Determine Certainty Program Framework of a Market Based Conservation Initiative for Longleaf Pine Habitat Improvements in Eastern North Carolina

Model Ecosystem Credit Program Final Report
Component Report 5 of 6

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Model Ecosystem Credit Program

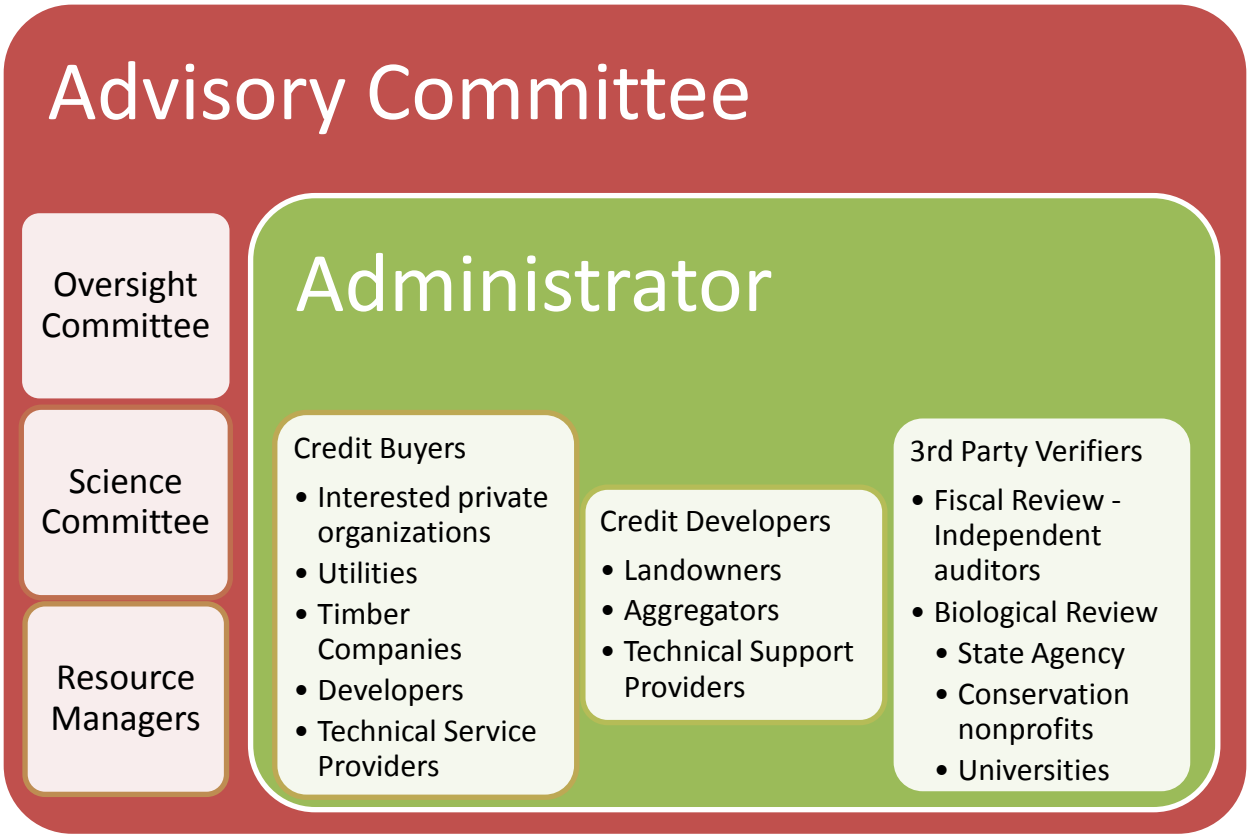
Several conservation programs exist to offset impacts to natural resources, such as wetland mitigation banks, water quality certainty programs, and habitat exchanges. In landscapes that are dominated by smaller acreage private landholdings, like what is found in eastern North Carolina, a strong aggregator network can be critical. Aggregating credits greatly increases the successful involvement of the credit demand entities with large purchasing power. An aggregator system can help combine the contributions of many small owners who do not have direct market knowledge or access, while also focusing efforts in a particular geographic area.

Several different types of conservation benefits programs across the nation were evaluated related to species recovery, water quality improvements, and agricultural sustainability. Evaluations included online research and interviews with selected programs. Attached is a set of case studies (Attachment 1) and a summary chart of programs (Attachment 2) evaluated and for the programs where the greater amount of information was available. The most holistic approach taken today is the State of Nevada as defined in their Conservation Credit System Manual Version 1 dated 12.12.14. The rest of this article is a description of a model program's organizational structure based on lessons learned during the evaluation and input gathered from stakeholders.

Model Ecosystem Credit Program – Organizational Structure

An ecosystem credit program will need a complex, integrated organizational structure to establish, deliver, maintain, monitor, and report progress on providing an ecosystem service. The types of detailed administrative requirements needed are described here. An organizational chart is provided in Figure 1.

Figure 1. Model Ecosystem Credit Program Organizational Structure



Advisory Committee: Oversees programmatic integrity and reports back annually to the public. The Advisory Committee consists of a variety of stakeholders that serve on the Oversight Committee and the Science Committee. The Oversight Committee makes recommendations to the Advisory Committee on process, policy and fiscal issues. The Science Committee makes recommendations to the Advisory Committee on biological and natural resource issues.

Resource Manager: Agencies with a regulatory responsibility to manage the program's specific ecosystem and all species of concern within the scope of the program. Resource Managers, through frequent stakeholder engagement, ensures programmatic functions are in accordance with all current laws, regulations and policies.

Administrator: Facilitates day to day program management including overseeing all credit generation and transactional activities. The Administrator ensures consistent processes in operational management, issues certified credits, and reports results on a regular basis to the Advisory Committee.

Credit Developer / Aggregator: Landowners or managers, or organizations acting as credit aggregators to produce or register credits in the Ecosystem Credit Program. Aggregators are entities that work with multiple landowners to leverage credit activities across a larger landscape than the individual landowner leading to a net gain in credit value.

Credit Buyers: Entities that purchase credits to satisfy regulatory obligations or to the ensure conservation value and longevity of the ecosystem by being good environmental stewards.

Technical Support Providers: Entities with the technical expertise in conservation planning, project design and understanding the Ecosystem Credit Program participation processes are eligible to assist Credit Buyers or Credit Sellers.

Verifier (Third Party Reviewer): Third party entities that assess the accuracy of the credit and debit calculations as well as the habitat gains realized.

Model Ecosystem Credit Program – Partners and their roles

Advisory Committee

The Advisory Committee functions as the oversight organization or Board of Directors for the Ecosystem Credit Program. The Advisory Committee provides instructions for programmatic changes to the Administrators based on best available science and stakeholder input. The committee consists of various stakeholders divided into an Oversight Committee for policy and programmatic delivery decisions and a Science Committee for science based process decisions related to habitat improvements. Below is a table of member categories as well as North Carolina example agencies (Table 1).

Oversight Committee

The Oversight Committee is responsible for overseeing the operations of the Ecosystem Credit Program, making overarching management decisions and conducting other critical ongoing duties related to performance and adaptive management.

Program Performance Functions

- Establishes and updates Memorandums of Understanding with participating organizations
- Oversees the Administrator's implementation of the Credit System's policy and technical aspects
- Evaluates Annual Reports as prepared by the Administrator including an assessment of credit projects' effectiveness and overall programmatic performance goals
- Executes annual audits of the Administrator's finances and operations regarding crediting and debiting processes
- Implements corrective actions based on findings of the annual audits
- Serves as dispute resolution as needed between participants

Adaptive Management Functions

- Evaluates Credit System improvements including habitat metric models, implementation processes and participant engagement
- Evaluates input from the Administrator and Science Committee on new scientific information, incorporating aspects annually
- Approves all adaptive management actions

Science Committee

The Science Committee consists of species and ecology experts that determine best practices and project baseline protocols based on sound science. The Science Committee prioritizes and defines monitoring processes, measures conservation recovery objectives, and makes recommendations on adaptive management.

Key Committee Functions:

- Compile and analyze the best available science regarding habitat functions as it relates to species of concern through adaptive management processes
- Assists the Oversight Committee regarding recommendations for revisions to habitat metric models and implementation processes

Table 1. Model Ecosystem Credit Program Advisory Committee Recommendations

Organizational Type	North Carolina Recommendations
Federal	US Department of Interior Fish and Wildlife US Department of Agriculture Natural Resources Conservation Service
State	NC Department of Agriculture and Consumer Services NC Department of Natural and Cultural Resources NC Department of Transportation NC Forest Service NC Wildlife Resources Commission
Local	NC Association of County Commissioners NC Association of Soil and Water Conservation Districts Voluntary Agriculture District Boards
Academia	NC Cooperative Extension NC State University Duke University Nicholas Institute
Environmental Nonprofits	Environmental Defense Fund The Nature Conservancy NC Longleaf Coalition The Conservation Fund
Commodity Advocacy Groups	NC Farm Bureau Federation NC Forestry Association
Private Sector	Farm Credit Associations of North Carolina NC Electric Cooperatives Duke Energy
Partnerships	South Atlantic Landscapes Conservation Cooperative

Administrator

The Administrator implements the Ecosystem Credit Program, making day-to-day management decisions based on the programmatic guidelines of the Advisory Committee. A variety of organizations can serve in this role but for optimum program flexibility and to maintain neutrality, project partners recommend an independent third party nonprofit.

Program Administration & Credit Accounting:

- Manages day-to-day Ecosystem Credit Program operations
- Manages all Ecosystem Credit Program resource tools, website, guidance documents, and application forms
- Manages credit accounts and the complete ledger of all credits and debits
- Manages accounting of reserve account credits
- Protects participant confidentiality

Credit Developer and Credit Buyer Engagement:

- Maintains programmatic transparency of processes and stakeholder engagement

- Responds to inquires of interest from Credit Buyers, Credit Developers, and Aggregators
- Ensures all necessary outreach to Credit Buyers, Credit Developers, and Aggregators occurs on a frequent basis

Adaptive Management and Reporting:

- Develops an annual performance report that documents achievements versus goals and a reporting of all finances; all individual credit project data is reported at an aggregated level
- Compiles Improvement Recommendations regularly, including updates to resource tools, and reports results to the Advisory Committee for consideration
- Implements programmatic revisions as adopted by the Advisory Committee, including updates to resource tools and credit metric methods

Compliance and Enforcement:

- Performs quality control reviews on information submitted by Ecosystem Credit Program participants and Verifiers
- Ensures programmatic compliance of the Ecosystem Credit Program as defined in Memorandums of Understanding with participating agencies and all applicable federal, state, and local laws
- Works with Credit Developers to implement corrective actions through remedial action plans in cases of intentional and unintentional credit reversals
- Enforces contract compliance and any associated penalties in cases of intentional credit reversals

Financial and Contracting Support:

- Manages funds, contracts, and monitoring partnerships
- Confirms financial assurances are in place for all credit projects
- Facilitates credit auctions or Request for Proposals for Credit Buyers
- Administers contract payments between Credit Buyers and Credit Developers
- Maintains a credit reserve account for use during unintentional credit reversals and to ensure an overall ecosystem net gain is maintained

Science and Technical Support:

- Gains input from the Science Committee on new scientific information to be incorporated into the Ecosystem Credit Program's tools and processes
- Defines questions and makes recommendations to the Advisory Committee to guide monitoring and research investments
- Trains and certifies Verifiers
- Evaluates results of any effectiveness monitoring established for credit and debit projects

Resource Managers

Each federal and state agency with regulatory responsibility for the management of the specific ecosystem and its species of concern determines if program participants will gain regulatory certainty for each credit project. It is advisable that participation guidelines be developed through the use of Memorandums of Understandings so that Credit Buyers and Credit Developers are given a framework to operate within, with the end goal of being provided some level of regulatory certainty.

Specific to the Endangered Species Act (ESA) the following actions are considered:

- For habitat work related to a threatened species listing, a 4(d) rule may be drafted to exempt credit development activities from ESA requirements. The 4(d) rule could include exemption from take requirements or exempt some agricultural and forestry activities.
- If a 4(d) rule is not forthcoming, Credit Buyers may receive protection by the use of Incidental Take Permits or Certificates of Participation in individual or regional Habitat Conservation Plans. Take protection consideration for Credit Developers when a 4(d) rule is not issued is a necessary component but additional agency discussions are needed for this to be a viable option.

Credit Developer / Aggregator

Credit Developers either own eligible land or act as a representative organization for a cluster of private lands. Credit Developers self assess the value of the credits on a given property by the following actions, with all work certified by the Administrator:

- Conduct a site eligibility assessment using an Advisory Committee approved habitat metric model based on sound science.
- Determine the percent of acreage that exhibits specific habitat function thresholds (functional acres); results are supported by field data.
- Establish baseline data as well as credit type and duration being offered; credit type and duration is supported by a defined level of protection for the credit acreage (conservation easement, term easement, declaration of restrictions, conservation agreement, land use contract, best management practice maintenance agreement, or other similar documents).
- Develop a land management plan following applicable state or federal best practices; Candidate Conservation Agreements and Candidate Conservation Agreements with Assurances are recommended if the credit is used for any regulatory requirements.
- When the acreage under consideration is enrolled in existing state or federal conservation programs, determine that applicable credits are beyond actions taken for participating in other conservation programs.
- Determine contributions to the credit reserve account and establish financial assurances for long-term management costs.

Credit Buyers

Credit Buyers participate to satisfy a regulatory requirement or to act as good environmental stewards by ensuring the conservation values and longevity of the ecosystem. By utilizing the Ecosystem Credit Program, Credit Buyers are assured a level of accountability and transparency allowing Credit Buyers to accurately report to their audiences regarding return on investment. Depending on the investment goals of the Buyer, the following characteristics are considered; type of credit to purchase, purchasing thresholds related to desired conservation gains, and life of purchases credits. The Credit Buyer can also use a variety of vehicles to buy credits such as a direct purchase, a reverse auction process, Request for Proposals, or selection from a master list maintained by the Administrator.

If credits are purchased for regulatory compliance the following steps may need to be taken, all of which are done in conjunction with the Administrator and the appropriate Resource Manager:

- Determine the value (functional acres) of the ecosystem at the area of impact using the habitat metric models and assess the additional amount of credits to be set aside in the credit reserve account.
- Document the current value of the ecosystem prior to project implementation in a Baseline Report.
- Determine if there is a necessary distance proximity being required from the debit credit site and the offsetting credit site.
- Determine the length of time the credits are needed to offset impacts.
- Determine the necessary level or protection of the credit acreage (conservation easement, term easement, declaration of restrictions, conservation agreement, land use contract, best management practice maintenance agreement, etc.).

Technical Service Providers

Several entities can serve as Technical Service Providers from private consulting firms to state and local conservation agencies. Technical Service Providers receive designation from the Advisory Committee through a vetting process. Technical Service Providers perform the following tasks; design credit projects or estimate credit obligations, and utilize all programmatic tools in a streamlined approach to account for all credits and debits. Technical Service Providers submit work to the Administrator allowing for an expedited implementation process.

Verifier

All Ecosystem Credit Program projects require verification of the credit estimates from a third party expert entity. The purpose is to provide confidence to all Ecosystem Credit Program participants and the public that credit calculations represent a faithful, true and fair accounting of environmental impacts and benefits. Ongoing verification over time is necessary to ensure the project supports the expected level of environmental enhancements. Continuous monitoring is required for best management practice functionality, credit accounting, and funds accounting. The Advisory Committee needs to determine acceptable levels of verification prior to opening the program up for enrollment.

A variety of organizations can fulfill this role including local, state and federal conservation agencies, nonprofits, or private consulting firms. If the Verifier is from an organization with a seat on the Advisory Committee, a clear separation of individual staff duties is necessary to avoid potential conflicts of interest. An Aggregator organization cannot serve the role of a Verifier. The Verifiers receive certification from the Advisory Committee through a vetting process.

Project aspects to be assessed by the Verifier include:

- Verify that the Ecosystem Credit Program processes were followed accurately.
- The amount of credit issued is accurate according to on-the-ground conditions and complies with the habitat metric methods.
- All accounting is supported by documentation and a documentation process is in place for the life of the credit project.
- Historic management activities are certified complete and future management activities are scheduled in a realistic timeframe to achieve continued compliance with the desired habitat metrics.
- Notify the Administrator of any out-of-compliance issues and develop a draft corrective action plan.

Model Ecosystem Credit Program Processes

Crediting Process

Credits - Credits are a quantifiable unit of habitat measured as the difference in the baseline functional acres and post-project functional acres. A Credit Developer can offer acreage as is; it is assessed for its habitat functionality. A Credit Developer can agree to habitat enhancements which can be done at the onset of the project or at the onset and into the future. A credit with agreed to future habitat enhancements will have a greater financial value. Credits can be purchased for offsetting future year projects with habitat impacts or to “bank” for anticipated impacts, but there is no regulatory assurance given that future impacts can be offset by the past purchased credits.

Debits – Debits are a quantifiable unit of habitat loss measures as the difference in the debit baseline functional acres and the post-project functional acres times a mitigation ratio. To ensure net habitat gains for the ecosystem, debits and credits should be traded at a ratio higher than a 1:1 ratio. Since this report is designed to define a model program and is not meant to be ecosystem specific, no actual trading ratio is provided. Project partners recommend that the trading ratio be established per each program through a consensus building stakeholder driven process. Project partners do recommend consideration of a dynamic offset approach in that a series of time-limited credits are purchased and the location changes over time. The process can provide for a certain number of credits to "come online" each year, the Credit Buyer is not allowed to over purchase credits on the front end to opt out in later years.

Credit Type – Two types of credits exist, a Stewardship Credit where existing conditions are preserved or a Restoration Credit where credits have a management component to enhance the existing habitat. Credits are calculated using the habitat metrics model to determine functional acreage. An assumed mitigation ratio enables each project to achieve net environmental benefits. The type of protection document put in place will determine the credit's durability and duration. Protection documents in order of enforcement strengths include fee simple purchases, perpetual conservation easements, term conservation easements, declaration of restrictions, conservation agreements, and best management practice maintenance agreements. At the end of the credit's lifespan it can be renewed at a new negotiated rate and an updated land management plan.

Process Steps – Credit Developer

1. The Credit Developer will select and validate the site for crediting by using a validation checklist. The proposed project is submitted to the Administrator for concurrence.
2. The Administrator will quantify the expected number of credits using the habitat metrics model and define any habitat improvement best management practices.
3. The Verifier will confirm the Credit Developer's project followings program protocols and the credits are calculated correctly.
4. The Credit Developer will submit registry information to the Administrator. The Administrator reviews the documentation and issues credits to the Credit Developer's account on a credit system registry.
5. The Administrator tracks credits and approves transfers to Credit Buyers accounts.
6. For the life of the project, the Credit Developer conducts regular monitoring, reporting all results to the Administrator.

Process Steps – Credit Buyer

1. The Credit Buyer defines their investment goals based on internal processes or through a negotiated mitigation offset project with a regulatory agency.
2. The Credit Buyer registers their debits with the Administrator's credit system registry.
3. The Credit Buyer identifies eligible projects with assistance from the Administrator. The project's selling value is a negotiated rate between the Credit Developer and the Credit Buyer.
4. Transaction fees and credit costs are transferred to the Administrator at the time of crediting. The total project cost includes the value of implementing the project, executing annual adaptive management practices, a transfer component and a per credit component.

Additional Accountability and Assurances Processes

Both Credit Buyers and Credit Developers need a certain level of certainty that the credit will function into the future for the set number of years it is needed for. The following steps are recommended:

Reserve Credit Account – Some credits are set aside in every project into a pool of credits ensuring an overall net benefit. Reserve credits can be used to temporarily offset unintentional project failures. The credits are temporarily removed from the account to cover nonperforming credits, the nonperforming credits are brought up to performance standards, and the reserve credits are added back into the reserve account. A minimum credit reserve recommendation is 10% of the total project credits.

Credit Verification – Developers perform annual monitoring and submit an annual self-certification to the Administrator. Credits are verified multiple times by a Verifier; before it is registered on the credit registry, every 5^{th} year required with annual spot checks, at the time the credit is released.

Financial Assurances – Fiscal mechanisms are put in place to insure the long-term viability of the credit, referred to as stewardship funds. The allowable investment vehicles and use of the funds are recorded in a contract, with management activities defined in a habitat management plan.

Intrastate Programs – As the program grows larger, it is important to be able to accurately share information through all levels of participation. It is recommended that project developers consider an on-line registry. For example, five models of registries and their web sites that address ecosystem markets follow:

- ✓ The Markit Environmental Registry: www.markit.com/Product/Registry
  Maintained by Forest Trends www.ecosystemmarketplace.com

- ✓ California Department of Fish and Wildlife Ecosystem Services:
  www.wildlife.ca.gov/Conservation/Planning/Banking/Approved-Banks

- ✓ California Air Resources Board (CARB) Compliance Offset Program:
  www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm

- ✓ California Air Resources Board (CARB) Early Action Projects:
  www.arb.ca.gov/cc/capandtrade/offsets/earlyaction/projects.htm

- ✓ Michigan Wetland Bank Registry:
  www.michigan.gov/documents/deq/lwm-wetlands-regOct08_255104_7.pdf

Overarching Programmatic Costs

Program costs for a ecosystem credit program are crucial. For example, carbon project ecosystem services providers in the California Air Resource Board market may charge about 15% to 20% of the total landowner payment price to broker a carbon project. An agency also will have significant costs, as estimated below. Potential program costs are provided here based on our previous experience so that agencies and policy makers can consider the costs of program management. These values are only estimates based on firsthand knowledge of project partners and cannot be relied on as a definitive cost to establish and Ecosystem Credit Program. Costs will vary geographically and increase over time.

Table 2. Estimated Annual Budget - *Assume 10 county geographic service area*

Category	Subcategory	Costs Year 1 = $430,000	Costs Year 5 = $145,000
Administration	Oversight Part Time Executive Director (part time to quarter time)	$53,000	$27,000
	Oversight Part Time Finance Officer (part time to quarter time)	$32,000	$16,000
	Program Delivery – Biologist (full time to part time)	$84,000	$42,000
	Travel	$10,000	$5,000
	Equipment & Supplies (upfront to annual cost)	$50,000	$10,000
Landowner Engagement	Local Agents – Soil and Water Conservation Districts	$100,000	$10,000
Training	Provided to aggregators and technical service providers; habitat management training provided to credit suppliers	$20,000	$5,000
Marketing	Cooperative Extension Service - general outreach and technical manual development	$50,000	
Verifiers Credit Accounting	Credit / Debit auditing by independent CPA	$20,000	$20,000
Verifiers Credit Biological Integrity	State Agencies or Nonprofits contract work	$11,000	$10,000

It was noted by stakeholders with experience running habitat exchange programs that operational costs generally run $500,000 in the early years and drop by 20% in future years. Another unexplored cost saving measure is to bundle the program with existing certification programs for credit verification.

Other cost items not included in the budget are project specific and would be part of the crediting cost;

- Habitat management assurance fund (stewardship)
- Credit insurance pool
- Legal expenses and contingency

A Discussion on the Role of Conservation Districts in an Ecosystem Credit Program

Soil and Water Conservation Districts (Districts) play a critical role in conservation activities on private lands in North Carolina. The first district in the nation was formed in 1937 Anson County, North Carolina. For the past 75 plus years, Districts have been at the forefront of locally led conservation initiatives. NC Districts do not take on a regulatory role although statutory authority exists. A few exceptions are noted for urban Districts that work with erosion and sediment control programs. NC Districts have not traditionally managed programs that are wildlife focused. Much of the their programs focus on water quality, water quantity, and soil improvements. Some conservation programs include best management practices with a wildlife component as a secondary consideration, with the exception of USDA Farm Bill programs such as the historic Wildlife Habitat Improvement Program. For wildlife focused programs, USDA has partnered with the NC Wildlife Resource Commission to provide field biologists. The concept of an Ecosystem Credit Program was something that Districts did not possess a working knowledge of as far as management issues related to threatened and endangered species.

NC Districts were exposed to being a local delivery point for ecosystem services on private lands through a pilot project with the military. The Market Based Conservation Initiative tested alternative tools for working with private landowners to maintain lands in compatible uses under a military flight-training path. A nontraditional partnership formed at the nexus of promoting profitable and sustainable family farms and forests, promoting natural resource conservation, and supporting the military mission. Districts in eastern North Carolina engaged over 4,000 landowners across over 600,000 acres underlying a specific military training flight path. Districts offered orientation workshops, collected applications, and verified information provided. The pilot project operated as a reverse auction process with staggered bid rounds in multi-county clusters. Landowners determined their level of commitment by selecting 10, 20, or 30-year options to place land use restrictions on their property for a requested set price per acre per year. Over 75,000 acres were offered for enrollment. The pilot program's outreach was successful in that NC Districts are a trusted information source for private landowners.

The project area used for sampling Districts includes 33 eastern North Carolina counties that are located within the traditional range of the longleaf pine. In each of these counties, the boundary of the local soil and water conservation district coincides with the county political boundary. Therefore, all districts in the study are single county districts. Eight soil and water conservation districts were visited, resulting in a 24.2% sample rate. The following goals were applied when selecting the local districts to visit:

- Achieve geographical distribution throughout the project area
- Select districts with varying staff sizes and size of on-going programs
- Select districts that did not participate in MBCI to eliminate bias associated with other experiences with ecosystem service type projects

After applying the above-mentioned goals, the following local soil and water conservation districts were selected: Moore, Cumberland, Wayne, Wilson, Pitt, Bladen, Richmond, and Craven.

Face to face visits were made to each district during a regularly scheduled district board meeting. In each district visited, a full complement of 5 supervisors was in attendance and on average two district/NRCS staff were present. Time was set aside on the agenda at each meeting for focused discussions, allowing time for discussion and questions.

In each visit, basic project information covered the following: project background, need and purpose of the project, what will be learned, partnering agencies and organizations in the project, brief explanation of element leads (i.e. supply side, demand side, economics, landowner survey, etc.) and general time line. In addition, the project brief was provided. District supervisors and staff were asked to study the project brief on their own and further discuss the project as an agenda item at an upcoming board meeting. As closure, each district was asked to complete the brief survey that was left with the district and return it to the Association office.

District Survey Responses

Of the Districts that responded, they represent 15% of the Districts in the project area. Because of the commonality of districts concerning their experience with and knowledge of ecosystem services and ecosystem crediting, it is believed that the composite information gathered is representative of the majority of the districts in the project area. The following general observations and conclusions are made from reviewing the composite data:

- There is a general lack of understanding among soil and water conservation districts regarding conservation credit trading and opportunities for expanded ecosystem services that could be offered through districts. If local districts are selected as the point of delivery for a program similar to that studied through the CIG grant, considerable time and effort

will be needed in training and information share before local districts are fully comfortable with their roles and responsibilities.

- Even with their general lack of understanding of the concepts of the project, districts are willing to sponsor landowner workshops and focus groups. Landowner interaction and the sharing of information about new programs is a customary role that districts have played over the years and one that they continue to be comfortable with. Districts are comfortable being the point of contact and a meeting place for buyers and sellers.

- Districts are comfortable serving as the Verifier by confirming that conservation actions taken by a landowner produce the ecological benefits necessary for credit creation. This comfort level stems from the technical expertise of the district staff and their experience verifying that conservation practices installed through landowner contracts through state and federal programs are properly installed and maintained.

- District predict only a “moderate” interest by landowners in their county to learn more about a possible Ecosystem Credit Program. It is assumed that this is due to the fact that the districts themselves have only a moderate or lower understanding of the credit system. In addition, the majority of district board members are agricultural land owners and see their personal interest in such a program as only “moderate”.

- It appears that Districts are only minimally interested in taking a more active role in habitat planning and management related to threatened and endangered plants and animals at this time. It is assumed that this is due to the following: (a) most district board members are engaged in production agriculture and forestry and income from their working lands is critical; (b) most are uncomfortable with the potential of greater regulation for landowners whose land is inhabited by threatened and/or endangered plant and animal species; and (c) most landowners don’t want to be restricted on how they use and manage their land and their potential to maximize economic return.

Additional Information Sources

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Model Ecosystem Credit Program
Attachment 1. Existing Program Case Studies
Component Report 5 of 6

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TEXAS CONSERVATION PLAN FOR THE DUNES SAGE BRUSH LIZARD OVERVIEW

In December 2010, the U.S. Fish and Wildlife Service (FWS) proposed to list the Dunes Sagebrush Lizard (DSL) as endangered under the Endangered Species Act. The DSL is a small, light brown lizard, found only in the active and semi-stable shinnery oak dunes of southeastern New Mexico and west Texas. In Texas, the geographical range of suitable DSL habitat (dune and dunal complex) only spans approximately 197,606 acres in a unique, spatially dynamic system of Shinnery Oak (*Quercus havardi*) dune complexes (i.e., interconnected areas of sand with large deep blowouts). The DSL habitat lies in the middle of one of the nations' most productive oil and gas regions, the Permian Basin.

Due to the significant collaboration between land and royalty owners, energy and agricultural industry representatives, state universities, state and federal agencies, and biologists, the Texas Conservation Plan (TCP) for the DSL was created, which included both a pre-listing Candidate Conservation Agreement with Assurances and a post-listing Habitat Conservation Plan. On February 17, 2012, the FWS approved the TCP and issued the federal enhancement of survival permit (TE55322A-0) to the Texas Comptroller of Public Accounts (Permit Holder). The voluntary conservation programs in Texas and New Mexico, as well as continued DSL research, prompted the FWS decision on June 13, 2012, to not list the DSL as endangered under the ESA. More information regarding the creation and implementation of the TCP can be found at the Texas Comptroller of Public Accounts' Keeping Texas First website (www.KeepingTexasFirst.org).

PARTIES THAT ARE INVOLVED IN THE ADMINISTRATION AND OPERATIONS OF THE TEXAS CONSERVATION PLAN FOR THE DUNES SAGEBRUSH LIZARD

The following entities have direct oversight and involvement over the management of the TCP:

U.S. FISH AND WILDLIFE SERVICE (FWS)

FWS is the federal agency responsible for implementing the Endangered Species Act of 1973. FWS has overall authority over the TCP and is the issuer of any associated permits to the Permit Holder under Section 10 of the ESA. Under the TCP, FWS is responsible for managing the permits, which includes both an enhancement of survival permit covering Participants enrolled under the Candidate Conservation Agreement with Assurances portion of the TCP (through a Certificate of Inclusion (CI)) and an incidental take permit covering Participants enrolled under the Habitat Conservation Plan portion of the TCP (through a Certificate of Participation (CP)).

TEXAS COMPTROLLER OF PUBLIC ACCOUNTS (PERMIT HOLDER)

Subject to Texas Government Code, Chapter 403, Subchapter Q, the Comptroller of Public Accounts (CPA) is the Texas state agency that serves as the Permit Holder and is directly responsible and accountable for carrying out the provisions of the TCP and ensuring compliance. Safeguards and controls have been developed to meet requirements of the TCP while facilitating continued and uninterrupted economic activity in the Permian Basin and promoting conservation of the DSL for the Covered Activities in the TCP. The CPA serves as the point of contact with FWS and is involved in overseeing the administration of the TCP through the Qualified Third Party Contractors referenced below.

TEXAS A&M AGRILIFE EXTENSION SERVICE (TAMU)

As Permit Holder, CPA has entered into an Interagency Cooperation Contract with TAMU to provide administration of the TCP. TAMU is a member of the Texas A&M University System and focuses on community-based education throughout the State. TAMU takes an active role in managing the operations of the TCP through its contract with the Texas Habitat Conservation Foundation.

TEXAS HABITAT CONSERVATION FOUNDATION (FOUNDATION)

TAMU's contract with the Foundation directs the Foundation to administer the day-to-day operations of the TCP. The Foundation was established for the direct purpose of administering the TCP at the local level. Its headquarters are located in Midland, Texas, near the areas of DSL Habitat and it serves as an authorized agent of TAMU and the Permit Holder. The Foundation is governed by a board of directors, who oversees activities in accordance with the Foundation's bylaws.

The Foundation enters into agreements with enrolled Participants and non-Participant landowners and is the regular point of contact with them. The Foundation is responsible for performing outreach efforts to encourage participation within the TCP, managing the activities of the Participants and contracted non-Participant landowners, addressing disturbance issues, facilitating the generation of mitigation credits and recovery awards, and monitoring for Participant and non-Participant landowner compliance.

The overall focus of the TCP is to provide for the uninterrupted and continued economic activity in the Permian Basin and to conserve the DSL and its habitat by ensuring activities conducted by Participants and non-Participant landowners provide such benefit.

THIRD PARTY REVIEWER

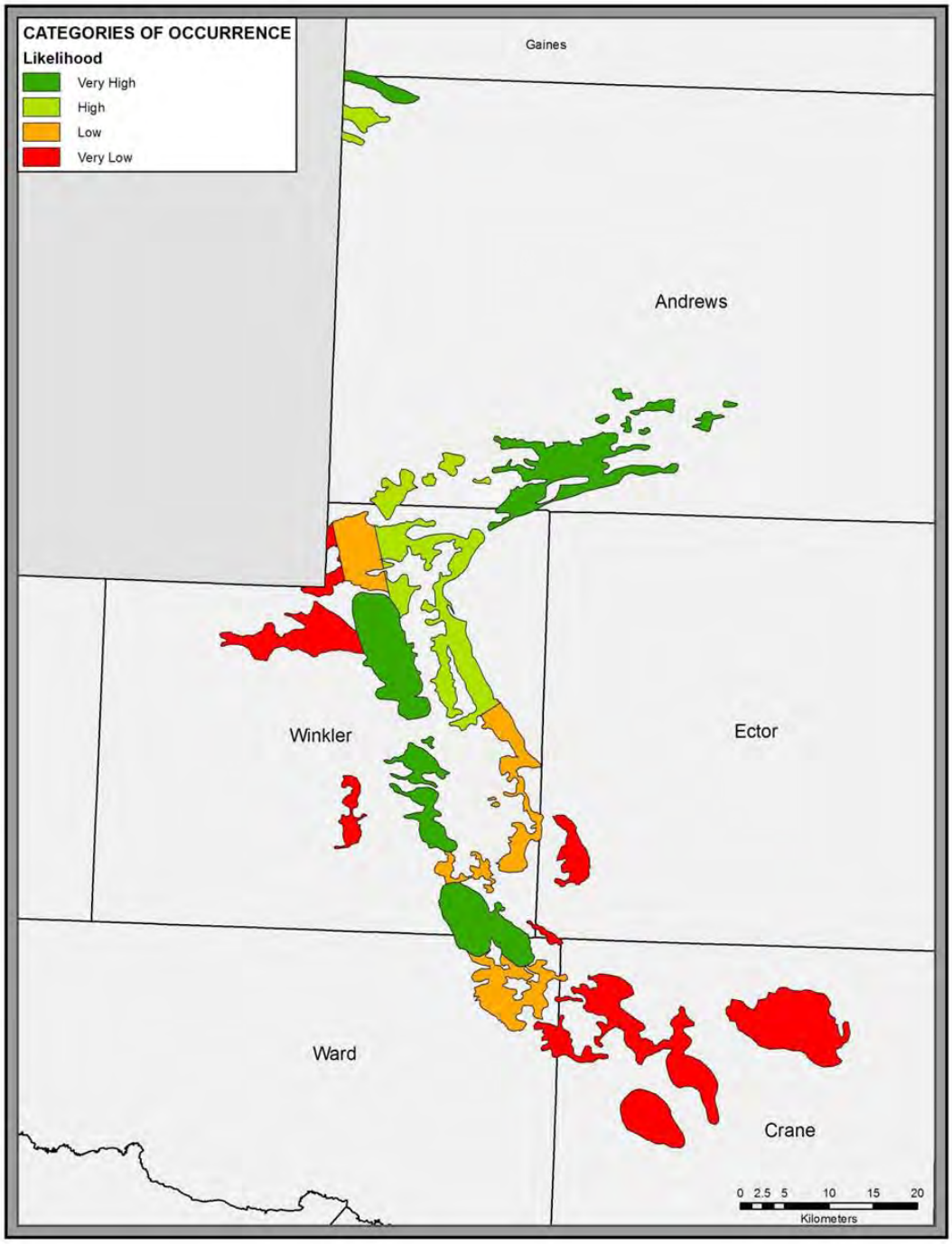
As Permit Holder, CPA has entered into a contract with a Third Party Reviewer (Texas Tech University) to perform ongoing verification of Recovery and Mitigation projects and the mitigation credits and recovery awards generated. They review award/credit calculations, project selection and appropriateness, and if TCP procedures are applied and followed correctly.

PARTICIPANT

Participants are property owners that enroll property in the TCP. The FWS regulations define "property owner" with respect to agreements outlined under 50 CFR §§ 17.22(c), 17.22(d), 17.32(c), and 17.32(d) to mean "a person with a fee simple, leasehold, or other property interest (including owners of water or other natural resources), or any other entity that may have a property interest, sufficient to carry out the proposed management activities, subject to applicable State law, on non-Federal land." Property owners may include agriculture producers and oil and gas companies. Participants are required to adhere to the provisions of their CI or CP.

NON-PARTICIPANT LANDOWNER

Landowners who are not enrolled in the TCP are referred to as non-Participant landowners. Although they are not formal Participants, these landowners may still be involved in conducting conservation measures benefiting the DSL that result in the generation of mitigation credits and recovery awards. Similar to Participants, the non-Participant landowners interact primarily with the Foundation to ensure that their measures are conducted in accordance with the TCP's provisions but may also interact with TAMU, Research, and the Permit Holder as needed. The Foundation may also engage non-Participant landowners about potential participation in the TCP.



Texas Conservation Plan Permit Area/Likelihood of Occurrence Map. The colors in the legend and corresponding map represent Likelihood of Occurrence Class; red is Very Low (0-25% probability of DSL occurrence), orange is Low (25-50% probability of DSL occurrence), light green is High (50-75% probability of DSL occurrence), and dark green is Very High (75-100% probability of DSL occurrence).

CALCULATION OF REQUIRED MITIGATION

Under the Texas Conservation Plan for the Dunes Sagebrush Lizard, surface disturbing activities are allowable within habitat, habitat polygons, and buffer areas, but may be subject to mitigation requirements. Participants are encouraged to avoid impacts or minimize disturbances to the habitat. However, in those unavoidable circumstances, the Foundation provides assistance in determining the extent of habitat loss and mitigation required. The amount of mitigation required is tiered based on the likelihood of occurrence and the distance to the habitat or polygon.

FOR AREAS INSIDE THE HABITAT POLYGON

Mitigation is calculated using the following formula and mitigation ratios referenced below:

Acres Impacted *multiplied by* Mitigation Ratio *equals* Acres of Required Mitigation

Gradient of Likelihood in Habitat	Map Color	Mitigation Ratio
Very High Likelihood of Occurrence	Dark Green	2.5
High Likelihood of Occurrence	Light Green	2.0
Low Likelihood of Occurrence	Orange	1.5
Very Low Likelihood of Occurrence	Red	1.0

Example: A Participant desiring to construct a new well site within the habitat impacting 5 acres in an area identified as having a high likelihood of DSL occurrence (light green = mitigation ratio of 2.0) will be required to earn or obtain 10 acres of Mitigation Credits or equivalent Recovery Awards. In addition, the mitigation activities should occur as close as possible to the impacts that may result from the incidental take.

FOR AREAS INSIDE THE BUFFER AREA

Mitigation requirements are further adjusted based on the buffer distance of the disturbance to the edge of all possible habitat or polygon.

Acres Impacted *multiplied by* Mitigation Ratio *multiplied by* Buffer Distance Multiplier *equals* Acres of Required Mitigation

Distance from Habitat	Multiplier
Within shinnery oak dune complex	1.00
0 to 30 meters	1.00
31 to 50 meters	0.75
51 to 100 meters	0.50
101 to 200 meters	0.25

Example: Under the previous example, if the new well site was constructed 150 meters from the edge of the habitat area (as opposed to directly within the habitat), then the required mitigation would be adjusted to 2.5 acres.

Appendix I of the TCP provides additional examples of mitigation credit calculations.

CALCULATION OF MITIGATION CREDITS GENERATED

Under the CRA, a property owner (Participant or non-Participant) can earn Mitigation Credits by conducting approved mitigation activities (shown below) based on Section 8.7.2 of the TCP. The mitigation credits generated may be used to offset incidental take or be banked for future use or sale to other Participants. The formulas to calculate mitigation credits generated are the same as the formulas to determine mitigation needed (listed above).

Mitigation Activities
Remove abandoned service roads and restore to pre-disturbance conditions, to the extent possible
Remove equipment from abandoned locations
Remove abandoned or unused fencing, windmills, or water storage devices
Establish preservation lands, when possible, for perpetual preservation
Conduct research and monitoring programs to assess the impacts of mitigation efforts

TRACKING AND VALUATION OF MITIGATION CREDITS

The Foundation is responsible for keeping records of the mitigation activity. The Foundation uses a mitigation tracking spreadsheet to assist in this effort. The Foundation tracks this data in its spreadsheet and works with the Participant to ensure that its efforts align with the TCP's requirements.

As Mitigation Credits are generated, they are tracked by project and valued based on a modified weighted average approach. The weighted average balance is calculated using the following formula:

Running Dollar Balance *divided by* Credits Balance *equals* Weighed Average Balance

The Running Dollar Balance represents the running total cost of credits earned from all projects for which there is an inventory of credits available. The Credits Balance represents the total number of credits currently in inventory. The modified approach involves tracking the Credits Balance by specific project and reducing the balance (and corresponding costs) of the oldest or earliest projects as credits are used or sold. Consequently, the weighted average balance is revalued after every reduction in the Credits Balance to account for the remaining credits and costs pertaining to the most recent projects. This modified approach represents a "first-in, first-out" methodology that allows the Foundation to "remove" the oldest projects from inventory as credits are used, while still accounting for the weighted average costs of the remaining projects on the books.

CALCULATION OF RECOVERY AWARDS GENRATED

Under the CRA, a property owner (Participant or non-Participant) can earn Recovery Awards for conducting approved recovery activities. The awards may be used to offset incidental take (if earned by a Participant) or be banked for future use or sale to other Participants. Recovery activities are proactive measures performed by interested parties (Participants in the TCP, as well as non-Participant landowners) that contribute to the recovery of the DSL species. A Recovery Award represents a quantity of credit acre units that can be used to mitigate or offset a surface disturbance by Participants and maintains a portion for net recovery of the species.

Section 12 of the TCP describes the CRA, which is the approach by which Mitigation Credits and Recovery Awards are used to offset the surface disturbance authorized under the TCP and to promote recovery of the DSL.

Recovery Awards are calculated using the following formula:

Acres Targeted for Conservation Measures *multiplied by* Recovery Ratio *multiplied by* Recovery Activity Value *equals* Available Recovery Awards in Acre Units

The Recovery Ratio is a factor used to adjust the amount of acreage positively impacted for the betterment of the DSL. The DSL Likelihood of Occurrence Map referenced at the end of this section and Figure 1-2 of the TCP is used to determine the recovery ratio. The ratio is based on the schedule below from Section 12.4 of the TCP (note the differences from the Mitigation Ratios).

Acres Targeted for Conservation Measures *multiplied by* Recovery Ratio *multiplied by* Recovery Activity-Value m*ultiplied by* Buffer Distance Multiplier equals Recovery Awards

Gradient of Likelihood in Habitat	Map Color	Recovery Ratio
Very High Likelihood of Occurrence	Dark Green	1.0
High Likelihood of Occurrence	Light Green	2.0
Low Likelihood of Occurrence	Orange	2.5
Very Low Likelihood of Occurrence	Red	1.5

The Recovery Activity Value is a factor used to adjust the acreage impacted based on the nature of the activity and its impact on reducing the threat to the DSL. The factor is based on the schedule (shown on the next page) from Section 8.8 of the TCP.

Measure	Potential Benefit	Recovery Activity Value	Potential Threat Reduction
Approved mesquite and invasive species management program	Prevents habitat degradation.	2.0	Very High
Oil & Gas (O&G) surface location removal and restoration	Reduces fragmentation, enhances habitat, and restores larger contiguous blocks of mosaic habitat.	1.5	High
Road/caliche removal and restoration	Reduces fragmentation, enhances habitat, and restores larger contiguous blocks of mosaic habitat.	1.5	High
Reclamation of plugged and abandoned Well Sites	Reduces fragmentation, enhances habitat, and restores larger contiguous blocks of mosaic habitat.	1.5	High
Monitoring effectiveness of establishing restoration of habitat	Contributes to understanding of recovery of habitat and the species and informs Adaptive Management decisions.	1.5	High
Removal of overhead infrastructure	Reduces perching habitat for predatory birds.	0.6	Medium
Purging pipelines (threat removal)	Reduces threat from chemical seepage.	0.6	Medium
Approved feral hog control program	Reduces disturbance to DSLs.	0.6	Medium
Relocation of infrastructure as development creates opportunity for centralization and/or enhancement of habitat	Enhances habitat, and restores larger contiguous blocks of mosaic habitat. Reduces or minimizes impacts that can cause fragmentation and degradation of DSL Habitat.	0.4	Low
Fence removal	Reduces perching habitat for predatory birds.	0.4	Low

Example: A landowner desiring to conduct road removal and restoration activities(recovery activity value of 1.5) impacting 6 acres inside the habitat area identified as having a low likelihood of DSL occurrence (orange = recovery ratio of 2.5) will earn 22.5 acres of recovery awards. Unlike the mitigation process, the recovery process can address a large menu of action across the range of the DSL and not be limited by association with take.

Recovery awards are further adjusted based on the buffer distance of the disturbance to the area of the habitat. Note that the distances for recovery extend beyond the distances for mitigation section above.

Distance from Habitat	Multiplier
Within shinnery oak dune complex	1.00
0 to 30 meters	1.00
31 to 50 meters	0.75
51 to 100 meters	0.50
101 to 200 meters	0.25
201 to 300 meters	0.20
301 to 600 meters	0.15
Beyond 600 meters	0.10 (see below)

For recovery activities conducted beyond 600 meters from the edge of the habitat, any credit awarded will depend on dispersal corridors identified by the Foundation as part of the particular habitat assessment on a case-by-case basis.

Example: Under the previous example, if the road removal activities were conducted 250 meters from the edge of the habitat area, then the recovery awards would be adjusted to 4.5 acres. Additional examples can be found in Appendix I of the TCP.

ALLOCATION, TRACKING AND VALUATION OF RECOVERY AWARDS

ALLOCATION OF RECOVERY AWARDS

For purposes of award distribution, the total amount of Recovery Awards generated is allocated to three separate pools, as described in Section 13.3.2 of the TCP.

- 50 percent of the total Recovery Award will be made available for mitigation upon completion of the recovery activities.
- 10 percent of the total Recovery Award will be allocated to a recovery reserve and will not be made available for mitigation.
- 40 percent of the total Recovery Award will be held in trust until such time as research indicates that the recovery activities have provided a clear net benefit to the recovery of the DSL or its habitat.

Example: Based on the earlier example, the 4.5 acres of Recovery Awards generated would be distributed so that 2.25 acres would be immediately available, 0.225 acres would be held in reserve, and the remaining 2.025 acres would be held in trust for potential subsequent distribution.

TRACKING AND VALUATION OF RECOVERY AWARDS

The Foundation is responsible for keeping records of the recovery activity. The Foundation uses a recovery tracking spreadsheet to assist in this effort. The Foundation tracks this data in its spreadsheet and works with the Participant to ensure that its efforts align with the TCP's requirements.

As Recovery Awards are generated, they are tracked by project and valued based on a modified weighted average approach. The weighted average balance is calculated using the following formula:

Running Dollar Balance *divided by* Awards Balance *equals* Weighed Average Balance

The Running Dollar Balance represents the running total cost of awards earned from all projects for which there is an inventory of awards available. The Awards Balance represents the total number of awards currently in inventory. The modified approach involves tracking the Awards Balance by specific project and reducing the balance (and corresponding costs) of the oldest or earliest projects as awards are used or sold. Consequently, the weighted average balance is revalued after every reduction in the Awards Balance to account for the remaining awards and costs pertaining to the most recent projects. This modified approach represents a "first-in, first-out" methodology that allows the Foundation to "remove" the oldest projects from inventory as awards are used, while still accounting for the weighted average costs of the remaining projects on the books.

PROCESS FOR SOLICITING AND COORDINATING CONSERVATION ACTIVITIES AS A MEANS OF GENERATING MITIGATION CREDITS AND RECOVERY AWARDS

Under the direction of the TCP, the Foundation consistently seeks opportunities to encourage property owners (Participants and non-Participants) to perform conservation activities (mitigation activities and recovery activities) as proactive measures that contribute to the recovery of the DSL species. The Foundation is responsible for generating monetary incentives to Participants and non-Participant property owners to conduct conservation activities that result in the generation of Mitigation Credits and/or Recovery Awards.

Participants and non-Participant landowners earning Mitigation Credits or Recovery Awards who choose not to keep them for their own use may sell the credits and awards to other Participants via the Foundation. In these situations, the Foundation will serve as a broker and money will be transferred through the Habitat Protection Fund. All mitigation or recovery projects must be coordinated with the Foundation.

In those situations where the Foundation determines a specific need for credits or awards, it will issue a Request for Proposals (RFP) to obtain responses for conducting conservation activities. It may also issue an RFP if there is a surplus of TCP funds for which an opportunity arises to generate Recovery Awards. The Foundation will work with TAMU and the Permit Holder to develop the components of the RFP and will utilize guidelines of those organizations for issuing the RFP. Parameters described in the RFP may include all or a selection of the following items:

- Category of activity (mitigation or recovery)
- Type of conservation measures requested (see *Policy 4-05*)
- Location/vicinity where measures are to be performed
- Amount/size of land covered
- Timeframe and duration of activities
- Respondent type (Participant or non-Participant landowner)

Respondents will be asked to submit proposals addressing the requested services. The proposal will include a work plan describing the conservation measures to be performed and a calculation of the credits or awards to be generated, along with the cost per credit or award. Respondents are required to provide detail at a sufficient level to allow the Foundation to calculate a per credit/award scale.

The Foundation will rank the proposals utilizing three equally-weighted factors:

- Benefit to the DSL: Expected ecological benefit to the DSL. Location of the project will be factored into the benefit analysis and includes proximity to the disturbance as well as proximity to inhabited or potential inhabited areas.
- Cost: Unit cost of credit awarded on a per acre basis.
- Timing: Actual time of implementation of the project, based on need at the time of the ranking.

Proposals will also be ranked in comparison to each other. The proposal with the highest ranking will be selected first. The number of projects to be performed will be based on the availability of funds.

The Foundation will then prepare a Management Plan that incorporates the project(s) being proposed, with any references to the proposer's name excluded. The Management Plan will include the following components:

- Description of activity
- Timing of activity
- Duration of project
- Credits or awards to be generated
- Timing and nature of compliance monitoring
- Spatial data files for relevant projects

In order to ensure consistency, spatial data will be field collected by the Foundation. These raw data will be supplied to TAMU where formal shapefiles will be generated. These shapefiles will then be added to the geodatabase in the common projected coordinate system (NAD 83 UTM zone 13N) with previous, existing feature classes to ensure correct topology. This will eliminate any potential errors or discrepancies like overlaps, slivers, etc. that can occur with collecting and generating spatial layers at different times and from different sources.

The Foundation will submit the Management Plan to the U.S. Fish and Wildlife Service (FWS) for formal approval. Upon approval, the Foundation enters into a formal contract with the selected proposer for services.

Participants and non-Participant landowners can generate mitigation credits or recovery awards without entering into a contract with the Foundation. In those cases, the party would contact the Foundation to arrange for a site visit. The Foundation would work with the interested party to create a project that would generate the desired credits or awards. A Management Plan would then be created and the coordination with FWS would occur as described above.

THIRD PARTY VERIFICATION OF MITIGATION AND RECOVERY PROJECTS AND MITIGATION CREDITS AND RECOVERY AWARDS

In order to verify Mitigation and Recovery projects and credit/award calculations are accurate and represent a fair account of impacts and benefits as prescribed in the TCP, an independent third party reviewer will audit all contracted Mitigation and Recovery projects.

PRIOR TO MITIGATION AND RECOVERY PROJECT CONTRACT EXECUTION/START:

1. The Third Party Reviewer receives a Project Description and/or Management Plan from QTPCs (Director with the THCF and/or Project Coordinator with TAMU) with all necessary documentation, including:
    - Proposal outline including type of project to be conducted and Mitigation Credits/Recovery Awards generated, etc.;
    - Qualifications of the proposed implementation persons;
    - Photographs of site or sites; and,
    - Geospatially explicit information for the site(s) to be developed and the Mitigation/Recovery sites, as they relate to Figure 1-1 and 1-2 in the TCP.
2. The Third Party Reviewer provides written confirmation of receipt within two days to QTPCs (Director with the Foundation and/or Project Coordinator with Texas A&M AgriLife Extension Service, TAMU).
3. The Third Party Reviewer to check and verify:
    - Mitigation/Recovery calculations, using the attached Excel spreadsheet (based partially on Appendix I in the TCP and partially on e-mail discussion with the Permit Holder);
    - Geographical information and site attributes.
4. Projects and Mitigation/Recovery calculations will be verified via a desk audit (Site visits may be required – see Steps 7 and 8):
    - Projects should be evaluated early in the proposal stage, within 2 weeks of proposal submission.
    - All necessary documentation needed should be clearly defined and incorporated into each proposal as described in Step 2.
5. Verification through a desk audit will be completed within one week of receiving the Project Description and/or Management Plan from QTPCs.
6. Site visits will be essential to larger projects or those that have high Mitigation/Recovery values. They should be reserved for instances where project uncertainties or unexpected events occur that alter the project outcome or Mitigation/Recovery value. Site visits should be conducted at random (not to exceed one per project activity type) to help refine the preliminary evaluation process and/or determine the most efficient method of documentation to serve the verification process.
7. If necessary, site visits will be coordinated and conducted within three weeks of initial receipt of the Project Description and/or Management Plan from QTPCs.
    - Typically, site visits will be concluded within one day on-site; efforts will be made to include multiple projects within same timeframe to ensure efficient use of funds.

- With prior approval by and notification of landowner/QTPCs/Permit Holder (only after verification procedures have been standardized) students may accompany PIs as a training exercise (student expenses will not be billed to the Permit Holder office). Students will sign confidentiality agreements prior to visits.

8. The Third Party Reviewer will provide written confirmation of appropriateness of project, correctness of Mitigation/Recovery calculations or request corrections utilizing a standardized initial project verification report form that will be sent to QTPCs within one week of desk audit or two weeks of site visit. This form will include the Third Party Reviewer's assessment and Mitigation/Recovery calculations according to the Excel spreadsheet (mentioned in Step 4), qualitative and quantitative (where applicable) assessment of the activity to be performed, and our as well as a written report including our recommendations of Adequate, Unacceptable, or Adequate with Monitoring.

    - The standardized report form will be considered a "living document," and any modifications to the form after initial approval by the Permit Holder will be approved by the Permit Holder office prior to implementation.

DURING PROJECT:

1. Copies of the monthly reports (Section 8.10 of TCP) provided in Appendix F will be provided to the PIs via the KTF website at http://www.keepingtexasfirst.org/tx_response/reports.php.

POST PROJECT COMPLETION:

1. The Third Party Reviewer will receive a project completion notice from QTPCs.
2. The Third Party Reviewer will provide a written confirmation of receipt of completion notice within two days to QTPCs.
3. A project assessment will be conducted via a desk audit within one week, or if needed, coordinate and conduct site visit within two weeks of receipt of project completion notice following process described in the previous section.
4. Project assessments will include review of all associated materials (contracts, invoices, etc.), verification of whether the proposed activities have been performed to the proposed extent (i.e. do the activities cover the proposed acreage, or only a portion of the proposed area? Have the proposed activities been performed completely, without abandonment?), in addition to confirmation of the number of Mitigation Credits/Recovery Awards generated.
5. Utilizing a standardized final project verification report form provide verification of project and Mitigation Credits/Recovery Awards generated or identification of additional work needed to QTPCs within the one week timeframe for the desk audit or two week timeframe for the site visit.
6. Provide Quarterly Reports to include activity to the Permit Holder no later than ten (10) working days after the end of each fiscal quarter.

DISPUTE RESOLUTION:

1. Receive notice of disagreement from QPTCs.
2. All PIs to meet (via teleconference or if agreed to in advance in person) with Permit Holder and all QTPCs and FWS within one month of receipt to evaluate the nature of the dispute and try to resolve it.

3. If said meeting and resulting activities do not resolve the issue within two weeks, follow TCP section 8.6.4.1.e (p. 44).

GOLDEN-CHEEKED WARBLER RECOVERY CREDIT SYSTEM

GOLDEN-CHEEKED WARBLER RECOVERY CREDIT SYSTEM OVERVIEW

The Golden-cheeked warbler Recovery Credit System (RCS) was developed in late fall 2005 and early spring 2006 by a working group convened by the Texas Department of Agriculture in response to a U.S. Fish & Wildlife Service (FWS) Biological Opinion, which recommended Fort Hood's participation in an off-site conservation program. Fort Hood Military Reservation (Fort Hood, TX) has the largest known population of Golden-cheeked warblers (*Dendroica chrysoparia,* GCWA), and maintains biological programs to protect their habitat on site. However, the potential for habitat loss is a constant possibility and, at times, limits on site training at Fort Hood. Therefore, to offset possible habitat losses from live fire training activities, a RCS for the GCWA was developed.

The primary objective of the RCS is to contribute to the Fort Hood Military Reservation environmental management and conservation objectives by providing support for off-site conservation efforts for endangered species, specifically GCWA. By conserving and enhancing habitat on private lands, the program generates recovery credits. This makes possible a market-based system for private landowners to conserve and improve endangered species habitats in return for financial assistance for land management and annual rent payments. As credits accumulate, Fort Hood gains greater training flexibility and protection against future loss of training time should they experience habitat loss on their training grounds. In addition, this tool simplifies administrative actions by creating a consistent process for implementing the Army's obligations under the ESA. More information regarding the creation and implementation of the RCS can be found at the Institute of Renewable Natural Resources' website (http://rcs.tamu.edu/).

PARTIES THAT ARE INVOLVED IN THE ADMINISTRATION AND OPERATIONS OF THE GOLDEN-CHEEKED WARBLER RECOVERY CREDIT SYSTEM

The following entities have direct oversight and/or involvement over the implementation and/or management of the RCS:

U.S. FISH AND WILDLIFE SERVICE (FWS)

FWS is the federal agency responsible for implementing the Endangered Species Act of 1973. FWS has overall authority over the RCS.

DEPARTMENT OF DEFENSE (DOD), U.S. ARMY

Funding partner for 3-year proof-of concept phase. Sole credit buyer for the RCS.

U.S. DEPARTMENT OF AGRICULTURE-NATURAL RESOURCE CONSERVATION SERVICE

Funding partner for 3-year proof-of concept phase.

NATIONAL FISH & WILDLIFE FOUNDATION

Funding partner for 3-year proof-of concept phase.

ENVIRONMENTAL DEFENSE FUND (EDF)

The EDF staff assessed habitat on private ranches, determined associated credit score, and developed warbler-specific management plans for each ranch. EDF developed reports for each property with descriptions and delineations of qualifying and supporting habitat, associated maps, credit calculations, and a management plan for enhancing, expanding, and conserving warbler habitat. This information was provided to each landowner and formed an essential part of their bid package.

TEXAS A&M INSTITUTE OF RENEWABLE NATURAL RESOURCES (TAMU)

The Department of Defense contracted with TAMU to implement a 3-year trial period (proof-of-concept) phase of the RCS and monitor the results.

TEXAS PARKS AND WILDLIFE DEPARTMENT (TPWD)

The TPWD staff developed or approved overall wildlife management plans of which the warbler-specific management plan was a priority component

TEXAS WATERSHED MANAGEMENT FOUNDATION (FOUNDATION)

TAMU sub-contracted with the Foundation to administer the day-to-day operations and general management of the RCS. The Foundation conducted landowner outreach, met with landowners to describe the system, coordinated site visits for the purposes of determining credit score and conducting management-plan development, conducted reverse auctions to purchase credits, executed contracts with landowners, conducted prescribed management activities, and performed yearly compliance monitoring.

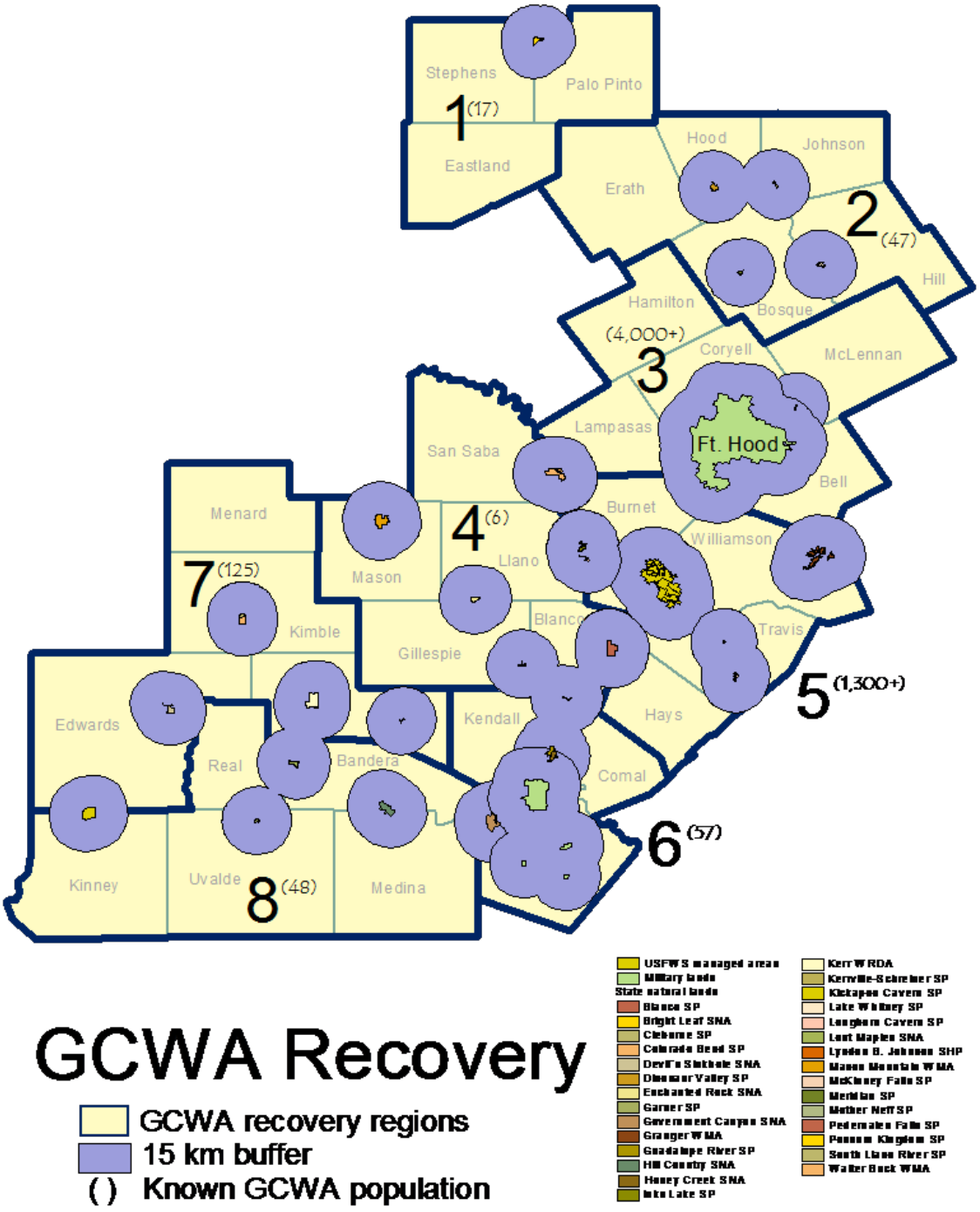
THIRD PARTY REVIEWER

The DoD entered into a contract with a Third Party Reviewer (Robertson Consulting Group, Inc.) to perform an evaluation of the initial 3-year proof-of-concept for both the process and the intended impact and overall utility of the RCS.

The Foundation commissioned an audit from a third party reviewer to examine both the funds and the credits generated and debited.

PRIVATE LANDOWNER

Private landowners are property owners with qualifying habitat that contract property (10 years to 25 years in 5 year increments) in the RCS.



Golden-cheeked Warbler Recovery Map. The map delineates the eight recovery regions used to calculate recovery credits. The legend further identifies known GCWA populations (with a 15 meter buffer) within the regions.

CALCULATION OF REQUIRED MITIGATION

The Recovery Crediting Guidance (USFWS 31 July 2008) outlines the general steps while the biological opinion for debiting (USFWS 3 March 2009) clearly describes the process for the proof of concept. As of 21 January 2010, the debiting action had been reviewed, approved, and assigned debits, but the action had not yet been implemented.

As described in the Recovery Crediting Guidance, the recovery debiting process includes the debit development phase and programmatic debiting consultation phase. The debit development phase establishes the standards according to which credits will be used. This phase may be conducted separately or concurrently with the credit accrual planning and development. The debiting process as part of a RCS is subject to consultation under section 7(a)(2) of the Endangered Species Act (programmatic debiting consultation). The project-specific application includes project-specific consultation under programmatic consultation and actual debits of the credits. As individual projects are proposed, the Federal Action Agency provides project- specific information as described in the programmatic biological opinion.

As described in the biological opinion for debiting (USFWS 3 March 2009), a tiered decision approach for site selection will be used in order to prioritize training areas based on minimizing impacts on GCWA habitat. Tiers were defined by the size of gaps in habitat and relation to habitat edge as follows:

- Tier 1. Non-endangered species habitat
- Tier 2. Isolated < 101-hectare marginal habitat
- Tier 3. > 101-hectare marginal habitat
- Tier 4. Isolated < 101-hectare moderate to high quality habitat
- Tier 5. > 101-hectare moderate to high quality habitat

A sub-committee of species and habitat experts developed treatment standards for modifying GCWA habitat on Fort Hood and estimated appropriate habitat recovery periods. The sub-committee specified standard one as light thinning and standard two as moderate thinning.

Recovery periods, and therefore debits, will then be assigned based on the tier and the standard. As described in the biological opinion (USFWS 3 March 2009 p. 10):

Debit values will be traded for credits based on the duration of use plus the habitat recovery period. Habitat recovery period is the time necessary for the affected habitat within the training area to return to acceptable pre-disturbance condition as a result of the treatment standard, scheduled maintenance, and training disturbance. Habitat recovery period begins when scheduled training area maintenance and training use have ceased.

The actual habitat recovery period is unknown at this time; however, the subcommittee developed standards to estimate the habitat recovery period that will be added to the training duration. The document notes the estimates are based on professional judgment as there are no data that support these estimates.

For the proof of concept, Fort Hood Military Reservation will debit their account 755 recovery credit years to thin small juniper trees using treatment standard two on 237 acres in Land Group Two in order to allow dismounted squads, platoons, and companies to conduct force on force maneuver training. Of the 237 acres, 35.14 are designated as tier 3, 5.05 acres as tier 4, and 196.98 acres as tier 5. Fort Hood

plans to implement minimization periods so that the recovery period for Tier 5 habitat will be five years, allowing for a five-year training period. As of 21 January 2010, the FWS approved the proposed action, finding it consistent with the terms and conditions of the RCS opinion, although actual thinning has not yet occurred. As this single action will utilize the accumulated credits, the RCS opinion is therefore terminated from further actions.

DEVELOPING A BID PACKAGE

Once the landowner contacted the program operators, the first step was to assess the habitat and assign credit. After a landowner contacted program operators about participation, the EDF assessed the habitat to ensure it met stated guidelines from the TPWD, assigned the ranking criteria for credit valuation (below) using the science committee recommendations, and wrote a management plan for the warbler in particular. That document was then attached to a larger wildlife management plan.

CONSERVATION UNIT AND SCIENCE-BASED CRITERIA FOR VALUATION OF RECOVERY CREDIT

CONSERVATION UNIT

A conservation unit is defined as a 20 acre area that is verified as meeting the TPWD criteria for areas that are likely to be inhabited by GCWAs.

SCREENING CRITERIA

Proposed conservation units must be within a priority landscape for GCWA recovery. Priority landscapes will be defined using the best available information. Pending review of this information, a conservation unit or units must be an integral part of a block of continuous GCWA habitat that is at least 250 acres (100 ha) in extent, and a minimum of 50 acres must be under contract.

RANKING CRITERIA

The following criteria are designed to place increased value on those projects that have the greatest potential to support viable populations and that are likely to provide the greatest recovery benefits. Greater value is placed on aggregations of conservation units, units that are within Recovery Regions with relatively low known populations, units that are close to existing populations and units that are within relatively large blocks of existing habitat.

1. Assess potential number of contiguous conservation units. One unit = 20 acres, two units = 40 acres, etc. (no partial units e.g., one unit = 20 – 39 acres, two units = 40 – 59 acres, etc.)
2. Apply number of units weighting

Units	Weighting	Total Credit
1	0.0	1.0
2	0.1	2.1
3	0.2	3.3
4	0.3	4.6
5	0.4	6.0

Units	Weighting	Total Credit
6	0.5	7.5
7	0.6	9.1
8	0.7	10.8
9	0.8	12.6
10	0.9	14.5
Etc…		

3. Apply recovery region priority multiplier

Recovery Region	Multiplier
1, 2, 4, 6, 7, 8	2.00
5	1.50
3	1.00

4. Apply habitat characteristic/landscape context multiplier

Proximity to existing GCW population	Multiplier
Within 15km of a known population of GCWs of at least 10 pairs	1.10
Within 15km of a known population of GCWs of at least 100 pairs	1.20
Extent of surrounding GCW habitat	**Multiplier**
Unit(s) are part of 250 – 620 acres (100 - 250 ha) of contiguous habitat	1.00
Unit(s) are part of >620 acres (250 ha) of contiguous habitat	1.50

Number of Units *multiplied by* Recovery Region Multiplier

multiplied by Proximity Multiplier *multiplied by* Landscape Multiplier *equals* Recovery Credits

Example: A landowner wants to assess their land of 110 continuous acres. It equates to 5 conservation units within 15km of Fort Hood (Recovery Region 3) that are situated within a block of 740 acres (300 ha) of contiguous habitat with over 100 known Golden Cheeked Warbler pairs.

Line Item	Calculation
Number of units weighting	6.0 credits
Recovery region multiplier	6.00 credits
Proximity multiplier	7.20 credits
Landscape multiplier	**10.80 credits**

FINALIZING THE BID PACKAGE

Once the recovery credits had been calculated, the landowner worked with program operators to prepare a bid. The bidding calculations were determined using the following formulas:

Recovery Credits *multiplied by* Length of Contract *equals* Recovery Credit Years

Costs per Recovery Credit *multiplied by* Recovery Credit Years *equals* Total Sponsor Cost

Percentage of Cost Share *multiplied by* Total Sponsor Cost *equals* Landowner Cost Share

Landowner Cost Share *plus* Total Sponsor Cost *equals* Total Value

Example: An interest landowner contacts the program and is assigned 2.52 recovery credits for their property after a habitat assessment was performed. The property owner decides to commit to a 20 year contract at $700 per recovery credit year, totaling $35,280 in sponsor cost. The landowner bids 33.3 percent as cost share for the $35,280, meaning the landowner must pay $11,748.24 into their account which will be distributed through completed management practices or annual payments. The total value of the landowners bid is $47,028.24.

Line Item	Calculation
Recovery credits assigned to the property based on size, location, and other weighting factors	2.52
Length of contract	20
Recovery credit years (credits X length of contract)	50.4
Bid per recovery credit year (RCY)	$700.00
Total sponsor (program) cost put into account for annual payments and management practices	$35,280.00
Landowner cost share (33.3%) put into their own account for annual payments and management practices	$11,748.24
Total in account for management practices and annual payments	**$47,028.24**

REVERSE AUCTION PROCESS FOR GENERATING RECOVERY CREDITS

A reverse auction process was utilized to select the winning (funded) bids. Bids were ranked based on number of credits, contract length, recovery credit years, recovery credit year cost, and percent of landowner cost share. Finally, bid packages and a ranking sheet were taken to Fort Hood for review and approval*.

Over the course of 8 bidding rounds, the competitive nature of the bidding resulted in increased cost-efficiency for Fort Hood: the cost per RCY for all bids decreased from approximately US$ 1,600 to just over US$ 600, which equated to an average cost per acre of US$ 888. Landowners quickly discovered they could increase the competitiveness of their bid by increasing the length of their contract term. In the first bid round, the majority of landowners chose a 10-year term; by the final bid round, all landowners chose the 25-year term.

* Although the ranking system was designed to identify the properties with both the best habitat value (through the credit valuation) and the best fiduciary value, Fort Hood staff occasionally chose properties based on proximity to the base and not on the ranking system developed by the science and economic committees during the planning process.

ALLOCATION, TRACKING AND VALUATION OF RECOVERY CREDITS

The Foundation contracted an accounting firm to account for both the money and the credits generated/debited.

As the debiting action has not yet occurred, the monitoring requirement has not yet been activated. The biological opinion (USFWS 3 March 2009 p.16), however, clearly describes the expectations:

On an annual basis, Fort Hood will evaluate and report on Management Plan compliance for each property. The report will include, but not be limited to: property bid contract number system used by the Cooperator<, county location of property, contract length (10-year, 20-year, etc.), credit vintage, results of bird monitoring surveys, results of vegetation monitoring surveys, results of scientific studies other than bird and vegetation monitoring, any change in status of the credit property (e.g., habitat damage from fire or land management), any change in status of credit property owner, any change in status of the surrounding properties, and copy of aerial imagery and any other imagery/maps used to determine credit land status.

Fort Hood is required to monitor the account balance and the habitat developed on Fort Hood (i.e., debit projects) and to report the results of monitoring to the FWS on an annual basis.

THIRD PARTY VERIFICATION OF THE GOLDEN-CHEEKED WARBLER RECOVERY CREDIT SYSTEM ACCOUNTING

The Foundation commissioned an audit of both the funds and the credits separately. The management letter states that financial statements ,present fairly, in all material respects, the financial position of the foundation as of August 31, 2009, 2008 and 2007 and the changes in its net assets and its cash flows for the years then ended in conformity with accounting principles generally accepted‘ and that the supplemental recovery credit suppliers’ schedule and values are also fairly stated.

THIRD PARTY VERIFICATION OF THE GOLDEN-CHEEKED WARBLER RECOVERY CREDIT SYSTEM, 3-YEAR PROOF-OF-CONCEPT

In 2009, the Department of Defense contracted with Robertson Consulting Group, Inc. to provide an objective and thorough evaluation of the 3-year proof-of-concept for both the process and the intended impact and to assess the utility of RCS. The peer review panel was composed of three independent scientists charged with the evaluation of all successful and unsuccessful landowner bids, review of program documents, and assessment of habitat on 8 contracted sites. In addition, they conducted 17 interviews with participating landowners and 24 interviews with program operators, military personnel, and other stakeholders. The review can be found at the Institute of Renewable Natural Resources' website (http://rcs.tamu.edu/media/277200/rcs_evaluation_executive_summary.pdf).

THE REVIEW CONCLUDED THE RCS:

1. Model was viable and feasible in a real-world environment,
2. participants perceived the process to be efficient,
3. promoted effective federal/non-federal landowner partnerships,
4. program met its goals for habitat conservation, and 5) provided additional flexibility for federal agencies to accomplish their mission.

Utah Prairie Dog Habitat Credits Exchange Program

UTAH PRAIRIE DOG HABITAT CREDITS EXCHANGE PROGRAM OVERVIEW

The Utah prairie dog (UPD) was down listed as threatened by U.S. Fish and Wildlife Service (FWS) in 1984. As a consequence of its threatened status, FWS requires that a Conservation Banking Agreement govern market-based mitigation for the prairie dog. The Utah Prairie Dog Habitat Credits Exchange Program (HCEP), a UPDs habitat credit bank, was established in 2007 to provide options to developers and private landowners to purchase habitat credits, permitting clearance from the Endangered Species Act "ESA" in perpetuity for development or sale of lands encumbered by the UPD. The HCEP is one facet of a multi-pronged effort working towards habitat and species conservation and future delisting of the UPD.

Through the HCEP, a program administrator purchases conservation actions (e.g., conservation easements) from private landowners and in doing so accrues conservation credits. Once accrued, the program administrator sells the credits to the entities required to offset their impacts to prairie dogs. Thus, the HCEP trades impacts on UPDs and their habitat for conservation targeted to high-value habitat elsewhere. More information regarding the creation and implementation of the HCEP can be found at the Panoramaland RC&D's website (http://panoramalandrcd.org/?page_id=199).

PARTIES THAT ARE INVOLVED IN THE FUNDING, ADMINISTRATION AND OPERATIONS OF THE UTAH PRAIRIE DOG HABITAT CREDITS EXCHANGE PROGRAM

FUNDING:

NATURAL RESOURCE CONSERVATION SERVICE (NRCS)

ENVIRONMENTAL DEFENSE FUND (EDF)

UTAH FARM BUREAU FEDERATION (UFBF)

UTAH DIVISION OF NATURAL RESOURCES (UDNR)

ENANGERED SPECIES MITIGAITON FUND (ESMF)

Initially the HCEP was funded by the NRCS Conservation Innovation Grant which was awarded to EDF and UFBF to develop the program concept. The NRCS funds were used to acquire the first three conservation easements; additional funding is now provided by mitigation funds.

ADMINISTRATION AND OPERTATIONS:

PANORAMALAND RESOURCE CONSERVATION AND DEVELOPMENT COUNCIL (RC&D)

The RC&D administer the day-to-day operations of the HCEP. The RC&D enters into agreements with private landowners and is the regular point of contact with them. The RC&D is responsible for performing outreach efforts to encourage participation within the HCEP, managing the activities of the contracted landowners, addressing disturbance issues, facilitating the generation, crediting and debiting of mitigation credits, and monitoring of contracted landowner compliance.

U.S. FISH AND WILDLIFE SERVICE (FWS)

FWS is the federal agency responsible for implementing the Endangered Species Act of 1973. FWS has overall authority over the HCEP.

THIRD PARTY REVIEWER

Utah State University has recently been tasked with performing a comprehensive review of the HCEP. No information regarding this review has been released.

PRIVATE LANDOWNER

Private landowners are property owners with qualifying habitat who may sell a perpetual conservation easement on those acres to the RC&D.

UTAH DIVISION OF WILDLIFE RESOURCES (UDWR)

UDWR has species management authority in the state of Utah, thus regulatory authority over the program. UDWR administer the Iron County HCEP and provide mitigation approval, perform surveys to determine how many credits are required for development, perform annual species site population surveys and approve all property enrollments into the program.

UTAH STATE UNIVERSITY COOPERATIVE EXTENSION (EXTENSION)

Extension acts as an oversight committee which provides advice (through professional, industry and technical support) for direct program objectives and general administration. Extension assists in marketing the program to credit buyers and private land owners in occupied UPD habitat.

CALCULATION OF REQUIRED MITIGATION

Incidental take of UPD may be mitigated by several mechanisms. The HCEP provides mitigation credits (i.e., Conservation Credits, credits) to prospective economic developers by offsetting losses through the protection of UPD habitats in other locations. Therefore, prospective economic developers can purchase credits from the HCEP in order to comply with the ESA, the process detailed by the Iron County HCP and ESA section 7 consultations.

The land in question will be evaluated (at no cost) by the RC&D (must receive final approval from FWS or UDWR), FWS or UDWR to determine its importance to UPDs. This habitat assessment will determine how many credits will be needed to offset loss of UPD habitat because of development. The assessment will determine if the land is Low, Medium or High quality UPD habitat. Once the degree of incidental take is calculated based on the factors (of the habitat assessment) provided below, credits can be purchased and the incidental take can be authorized.

The following criteria are employed to determine the appropriate calculation:

Factor	Criteria	Value	Priority
HABITAT QUALITY			
Species Richness	species richness = 10, 3 grass, 3 forb	0	Low
	species richness >10, 3 grass, 3 forb	1	Medium
	species richness >20, 6 grass, 6 forb	2	High
Average shrub canopy cover	average shrub canopy cover >20%	0	Low
	average shrub canopy cover 11-20%	1	Medium
	average shrub canopy cover 0-10%	2	High
% Ground Cover	% Ground cover 0-20	0	Low
	% Ground cover 20-60	1	Medium
	% Ground cover 60-100	2	High
Moisture rich vegetation	None	0	Low
	300-1000m	1	Medium
	<300m	2	High

LANDSCAPE CONTEXT			
Landscape Location	>2 km dispersal distances to other colony	0	Low
	1 -2 km dispersal distances to other colony	1.5	Medium
	≤ 1 km dispersal distance to other colony	4	High
Barriers to dispersal	4 sides barred to dispersal (w/in 2 km)	0	Low
	3 sides barred to dispersal (w/in 2 km)	1.5	Medium
	0-2 sides barred to dispersal (w/in 2 km)	4	High
POPULATION			
Persistence	unknown or occupied <6 of 10 years	0	Low
	occupied 6-10 years	1	Medium
	occupied consistently for 10 years (or more)	2	High
Number of Prairie Dogs - Population size	1 - 10 UPD	0	Low
	11 - 40 UPD	1	Medium
	> 40 UPD	2	High
	Total Value(TV; Sum, 1 from each above)		
	Max Value (MV)	20	
RESULTING VALUE: LOW/MED/HIGH ***Calculate TV/MV = Resulting Value***	Low Value = <0.5		
	Medium Value = 0.5 - 0.74		
	High Value = >0.75		
MITIGATION MULTIPLIER:	Permanent: Low (6), Medium (8), High (10)		
	Temporary: Low (1.2), Medium (1.6), High (2)		

Total Value *divided by* Max Value *equals* Resulting Value

Acres *multiplied by* Mitigation Multiplier *equals* Credits

Credits *multiplied by* Current Credit Cost *equals* Total Mitigation Cost

Example: A landowner wants to permanently develop 5 acres of UPD habitat. After the initial habitat assessment was performed by FWS, the property was determined to be High value. Since this development is permanent a mitigation multiplier of 10 is used to determine the number of credits needed. Currently credits are sold at $800/credit so $40,000 total is owed for mitigation.

TV= 15.5; 15.5/20=0.0775[high value]

5 acres * 10 [high mitigation multiplier]=50 credits

50 credits * $800 =**$40,000 [mitigation cost]**

Ratio Calculation:

Impacting high quality habitat and mitigating with medium quality habitat = ***3.33 ratio***
3.33 ratio x 5 acres =16.65 acres of conservation
$40,000/16.65= ***$2,402 per acre***

Impacting high quality habitat and mitigating with high quality habitat = ***2.5 ratio***

2.5 ratio x 5 acres =12.5 acres of conservation
$40,000/12.5= ***$3,200 per acre***

Because all credits are consolidated – acquired a combination of medium and high quality habitat credits – the current ratio is 2.86. It is a floating number, determined by the amount of each type of credit acquired.

Impacting high quality habitat = ***2.86 ratio***
2.86 ratio x 5 acres = 14.30 acres of conservation
$40,000/14.30= ***$2,797.20 per acre***

DETERMINING CREDIT COST

Credit costs are calculated based on a combination of variables which are determined by: direct and indirect costs associated with the purchase of the off-site mitigation easement property; endowment fund costs established for future monitoring of easement property; and program administration. Those variable costs are then factored by the mitigation ratio established by the FWS, UDWR and members of the HCEP Advisory Panel as sufficient offset for development impact. Credit costs are subject to variation resulting from variable land acquisition prices & associated program costs. Credits prices are also subject to the theory of economics, supply and demand, for example if demand increases beyond the available credit supply credits will then be sold through auction.

CALCULATION OF MITIGATION CREDITS GENERATED

Willing landowners with at least 20 UPDs on 40 acres may sell a perpetual conservation easement on those acres to the RC&D. This transaction preserves UPD habitat, thereby earning UPD credits. The landowner gets paid by the RC&D for keeping UPDs on his/her ground while retaining title and agricultural rights. The RC&D will hold the conservation easement on the preserved land and coordinate stewardship of the land with the primary landowner. Each landowner, in conjunction with the RC&D, will be able to develop a customized management plan that protects habitat values for UPD and allows continued agricultural activities.

Participating properties will be evaluated and ranked by the RC&D, FWS and UDWR. Upon evaluation, properties receive a rating and a value. Upon approval for easement purchase credits can then be calculated from the value given. The amount of credits earned will be determined by the environmental evaluation, ranking, and quality of the UPD habitat and an inventory of the existing population.

The following criteria are employed to determine the appropriate calculation:

Factor	Criteria	Value	Priority
HABITAT QUALITY			
Species Richness	species richness = 10, 3 grass, 3 forb	0	Low
	species richness >10, 3 grass, 3 forb	1	Medium
	species richness >20, 6 grass, 6 forb	2	High
Average shrub canopy cover	average shrub canopy cover >20%	0	Low
	average shrub canopy cover 11-20%	1	Medium
	average shrub canopy cover 0-10%	2	High
% Ground Cover	% Ground cover 0-20	0	Low
	% Ground cover 20-60	1	Medium
	% Ground cover 60-100	2	High
Moisture rich vegetation	None	0	Low
	300-1000m	1	Medium
	<300m	2	High
LANDSCAPE CONTEXT			
Landscape Location	>2 km dispersal distances to other colony	0	Low
	1 -2 km dispersal distances to other colony	1.5	Medium
	≤ 1 km dispersal distance to other colony	4	High
Barriers to dispersal	4 sides barred to dispersal (w/in 2 km)	0	Low
	3 sides barred to dispersal (w/in 2 km)	1.5	Medium
	0-2 sides barred to dispersal (w/in 2 km)	4	High
POPULATION			
Persistence	unknown or occupied <6 of 10 years	0	Low
	occupied 6-10 years	1	Medium
	occupied consistently for 10 years (or more)	2	High
Number of Prairie Dogs - Population size	21-30 UPD	0	Low
	31-60 UPD	1	Medium
	> 60 UPD	2	High
	Total Value(TV; Sum, 1 from each above)		
	Max Value (MV)	20	
RESULTING VALUE: LOW/MED/HIGH ***Calculate TV/MV = Resulting Value***	Low Value = <0.5; ***Not eligible to enroll***		
	Medium Value = 0.5 - 0.74		
	High Value = >0.75		
	Permanent commitment: Medium (3X), High (4X)		

CREDIT VALUATION MULTIPLIER:	Temporary, 10-15 year commitment: Medium (1X), High (2X)	
	Temporary, 16+ year commitment: Medium (2X), High (3X)	

Total Value *divided by* Max Value *equals* Resulting Value

Acres *multiplied by* Credit Valuation Multiplier *equals* Credits Generated

Example: A landowner wants to permanently enroll their land of 80 contiguous acres. After the initial habitat assessment was performed by FWS, the property was determined to be High value. Since this development is of High value and permanent credit valuation multiplier of 4 is used to determine the number of credits generated.

TV= 15.5; 15.5/20=0.0775 [high value]

80 acres * 4 [high credit valuation multiplier]=**320 Credits**

ALLOCATION, TRACKING AND VALUATION OF MITIGATION CREDITS

THE HCEP uses the Regulatory In lieu fee and Bank Information Tracking System (RIBITS) to manage all credits generated and sold. Further information on this system can be found at the U.S. Army Corps of Engineers' website (https://ribits.usace.army.mil/ribits_apex/f?p=107:27:8977090853153::NO:RP:P27_BUTTON_KEY:22).

	Program	Website	Status	Description	Level	Managing Agency	Compliance Monitoring
Threathened and Endangered Species Programs	Texas Conservation Plan for the Dunes Sagebrush Lizard (TCP)	www.KeepingTexasFirst.org	Active, currently acting as a CCAA	The TCP is a voluntary program for property owners to participant in, acting as both a CCAA and HCP for the Dunes Sagebrush Lizard. Under this program, Participants and non-Participant landowners may enter into contracts to perform Recovery and/or Mitigation Activies which generate Recovery Awards and Mitigation Credits for the TCP. Conservation Measures are also applied to the enrolled acreage by Participants (no credits awarded for implementing these measures).	Federal- U.S. Fish and Wildlife Service	Texas Comptroller of Public Accounts; sub -contractors Texas A&M AgriLife Extension Service and Texas Habitat Conservation Foundation	Subcontractors perform monthly monitoring of TCP Participants and pre, during and post monitoring of contracted Recovery and Mitigation Activities.
	Golden-Cheeked Warlber Recovery Credit System (RCS)	http://rcs.tamu.edu/	Active, Proof-of Concept Program	The RCS allowed the Department of Defense to receive credit for recovery measures implemented by private landowners to offset adverse effects from training activities pertaining to the conservation of the golden-cheeked warbler (GCW). BY conserving/managing GCW habitat for a specified number of years, landowners generated credits for the DoD to use to offset habitat damage on DoD lands.	Federal- U.S. Fish and Wildlife Service, U.S. Department of Defense (DoD), U.S. Department of Agriculture (NRCS); NGO- National Fish and Wildlife Foundation	Texas Parks and Wildlife Department, Environmental Defense Fund, Texas A&M Institute of Renewable Natural Resources ; sub -contractors Texas Watershed Management Foundation	
	Range-wide Conservation Strategy for the Gopher Tortoise	http://www.fws.gov/southeast/candidateconservation/examples.html	Active	The Range-Wide Conservation Strategy for the Gopher Tortoise is meant to serve as a guide to help the U.S. Fish and Wildlife Service, the six states in the gopher tortoise range, and many other public and private partners work together to proactively conserve the gopher tortoise.	Federal- U.S. Fish and Wildlife Service		
	Candidate Conservation Agreement for the Gopher Tortoise (CCA)	http://www.fws.gov/southeast/candidateconservation/pdf/CCA_GopherTortoise_revisedDec2012_final.pdf	Active	The CCA for the Gopher Tortoise was developed as a cooperative effort among state, federal, non-governmental, and private organizations. It establishes a common conservation approach and framework and supports efforts by the signatories to leverage knowledge and funding. The CCA is flexible and voluntary, so that different conservation and management actions can be adopted and implemented at varying levels by each partner.	Federal- U.S. Fish and Wildlife Service		

	Program	Third Party Review	Permits	State and Local Laws	Landowner Assurances	Landowner Incentives	Landowner Hinderances
Threathened and Endangered Species Programs	Texas Conservation Plan for the Dunes Sagebrush Lizard (TCP)	Multiple reviews included in TCP. Ongoing review of all Mitigtion and Recovery projects are performed by Texas Tech Univesity.	Federal enhancement of survival permit (TE55322A-0) issued once species is listed. TCP then converts from a Candidate Conservation Agreement with Assurances into a Habitat Conservation Plan	Endangered Species Act	Contracted landowners will only have to perform activites describes in their Mangement Plan.	100% payment for Recovery or Mitigation Activities performed as specified in contract.	Must comply with contract/Management Plan regulations. Vary by contract.
	Golden-Cheeked Warlber Recovery Credit System (RCS)	The DoD contracted Robertson Consulting Group, Inc. to perform an evaluation of the initial 3-year proof-of-concept for both the process and the intended impact and overall utility of the RCS. The Texas Watershed Management Foundation commissioned an audit from a third party reviewer to examine both the funds and the credits generated and debited.		Endangered Species Act	Contracted landowners will only have to perform activites describes in their contract/Mangement Plan.	Financial assistance for land management and annual rent payments.	Must comply with contract/Management Plan regulations. Vary by contract.
	Range-wide Conservation Strategy for the Gopher Tortoise			Endangered Species Act			
	Candidate Conservation Agreement for the Gopher Tortoise (CCA)			Endangered Species Act			

	Program	Website	Status	Description	Level	Managing Agency	Compliance Monitoring
	Utah Prairie Dog Habitat Credits Exchange Program (HCEP)	http://panoramalandrcd.org/?page_id=199	Active	Through the HCEP, a program administrator purchases conservation actions (e.g., conservation easements) from private landowners and in doing so accrues conservation credits. Once accrued, the program administrator sells the credits to the entities required to offset their impacts to prairie dogs. Thus, the HCEP trades impacts on upland prairie dogs and their habitat for conservation targeted to high-value habitat elsewhere.	Federal- U.S. Fish and Wildlife Service(FWS), Environmental Defense Fund; State- Utah Farm Bureau Federation, Utah Division of Natural Resources, Endangered Species Mitigation Fund	Panoramaland Resource Conservation and Development Council (RC& D), Utah Division of Wildlife Resources (UDWR), State University Cooperative Extension	Land seeking enrollment or needing credits is evaluated by RC&D (must receive final approval from FWS or UDWR), FWS or UDWR before contracting into the program or purchasing credits.
Water Quality Programs	Texas Water Quality Management Plan Program (WQMP)	https://www.tsswcb.texas.gov/en/wqmp	Active	The WQMP is a voluntary program tied to the State's water quality assessments that identify priority water quality problems. The WQMPs are used to direct planning for implementation measures that control and/or prevent water quality problems. Several elements may be contained in the WQMP, such as effluent limitations of wastewater facilities, total maximum daily loads (TMDLs), nonpoint source management controls, identification of designated management agencies, and ground water and source water protection planning. Some of these elements may be contained in separate documents which are prepared independently of the current WQMP update process, but may be referenced as needed to address planning for water quality control measures	State- Texas State Soil and Water Conservation Board	Texas State Soil and Water Conservation Board	State- Texas State Soil and Water Conservation Board
	Louisiana Master Farmer Program	http://www.lsuagcenter.com/en/environment/conservation/master_farmer/	Active	The Louisiana Master Farmer Program focuses on helping agricultural producers voluntarily address environmental concerns as well as helping them enhance the production and resource management skills they need for the continued sustainability of Louisiana agriculture. The program helps producers across a wide range of agricultural and natural resource enterprises by teaching them more about environmental stewardship, conservation-based production techniques and resource management. The program uses a comprehensive approach that includes classroom instruction, observation of LSU AgCenter research-based best management practices and implementation of a comprehensive conservation plan. It also involves a voluntary producer certification process.	Federal- U.S. Department of Agriculture (NRCS)	Louisiana State University Ag Center, Louisiana Farm Bureau,Louisiana Cattlemen's Association andLouisiana Department of Agriculture and Forestry	Commissioner of Agriculture and Forestry

	Program	Third Party Review	Permits	State and Local Laws	Landowner Assurances	Landowner Incentives	Landowner Hinderances
	Utah Prairie Dog Habitat Credits Exchange Program (HCEP)	Utah State University has recently been tasked with performing a comprehensive review of the HCEP. No information regarding this review has been released.		Endangered Species Act	Contracted landowners will only have to perform activites describes in their contract/Mangement Plan.	Payment for conservation easement as determine by contract.	Must comply with contract/Management Plan regulations. Vary by contract
Water Quality Programs	Texas Water Quality Management Plan Program (WQMP)	NA	NA	Texas Water Code, Clean Water Act, Texas Senate Bill 503	NA	Cost-share funding up to $15,000.	Must comply with criteria outlined in the Field Office Technical Guide (written by the NRCS).
	Louisiana Master Farmer Program	NA	NA	Environmental Protection Agency's Impaired Waters List (Total Maximum Daily Load monitoring).	Participants who complete the certification are "presumed" to be in compliance with Louisiana's state soil and water conservation requirements.	Classroom instruction on environmental stewardship and Best Management Practices, field day workshops, help developing a conservaiton plan, and a certificate (good for 5 years).	Must attend 6 hours of continuing education every year.

	Program	Website	Status	Description	Level	Managing Agency	Compliance Monitoring
Other	Michigan Agriculture Environmental Assurance Program (MAEAP)	http://www.maeap.org/	Active	The MAEAP is an innovative, proactive, and voluntary program, designed to reduce farmers' legal and environmental risks through a three-phase process: 1) education; 2) farm-specific risk assessment and practice implementation; and 3) on-farm verification that ensure the farmer has implemented environmentally sound practices.	State- Michigan Department of Agriculture and Rural Development	Michigan Department of Agriculture and Rural Development	Michigan Department of Agriculture and Rural Development
	New York Agriculture Environmental Management (AEM)	http://www.nys-soilandwater.org/aem/	Active	AEM is a cooperative, interagency program that provides one-on-one help to farmers to identify environmental risks on their farms. Once these risks are identified, farmers receive planning, design and help obtaining financial assistance to correct existing problems and prevent future ones. The State Committee develops policy for the statewide AEM program and administers programs through staff and various groups associated with the interagency AEM Steering Committee.	State- New York State Department of Agriculture and Markets and New York State Soil and Water Conservation Committee	Local Soil and Water Conservation Districts	NA

	Program	Third Party Review	Permits	State and Local Laws	Landowner Assurances	Landowner Incentives	Landowner Hinderances
Other	Michigan Agriculture Environmental Assurance Program (MAEAP)	NA	NA	Senate Bill 122 and House Bill 4212, now Public Acts 1 and 2 of 2011	NA	Classroom instruction on new and emerging regulations and opportunities affecting agriculture, on-farm risk assessment, third-party verification that the property meets the State's Generally Accepted Agricultural Management Practice, recognition for their accomplishments and access to incentives.	To maintain MAEAP Verification, producers must request a MDARD visit every three years.
	New York Agriculture Environmental Management (AEM)	NA	NA	Clean Water Act, Clean Air Bond Act	NA	Help identifying issues on property, development of a conservaiton plan to address issues , and assistence in finding financial assistance.	NA