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**TO: Secretary Tom Vilsack[[1]](#footnote-1)\***

**U.S. Department of Agriculture (USDA)**

**FROM: Debbie Reed, Executive Director**

**Coalition on Agricultural Greenhouse Gases (C-AGG)**

***and***

**USDA Greenhouse Gas (GHG) Conservation Innovation Grant (CIG) Project Participants**

**SUBJECT: USDA GHG CIG Projects: C-AGG Recommendations and Feedback to USDA**

**DATE: August 15, 2013**

We are writing to provide recommendations and feedback about the substantial benefits that have been realized from USDA Natural Resource Conservation Service (NRCS) investments in FY2011 of $7.47M for Conservation Innovation Grant (CIG) projects to reduce greenhouse gas (GHG) emissions and promote carbon sequestration, hereinafter referred to as the USDA GHG CIG projects.

C-AGG also wishes to thank you for USDA’s investments in GHG mitigation and adaptation activities as they relate to the agricultural sector, but in particular, investments to prepare the sector to voluntarily contribute to GHG mitigation efforts in a manner that simultaneously benefits agricultural operations. The investments include many reports, tools and calculators developed by USDA that are helping to engage and support the sector in mutually beneficial activities and programs.

In particular, the focus of this memo is on the USDA GHG CIG projects. C-AGG urges USDA to continue to invest in the existing USDA GHG CIG projects, as well as to consider funding additional USDA GHG CIG projects in the future. Among the many successes of the existing projects is that the California (CA) Air Resources Board (ARB) is currently engaged in adoption of an agricultural offset protocol for rice growers that is based on one of the USDA GHG CIG projects. It is essential that agricultural offsets be included in CA’s mandatory cap-and-trade program, both to satisfy the need and demand for cost-effective offsets within CA’s compliance market and future additional compliance markets, but also to show how to effectively develop the necessary infrastructure and programmatic underpinnings to enable and encourage agricultural producers’ participation in carbon markets. The USDA GHG CIG projects have provided a critical path to enabling viable agricultural offset protocols to be adopted in CA as well as within voluntary carbon markets. Additionally, USDA’s investments have leveraged private sector and Canadian government investments in agricultural offset protocol and methodology development and related activities that are critical to further progress in this important area.

***Background Information on C-AGG***

C-AGG is a multi-stakeholder coalition of agricultural producers, scientists, methodology experts and developers, carbon investors, environmental ngo’s, and project developers that fosters a fact-based discourse on the development and adoption of policies, programs, methodologies, protocols and tools for GHG emissions reductions and carbon sequestration from the agricultural sector. C-AGG’s primary objective is to incentivize voluntary GHG emissions reductions opportunities for agricultural producers that enhance productivity and income generation opportunities while benefiting society.

Given C-AGG’s focus, objectives, and activities, we welcomed USDA’s investment in GHG CIG projects as a focal area, and have benefited greatly from our collaborative engagement with USDA’s GHG CIG projects. To foster this partnership, C-AGG provides financial support to the USDA GHG CIG project participants to participate in C-AGG meetings and workshops, including informal dinners with USDA staff, in order to promote collaboration, shared learning, and productive, focused discussions on the projects. C-AGG devotes specific sessions during meetings and workshops to address USDA GHG CIG and related project updates, successes and challenges. We created a portal on our website to showcase the USDA GHG CIG and related projects (http://www.c-agg.org/cig/), and to allow project participants to communicate and share information in a dedicated online forum; and have utilized our network of participants and stakeholders to share news and information regarding the GHG CIGS and related projects, as well as opportunities and announcements of likely interest and benefit to project developers and other stakeholders.

We would like to take this opportunity to summarize our shared learning based on our partnership with USDA GHG CIG project participants. While most of the USDA GHG CIG projects are in the second year of three-year grant cycles, there is much progress and success to report, and this memo presents just a snapshot of the many benefits. The following lessons and outcomes are categorized into three broad areas: successes, challenges, and future recommendations.

***USDA GHG CIG Project Successes***

* USDA GHG CIG Projects are Informing the Development of the Mandatory CA Cap-&-Trade Program and Voluntary Carbon Market Registries and Protocol Development
  + The process of developing, planning and implementing the USDA GHG CIG projects has and continues to play a key role in helping to inform ongoing development of agricultural offset protocols and future protocol opportunities in the CA Cap-&-Trade Program as well as in voluntary GHG markets, and market-based registries. The USDA GHG CIG projects have served as project pilots, providing a formative and developmental bridge to carbon offset markets and the potential role of agricultural projects within these markets.
    - This role is particularly valuable given that agricultural offsets represent a new area within offset markets, which has led investors and potential buyers to view them as still high-risk, which will only be overcome once these early projects show success, and build confidence with markets, regulators, and investors (including purchasers of credits).
  + USDA GHG CIG project developers have engaged directly and through C-AGG with CA policymakers to share program requirements and opportunities related to agricultural protocol development, and the CA ARB is currently working to adopt a Rice Protocol based on one of the USDA GHG CIG projects.
  + USDA GHG CIG projects are providing innovative agricultural offset and related, derivative opportunities to the agricultural sector, such as informing sustainable supply chain initiatives and ecosystem market opportunities for the agricultural sector.
  + Significant cross-border (Canada-US) collaboration between scientists on adapting protocols within the USDA GHG CIG projects has led to synergistic progress on pathways to quantifying and reducing greenhouse gas emissions in agricultural operations.
* USDA GHG CIG Project Developers, Collaborators Represent Diverse Backgrounds, Disciplines
  + USDA GHG CIG project developers and collaborators:
    - Include conservation leaders and stakeholders focused on multiple beneficial environmental outcomes from agricultural ecosystems, including but not solely based on GHG mitigation;
      * e.g., the Chesapeake Bay Foundation (CBF), Ducks Unlimited (DU), Environmental Defense Fund (EDF), and Winrock International (WI)
    - Include key agricultural sector stakeholders seeking to enhance member productivity and sustainability in the face of changing market needs;
      * e.g., The Fertilizer Institute (TFI), Dairy Management Institute (DMI), the California Rice Commission, the California Farm Bureau Federation, the New England Farmers Union, and Shepherds Grain
    - Have trusted relationships with the agricultural sector, including an understanding of the realities of agricultural operations, and are typically valued and recognized agents of change within the sector;
    - Play the valuable role of aggregation and program interpretation for individual producers – in other words, they make possible the ability of individual farms/farmers and groups of farms/farmers to participate in GHG mitigation programs and carbon offset markets, regardless of farm size;
    - Are building the necessary infrastructure to enable successful and cost-effective aggregation, as well as leveraging financing and added value for projects. This includes the development of educational materials, protocol development, recruitment, training, data collection, web-based interface development, purchasing credits, etc.
      * Are developing web-based interfaces that are user (“farmer”) friendly, to simplify and minimize producer data collection requirements and burdens, which can be significant. Some of the USDA GHG CIG projects have developed unique, open access interfaces for their projects and others.
* USDA GHG CIG Projects Encouraged Collaborative Engagement with Other Programs
  + The collaborative opportunities provided by the USDA GHG CIG projects have led to significant cross-pollination of agricultural and land-based offset and ecosystem service experiences, including with water quality programs and sustainable agricultural certification programs.
    - Project development encouraged new program outreach and collaborations between NRCS, other USDA agencies, and private sector partners.
  + The Alberta Offset Program experience with Agricultural Offset Protocols and project verification has been a topic of dialogue within C-AGG, and is a valuable source of learning and direction for GHG market and protocol developers, registries, and USDA GHG CIG projects, and continues to help inform program and protocol development.
    - The shared findings of the Office of the Auditor General of Alberta (independent auditors of all Government of Alberta Ministries) through audit reports, as well as presentations by C-AGG Alberta participants reporting on program developments and changes have been particularly instrumental in contributing key learnings, such as describing the characteristics of data management systems needed by project developers and aggregators to bring quality offset ton to markets.
* USDA Conservation Programs Offer Key Benefits to USDA GHG CIG Projects
  + Conservation programs in particular are familiar to producers, providing a point of entry for agricultural offset-type programs, and a potential source of funds to help get projects started, and help with producer engagement by “starting the conversation” with trusted sources.
* Agricultural GHG Mitigation Activities Offer Significant Co-benefits
  + The value of agricultural GHG emissions reductions tends to exceed that of non-biological projects, because by their very nature, the emissions reduction co-benefits are multiple, including ecosystem and habitat benefits, water quality benefits, air quality benefits, and enhanced soil and productivity benefits.
  + Environmental co-benefits with agriculture can be and often are significant, but most of these co-benefits are hard to quantify, and/or cannot yet be monetized.
  + Allowing for co-benefits to be recognized or included in criteria for project selection, protocol assessment and development (i.e., determination of which protocols to develop), could help to further incentive investments in agricultural offsets.
    - Over time, monetization of co-benefits and creation of ecosystem service markets can further “grow” this opportunity by adding income streams to agricultural offset projects, thus helping to build the business case.

***USDA GHG CIG Project Challenges***

* Project Timelines
  + While the USDA GHG CIG project cycle is three years, it is clear that the project development cycle is much longer, particularly for these first-of-a-kind projects. Protocol development, farmer recruitment, project implementation, and credit delivery can take five or more years to complete.
* USDA Conservation Programs
  + Although most USDA GHG CIG projects benefit from USDA conservation programs as an entrée to participation in GHG mitigation projects, existing conservation program requirements created some challenges, as did the topic of GHG mitigation as a primary focal point of the projects, which required semantic and approach-based adjustments to farmer engagement. Farmers are far more likely to engage in dialogue about enhanced operational efficiencies or efficient input utilization than about GHG reduction.
  + Strict “additionality[[2]](#footnote-2)” requirements related to some GHG offset programs complicate the ability of producers to participate in both conservation programs and carbon market offset programs, despite the fact that producer costs are rarely covered by potential carbon market proceeds. Additionality requirements also perversely penalize innovators and early adopters of beneficial GHG emissions reduction or sequestration practices.
  + While the availability of EQIP funding to USDA GHG CIG projects was greatly appreciated and potentially highly valuable to the success of the USDA GHG CIG projects, the timing and ability to target the EQIP funding to these projects proved a disconnect, and thus an opportunity lost.
    - The lack of Technical Assistance funds available to State NRCS offices proved challenging in securing engagement and responsiveness from many State NRCS offices, as the EQIP funding was viewed as an additional burden to staff.
* Producer Engagement
  + A significant lesson learned is that agricultural producers will engage in projects not based on GHG mitigation opportunities, but rather on enhanced income generation or productivity, input utilization efficiency, and perhaps, to help prevent regulatory threats. We must meet producers where they are at, and identify the pain points or opportunity points that will encourage their participation in GHG mitigation projects in ways that enhance their operations.
    - These obstacles to engagement are not just about semantics – they are cultural and socio-economic. Agricultural producers make management decisions based on knowledge, costs, equipment, available support systems (e.g. technology transfer or availability of best management practice guidance), market signals, and not insignificantly, based on what their peers and neighbors are doing.
  + Practice changes of any kind require decision support systems, and the bigger the practice change, the more important the support system is to inducing the desired change. This is particularly true for practice changes that involve long-term management investments (e.g. capital investments, infrastructure, and equipment). These changes are viewed largely as business decisions, and without the decision support systems, including business case scenarios showing adequate return on investment, even smaller practice changes that might reduce yield or income are viewed as risky – particularly if the financial benefits of participating are uncertain or delayed.
  + Messengers are important. Farmer-to-farmer interactions are most likely to lead to producer engagement and adoption of new practices. Often, innovators have a strong peer following and are viewed as trusted peers/partners who will take risks, tweak the system to maximize benefits, and optimize financial and co-benefit options for the “win-win” situation.
    - Due to offset market additionality requirements, innovators and early actors are generally prohibited from participating in offset markets, which penalizes the leading edge producers who take on the risks of new management practices and who pave the way for wider scale adoption and potential participation in new activities and new programs.
  + Simple educational materials with a sophisticated assessment of benefits and support systems (including available tools) are necessary.
  + Onerous program participation requirements, including high data input and collection needs, and data collection that is not within the current realm of most agricultural producers, is a significant hurdle to producer engagement.
  + Project developers who interpret program opportunities for farmers and deliver the opportunities in a manageable fashion are required to engage farmers. Farmers should never have to see or read a GHG Offset Protocol, or calculate GHG emissions reductions for a protocol.
  + USDA’s COMET-Farm tool is a valuable, user-friendly, web-based tool to help introduce individual producers to GHG mitigation opportunities, and with further development can potentially be used for data collection needs and efforts related to agricultural offset protocol opportunities.

* Data Needs are High; USDA Data Sharing Opportunities Should be Investigated
  + GHG methodologies and protocols are data intensive, and there is insufficient data for some project types or agricultural cropping or livestock systems to quantify GHG emissions associated with “common” agricultural practices (baseline estimation), as well as emissions reductions or sequestration associated with certain practices.
    - E.g., there is insufficient data available for specialty crops and cropping systems in some regions, such as CA.
  + Temporal and spatial differences in GHG fluxes (particularly with regard to N2O) and measurement tools and approaches remain challenging, and require additional research and data collection, and data sharing;
  + A cohesive attempt to identify the most critical data needs for offset protocols and projects is required, and collaboration with USDA and other relevant government agencies could identify access to USDA data that can benefit projects, protocols, models, and overall program development.
    - Data that can be directly downloaded into models or protocol interfaces, or otherwise available in a compatible and accessible format can greatly benefit protocol development, including data management, measurement, and verification systems;
    - Data directly collected from producers needs to be compatible with their ability to collect and deliver the data, e.g., in a format used by/already collected by producers (e.g. amount of diesel used in a certain timeframe, not CO2 equivalents of fuel used), and needs to be translated elsewhere and by others within the offset system or program.
* Landscape Uncertainties Related to Program Design, Protocol Development, and Agricultural Opportunities
  + Without US federal mandatory GHG regulations or requirements, and mandatory and voluntary programs related to agricultural offset program development and design still underway, these project have been largely leading the way in helping to tease out and test:
    - necessary program architecture to accommodate agricultural offset requirements, such as:
      * aggregation approaches;
      * cost-effective, realistic verification approaches;
      * model-based GHG estimation approaches;
    - the need to tailor offset protocol opportunities (based on and derived mainly from very different point-source pollution systems) to highly diverse biological ecosystems subjected to weather and climate variability as well as heterogeneous management approaches and operations;
    - the need for a high degree of flexibility to allow farmers to farm and to manage their operations while also meeting programmatic requirements;
      * flexibility and innovation are not optional within agricultural operations; and
    - barriers to practice change are often high – e.g., technical, operational, equipment/capital investment, inputs, management-related – and require proper technical and operational support in the form of tailored decision support systems and tools for the agricultural sector;
      * The reverse of this is that once implemented, successful practice changes are unlikely to revert.
  + The Cash Match Funding for some of the USDA GHG CIG projects was compromised or lost due to a reduction in value of voluntary carbon market credits coupled with the long timeframe required to fully develop these projects and deliver credits to market.
* Costs and Benefits
  + Business case and value proposition uncertainties exist due to the still formative nature of carbon markets and the role of agricultural offset opportunities within them, and the resulting difficulty in estimating credits or the value of credits from any given agricultural offsets project;
  + These uncertainties have limited or stifled full-blown investor, developer (project or protocol), and producer engagement in these early projects – which makes the GHG CIG project investments all the more critical to developing the business case and the certainty needed to develop these opportunities;
  + Not enough successful business case successes exist to convince investors to engage in agricultural offset protocols at this time, further limiting opportunities; and
  + Further programmatic and protocol design investments are necessary to apply the learnings and complete the success of the significant investments made in these projects, to date.

***GHG CIG Project Future Recommendations***

* Additional funding for current USDA GHG CIG projects is strongly recommended to allow successful completion of these projects, to deliver credits to markets, and to provide necessary successful business case scenarios for future producer engagement.
* Funding of additional USDA GHG CIG projects in the future is also recommended, to further develop this critical opportunity area for the agricultural sector.
  + Typically, methodology or protocol development requires expertise and significant investment of time, often as long as two years. Once developed, producers must be identified and engaged, and the project must be implemented, which can take anywhere from 1-3 years. After monitoring and verification – which can add up to another 6 months to 1 year, credits can be delivered;
  + The current value of carbon market offsets is unlikely to cover agricultural practice change costs and potential risks borne by participating producers, so additional investments are necessary while program infrastructures and rules and certainty are still in flux and under development; and
  + Credit stacking, particularly with existing conservation programs, and developing ecosystem service markets, can aid in project economics.
* Funds are often required up front to engage producers and pay for necessary practices change investments. Offset payments are delivered only after implementation and verification, etc., which leaves a huge temporal financing gap for project developers as well as agricultural producers, thus creating additional engagement risk to project developers, investors, and producers. USDA GHG CIG project investments are invaluable sources of gap funding in the development stages of these markets and projects.
* Quantification methodologies require further investment
  + USDA enhancements to tools and GHG support services to agricultural producers (e.g., COMET-Farm, the GHG Quantifier Tool) can aid in producer engagement in existing and future GHG offset markets, but harmonization and standardization remain important issues to consider, given the potential impact to producers of multiple programs with varying data needs, and potentially, varied outputs.
  + Transparency and rigor are critical to GHG tools and calculators, and are particularly necessary for market-based transactions, which require higher rigor and certainty than conservation programs.
    - Compliance markets likely require the highest degree of rigor and certainty, as compared to voluntary markets, with conservation programs and sustainable supply chain initiatives likely requiring less comparative rigor.
  + C-AGG supports the development of and investments in low-cost, high value quantification methodologies, including the appropriate development of and use of models (including biogeochemical process models) for agricultural offset programs.
  + Intensity-based metrics should be considered for agricultural offset program opportunities.
* Critical programmatic and structural issues for agricultural offsets, including issues such as additionality, aggregation, verification, data sharing, permanence (in the case of sequestration), and related issues, such as decisions support systems and tools for the agricultural sector, require additional development and stakeholder input and support to further demonstrate and deliver voluntary, market-based GHG mitigation opportunities for the sector that encourage producer participation and deliver multiple societal and economic benefits. USDA GHG CIG projects can further help address these needs.

**Avoided Grassland Conversion Carbon Project**

***Summary***

Grassland conversion, both native prairie and restored grasslands such as those under the Conservation Reserve Program, is an ongoing resource concern that has been amplified in the last several years in response to a myriad of factors: high crop commodity prices, new crop technologies, and policies that inadvertently incentivize the expansion of cropland production. Ranchers and other grass-based producers have had limited additional economic incentives to protect these Grasslands, which provide an important source of forage and also critical environmental benefits including soil carbon sequestration and storage. This innovative project is both developing the policy structure for producers to maintain grasslands through participation in the carbon marketplace and also testing this structure through a pilot project. An initial group of five to fifteen individual producers, including cow-calf production and mixed (cow-crop) operations will participate in this project. Approximately 5,700 acres of native grassland and an additional 700 acres of wetlands in the Prairie Pothole Region of the Northern Great Plains will be protected for wildlife and livestock use. Project partners include Ducks Unlimited, The Nature Conservancy, The Climate Trust, Environmental Defense Fund and Terra Global Capital.

***Successes***

* Project partners have co-authored an Avoided Conversion of Grasslands and Shrublands offset project methodology, which is nearing completion of a peer review process and validation by the American Carbon Registry. This will be the first methodology of its kind.
* Ducks Unlimited has aggregated a pool of producers that are interested in participating in the project, and once the methodology has been certified for use, will begin the certification process for project- derived offsets.
* Project partner, The Climate Trust, brokered a purchase agreement for project verified offsets with a large multi-national corporation.
* The EQIP sign-up associated with the project was wildly successful, generating nearly $12 million in producer requested assistance during a brief 30 day sign-up period. Contracts are still being finalized, but to date $3.1 million has been committed to the highest priority applications and producing a list of 8 to 10 producers interested in participating in future carbon program enrollments.

***Challenges***

* Methodology approval has taken longer than anticipated due to policy changes within certification programs and other circumstances, which have delayed the progress of the project.
* Data availability for model-scaling has been proven difficult. Direct measurement of soil carbon through soil sampling is prohibitively expensive, requiring a scaling approach and use of existing data supplemented with targeted additional measurements. Coordination of existing data sets, making calibration and validation data for existing programs (DAYCENT, Comet Farm) more readily accessible would make this task easier for future applications.
* Permanence- Soil carbon projects require long-term protection to insure that project carbon benefits are real. This has required the use of perpetual conservation easements, which are expensive and often unpopular with producers. The expense of the easement exceeds the current market value of carbon offsets that can be realized from a project, requiring outside funds from non-GHG funding sources, limiting potential scalability of the project.

Please contact Randal Dell for additional inquires at [rdell@ducks.org](mailto:rdell@ducks.org) or at 701.355.3593.

**Bovine Innovative Greenhouse Gas Solutions (BIGGS)**

***Summary***

The purpose of Bovine Innovative Greenhouse Gas Solutions (BIGGS) Pilot Project is to enable beef and dairy producers to create and sell voluntary carbon offsets to buyers. Our intention is for stakeholders in the U.S. beef and dairy supply chain to successfully participate in a voluntary greenhouse gas (GHG) offset program that is science-based and meets their triple bottom-line needs and concerns. The BIGGS pilot project is adapting and testing GHG protocols from Alberta that generate voluntary carbon offsets and demonstrate decreased carbon intensity of beef and milk produced in the beef and dairy sectors.

The project is being implemented over a 3-year period.

Years 1 & 2 – Protocol adaptation, Design and development, Implementation

Years 2 & 3 – Implementation, Operations, Market demonstration and Evaluation

The project is designed to develop best practices/systems associated with voluntary bovine GHG offsets:

* Streamline complex data management requirements;
* Create diverse systems producers can use to quantify voluntary offsets;
* Monetize and serialize verifiable carbon offsets;
* Close knowledge gaps associated with bovine-targeted voluntary GHG offsets; and
* Assess the costs, benefits and potential production efficiency gains realized by feedyard and dairy operations when implementing the GHG-reducing practices.

This project’s goal is to capitalize and leverage Alberta’s experience and aggregate records from a total of 25,000 head of dairy cattle and 500,000 head of beef feedyard animals. Project partners include dairy and feedyard cooperators across the states of Texas, Kansas, Nebraska, New Mexico, Ohio, Wisconsin, Michigan and California.

***Successes***

* The Reduced Carbon Intensity of Fed Cattle protocol (amalgamation of 3 Alberta Beef protocols) was successfully adapted through the Protocol Scientific Adaptation Team process[[3]](#footnote-3) and submitted to American Carbon Registry for public comment period (fall 2013).
* The Dairy protocol adaptation process is near completion – sensitivity testing on herd components will greatly streamline implementation of the protocol, with a focus on dry cows and lactating heifers only.
* At least 3 new scientific papers have been submitted, describing meta-analyses and research results as a ouput of the work. The papers address enteric methane relationships with use of (1) monensin, (2) lipid content of the diets and (3) forage quality; as well as new nitrogen retention curves for dairy and beef cattle.
* A common data management/quantification framework is being developed to enable aggregation.

***Challenges***

* The evolving policy landscape with carbon registries/programs has delayed methodology adaptation, approval and project implementation.
* The time need to prepare and submit scientific manuscripts to refereed journals, as well as coordinate the review of several protocols, and gain scientific consensus, was underestimated in our project timeline.

Please contact Matt Sutton-Vermeulen for additional inquires at [mattsv@prasinogroup.com](mailto:rdell@ducks.org) or at 515-343-5149.

**Estimating Nitrous Oxide Reductions from Nutrient Management in the Chesapeake Watershed**

***Project Partners***: Chesapeake Bay Foundation (CBF), Environmental Defense Fund, Virginia Tech, DNDC Applications LLC, EcoFor LLC, Sterling Planet (SP), Washington Gas Energy Services (WGES)

***Summary:***

The goal of the three year project is to encourage adoption of enhanced nutrient management techniques by facilitating the process by which Chesapeake Bay farmers can participate in, and financially gain from, carbon offsets markets. Specifically, we are developing a region-specific, user-friendly version of the Denitrification-Decomposition (DNDC) model and will use it to estimate the nitrous oxide emissions reductions associated with different nutrient management approaches: soil testing/adaptive management on farms in South Central Pennsylvania and variable rate technology (i.e., GreenSeeker) on grain farms on Virginia’s Eastern Shore. This project will allow us to compare and contrast these approaches in terms of greenhouse gas benefits, nitrogen application reductions, and obstacles to greater implementation.

A unique aspect of this study is that we are leveraging dollars from a partnership the CBF has with WGES and SP whereby WGES and SP are donating some of the proceeds from the sale of carbon offsets to WGES customers into a Carbon Reduction Fund that CBF is managing. The purpose of this Fund is to implement projects, primarily with agricultural producers, which generate carbon offset credits while also reducing water pollution to the Chesapeake Bay.

***Successes:***

* The DNDC model has been calibrated for corn, rye, soy and wheat rotations in this region using a long term dataset from a USDA-Agriculture Research Service Project in Beltsville, MD. In addition, a web-based system for entry of cropping information needed to create DNDC simulation input files has been developed.
* In Pennsylvania, we have successfully recruited seven producers to participate in the project and have obtained 2012 agronomic information from these farms.
* The EQIP sign-up associated with the project in VA was very successful; 6 farmers committed to use GreenSeeker on more than 11,000 acres of corn and small grains, generating nearly $900,000 in producer requested assistance.

***Challenges***

* Accessing historic agronomic and nutrient management data from participating producers has been the biggest challenge of the grant. To adequately calibrate the DNDC model and follow the American Carbon Registry protocol requires 5 years of “baseline” data, including nutrient application dates, yields, harvesting dates, etc. The majority of farmers do not have this level detail in their nutrient management files. In addition, some farmers are reluctant to share information they do have because of privacy concerns.
* Technological and software glitches with GreenSeeker. There have been challenges getting the GreenSeeker to work due to difficulties in meshing software between the unit and the sprayer. So, we lost one year of implementation on this grant because not all of the available units were available.

For more information contact Beth McGee (CBF), [bmcgee@cbf.org](mailto:bmcgee@cbf.org) or 443-482-2157.

Managing Western Rangelands for Soil Carbon Benefits

#### A USDA Funded Conservation Innovation Grant funded partnership with

Colorado State University - Environmental Defense Fund – University of California at Berkeley

Total Project Funding: $1,277,746 USDA Grant Funding: $638,793

Project Summary

Rangelands throughout the West hold tremendous promise for soil carbon sequestration due to their large scale. Today, ranchers and grassland managers have few economic incentives to manage these rangelands for carbon and other ecosystem benefits. This USDA funded CIG aims to change this with the development of rangeland based carbon offset projects—so that tomorrow, ranchers will be able to participate in emerging carbon and ecosystem service marketplaces. This project has two main goals: 1) determine a set of cost-effective best management practices that increase soil carbon sequestration and other ecosystem services on rangelands; 2) develop accounting protocols based on these practices.

Project Status

Almost three years into our project, several rangeland conservation and management practices are under assessment including: avoided conversion of grasslands to croplands and improved rangeland management through grazing changes, and compost amendments. The assessment of these practices includes field sampling across several states then analyzing and integrating these samples into the CENTURY model. We have also begun conducting an analysis of the environmental co-benefits of rangeland conservation and management practices and an economic feasibility study.

We have made significant progress in writing two greenhouse gas accounting protocols to date: Avoided Conversion of Grasslands to Croplands (ACoGS) and Compost Amendments on Rangelands (Compost). In collaboration with Duck’s Unlimited, the Climate Trust, The Nature Conservancy (TNC) and Terra Global Capital, the ACoGS protocol is due to be approved by American Carbon Registry in the fall of 2013. In collaboration with our partners, Terra Global Capital and the Marin Carbon Project, we are finalizing our Compost protocol and plan to submit it to ACR before the end of the year. EDF has begun a series of stakeholder outreach sessions in California, the Southwest, and the Midwest.

1. \* cc: Krysta Harden

   Robert Bonnie

   Ann Bartuska

   Ann Mills [↑](#footnote-ref-1)
2. “Additionality” refers to the concept that GHG emissions reductions credits must result from additional action or action that likely would not have happened in the absence of the incentive provided by the carbon market. C-AGG identified additionality as one of five core principles in its April 2010 report, stating: “Only net reductions of atmospheric GHG concentrations beyond business as usual should be rewarded.” However, in C-AGG’s 2012 Executive Summary on Additionality in Agricultural Offset Protocols, we agree that additionality as it applies to the agricultural sector has a somewhat unique context, and thus should be addressed uniquely, as well. [↑](#footnote-ref-2)
3. The PSAT process was led by Dr. Ermias Kebreab, UC Davis and consisted of extensive scientific work and review by a team of 15 scientists from across the US and Canada. [↑](#footnote-ref-3)