,900.
- Stereo cameras for flux towers track positions of animals in the field, enabling inference of the origin of methane emissions based on combined air flux and visual information: Zed2 Stereo Cameras (8 x \$524 each) = \$4,192
- \$700 Auger fuel and parts
- \$10,500 Soil core packing supplies and shipping costs Reno, OK to Fort Collins, CO
- 700 cores taken in 2023, 700 cores taken in 2026.

Shipping	UPS Dropoff Ra	ate
UPS Flat Rate - 50 lbs		
El Reno, OK to Fort Collins, CO - box option one	\$ 26.05	
El Reno, OK to Fort Collins, CO - box option two	\$ 21.05	
Nominal Core Weight		
Nominal Diameter	5	cm
Nominal Length	100	cm
Nominal Volume	1963.50	cm^3
Full Nominal Volume Shipped	1963.50	cm^3
Volume/Core	119.82	inches^3
Volume/Sample	29.95	inches^3
Volume/Sample	16.60	oz
Dry Soil Bulk Density_Max	1.65	g/cm^3
Avg. Water Content_Conservative	45.0%	
Composite Wet Density	2.39	g/cm^3
Nominal Mass/Core	4697.66	g
Nominal Mass/Core	10.36	lbs
Box Weight (48 x 6 x 6, 200# test)	1.14	lbs
Box Length	48	inches
Box Width	6	inches
Box Height	6	inches
Box Cost	\$ 2.75	
Core Liner Wall Thickness	0.102	cm
Core Liner Volume	162.836	cm^3
Core Liner Density	1.300	g/cm^3
Core Liner Weight	0.4667	lbs
Plastic Core Liners Cost	\$ 0.300	
Additional Packaging Weight	1	lbs
Rounded Max. Full Cores/Box (based on mass)	4	cores/box
Rounded Max. Full Cores/Box (based on volume)	9	cores/box
Rounded Max. Samples/Box (based on mass)	16	samples/bo
Number of Shipments, First Round	175	boxes
Number of Shipments, Second Round	175	boxes
Cost for Shipments, First Round, Drop Off_Extra Large Box	\$ 4,558.75	
Cost for Shipments, Second Round, Drop Off_Extra Large Box	\$ 4,558.75	
Cost for Shipments, First Round, Drop Off_Large Box	\$ 3,683.75	
Cost for Shipments, Second Round, Drop Off_Large Box	\$ 3,683.75	
Total Cost for Shipments, Max	\$ 11,203.50	
Total Cost for Shipments, Mid-range	\$ 10,500.00	
Total Cost for Shipments, Min	\$ 8,382.50	
Total Cost per core, Max	\$ 8.00	/core
Total Cost per core, Mid-range	\$ 7.50	/core
Total Cost per core, Min	\$ 5.99	/core
Total Cost per sample, Max	\$ 2.00	/sample
Total Cost per sample, Mid-range	\$ 1.88	/sample
Total Cost per sample, Min	\$ 1.50	/sample

\$1,400 Soil core packing supplies and shipping costs - Fort Collins, CO, to Boston, MA
100 cores shipped from Fort Collins, CO, to Boston, MA, for AB testing (Haystack Ag versus traditional) in 2023. 300 cores shipped from Fort Collins, CO, to Cambridge, MA, for AB testing (Haystack Ag versus traditional) in 2026.

Shipping	UPS	Dropoff	UPS	Pickup
UPS Flat Rate - 50 lbs				
Fort Collins, CO to Boston MA - box option 1	\$	24.35	\$	38.36
Fort Collins, CO to Boston MA - box option 2	\$	19.65	\$	33.66
Nominal Core Weight				
Nominal Diameter		5	cm	
Nominal Length		100	cm	
Nominal Volume		1963.50	cm^3	3
Half Nominal Volume Shipped to Haystack		981.75	cm^3	3
Volume/Half Core		59.91	inch	es^3
Volume/Half Sample		14.98	inch	es^3
Volume/Half Sample		8.30	OZ	
Dry Soil Bulk Density_Max		1.65	g/cm	1^3
Avg. Water Content_Conservative		45.0%		
Composite Wet Density		2.39	g/cr	n^3
Nominal Mass/Half Core		2348.83	g	
Nominal Mass/Half Core		5.18	lbs	
Box Weight (12 x 12 x 12, 275# test)		1.43	lbs	
Box Cost	\$	1.67		
Whirl Pack Sample Bags Cost, 18 oz capacity	\$	0.202		
Additional Packaging Weight		1	lbs	
Max. Half Cores/Box (based on mass)		9.19	half	cores/b
Max. Half Cores/Box (based on volume)		28.84	half	cores/b
Max. Samples/Box (based on mass), round down		36	sam	ples/bo
Number of Shipments, First Round		12	boxe	es
Number of Shipments, Second Round		34	boxe	es
Cost for Shipments, First Round, Drop Off_Large Box	\$	292.20		
Cost for Shipments, Second Round, Drop Off_Large Box	\$	827.90		
Cost for Shipments, First Round, Drop Off_Medium Box	\$	235.80		
Cost for Shipments, Second Round, Drop Off_Medium Box	\$	668.10		
Total Cost for Shipments, Drop Off_Max	\$	1,520.12		
Total Cost for Shipments, Drop Off_Min	\$	1,303.92		
Total Cost per sample, Drop Off_Max	\$	0.950	/sam	ple
Total Cost per sample, Drop Off_Min	\$	0.815	/sam	ple

OTHER \$218,400

Consultants: The below are considered consultants and are acting independently from the universities.

The three CE Postdoctoral Research Fellows will be advised by three widely recognized authorities in their respective fields of investigation. These senior scientists will work with CE to plan sampling strategies, develop the ghg budget for the project, advance rigorous yet cost-effective mrv methods, publish results, and develop the new verified regenerative bison standards and protocols.

• Stephen Porder, PhD

Average of 4 hrs. per week @ \$72.12/hr. throughout the project. \$15,000 per year for four years = \$60,000.

Dr. Stephen Porder is Professor of Ecology and Evolutionary Biology at Brown University, as well as a fellow in the University's Climate Solutions Lab and in the Institute for Environment and Sustainability. He is widely recognized as an international leader in the field of soil biogeochemistry. To have a professor of Dr. Porder's unique expertise and experience overseeing this work is an extraordinary opportunity to move forward rigorous yet economical mrv methods for verified regenerative practices. The value of the brand created around verified regenerative bison will depend not only on rigorous mrv methods, transparently and effectively communicated to the public, but also on the trustworthy reputation of scholars in environmental science involved in the definition of standards and verification processes. It is therefore critical that we have scholars of Dr. Porder's integrity and stature involved in this project. Finally, Dr. Porder has been collaborating with Collaborative Earth and the other team members listed

here since November 2022 to advance science on the effects of bison on grasslands.

In this project, Dr. Porder will

- ✓ lead the process of hiring one CE Postdoctoral Fellow in Grassland Soil Science
- ✓ work with CE Postdoctoral fellows and Dr. Stoy to hire two field assistants in Oklahoma for collection of soil cores and flux-tower installation.
- work with CE Postdoctoral fellows and Dr. Booman on remote-sensing informed sampling design for the soil cores to be taken from sites in Oklahoma, as well as analysis of data from those cores.
- ✓ work with CE Postdoctoral Fellows to model and account for project-wide ghg emissions and sequestration.
- ✓ work with CE Postdoctoral Fellows, Dr. Booman, and Dr. Stoy to improve and apply scalable and economical mrv methods for verified regenerative bison products.
- ✓ share in authorship on scientific publications describing the mrv methods developed in this project.
- ✓ participate in devising guidelines and protocols for regenerative bison verification.
 - Paul Stoy, PhD

Average of 4 hrs. per week @ \$72.12/hr. throughout the project. \$15,000 per year for four years = \$60,000.

Dr. Paul Stoy is Professor of Biological Systems Engineering in the College of Agricultural and Life Sciences at the University of Wisconsin–Madison. He is a widely recognized authority on eddy-covariance flux towers and their deployment to measure grasslands ghg flows. Dr. Stoy is senior author on the only peer-reviewed publication using flux towers to compare emissions from bison to those from cattle. His expertise in this key technology is not something we could find elsewhere. He also has experience working with tribal partners. The value of the brand created around verified regenerative bison will depend not only on rigorous mrv methods, transparently and effectively communicated to the public, but also on the trustworthy reputation of scholars in environmental science involved in the definition of standards and verification processes. It is therefore critical that we have scholars of Dr. Stoy's integrity and stature involved in this project.

In this project, Dr. Stoy will

- ✓ lead the process of hiring one CE Postdoctoral Fellow in Carbon Cycle Modeling.
- ✓ work with Dr. Porder and the CE Postdoctoral fellows to hire two field assistants in Oklahoma for collection of soil cores and flux-tower installation.
- ✓ oversee collection and analysis of data from camera-equipped flux-towers installed in Oklahoma to measure CO2 and CH4 emissions from cattle and bison fields.
- ✓ work with CE Postdoctoral Fellows, Dr. Porder, and Dr. Booman to improve and apply scalable and economical mrv methods for verified regenerative bison products.
- ✓ work with CE Postdoctoral Fellows, Dr. Porder, and Dr. Booman to model and account for project-wide ghg emissions and sequestration.
- ✓ share in authorship on scientific publications describing the mrv methods developed in this project.
- ✓ participate in devising guidelines and protocols for regenerative bison verification.
 - Dr. Gisel Booman,

Remote Sensing and Machine Learning, average of 4 hrs. per week @ \$72.12/hr. throughout the project. \$15,000 per year for four years = \$60,000. Dr. Booman is a leading expert in novel methods for using remote sensing and machine learning to extrapolate from limited soil carbon measurements to obtain estimates of total ghg sequestration on larger areas of land. Since May 2022, she has been collaborating with Collaborative Earth and its tribal partners to begin development of remote-sensing indices that can be used to estimate the differential effects of bison and cattle on grasslands. She therefore has a demonstrated history of work in precisely the area needed for this project. Because of her belief in the mission of this project, she is working at a rate well below market rates for a senior remote sensing and machine-learning engineer. In this project, Dr. Booman will

- ✓ lead the process of hiring one CE Postdoctoral Fellow in Remote Sensing and Machine Learning.
- oversee analysis of data from this project as well as other bison projects around North America to document the effects of regeneratively managed bison on grasslands.
- ✓ work with CE Postdoctoral Fellows, Dr. Porder, and Dr. Stoy to improve and apply scalable and economical mrv methods for verified regenerative bison products.
- ✓ work with CE Postdoctoral Fellows, Dr. Porder, and Dr. Stoy to model and account for project-wide ghg emissions and sequestration.
- ✓ share in authorship on scientific publications describing the mrv methods developed in this project.
- ✓ participate in devising guidelines and protocols for regenerative bison verification.

Additionally: Two field assistants for soil-sampling and flux-tower installation in Oklahoma. These individuals will be hired and overseen by the CE Fellows in Grassland Soil Science and Flux Towers. These positions will provide educational employment opportunities for two tribe members, perhaps students in the field of environmental science. They will be hired at a competitive hourly wage to assist in soil-core drilling, as well as flux-tower installation and maintenance. We anticipate hiring them for twelve weeks in year one and twelve weeks in year four. These are the two periods of intensive core sampling. We anticipate taking approximately 700 soil cores in year one and the same number in year four to measure the total change in soil carbon across the fields involved in this study. At 30 minutes per core, 16 cores per day, which is 44 working days. At least one additional week in year one and in year four will be needed for tower installation, relocation, and removal.

Total Field Assistants:

\$20/ hr. x 40 hrs. per week, (12 weeks in year one + 12 weeks in year four) for each of two assistants. \$19,200 per year in years one and four = \$38,400.

INDIRECT CHARGES for Collaborative Earth \$112,168

De minimis 10% will be charged by Collaborative Earth on the project categories below:

• \$83.820 indirect cost for personnel and fringe benefits (\$838.200)

- \$3,628 indirect cost for travel (\$36,288)
- \$2,879 indirect cost for supplies (\$28,792)
- \$21,840 indirect cost for other (\$218,400)

SUBAWARD#2 FRASIER BISON LLC \$366,977

<u>Parasitology and Bison Sequestration</u> demonstration program collaborators on this project will include Frasier Bison LLC, Texas A&M University Parasitology Diagnostic Laboratory, Southwest Bison, and Wheeler Feeders FCCAI.

Frasier Bison LLC will be the consulting project manager for the design and implementation of the demonstration program on Cheyenne and Arapaho tribal lands.

Personnel \$156,000

Fraiser Bison LLC is owned and operated by Tim Fraiser. Tim Fraiser will provide consulting services for the design and implementation of the bison program on Cheyenne and Arapaho tribal lands. These consulting services are for labor only.

Project manager: Monthly consulting fee of \$3,250 per month for 48 months.

6 hours/week x \$125/hour = \$39,000/year. Total consulting fee = \$156,000

Travel \$6,011

Frasier Bison LLC's travel policy is a direct-cost system. Employees utilize their company credit card to pay directly for travel related expenses at the time of travel or booking. These direct costs will be recorded, and actual costs provided at time of claim-reimbursements and financial reporting. Tim Frasier Bison LLC will make up to eight trips throughout the four years for planning the design and implementation of bison operations and demonstration program (total 8 trips, total 16 days).

- Lodging \$104 per night x 16 nights = \$1,664
- Meals \$64 per day x 16 travel days = \$1,024 Mileage 5,680 miles x \$0.585 = \$3,323

Contractual \$171,605

TXBPSCSOI will be engaged in this project as a contract under FRASIER BISON LLC

TXBPSCSOI profit from this contract is expected to be below 10%.

Justification:

The project requires not less than seven separate individual chute-side collections on each group of twenty-five bison to accurately assay GIN and Dictyocaulus eradication. After these consecutive collections occur over a six-month period, three female and three male bison yearlings from each group of each original twenty-five bison from Inter Tribal Buffalo Council and NGO Tribal gifting source groups, will be selected based on the individuals with the highest EPG and LPG counts assayed at the Diagnostic Parasitology Lab at Texas A&M University. These groups will be sorted and separated by sex and comingled with both RFID and floppy tag individual identification. They will then be housed in separate lairage for six months for a final collection and testing at a twelve-month interval from their original test. The first two testing are timed and intended to assay GIN and Dictyocaulus infections from their origin and determine efficacious response to treatments that can be applied by Tribal herd managers in a field treatment scenario. The subsequent 30-day, 90-day, and 180-day tests will describe any hypo biotic threats of GIN and Dictyocaulus that may exist from Tribal gifting sources. The twelve- month, 365-day, test will determine an ultimate efficacy of treatment, or reveal probable threats from internal parasite reemergence. The bison will be sequestered in zero transmission vehicle environments during testing. The project will exclude any relevance of Trichuris and Strongyloides during the 365-day project duration of each group.

Data will be compiled and organized cooperatively between the TAMU Parasitology Diagnostic Lab and TXBPSCSOI, on behalf of the Cheyenne & Arapaho Tribes, for inclusion to the technical management manuals.

Others-\$170,101.6

ITEM	USE PURPOSE	COST/UNIT	TOTAL
ZIPLOCK 1 GALLON	Sample Collection and Shipping	0.28 ea.	12.50
OB GLOVES	Chute side sample collection	0.65 ea.	27.15
INSULATED SHIPPING CONTAINER	Shipping samples	\$50.00 ea.	50.00
ThermoSafe PolarPack	Preserve Sample Integrity	\$0.75 ea.	3.00
SVA FedEx Priority Overnight	Reduced TXBP Rate through Southeast Vocational Alliance	\$75.00	75.00
Sample Prep for Shipment	Skilled and Knowledgeable Handling of Fecal Samples	\$50.00/hr.	75.00
Chute Charge	Vital Wildlife XLT Bison Chute	\$5.00/hd	125.00
HANDLING CREW 2-5 HR (3.0 hrs. avg/ 9 min per head) 7-person crew	Individual Collection in Chute	\$100.00/hr.	375.00
Bison Handling & Sample Collection Manager	Knowledgeable low stress handling, blood draw, fecal sample collection and handling	\$50.00/hr.	200.00
Total	7 Collections Per Group Over 6 Months: Identify & Assay L4 Emergence &Re-Appearing LPG Numbers	\$942.65	\$6,598.55

Total Cost for 12 Month Check	Identify & assay reemergence of EPGs & LPGs in 3 females & 3 male bison from each of the	\$282.80
	original annual groups of 20, 30% of 25 hd sampling	

Total Collection Cost Per Group Per 4 groups= (\$6,598.55+\$282.80)x4=\$27,525.40

TXBPSCSOI Admin, Lab Communication,	Actively coordinate collaboration and project	\$150.00/hr. 25 hours per group,	\$15,000.00
Technical Manual Oversight & Authorship,			
Research Guidelines Coordinator			

Total TXBPSCSOI Others for 4 years (\$15,000+\$27,525.4)x4= \$170,101.6

Travel-\$1,503

Travel Policy: TXBPSCOI's travel policy is a direct-cost system. Employees utilize their company credit card to pay directly for travel related expenses at the time of travel or booking. These direct costs will be recorded, and actual costs provided at time of claim-reimbursements and financial reporting.

TXBPSCOI will make up to two trips throughout the four years for planning the design and implementation of bison operations and demonstration program (total 2 trips, total 4 days).

- Lodging \$104 per night x 4 nights = \$416
- Meals \$64 per day x 4 travel days = \$256
- Mileage 1,420 miles x \$0.585 = \$831

INDIRECT CHARGES for Fraiser Bison LLC \$33,362

De minimis 10% will be charged by Fraiser Bison LLC on the project categories below:

- \$15,600 indirect cost for Other (\$156,000)
- \$601 indirect cost for travel (\$6,011)

De minimis 10% will be charged for TXBPSCOI contract on the project categories below:

- \$150 indirect cost for travel (\$1,503)
- \$17,010 indirect cost for others (\$170,101.6)

SUBAWARD#3 Texas A&M University (TAMU) Parasitology Diagnostic Laboratory, \$776,982

Texas A&M AgriLife Research Parasitology Laboratory, led by Dr. Guilherme Verocai, will be a subaward. This lab will perform accredited laboratory work and publishing for the parasitology program. Gastrointestinal lab work will include Wisconsin EPG, Coproculture Analysis, Baermann's Test (Dictyocaulus), Fluke Finder Test (Liver Fluke), Larval Genetic Sequencing (Ostertagia | Haemonchus | Dictyocaulus). Developments will include scientific description of Northern vs Southern Ostertagia ostertagi, Nemabiome capability; for detection of O. bisonis vs O. ostertagi, for detection of S. O. ostertagi vs N. O. ostertagi. We will assay incoming parasitism from ITBC and NGO gifting sources that will become introduced to tribal herds. Yearly reports will be compiled to identify classical and molecular parasitology tests performed on each bison source. In addition, treatment experimentation will be used to determine efficacy that can be utilized in a field treatment scenario. These anthelmintic efficacy trials will utilize selected drugs and combinations in a group of approximately 100 bison, divided in groups annually over four years. Each year, a detailed report on fecal egg count reduction using various individual anthelmintic drugs or combinations of two or more drugs will help to identify ideal treatments in a tribal herd. A technical manual will be compiled that includes basic information on different parasites of bison, routine diagnostics, and anthelmintic treatment on bison health and production.

<u>Personnel</u>						<u>\$164,943</u>
Employee	FTE %	year 1	year 2	year 3	year 4	Total
Dr. Guilherme G. Verocai	3.51	\$5,141	\$5,286	\$5,436	\$5,589	\$21,452
Graduate Student, TBN	50	\$29,588	\$30,456	\$31,294	\$32,186	\$123,523
Hourly Student Worker (\$12/h for 8h/week, 52 week/year)	25	\$4,992	\$4,992	\$4,992	\$4,992	\$19,968
Fringe and benefits	Full time faculty receives 18.9% and \$963/month. Part time faculty receives 10.9% and \$473/month.					<u>\$28,815</u>
Dr. Guilherme G. Verocai		\$1,216	\$1,249	\$1,284	\$1,320	\$5,069
Graduate Student, TBN		\$5,212	\$5,318	\$5,421	\$5,530	\$21,482
Hourly Student Worker (\$12/h for 8h/week, 52 week/year)		\$566	\$566	\$566	\$566	\$2,264
Total Personnel and Fringe and benefits						\$193,758
Dr. Guilherme G. Verocai		\$6,357	\$6,535	\$6,720	\$6,909	\$26,521
Graduate Student, TBN		\$34,800	\$35,774	\$36,715	\$37,716	\$145,005
Hourly Student Worker (\$12/h for 8h/week, 52 week/year)		\$5,558	\$5,558	\$5,558	\$5,558	\$22,232

TRAVEL: \$27,680

Travel policy will follow Texas A&M AgriLife Research guidelines.

Texas A&M AgriLife Research personnel will make five trips each year of the project to participate in meetings on the development of new standards and verification processes for verified regenerative bison (total of 20 trips, 60 days).

Airfare @ \$550 x 20 trips = \$11,000

- Lodging @ \$104/day per diem x 60 days = \$6,240
- Meals @ \$64/day per diem x 60 days = \$3,840
- Car rental @ \$55 per day x 60 days = \$3,300
- Fuel @ \$55/day x 60 days = \$3,300

MATERIALS AND SUPPLIES: \$88,000

This category includes a variety of laboratory supplies and reagents for processing bison samples using classical, molecular and immunodiagnostic techniques, such as: 15mL test tubes, 50mL Falcon tubes, cheese cloth, glass microscope slides and coverslips, plastic pipettes, pipette tips of assorted sizes, Eppendorf tubes and cryovials, Kim wipes, paper towel, plastic cups, glass vials, tongue depressors, counter, methylene blue, Zinc sulfate and sucrose solutions, absolute ethanol, 10% formalin, cryoboxes, vermiculite, labelling tape, lab notebooks, stationary. DNA extraction kits, primers and probes, master mix, 96 well plates, 8-well strips, column purification kits, molecular water, agarose, TA buffer, Lysis buffer.

Materials & Supplies (unit)	Unit price	Units/Year	Year 1	Year 2	Year 3	Year 4
Flotation solution (gallon)	\$25.00	20	500	500	500	500
Test tubes 15mL (boxes)	\$125.00	25	3125	3125	3125	3125
Test tubes 50mL (boxes)	\$150.00	25	3750	3750	3750	3750
Cheese cloth (rolls)	\$50.00	6	300	300	300	300
Microscope slides (boxes)	\$26.00	25	650	\$650	650	650
Coverslips (boxes)	\$22.00	25	550	550	550	550
Plastic pipettes (box)	\$60.00	5	300	300	300	300
Pipette tips (boxes)	\$32.00	10	320	320	320	320
Eppendorf tubes 2mL (box)	\$33.00	100	3300	3300	3300	3300
Cryovials (box)	\$38.00	100	3800	3800	3800	3800
Kimwipes (box)	\$53.00	4	212	212	212	212
DNA extraction kits (box)	\$400.00	4	1600	1600	1600	1600
Primers (unit)	\$11.00	8	88	88	88	88
PCR Mastermix (box)	\$175.00	4	700	700	700	700
96-well plates (box)	\$51.00	8	408	408	408	408
Column purification Kits (box)	\$160.00	2	320	320	320	320
Molecular water 250mL (bottles)	\$17.10	4	68.4	68.4	68.4	68.4
Agarose 500g (vial)	\$36.16	1	36.16	36.16	36.16	36.16
Lysis Buffer (kit box)	\$20.00	2	40	40	40	40
TAE Buffer 500mL (bottle)	\$55.45	1	55.45	55.45	55.45	55.45
Tongue depressor (box w/ 100)	\$10.00	10	100	100	100	100
Sucrose solution (gallon)	\$22.30	10	223	223	223	223
Ethanol 500mL (bottle)	\$58.00	10	580	580	580	580
Cryoboxes (box w/ 25)	\$10.23	6	61.38	61.38	61.38	61.38
Vermiculite (bag, 10kg)	\$16.12	1	16.12	16.12	16.12	16.12
Labeling tape (box)	\$8.00	15	120	120	120	120
Laboratory notebooks (book)	\$10.00	3	30	30	30	30
Stationary (pens, markers)	\$5.00	25	125	125	125	125
Plastic cups (box)	\$5.00	22	110	110	110	110
10% formalin (gallons)	\$24.19	1	24.19	24.19	24.19	24.19
Counters (unit)	\$75.28	1	75.28	75.28	75.28	75.28
Methylene blue (vial)	\$19.00	3	57	57	57	57
Paper towels (boxes)	\$35.50	10	355	355	355	355
TOTAL			\$ 22,000	\$ 22,000	\$ 22,000	\$ 22,000

OTHER: \$234,011

Graduate Students Tuition \$46,343

Graduate Student 1 = \$10,752 for Year 1, \$11,290 for Year 2, \$11,854 for Year 3, and \$12,447 for Year 4

A total of \$164,668 is requested for service fees and shipping. The yearly amounts are:

\$41,000 for Years 1 and 2; 41,333 for Year 3, and \$41,335 for Year 4.

This category includes:

Miscellaneous service fees: \$140,668 is requested for service fees and shipping. The yearly amounts are: \$35,000 for Years 1 and 2; \$35,333 for Year 3, and \$35,335 for Year 4. including parasitology diagnostic tests, clinical pathology and anatomic pathology service fees, Sanger sequencing and Illumina MiSeq Deep-Amplicon sequencing (i.e., Nemabiome).

Other Service Fees	Unit price	Sample #	Year 1	Year 2	Year 3	Year 4
Nemabiome Fees	\$50	420	21000	21000	21000	21000
Sanger sequencing	\$7	200	1400	1400	1400	1400
Baermann	\$10	420	4200	4200	4200	4200
Mini-FLOTAC Egg Count	\$10	420	4200	4200	4200	4200
Coproculture	\$10	420	4200	4200	4200	4200
Histopathology Slides	\$3	111 Y3, 112 Y4	NA	NA	333	333
TOTAL			\$35,000	\$35,000	\$35,333	\$35,335

Shipping costs (\$24,000; 6,000/year): Shipping of samples to laboratorial analysis, material to and from the field sites, this includes domestic and international courier overnight priority service fees, cooler, ice packs, insulated boxes, tapes, shipping labels, etc.

Shipping	Unit price	Sample #	Year 1	Year 2	Year 3	Year 4
International shipping	\$144	12	1728	1728	1728	1728
Domestic shipping	\$75	42	3150	3150	3150	3150
Tapes (box)	\$20	1	20	20	20	20
Insulated boxes	\$17.5	32	560	560	560	560
Yeti Cooler	\$137	1	137	137	137	137
Shipping label (roll)	\$20	1	20	20	20	20
Icepacks (box)	\$11	35	385	385	385	385
TOTAL			\$6,000	\$6,000	\$6,000	\$6,000

PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION:

A total of \$23,000 (\$5,000/Year 1 and \$6,000/Years 2 to 4) to cover open-access publication fees for scientific articles, editorial and printing charges for manuscripts and technical manual.

Indirect - \$233,533

51.50% on categories expect the Graduate Students Tuition \$46,343: (51.50%*(\$776,982-\$46,343)

SUBAWARD#4 MAD AGRICULTURE \$312,431

To execute the marketing activities in the proposal, Mad Agriculture will participate as a partner. Development of markets as well as the new verification program will take place in years three and four of the project.

Personnel - \$227,200

These personnel services are for labor only.

MadAg Marketing Specialist.

Salary	% Effort	Project Duration	Amount Requested
\$90,000	50	24 months	\$90,000

(\$90,000\$=45,000 per year x 2 years)

- Executive Director: \$180,00 * 5% FTE = \$9,000 per year
- Dir of Operations: \$150,000 * 5% FTE = \$7,500 per year
- Dir of Strategic Partnerships: \$110,000 * 10% FTE = \$11,000 per year
- Supply Chain Coordinator: \$100,000 * 10% FTE = \$10,000 per year
- Regional Farm Relationship Manager: \$100,000 * 7.5% FTE = \$7,500 per year

One MadAg expert in regenerative grazing techniques will participate in the verified regenerative bison advisory panel. MadAg representative to the verified regenerative bison advisory panel.

Salary	% Effort	Project Duration	Amount Requested
\$80,000	2.25	48 months	\$7,200

\$20,000 per year for years three and four of the project for personnel to work with Savory Institute on development of the new verification program.)

- Dir of Operations: \$150,000 * 5% FTE = \$7,500 per year
- Regional Farm Relationship Manager: \$100,000 * 12.5% FTE = \$12,500 per year

Travel- \$12,828

Travel Policy: Mad Agriculture's travel policy is a direct-cost system. Employees utilize their company credit card to pay directly for travel related expenses at the time of travel or booking. These direct costs will be recorded, and actual costs provided at time of claim-reimbursements and financial reporting.

Mad Agriculture does not allow costs for entertainment nor non-work-related meals.

Regenerative bison advisory panel will meet twice per year in the first two years of the project, and once per year in years three and four, a total of 6 trips.

- Airfare \$550 x 6 trips = \$3,300
- Lodging \$114 per night x 12 nights = \$1,368
- Meals \$70 per day x 12 travel days = \$840
- Car rental \$55 per day x 12 days = \$660
- Gas per day \$55 per day x 12 days = \$660
- Total travel: \$6,828

Other travel for the project (\$6,000 per year x 2 years)

Costs are based on best estimates and the total travel budget of \$12,000 will remain, though items within may vary. Person-trips designates assumes that multiple people may travel together on the same trip, but each would need their own flight. Similar approach for person-nights for lodging, wherein each employee would have their own private room for lodging per company policy. Airfare \$600 x 10 person-trips = \$6,000

- Lodging \$150 per night x 20 person-nights = \$3,000
- Meals \$50 per day x 20 person-days = \$1,000
- Car rental \$150 per day x 10 days = \$1,500
- Gas per day \$50 per day x 10 days = \$500

Supplies- \$4,000 (\$2,000 per year x 2 years)

- Software subscriptions incidental to work (e.g., ArcGIS, StratifyX, HowGood, New Hope, etc.; multiple licenses): \$1000/yr. \$2000 total. MadAg will prorate software rate if used other than the project.
- Miscellaneous education or field demonstration supplies (pens, notebooks, shovels for soil pits, etc.): \$500 total.
- Miscellaneous supplies to support marketing of product at trade conferences or other market-based events or meetings (printed pamphlets, banners, etc.): \$1500 total.

Contractual \$40,000

Savory Institute will be engaged in this project as a contract under MadAg. Savory Institute Profit from this contract is expected to be below 10%. <u>Justification:</u> Traceability Mechanisms. The project team, including MadAg, Frasier Bison, and Collaborative Earth personnel, will work with Savory Institute and their Land to Market verification program, a value-added outcomes-based verified regenerative sourcing solution for both producers and buyers. We will adapt their existing verification and tracing systems to the context of verified regenerative bison.

Others- \$40,000

\$40,000 for contractual consulting (\$20,000 per year for years three and four of the project to in fee payments to Savory Institute for work with
us on this project). Rate are based on 100hrs/yr * \$200/hr.

Indirect- \$28,403

Indirect charges on all categories using 10% de minimis.

Demonstration, Expansion, and Quantification of the Benefits of a Climate Smart Commodity:

Verified Regenerative Bison Products

I. Executive Summary

In this project, we will:

- 1. Develop a demonstration program on tribal lands, implementing and expanding multiple climate-smart practices in the production of American bison. This program will showcase the benefits of regenerative bison production to rangeland, ranchers, and climate. It will increase climate resilience of ranching operations, reduce net greenhouse gas (ghg) emissions, and direct the financial benefits of climate-smart commodity production to ranchers, including tribal groups and early adopters.
- 2. Leverage this demonstration program, as well as the recent history of tribal bison reintroduction programs around the country, to rigorously quantify the climate impacts of regenerative bison production in comparison with the baseline of conventional beef production. In this quantification, we will also trial streamlined processes—based on remote sensing and automation of soil-carbon measurement—to reduce monitoring costs for future adopters.
- 3. Create a new entity to maintain standards of regenerative bison production, track climate benefits and payment for those benefits through the supply chain, establish consumer trust in and appreciation for the multiple benefits of Verified Regenerative Bison Products, and thus foster a market-driven expansion of the practices demonstrated and studied in this program.

The lead on this proposal is the Cheyenne and Arapaho Tribes Agricultural Program, represented by Lorna Carter (100 Red Moon Circle, Concho, Oklahoma 73022, 405-422-7711, <u>lcarter@cheyenneandarapaho-nsn.gov</u>). Project partners include Frasier Bison LLC (h ttps://frasierbison.com/), consulting bison specialist; Collaborative Earth (formerly known as Earthshot Institute) (https://www.collaborative.earth/), a non-profit scientific research organization specializing in the use of advanced technologies to measure and model environmental impacts; Mad Agriculture (https://madagriculture.org/), a non-profit organization specializing in outreach to producers and development of markets to support transitions to sustainable practices; and several Tribal Buffalo programs around the country, with whom we interface through the Eastern Shoshone Tribal Buffalo Program (https://easternshoshone.org/) Buffalo and the Intertribal Council (ITBC) (h ttps://itbcbuffalonation.org/).

Project management will be divided among partners according to their areas of focus and expertise. For design and implementation of the demonstration program, Frasier Bison and the Cheyenne and Arapaho Agricultural Program possess the requisite expertise. For MMRV, Collaborative Earth will coordinate research overseen by our contracted partners Dr. Stephen Porder (Brown University) and Dr. Paul Stoy (University of Wisconsin) and executed by Collaborative Earth's Postdoctoral Fellows and Bison Lab. For outreach to ranchers, the Cheyenne and Arapaho Agricultural Program and Mad Ag will work through their networks of hundreds of cattle and bison ranchers. The regenerative bison verification program will be developed through a collaboration between the partners in this proposal and the Savory Institute's Land to Market Program, allowing us to build out a new set of verification processes and criteria within the Savory Institute's established program. For access to markets offering a premium for climate-smart commodities, we will access Mad Ag's extensive network of distributors and retailers emphasizing sustainability-oriented products.

While there is evidence in the scientific literature for the climate-related benefits of regenerative bison production, the industry is nascent. Consequently, better data informing USDA Comet for grazing practices with American bison are needed; ranchers cannot yet benefit from a significant price premium tied to the carbon-sequestration potential of regenerative grazing with bison; and ranchers do not yet have the practical guidance or financial incentives needed to transition to this culturally and ecologically important species. This project will address all three of these important unmet needs.

This project minimizes costs associated with activities in several ways. First, rather than building whole new systems for tracing the benefits of our climate-smart commodity, we will build on well-established practices for verification and tracking chain of custody, expanding and adapting them to apply to regenerative bison and to incorporate data on ghg emissions and other ecosystem services. Second, in the course of this project, we will move from the most thorough 'gold-standard' of measuring ecological impacts, including ghg emissions, to more efficient and scalable methods based on remote sensing, machine learning, and automation. Third, we will leverage the open-science ecosystem supported by Collaborative Earth, greatly reducing overhead and expense associated with research in traditional University contexts.

Fittingly, our demonstration program will be located on the site of three schools that were established in the 19th century to teach Cheyenne and Arapaho children. In the project described here, the Cheyenne and Arapaho, along with the Eastern Shoshone and other tribal members of the ITBC, will furnish an educational and compelling case of tribal development of ranching practices to restore thriving grassland ecosystems, enhance their resilience, and mitigate climate change. These practices are centered around American bison, a species of ancient spiritual importance to the plains tribes of North America. This project thus represents a new kind of school, offering a synthesis of deep traditions with advanced technologies to

develop and demonstrate the benefits of a climate-smart commodity, Verified Regenerative Bison Products.

II. Development of a demonstration program on tribal lands, implementing and expanding multiple climate-smart practices in the production of American bison

i. Context and Outreach

The Cheyenne and Arapaho Reservation, established in 1869, covered 4,300,000 acres in what is now western Oklahoma. These lands are in the transition zones ranging from tallgrass prairie to shortgrass high-plains prairie. Rolling hills and broad plains are dissected by river valleys, where moist riparian ecosystems harbor cottonwoods. In small pockets where hardwood stands have not been removed, postoak-blackjack and shinnery oak forests thrive. These prairie ecosystems represent one of the planet's most stable available repositories of carbon (1); they are capable of sequestering between 3 and 9 megagrams of carbon per hectare per year (2-4). Tragically, tilling and overgrazing have squandered much of this carbon-storage capacity (3). In the project proposed here, we will demonstrate how this vital ecosystem service can be recovered through active restoration efforts and regenerative grazing with the dominant native herbivore, American bison.

During the Reservation Era, farming and industrial skills were taught to Cheyenne and Arapaho children at four different schools established on the reservation. In this Partnership for Climate Smart Commodities (PCSC) project, an educational and compelling demonstration of holistic regenerative rangeland management, centered on Verified Regenerative Bison, will be implemented at the location of three of these former schools. We are writing a new chapter in the history of these schools, making their former grounds a place where the Cheyenne and Arapaho Agricultural Program will document and showcase climatesmart practices that regenerate the prairie through management of our ecologically and culturally vital native grazer.

Today, the Cheyenne and Arapaho Agriculture Program manages approximately 8,400 acres utilizing regenerative and conservation agriculture practices. The Tribes began their climatesmart planning activities in 2015, when they launched their grassland restoration project. Rangeland Health Assessments were conducted in 2015 on 2,084 acres to establish baseline data from which improvement efforts can be measured. These rangeland acres were inventoried to determine plant composition and estimated forage productivity. The data revealed that some areas of Tribal rangeland contains 97% of the plant species from original prairies, while in other areas, biodiversity had been reduced to as little as 10% of the original species present. This assessment provided the baseline data from which restoration plans were developed.

The Cheyenne and Arapaho tribes began to implement climate-smart production practices in 2016 and have since purchased over \$220,000 in low-till and no-till equipment. As an advocate for soil health principles, the Tribes entered into a landmark soil health agreement in January 2017 with the United States Department of Agriculture Natural Resource Conservation Service to establish a demonstration farm showcasing advanced soil-health techniques. The agreement was the first of its kind between the NRCS and an Indian tribe. Conservation technologies used to improve lands managed by the Cheyenne and Arapaho were demonstrated on a 70-acre area in partnership with the USDA NRCS. The Tribes were cohosts of four soil health workshops throughout western Oklahoma in 2017.

Grassland restoration on Cheyenne and Arapaho Tribal lands began in 2018. Smaller isolated fields previously farmed for row crops were converted to native grasslands, utilizing both native grass seed mixtures and monoculture plantings. The restoration efforts also started over-seeding existing pastures with native grasses and legume inter-seeding. Mechanical treatments were started for the removal of invasive tree species in the livestock pastures. A prescribed burn program was established as a means to reduce hazardous fuel accumulations, to aid in restoring the prairie ecosystems and landscapes, and to assist in controlling woody invasive species in the grasslands. Over 3,000 acres have been placed in the prescribed burn rotation.

Expanding on the success of facilitating soil health workshops, the agriculture program began participating in additional educational events. These include co-hosting bison management workshops with the USDA NRCS and other private ranches. The largest event co-hosted by the Cheyenne and Arapaho Agriculture Program has been the National Land and Range Judging Contest. Nearly 1,000 4-H and FFA students from over 30 states have gathered on the Tribal lands for the event. The Tribes have co-hosted three of these national events in the past seven years.

Thus, prior to the pandemic shutdown of in-person gatherings, the Cheyenne and Arapaho agriculture program was active with outreach efforts to share their experiences of grasslands restoration and regenerative bison management. In the PCSC project proposed here, the agriculture program will build on its successful history of education and outreach efforts to introduce many more producers to the environmental and financial benefits of regenerative grasslands management centered on Verified Regenerative Bison Products. Working in concert with the regenerative, scientific, and market-development activities described below, one full-time outreach professional will offer ranch visits, short courses for practitioners, and speaking engagements at conferences and events. We project that we can introduce and teach these practices to at least 100 producers during years three and four of this project, resulting in implementation in at least 25 operations comprising at least 125,000 acres.

Anticipating producer interest in the methods showcased in our demonstration project, as well as in the opportunities for premium prices commanded by Verified Regenerative Bison Products, Mad Ag will explore a new application of its financing mechanism that has already demonstrated success in transitioning conventional broad acre farmers into organic and regenerative cultivation methods. In essence, financing is provided by impact capital funds offering reasonably priced loans that enable a producer to cross a valley of cost in order to achieve higher returns from certified production techniques. In the present case, the transition will be from conventional cattle production to verified regenerative bison production.

ii. The New Regenerative Demonstration Program.

The headquarters for the Cheyenne and Arapaho Tribal government is at the Concho Reserve, which is also where the first school was established. The Darlington School, Indian Territory, opened in 1871. Passing through the Concho Reserve was the Chisholm Trail, a famed cattle route, drawn to the area by an abundant supply of water from Caddo Springs. These springs are still flowing today. Of the 3,500 acres of Concho Reserve that will be included in this PCSC demonstration project, 1,100 acres, centered around the Caddo Springs, will be managed as a riparian area. Net carbon sequestered annually as a result of regeneration of the riparian zone will be measured as part of our MMRV program, described below, and the ghg benefits will be linked explicitly to the Verified Regenerative Bison Products, as part of the whole-operation ghg accounting. Thus, this area of the larger demonstration project will be used to document and measure the considerable benefits in ghg sequestration that can be achieved through effective riparian regeneration of a form compatible with raising Verified Regenerative Bison. In general, riparian zone restoration can be an important component of the overall ghg reduction program implemented in holistically managed ranches. This component of our demonstration program therefore has scalable impact for adoption by other producers throughout U.S. grasslands.

Riparian Restoration efforts will focus on a total of 1,680 acres of Cheyenne and Arapaho lands. The removal of invasive trees and shrubs from the bison pastures will be rebalanced with the planting of native trees in the moist riparian areas. Simple interventions, including installation of beaver dam analogs and riverbank plantings, can have significant effects on riparian productivity and drought resilience, as has been well-documented in the literature (5-7).

In connection with our riparian restoration efforts, we note that climate-smart agriculture requires not only sequestering more carbon, but also building greater climate-change resilience into agricultural systems. Riparian environments exhibit significant microclimatic differences from open grasslands; they can be critical refuges in periods of extreme heat. In addition, their water-storing capacities increase drought resilience. Our native grazer, bison, also appear to be better at managing climatic extremities than cattle, which are a northern

European species. In this regard, bison appear to be a pre-adapted 'climate-smart' grazing species (8).

The Canton Reserve of the Cheyenne and Arapaho Reservation is where the Cantonment military post was established. When the military post was abandoned, in 1882, the Cantonment school began operating and taught farming and ranching to the students. The U.S. Army Corps of engineers completed the Canton dam in 1948 and Tribal lands were lost to the Corp of Engineers. The Canton Tribal lands were reduced to 2,235 acres. 1,600 acres in the Canton Reserve will be included in this PCSC project. Perennialization of former crop land to native grass will take place in Canton on 650 acres. This will become pasture for regenerative bison grazing. As described below, in relation to our MMRV activities, the carbon content of this field will be measured before transition to pasture, and again three years later. 270 acres in the Canton Reserve are currently used as grass pasture for cattle. These lands will be transitioned from cattle to bison. 180 acres are considered the riparian area to Canton Lake. 500 acres of existing cropland will stay in crop rotations for supplemental bison feed. No-till and cover crop techniques will be used on this land. If water sources are added to these acres, they can be used for grazing paddocks with rotational grazing management.

One of the oldest towns in Western Oklahoma, Colony was founded in 1886 by John H. Seger. Seger started his work at the Darlington school and was later asked to establish a colony that would concentrate Indian families in agriculture communities. The Seger Colony was established in the South-central location of the Cheyenne and Arapaho Reservation along the fertile lands of Cobb Creek. John Seger built the federally funded Seger Industrial Training School in 1893. The school taught farming and industrial skills to Native Americans. The Seger Indian School became known as the model Industrial Indian School in the United States. 2,300 acres at the Colony Reserve will be included in the PCSC project.

Perennialization of former crop land to native grass will take place in Colony on 680 acres. This will become bison pasture. 1080 acres have most recently been grazed by cattle. These lands will be transitioned to bison pastures. Again, as described below, these fields will be subject to soil analyses prior to transition, and again at least three years later. While we do not expect the full carbon-sequestration gains to be evident in just three years, we do expect to see a signal in certain variables. In addition, adopting a chronosequence approach, we will also be sampling fields that have been under bison for at least five years, and comparing them with fields that have been under cattle for decades. In Colony, 320 acres are considered the riparian area to Cobb Creek and a pond. 100 acres are existing crop land will stay in crop rotations for supplemental bison feed. No-till and cover crop techniques will be used on this land. 120 acres are used for native grass hay fields.

In sum, the project will execute a range of changes in land use and agricultural practices in order to develop a demonstration of holistic climate-smart ranch management, centered

around regenerative grazing by bison. These changes include conversion of cropland to grassland replacement of cattle with bison, which will be managed following regenerative practices; reseeding with grassland species; removal of invasive trees and shrubs from grasslands, counterbalanced by the reforestation of riparian zones with native species; crop rotations and tillage transition to no till. Across three sites, our conversion of cropland will perennialize 2,300 acres. The management practices of the agriculture program are focused on regenerating Tribal lands back to productive native and locally adapted grasslands, characterized by a blend of native grasses, including big bluestem, little bluestem, indiangrass, switchgrass and eastern gamagrass. Native mixed grass stands will be the main forage resource for the Tribes' bison. These grasslands provide numerous ecosystem services beyond animal agriculture, including wildlife habitat, water storage resulting in greater climate resilience, and carbon sequestration.

When planning the implementation of practices (riparian restoration, native grass planting, animal integration, etc) the project team will consult the Oklahoma e-FOTG website for practice implementation guidance and standards. The implementation team will make adjustments during actual practice implementation according to field conditions, but will stay within the boundaries of practice guidance to the highest degree possible in a given circumstance. When needed, we will consult with local field office representatives on practice guidance and local/regional best practices. Consultation with contracted regional experts will also provide practice implementation guidance. In the course of this project, we will be guided by a panel of experts on regenerative grazing and bison management. One member of this panel will be drawn from Mad Agriculture, one from a regional soil-health organization, and one will be Tim Frasier, of Frasier Bison, a subawardee on this proposal.

In part III of this proposal, we will describe how sampling and analyses of soil cores, as well as flux-tower measurements, from fields subject to different management practices will support the development of a whole-operation ghg accounting of our demonstration project. These data will be vital to our outreach and communications efforts, described above, as well as to the verification program and justification of premium pricing for Verified Regenerative Bison Products, described below. Furthermore, by taking these measurements in three different prairie ecosystems under tribal management, we will further support the improvement of USDA Comet for American bison, as well as the scaling of the new Verified Regenerative Bison production to more ranches across the central plains.

iii. Parasitology and Bison Sequestration Systems

As we emphasized above, to be truly climate-smart means not only to reduce net ghg emissions but also to improve climate resilience and the capacity to adapt to changing conditions. One area of climate adaptation that may be dangerously under-appreciated at present concerns the effects of changing climate on parasite risks (9-11).

Regenerative grazing practices of bison to increase climate resilience will prove successful in its goals only if the bison are healthy. Keeping bison well-nourished and disease-free requires a parasitology program that is responsive to the new conditions introduced not only by climate change, but also by the new grazing practices we adopt to improve soil health and thus mitigate climate change. Healthy soils increase the density of grass stands, increasing retained moisture, and they may therefore enhance the development and transmission for Gastrointestinal Nematodes (GIN). Important parasites that pose a threat that may be enhanced by climate change are *Ostertagia*, *Haemonchus*, and *Dictyocaulus* species. The Southern Plains are a window into the future for the Northern Great Plains, where climate models predict change to warmer, wetter conditions more conducive for proliferation of certain parasites within 15 years' time. Fortunately, an adaptive parasitology program can track parasite loads, identify species present, and responsively formulate treatment and prevention options to address these parasitic diseases.

As an important component of our demonstration program, we will develop a climate-adaptive parasitology program that combines citizen-science and observation with scientific analysis to provide management tools for bison producers. Accredited laboratory work and publication will be provided by Texas A&M University Parasitology Diagnostic Laboratory. The Texas Bison Parasitology Stakeholder Citizen Science & Observation Initiative (TXBPSCOI) will develop a handbook of technical procedures. TXBPSCOI and Mag Ag will be providing technical assistance for the grant recipient. The adaptive parasitology demonstration program will also encompass sequestration systems, which are a key strategy for preventing the spread of GIN and other parasites. Collaborators on this project will include Texas A&M University Parasitology Diagnostic Laboratory, Frasier Bison, Southwest Bison, and Wheeler Feeders FCCAI. The research from this collaborative program will provide management strategies and technical tools to equip future adopters of regenerative bison grazing practices to implement the parasitology programs needed as we adapt to climate change.

III. Measurement/quantification, monitoring, reporting, and verification plan (MMRV)

The MMRV component of this project will have four different but interrelated parts.

i. Quantification of the ghg emission reductions associated with conversion from conventional cattle grazing to regenerative bison grazing.

Recent research combining remote sensing with field observations has shown that bison can "engineer the green wave" (12). That is, their grazing alters the timing and speed of the spring green-up across prairies. Bison grazing causes grasslands to green faster, more intensely, and for longer duration. Cattle graze differently from bison (13), and therefore they are likely to have different effects on the dynamics of the green wave, and consequently on soil attributes

and other ecological variables. On evolutionary grounds, it is reasonable to hypothesize that native plant communities will thrive, and consequently sequester more carbon, under grazing that resembles the conditions under which they evolved, and North American grassland species evolved with American bison, not with cattle. Interestingly, the regenerative cattle ranching practice known as 'adaptive multi-paddock' (amp) grazing compels cattle to exhibit behaviors that closely resemble what bison instinctively do, namely localized grassland balding followed by tight herd movement. While poor grazing practices with bison, such as persistent overstocking, can certainly degrade grassland, the practice studied here—regenerative bison grazing—requires avoiding such mismanagement. In the sole available comparative study, regeneratively managed bison and amp-managed cattle resulted in higher soil carbon levels than conventionally managed cattle (14). While this study is intriguing, it represents a single geographic site and a limited sampling period, and therefore is not sufficient for quantification of the difference in grassland carbon sequestration that can result from regenerative bison grazing.

There is also evidence that bison emit less ghg's than cattle(15), as well as a mechanistic rationale to explain why this could be the case: In their diet mixing, bison are concentrate grazers; that is, they more actively select forbs, which are higher in secondary nutrients, including tannins, which may reduce methane as well as nitrous oxide emissions. However, as with soil-carbon sequestration, the data are not yet sufficient to make reliable general predictions about the overall ghg effects of bison versus cattle. The timeframe of the only study on this topic was relatively brief. In addition, novel methods for combining tracking of animals by camera with flux-tower detection of emissions should now facilitate more accurate emissions measurement (15-17).

In the research proposed here, we will measure the difference between bison and cattle in two important factors contributing to their total ghg emissions: sequestration of carbon by soils and direct animal emissions of methane. Our results will contribute directly to improving the forecasts offered by USDA Comet for the production of bison.

Over the past ten years, a number of tribal programs around the country have reintroduced bison to their former range. Most of these programs are members of the Intertribal Buffalo Council. Collectively, the ITBC programs present a unique opportunity to study the effects of bison grazing on carbon sequestration as well as ecological co-benefits, including insect and bird biodiversity, soil water storage, and grassland drought resilience. In work external to this proposal, Collaborative Earth is coordinating with ITBC to sample soils in grasslands that were converted from cattle to bison at known points in the past, ranging from over 10 years to just a few years, at sites of more recent introduction. Data from that work will be combined with the data generated in this project, as well as with data available in the literature, to create

a larger aggregated dataset for estimating the longer term effects of regenerative grazing by bison.

In this project, to contribute to our understanding of the effects of bison grazing on carbon sequestration, we will analyze soils in treatment and control fields at the start of the research project and then once again at least three years later. To be clear, we expect the signal of change in total organic carbon to be revealed primarily by comparison across fields with differing histories, rather than comparison across time points during our study. However, sampling twice will contribute to the total size of the dataset, potentially add information about changes on shorter time scales in certain soil variables, such as mineral-associated organic carbon, and inform the construction and parameterization of models of soils (18, 19).

Informed by remote analysis of DEMs, historical NDVI, other ecological variables, and soil maps, as well as on-the-ground soil surveys where needed, our team will make decisions about specific sampling sites and core depths, ranging from 30 cm to 2 m, depending on soil types and horizonization. Our team for this work will be led by Dr. Stephen Porder, who will be supported through consultation with Dr. Gisel Booman (leader of Collaborative Earth's Bison Lab), who is an expert in remote sensing of grasslands, and with Dr. Francesca Cotrufo (CSU and Cquester Labs), who is an expert on carbon and nitrogen cycling in the particular grasslands we are investigating.

We will calculate carbon stocks as a function of cumulative core mass, in addition to fixed depth (20). On average, across our 7 fields, we anticipate 100 cores per field, 4 depths sampled per core, for a total of 2,800 samples early in the grant period, and another 2,800 samples late in the grant period, over three years after the first sampling round. Soil analyses for all samples will be performed by Cquester Labs, Fort Collins, CO. Quantities to be measured in each sample include the following: bulk density, total percent carbon, total percent nitrogen, pH, texture with hydrometer, inorganic carbon (in samples exhibiting a positive fizz test), midinfrared spectroscopic profile, particulate organic matter and mineral-associated organic matter fractions. Methods that will be used are described in the following references: (18, 21-24). The ultimate goal of our soil sampling analyses is to quantify how bison affect the total carbon sequestered in soil over time; to do so rigorously will require us to measure a number of variables beyond total carbon stocks (18, 19), so that we can understand soil evolution and how it varies with depth (20). In addition, as we describe below, we will also be designing more efficient methods for monitoring soil carbon at scale, so that the extensive analysis described here will not be needed in future projects monitoring the effects of grazing methods in order to meet the requirements of the verification process we propose below.

To measure the methane emitted by bison under regenerative grazing management relative to cattle, Dr. Paul Stoy will lead a team to deploy two flux towers. These flux towers will be equipped to measure both CO₂ and CH₄ emissions. Towers will track animal locations and

movements, which can be integrated with micrometeorological observations to infer total CH₄ emissions from the animals (15-17). (Combining AI with 3D sensing by stereo cameras, the zed open-source software community has recently made significant progress in tracking animal movements in space.) The CO₂ measurements will provide valuable cross-reference data for the soil studies. The CH₄ measurements will enable us to estimate the total methane emitted by each herd. We will estimate the size of each animal in each herd at the start and finish of flux tower observation, providing more meaningful metrics, such as methane emitted per kg of total weight or protein accumulation.

In sum, the study proposed here will yield a quantitative estimate of ghg emissions by bison versus cattle under similar conditions and using the same measurement techniques. This data will inform USDA Comet and provide a baseline estimate of ghg reductions achieved by adopters of regenerative bison practices.

ii. Development of economical and scalable methods for assessing GHG impacts of grazing species and practices.

The analyses proposed in MMRV part i are too costly to form the basis of common practice for monitoring the benefits of regenerative bison grazing practices at scale. Therefore, we will design a sampling protocol that will leverage the analyses from this project and other research to reduce the measurements demanded from future adopters. We will reduce future measurement needs in three ways. First, to reduce the number of soil samples needed, the Bison Lab at Collaborative Earth, led by Dr. Gisel Booman, will develop machine-learning algorithms for interpolating soil carbon levels between sparse sampling points. Such reduction in sampling density will inevitably reduce accuracy, however the added variance can be quantified and kept within tolerance levels stipulated by international carbon registries (25). Second, our soil samples will be analyzed by MIR. MIR can substitute for full laboratory analysis, yet its accuracy varies with place and land use (26). We will contribute to the understanding of when and where MIR can be used without dramatic loss of accuracy. Third, we will trial Haystack Ag's cost-effective automated system for measuring soil organic carbon. To test measurements compared with the traditional analyses from Cquester, we will run one 400 of our 2,800 samples collected in our first collecting campaign through Haystack's automated system. Contingent upon Haystack achieving its goals of cost reduction through automation in the next three years, we will run half of our samples from our second collecting campaign through Haystack's automated system. In all cases, results from Haystack's analysis will be compared with the thorough "gold standard" of results from Cquester, to detect and quantify deviation between the methods. We view this duplication of analyses as a worthwhile investment, because Haystack's automation technology has the potential to reduce the total cost of future soil carbon analyses by an order of magnitude. Such a reduction would greatly facilitate our effort to establish an outcome-confirmed sustainable grazing verification program, as described below.

iii. GHG measurement and accounting in the expansion of the Cheyenne and Arapaho regenerative bison production program.

As described in part I of this proposal, the development of the Cheyenne and Arapaho demonstration program will involve four types of land-use conversion and regeneration: from cattle production to bison production using regenerative grazing practices; from dry-land cropping to bison production using regenerative grazing practices; from dry-land cropping to hay production with native perennial grass mixes; from cattle-degraded river bank to restored riparian habitat. The reductions in ghg emissions associated with all of these land-use conversions will be estimated through the collaborative work of our research team.

At the start of the project period, we will initiate our sampling protocol to measure the carbon content of soils prior to land use conversions. Land use changes will occur over the following two years. In year four of the project, we will repeat our sampling process in each site. Aggregating data from this project and other bison/cattle comparison studies, as described above, we will estimate the operation's overall ghg budget and forecast its changes over the decade to come. This information will flow into the enhanced value of products specifically linked to environmental improvements through the verified products described below.

We will also measure changes in climate resilience that result from the interventions. We expect such changes in several areas: microclimatic differences achieved through riparian restoration around Caddo Springs, as well as replanting of native trees in other locations; water storage and drought resilience resulting from riparian regeneration, as well as from reduction in soil compaction and increases in soil water-holding capacity; increases in grassland biodiversity, which improve ecological resilience in the face of climate change. Though these changes are often referred to as co-benefits, we view them as central to climate-smart improvements to rangeland management

iv. Creation of the world's first regenerative bison verification program.

Verification and certification programs can be a powerful way to reintegrate regional food systems and reconnect consumers with the people, places, and ecosystems that provide food. Successful programs of this kind have created trust between consumers and growers that share the same values. Such programs ensure that sustainability standards are being met through inspection, record keeping, and third-party verification. For example, the USDA Organic Program has enabled farmers to connect with consumers that will pay more for the "integration of cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity", with the USDA Organic or Verified Organic seal. The Global Animal Partnership (GAP) is another successful certification, this one focused on animal welfare. We propose that a program of this nature can be used to

connect procedures and consumers in ways that financially reward the ecological benefits of regenerative and climate-smart agriculture, and effectively create climate-smart commodities.

We will work with the Savory Institute and their new and exciting verification program. The Land to Market program is the first outcomes-based verified regenerative sourcing solution for both producers and buyers. The program primarily relies on the measurement and reporting of outcomes using Ecological Outcomes Verification (EOV), which allows producers that properly manage livestock to monitor the improvement of soil fertility, carbon sequestration, hydrologic function, and biodiversity. With Land to Market verification, producers can then access buyers, brands, retailers, and consumers.

Through our collaboration with the Savory Institute, we will create a *bison-specific* and *rigorously climate-beneficial* program leading to the first verified and certified regenerative bison products. The land-conversion and grazing practices implemented in our demonstration program will constitute a trial of practices that will enable ranchers to meet the outcome-based criteria for verified regenerative bison products. Meanwhile soil carbon and methane measurements conducted in this project, through a collaboration among the project partners, will support the development of more cost-effective methodologies for monitoring ghg outcomes resulting from grazing management. These methodologies will, in turn, integrate with and build on the EOV approach, creating greater rigor in measurement of outcomes and consequentially more reliable veracity of claims.

To clearly define the roles in our collaboration with Savory's Land to Market program: The partners of this project, including the tribal bison programs, Collaborative Earth, Frasier Bison, and Mad Agriculture will develop and ultimately define the practices and criteria for certification. These practices and criteria will be provided to Savory's Land to Market master verifies for their implementation in an already well-developed certification operation. We will work with Savory to ensure that added value will travel with the commodity through traditional, affidavit-based chain of custody and traceability mechanisms. We believe widespread adoption of our new bison-specific and climate-smart verification and certification will require that we begin with the simplest possible enhancement of existing mechanisms for tracing meat from producer to distributor to whole-seller to retailer. Carbon credits will not be created or sold in this process, however the value of verified carbon sequestration to conscientious consumers will be passed back to ranchers through a higher price commanded by verified products.

The demonstration project described in part I of this proposal will provide a powerful mechanism for outreach to ranchers, illustrating for them the financial as well as ecological benefits associated with obtaining the verification we will design in collaboration with the Savory Institute.

IV. Plan to develop and expand markets for climate-smart commodities

More and more consumers want to know where their food comes from, and what impact food has on the landscapes and communities where it is produced. With the rise of regenerative agriculture and the growing urgency to solve climate change, more and more buyers are committing to climate-smart agriculture and to sourcing from regenerative farms as a way of fulfilling that commitment. A wide variety of consumer packaged goods companies are leading the way, from small (e.g., Patagonia Provisions) to large (e.g., Applegate), from international (e.g. Unilever) to domestic (i.e. General Mills). Consumers are ultimately driving this trend along with corporate shareholders in whose companies that desire and mandate are driving adoption of climate-oriented goals. Major brands are not only faced with the challenge of dealing with emissions that occur outside of their operations but within their supply chain (Scope 3 greenhouse gas emissions).

Mad Agriculture's Markets Program helps farmers connect with value-aligned buyers, and vice versa. Mad Ag primarily works with consumer packaged goods (CPGs) brands who have made commitments to regenerative sourcing and climate action goals. We help facilitate and build long-term relationships between producers and buyers based on a shared vision and commitment. Mad Ag works on behalf of producers to broker deals with buyers, and works on behalf of CPGs to originate new supply for their products. Mad Ag currently works with over 90 producers in 16 states who collectively manage over 75,000 acres of land. For this project, Mad Agriculture will hire a bison markets specialist to focus on full 'hoof to horn' utilization to sell multiple products, including specialty cuts, ground bison, jerky cuts, hides, and bone meal.

The bison-specific verification program created within Savory Institute's Land to Market program will provide the basis for market differentiation and added value to both producer and CPG partners. In reality, the market will determine the actual value, but we will target a 20% premium for certified bison over non-certified bison; these prices will not be directly tied to cattle prices. We are in active conversation with a variety of buyers, including: Nose to Tail, Moink, Whole Foods, Epic Provisions (General Mills), Rep Provisions, Patagonia Provisions, Figure 8 Foods and Applegate. The bison-specific verification developed in this project is the first for bison and will become available to producers not directly involved in this grant, and will remain as a market differentiator beyond the duration of this grant period. The scientific protocols and methodologies for the bison certification may become useful for the development of cattle, sheep, or other livestock certifications.

The processors of the product will follow Land to Market protocols and Ecological Outcome Verification. Common chain of custody protocols will be followed to track certified products through the supply chain. Carbon and climate beneficial metrics will be taken during the certification process but will not be fractionalized to be sold with the products into the marketplace. To avoid double counting, producers will agree to not sell the carbon beneficial metrics as credits or offsets, but use the data only for certification and management purposes.

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Milestones/benchmarks:

Required Quantitative Targets by Quarter (Cumulative) – some initial quarters may be zero:

• Number of producers involved:

Number of Producers Involved (through outreach)					
1 st Quarter 2 nd Quarter 3 rd Quarter 4 th Quarter					
Year 1	1	1	1	1	
Year 2	1	1	1	1	
Year 3	1	5	15	30	
Year 4	50	75	100	100	

• Number of underserved producers involved:

Number of Underserved Producers Involved (through outreach)					
1 st Quarter 2 nd Quarter 3 rd Quarter 4 th Quarter					
Year 1	1	1	1	1	
Year 2	1	1	1	1	
Year 3	1	4	11	23	
Year 4	38	56	75	75	

• Number of acres involved in demonstration program:

Number of Acres Involved in Demonstration Program						
	1 st Quarter 2 nd Quarter 3 rd Quarter 4 th Quarter					
Year 1	1850	1850	1850	1850		
Year 2	1850	1850	1850	1850		
Year 3	3700	3700	3700	3700		
Year 4	3700	3700	3700	3700		

• Number of acres involved in demonstration program:

Number of Acres Involved in Demonstration Program					
1 st Quarter 2 nd Quarter 3 rd Quarter 4 th Quarter					
Year 1	185	370	555	740	
Year 2	1480	2220	2960	3700	
Year 3	4440	5180	5920	6660	
Year 4	6845	7030	7215	7400	

• Number of acres involved through outreach:

Number of Acres Involved through Outreach					
	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	
Year 1	5000	5000	5000	5000	
Year 2	5000	5000	5000	5000	
Year 3	5000	25000	25000	50000	
Year 4	75000	100000	100000	125000	

• Number of head involved (if applicable):

Number of Head Involved in Demonstration Program				
	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
Year 1	25	25	25	25
Year 2	50	50	50	50
Year 3	75	75	75	75
Year 4	100	100	100	100

Number of Head Involved through outreach						
	1 st Quarter 2 nd Quarter 3 rd Quarter 4 th Quarter					
Year 1	0	0	0	0		
Year 2	0	0	0	0		
Year 3	0	100	350	725		
Year 4	1225	1850	2475	2475		

• GHG Benefits (Metric Tons of CO2e Reduced or Sequestered):

GHG Benefits						
(Metric Tons of CO2 Reduced or Sequestered)						
	1 st Quarter 2 nd Quarter 3 rd Quarter 4 th Quarter					
Year 1	0	0	0	0		
Year 2	170	330	500	660		
Year 3	990	1980	2970	3950		
Year 4	2640	5270	7900	10550		

The acreage involved in the demonstration program, which is summarized in the table above, is in a wide range of different conditions, and committed to a variety of different land uses. To model each soil condition x land-use-conversion combinations individually would at this stage involve microgeographic assessment of current carbon levels. However, we can make reasonable assumptions based on average sequestration rates due to prairie restoration of multiple current land-uses, including annual crops and hayed grassland, as summarized in Paustian et al (2019) (see project narrative reference 3). Assuming an average rate of carbon sequestration due to prairie restoration of 0.9 t CO2/acre/year, we extrapolate from the acreage table above to the ghg sequestration forecasts shown here. Please note that quarterly benchmarks are linearly interpolated from annual benchmarks. Because of the seasonality of carbon sequestration, we do not actually expect carbon sequestration to follow this precise path, but annual estimates should be reasonable.

We will also be including CH4 emissions in our assessments of total ghg benefits of this project. However, the relative methane emissions of cattle versus bison is one key unknown, making quantitative forecasting at this stage impossible. We anticipate gaining important information on this variable from the flux tower measurements taken as part of this project.

• Number of new marketing channels* established:

Number of New Marketing Channels Established					
1 st Quarter 2 nd Quarter 3 rd Quarter 4 th Quarter					
Year 1	0	0	0	0	
Year 2	0	0	0	0	
Year 3	5	10	15	20	
Year 4	20	20	20	20	

Explain

• Number of measurement tools utilized:

Number of Measurement Tools Utilized					
1 st Quarter 2 nd Quarter 3 rd Quarter 4 th Quarter					
Year 1	0	12	12	2	
Year 2	2	2	2	2	
Year 3	2	2	2	2	
Year 4	2	2	12	12	

Explain

In Q1, the CE research fellows will visit the project site to plan flux tower installation and soil core sampling. In Q2, camera-equipped flux tower installation and the first round of soil core sampling will take place. Eddy-covariance sensors will measure CO2 and CH4 fluxes, and cameras will enable

more accurate attribution of fluxes to local livestock. The soil cores drawn in Q2 will be subject to laboratory analyses in Q2 and Q3. Soil analyses will include bulk density, percent C and percent N, fizz test to determine presence of inorganic carbon, inorganic carbon levels when necessary, total organic carbon, including fractionation of soil organic carbon into particulate organic matter and mineral-associated organic matter, and pH (a total of 8 soil measurements). The reason for measuring all of these variables is that they will enable us to understand changes in total soil carbon and ultimately to predict how soils will respond over time to shifts to regenerative practices by future adopters. The ultimate goal is to design lower-cost methods for mmrv by future adopters of verified regenerative bison production. Importantly, we will also perform Mid-IR spectroscopic analysis of soil cores (a 9th measurement), determining whether MidIR will be a viable, lower cost tool for future adopters to measure soil carbon levels. Finally, we are counting analysis by Haystack Ag as a 10th measurement, although the variables measured are overlapping with those measured by more conventional methods. The reason for subjecting 100 out of 700 cores to redundant measurement at this stage is to trial the automated methods of Haystack Ag for accuracy, speed, and cost.

Q2 and Q3 soil core results will provide vital baseline measurements for the effects of the demonstration project on ghg sequestration. They will also contribute to a large database facilitating comparison of the effects of bison versus cattle effects on soils. We are not anticipating a second round of soil core sampling until Q3 and Q4 of year 4; our intention is to wait as long as possible between core sampling rounds, as the accumulation of organic matter in soils is a relatively slow process. During all intervening quarters, the flux tower measurements of CO2 and CH4 will be ongoing.

Other Required Benchmarks that may be quantitative or qualitative:

• Outreach, training and other technical assistance:

Outreach, Training, and Other Technical Assistance						
	1 st Quarter 2 nd Quarter 3 rd Quarter 4 th Quarter					
Year 1	0	1	0	1		
Year 2	1	2	1	1		
Year 3	1	2	2	1		
Year 4	1	2	2	1		

Our outreach and training strategy will focus on presenting at conferences and hosting on-site workshops/field days at the demonstration project. We will present at conferences or host online webinars during Q1 and Q4 of each year, and host on-site field days in Q3 and Q4. Possible conferences, which we already actively attend, may include Marbelseed, EcoFarm, Grassfed Exchange, Regenerate, Holistic Management International, Regenerative Agriculture and Foods Systems Summit, and others. For field-days, in Years 2, 3 and 4, we will host a field day in the spring and summer focused on sharing regenerative systems design, practices, progress and economics aimed at educating other producers. In Year 4, we will host a field specifically for brands and buyers that are interested in sourcing certified regenerative raised bison. Every year in Q2, we will also host a field day for the tribal community.

Explain

• Other MMRV and supply chain traceability attributes:

Other MMRV and Supply Chain Traceability Attributes						
	1 st Quarter 2 nd Quarter 3 rd Quarter 4 th Quarter					
Year 1	0	0	0	0		
Year 2						
Year 3						
Year 4						

MMRV -

In Year 2, we will begin to develop the Regenerative Bison certification in partnership with the Savory Institute, and we will likely envelope the standard within their Ecological Outcome Verification (EOV) program, which in turn, enables us to enter their Land to Market sales program. In Year 3, we will begin to cultivate relationships with prospective buyers and begin to develop supply chains from field to process and distribution to sales. Traceability is critical for the success of this project and for the certification. Traceability is a system of identification that allows tracking of location and movement of animal products. We will follow industry standards to design, develop and implement regenerative supply systems.

• Other measurements of work related to marketing of commodities:

Other Measurements of Work Related to Marketing of Commodities						
1 st Quarter 2 nd Quarter 3 rd Quarter 4 th Quarter						
Year 1	0	0	0	0		
Year 2	0	0	0	0		
Year 3	0	1	2	3		
Year 4	3	3	6	6		

In Year 3 we will begin aligning buyers and establishing purchasing contracts for the regenerative raised bison. We will originate 3 buyers in Year 3 and 3 more buyers in Year 4, for a total of at least 6 buyers of regenerative certified bison. Most of our marketing will be direct outreach to buyers that we already have established relationships with.

Climate-Smart Practices and Limitations

Climate-Smart practices under this grant shall be limited to the following practices:

NRCS Practice Code	Practice Name
380	Windbreak/Shelterbelt Establishment and Renovation
382	Fence
390	Riparian Herbaceous Cover
391	Riparian Forest Buffer
393	Filter Strip
512	Pasture and Hay Planting
528	Prescribed Grazing
550	Range Planting
590	Nutrient Management
612	Tree/Shrub Establishment

All practices applied under this grant will follow NRCS practice standards unless noted below:

In occasional circumstances, field conditions or available seed varieties may require that practice implementation varies slightly from the NRCS Conservation Practice Standard. These situations will be avoided wherever possible. If deviations are needed, the application will adhere to the principles of the practice standard as closely as possible and will avoid activities such as planting invasive weed seeds or over-application of nutrients that may cause damage to the land base or its resources. Prior to any deviations from the NRCS Conservation Practice Standard, notification of different practices planned will be provided to USDA and approval from USDA will be obtained for the deviations to the NRCS practices prior to project implementation.



Partnerships for Climate-Smart Commodities Data Dictionary for Recipients February 2023 Version 1.0



Table of Contents	
Overview of Reporting Requirements	2
Project Summary	3
Partner Activities	4
Marketing Activities	5
Producer Enrollment	6
Field Enrollment	7
Farm Summary	8
Field Summary	9
GHG Benefits - Alternate Modeled	10
GHG Benefits - Measured	11
Additional Environmental Benefits	12
Supplemental Data Submission	13
Data Descriptions	14
Unique IDs	14
Project Summary	15
Partner Activities	20
Marketing Activities	25
Producer Enrollment	30
Field Enrollment	38
CSAF Practice Sub-questions	44
Farm Summary	45
Field Summary	49
GHG Benefits - Alternate Modeled	57
GHG Benefits - Measured	61
Additional Environmental Benefits	65
CSAF Practice Sub-questions	75
Appendix A: Climate-smart Agriculture and Forestry Practices	83
All NRCS Practice Standards (not limited to climate-smart practices)	83
Other CSAF Practices	85
Annandiy D. Commodity List	9.6



Overview of Reporting Requirements

Grant recipients are required to submit reports to document their performance under the Partnerships for Climate-Smart Commodity funding opportunity. These submissions will be required to use the Microsoft Excel workbook templates provided by USDA. The workbooks contain a series of worksheets that collect data in a standardized format to ensure data quality and allow for aggregation and summary of this information. The entire workbook must be submitted quarterly, with updates to all applicable worksheets. This guide is divided into three sections. The Overview of Reporting Requirements section summarizes the layout of the reporting workbook and presents the data elements included in each worksheet. It also describes additional documents that must be submitted to supplement the performance reports. The Data Definitions section provides descriptions and allowable response options for each data element. The guide also indicates whether each data element is required, applicable at times, or optional; as well as how frequently each data element must be updated. Finally, the Appendices contain practice and commodity lists that will be used for these reports. Reporting is necessary for USDA oversight of this effort. The data elements required for inclusion in the quarterly performance reports allow USDA to conduct selected audits to review whether producers are receiving federal funds from multiple sources for the same purpose; to determine whether GHG benefits from implementation of climate-smart agriculture and forestry (CSAF) practices are being estimated accurately; and for other purposes deemed appropriate by USDA.

The reporting worksheets collect information at four levels: project, partner, producer, and field. Descriptions of each level:

Project level: Information about activities and impacts at a whole project/aggregate level (i.e., reflecting all activities under the grant agreement). Some project-level reporting is further subdivided by commodity type or a combination of commodity and CSAF practice(s) (commodity x practice).

Partner level: Information about activities related to a single organization (recipient, subrecipient, contractor, or other partner) within a project.

Producer level: Information about individual producers who have one or more farms enrolled in a project. **Field level**: Information about individual fields enrolled in a project.

Certain data elements are required to be reported for each producer and field enrolled in a project. In order to minimize the burden associated with data collection and to enable USDA to match data to existing records, these producer- and field-specific records must use the producer's established FSA Farm, Tract and Field IDs, and report the State and County associated with the Farm ID. Associated data entered in conjunction with these data elements, such as Producer Name, must match the data contained in the customer's Business Partner record, and the Farm Operating Plan in Business File for that Farm ID. Disclosure of this information is protected under Section 1619 of the Food, Conservation, and Energy Act of 2008 (PL 110- 246), 7 U.S.C. 8791. Additionally, Departmental Regulation 4370-001 provides USDA's policies for collecting demographic data, including race, ethnicity and gender. Providing demographic information is voluntary and at the discretion of the customer. Demographic information is used by USDA for statistical purposes only and will not be used to determine an applicant's eligibility for programs or services for which they apply.

Note: For purposes of this guide, "farm" refers to the operation from which climate-smart commodities are produced and may represent farms, ranches, forests or other operations. Similarly, "field" refers to the individual land units at which climate-smart practices are being implemented to produce climate-smart commodities and may represent lots, farmsteads or other units, depending on the type of operation and commodity. The use of "Farm", "Tract" and "Field" align with the FSA definitions; for example, "A field is a part of a farm that is separated from the balance of the farm by a permanent boundary, such as; fences, permanent waterways, woodlands, croplines in cases where farming practices make it probable that this cropline is not subject to change, and other similar features."

Version 1.0 Page 2 of 87



The following tables list the data elements included in each reporting worksheet, along with a brief description of each item.

Project Summary

These data will be collected about each project. Cumulative results are reported each quarter. Report last quarter's entry if there has been no change in this quarter.

Table 1. Project Summary elements

	Description	Frequency
Commodity type	Type of commodity(ies) incentivized by the project	Quarterly
Commodity sales	Indicates sales of the commodity(ies) related to the project occurred this quarter	Quarterly
Farms enrolled	Indicates enrollment activities occurred this quarter	Quarterly
GHG calculation methods	Methods used to calculate greenhouse gas (GHG) benefits	Quarterly
GHG cumulative calculation	Method used to calculate cumulative GHG benefits	Quarterly
Cumulative GHG benefits	Whole project estimate of total GHG (CO2e) emission reductions	Quarterly
Cumulative carbon stock	Whole project estimate of total carbon sequestration	Quarterly
Cumulative CO2 benefit	Whole project estimate of total CO2 emission reductions	Quarterly
Cumulative CH4 benefit	Whole project estimate of total CH4 emission reductions	Quarterly
Cumulative N2O benefit	Whole project estimate of total N2O emission reductions	Quarterly
Offsets produced	Amount of carbon offsets produced by project	Quarterly
Offsets sale	Name of marketplace where carbon offsets were sold	Quarterly
Offsets price	Price of carbon in offset sales	Quarterly
Insets produced	Amount of carbon insets produced by project	Quarterly
Cost of on-farm TA	Cost of on-farm technical assistance (TA) provided to producers	Quarterly
MMRV cost	Cost of measurement, monitoring, reporting, and verification (MMRV) activities	Quarterly
GHG monitoring method	Methods used by project to monitor GHG benefits (up to 5)	Quarterly
GHG reporting method	Methods used by project to report on GHG benefits (up to 5)	Quarterly
GHG verification method	Methods used to verify GHG benefits (up to 5)	Quarterly

Version 1.0 Page **3** of **87**



Partner Activities

These data will be collected at the project level. Each row in this worksheet will represent one organization involved in the project, including the recipient and all contributing partners. A partner is any organization that is receiving project funds or providing matching contributions (funds or in-kind contributions) to the project. While the recipient must complete one row for their own organization, not all data elements apply to the recipient. These exceptions are noted in the detailed descriptions of the specific elements in the *Data Definitions* section of this guide. Data are reported cumulatively each quarter. Report last quarter's entry if there has been no change in this quarter.

Table 2. Partner Activities elements

Data element name	Description	Frequency
Partner ID	Unique ID for each partner	One-time
Partner name	Name of partner organization	One-time
Partner type	Type of organization	One-time
Partner POC	Partner point of contact name	As applicable
Partner POC email	Partner point of contact email	As applicable
Partnership start date	Start of partnership on project	One-time
Partnership end date	End of partnership on project	As applicable
New partnership	Indicator for partner organizations that have no prior work with the recipient	As applicable
Partner total requested	Total amount requested to date by partner from recipient	Quarterly
Total match contribution	Total amount of match contribution by partner to date	Quarterly
Total match incentives	Total amount of match contribution by partner for incentives	Quarterly
Match type	Top 3 types of match contribution by partner, other than incentives	Quarterly
Match amount	Value of match contributions by type	Quarterly
Training provided	Top 3 types of training provided to the partner through project	Quarterly
Activity by partner	Top 3 types of activities provided by this partner to producers or other partners	Quarterly
Activity cost	Approximate cost per activity type provided by partner to producers or other partners	Quarterly
Products supplied	Names of products supplied to producers as part of project activities or incentives	Quarterly
Product source	Supplier or source of products supplied to producers as part of project activities or incentives	Quarterly

Version 1.0 Page 4 of 87



Marketing Activities

These data will be collected at the project level. Each row in this worksheet will correspond to one commodity for which the project enrolls fields and one marketing channel used to sell that commodity by the project or producers enrolled in the project. Data are reported for the current quarter and are not cumulative. If no sales of the commodity were reported during a quarter, do not complete this worksheet for that quarter.

Table 3. Marketing Activities elements

Data element name	Description	Frequency
Commodity type	Type of commodity incentivized by the project	Quarterly
Marketing channel type	Type of marketing channels used	Quarterly
Number of buyers	Number of buyers per marketing channel	Quarterly
Names of buyers	Names of buyers in the marketing channel	Quarterly
Marketing channel geography	Geography of marketing channel	Quarterly
Value sold	Value of commodity sold by marketing channel	Quarterly
Volume sold	Volume of commodity sold by marketing channel	Quarterly
Price premium	Price premium of commodity by marketing channel	Quarterly
Price premium to producer	Percent of price premium that goes to the producer	Quarterly
Product differentiation method	Top 3 types of product differentiation methods used	Quarterly
Marketing method	Top 3 types of marketing methods used	Quarterly
Marketing channel identification method	Top 3 ways marketing channel was identified	Quarterly
Traceability method	Top 3 types of supply chain traceability methods used	Quarterly

Version 1.0 Page **5** of **87**



Producer Enrollment

These data will be collected at the producer level about each farm enrolled in the project. In this worksheet, each row will correspond to one farm that has at least one field enrolled in the project. Data are reported when a producer first enrolls one or more fields in the project. If a producer is enrolled in the project for multiple years, review the farm characteristics each time a new contract is signed and provide any necessary updates. The quarterly submission should contain information about each farm initially enrolled in the project during that quarter and for updates to farms that have re-enrolled during that quarter, as applicable. If no farms are enrolled during that quarter, do not complete this worksheet for that quarter.

Table 4. Producer Enrollment elements

Data element name	Description	Frequency
Farm ID	Unique Farm ID assigned by FSA	
State or territory	State name (must match FSA farm enrollment data)	
County of residence	County name (must match FSA farm enrollment data)	
Producer data change	Indicator that producer data was updated at re-enrollment	As
		applicable
Producer start date	Contract start date	Enrollment
Producer name	Name of primary operator	Enrollment
Underserved status	Indicator the primary operator is considered underserved and/or a small producer	Enrollment
Total area	Total area of enrolled operation	Annual
Total crop area	Total crop area in enrolled operation enrolled	Annual
Total livestock area	Total livestock confinement, pasture and rangeland in enrolled operation	Annual
Total forest area	Total forest area in enrolled operation	Annual
Livestock type	Top 3 types of livestock on enrolled operation	Annual
Livestock head	Total livestock currently managed (by type)	Annual
Organic farm	Indicator that part of the farm is certified or transitioning organic	Annual
Organic fields	Indicator that any of the enrolled fields are certified or transitioning organic	Annual
Producer motivation	Motivation for participation	Annual
Producer outreach	Top 3 types of outreach provided to producer	Annual
CSAF experience	Indicator of prior implementation of CSAF practices at this farm	Annual
CSAF federal funds	Indicator of prior receipt of federal funds for CSAF practices	Annual
CSAF state or local funds	Indicator of prior receipt of state funds for CSAF practices	Annual
CSAF nonprofit funds	Indicator of prior receipt of nonprofit funds for CSAF practices	Annual
CSAF market incentives	Indicator of prior receipt of market incentives for CSAF practices	Annual

Version 1.0 Page 6 of 87



Field Enrollment

These data will be collected about each field enrolled in the project. In this worksheet, each row corresponds to one field x commodity combination enrolled in the project. Generally, data are reported once for each field, at its initial enrollment. The quarterly submission should contain information about each field initially enrolled in the project during that quarter. If no fields are enrolled during that quarter, do not complete this worksheet for that quarter. If a field is enrolled for multiple years, any relevant changes, such as a new ID number or changes to the commodity or practice combinations should be entered in this worksheet during the quarter it is re-enrolled, or as applicable.

Table 5. Field Enrollment elements

Description
Unique Farm ID assigned by FSA
Unique Tract ID assigned by FSA
Unique Field ID assigned by FSA
State name
Physical county name must match FSA farm records
Previous Field ID when reconstitution of farm results in new Field IDs
Indicator that field data has changed from initial enrollment
Start date of contract
Size of enrolled field
Category of commodity(ies) produced
Type of commodity(ies) produced
Average yield of commodity in 3 years prior to enrollment
Location for which baseline yield is provided
Most common land use in field in past 3 years
Most common irrigation type in field in past 3 years
Most common tillage in field in past 3 years
Extent of operation that implemented this practice prior to project enrollment
Indicator for prior CSAF practices in this field in past 3 years
Indicator of prior use of this practice in this field in the past 3 years
CSAF practice(s) that will be implemented in enrolled field (up to 7)
Organization that developed CSAF practice standard implemented in field
Year that practice is planned to be implemented
Area or number of animals for which practice is implemented

Version 1.0 Page **7** of **87**



Farm Summary

These data will be collected about each farm enrolled in the project. In this worksheet, each row will correspond to one farm that has at least one field enrolled in the project. The quarterly submission should contain updates to any data elements that have changed for each farm enrolled in the project during that quarter. If there are no changes from the previous quarter, do not complete this worksheet for that quarter. Data are not cumulative.

Table 6. Farm Summary elements

Data element name	Description	Frequency
Farm ID	Unique Farm ID assigned by FSA	
State or territory	State name	
County of residence	County name	
Producer TA received	Type of technical assistance provided to producer	Quarterly
Producer incentive amount	Total financial incentive provided to the producer	Quarterly
Incentive reason	Top 4 reason(s) for financial incentives provided to producer	Quarterly
Incentive structure	Top 4 units on which financial incentives are structured	Quarterly
Incentive type	Top 4 type(s) of financial incentives provided to producer	Quarterly
Payment on enrollment	Extent of payment provided to producer upon enrollment	Quarterly
Payment on implementation	Extent of payment provided to producer upon implementation of CSAF practices	Quarterly
Payment on harvest	Extent of payment provided to producer upon harvest or slaughter	Quarterly
Payment on MMRV	Extent of payment provided to producer upon reporting or verification	Quarterly
Payment on sale	Extent of payment provided to producer upon sale of commodity	Quarterly

Version 1.0 Page 8 of 87



Field Summary

These data will be collected about each field enrolled in the project for a commodity x practice(s) combination. In this worksheet, each row will correspond to one field x commodity x practice(s) combination enrolled in the project. Data for each field will be reported quarterly and are not cumulative. Report data for any elements that have an update in that quarter. Greenhouse gas benefit estimates must be entered upon practice completion or annually, as appropriate. If there are no changes from the previous quarter, do not complete this worksheet for that quarter. This worksheet includes a section to report the "official" estimate of GHG benefits – amounts of greenhouse gas emissions reduced and carbon sequestered – for the field. These quantities refer to the estimates that are used to calculate the project's aggregate impact (reported in Table 1). Tables 8 and 9 are used to report alternate estimates of the field-level GHG benefits when additional methods are used to model (Table 8) or measure (Table 9) these impacts. Any field that can use COMET-Planner must submit those results, either as the official or alternate model.

Table 7. Field Summary elements

Data element name	Description	Frequency
Farm ID	Unique Farm ID assigned by FSA	
Tract ID	Unique Tract ID assigned by FSA	
Field ID	Unique Field ID assigned by FSA	
State or territory of field	State name	
County of field	County name	
Commodity type	Type of commodity produced from field	Quarterly
Practice type	Type of practice(s) incentivized in field (up to seven)	Quarterly
Date practice complete	Date that practice implementation is certified complete	Quarterly
Contract end date	End date of contract	Quarterly
MMRV assistance provided	Indicator that MMRV assistance is provided to field	Quarterly
Marketing assistance provided	Indicator that marketing assistance provided for commodity from field	Quarterly
Incentive per acre or head	Indicator that a per acre/head incentives is provided for the CSAF practice(s) on this field	Quarterly
Field commodity value	Value of commodity produced from field	Quarterly
Field commodity volume	Volume of commodity produced from field	Quarterly
Cost of implementation	Total cost of practice implementation in field	Quarterly
Cost coverage	Percent of total cost of implementation of practice covered by project	Quarterly
	incentives	
Field GHG monitoring	Methods used to monitor GHG benefits in field (up to 3)	Quarterly
Field GHG reporting	Methods used to report on GHG benefits for field (up to 3)	Quarterly
Field GHG verification	Methods used to verify GHG benefits for field (up to 3)	Quarterly
Field GHG calculations	Methods used to calculate GHG benefits for field	Quarterly
Field official GHG calculation	Method used to calculate official GHG benefits for field	Quarterly
Field official GHG ER	Official estimate of total GHG emission reductions for field	Quarterly
Field official carbon stock	Official estimate of total carbon sequestration for field	Quarterly
Field official CO2 ER	Official estimate of total CO2 emission reductions for field	Quarterly
Field official CH4 ER	Official estimate of total CH4 emission reductions for field	Quarterly
Field official N2O ER	Official estimate of total N2O emission reductions for field	Quarterly
Field offsets produced	Amount of carbon offsets produced in field	Quarterly
Field insets produced	Amount of carbon insets produced in field	Quarterly
Other field measurements	Indicator that field data was collected for reasons other than GHG benefit estimation	Quarterly

Version 1.0 Page 9 of 87



GHG Benefits - Alternate Modeled

If greenhouse gas benefits are modeled for the same field using multiple methods, the results for the alternate models are reported in this worksheet. The "alternate" models refer to those model results that were not used in the calculation of the project's aggregate impact (as reported in Table 1). Any field that can use COMET-Planner must submit those results, either as the official or alternate model. These data will be collected about the modeled GHG benefits for each field x commodity x practice(s) combination. In this worksheet, each row will correspond to one field enrolled in the project. Data are not cumulative. Each quarterly submission should include information for all fields that have new modeled data. Greenhouse gas benefit estimates must be entered upon practice completion or annually, as appropriate.

Table 8. GHG Benefits – Alternate Modeled elements

Data element name	Description	Frequency
Farm ID	Unique Farm ID assigned by FSA	
Tract ID	Unique Tract ID assigned by FSA	
Field ID	Unique Field ID assigned by FSA	
State or territory of field	State name	
County of field	County name	
Commodity type	Type of commodity(ies) produced from the field (up to 6)	Annual
Practice type	Type of practice(s) incentivized in field (up to 7)	Annual
GHG model	Model used to calculate GHG benefits	Annual
Model start date	Start date of model run	Annual
Model end date	End date of model run	Annual
Total GHG benefits estimated	Estimate of total GHG benefits for field	Annual
Total carbon stock estimated	Estimate of total change in carbon stock for field	Annual
Total CO2 estimated	Estimate of total CO2 emission reductions for field	Annual
Total CH4 estimated	Estimate of total CH4 emission reductions for field	Annual
Total N2O estimated	Estimate of total N2O emission reductions for field	Annual

Version 1.0 Page **10** of **87**



GHG Benefits - Measured

Projects must report the results of any carbon stock or greenhouse gas emission measurements in this worksheet. These data will be collected at the field level. Each row will represent a separate measurement method used to calculate GHG benefits for a given field. Data are reported once per year of measurement and are not cumulative. Each quarterly submission should include information for any field for which there are new soil samples or new calculations of annual GHG benefits based on actual measurements.

Table 9. GHG Benefits - Measured data elements

Data element name	Description	Frequency
Farm ID	Unique Farm ID assigned by FSA	
Tract ID	Unique Tract ID assigned by FSA	
Field ID	Unique Field ID assigned by FSA	
State	State name	
County	County name	
GHG measurement method	Method of measurement	Annual
Lab name	Entity that conducted analysis	Annual
Measurement start date	Start date of measurements	Annual
Measurement end date	End date of measurements	Annual
Total CO2 reduction calculated	Calculation of total CO2 reduction	Annual
Total carbon stock change calculated	Calculation of change in carbon stock	Annual
Total CH4 reduction calculated	Calculation of total CH4 reduction	Annual
Total N2O reduction calculated	Calculation of total N2O reduction	Annual
Soil sample result	Numeric result from soil sample	Annual
Measurement type	Type of analysis conducted	Annual

Version 1.0 Page **11** of **87**



Additional Environmental Benefits

Projects that track additional environmental benefits (e.g., water quality improvements) from enrolled fields report results in this worksheet. These data will be collected about each field. Each row in this worksheet will correspond to an enrolled field. Data are not cumulative. Estimates of environmental benefits must be entered upon practice completion or annually, as appropriate.

Table 10. Additional Environmental Benefits elements

Data element name	Description	Frequency
Farm ID	Unique Farm ID assigned by FSA	
Tract ID	Unique Tract ID assigned by FSA	
Field ID	Unique Field ID assigned by FSA	
State	State name	
County	County name	
Environmental benefits	Indicator that project tracks other environmental benefits	Annual
Reduction in nitrogen loss	Indicator that project tracks reductions in nitrogen loss	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Reduction in phosphorus loss	Indicator that project tracks reductions in phosphorus loss	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Other water quality	Indicator that project tracks other water quality improvements	Annual
Туре	Type of water quality metric being tracked	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Water quantity	Indicator that project tracks reduced water use	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Reduced erosion	Indicator that project tracks reductions in soil erosion	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Reduced energy use	Indicator that project tracks reductions in energy use	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Avoided land conversion	Indicator that project tracks reductions in land conversion	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Improved wildlife habitat	Indicator that project tracks improvements in wildlife habitat	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual

Version 1.0 Page 12 of 87



<u>Supplemental Data Submission</u>

Project MMRV Plan

Definition of MMRV elements:

Measurement: Quantification of the greenhouse gas benefits (reduction or capture) using mathematical models and/or direct physical measurements in the field

Monitoring: Ongoing review and confirmation that the climate-smart practice has been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time

Reporting: Documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization

Verification: Independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable.

Projects must submit an MMRV plan that includes details about how each of the following are addressed:

- Quantification approach, including:
 - o GHG models used
 - GHG measurement plan (if applicable)
 - Approach to quantifying additional environmental benefits, if applicable (e.g., water quality, habitat)
- Verification approach:
 - o Compliance criteria
 - Verification plan/methodology
- Approach to ensuring:
 - Additionality
 - Permanence
 - Leakage
 - Impacts of weather
- Plan for non-compliance

If the project is using a specific MMRV methodology or approach developed by the recipient, a project partner, or an outside organization, the project can submit documentation associated with the methodology as long as the documentation addresses each of the above categories.

If the project is tracking other environmental benefits (as reported in the *Additional Environmental Benefits* worksheet), include a description of the methodology and tools used to track and report on these benefits.

Field modeled GHG benefit reports

Results from any models besides COMET-Planner used to estimate GHG benefits must also be submitted as a separate report. This includes projects running COMET-Farm. The full results of any model can be submitted in the native/standard format generated by the modeling tool and must include the following Unique IDs in the report or in the file name: State, County, Farm ID, Tract ID, Field ID.

Field direct measurement results

For any direct physical measurements in the field, measurement results must be submitted as a separate report and must include the following Unique IDs in the report or in the file name: State, County, Farm ID, Tract ID, Field ID. Measurement results reports must include the name of the equipment used for sampling or data collection, the name of the lab that analyzed the data, and the analytical method used.

Sample report types include soil analysis reports, summarized results of portable emissions analyzers or flux towers, water quality analyses, and plant species counts. These could be collected for the purposes of determining GHG emission reductions or carbon sequestration amounts, for calibration of tools or models, for tracking other environmental benefits, or for other reasons.

Version 1.0 Page 13 of 87



Data Descriptions

This section provides descriptions and allowable response options for each data element. The guide also indicates whether each data element is required, applicable at times, or optional; as well as how frequently each data element must be updated.

Unique IDs

Project ID: Unique ID at the project level – "Award Identifying Number" shown on award documentation

Partner ID: Unique ID at the partner level – use EIN; if no EIN, a unique ID will be assigned for use in these reports

State or territory of operation: State or territory name

County of operation: Physical county name

Farm ID: Unique ID at the operation level assigned by Farm Service Agency (FSA)

Tract ID: Unique ID at the tract level assigned by FSA **Field ID:** Unique ID at the field level assigned by FSA

Version 1.0 Page 14 of 87



Project Summary

Data collection level: Project

<u>Project Summary</u>	
Commodity type	
Data element name: Commodity type	Reporting question: What climate-smart commodity types are produced by this project?
Description: Type of commodity incentivized	d by the project. These commodities include those for whom
farmers are directly receiving incentives or o	other types of marketing support. See full list of commodity options
in Appendix B. List one commodity per row.	
Data type: List	Select multiple values: No
Measurement unit: Category	Allowed values: FSA commodity list
Logic: None – all respond	Required: Yes
Data collection level: Project	Data collection frequency: Quarterly
Commodity sales	
Data element name: Commodity sales	Reporting question: Did project activities result in sales this quarter of the commodity(ies) produced by this project?
	y(ies) related to project activities. If sales are reported, complete the
Marketing Activities worksheet (Table 3) as	
Data type: List	Select multiple values: No
Measurement unit: Category	Allowed values:
	YesNo
Logic: None – all respond	Required: Yes
Data collection level: Project	Data collection frequency: Quarterly
Farms enrolled	Tata concession requesters accuracy
Data element name: Farms enrolled	Reporting question: Did the project enroll any producers or
	fields this quarter?
	led producers or fields. If enrollment activities occurred this quarter, Enrollment worksheets (Tables 4 and 5) as part of the quarterly
performance report.	
Data type: List	Select multiple values: No
Measurement unit: Category	Allowed values:
	• Yes
Logic: None – all respond	NoRequired: Yes
Data collection level: Project	Data collection frequency: Quarterly
GHG calculation methods	Data concessor requestry. Quarterly
Data element name: GHG calculation	Reporting question: What methods is the project using to
methods	calculate GHG benefits?
Description: List the way(s) that GHG benefit	its are being measured and calculated by the project this quarter.
Data type: List	Select multiple values: No
Measurement unit: Category	Allowed values:
	 Models
	Direct field measurements
Logic None all respond	Both Required: Yes
Logic: None – all respond	Required: Yes

Version 1.0 Page 15 of 87

Data collection frequency: Quarterly



GHG cumulative calculation

Data element name: GHG cumulative **Reporting question:** What method(s) was used to calculate the

calculation total cumulative GHG benefits reported here?

Description: List the method(s) that was used to calculate the total cumulative GHG benefits reported by the

project this quarter.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Models

• Direct field measurements

• Both

Logic: None – all respond **Required:** Yes

Data collection level: Project Data collection frequency: Quarterly

Cumulative GHG benefits

Data element name: Cumulative GHG **Reporting question:** What are the project's estimated total GHG

benefits emission reductions (CO2eq) to date?

Description: Total cumulative estimated greenhouse gas emission reductions from practice implementation.

This is updated quarterly. If there are no changes, enter the same number as the previous quarter.

Data type: Decimal Select multiple values: No

Measurement unit: Metric tons CO₂eq Allowed values: 0-10,000,000

Logic: None – all respond Required: Yes

Cumulative carbon stock

Data element name: Cumulative carbon **Reporting question:** How much carbon has the project

stock seguestered to date?

Description: Estimated total cumulative change in carbon stock based on practice implementation. This is updated quarterly. If there are no changes, enter the same numbers as the previous quarter. Conversion rate is

one ton of carbon = 3.67 tons of CO_2 eq.

Data type: Decimal Select multiple values: No

Measurement unit: Metric tons CO₂eq Allowed values: 0-10,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Project **Data collection frequency:** Quarterly

Cumulative CO2 benefit

Data element name: Cumulative CO2 **Reporting question:** What are the project's estimated total

benefit cumulative CO2 emission reductions to date?

Description: Estimated total cumulative carbon dioxide emission reductions based on practice implementation.

This is updated quarterly. If there are no changes, enter the same number as the previous quarter.

Data type: Decimal Select multiple values: No

Measurement unit: Metric tons CO₂ Allowed values: 0-10,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Project **Data collection frequency:** Quarterly

Cumulative CH4 benefit

Data element name: Cumulative CH4 benefit **Reporting question:** What are the project's estimated total

CH4 emission reductions to date?

Description: Estimated total cumulative methane reduction based on practice implementation. This is updated quarterly. If there are no changes, enter the same numbers as the previous quarter. Conversion rate is one ton

of $CH_4 = 25$ tons of CO_2 eq.

Data type: Decimal Select multiple values: No

Measurement unit: Metric tons CH4 reduced in Allowed values: 0-10,000,000

CO₂eq

Logic: None – all respond **Required:** Yes

Data collection level: Project **Data collection frequency:** Quarterly

Version 1.0 Page **16** of **87**



Cumulative N20 benefit

Data element name: Cumulative N2O benefit **Reporting question:** What are the project's estimated total

N2O emission reductions to date?

Allowed values: 0-10,000,000

Description: Estimated total cumulative nitrous oxide reduction based on practice implementation. This is updated quarterly. If there are no updated numbers enter the same number as the previous quarter.

Conversion rate is one ton of $N_2O = 298$ tons of CO_2eq .

Data type: Decimal Select multiple values: No

Measurement unit: Metric tons N2O reduced in

CO₂eq

Data collection level: Project Data collection frequency: Quarterly

Offsets produced

Logic: None – all respond

Data element name: Offsets produced **Reporting question:** How many carbon offsets have been

produced in the project?

Required: Yes

Description: Total carbon offsets produced by enrolled project fields during the quarter. Offsets are defined as

having been verified and certified using an accepted standard and sold into the carbon marketplace.

Data type: Decimal **Select multiple values**: No

Measurement unit: Metric tons CO₂eq Allowed values: 0-10,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Project **Data collection frequency:** Quarterly

Offsets sale

Data element name: Offsets sale **Reporting question:** To what marketplace(s) were carbon offsets

sold?

Description: Marketplaces to which carbon offsets produced by enrolled project fields were sold. Offsets are defined as having been verified and certified using an accepted standard and sold into the carbon marketplace.

List each marketplace name. Separate names with commas.

Data type: Text Select multiple values: NA

Measurement unit: Name Allowed values: Text

Logic: Respond if >0 to 'Offsets produced' **Required:** Yes

Data collection level: Project **Data collection frequency:** Quarterly

Offsets price

Data element name: Offsets price **Reporting question:** What was the average price of carbon

received for offsets?

Description: Average price per metric ton paid for carbon offsets produced by enrolled project fields. Offsets are defined as having been verified and certified using an accepted standard and sold into the carbon marketplace.

Data type: Decimal Select multiple values: No

Measurement unit: Dollars per metric ton Allowed values: 0-500

Logic: Respond if >0 to 'Offsets produced' **Required:** Yes

Data collection level: Project **Data collection frequency:** Quarterly

Insets produced

Data element name: Insets produced **Reporting question:** How many carbon insets have been

produced in the project?

Description: Total carbon insets produced by enrolled fields during the quarter. Insets are defined as having been verified and certified using an accepted standard and accounted for within Scope 3 emissions for a firm.

Data type: Decimal Select multiple values: No

Measurement unit: Metric tons CO₂eq Allowed values: 0-10,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Project Data collection frequency: Quarterly

Version 1.0 Page **17** of **87**



Cost of on-farm TA

Data element name: Cost of on-farm TA **Reporting question:** What is the total amount that has been

spent to provide on-farm TA?

Description: Total cost of any field- or practice-specific technical assistance provided by the project (by recipient or partners) to any producers. This is updated quarterly. If there are no changes, enter the same number as the

previous quarter.

Data type: DecimalSelect multiple values: NoMeasurement unit: DollarsAllowed values: \$0-\$50,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Project Data collection frequency: Quarterly

MMRV cost

Data element name: MMRV cost **Reporting question:** What is the total amount that has been

spent on MMRV activities?

Description: Total cost of all MMRV activities paid for by the project (recipient or partners). MMRV components are defined as measurement (calculations or estimations of GHG emissions), monitoring (ongoing review and confirmation that the climate-smart practices have been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time), reporting (documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization), and verification (independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable). This is updated quarterly. If there are no changes, enter the same number as the previous quarter.

Data type: DecimalSelect multiple values: NoMeasurement unit: DollarsAllowed values: \$0-\$50,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Project Data collection frequency: Quarterly

GHG monitoring method

Data element name: GHG monitoring 1-5 Reporting question: How did the project monitor GHG benefits?

Description: Up to the five most common forms of monitoring GHG benefits used this quarter as part of MMRV requirements. Monitoring is defined as ongoing review and confirmation that the climate-smart practice has been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time. Include up to 5 methods, based on which methods are most commonly used for this project. The worksheet provides five columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 5 GHG monitoring methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG monitoring methods as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Drones

Ground-level photos and videos

On-farm visit

Plot-based sampling

• Producer records or attestation

Satellite monitoring or remote sensing

Soil metagenomics

Soil sensors

Water sensors

Other (specify)

Logic: None – all respond **Required:** Yes

Data collection level: Project Data collection frequency: Quarterly

Version 1.0 Page **18** of **87**



GHG reporting method

Data element name: GHG reporting 1-5

Reporting question: How did the project track and report implementation of practices to reduce GHG emissions?

Description: Up to the five most common forms of tracking and reporting on practice implementation used this year as part of MMRV requirements. Reporting is defined as documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization. Include up to 5 methods, based on which methods are most commonly used for this project. The worksheet provides five columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 5 GHG reporting methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG reporting methods as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

- Automated devices
- Email
- Mobile app
- Paper
- Third-party actors
- Website
- Other (specify)

Logic: None – all respond **Required:** Yes

Data collection level: Project Data collection frequency: Quarterly

GHG verification method

methods as free text.

Logic: None - all respond

Data element name: GHG verification method 1-5

Reporting question: How did the project verify implementation of practices to reduce GHG emissions?

Description: Up to the five most common forms of verifying practice implementation used this year as part of MMRV requirements. Verification is defined as independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable. Include up to 5 methods, based on which methods are most commonly used for this project. The worksheet provides five columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 5 GHG verification methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG verification

Data type: List Select multiple values: No

Measurement unit: Category Allowed v

Allowed values:

- Artificial intelligence
- Audit by recipient
- Computer modeling
- Photos
- Record audit
- Satellite imagery
- Site or field visit
- Third-party audit
- Other (specify)

Required: Yes

Data collection level: Project Data collection frequency: Quarterly

Version 1.0 Page **19** of **87**



Partner Activities

U	nic	aue	IDs
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Partner ID Unique Project ID for each partner

Partner name

Data element name: Name of partner organization **Reporting question:** What is the official name of the

recipient or partner organization?

Description: Legal name of recipient or partner organization

Data type: Text Select multiple values: NA

Measurement unit: NA Allowed values: Text

Logic: None – all respond **Required:** Yes

Data collection level: Partner **Data collection frequency:** Partnership initiation

Partner type

Data element name: Type of partner organization **Reporting question:** What type of organization is this?

Description: Legal/financial structure of recipient or partner organization

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Commodity groups (501c5)

For-profitIndividualNonprofit

State or local agency

Tribal agencyUniversityRequired: Yes

Data collection level: Partner **Data collection frequency:** Partnership initiation

Partner POC

Logic: None – all respond

Data element name: Partner POC **Reporting question:** Who is the point of contact for

this project at the recipient or partner organization?

Description: Name of a point of contact for the recipient or partner organization

Data type: Text Select multiple values: NA

Measurement unit: NA Allowed values: Text

Logic: None – all respond Required: Yes

Data collection level: Partner Data collection frequency: Partnership initiation;

update as necessary

Partner POC email

Data element name: Partner POC email Reporting question: What is the point of contact's

email address?

Description: Email of the point of contact for the recipient or partner organization

Data type: Text Select multiple values: NA

Measurement unit: NA Allowed values: Text

Logic: None – all respond **Required:** Yes

Data collection level: Partner **Data collection frequency:** Partnership initiation;

update as necessary

Version 1.0 Page **20** of **87**



Partnership start date		
Data element name: Partnership start date	Reporting question: When did the partnership start?	
·	d the recipient began formally partnering on the project	
Data type: Date	Select multiple values: NA	
Measurement unit: MM/DD/YYYY	Allowed values: 01/01/2023 – 12/31/2030	
Logic: No response for recipient	Required: Yes	
Data collection level: Partner	Data collection frequency: Partnership initiation	
Partnership end date		
Data element name: Partnership end date	Reporting question: When did the partnership end?	
Description: Date that the partner organization an	d the recipient stopped formally partnering on the project	
Data type: Date	Select multiple values: NA	
Measurement unit: MM/DD/YYYY	Allowed values: 01/01/2023 – 12/31/2030	
Logic: No response for recipient	Required: Yes	
Data collection level: Partner	Data collection frequency: Partnership end quarter	
New partnership		
Data element name: New partnership	Reporting question: Is this a new partnership?	
	cipient and the partner organization have not had a formal	
Description: A new partnership means that the rec working relationship (under contract or on a grant)	cipient and the partner organization have not had a formal prior to the start of the project.	
Description: A new partnership means that the recovering relationship (under contract or on a grant) Data type: List	cipient and the partner organization have not had a formal prior to the start of the project. Select multiple values: No Allowed values: • Yes	
Description: A new partnership means that the recovering relationship (under contract or on a grant) Data type: List	cipient and the partner organization have not had a formal prior to the start of the project. Select multiple values: No Allowed values: Yes No	
Description: A new partnership means that the recovering relationship (under contract or on a grant) Data type: List Measurement unit: Category	cipient and the partner organization have not had a formal prior to the start of the project. Select multiple values: No Allowed values: Yes No I don't know	
Description: A new partnership means that the recovering relationship (under contract or on a grant) Data type: List Measurement unit: Category Logic: No response for recipient	cipient and the partner organization have not had a formal prior to the start of the project. Select multiple values: No Allowed values: Yes No I don't know Required: Yes	
Description: A new partnership means that the recovering relationship (under contract or on a grant) Data type: List Measurement unit: Category Logic: No response for recipient Data collection level: Partner	cipient and the partner organization have not had a formal prior to the start of the project. Select multiple values: No Allowed values: Yes No I don't know	
Description: A new partnership means that the recovering relationship (under contract or on a grant) Data type: List Measurement unit: Category Logic: No response for recipient	cipient and the partner organization have not had a formal prior to the start of the project. Select multiple values: No Allowed values: Yes No I don't know Required: Yes Data collection frequency: Partnership initiation Reporting question: What is the total amount of funding the partner has requested to date from this	
Description: A new partnership means that the recover working relationship (under contract or on a grant) Data type: List Measurement unit: Category Logic: No response for recipient Data collection level: Partner Partner total requested Data element name: Partner total requested Description: Cumulative (total) amount of funds the recipient from the start of the partnership to the en	cipient and the partner organization have not had a formal prior to the start of the project. Select multiple values: No Allowed values: Yes No I don't know Required: Yes Data collection frequency: Partnership initiation Reporting question: What is the total amount of funding the partner has requested to date from this project? at the partner has requested reimbursement for from the and of the reporting quarter. For each quarter's data entry, the he amount of funds requested in the reporting quarter. If	
Description: A new partnership means that the recover working relationship (under contract or on a grant) Data type: List Measurement unit: Category Logic: No response for recipient Data collection level: Partner Partner total requested Data element name: Partner total requested Description: Cumulative (total) amount of funds the recipient from the start of the partnership to the envalue must be the sum of all previous entries plus there are no changes, report the value from the presentations.	cipient and the partner organization have not had a formal prior to the start of the project. Select multiple values: No Allowed values: Yes No I don't know Required: Yes Data collection frequency: Partnership initiation Reporting question: What is the total amount of funding the partner has requested to date from this project? at the partner has requested reimbursement for from the and of the reporting quarter. For each quarter's data entry, the he amount of funds requested in the reporting quarter. If evious quarter.	
Description: A new partnership means that the recover working relationship (under contract or on a grant) Data type: List Measurement unit: Category Logic: No response for recipient Data collection level: Partner Partner total requested Data element name: Partner total requested Description: Cumulative (total) amount of funds the recipient from the start of the partnership to the ervalue must be the sum of all previous entries plus there are no changes, report the value from the predata type: Decimal	cipient and the partner organization have not had a formal prior to the start of the project. Select multiple values: No Allowed values: Yes No I don't know Required: Yes Data collection frequency: Partnership initiation Reporting question: What is the total amount of funding the partner has requested to date from this project? at the partner has requested reimbursement for from the and of the reporting quarter. For each quarter's data entry, the he amount of funds requested in the reporting quarter. If evious quarter. Select multiple values: NA	

Version 1.0 Page **21** of **87**



Total match contribution

Data element name: Total match contribution

Reporting question: What is the total match value the organization has contributed to the project to date?

Description: Cumulative (total) value of funds and in-kind contributions (e.g., staff time, inputs, equipment rental, marketing support) that the partner has provided as a project match contribution from the start of the partnership to the end of the reporting quarter. For each quarter's data entry, the value must be the sum of all previous entries plus match contributions in the reporting quarter. If there are no changes, report the value from the previous quarter.

Data type: Decimal Select multiple values: NA

Allowed values: \$0-\$100,000,000 Measurement unit: Dollars

Required: Yes Logic: None - all respond

Data collection level: Partner Data collection frequency: Quarterly

Total match incentives

Data element name: Total match incentives

Reporting question: What is the total value of match provided by this organization for producer incentives?

Description: Cumulative (total) value of funds for incentive payments directly to producers that the partner has provided as a project match contribution from the start of the partnership to the end of the reporting quarter. For each quarter's data entry, the value must be the sum of all previous entries plus match incentives in the reporting quarter. If there are no changes, report the value from the previous quarter.

Data type: Decimal Select multiple values: NA

Measurement unit: Dollars Allowed values: \$0-\$100,000,000

Logic: None - all respond Required: Yes

Data collection level: Partner Data collection frequency: Quarterly

Match type

Logic: None - all respond

Data element name: Match type 1-3 Reporting question: What types of match

contributions has the organization provided to the

project?

Description: Types of match contributions other than incentives provided directly to producers by the organization from the start of the partnership to the end of the reporting quarter. Enter up to the top three (in dollar value) types of match contributions provided. In-kind staff time could be used for technical assistance, marketing assistance, or other support to producers. Production inputs include seed, fertilizer, pesticides, equipment and other inputs for use in the field. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 match types are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other match types as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Equipment rental or use

In-kind staff time

Production inputs (reduced cost or free)

Program income

Software

Other (specify)

Required: Yes

Data collection level: Partner Data collection frequency: Quarterly

Version 1.0 Page 22 of 87



Match amount

Data element name: Match amount 1-3 Reporting question: What is the value of the match

contributions the organization provided to the

project?

Description: Cumulative (total) value of funds for each match type that the organization has provided as a project match contribution from the start of the partnership to the end of the reporting quarter. Enter amounts for up to the top three (in dollar value) match types. The worksheet provides three columns for this data element. Enter one value for each column. If fewer than 3 match types are used, leave unnecessary columns

blank.

Data type: Decimal Select multiple values: NA

Measurement unit: Dollars Allowed values: \$0-\$100,000,000

Logic: None - all respond Required: Yes

Data collection level: Partner Data collection frequency: Quarterly

Training type provided

Reporting question: What types of training has the **Data element name:** Training type 1-3 provided

organization provided to project partners?

Description: Types of training provided to the project partner as a result of participating in the project during the past quarter. Training can come from the recipient, a project partner organization (including other divisions of their own organization, or an outside organization. Enter up to the top three (in dollar value) types of partner training provided. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 training types are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other training types as free text.

Data type: List Select multiple values: No

Measurement unit: Category

Allowed values:

- Data collection
- **Grant reporting**
- Marketing opportunities
- Providing financial assistance
- Providing technical assistance
- Writing producer contracts

Other (specify) Required: Yes

Logic: None - all respond

Data collection level: Partner Data collection frequency: Quarterly

Activity by partner

Data element name: Activity 1-3 by partner **Reporting question:** What types of activities has the

organization provided to the project?

Description: Types of activities that the recipient or partner organization has provided during the reporting quarter. Enter up to the top three (in dollar value) types of activities undertaken. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 activity types are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other

activity types as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

- Marketing support
- MMRV support
- Producer outreach for enrollment
- Technical assistance to producers
- Training to other partner organizations

Other (specify)

Logic: None - all respond **Required:** Yes

Data collection level: Partner Data collection frequency: Quarterly

Version 1.0 Page 23 of 87



Activity cost

Data element name: Activity cost 1-3 **Reporting question:** What is the value of the activities

this organization has provided to the project?

Description: Cumulative (total) cost of each activity type that the organization has undertaken or offered from the start of the partnership to the end of the reporting quarter. Enter amounts for up to the top three (in dollar value) activity types. The worksheet provides three columns for this data element. Enter one value for each

column. If fewer than 3 activity types are provided, leave unnecessary columns blank.

Data type: Decimal Select multiple values: NA

Measurement unit: Dollars Allowed values: \$0-\$100,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Partner Data collection frequency: Quarterly

Products supplied

Data element name: Products supplied Reporting question: What products or supplies were

provided to enrolled fields?

Description: Name(s) of products supplied to enrolled producers as incentives or matching contributions. Enter the name of each product, including its brand. Separate each product name with a comma. If no products or

supplies were provided by the organization, leave the column blank.

Data type: Text Select multiple values: NA

Measurement unit: Name Allowed values: Text

Logic: None – all respond **Required:** Yes

Data collection level: Partner Data collection frequency: Quarterly

Product source

Data element name: Product source **Reporting question:** Which companies provided the

supplies?

Description: Name of firm or company from which supplies were obtained.

Data type: Text Select multiple values: NA

Measurement unit: Name Allowed values: Text

Logic: Respond if text entered for 'Products supplied' **Required:** Yes

Data collection level: Partner **Data collection frequency:** Quarterly

Version 1.0 Page **24** of **87**



Marketing Activities

Commodity type

Data element name: Commodity type Reporting question: What type of commodity is produced by

the farmers enrolled in this project?

Description: List a single commodity produced or marketed through incentives from this project. If multiple commodities are produced by the project, use additional rows of the worksheet to report each commodity. Use the FSA commodity list in Appendix B and choose the commodity from the list.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values: FSA commodity list

Logic: None – all respond **Required:** Yes

Data collection level: Project **Data collection frequency:** Quarterly

Marketing channel type

Data element name: Marketing channel Reporting question: What type of marketing channel is used to

ype sell this commodity?

Description: List a single type of marketing channel used to sell the commodity produced by farmers enrolled in the project. If a single commodity is marketed through multiple channels, use additional rows of the worksheet to report each combination of commodity and marketing channel. If "other" is chosen, use the additional column to enter the other marketing channel type(s) as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Agricultural marketing board

Biorefinery

Commodity broker

Direct to consumer

Direct to institution

Direct to restaurant

Distributor (including grain elevators)

Food hub or cooperative

Food processor

Non-food byproducts processor

Retailer

USDA

Other (specify)

Logic: None – all respond **Required:** Yes

Data collection level: Project Data collection frequency: Quarterly

Number of buyers

Data element name: Number of buyers **Reporting question:** How many buyers are there in this

marketing channel?

Description: List the number of individual firms or buyers in this marketing channel.

Data type: IntegerSelect multiple values: NoMeasurement unit: CountAllowed values: 1-500

Logic: None – all respond **Required:** Yes

Data collection level: Project Data collection frequency: Quarterly

Version 1.0 Page 25 of 87



Names of buyers

this marketing channel?

Description: Provide the names of all buyers in this marketing channel. Separate each name with a comma.

Data type: Text Select multiple values: NA

Measurement unit: Name Allowed values: Text

Logic: None – all respond **Required:** Yes

Data collection level: Project **Data collection frequency:** Quarterly

Marketing channel geography

Data element name: Marketing channel Reporting question: What is the primary geography of the

geography marketing channel?

Description: The primary geography of the type of marketing channel. Primary geography means the scale at which most of the activity of buying and selling happens. Local means within a single state or directly neighboring states. Regional means within a five-to-ten state area. National means across the United States. International means specific locations outside of the United States. Global means across the world or not to a

specific international location.

Logic: None – all respond

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

LocalRegionalNational

GlobalRequired: Yes

Data collection level: Project Data collection frequency: Quarterly

Value sold

Data element name: Value sold **Reporting question:** What is the value of the commodity sold in

this marketing channel?

Description: The dollar value of the commodity sold in this marketing channel this quarter (non-cumulative).

Data type: Decimal Select multiple values: No

Measurement unit: Dollars Allowed values: \$1-\$100,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Project Data collection frequency: Quarterly

Volume sold

Data element name: Volume sold **Reporting question:** What is the volume of the commodity sold

in this marketing channel?

Description: The volume of the commodity sold in this marketing channel this quarter (non-cumulative).

Data type: Decimal Select multiple values: No

Measurement unit: Number Allowed values: 1-100,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Project **Data collection frequency:** Quarterly

Version 1.0 Page **26** of **87**



Volume sold unit

Data element name: Volume sold unit **Reporting question:** What is the unit of volume?

Description: The unit associated with the volume of the commodity sold in the marketing channel. If "other" is

chosen, use the additional column to enter the appropriate unit as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Bales (500 pounds)

Bushels

Carcass pounds

Gallons

Kilograms

Linear board feet

Liveweight pounds

Metric tons

Pounds

Short tons

Other (specify)

Logic: None – all respond Required: Yes

Data collection level: Project **Data collection frequency:** Quarterly

Price premium

Data element name: Price premium Reporting question: What price premium is received for the

commodity sold in this marketing channel?

Description: The price premium received for the commodity sold in this marketing channel this quarter. Price

premium is the amount received above a 'business as usual' price.

Data type: Decimal Select multiple values: No

Measurement unit: Dollars Allowed values: \$0.01-\$10,000

Logic: None – all respond **Required:** Yes

Data collection level: Project **Data collection frequency:** Quarterly

Price premium unit

Data element name: Price premium unit **Reporting question:** What is the unit for the price premium?

Description: The unit associated with the price premium for the commodity sold in the marketing channel. If

"other" is chosen, use the additional column to enter the appropriate unit as free text.

Data type: List Select multiple values: No

Measurement unit: Category

Select illultiple values. No

Allowed values:

Per bale (500 pounds)

Per bushel

Per carcass pound

Per gallon

Per kilogram

Per linear board foot

Per live pound

Per metric ton

Per ounce

Per short ton

Other (specify)

Logic: None – all respond **Required:** Yes

Version 1.0 Page 27 of 87



Price premium to producer

Data element name: Price premium to Reporting question: What percent of the price premium is producer

provided to the producer for the commodity sold in this

marketing channel?

Description: The percent of the price premium provided to the producer for the commodity sold in this marketing channel this quarter. Price premium is the amount received above a 'business as usual' price.

Data type: Decimal Select multiple values: No Measurement unit: Percent Allowed values: 0-100

Logic: None - all respond Required: Yes

Data collection level: Project Data collection frequency: Quarterly

Product differentiation method

Data element name: Product differentiation method 1-3 Reporting question: What methods are used

to differentiate climate-smart commodities in

this marketing channel?

Description: Provide the methods used to differentiate the climate-smart commodity in this market channel. Product differentiation methods are ways to distinguish or differentiate the climate-smart commodity in the marketplace. Include up to 3 methods, based on which methods are most commonly used for this project. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 product differentiation methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other product differentiation methods as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

- Certification/verification for internal insetting
- Farm certification
- Label or badge used on packaging or marketing
- Third party certification/verification
- Trademark Other (specify)

Logic: None - all respond Required: Yes

Data collection level: Project Data collection frequency: Quarterly

Marketing method

Data element name: Marketing method 1-3 Reporting question: What methods are used to market climate-smart commodities in this marketing channel?

Description: Provide the method(s) used to market this commodity in this market channel. Marketing method is the way that potential buyers of the climate-smart commodity are engaged by the project partners as the sellers or facilitators of sale. Include up to 3 methods, based on which methods are most commonly used for this project. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 marketing methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other marketing methods as free text

Data type: List Select multiple values: No

Allowed values: Measurement unit: Category

- Label or badge used on packaging or marketing materials
- Marketing partnership (e.g., promotion by buyer)
- Print marketing campaign
- Social media and digital marketing campaign
- Verbal marketing campaign (e.g., radio, word of mouth)
- Other (specify) Required: Yes

Logic: None - all respond

Data collection level: Project Data collection frequency: Quarterly

Version 1.0 Page 28 of 87



Marketing channel identification method

Data element name: Marketing channel identification method 1-3

Reporting question: What methods are used to generate interest in climate-smart commodities in this marketing channel?

Description: Provide the marketing channel identification method(s) used for this commodity in this market channel. Market channel identification methods are the ways that producers and project partners generate interest in purchasing the climate-smart commodity. Include up to 3 methods, based on which methods are most commonly used for this project. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 marketing channel identification methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other marketing channel identification methods as free text

Select multiple values: No Data type: List

Measurement unit: Category

Allowed values:

- Educational tours for buyers
- In-person lead generation
- Negotiated contracts with buyers
- Partnership network or project partner
- Other (specify) Required: Yes

Logic: None - all respond

Data collection level: Project Data collection frequency: Quarterly

Traceability method

Data element name: Traceability method

Reporting question: What traceability methods are used for climate-smart commodities in this channel?

Description: Provide the traceability method(s) used for the climate-smart commodity in this market channel. Traceability methods are ways to trace the climate-smart commodity or the climate-smart claims through the supply chain. Include up to 3 methods, based on which methods are most commonly used for this project. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 traceability methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other traceability methods as free text.

Data type: List Select multiple values: No

Measurement unit: Category

Allowed values:

- Barcode or unique ID
- Blockchain
- Book and claim
- Chain of custody
- Mass balance
- Recordkeeping
- Registry with certification
- Segregation
- Supply shed
- Volume proxy
- Other (specify)

Logic: None - all respond

Data collection level: Project

Required: Yes

Data collection frequency: Quarterly

Version 1.0 Page 29 of 87



Producer Enrollment

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u		u	ue	IDs

Farm ID	Unique Farm ID assigned by FSA
State or territory	State name (must match FSA farm enrollment data)
County of residence	County name (must match FSA farm enrollment data)

Producer data change

Data element name: Producer data change **Reporting question:** Is there new/updated

information for a producer who is re-enrolling in the

project?

Description: Indicates that there is new or updated information for a producer who had previously enrolled in

the project and is re-enrolling.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

YesNo

Logic: None – all respond Required: Yes

Data collection level: Producer Data collection frequency: Re-enrollment

Producer start date

Data element name: Producer start date **Reporting question:** When did the producer enroll in

the project?

Description: Date that the producer enrolled in the project by signing their first contract.

Data type: Date Select multiple values: NA

Measurement unit: MM/DD/YYYY Allowed values: 01/01/2023 – 12/31/2030

Logic: None – all respond **Required:** Yes

Data collection level: Producer Data collection frequency: Initial enrollment

Producer name

Data element name: Producer name **Reporting question:** What is the name of producer

enrolled in the project?

Description: Name of the producer enrolled in the project; the name must match the name contained in the customer's Business Partner record and the Farm Operating Plan in FSA Business File for that Farm ID.

Data type: Text Select multiple values: NA

Measurement unit: NA Allowed values: Text

Logic: None – all respond **Required:** Yes

Data collection level: Producer Data collection frequency: Initial enrollment

Version 1.0 Page **30** of **87**



Underserved status

Data element name: Underserved status

Reporting question: Is this producer considered an underserved and/or a small producer?

Description: Underserved status of the primary operator of the enrolled operation. Underserved producers generally include beginning farmers, socially disadvantaged farmers, veteran farmers, and limited resource farmers; women farmers and producers growing specialty crops are generally also included in these categories. Small farms are generally those with less than \$350,000 in annual gross cash farm income. Indicate whether this producer is considered underserved, a small producer, or both underserved and a small producer. Use "I don't know" if the producer declines to answer. Departmental Regulation 4370-001 provides USDA's policies for collecting demographic data, including race, ethnicity and gender. Providing demographic information is voluntary and at the discretion of the customer. Demographic information is used by USDA for statistical purposes only and will not be used to determine an applicant's eligibility for programs or services for which they apply.

Data type: List Select multiple values: No

Measurement unit: Category Allo

Allowed values:

- Yes, underservedYes, small producer
- Yes, underserved and small producer
- No
- I don't know

Required: No

Data collection level: Producer Data collection frequency: Initial enrollment

Total area

Logic: None - all respond

Data element name: Total area **Reporting question:** What is the total area of the farm?

Description: Total area of the farm associated with the Farm ID. Report total area of the farm, even if only a portion of the farm is enrolled in the project. If a producer is enrolled in the project for multiple years, review the total area each time a new contract is signed and provide any necessary updates.

Data type: List Select multiple values: No

Measurement unit: Category

Allowed values:

- Less than 1 acre
- 1 to 9 acres
- 10 to 49 acres
- 50 to 69 acres
- 70 to 99 acres
- 100 to 139 acres
- 140 to 179 acres180 to 219 acres
- 220 to 259 acres
- 220 to 259 acres
- 260 to 499 acres500 to 999 acres
- 1,000 to 1,999 acres
- 2,000 to 4,999 acres
- 5,000 or more acres

Logic: None – all respond

Data collection level: Producer

Required: Yes

Data collection frequency: Initial enrollment and subsequent

enrollment(s), if applicable

Version 1.0 Page **31** of **87**



Total crop area

Data element name: Total crop area **Reporting question:** What percent of the current operation is

cropland?

Description: Area of the total farm that is currently used as cropland. If a producer is enrolled in the project for multiple years, review the total crop area each time a new contract is signed and provide any necessary

updates.

Data type: IntegerSelect multiple values: NoMeasurement unit: AcresAllowed values: 0-100,000

Logic: None – all respond **Required:** Yes

enrollment(s), if applicable

Total livestock area

Data element name: Total livestock **Reporting question:** What amount of the current operation is used for

irea livestock (by area)?

Description: Area of the total farm that is currently used for pasture, grazing, rangeland; or animal housing, feeding or milking. If a producer is enrolled in the project for multiple years, review the total livestock area each

time a new contract is signed and provide any necessary updates.

Data type: Integer

Select multiple values: No

Measurement unit: Acres Allowed values: 0-100,000

Logic: None – all respond **Required:** Yes

enrollment(s), if applicable

Total forest area

(by area)?

Description: Area of the total farm that is currently considered forest land use. Forest land use means that at least 10% of the land area is covered in trees that will be at least 13 feet tall when mature. If a producer is enrolled in the project for multiple years, review the total forest area each time a new contract is signed and

provide any necessary updates.

Data type: IntegerSelect multiple values: NoMeasurement unit: AcresAllowed values: 0-100,000

Logic: None – all respond **Required:** Yes

Data collection level: Producer
Data collection frequency: Initial enrollment and subsequent

enrollment(s), if applicable

Version 1.0 Page **32** of **87**



Livestock type

Data element name: Livestock type 1-3

Reporting question: What types of livestock are raised on the farm?

Description: Up to top three types of livestock (by head count) on the farm. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 3 livestock types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other livestock types as free text. If a producer is enrolled in the project for multiple years, review the livestock type each time a new contract is signed and provide any necessary updates.

Data type: List Select multiple values: No

Measurement unit: Category

Sciece manapic values. No

Allowed values:

- Alpacas
- Beef cows
- Beefalo
- Buffalo or bison
- Chickens (broilers)
- Chickens (layers)
- Dairy cows
- Deer
- Ducks
- Elk
- Emus
- Equine
- Geese
- Goats
- Honeybees
- Llamas
- Reindeer
- Sheep
- Swine
- Turkeys
- Other (specify)

Required: Yes

Required: Yes

Data collection frequency: Initial enrollment and subsequent enrollment(s), if applicable

Livestock head

Data element name: Livestock head 1-3

Logic: Respond if 'Total livestock area' >0

Data collection level: Producer

Reporting question: How many livestock (by type) are on this operation?

Description: Average annual head count for each type of livestock. Enter amounts for up to the top three livestock types by number. The worksheet provides three columns for this data element. Enter one value for each column. If there are fewer than 3 livestock types, leave unnecessary columns blank. If a producer is enrolled in the project for multiple years, review the average annual head count each time a new contract is signed and provide any necessary updates.

Data type: IntegerSelect multiple values: NAMeasurement unit: Head countAllowed values: 1-10,000,000

Logic: Respond if 'Total livestock area' >0

Data collection level: Producer **Data collection frequency:** Initial enrollment and

subsequent enrollment(s), if applicable

Version 1.0 Page 33 of 87



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Data element name: Organic farm

Reporting question: Is any part of the farm currently USDAcertified organic or transitioning to USDA-certified organic?

Description: USDA-certified organic means that the farm has been certified by an accredited organic certifying agent or is transitioning to USDA-certified organic by not using any of the prohibited substances. Yes means that some or all of the farm is certified organic or transitioning to certified organic. No means that no part of the farm is certified organic or transitioning to certified organic. If a producer is enrolled in the project for multiple years, review the organic certification status of the farm each time a new contract is signed and provide any necessary updates.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

> Yes Nο

I don't know

Required: No Logic: None - all respond

Data collection level: Producer Data collection frequency: Initial enrollment and

subsequent enrollment(s), if applicable

Organic fields

Data element name: Organic fields

Reporting question: Are any of the fields enrolled in the project currently USDA-certified organic or transitioning to USDA-certified organic?

Description: USDA-certified organic means that the operation has been certified by an accredited organic certifying agent or is transitioning to USDA-certified organic by not using any of the prohibited substances. Yes means that some or all of the fields enrolled in the project are certified organic or transitioning to certified organic. No means that no part of the fields enrolled in the project are certified organic or transitioning to certified organic. If a producer is enrolled in the project for multiple years, review the organic certification status of the enrolled fields each time a new contract is signed and provide any necessary updates.

Select multiple values: No Data type: List

Allowed values: Measurement unit: Category

Yes

Nο

I don't know

Logic: Respond if yes to 'Organic operation'

Required: No

Data collection level: Producer

Data collection frequency: Initial enrollment and

subsequent enrollment(s), if applicable

Producer motivation

Data element name: Producer motivation

Reporting question: Which of the following was the primary

reason the producer enrolled in this project?

Description: Primary operator's motivation for enrolling in the project.

Data type: List Select multiple values: No

Measurement unit: Category

Allowed values:

Financial benefit

Environmental benefit

New market opportunity

Partnerships or networks

Other

Logic: None - all respond Required: Yes

Data collection level: Producer

Data collection frequency: Initial enrollment

Version 1.0 Page **34** of **87**



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Data element name: Producer outreach 1- **Reporting question:** What types of outreach were provided to producers?

Description: Up to three most common types of outreach provided to producer prior to enrollment. Outreach activities are those focused on identifying and enrolling producers in the project. Outreach can come from the recipient or project partners. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 3 outreach types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other outreach types as free text.

Data type: List Select multiple values: Yes

Measurement unit: Category

Allowed values:

- Commodity organizations
- Conferences
- Cooperative extension
- Digital communications and resources
- Education workshops, field days, and town halls
- Existing partner networks
- Farm visits and one-on-one meetings
- General advertising
- Peer referrals and producer groups
- Phone calls
- Print communications and resources
- Retailers
- State agencies
- Targeted messaging using proprietary data
- Technical service providers
- Other (specify)
 Required: Yes

Logic: None – all respond

Data collection level: Producer

Data collection frequency: Initial enrollment

CSAF experience

Data element name: CSAF experience

Reporting question: Has the primary operator implemented CSAF practices in the last ten years anywhere on the farm?

Description: Has this farm implemented climate-smart agriculture or forestry (CSAF) practices anywhere on the farm in the past 10 years or since the current primary operator took control (whichever time period is shorter)? CSAF practices are included in a list in Appendix A.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Yes

No

I don't know

Logic: None – all respond **Required:** Yes

Data collection level: Producer **Data collection frequency:** Initial enrollment

Version 1.0 Page **35** of **87**



CSAF federal funds

Data element name: CSAF federal funds **Reporting question:** Were prior CSAF practices supported by federal funds?

Description: If this farm (under the primary operator) has implemented CSAF practices in the last ten years, was implementation supported by federal funds? Federal funds are defined as being from programs including, but not limited to, those from the Natural Resources Conservation Service ((NRCS), including through Environmental Quality Incentives Program (EQIP), Conservation Stewardship Program (CSP), Regional Conservation Partnership

Program (RCPP), or related programs), the Farm Service Agency Conservation Reserve Program (CRP), as well as funds from other USDA programs or other federal agencies.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

YesNo

I don't know

Logic: Respond if yes to 'CSAF experience' **Required:** Yes

Data collection level: Producer Data collection frequency: Initial enrollment

CSAF state or local funds

Data element name: CSAF state or local **Reporting question:** Were prior CSAF practices supported by

funds state or local funds?

Description: If this farm (under the primary operator) has implemented CSAF practices in the last ten years, was implementation supported by state funds? State or local funds are those from state departments of agriculture or other state agencies, local water quality districts and other local agencies.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

• Yes

No

I don't know

Logic: Respond if yes to 'CSAF experience' **Required:** Yes

Data collection level: Producer Data collection frequency: Initial enrollment

CSAF nonprofit funds

Data element name: CSAF nonprofit funds Reporting question: Were CSAF practices supported by

nonprofit funds?

Description: If this farm (under the primary operator) has implemented CSAF practices in the last ten years, was implementation supported by nonprofit funds? Nonprofit funds are those offered directly from a nonprofit organization to a producer.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

• Yes

No

I don't know

Logic: Respond if yes to 'CSAF experience'

Required: Yes

Data collection level: Producer Data collection frequency: Initial enrollment

Version 1.0 Page **36** of **87**



CSAF market incentives

Data element name: CSAF market incentives
Reporting question: Were CSAF practices supported by market

incentives?

Description: If this farm (under the primary operator) has implemented CSAF practices in the last ten years, was implementation supported by market incentives? Market incentives include premiums paid by a commodity buyer or by a consumer based on branding or labeling as a climate-smart commodity.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Yes

No

I don't know

Logic: Respond if yes to 'CSAF experience' Require

Required: Yes

Data collection level: Producer Data collection frequency: Initial enrollment

Version 1.0 Page 37 of 87



Field Enrollment

Unique IDs

Farm ID	Unique Farm ID assigned by FSA
Tract ID	Unique Tract ID assigned by FSA
Field ID	Unique Field ID assigned by FSA
State or territory of field State name (must match FSA farm enrollment data)	
County of field County name (must match FSA farm enrollment data)	
Prior Field ID, if applicable	Prior Field ID assigned by FSA if there has been reconstitution of the farm resulting in a new Field ID during the field's enrollment in the project

Field data change

Data element name: Field data change **Reporting question:** Has the information previously

reported for this field changed?

Description: Indicator that this entry is being used to report any relevant changes, such as a new Field ID number or changes to the commodity or practice combinations, for a field that has previously been enrolled in

the project.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

YesNo

Logic: None – all respond Required: Yes

Data collection level: Field Data collection frequency: Re-enrollment

Contract start date

Data element name: Contract start date **Reporting question:** What is the start date of the

contract with the producer that includes this field?

Description: Start date listed on the contract that enrolls the field in the project.

Data type: Date Select multiple values: NA

Measurement unit: MM/DD/YYYY Allowed values: 01/01/2023 – 12/31/2030

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Initial enrollment

Total field area

Data element name: Total field area **Reporting question:** What is the total size of the

enrolled field?

Description: Total size of the field enrolled with the project.

Data type: DecimalSelect multiple values: NoMeasurement unit: AcresAllowed values: .01-500

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Initial enrollment

Version 1.0 Page **38** of **87**



Commodity category	
Data element name: Commodity category	Reporting question: What category of
	commodity(ies) is (are) produced from this field?
Description: Category of commodity(ies) produced in fie	ld enrolled in the project
Data type: List	Select multiple values: No
Measurement unit: Category	Allowed values:
	 Crops
	 Livestock
	• Trees
	 Crops and livestock
	 Crops and trees
	 Livestock and trees
	 Crops, livestock and trees
Logic: None – all respond	Required: Yes
Data collection level: Field	Data collection frequency: Initial enrollment
Commodity type	
Data element name: Commodity type	Reporting question: What type of commodity is
	produced from this field?
Description: Type of commodity produced in field enroll	
worksheet provides a drop-down list of the allowed value	es. Choose the appropriate value. Enter additional
commodities in subsequent rows. Data type: List	Select multiple values: No
Measurement unit: Category	Allowed values: FSA commodity list
Logic: None – all respond	Required: Yes
Data collection level: Field	Data collection frequency: Initial enrollment
Baseline yield	Bata concessor requency. Initial emoliment
Data element name: Baseline yield	Reporting question: What is the baseline yield
· · · · · · · · · · · · · · · · · · ·	of this field?
Description: Average annual yield of commodity in 3 year	ars prior to enrollment. Provide yield for the enrolled
field if possible. If not at field level, provide average annual	
Data type: Decimal	Select multiple values: No
Measurement unit: Production per acre or animal	Allowed values: .01-100,000
	Required: Yes
Logic: None – all respond	Required. 163

Version 1.0 Page **39** of **87**



Base		

Data element name: Baseline yield unit Reporting question: Baseline yield unit

Description: Unit of average annual yield of commodity in enrolled field in 3 years prior to enrollment. The worksheet provides a drop-down list of choices for this data element. If "other" is chosen, use the additional

column to enter the appropriate yield unit as free text. Data type: List Select multiple values: No

Measurement unit: Category

Allowed values:

Animal units per acre

Bushels per acre

Carcass pounds per animal

Head per acre

Hundred-weights (or pounds) per head

Linear feet per acre

Liveweight pounds per animal

Pounds per acre Tons per acre

Other (specify) Required: Yes

Data collection level: Field Data collection frequency: Initial enrollment

Baseline yield location

Logic: None – all respond

Data element name: Baseline yield location **Reporting question:** For what portion of the operation is the

baseline yield being reported?

Description: Location of the reported average annual yield of commodity in 3 years prior to enrollment. If

"other" is chosen, use the additional column to enter the appropriate location as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Enrolled field

Whole operation Other (specify)

Logic: None - all respond Required: Yes

Data collection level: Field Data collection frequency: Initial enrollment

Field land use

Data element name: Field land use **Reporting question:** What is this field's land use history?

Description: Prior to enrollment, what was the most common land use for this field in the past 3 years?

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Crop land

Forest land

Non-agriculture

Other agricultural land

Pasture

Range

Logic: None - all respond Required: Yes

Data collection level: Field Data collection frequency: Initial enrollment

Version 1.0 Page **40** of **87**



Field irrigated

Data element name: Field irrigated Reporting question: What is this field's irrigation history?

Description: Prior to enrollment, what was the most common irrigation practice on this field the past 3 years?

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

No irrigation

Center pivot

Drip-subsurface

Drip-surface

Flood/border

Furrow/ditch

Lateral/linear sprinklers

Micro-sprinklers

Seepage

Side roll

Solid set sprinklers

Supplemental

Surface

Traveling gun/towline

Wheel Line

Other

Required: Yes

Data collection level: Field Data collection frequency: Initial enrollment

Field tillage

Logic: None - all respond

Data element name: Field tillage Reporting question: What is this field's tillage history?

Description: Prior to enrollment, what was the most common tillage approach during the past 3 years?

Data type: List Select multiple values: No

Allowed values: Measurement unit: Category

None

Conventional, inversion

Conventional, vertical

No-till, direct seed

Reduced till, inversion

Reduced till, vertical

Strip till

Other

Logic: None - all respond Required: Yes

Data collection level: Field Data collection frequency: Initial enrollment

Version 1.0 Page **41** of **87**



Practice past extent - farm

Data element name: Practice past extent - **Reporting question:** What percent of the farm has

farm implemented this CSAF practice (combination) previously?

Description: Prior to enrollment, on what portion of the whole farm had this (these) CSAF practice(s) ever been used by the primary operator? If multiple practices are planned to be implemented in this field, enter the value that best corresponds to the farm's prior experience with the planned set of practices.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Never used

Used on less than 25% of operation

Used on 25-50% of operationUsed on 51-75% of operation

• Used on more than 75% of operation

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Initial enrollment

Field any CSAF practice

Data element name: Field any CSAF practice **Reporting question:** What is this field's prior experience with

CSAF practices?

Description: Prior to enrollment, have any CSAF practice or practices been used in this field in the past 3 years?

CSAF practices are included in a list in Appendix A.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

YesNo

I don't know

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Initial enrollment

Practice past use - this field

Data element name: Practice past use - this Reporting que

ield

Reporting question: Have this CSAF practice (combination)

been implemented previously in this field?

Description: Prior to enrollment, had this (these) CSAF practice(s) been used in this field in the in the past 3 years? Enter yes if all of the practices had been used previously in this field; enter some if multiple practices are being implemented and one or more, but not all of the practices had been used previously in this field; and enter no if none of the practices had been used previously in this field.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

• Yes

SomeNo

I don't know

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Initial enrollment

Version 1.0 Page **42** of **87**



Practice type

Data element name: Practice type 1-7 **Reporting question:** What CSAF practice is being implemented

in this field through the project?

Description: Which CSAF practice or practices will be implemented on this field as part of enrollment in the project? CSAF practices are included in a list in Appendix A. The worksheet provides seven columns for this data element. Enter one value for each column. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values: See list in Appendix A

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Initial enrollment

Practice standard

Data element name: Practice standard 1-7 **Reporting question:** What standard does the CSAF practice

follow?

Description: Is the CSAF practice being implemented on the field as part of enrollment in the project following a defined practice standard? The worksheet provides seven columns for this data element. Enter one value for each column, corresponding to the practice types entered in the previous columns. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

NRCS

Other (specify)

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Initial enrollment

Planned practice implementation year

Data element name: Practice 1-7 **Reporting question:** What year is the CSAF practice planned to

implementation year be implemented?

Description: Year that the CSAF practice is planned to be implemented on the field. Use 2022 for early adopters, defined as fields that have the practice actively implemented in 2022 (prior to contract being signed for this project). The worksheet provides seven columns for this data element. Enter one value for each column, corresponding to the practice types entered in the previous columns. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

Data type: IntegerSelect multiple values: NoMeasurement unit: YearAllowed values: 2022-2030

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Initial enrollment

Practice extent

Data element name: Practice 1-7 extent **Reporting question:** To what extent is the practice

implemented?

Description: Total area, length, or head where the practice is being implemented in the field specified by the

contract.

Data type: Decimal Select multiple values: No Measurement unit: Extent Allowed values: .01-

100,000

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Initial enrollment

Version 1.0 Page **43** of **87**



Practice extent unit

Data element name: Practice 1-7 **Reporting question:** Unit for extent of practice implementation

extent unit

Description: Unit for extent of practice implementation on the field specified by the contract. If "other" is

chosen, use the additional column to enter the appropriate unit.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Acres

Head of livestock

• Linear feet

Square feet

Other (specify)

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Initial enrollment

CSAF Practice Sub-questions

For certain practices, additional questions are asked that provide information necessary to estimate greenhouse gas benefits from implementation of the practice. See Table 11 in the CSAF Practice Sub-questions section for descriptions of individual questions to be answered depending on the CSAF practices selected.

Version 1.0 Page 44 of 87



Farm Summary

Unique IDs

Farm ID	Unique Farm ID assigned by FSA
State or territory	State name (must match FSA farm enrollment data)
County of residence	County name (must match FSA farm enrollment data)

Producer TA received

Data element name: Producer TA received **Reporting question:** What types of technical assistance were provided to this producer?

Description: Did the recipient or any partner provide technical assistance (TA) to the producer this year? Technical assistance is any training, education, capacity building or other support provided by any project partner(s) directly to producers enrolled in the project. List up to the top three most common types of TA provided to this producer. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 3 TA types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other TA types as free text.

Data type: List Select multiple values: No

Measurement unit: Category

Allowed values:

- Demonstration plots
- Equipment demonstrations
- Group field days or in-person field workshops
- Hotline
- One-on-one enrollment assistance
- One-on-one field visits
- One-on-one producer mentorship
- Producer networks and peer-to-peer groups
- Retailer consultation
- Social media/digital tools
- Train-the-trainer opportunities
- Virtual meetings or field days
- Webinars and videos
- Written materials
- None
- Other (specify)Required: Yes

Logic: None – all respond

Data collection level: Producer **Data collection frequency:** Quarterly

Producer incentive amount

Data element name: Producer incentive **Reporting question:** What is the total value of financial

amount incentives provided to this producer?

Description: Total incentive payment received by the producer from USDA project funds for the year (non-

cumulative). Do not include incentive payments made with partner match funds.

Data type: DecimalSelect multiple values: NAMeasurement unit: DollarsAllowed values: \$0-\$5,000,000

Logic: None – all respond **Required:** Yes

Version 1.0 Page **45** of **87**



Incentive reason

Data element name: Incentive reason 1-4 **Reporting question:** Why were incentives provided to this producer?

Description: List up to four reasons for producer incentive payments. List the top 4 based on total value of the incentive for each reason. The worksheet provides four columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 4 reasons, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other reasons as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

-
- Avoided conversion
- Conference or training attendance
- Demographics/equity payment
- Enrollment
- Foregone revenue
- Historic data collection
- Identity preservation (supply chain tracing)
- Implementation of practices
- MMRV (e.g., data collection, reporting)
- Passing audit
- Price premium on output
- Yield change
- Other (specify)

Required: Yes

Data collection level: Producer Data collection frequency: Quarterly

Incentive structure

Logic: None - all respond

Data element name: Incentive structure 1-4 **Reporting question:** What are the units for the financial incentives provided to this producer?

Description: List the structures (units) corresponding to the top 4 (by dollar value) incentive payments to producers. Production unit is weight or volume (bushel, kilogram, ton). The worksheet provides four columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 4 structure types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other structure types as free text.

Data type: List Select multiple values: No

- Measurement unit: Category Allowed values:
 - Flat ratePer animal head
 - Per animai nead
 - Per area
 - Per length
 - Per production unit
 - Per ton GHG
 - Per tree
 - Other (specify)

Logic: None – all respond Required: Yes

Version 1.0 Page **46** of **87**



Incentive type

Data element name: Incentive type 1-4

Reporting question: What type of incentives were provided to each producer?

Description: List the top 4 types of incentive payments to producers (based on dollar value). The worksheet provides four columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 4 incentive types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other incentive types as free text.

Data type: List Select multiple values: No

Measurement unit: Category

Allowed values:

- Cash payment
- Equipment loan
- Guaranteed commodity premium payment
- Inputs and supplies
- Land rental
- Loan
- Paid labor
- Post-harvest transportation
- Tuition or fees for training
- Other (specify)
 Required: Yes

Logic: None – all respond

Data collection level: Producer Data

Data collection frequency: Quarterly

Payment on enrollment

Data element name: Payment on

enrollment

Reporting question: What portion of the financial incentive is provided to the producer upon enrollment in the project?

Description: Any incentive payment provided to the producer upon enrollment/signing a contract, and not related to any implementation, MMRV or sales activities. Full payment means the full incentive amount for any contract held by the producer is paid upon enrollment. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon enrollment. No payment means that none of the full incentive amount for any contract held by the producer is paid upon enrollment.

Data type: List Select multiple values: No

Measurement unit: Category

Allowed values:

- Full payment
- Partial payment
- No payment

Logic: None - all respond

Required: Yes

Data collection level: Producer **Data collection frequency:** Quarterly

Payment on implementation

Data element name: Payment on

implementation

Reporting question: What portion of the financial incentive is provided to the producer upon implementation of the practices?

Description: Any incentive payment provided to the producer upon implementing the practices included in the contract. Full payment means the full incentive amount for any contract held by the producer is paid upon implementation. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon implementation. No payment means that none of the full incentive amount for any contract held by the producer is paid upon implementation.

Data type: List Select multiple values: No

Measurement unit: Category

Allowed values:

Full payment

Partial payment

No payment Required: Yes

Data collection level: Producer

Logic: None - all respond

Data collection frequency: Quarterly

Version 1.0 Page **47** of **87**



Payment on harvest

Data element name: Payment on harvest

Reporting question: What portion of the financial incentive is provided to the producer upon harvest of the commodity?

Description: Any incentive payment provided to the producer upon harvesting or slaughtering the commodity included in the contract. Full payment means the full incentive amount for any contract held by the producer is paid upon harvest. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon harvest. No payment means that none of the full incentive amount for any contract held by the producer is paid upon harvest.

Data type: List Select multiple values: No

Measurement unit: Category

Allowed values:Full paymentPartial paymentNo payment

Logic: None – all respond Required: Yes

Payment on MMRV

Data element name: Payment on MMRV

Reporting question: What portion of the financial incentive is provided to the producer upon completing MMRV requirements?

Description: Any incentive payment provided to the producer upon completing the annual MMRV requirements included in the contract. Full payment means the full incentive amount for any contract held by the producer is paid upon MMRV being complete. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon MMRV being complete. No payment means that none of the full incentive amount for any contract held by the producer is paid upon MMRV being complete.

Data type: List Select multiple values: No

Measurement unit: Category

Logic: None - all respond

Allowed values:

Required: Yes

Full paymentPartial paymentNo payment

Data collection level: Producer Data collection frequency: Quarterly

Payment on sale

Data element name: Payment on sale

Reporting question: What portion of the financial incentive is provided to producer upon sale of the commodity?

Description: Any incentive payment provided to the producer upon sale of the commodity included in the contract. Full payment means the full incentive amount for any contract held by the producer is paid upon sale. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon sale. No payment means that none of the full incentive amount for any contract held by the producer is paid upon sale.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Full paymentPartial paymentNo payment

Logic: None – all respond **Required:** Yes

Version 1.0 Page 48 of 87



Field Summary

u	nia	11e	IDs
_			

Farm ID	Unique Farm ID assigned by FSA
Tract ID	Unique Tract ID assigned by FSA
Field ID	Unique Field ID assigned by FSA
State or territory of field	State name (must match FSA farm enrollment data)
County of field	County name (must match FSA farm enrollment data)

Commodity type

Data element name: Commodity type
Reporting question: What type of commodity is produced from

this field?

Description: Type of commodity produced in field enrolled in the project. See full list in Appendix B. The worksheet provides multiple columns with a drop-down list of the allowed values. Choose one value for each

column. Leave unnecessary columns blank.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values: FSA commodity list

Logic: None – all respond **Required:** Yes

Data collection level: Field **Data collection frequency:** Quarterly

Practice type

Data element name: Field practice type 1-7 Reporting question: What CSAF practice is being implemented

in this field through the project?

Description: Which climate-smart agriculture or forestry (CSAF) practice or practices are being implemented in this project? CSAF practices are included in a list in Appendix A. The worksheet provides seven columns for this data element. Enter one value for each column. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values: See list in Appendix A

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Date practice complete

Data element name: Date practice complete Reporting question: When did the project certify CSAF practice

implementation as complete?

Description: Date that the project certifies that implementation of the CSAF practice is complete on the field. Use January of the year prior to contract year for early adopters, defined as fields that have the practice actively implemented in the year prior to a contract associated with this project is signed). The worksheet provides seven columns for this data element. Enter one value for each column, corresponding to the practice types entered in the previous columns. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

Data type: Date Select multiple values: No

Measurement unit: MM/DD/YYYY Allowed values: 01/01/2023 – 12/31/2030

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Version 1.0 Page **49** of **87**



Contract end date

Data element name: Contract end date Reporting question: Contract end date

Description: End date listed on the contract that enrolls the field in the project. If contract end date changes,

submit updated end date during the next quarter's reporting.

Data type: Date Select multiple values: No

Measurement unit: MM/DD/YYYY Allowed values: 01/01/2023 – 12/31/2030

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

MMRV assistance provided

Data element name: MMRV assistance provided **Reporting question:** Was MMRV assistance provided?

Description: Was any MMRV assistance provided to the primary operator for this field? MMRV assistance includes in-field support for the use of technologies, consultation on data collection and input, and other support related to MMRV. MMRV is defined a measurement (calculations or estimations of GHG emissions), monitoring (ongoing review and confirmation that the climate-smart practice has been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time), reporting (documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization), and verification (independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable).

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Yes

No

I don't know

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Marketing assistance provided

Data element name: Marketing assistance provided Reporting question: Was marketing assistance

provided?

Description: Was any marketing assistance provided to the primary operator for the commodity(ies) produced from this field? Marketing assistance includes guaranteeing the sale of the commodity(ies), providing a platform for the sale of the commodity(ies), providing a label, branding, or other support related to marketing.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Yes

• No

• I don't know

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Incentive per acre or head

Data element name: Incentive per acre or head Reporting question: Is this field receiving a per-acre or

per-head incentive?

Description: Is this field receiving an incentive payment to implement a specific CSAF practice or set of practices

on a per-acre or per-head (livestock) basis?

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Yes

No

I don't know

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Version 1.0 Page **50** of **87**



Field commodity value

Data element name: Field commodity value Reporting question: What is the value of the commodity

produced on the enrolled field?

Description: The dollar value of the commodity produced on the enrolled field.

Data type: Decimal

Select multiple values: No

Measurement unit: Dollars Allowed values: \$1-\$10,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Field commodity volume

Data element name: Field commodity volume **Reporting question:** What is the volume of commodity

produced on the enrolled field?

Description: The volume of the commodity produced on the enrolled field **Data type:** Decimal **Select multiple values:** No

Measurement unit: Number Allowed values: 1-10,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Field commodity volume unit

Data element name: Field commodity volume **Reporting question:** What is the unit of volume?

unit

Description: The unit associated with the volume of the commodity produced on the enrolled field. If "other" is

chosen, enter the appropriate value in the additional column.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Bushels

• Carcass weight pounds

GallonsHead

Linear feet

Liveweight pounds

Pounds Tons

Other (specify)

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Cost of implementation

Data element name: Cost of implementation **Reporting question:** What is the cost of practice

implementation in the field?

Description: Total annual estimated cost per unit of implementing the practice(s) in the enrolled field.

Data type: Decimal Select multiple values: No

Measurement unit: Dollars Allowed values: \$1-\$10,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Version 1.0 Page **51** of **87**



Cost unit

Data element name: Cost unit **Reporting question:** What is the unit for cost?

Description: The unit associated with the cost of implementing CSAF practices in the field. If "other" is chosen,

enter the appropriate value in the additional column.

Data type: List Select multiple values: No

Measurement unit: Category

Allowed values:

Per acre

Per bushel

Per head

Per linear foot

Per pound

Per ton

Other (specify)

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Cost coverage

Data element name: Cost coverage **Reporting question:** What percent of the practice cost is

covered by the incentive?

Description: Estimated proportion of total annual cost of implementing the practice(s) that is covered by project

incentives.

Data type: IntegerSelect multiple values: NoMeasurement unit: PercentAllowed values: 0-100

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Field GHG monitoring

Data element name: Field GHG monitoring **Reporting question:** How were GHG impacts monitored in this

ß fie

Description: Up to the top three forms of monitoring GHG benefits as part of MMRV requirements. Monitoring is defined as ongoing review and confirmation that the climate-smart practice has been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time. Include up to 3 methods, based on which methods are most commonly used for this field. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 GHG monitoring methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG monitoring methods as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Drones

Ground-level photos and videos

On-farm inspection

Plot-based sampling (e.g., soil, water)

Producer records or attestation

· Satellite monitoring or remote sensing

Soil metagenomics

Soil sensors

Water sensors

Other (specify)

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Version 1.0 Page **52** of **87**



Field GHG reporting

Data element name: Field GHG reporting **Reporting question:** How were GHG benefits reported for this field?

Description: Up to the top three forms of reporting on GHG benefits as part of MMRV requirements. Reporting is defined as documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization. Include up to 3 methods, based on which methods are most commonly used for this field. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 GHG reporting methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG reporting methods as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

- Automated devices
- Email
- Mobile app
- Paper
- Third-party actors
- Website
- Other (specify)

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Field GHG verification

Data element name: Field GHG verification Reporting question:

Reporting question: How was implementation of practices to reduce GHG emissions verified for this field?

Description: Up to the top three of verification of GHG benefits as part of MMRV requirements. Verification is defined as independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable. Include up to 3 methods, based on which methods are most commonly used for this field. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 GHG verification methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG verification methods as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

- Artificial intelligence
 - Computer modeling
 - Recipient audit
 - Photos
 - Record audit
 - Satellite imagery
 - Site or field visit
 - Third-party audit
 - Other (specify)

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Version 1.0 Page **53** of **87**



Field GHG calculations

Data element name: Field GHG Reporting question: What methods are used to calculate GHG

calculations benefits in this field?

Description: List the method(s) used to calculate GHG benefits in this field. If yes to direct physical

measurements, submit result reports (see Supplemental Data Submission – Field direct GHG measurement

results).

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Models

• Direct field measurements

Both

Logic: None – all respond Required: Yes

Data collection level: Field Data collection frequency: Quarterly

Field official GHG calculation

Data element name: Field official GHG **Reporting question:** What method was used to calculate the

calculation official GHG benefits in this field?

Description: List the method used to calculate the official GHG benefits in this field that are reported as part of

the project's aggregate impact.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Models

Direct field measurements

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Field official GHG ER

Data element name: Field official GHG **Reporting question:** What are the estimated total GHG emission

emission reductions reductions (CO2eq) in this field?

Description: Estimated greenhouse gas emission reductions from practice implementation in this field that are reported as part of the project's aggregate impact. This data element must be entered upon practice completion

or annually, as appropriate.

Data type: Decimal **Select multiple values:** No **Measurement unit:** Metric tons CO₂eq **Allowed values:** 0-10,000,000

Logic: None – all respond Required: Yes

Data collection level: Field Data collection frequency: Quarterly

Field official carbon stock

Data element name: Field official carbon **Reporting question:** How much carbon has been sequestered in

stock this field?

Description: Estimated total change in carbon stock based on practice implementation in this field. This data element can be reported in any quarter and is cumulative for the year. Conversion rate is one ton of carbon =

3.67 tons of CO₂eq.

Data type: DecimalSelect multiple values: NoMeasurement unit: Metric tons CO2eqAllowed values: 0-10,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Version 1.0 Page **54** of **87**



Field official CO2 ER

Data element name: Field official CO2 Reporting question: What are the estimated total CO2 emission

emission reductions reductions in this field?

Description: Estimated total carbon dioxide emission reductions based on practice implementation in this field that are reported as part of the project's aggregate impact. This data element must be entered upon practice

completion or annually, as appropriate.

Data type: DecimalSelect multiple values: NoMeasurement unit: Metric tons CO2Allowed values: 0-10,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Field official CH4 ER

Data element name: Field official CH4 emission Reporting question: What are the estimated total CH4

reductions emission reductions in this field?

Description: Estimated total methane emission reductions based on practice implementation in this field that are reported as part of the project's aggregate impact. This data element must be entered upon practice

Allowed values: 0-10,000,000

Allowed values: 0-10,000,000

completion or annually, as appropriate. Conversion rate is one ton of CH₄ = 25 tons of CO₂eq.

Data type: Decimal Select multiple values: No

Measurement unit: Metric tons CH4 reduced in

CO₂eq

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Field official N20 ER

Data element name: Field official N2O emission **Reporting question:** What are the estimated total N2O

reductions emission reductions in this field?

Description: Estimated total nitrous oxide emission reductions based on practice implementation in this field that are reported as part of the project's aggregate impact. This data element must be entered upon practice

completion or annually, as appropriate. Conversion rate is one ton of N₂O = 298 tons of CO₂eq.

Data type: Decimal Select multiple values: No

Measurement unit: Metric tons N2O reduced in

CO2ea

Logic: None – all respond **Required:** Yes

Data collection level: Field **Data collection frequency:** Quarterly

Field offsets produced

Data element name: Field offsets produced **Reporting question:** How many carbon offsets have been

produced in this field?

Description: Total carbon offsets produced in the field during the quarter (not cumulative). Offsets are defined

as having been verified and certified using an accepted standard and sold into the carbon marketplace.

Data type: Decimal Select multiple values: No

Measurement unit: Metric tons CO₂eq Allowed values: 0-10,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Field **Data collection frequency:** Quarterly

Version 1.0 Page 55 of 87



Field insets produced

Data element name: Field insets produced Reporting question: How many carbon insets have been

produced in this field?

Description: Total carbon insets produced in the field during the quarter (not cumulative). Insets are defined as having been verified and certified using an accepted standard and accounted for within Scope 3 emissions for a

firm.

Data type: DecimalSelect multiple values: NoMeasurement unit: Metric tons CO2eqAllowed values: 0-10,000,000

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Quarterly

Other field measurement

Data element name: Other field **Reporting question:** Were data collected from the field for

measurement reasons other than GHG benefit estimation?

Description: Direct physical measurements or data collection taken in the field for any reason other than GHG benefits estimation. These reasons could include calibration of GHG estimation tools or models, tracking other environmental benefits (see Field environmental benefits report), and other reasons. If yes, submit

corresponding reports (see Supplemental data submission - Field direct measurement results).

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Yes

No

I don't know

Logic: None – all respond Required: Yes

Data collection level: Field **Data collection frequency:** Quarterly

Version 1.0 Page **56** of **87**



GHG Benefits - Alternate Modeled

_	• • • •	7	IDs

Farm ID	Unique Farm ID assigned by FSA	_
Tract ID	Unique Tract ID assigned by FSA	
Field ID	Unique Field ID assigned by FSA	
State or territory of field	State name (must match FSA farm enrollment data)	
County of field	County name (must match FSA farm enrollment data)	

Commodity type

Data element name: Commodity type 1-6 Reporting question: What type of commodity(ies) is produced

from this field?

Description: Type of commodity(ies) produced in field enrolled in the project. See full list of commodity options in Appendix B. The worksheet provides multiple columns with drop-down lists of the allowed values. Choose

one value for each column. Leave unnecessary columns blank

Data type: List Select multiple values: No

Measurement unit: Category Allowed values: FSA commodity list

Logic: None – all respond **Required:** If project calculates GHG benefits using multiple

methods

Data collection level: Field **Data collection frequency:** Annual

Practice type

Data element name: Practice type 1-7 **Reporting question:** What CSAF practice is being implemented

by this project?

Description: Which CSAF practice or practices are being implemented in this project? CSAF practices are included in a list in Appendix A. The worksheet provides seven columns for this data element. Enter one value for each column. If there are fewer than 7 practices being implemented by the project, leave unnecessary columns blank.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values: See list in Appendix A

Logic: None – all respond **Required:** If project calculates GHG benefits using multiple

methods

Data collection level: Field Data collection frequency: Annual

Version 1.0 Page **57** of **87**

GHG model

Data element name: GHG model **Reporting question:** What model was used for alternate calculation of GHG benefits?

Description: Select the model used for the alternate calculation of the field's GHG benefits.

Data type: List Select multiple values: No

Measurement unit: Category

Allowed values:

- ACC Calculator
- Agriculture, Forestry and Other Land Use (AFOLU) Carbon Calculator
- AIRES
- APEX
- Bowen Ratio Energy Balance
- Carat-Calculator
- CArPE
- CDFA web-based calculator
- COMET-Farm
- COMET-Planner
- CoolFarm
- Cover Crop Explore
- CropTrak
- CultivateAI's FMIS
- DayCent-CR
- DNDC
- DSSAT
- Earth Optics
- EcoPractices
- EPIC
- Extrapolation based on literature
- FieldPrint
- Granular
- GREET
- gTIR
- IFSM
- IPCC default emissions factors & models
- itree
- Nitrogen Balance
- Nutrient Tracking Tool (NTT)
- RCD Project Tracker
- Revised Universal Soil Loss equation 2 (RUSLE2)
- RuFaS
- SAFE-Link
- SALUS (CIBO)
- SNAPGRAZE
- SquareRoots
- SWAT-C
- SYMFONI
- Truterra Sustainability Tool
- Verra
- WEPP
- YardStick
- Other (specify)

Logic: None – all respond

Data collection level: Field

Required: If project calculates GHG benefits using multiple methods

Data collection frequency: Annual

Version 1.0 Page 58 of 87



Model start date		
Data element name: Model start date	Reporting question: For what time period are the GHG benefits modeled (model start date)?	
Description: Date that the model parameters	begin.	
Data type: Date	Select multiple values: NA	
Measurement unit: MM/DD/YYYY	Allowed values: 01/01/1950 – 12/31/2030	
Logic: None – all respond	Required: If project calculates GHG benefits using multiple methods	
Data collection level: Field	Data collection frequency: Annual	
Model end date		
Data element name: Model end date	Reporting question: For what time period are the GHG benefits modeled (model end date)?	
Description: Date that the model parameters	end.	
Data type: Date	Select multiple values: NA	
Measurement unit: MM/DD/YYYY	Allowed values: 01/01/2023-12/31/2030	
Logic: None – all respond	Required: If project calculates GHG benefits using multiple methods	
Data collection level: Field	Data collection frequency: Annual	
Total GHG benefits estimated		
Data element name: Total GHG benefits	Reporting question: What is the alternate estimate of the field's	
estimated	total GHG emission reductions?	
	eductions from practice implementation in the field estimated	
using an alternate model.	Calant modeling makes No	
Data type: Decimal	Select multiple values: No	
Measurement unit: Metric tons CO ₂ eq	Allowed values: 0-10,000,000	
Logic: None – all respond	Required: If project calculates GHG benefits using multiple methods	
Data collection level: Field	Data collection frequency: Annual	
Total carbon stock estimated		
Data element name: Total carbon stock	Reporting question: What is the alternate estimate of how much	
estimated	carbon has the field has sequestered?	
	ed on practice implementation in the field estimated using an	
alternate model. Conversion rate is one ton of Data type: Decimal	Select multiple values: No	
	Allowed values: 0-10,000,000	
Measurement unit: Metric tons CO ₂ eq		
Logic: None – all respond	Required: If project calculates GHG benefits using multiple methods	
Data collection level: Field	Data collection frequency: Annual	
Total CO2 estimated		
Data element name: Total CO2 estimated	Reporting question: What is the alternate estimate of the field's total CO2 emission reductions?	
	ductions based on practice implementation in the field estimated	
using an alternate model.		
Data type: Decimal	Select multiple values: No	
Measurement unit: Metric tons CO ₂	Allowed values: 0-10,000,000	
Logic: None – all respond	Required: If project calculates GHG benefits using multiple methods	
Data collection level: Field	Data collection frequency: Annual	

Version 1.0 Page **59** of **87**



Total CH4 estimated	
Data element name: Total CH4 estimated	Reporting question: What is the alternate estimate of the field's total CH4 emission reductions?
Description: Total methane emission reductions based on praction an alternate model. Conversion rate is one ton of CH ₄ = 25 ton	
Data type: Decimal	Select multiple values: No
Measurement unit: Metric tons CH4 reduced in CO ₂ eq	Allowed values: 0-10,000,000
Logic: None – all respond	Required: If project calculates GHG benefits using multiple methods
Data collection level: Field	Data collection frequency: Annual
Total field N20 estimated	
Data element name: Total N2O estimated	Reporting question: What is the
	alternate estimate of the field's total
	N2O emission reductions?
Description: Total nitrous oxide emission reductions based on using an alternate method. Conversion rate is one ton of N_2O	
Data type: Decimal	Select multiple values: No
Measurement unit: Metric tons N2O reduced in CO ₂ eq	Allowed values: 0-10,000,000
Logic: None – all respond	Required: If project calculates GHG
	benefits using multiple methods
Data collection level: Field	Data collection frequency: Annual

Version 1.0 Page **60** of **87**



GHG Benefits - Measured

U	nia	ue	IDs

Farm ID	Unique Farm ID assigned by FSA	_
Tract ID	Unique Tract ID assigned by FSA	
Field ID	Unique Field ID assigned by FSA	
State or territory of field	State name (must match FSA farm enrollment data)	
County of field	County name (must match FSA farm enrollment data)	

GHG measurement method

Logic: None - all respond

Data element name: GHG measurement method

Reporting question: What measurement method is used to calculate GHG benefits?

Description: Field-based measurement method used to calculate GHG benefits. If "other" is chosen, enter the

appropriate value as free text in the additional column.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

 Emissions measurement unit

Flux towers

Litterbags

Plant measurements

 Portable emissions analyzers

• Soil flux chambers

Soil samplesSoil sensors

Vehicle-mounted sensors

Other (specify)

Required: If a project conducts soil samples or takes carbon stock or greenhouse gas emission measurements in this

field

Data collection level: Field

Data collection frequency:
Annual

Lab name

Data element name: Lab name **Reporting question:** What is the name of the lab that

processed the measurement samples?

Description: Name of entity that received data and conducted analysis of samples.Data type: TextSelect multiple values: NoMeasurement unit: NAAllowed values: Free textLogic: None – all respondRequired: If applicable

Data collection level: Field Data collection frequency: Annual

Version 1.0 Page **61** of **87**



Measurement start date

Data element name: Measurement start date Reporting question: On what date did the

measurement start?

Description: Date that the measurements began. If it was a single point in time, use the same date for start date and end date. If multiple measurements took place over a time period, use the date that the measurements first

began.

Data type: Date Select multiple values: No

Measurement unit: MM/DD/YYYY Allowed values: 01/01/2023 – 12/31/2030

Logic: None – all respond Required: If a project conducts soil samples or takes

carbon stock or greenhouse gas emission

measurements in this field

Data collection level: Field Data collection frequency: Annual

Measurement end date

Data element name: Measurement end date Reporting question: On what date did the

measurement end?

Description: Date that the measurements began. If it was a single point in time, use the same date for start date and end date. If multiple measurements took place over a time period, use the date that the measurements

were completed.

Data type: Date Select multiple values: No

Measurement unit: MM/DD/YYYY Allowed values: 01/01/2023–12/31/2030

Logic: None – all respond Required: If a project conducts soil samples or takes

carbon stock or greenhouse gas emission

measurements in this field

Data collection level: Field Data collection frequency: Annual

Total CO2 reduction calculated

Data element name: Total CO2 reduction calculated Reporting question: What are

the total measured CO2 emission reductions?

Description: Total annual CO2 emission reductions based on practice implementation in the field calculated

from in-field measurements.

Logic: None – all respond

Data type: Decimal Select multiple values: No

Measurement unit: Metric tons CO₂ Allowed values: 0-10,000,000

Required: If a project takes carbon stock or greenhouse gas emission measurements in this

field

Data collection level: Field Data collection frequency:

Annual

Total field carbon stock measured

Data element name: Total field carbon stock **Reporting question:** What is the total amount of

measured carbon sequestered based on repeat measurements

in this field?

Description: Change in carbon stock based on practice implementation in the field calculated from repeat soil sampling in this field. (Results for initial field soil samples should be reported in the 'Soil sample result' and

'Measurement type" columns.) Conversion rate is one ton of carbon = 3.67 tons of CO₂eq.

Data type: DecimalSelect multiple values: NoMeasurement unit: Metric tons CO₂eqAllowed values: 0-10,000,000

Logic: None – all respond Required: If a project conducts soil samples or takes

carbon stock measurements in this field

Data collection level: Field Data collection frequency: Annual

Version 1.0 Page **62** of **87**



Total CH4 reduction calculated		
Data element name: Total CH4 reduction calculated	Reporting question: What are the total measured CH4 emission reductions?	
Description: Total annual methane emission reductions b		
from in-field measurements. Conversion rate is one ton o		
Data type: Decimal	Select multiple values: No	
Measurement unit: Metric tons CH4 reduced in CO ₂ eq	Allowed values: 0-10,000,000	
Logic: None – all respond	Required: If a project conducts soil samples or takes carbon stock or greenhouse gas emission measurements in this field	
Data collection level: Field	Data collection frequency: Annual	
Total N20 reduction calculated		
Data element name: Total N2O reduction calculated	Reporting question: What are the total measured N2O emission reductions?	
Description: Total annual nitrous oxide emission reductions based on practice implementation in the field		
calculated from in-field measurements. Conversion rate is	·	
Data type: Decimal	Select multiple values: No	
Measurement unit: Metric tons N2O reduced in CO ₂ eq	Allowed values: 0-10,000,000	
Logic: None – all respond	Required: If a project conducts soil samples or takes carbon stock or greenhouse gas emission	
	measurements in this field	
Data collection level: Field	Data collection frequency: Annual	
Soil sample result		
Data element name: Soil sample result	Reporting question: What is the numeric result from this soil sample?	
Description: Results of measurement(s) taken to determi	ne the carbon stock of a soil (the tons of carbon found	
in a specified volume of soil).		
Data type: Decimal	Select multiple values: No	
Measurement unit: Amount	Allowed values: .00001-100,000	
Logic: None – all respond	Required: If a project conducts soil samples in this field	
Data collection level: Field	Data collection frequency: Annual	

Version 1.0 Page **63** of **87**



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3011	Sam	pie	resui	ιu	mı

Data element name: Soil sample result unit **Reporting question:** What is unit for the soil sample result?

Description: Unit for the corresponding soil sample result. The worksheet provides a drop-down list of choices for this data element. If "other" is chosen, use the additional column to enter the appropriate yield unit as free

text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Percent

PpmGrams

Grams per cubic centimeter

Other (specify)

Logic: None – all respond **Required:** If a project conducts soil samples in this field

Data collection level: Field Data collection frequency: Annual

Measurement type

Data element name: Measurement type
Reporting question: What type of analysis was conducted for

this soil sample?

Description: Type of soil analysis conducted. The worksheet provides a drop-down list of choices for this data element. If "other" is chosen, use the additional column to enter the appropriate yield unit as free text.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Organic matterTotal organic carbon

Bulk densityOther (specify)

Logic: None – all respond **Required:** If a project conducts soil samples in this field

Data collection level: Field **Data collection frequency:** Annual

Version 1.0 Page **64** of **87**



<u>Additional Environmental Benefits</u>

Uni	ique	IDs
-----	------	-----

<u> </u>	
Farm ID	Unique Farm ID assigned by FSA
Tract ID	Unique Tract ID assigned by FSA
Field ID	Unique Field ID assigned by FSA
State or territory of field	State name (must match FSA farm enrollment data)
County of field	County name (must match FSA farm enrollment data)

Environmental benefits

Data element name: Environmental **Reporting question:** Are environmental benefits other than

benefits GHGs being tracked in the field?

Description: Tracking of environmental benefits other than greenhouse gas emission reductions and carbon sequestration in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting

that can quantify benefits.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

YesNo

I don't know

Logic: None – all respond **Required:** Yes

Data collection level: Field Data collection frequency: Annual

Reduction in nitrogen loss

Data element name: Reduction in nitrogen Reporting question: Are reductions in nitrogen losses being

ss tracked in the field?

Description: Tracking reductions in nitrogen losses in the enrolled field. Tracking means at a minimum using

some form of monitoring and reporting that can quantify benefits.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

YesNo

I don't know

Logic: Respond if yes to 'Environmental

benefits'

Required: Yes

Data collection level: Field Data collection frequency: Annual

Reduction in nitrogen loss amount

Data elementReporting question: How much reduction in nitrogen losses

name: Reduction in nitrogen loss amount have been measured in the field?

Description: Total amount of reduction in nitrogen losses that is measured and reported in the enrolled field.

Data type: DecimalSelect multiple values: NoMeasurement unit: AmountAllowed values: 0-1,000,000

Logic: Respond if yes to 'Reduction in

nitrogen loss'

Required: Yes

Data collection level: Field **Data collection frequency:** Annual

Version 1.0 Page **65** of **87**



February 2023	
Reduction in nitrogen loss amount unit	
Data element name: Reduction in nitrogen loss amount unit Description: Unit for the total amount of red	Reporting question: What is the unit for how much reduction in nitrogen losses have been measured in the field? uction in nitrogen losses that is measured and reported in the appropriate value as free text in the additional column. Select multiple values: No
Measurement unit: Category	Allowed values:
Logic: Respond if yes to 'Reduction in nitrogen loss' Data collection level: Field	 Kilograms Metric tons Pounds Other (specify) Required: Yes Data collection frequency: Annual
Reduction in nitrogen loss purpose	
Data element name: Reduction in nitrogen loss purpose	Reporting question: What is the purpose of tracking reduction in nitrogen losses? nitrogen losses in the enrolled field. If "other" is chosen, enter the al column. Select multiple values: No
Measurement unit: Category	Allowed values:
measurement and eategory	 Commodity marketing Producing insets Producing offsets I don't know Other (specify)
Logic: Respond if yes to 'Reduction in nitrogen loss'	Required: Yes
Data collection level: Project	Data collection frequency: Annual
Pata element name: Reduction in phosphorus loss Description: Tracking of reductions in phosphusing some form of monitoring and reporting	Reporting question: Are reductions in phosphorus losses being tracked in the field? norus losses in the enrolled field. Tracking means at a minimum that can quantify benefits
Data type: List	Select multiple values: No
Measurement unit: Category	Allowed values: Yes No I don't know
Logic: Respond if yes to 'Environmental benefits'	Required: Yes
Data collection level: Field	Data collection frequency: Annual
Reduction in phosphorus loss amount	
Data element name: Reduction in	Reporting question: How much reduction in phosphorus losses
phosphorus loss amount Description: Total amount of reduction in phosphore.	have been measured in the field?
Data type: Decimal Measurement unit: Amount	Select multiple values: No Allowed values: 0-1,000,000
ivicasui eilleilt ullit. Allibuilt	Allowed Values. U-1,000,000

Logic: Respond if yes to 'Reduction in

phosphorus loss'

Data collection level: Field **Data collection frequency:** Annual

Page **66** of **87** Version 1.0

Required: Yes



Data element name: Reduction in **Reporting question:** What is the unit for the reduction in

phosphorus loss amount unit phosphorus losses measured in the field?

Description: Unit for the total amount of reduction in phosphorus losses that is measured in the enrolled field. If

"other" is chosen, enter the appropriate value as free text in the additional column.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Kilograms

Metric tonsPounds

Required: Yes

Other (specify)

Logic: Respond if yes to 'Reduction in

phosphorus loss'

Data collection level: Field

Data collection frequency: Annual

Reduction in phosphorus loss purpose

Data element name: Reduction in **Reporting question:** What is the purpose of tracking reductions

phosphorus loss purpose in phosphorus losses?

Description: Purpose of tracking reduction in phosphorus losses in the enrolled field. If "other" is chosen, enter

the appropriate value as free text in the additional column.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Commodity marketing

Producing insets

Producing offsets

I don't knowOther (specify)

Logic: Respond if yes to 'Reduction in **Required:** Yes

phosphorus loss'

Data collection level: Field **Data collection frequency:** Annual

Other water quality

Data element name: Other water quality **Reporting question:** Are other water quality metrics being

tracked in the field?

Description: Project tracking of other water quality metrics in the enrolled field. Tracking means at a minimum

using some form of monitoring and reporting that can quantify benefits.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Yes

• No

I don't know

Logic: Respond if yes to 'Environmental

benefits'

Required: Yes

Data collection level: Field

Data collection frequency: Annual

Version 1.0 Page **67** of **87**



Data collection level: Field

•	
Other water quality type	
Data element name: Other water quality	Reporting question: What type of other water quality metric
type	have been measured in the field?
	etric (besides nitrogen loss and phosphorus loss reductions) that is
	enter the appropriate value as free text in the additional column.
Data type: List	Select multiple values: No
Measurement unit: Category	Allowed values:
	Sediment load reduction
	Temperature
	Other (specify)
Logic: Respond if yes to 'Other water quality'	Required: Yes
Data collection level: Field	Data collection frequency: Annual
Other water quality amount	
Data element name: Other water quality	Reporting question: How much reduction in other water quality
amount	metrics have been measured in the field?
Description: Total amount of reduction in o	ther water quality metrics that is measured in the enrolled field.
Data type: Decimal	Select multiple values: No
Measurement unit: Amount	Allowed values: 0-1,000,000
Logic: Respond if yes to 'Other water quality'	Required: Yes
Data collection level: Field	Data collection frequency: Annual
Other water quality amount unit	
Data element name: Other water quality	Reporting question: What is the unit for the reduction in other
amount unit	water quality metrics measured in the field?
Description: Unit for the total amount of re	duction in other water quality metrics that is measured in the
enrolled field. If "other" is chosen, enter the	e appropriate value as free text in the additional column.
Data type: List	Select multiple values: No
Measurement unit: Category	Allowed values:
	 Degrees F
	 Kilograms
	Kilograms per liter
	 Metric tons
	 Pounds
	Other (specify)
Logic: Respond if yes to 'Other water quality'	Required: Yes

Version 1.0 Page **68** of **87**

Data collection frequency: Annual



Other water quality purpose	
Data element name: Other water quality	Reporting question: What is the purpose of tracking other water
purpose	quality benefits?
	r quality benefits in the enrolled field. If "other" is chosen, enter the
appropriate value as free text in the addition	nal column.
Data type: List	Select multiple values: No
Measurement unit: Category	Allowed values:
	 Commodity marketing
	 Producing insets
	 Producing offsets
	 I don't know
	Other (specify)
Logic: Respond if yes to 'Other water quality'	Required: Yes
Data collection level: Field	Data collection frequency: Annual
Water quantity	
Data element name: Water quantity	Reporting question: Is water conservation being tracked in the field?
=	or reduction in use in the enrolled field. Tracking means at a
minimum using some form of monitoring and	
Data type: List	Select multiple values: No
Measurement unit: Category	Allowed values:
	• Yes
	• No
	I don't know
Logic: Respond if yes to 'Environmental benefits'	Required: Yes
Data collection level: Field	Data collection frequency: Annual
Water quantity amount	
Data element name: Water quantity amount	Reporting question: How much water conservation has been measured in the field?
Description: Total amount of water conserva	ation or reduction that is measured in the field.
Data type: Decimal	Select multiple values: No
Measurement unit: Amount	Allowed values: 0-1,000,000
Logic: Respond if yes to 'Water quantity'	Required: Yes
Data collection level: Field	Data collection frequency: Annual
Water quantity amount unit	· ·
Data element name: Water quantity amount unit	Reporting question: What is the unit for the amount of water conservation measured in the field?
	ter conservation or reduced use that is measured and reported in
	the appropriate value as free text in the additional column.
Data type: List	Select multiple values: No
	-
Measurement unit: Category	Allowed values:
Measurement unit: Category	Allowed values: • Acre-feet
Measurement unit: Category	
Measurement unit: Category	 Acre-feet
Measurement unit: Category Logic: Respond if yes to 'Water quantity'	Acre-feetCubic feet

Version 1.0 Page **69** of **87**



Water quantity purpose

Data element name: Water quantity **Reporting question:** What is the purpose of tracking water

purpose conservation?

Description: Purpose of tracking water conservation or reductions in water use in the enrolled field. If "other" is

chosen, enter the appropriate value as free text in the additional column.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Commodity marketingProducing insetsProducing offsets

I don't knowOther (specify)

Logic: Respond if yes to 'Water quantity' Required: Yes

Data collection level: Field Data collection frequency: Annual

Reduced erosion

Data element name: Reduced erosion **Reporting question:** Is reduced soil erosion being tracked in the

field?

Description: Tracking of reduced soil erosion in the enrolled field. Tracking means at a minimum using some

form of monitoring and reporting that can quantify benefits.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

YesNo

I don't know

Logic: Respond if yes to 'Environmental

benefits'

Required: Yes

Data collection level: Field **Data collection frequency:** Annual

Reduced erosion amount

Data element name: Reduced erosion Reporting question: How much erosion reduction has been

amount measured in the field?

Description: Total amount of erosion reduction that is measured in the enrolled field.

Data type: DecimalSelect multiple values: NoMeasurement unit: AmountAllowed values: 0-1,000,000

Logic: Respond if yes to 'Reduced erosion' **Required:** Yes

Data collection level: Field **Data collection frequency:** Annual

Reduced erosion amount unit

Data element name: Reduced erosion unit **Reporting question:** What is the unit for the amount of erosion

reduction measured?

Description: Unit for the total amount of erosion reduction from enrolled fields that is measured and reported

by the project. If "other" is chosen, enter the appropriate value as free text in the additional column.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Tons

Other (specify)

Logic: Respond if yes to 'Reduced erosion' **Required:** Yes

Data collection level: Field Data collection frequency: Annual

Version 1.0 Page **70** of **87**



Reduced erosion purpose		
Data element name: Reduced erosion	Reporting question: What is the purpose of tracking reduced	
purpose	erosion in the field?	
value as free text in the additional column.	rosion the enrolled field. If "other" is chosen, enter the appropriate	
Data type: List	Select multiple values: No	
Measurement unit: Category	Allowed values:	
ζ,	Commodity marketing	
	Producing insets	
	Producing offsets	
	I don't know	
	Other (specify)	
Logic: Respond if yes to 'Reduced erosion'	Required: Yes	
Data collection level: Field	Data collection frequency: Annual	
Reduced energy use		
Data element name: Reduced energy use	Reporting question: Is reduced energy use being tracked in the field?	
	e in the enrolled field. Tracking means at a minimum using some	
form of monitoring and reporting that can o		
Data type: List	Select multiple values: No	
Measurement unit: Category	Allowed values:	
	• Yes	
	• No	
	I don't know	
Logic: Respond if yes to 'Environmental benefits'	Required: Yes	
Data collection level: Field	Data collection frequency: Annual	

Data element name: Reduced energy use Reporting question: How much energy use reduction has been

measured in the field? amount

Description: Total amount of energy use reduction that is measured in the enrolled field.

Data type: Decimal Select multiple values: No Measurement unit: Amount **Allowed values: 0-1,000,000**

Logic: Respond if yes to 'Reduced energy

use'

Data collection level: Field Data collection frequency: Annual

Reduced energy use amount unit

Data element name: Reduced energy use Reporting question: What is the unit for the energy use

unit reduction measured in the field?

Description: Unit for the total amount of energy use reduction that is measured in the enrolled field. If "other"

Required: Yes

is chosen, enter the appropriate value as free text in the additional column. Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

> Kilowatt hours Other (specify)

Logic: Respond if yes to 'Reduced energy

use'

Required: Yes

Data collection level: Field Data collection frequency: Annual

Version 1.0 Page **71** of **87**



Reduced energy use purpose

Data element name: Reduced energy use Reporting question: What is the purpose of tracking reduced

urpose energy use in the field?

Description: Purpose of tracking reduced energy use in the enrolled field. If "other" is chosen, enter the

appropriate value as free text in the additional column.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Commodity marketingProducing insetsProducing offsets

I don't knowOther (specify)

Logic: Respond if yes to 'Reduced energy

use'

Required: Yes

Data collection level: Field Data collection frequency: Annual

Avoided land conversion

Data element name: Avoided land Reporting question: Is avoided land conversion being tracked in

conversion the field?

Description: Tracking of avoided land conversion in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits. Land conservation means land use changing from

agricultural uses to non-agricultural uses.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

YesNo

I don't know

Logic: Respond if yes to 'Environmental

benefits'

Required: Yes

Data collection level: Field **Data collection frequency:** Annual

Avoided land conversion amount

Data element name: Avoided land **Reporting question:** How much avoided land conversion has

conversion amount been measured in the field?

Description: Total amount of avoided land conversion that is measured in the enrolled field.

Data type: DecimalSelect multiple values: NoMeasurement unit: AmountAllowed values: 0-1,000,000

Logic: Respond if yes to 'Avoided land

conversion'

Required: Yes

Data collection frequency: Annual

Avoided land conversion amount unit

Data collection level: Field

Data element name: Avoided land **Reporting question:** What is the unit for the amount of avoided

conversion unit land conversion measured in the field?

Description: Unit for the total amount of avoided land conversion that is measured in the enrolled field. If

"other" is chosen, enter the appropriate value as free text in the additional column.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Acres

Other (specify)

Logic: Respond if yes to 'Avoided land

conversion'

Required: Yes

Data collection level: Field **Data collection frequency:** Annual

Version 1.0 Page **72** of **87**



Avoided l	and	conversion	purpose
-----------	-----	------------	---------

Data element name: Avoided land **Reporting question:** What is the purpose of tracking avoided

conversion purpose land conversion in the field?

Description: Purpose of tracking avoided land conversion in the enrolled field. If "other" is chosen, enter the

appropriate value as free text in the additional column.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

Commodity marketingProducing insets

Producing offsets

I don't know

Other (specify)

Logic: Respond if yes to 'Avoided land

conversion'

Required: Yes

Data collection level: Field

Data collection frequency: Annual

Improved wildlife habitat

Data element name: Improved wildlife Reporting question: Are improvements to wildlife habitat being

habitat tracked in the field?

Description: Tracking of improvements to wildlife in and around the enrolled field. Tracking means at a

minimum using some form of monitoring and reporting that can quantify benefits.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

YesNo

I don't know

Logic: Respond if yes to 'Environmental

benefits'

Required: Yes

Data collection level: Field **Data collection frequency:** Annual

Improved wildlife habitat amount

Data element name: Improved wildlife **Reporting question:** How much improved wildlife habitat has

habitat amount been measured in the field?

Description: Total amount of improved wildlife habitat that is measured in and around the enrolled fields.

Data type: DecimalSelect multiple values: NoMeasurement unit: AmountAllowed values: 0-1,000,000

Logic: Respond if yes to 'Improved wildlife

habitat'

Required: Yes

Data collection level: Field **Data collection frequency:** Annual

Improved wildlife habitat amount unit

Data element name: Improved wildlife **Reporting question:** What is the unit for the amount of improved

habitat unit wildlife habitat measured in the field?

Description: Unit for the total amount of improved wildlife habitat that is measured in and around enrolled

fields. If "other" is chosen, enter the appropriate value as free text in the additional column.

Data type: List Select multiple values: No

Measurement unit: Category Allowed values:

AcresLinear feet

Other (specify)

Logic: Respond if yes to 'Improved wildlife

habitat'

Required: Yes

Data collection level: Field Data collection frequency: Annual

Version 1.0 Page **73** of **87**



Improved wildlife habitat purpose		
Data element name: Improved wildlife habitat purpose	Reporting question: What is the purpose of tracking improved wildlife habitat in the field?	
Description: Purpose of tracking improved w appropriate value as free text in the addition	ildlife habitat in the enrolled field. If "other" is chosen, enter the al column.	
Data type: List	Select multiple values: No	
Measurement unit: Category	Allowed values: Commodity marketing Producing insets Producing offsets I don't know Other (specify)	
Logic: Respond if yes to 'Improved wildlife habitat'	Required: Yes	
Data collection level: Field	Data collection frequency: Annual	

Version 1.0 Page **74** of **87**



CSAF Practice Sub-questions

For some CSAF practices, there is an additional set of questions that are unique to each practice. Responses to these questions are needed to verify estimated GHG benefits of these practices. If a field is implementing a CSAF practice with an NRCS CPS code in Table 11, answer the follow-up questions listed next to the relevant practice name in the table. Use the *Supplemental Reporting Workbook – CSAF Practice Sub-questions* to report the required information.

Table 11. Follow-on questions for select CSAF practices

Practice name and code	Follow-up question	Options (select one)
Alley Cropping (CPS 311)	Species category (select most common/extensive type if using more than one)	Coniferous trees Deciduous trees Shrubs
	Species density (number of trees planted per acre)	1-10,000
Anaerobic Digester (CPS 366)	Waste storage system prior to installing anaerobic digester	Aerobic lagoon Anaerobic digester (complex mix) with energy generation Anaerobic digester (plug flow) with energy generation Anaerobic lagoon Composting Covered lagoon (no energy generation or flaring) Covered lagoon with energy generation Covered lagoon with flaring Daily spread Deep bedding pack Deep pit Dry lot Dry stacking/solid storage Pasture/range/paddock Poultry with bedding Poultry without bedding (e.g., high rise) Slurry tank/basin
Digester type	Digester type	Covered lagoon with energy generation Covered lagoon with flaring Covered lagoon (no energy generation or flaring Complex mix with energy generation Plug flow with energy generation Other (specify)
	Additional feedstock source (select most common if using more than	Food waste Straw or bedding Wastewater
	one)	Other (specify)

Version 1.0 Page **75** of **87**

-		<u> </u>
		Coal
		Diesel
		Electricity
		Gasoline
	Fuel type before installation	Kerosene
	r der type before motumation	Liquified petroleum gas (LPG)
		Natural gas
		Propane
		Wood
		Other (specify)
	Fuel amount before installation	0-1,000,000
		Cubic feet (natural gas)
	Fuel and superiorit bafairs	Gallons (diesel, gasoline, propane, LPG, kerosene)
	Fuel amount unit before	Kilowatt-hours (electricity)
	installation	Pounds (wood, coal)
Combustion System		Other (specify)
Improvement (CPS 372)	Fuel type after installation	Coal
		Diesel
		Electricity
		Gasoline
		Kerosene
		Liquified petroleum gas (LPG)
		Natural gas
		Propane
		Wood
		Other (specify)
	Fuel amount after installation	0-1,000,000
		Cubic feet (natural gas)
	Fuel amount unit after installation	Gallons (diesel, gasoline, propane, LPG, kerosene)
		Kilowatt-hours (electricity)
		Pounds (wood, coal)
		Other (specify)
	Species category (select most common/extensive type if using more than one)	Brassicas
		Grasses
Conservation Cover		Legumes
(CPS 327)		Non-legume broadleaves
		Shrubs

Version 1.0 Page **76** of **87**

		Brassica
		Broadleaf
	Conservation crop type	Cool season
Conservation Crop Rotation (CPS 328)		Grass
		Legume
		Warm season
		Added perennial crop
	Change implemented	Reduced fallow period
		Both
		Conventional (plow, chisel, disk)
		No-till, direct seed Reduced till
	Conservation crop rotation tillage type	
		Strip till None
	Total conservation eron rotation length in	Other (specify)
	Total conservation crop rotation length in days	1-120
	Strip width (feet)	1-100
Contour Buffer Strips (CPS		Grasses
332)	Species category	Forbs
		Mix
		Brassicas
	Species category (select most	Forbs
	common/extensive type if using more	Grasses
	than one)	Legume
		Non-legume broadleaves
		Grazing
Cover Crop (CPS 340)	Cover crop planned management	Haying
		Termination
		Burning
		Herbicide application
	Cover crop termination method	Incorporation
		Mowing
		Rolling/crimping
		Winter kill/frost
		Grass logumo/forb mix
Critical Area Planting ICPS	Species category (select most	Grass legume/forb mix
Critical Area Planting (CPS	common/extensive type if using more	Herbaceous woody mix Perennial or reseeding
342)	than one)	Shrubs
		Trees
	Crudo protoin (parcent)	
	Crude protein (percent)	0-100
	Fat (percent)	0-100
Feed Management (CPS 592)		Chemical
	Feed additives/supplements	Edible oils/fats
	. III addition of adplication	Seaweed/kelp
		Other (specify)
	Species category (select most	Forbs
Field Border (CPS 386)	common/extensive type if using more	Grasses
()	than one)	Mix
	1	Shrubs

Version 1.0 Page **77** of **87**

-		
	Strip width (feet)	20-1,000
	Charles estagen / calast most	Forbs
Filter Strip (CPS 393)	Species category (select most	Grasses
	common/extensive type if using	Mix
	more than one)	Shrubs
		Forest
		Multi-story cropping
Forest Farming (CPS 379)	Land use in previous year	Pasture/grazing land
		Row crops
		Other agroforestry
		Maintain or improve forest carbon stocks
		Maintain or improve forest health and
		productivity
		Maintain or improve forest structure and
Forest Stand	Down and for invaling antation	composition
Improvement (CPS 666)	Purpose for implementation	Maintain or improve wildlife, fish, and
		pollinator habitat
		Manage natural precipitation more efficiently
		Reduce forest pest pressure
		Reduce forest wildfire hazard
Crassed Waterway (CDS	Species category (select most	Flowering Plants
Grassed Waterway (CPS 412)	common/extensive type if using	Forbs
	more than one)	Grasses
	Species category (select most	Grasses
Hedgerow Planting (CPS	common/extensive type if using	Shrubs
422)	more than one)	Trees
	Species density (number of trees planted per acre)	1-10,000
		Forbs
	Species category (select most common/extensive type if using more than one)	Grasses
Herbaceous Wind		Mix
Barriers (CPS 603)		Shrubs
barriers (CF3 003)	Barrier width (feet)	1-1,000
	Number of rows	1-100
		Gravel
Mulching (CPS 484)		Natural
	Mulch type	Synthetic
		Wood
	Mulch cover (percent of field)	0-100
-	,	

Version 1.0 Page **78** of **87**

Nutrient management (CPS 590)	Nutrient type with CPS 590	Biosolids Commercial fertilizers Compost EEF (nitrification inhibitor) EEF (slow or controlled release) EEF (urease inhibitor) Green manure Liquid animal manure Organic by-products Organic residues or materials Solid/semi-solid animal manure Wastewater
	Nutrient application method with CPS 590	Banded Broadcast Injection Irrigation Surface application Surface application Variable rate
	Nutrient application method in the previous year	Banded Broadcast Injection Irrigation Surface application Surface application with tillage Variable rate
	Nutrient application timing with CPS 590	Single pre-planting Single post-planting Split pre- and post-planting Split post-planting
	Nutrient application timing in the previous year	Single pre-planting Single post-planting Split pre- and post-planting Split post-planting
	Nutrient application rate with CPS 590	0-20,000
	Nutrient application rate unit with CPS 590	Gallons per acre Pounds per acre
	Nutrient application rate change	Decrease compared to previous year Increase compared to previous year No change
Pasture and Hay Planting (CPS 512)	Species category (select most common/extensive type if using more than one)	Cool-season broadleaf Cool-season grass Warm-season broadleaf Warm-season grass
	Termination process	Grazing Haying (i.e., cutting and baling) Other (specify)
Prescribed Grazing (CPS 528)	Grazing type	Cell grazing Deferred rotational Management intensive Rest-rotation
		

Version 1.0 Page **79** of **87**

Range Planting (CPS 550)	Species category (select most common/extensive type if using more than one)	Forbs Grasses Legumes Shrubs Trees
Residue and Tillage Management – No-till (CPS 329)	Surface disturbance	None Seed row only
Residue and Tillage Management – Reduced Till (CPS 345)	Surface disturbance	None Seed row/ridge tillage for planting Shallow across most of the soil surface Vertical/mulch
Riparian Forest Buffer	Species category (select most common/extensive type if using more than one)	Coniferous trees Deciduous trees Shrubs
(CPS 391)	Species density (number of trees planted per acre)	1-10,000
Riparian Herbaceous Cover (CPS 390)	Species category (select most common/extensive type if using more than one)	Ferns Forbs Grasses Legumes Rushes Sedges
Roofs and Covers (CPS 367)	Roof/cover type	Concrete Flexible geomembrane Metal Timber Other (specify)
common/extensive t Silvopasture (CPS 381) one)	Species category (select most common/extensive type if using more than one)	Coniferous trees Deciduous trees Forage Shrubs
	Species density (number of trees planted per acre)	1-10,000
	Strip width (feet)	1-1,000
Stripcropping (CPS 585)	Crop category (select most common/extensive type if using more than one)	Erosion resistant crops Fallow Sediment trapping crops
	Number of strips	2-100
	Species category (select most	Coniferous trees
Tree/Shrub Establishment	common/extensive type if using more than	Deciduous trees
•	one)	Shrubs
(CPS 612)	Species density (number of trees planted per acre)	1-10,000
	Species category (select most	Grasses
Vegetative Barrier (CPS	common/extensive type if using more than	Grass forb mix
601)	one)	Grass legume mix
	Barrier width (feet)	3-1,000

Version 1.0 Page **80** of **87**

		Chemical (e.g., salts, polymers)
	Separation type	Mechanical (e.g., screens, presses)
Waste Separation Facility		Settling basin
(CPS 632)		Bedding
	Most common use of solids	Field applied
		Other (specify)
		Aerobic lagoon
		Anaerobic digester (complex mix) with
		energy generation
		Anaerobic digester (plug flow) with
		energy generation
		Anaerobic lagoon
		Composting
		Covered lagoon (no energy generation
		or flaring)
Waste Storage Facility (CPS	Waste storage system prior to	Covered lagoon with energy generation
313)	installing your waste storage facility	Covered lagoon with flaring
,	3, 3,	Daily spread
		Deep bedding pack
		Deep pit
		Dry lot
		Dry stacking/solid storage
		Pasture/range/paddock
		Poultry with bedding
		Poultry with bedding (e.g., high rise)
		Slurry tank/basin
		Biological
Waste Treatment (CPS 629)	Treatment type	Chemical
waste freatment (CF3 023)	rreatment type	Mechanical
		Appropriate digaster (complex mix) with
		Anaerobic digester (complex mix) with
		energy generation
		Anaerobic digester (plug flow) with
	Waste storage system prior to installing waste treatment lagoon	energy generation
		Anaerobic lagoon
		Composting
		Covered lagoon (no energy generation
		or flaring)
		Covered lagoon with energy generation
		Covered lagoon with flaring
Waste Treatment Lagoon		Daily spread
(CPS 359)		Deep bedding pack
		Deep pit
		Dry lot
		Dry stacking/solid storage
		Pasture/Range/Paddock
		Poultry with bedding
		Poultry without bedding (e.g., high rise)
		Slurry tank/basin
	lethere e leasers and 12	Yes
	Is there a lagoon cover/crust?	No
	Is there lagoon aeration?	Yes
		No

Version 1.0 Page **81** of **87**

Windbreak/Shelterbelt Establishment and	Species category (select most common/extensive type if using more than one)	Coniferous trees Deciduous trees Shrubs
Renovation (CPS 380)	Species density (number of trees planted per acre)	1-10,000

Version 1.0 Page 82 of 87



Appendix A: Climate-smart Agriculture and Forestry Practices

All NRCS Practice Standards	(not limited to climate-smart prac	ctices)

309, Agrichemical Handling Facility
390, Riparian Herbaceous Cover
311, Alley Cropping
391, Riparian Forest Buffer

313, Waste Storage Facility 393, Filter Strip 314, Brush Management 394, Firebreak

315, Herbaceous Weed Treatment 395, Stream Habitat Improvement and Management

316, Animal Mortality Facility
396, Aquatic Organism Passage
317, Composting Facility
397, Aquaculture Pond
318, Short Term Storage of Animal Waste and By-Products
398, Fish Raceway or Tank

319, On-Farm Secondary Containment Facility 399, Fishpond Management

320, Irrigation Canal or Lateral 400, Bivalve Aquaculture Gear and Biofouling Control

324, Deep Tillage 402, Dam

325, High Tunnel System 410, Grade Stabilization Structure

326, Clearing and Snagging
412, Grassed Waterway
327, Conservation Cover
420, Wildlife Habitat Planting
328, Conservation Crop Rotation
422, Hedgerow Planting
329, Residue and Tillage Management, No Till
423, Hillside Ditch

220. Contaur Forming

330, Contour Farming 428, Irrigation Ditch Lining

331, Contour Orchard and Other Perennial Crops 428A, Irrigation Water Conveyance, Ditch and Canal Lining,

332, Contour Buffer Strips Plain Concrete

334, Controlled Traffic Farming

333, Amending Soil Properties with Gypsum Products 428B, Irrigation Water Conveyance, Ditch and Canal Lining,

Flexible Membrane

336, Soil Carbon Amendment
 328, Prescribed Burning
 340, Cover Crop
 428C, Irrigation Water Conveyance, Ditch and Canal Lining,
 Galvanized Steel
 430, Irrigation Pipeline

342, Critical Area Planting
345, Residue and Tillage Management, Reduced Till
436, Irrigation Reservoir

348, Dam, Diversion 441, Irrigation System, Microirrigation

350, Sediment Basin 442, Sprinkler System

351, Well Decommissioning

443, Irrigation System, Surface and Subsurface
353, Monitoring Well

447, Irrigation and Drainage Tailwater Recovery
355, Groundwater Testing

449, Irrigation Water Management

356, Dike and Levee450, Anionic Polyacrylamide (PAM) Application359, Waste Treatment Lagoon453, Land Reclamation, Landslide Treatment360, Waste Facility Closure455, Land Reclamation, Toxic Discharge Control

362, Diversion 457, Mine Shaft and Adit Closing

366, Anaerobic Digester

460, Land Clearing

367, Roofs and Covers

462, Precision Land Forming and Smoothing

Hor, Notis and Covers

368, Emergency Animal Mortality Management
 371, Air Filtration and Scrubbing
 372, Combustion System Improvement
 464, Irrigation Land Leveling
 466, Land Smoothing
 468, Lined Waterway or Outlet

373, Dust Control on Unpaved Roads and Surfaces
 374, Energy Efficient Agricultural Operation
 375, Dust Management for Pen Surfaces
 376, Field Operations Emissions Reduction
 472, Access Control
 484, Mulching
 490, Tree/Shrub Site Preparation
 500, Obstruction Removal

376, Field Operations Emissions Reduction 500, Obstruction Removal 378, Pond 511, Forage Harvest Management

379, Forest Farming
512, Pasture and Hay Planting
380, Windbreak/Shelterbelt Establishment and Renovation
516, Livestock Pipeline

381, Silvopasture 520, Pond Sealing or Lining, Compacted Soil Treatment

382, Fence 521, Pond Sealing or Lining, Geomembrane or 383, Fuel Break Geosynthetic Clay Liner

384, Woody Residue Treatment
386, Field Border
521B, Pond Sealing or Lining, Soil Dispersant
521C, Pond Sealing or Lining, Bentonite Sealant

Version 1.0 Page **83** of **87**

521D, Pond Sealing or Lining, Compacted Clay Treatment

522, Pond Sealing or Lining - Concrete

527, Sinkhole Treatment 528, Prescribed Grazing 533, Pumping Plant

543, Land Reclamation, Abandoned Mined Land 544, Land Reclamation, Currently Mined Land 548, Grazing Land Mechanical Treatment

550, Range Planting

554, Drainage Water Management

555, Rock Wall Terrace 557, Row Arrangement 558, Roof Runoff Structure

560, Access Road

561, Heavy Use Area Protection562, Recreation Area Improvement

566, Recreation Land Improvement and Protection

570, Stormwater Runoff Control

572, Spoil Disposal 574, Spring Development 575, Trails and Walkways 576, Livestock Shelter Structure

578, Stream Crossing

580, Streambank and Shoreline Protection

582, Open Channel

584, Channel Bed Stabilization

585, Stripcropping

587, Structure for Water Control

588, Crosswind Ridges 589, Cross Wind Trap Strips 590, Nutrient Management

591, Amendments for Treatment of Agricultural Waste

592, Feed Management

595, Pest Management Conservation System

600, Terrace

601, Vegetative Barrier 602, Equitable Relief

603, Herbaceous Wind Barriers

604, Saturated Buffer 605, Denitrifying Bioreactor 606, Subsurface Drain 607, Surface Drain, Field Ditch 608, Surface Drain, Main or Lateral

609, Surface Roughening

610, Salinity and Sodic Soil Management

612, Tree/Shrub Establishment

614, Watering Facility 620, Underground Outlet 629, Waste Treatment 630, Vertical Drain 632, Waste Separation Facility

633, Waste Recycling 634, Waste Transfer

635, Vegetated Treatment Area 636, Water Harvesting Catchment 638, Water and Sediment Control Basin

640, Waterspreading 642, Water Well

643, Restoration of Rare or Declining Natural Communities

644, Wetland Wildlife Habitat Management 645, Upland Wildlife Habitat Management

646, Shallow Water Development and Management 647, Early Successional Habitat Development-Mgt

649, Structures for Wildlife

650, Windbreak/Shelterbelt Renovation

654, Road/Trail/Landing Closure and Treatment

655, Forest Trails and Landings 656, Constructed Wetland 657, Wetland Restoration 658, Wetland Creation 659, Wetland Enhancement 660, Tree-Shrub Pruning

666, Forest Stand Improvement 670, Energy Efficient Lighting System 672, Energy Efficient Building Envelope 736, Crop By-Product Transfer, interim 724, Water Treatment Facility, interim 735, Waste Gasification Facility, interim

737, Reduced Water and Energy Coffee Conveyance

System, interim

740, Pond Sealing and Lining, Soil Cement, interim

751, Individual Terrace, interim 753, Infiltration Ditch, interim 755, Well Plugging, interim

770, Livestock Confinement Facility, interim775, Drainage Ditch Covering, interim782, Phosphorus Removal System, interim800, Controlling Existing Flowing Wells, interim

803, Water Well Disinfection, interim

805, Amending Soil Properties with Lime, interim

808, Soil Carbon Amendment, interim

809, Conservation Harvest Management, interim 810, Annual Forages for Grazing Systems, interim

812, Raised Beds, interim

815, Groundwater Recharge Basin or Trench, interim

817, On-Farm Recharge, interim

818, Water Conservation System, interim

821, Low Tunnel Systems, interim 823, Organic Management, interim

Version 1.0 Page **84** of **87**



Other CSAF Practices

Traditional or cultural practices Microbial products Solar power generation Grain bin construction Pre-season drainage

Version 1.0 Page **85** of **87**

Appendix B: Commodity List

CHICORY/RADICCHIO

<u>CROPS</u> CINNAMON HYBRID POPLAR TREES

ALFALFA CLOVER IDLE ALMONDS COCONUTS INDIGO

AMARANTH GRAIN COFFEE ISRAEL MELONS
APPLES CORN JACK FRUIT

APRICOTS COTTON ELS JERUSALEM ARTICHOKES

ARONIA (CHOKEBERRY) **COTTON UPLAND JICAMA ARTICHOKES CRANBERRIES JOJOBA ASPARAGUS CRENSHAW MELON** JUJUBE **ATEMOYA CRUSTACEAN JUNEBERRIES AVOCADOS CUCUMBERS KENAF BAMBOO SHOOTS CURRANTS KHORASAN BANANAS DASHEEN KIWIBERRY BARLEY DATES KIWIFRUIT**

BEANS DURIAN KOCHIA (PROSTRATA)

BEETS EGGPLANT KOHLRABI

BIRDSFOOT/TREFOIL EINKORN KOREAN GOLDEN MELON

BLUEBERRIES ELDERBERRIES KUMQUATS EMMER LAMBS EAR **BREADFRUIT BROCCOFLOWER FIGS LEEKS BROCCOLI FINFISH LEMONS BROCCOLINI** FLAX **LENTILS BRUSSEL SPROUTS FLOWERS LESPEDEZA** FORAGE SOYBEAN/SORGHUM **BUCKWHEAT LETTUCE CABBAGE GAILON** LIMES **CACAO GARLIC** LONGAN **CACTUS GENIP LOQUATS CAIMITO GINGER** LYCHEE CALABAZA MELON **GINSENG MANGOS CALALOO GOOSEBERRIES MANGOSTEEN**

CAMELINA GOURDS MAPLE SAP
CANARY MELON GRAPEFRUIT MAYHAW BERRIES
CANARY SEED GRAPES MEADOWFOAM
CANEBERRIES GRASS MILKWEED
CANISTEL GREENS MILLET

CANOLA GROUND CHERRY MIXED FORAGE

CANTALOUPES GUAMABANA/SOURSOP MOHAIR CARAMBOLA (STAR FRUIT) GUAR MOLLUSK CARROTS GUAVA MORINGA CASHEW GUAVABERRY MULBERRIES CASSAVA GUAYULE MUSHROOMS CAULIFLOWER HAZEL NUTS MUSTARD CELERIAC HEMP NECTARINES CELERY HERBS NIGER SEED CHERIMOYA HESPERALOE NONI **CHERRIES HONEY OATS CHESTNUTS HONEYBERRIES OKRA**

CHINESE BITTER MELON HOPS ONIONS
CHRISTMAS TREES HORSERADISH ORANGES
CHUFAS HUCKLEBERRIES PAPAYA

HONEYDEW

Version 1.0 Page **86** of **87**

OLIVES

LIVESTOCK

ALPACAS BEEF COWS

USDA Partnerships for Climate-Smart Commodities Data Dictionary for Recipients February 2023

PARSNIP STRAWBERRIES
PASSION FRUITS SUGAR BEETS
PAWPAW SUGARCANE
PEACHES SUNFLOWERS
PEANUTS SUNN HEMP

PEARSTANGELOSBEEFALOPEASTANGERINESBUFFALO OR BISONPECANSTANGORSCHICKENS (BROILERS)PENNYCRESSTANGOSCHICKENS (LAYERS)PEPPERSTANNIERDAIRY COWS

PERENNIAL PEANUTS **TARO** DEER PERIQUE TOBACCO TEA **DUCKS PERSIMMONS TEFF** ELK PINE NUTS ΤI **EMUS PINEAPPLE TOBACCO CIGAR WRAPPER EQUINE PISTACHIOS TOBACCO BURLEY** GEESE PITAYA/DRAGONFRUIT **TOBACCO BURLEY 31V GOATS PLANTAIN TOBACCO CIGAR BINDER HONEYBEES PLUMCOTS TOBACCO CIGAR FILLER LLAMAS**

PLANTAIN

TOBACCO CIGAR BINDER

HONEYBEI

PLUMCOTS

TOBACCO CIGAR FILLER

LLAMAS

PLUMS

TOBACCO CIGAR FILLER BINDER

REINDEER

POMEGRANATES

TOBACCO DARK AIR CURED

SHEEP

POTATOES

TOBACCO FIRE CURED

SWINE

POTATOES SWEET

TOBACCO FLUE CURED

TURKEYS

PRUNES TOBACCO MARYLAND

PSYLLIUM TOBACCO VIRGINIA FIRE CURED

PUMMELO TOMATILLOS PUMPKINS TOMATOES QUINCES TREES TIMBER QUINOA **TRITICALE RADISHES TRUFFLES RAISINS TURNIPS RAMBUTAN VETCH RAPESEED WALNUTS RHUBARB** WAMPEE RICE **WASABI** RICE SWEET WATERMELON RICE WILD **WAX JAMBOO FRUIT**

RUTABAGA WHEAT

RYE WILLOW SHRUB
SAFFLOWER WINTER MELON
SAPODILLA WOLFBERRY/GOJI

SAPOTE YAM

SCALLIONS SESAME SHALLOTS SORGHUM

SORGHUM DUAL PURPOSE

SORGHUM FORAGE

SOYBEANS SPELT SQUASH

STAR GOOSEBERRY

Version 1.0 Page 87 of 87

Partnerships for Climate-Smart Commodities Additional Specific Terms and Conditions February 2023

I. Overarching Statement

The following award terms and conditions are applicable to Partnerships for Climate-Smart Commodities agreements and are in addition to the USDA FPAC General Terms and Conditions. The award recipient must abide by all terms of this grant including, but not limited to, the General Terms and Conditions, the terms in the Funding Opportunity and associated Frequently Asked Questions, and this addendum. The recipient must also deliver on the planned objectives in the project narrative and budget narrative associated with this grant.

II. Eligibility and Highly Erodible Lands and Wetlands Compliance

In order to be eligible for an incentive payment as a part of the Partnerships for Climate-Smart Commodities, a producer must:

- Establish Farm Records with the Farm Service Agency (FSA) (have farm, tract, and field numbers in place);
- Complete an AD-2047 (Customer Data Worksheet to facilitate the collection of customer data for Business Partner Record);
- Certify highly erodible land conservation (HEL) and wetland conservation (WC) compliance via Form AD-1026, Highly Erodible Land Conservation (HELC) and Wetland Conservation (WC) Certification; and
- Certify that they are not a foreign person or entity.

Farm, tract, and field numbers are required for the producer, and ultimately the Partnerships for Climate-Smart Commodities recipient, to report climate-smart practice implementation to USDA, as well as to certify and maintain HELC/WC compliance. This will require that some producers who do not already have these numbers, like perennial crop growers or feedlots, establish these records with USDA's FSA. Farm, tract, field numbers, producer name, and Core Customer I.D. (CCID) will be provided by the recipient to the National Program Officer as a part of routine grant reporting. Recipients must ensure that producers receiving financial assistance or incentives through this project use the same name as is included in the relevant FSA Business File for that Farm ID in any contracts or similar documentation kept by the recipient.

Producers are not bound by the payment limitations and the adjusted gross income (AGI) limitations that are in place for other USDA programs.

In order to demonstrate HELC/WC compliance for Partnerships for Climate-Smart Commodities incentive payments, producers will need to request a copy of their subsidiary print from their

USDA FSA field office. The Subsidiary Print includes print year specific eligibility related information about a selected producer. The producer will then provide this documentation to the Partnerships for Climate-Smart Commodities recipients as proof of compliance. A current year subsidiary print will be required for each crop year that the producer receives a payment, and HELC/WC eligibility information is provided under the AD-1026 and Conservation Compliance sections of subsidiary (determined by year, which can change at any time during the year or in a subsequent year). As is the case already, field offices will not be expected to provide documentation to anyone besides the producer themselves (and must always comply with Section 1619 limitations if they ever do provide documentation to third parties). Producers must have control of the land for the term of their beneficiary contract.

Recipients are responsible for determining producer eligibility within the funding opportunity requirements. Recipients must inform producers of eligibility requirements and direct them to local USDA offices for requested information as necessary, including but not limited to, farm and tract establishment and Highly Erodible Land and Wetland Compliance determinations. Privacy of producers is a priority throughout this process, and recipients are responsible for maintaining producer privacy in the process.

At minimum, the recipient will collect and review subsidiary reports from participating producers. They will ensure that the producer is listed as "compliant" in all sections of the conservation compliance portion of subsidiary and "certified" for AD-1026 before an incentive payment is made. If payments to a producer span more than one Federal fiscal year, the recipient will review an updated subsidiary print each fiscal year to ensure that the status is still compliant.

III. Other Environmental and Cultural Resources Reviews

A Finding of No Significant Impact (FONSI) was signed by USDA NRCS on August 26, 2022. A copy of the Programmatic Environmental Assessment for Partnerships for Climate-Smart Commodities is available at www.usda.gov/climate-smart-commodities. USDA may determine that additional environmental and cultural resources review is needed for any particular action under Partnerships for Climate-Smart Commodities. The recipient must not execute any beneficiary contracts under this grant agreement prior to receipt of a letter from USDA that specifically details:

- further procedures deemed appropriate by the Agency to ensure a completed National Environmental Policy Act (NEPA) review and all appropriate consultation requirements are met, and
- 2) additional instructions for any unanticipated discoveries or conditions.

A resolution of support is required for projects on Tribal lands from the governing body of the Tribe with jurisdiction over that land, if the applicant is not the Tribe nor an entity owned or

operated by that Tribe. USDA may approve alternative documentation for resolutions when USDA deems necessary and legally sufficient.

IV. Producer Benefits

USDA encourages the recipient to disclose to participating producers the manner and amount for which any market premiums derived from the development of the relevant climate-smart commodity will be shared between participating parties, including producers. USDA will be monitoring producer benefits, in particular those to small and underserved producers, throughout the grant period. Recipients agree that their project(s) will implement a plan for engaging small and underserved producers as laid out in this agreement.

V. Producer Data Protection and Disclosure

Recipients must ensure each producer has convenient access to any data collected from that producer or the producer's land and any associated modeling as part of the project. The recipient must provide each producer applying for benefits under this grant a description in writing of how their information, including but not limited to data about their farm and commodities, will be utilized, protected and shared as applicable.

VI. Other Data and Reporting Requirements

In addition to the reporting information provided in the statement of work and General Terms and Conditions, USDA will provide a template for the Detailed Progress Report, also known as the Partnerships for Climate-Smart Commodities (PSCS) Project Reporting Workbook. Within 30 calendar days of execution of this grant, a copy of this workbook will be posted at www.usda.gov/climate-smart-commodities or an alternative location provided to the recipient by the National Program Officer. USDA may provide updates to the PCSC Project Reporting Workbook or submission methods to streamline the data collection process and/or reduce the burden on the recipient throughout the grant period. Generally, these updates will be provided at least 3 months in advance of any required changes. The recipient must not transfer any data to foreign governments or foreign entities without prior approval from USDA.

USDA will provide a Technical Contact for this grant. The Technical Contact will have the responsibility of technical oversight for USDA for the project. The recipient is responsible for providing the technical assistance required to successfully implement and complete the project. The recipient must comply with any requests for information from the Technical Contact. The Technical Contact for this award is the National Program Officer assigned to this grant.

Prior to execution of this grant, the recipient must provide a shapefile depicting the project boundary for enrollment under this grant. Producer enrollment may not occur outside this boundary without modification of this grant.

Within 30 calendar days of execution of this grant, the recipient must provide to the National Program Officer a website address where enrollment information will be posted for producers for the project associated with this grant. Recipients will be responsible for the following reports:

- Submit quarterly performance reports that include a written progress report, as well as
 additional reporting on specific data elements contained in the most up-to-date version
 of the Partnerships for Climate-Smart Commodities Project Reporting Workbook.
 Additional information about each reported element is described in the Data Dictionary.
- Submit supplemental reports required to validate greenhouse gas (GHG) benefit data, including: (1) an initial project MMRV plan, (2) field-modeled GHG benefit reports, and (3) field-direct GHG measurement results, as applicable. Additional information about these reports is in included in the Data Dictionary.
- Submit copies of project outputs and deliverables (e.g., fact sheets, reports) as attachments in ezFedGrants along with quarterly performance reports.
- Report the version of COMET-Planner used to estimate GHG benefits of the project within each quarterly performance report. As COMET-Planner is updated, recipients must adopt the latest version of the tool as directed by USDA for use in performance reports.

Recipients must designate an individual as a member of the USDA Partnerships for Climate-Smart Commodities Learning Network (Partnerships Network); this representative should be identified in the Project Narrative for this grant. Each project includes a plan for up to two Partnerships Network virtual meetings and two in-person meetings a year during the project duration. Dates and other details on events will be posted at www.usda.gov/climate-smart-commodities or an alternative location provided to the recipient by the National Program Officer.

The Partnerships Network will be co-chaired by representative from the USDA Office of the Chief Economist and the Farm Production and Conservation Mission Area. The Partnerships Network will inform synthesis reports to be assembled by USDA on a range of topics related to the implementation of Partnerships for Climate-Smart Commodities projects, including:

- Lessons-learned as projects are implemented;
- Options for providing technical assistance;
- Procedures for measurement/quantification, monitoring, reporting, and verifying GHG benefits;
- Options for tracing climate-smart commodities through the supply chain;
- Mechanisms for reducing costs of implementation;
- A forum for discussion and learning regarding approaches to climate-smart agriculture and forestry implementation (including but not limited to deployment and

measurement/quantification, monitoring, reporting, tracking, and verification of associated greenhouse gas benefits and marketing of climate-smart commodities).

- Synthesis of outcomes; and
- Opportunities for USDA and others to inform future approaches to generating new and expanded markets for climate-smart commodities.

The Partnerships Network topics to be discussed will cover at minimum the areas described in previous FAQs and will evolve with USDA's ongoing project data analysis efforts and with input from the project recipients on the kinds of sessions that will be most helpful to them in building the diverse climate-smart markets associated with their projects. Participation may include at least one interview a year and include questions related to the following areas:

- Technical assistance approaches, methods, and successes and/or challenges
- Producer outreach approaches, methods, and successes and/or challenges
- Monitoring, measurement, reporting, and verification (MMRV) approaches, methods, and successes and/or challenges
- Marketing approaches, methods, and successes and/or challenges
- Partnership approaches, methods, and successes and/or challenges
- Data collection and storage approaches, methods, and successes and/or challenges
- Supply chain approaches, methods and successes and/or challenges, including approaches to traceability
- Supply chain benefits and demand for climate-smart commodities
- Perspectives on program design, climate-smart commodity definitions, and future approaches or opportunities
- Project successes and stories

USDA may also request producer exit reports at a later date. Additional marketing and branding-related requirements may be provided by USDA, including signage related to Partnerships for Climate-Smart Commodities.

VII. Competition and Anti-Competitive Practices

In connection with this grant, recipients may not prohibit or otherwise limit a producer from changing the provider of other services or materials not included as part of this grant. Recipients may not condition, limit, steer, or discriminate in their provision or sale of non-project business functions or products to producers based on their participation or non-participation in or use of any services provided as part of this grant. Additionally, funds in this agreement shall not be used for purposes or activities related to mergers or acquisitions.

VIII. Suspension and Disbarment

The provisions governing Suspension and Disbarment in subsection 1.a.8 shall also apply to fraud, embezzlement, theft, forgery, bribery, falsification, or destruction of records, making false statements, or violations of the Federal civil antitrust or unfair trade practice laws.

IX. Special provisions for awards to for-profit entities as recipients

This section contains provisions that apply to awards to for-profit entities. These provisions are in addition to other applicable provisions of these terms and conditions, or they make exceptions from other provisions of the terms and conditions for awards to for-profit entities. For-profit entities that receive awards have two options regarding audits:

- 1) A financial related audit of a particular award in accordance with Generally Accepted Government Auditing Standards issued by the Comptroller General of the United States, in those cases where the for-profit entity receives awards under only one USDA program; or, if awards are received under multiple USDA programs, a financial related audit of all awards in accordance with Generally Accepted Government Auditing Standards issued by the Comptroller General of the United States; or
- 2) An audit that meets the requirements contained in 2 CFR 200 subpart F.

For-profit entities that receive annual awards totaling less than the audit requirement threshold in 2 CFR 200 subpart F are exempt from USDA audit requirements for that year, but records must be available for review by appropriate officials of Federal agencies or the Government Accountability Office.

X. Non-Disparagement

Recipients may not engage in any advertising deemed by USDA as disparaging to another agricultural commodity or competing product, or in violation of the prohibition against false and misleading advertising. Disparagement is defined as anything that depicts other commodities in a negative or unpleasant light via overt or subjective video, photography, or statements. Comparative advertising is allowable, provided the presentation of facts is truthful, objective, not misleading, and supported by a reasonable basis.