1. Project Description

a. Project Narrative

Purpose, Approach, and Goals.—Long-term climate change, land use history, and altered fire regimes have impacted vegetation and biochemical cycles of grasslands in the Southwestern United States. Woody encroachment has increased in these fire-maintained landscapes through increased atmospheric CO_2 and fire suppression. Carbon sequestration can help offset anthropogenic CO_2 emissions and aid in adapting to climate change (Woodbury et al. 2007); however, recent research suggests that catastrophic wildfires is detrimental to the long-term sustainability of carbon storage (Breshears and Allen 2002, Hurteau et al. 2008, Hurteau and North 2009), particularly in landscapes that historically burned with high frequency and low severity (e.g., grasslands, savannahs). Use of prescribed fire can make carbon sequestration more sustainable in fire-dominated landscapes (Tilman et al. 2000, Rau 2009, Hurteau and North 2009). The value of prescribed burning in maintaining the functionality of grasslands has long been recognized. Prescribed burning can, for example, improve rangeland conditions, forage productivity, and wildlife habitats (Schifres 1980). Many private landowners understand the benefits of prescribed fire but lack the experience or confidence to carry out prescribed burning without technical assistance (Taylor 2005). Furthermore, state and federal agencies (e.g., state natural resource/wildlife departments, NRCS, etc.) often cannot meet the demand for onsite technical assistance required to implement effective prescribed burning at large, regional scales.

In , a viable alternative to state or federal assistance programs has been the development of prescribed burning associations, organized landowner cooperatives that are user owned, controlled and operated (Taylor 2009). Burn associations can significantly reduce landowner risks through increased and shared experience, knowledge and available resources, and can ultimately serve to increase capacity for use of prescribed fire at regional, landscape scales. In the last 10 years, the concept of burning associations has expanded to include 10 cooperatives with over 1,000 landowner members (Figure 1). Some unforeseen challenges to prescribed burning associations includes maintaining communication among cooperatives (i.e., key stakeholder groups, agency personnel), dissemination of timely information (i.e., research, policy, education), and support for training/certification. Our project **purpose** is to build capacity in use of prescribed fire at regional, landscape scales. Specifically, we propose to develop a partnership among state burning associations to increase use of prescribed fire state-wide, and to provide critical support for associations to include timely information (i.e., latest science, policy), an improved communication framework, and support for training needs. Our **approach** includes (1) improved networking via the development of a community-based partnership (i.e., state-wide *Prescribed Fire Alliance*), (2) improved communication and sharing of expertise through use of a *Prescribed Fire Web Portal* and *Online Landowner Handbook*, and (3) training support for state-certification required for practitioners through online web courses and field demonstrations. This approach will serve to address three important barriers in the continued use of prescribed fire in the state: (1) development of state-wide organizational framework for prescribed fire associations, (2) improved education and communication among landowner associations, and (3) increased numbers of certified prescribed fire applicators. Our approach will serve to realize the project's **goal** to increase prescribed fire use through a community-based partnership to include a Community of Practice (CoP), and increased use of web-based technology, particularly for education and training. Ultimately, promoting the use of prescribed burning can serve to maintain and improve grasslands in the Southwest and adapt to climate change in landscapes historically maintained by wildfires.

Innovative Approach.—Burning associations are a proven approach in promoting wide application of prescribed fire (Taylor 2009). As previously mentioned, use of prescribed fire can

serve to make long-term carbon sequestration more sustainable in fire-dominated landscapes (Tilman et al. 2000, Hurteau and North 2009) while improving production agriculture and rangeland sustainability, watershed integrity, wildlife and forest health, and preventing catastrophic wildfires due to excessive fuel loads. Maintaining grasslands in the Southwest with increasing brush encroachment and land fragmentation will require more coordinated use of prescribed fire beyond what burning associations currently may offer. Many burning associations lack capacity, for example, in communication (e.g., web-resources, news/communication tools, etc.), access to prescribed fire expertise, and online training and certification materials. This project is **innovative** in two ways. First, we will capitalize on the proven concept of burning associations and network existing associations state-wide through a proposed *Prescribed Fire Alliance*. Representatives from each of the associations and key state and natural resource agencies will be represented in this community-based partnership. Second, web-based technology will be used to support local burning associations through the increased use of web-based tools (e.g., function to develop association web-pages/contact information, shared calendar, file sharing capabilities, news section, etc.), and access to much needed online training modules. The latter is particularly innovative because we anticipate increasing the number of state-certified prescribed fire applicators through the use of online course material. Currently, landowners need to attend a 5-day state-mandated course. We propose to reduce classroom time with the development of high-quality instructional classroom material delivered online. Ultimately, we anticipate an **institutionalization** of the proven concept of prescribed fire associations state-wide, and the transferability of this model to other states or regions who wish to promote the continued use of prescribed fire.

Project Management and Transferability.—Project PIs have technical expertise and experience ranging from regional and community-based partnerships , experience with burning associations , working with private landowners (e.g., all PIs), and integration of web-based technology in natural resource management and education. Project team experience will ensure the successful implementation of the project with key stakeholders and private landowner groups. We anticipate **transferability** of the project to other states or regions who wish to promote the continued use of prescribed fire. Web-based tools and educational/training materials to be developed in this project would be easily used by other states and organizations or easily adapted for use in specific regions of the country.

b. Project Background

Burning associations have been in existence for the last 10 years . One primary advantage of burning associations is the ability to share resources and expertise, significantly reducing landowner risk and concern in the use of prescribed fire. The capacity for burning associations can be significantly improve; however, through a state-wide network that would increase organizational capacity of burn associations (i.e., a "partnership of partnerships"). Some immediate benefits from such an approach would be the reduction of duplication or redundancy (e.g., landowner information, training material, etc.), shared web-based resources like a calendar (i.e., upcoming training, meetings of interest, landowner field days, etc.), and the ability to create or access web pages and tools supporting individual burning associations. Furthermore, a centralized informational clearinghouse via the proposed *Prescribed Fire Web Portal* with information like an online landowner's handbook or toolkit and online training material for state certification would serve to benefit all burning associations in the state. There is currently no formal structure for burning associations to share information among the various associations at

this time, thus, the concept of a *Prescribed Fire Alliance* would be innovative in capitalizing on the concept of burning associations through the networking of burning associations at a regional, state-wide scale. The concept of a *Prescribed Fire Alliance* and associated training and web-based tools would directly support efforts of the Grazing Lands Conservation Initiative (GLCI), an alliance of organizations established in 1990 that provides technical assistance to privately-owned grazing lands in the region. Phase I of GLCI is to provide increased technical assistance to private landowners. Thus, this project would directly support the top priority of the GLCI Coalition and National GLCI Steering Committee through increased technical assistance to landowners via burn associations to include state-required training required by Department of Agriculture (TDA). This project would also support activities of the Prescribed Burning Board established in 1999 within the TDA. The Prescribed Burning Board (1) sets standards for prescribed burning, (2) develops a comprehensive training curriculum for prescribed burn managers, (3) sets standards for certification, recertification and training of burn managers, (4) establishes minimum education and professional requirements for instructors for the approved curriculum, and (5) sets minimum insurance requirements for prescribed burn managers. As previously mentioned, the proposed CIG project would increase access to training material through the development of online training modules (reducing classroom time from current 5-day course) and an online landowner handbook or "toolkit" via the *Prescribed Fire Web Portal* and Community of Practice.

c. Project Objectives

The project's **goal** is to increase prescribed fire use through a community-based alliance of burning associations, and integration of web-based technology, particularly for education and training. Our **approach** improves (1) networking/partnership, (2) communication, and (3) training/education. We will create a Community of Practice (CoP) serving a community of interest (i.e., prescribed burning associations, private landowners) that will work together to meet the following **objectives**:

1. Create and foster a state-wide *Prescribed Fire Alliance* to expand capacity through information exchange and access to prescribed fire expertise (*Networking/Partnership*).
2. Develop a web-based clearing house or "portal" to include an online association/landowner handbook or "toolkit" (*Communication*).
3. Develop web-based training modules to support burning certification required by state law (*Training/Education*).

This project is **innovative** in two ways. First, we will capitalize on the proven concept of burning associations and network existing associations state-wide through a proposed *Prescribed Fire Alliance*. Representatives from each of the associations and key state and natural resource agencies will be represented in this community-based partnership. Second, web-based technology will be used to support local burning associations through the increased use of web-based tools, and access to much needed online training modules. The latter is particularly innovative because we anticipate increasing the number of state-certified prescribed fire applicators through the use of online course material, effectively reducing classroom time required for state certification.

d. Project Methods

The project team will employ various methods to increase use of prescribed fire state-wide. This approach (i.e., networking/partnership, communication, and training/education) will support a Community of Practice (CoP) serving a community of interest, namely prescribed burning associations and private landowners who are members. Below is a description of methods by objective and approach:

***Objective 1*.—Create and foster a state-wide *Prescribed Fire Alliance* to expand capacity through information exchange and access to prescribe fire expertise (*Networking/Partnership*).**

Burning cooperatives are found across various ecoregions to include forests, rangelands, and high desert (Figure 1). Forming a community-based partnership among the various burning associations can serve to expand capacity through information exchange/communication, networking, and access to prescribed fire expertise found throughout the state. A *Prescribed Fire Alliance* of burning associations with representation from each will be the basis for this network/partnership. An initial partner "kick-off" meeting will be held at the beginning of the project to (1) socialize the concept of a *Prescribed Fire Alliance*, (2) gather endorsement from key leaders of burning associations and agency/organization representatives (e.g., NRCS, TDA, Prescribed Fire Board, GLCI Coalition), and (3) receive specific input in desired web-based tools and training requirements for supporting local burning associations. We envision the development of a Memorandum of Partnership (MOP) to formalize the proposed alliance of burning associations that includes an outline of organizational structure to ensure its long-term sustainability. The initial "kick-off" meeting and subsequent workgroup meetings will provide input into the Alliance's goals, strategic plan, and organizational/communication structure (e.g., charter).

***Objective 2*.—Develop a web-based clearing house or "portal" to include an online association/landowner handbook and "toolkit" (*Communication*).**

Central to the project is the full use of cyber technology to facilitate communication and educational material among the various burning associations. We anticipate accomplishing this objective in two ways. First, we will develop a web-based portal or "clearing house" to share information (e.g., policy, education, research) among the various burning associations and serve as a centralized resource (e.g., www.texasprescribedfire.org) to promote use of prescribed fire. Some initial portal features will include file sharing capabilities, shared calendar/events section, news feed, and support for creating and maintaining local association web pages. These web portal features would facilitate the local management of burning association without requiring programming expertise or web hosting costs. This "one-stop" portal also would include group email function, RSS feeds, and current burning association contact information. Publications, technical documents, and other web resources (e.g., online fire models) will be accessed via a searchable database. These portal features would promote communication and networking among burning associations. Finally, we envision the development of a state-wide database to track the efforts of burning associations (e.g., number of acres burned, number of producers, etc.) through a centralized reporting framework. One significant value of the database tool includes collecting information useful in justifying use of prescribed fire to county commissioner courts. The latter is responsible for placing "burn bans" within individual counties that limits the use of prescribed fire. Comparing numbers of prescribed fire and wildfires by county, for example, would illustrate the value of prescribed fires in reducing wildfire risks to rural landowners and county decision makers. Such information is currently not collected. Second, we will develop an online landowner handbook and "toolkit" that will be a major feature of the proposed *Prescribed Fire Portal*. A recent survey conducted by AgriLife Extension identified a need for an "association/landowner handbook", a manual that describes state and local policies that regulates use of prescribed fire, basic information about prescribed fire and its safe application, and a justification for its use in managing natural resources in the state. This handbook will be developed in coordination with *Prescribed Fire Alliance* partners and maintained through the use of the portal as a "living" document.

***Objective 3*.—Develop web-based training modules to support burning certification required by state law (*Training/Education*).**

HB 2599 guarantees private landowners the right to burn their property through a prescribed burn manager certification system administered by the Department of Agriculture. The certification program is managed under the direction of the Prescribed Burning Board. There are currently 24 TDA-certified private burn managers in the state (TDA 2010). In order to burn legally, private landowners are required to obtain state-certification to include (1) formal classwork, (2) field experience, and (3) proof of liability insurance. The cost for the 5-day course is $500. Our project would increase landowner access to training through development of (1) online training modules and (2) field experiences. First, we anticipate the development of high-quality video instruction comprised of lectures and short exercises deliver from prescribed fire experts in the state. Currently, approximately 80% of the curriculum is classroom time. We anticipate use of online training modules would significantly reduce landowner costs (i.e., reduced course fees, savings in lodging and travel not included in fee, lost work time, etc.) through the use of web-based instruction. Modules comprised of reading materials, demonstration videos, and short lectures would prepare students for comprehensive exam given the day of field demonstration. The one-day field demonstration would provide students with "hands-on" training in addition to the official administration of the exam. Proposed web-based training modules would be reviewed and approved by the Prescribed Burning Board. Second, we will host 4 field demonstrations to interested landowners on the benefits and process in the application of prescribed fire. Representatives from burn associations would use these field days to increase membership into their respective burn associations.

e. Location and Size of Project

The resources described in this proposal will be accessible to landowners, burning association leadership, and other partners statewide. Training and hands-on workshops will initially target the central where the highest number of
requests for assistance and training occurs in addition to the greatest number of burning associations (see Figure 1).

f. Producer Participation

Participation in the program will be open to all interested parties. Individuals in service areas for active prescribed burn associations and in residing adjacent counties will be a targeted audience. This program will seek to strengthen and grow existing associations and promote awareness at the county level for the benefit of prescribed burning in natural resource management.

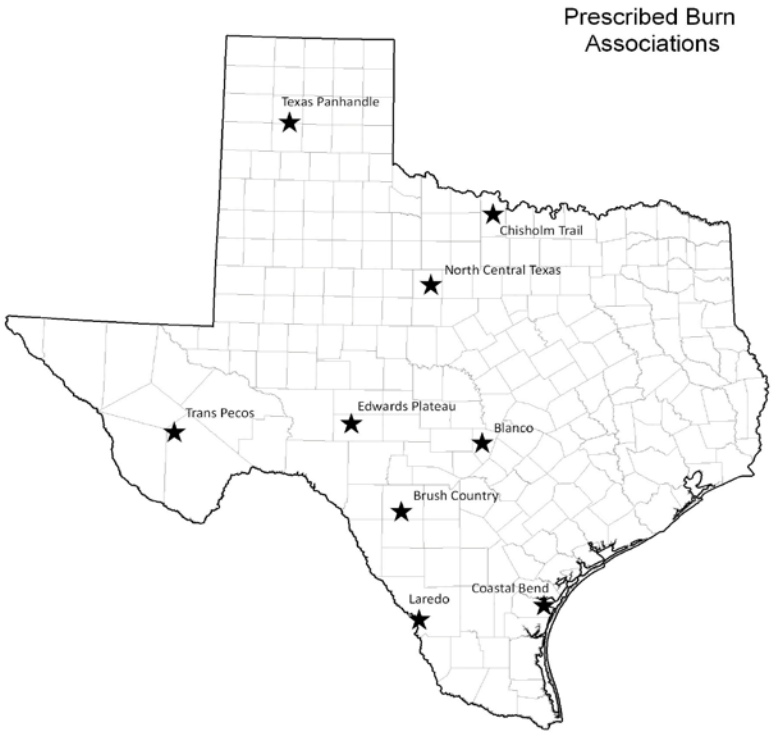

Figure 1. Project location to promote increased use of prescribed fire through a state-wide community-based partnership of Prescribed Burn Associations.

g. Project Action Plan and Timeline

Table 1. Project action plan and timeline by project objective, 2010.

	Year 1				Year 2			
Actions/Milestones	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Objective 1 – Create and foster a state-wide Prescribed Fire Alliance to expand capacity through information exchange and access to prescribed fire expertise.								
▪ Host "kick-off" meeting for Prescribed Fire Alliance	■							
▪ Draft and approve Memorandum of Partnership (MOP)		■						
▪ Draft and approve Strategic Plan			■	■				
▪ Draft and approve Alliance Charter				■	■			
▪ Host annual meeting for Alliance					■			
Objective 2 –Develop a web-based clearing house or "portal" to include an online association/landowner handbook and"toolkit".								
▪ Develop and launch Prescribed Fire Web Portal	■	■	■	■				
▪ Develop and implement prescribed fire tracking database			■	■	■			
▪ Draft and launch landowner handbook and associated "toolkit"	■	■	■	■	■	■		
Objective 3 – Develop web-based training modules to support burning certification required by								

state law.								
▪ Determine approved course material to offer online (with TDA)								
▪ Develop certification online courses and associated curriculum materials								
▪ Host landowner field day (4 to be hosted in various regions statewide)								
▪ Offer online courses to landowners and association members								
Program Management								
▪ Project evaluation								
▪ Semi-Annual Reporting								
▪ Annual/Final Reporting								
▪ Project Team meetings								

h. Project Management

Extension Service will serve as the lead organization for project management, landowner outreach and identification, project evaluation, and reporting. Dr. is Associate Director of the Institute of Renewable Natural Resources and Associate Professor in the Department of Wildlife and Fisheries Sciences at University. His research interests are in applied wildlife habitat management, population ecology, and military land management. Dr. will be responsible for overall project oversight to include developing proposed online teaching material. He will dedicate approximately 15% of his time towards the project. His current teaching responsibilities include several distance education courses in support of a unique graduate degree program in military land sustainability offered at University.

Mr. is an Extension Program Specialist with the Institute of Renewable Natural Resources, and has many years of experience in natural resource research and management. Mr. has worked for Extension for 12 years and has extensive experience with program outreach and stakeholder engagement. His project contributions include organizing and hosting meetings relative to the establishment of the Prescribed Fire Alliance and proposed landowner field days or demonstrations. Mr. has led a NRCS funded certification program to certify landowners and contractors that would be working on EQIP (Farm Bill) projects in the vicinity of endangered species habitat. A total of 428 people were certified through this effort.

Dr. is a Regents Fellow and Professor with Research and has 39-years of experience in range management and prescribed fire. His project contributions will include working with leadership of the Prescribed Burn Associations, providing course material to develop into the online modules, and lecturing in some of the proposed course modules. Dr. expertise includes the use of prescribed fire in grassland systems, establishment of prescribed burn associations across the Great Plains States (i.e., from Kingsville, Texas to South Dakota, including Oklahoma, Colorado, Kansas, and Nebraska), and conducting prescribed burn schools throughout Texas as well as other states. Dr. is Vice-Chairman of the Prescribed Burning Board and served on the educational committee, which developed the official training curriculum for Certified Prescribed Burn Managers.

Ms. is a Geospatial Extension Specialist with the Institute of Renewable Natural resources, and has 20 years of experience in the application of geospatial

technologies to natural resource problem solving. Mrs. has worked for Extension for 11 years and has extensive experience with program outreach and stakeholder engagement. Mrs. is involved with two national initiatives that focus on the use of web-based tools and technologies to enhance private lands: National eXtension Initiative and Content Leader of the Geospatial Technology resource area (technology). Mrs. will assist in the development of the online landowner's handbook and training media for online courses.

In addition to the above project team members, a Project Steering Committee will be created to provide guidance regarding program delivery and project outcomes. The Committee will be comprised of the Extension Service project coordinators, NRCS personnel, Parks and Wildlife Department personnel, representatives of GLCI, and others as deemed appropriate.

i. Benefits or Results Expected and Transferability

Project outputs for this project include (1) a state-wide *Prescribed Fire Alliance* that networks the various prescribed burning associations and expands capacity for use of prescribed fire, (2) organizational framework for proposed Alliance (i.e., charter, strategic plan, etc.), (3) a web portal to include an online handbook and associated toolkit for landowners, and (4) development of training modules to facilitation required state-certification for prescribed burning application. Semi-annual reports will chronicle performance items specific to the project indicating progress on deliverables. Supplemental narratives will be given to explain and support payment requests. We will attend at least 1 CIG showcase or NRCS event and compile all reports and deliverables within a final report. Short, medium and long term benefits of the project are outlined in the attached logic model (see Figure 2). We envision our project can serve as a national model to promote the increased use of prescribed fire through burn associations to ultimately address land management issues related to climate change.

j. Project Evaluation

Success of the project will be evaluated by a team represented by the Extension Service, GLCI, NRCS, TPWD, and TDA. Workshop evaluation will be used to test pre- and post knowledge gained about aspects and use of prescribed fire. Online webinars and training will include evaluation developed through Moodle courses and Survey Monkey. Overall participation in state certification for certified prescribed burn managers will be used as an indicator of success. Additionally, survey instruments will be used to determine the overall quality and client satisfaction with the educational programs and be used to constantly improve the overall quality and effectiveness of the program. Finally, proposed state-wide prescribed fire database will serve to monitor the increased use of prescribed fire.

k. Environmental Information and Assessment of Environmental Impacts

During the project implementation, at least 4 prescribed burns will be conducted at regional prescribed burn trainings. As with any prescribed fire the potential for impacts to air quality, water quality, and wildfire exist. All proposed prescribed fires; however, will have a written fire plan prepared by a certified prescribed burn specialist. Burning will take place within plan guidelines. Additionally, the overall goal of this project is to increase the use of prescribed burning landowners. We anticipate this to be beneficial long-term, particularly in adapting to climate change and increasing the long-term sustainability of carbon storage through reduced fuel loads decreased fire intensity.

Sample

SITUATION: Provide training and resources to farmers and ranchers, and existing prescribed burn associations to enhance their knowledge and participation in natural resouce management on private lands to benefit rangeland health and watershed integrity.

PRIORITIES: **Increase participation in pescribed burning and prescribed burn associations and build a network for existing associations to provide importantant resource information, create new partnerships and collaborations .**

PROGRAM ACTION- LOGIC MODEL

Inputs	Outputs		Outcomes		
	Activities	Participation	Short	Medium	Long
Faculty and Staff -	Conduct workshops on prescribed burning	landowners, land managers, county officials, VFDs	Inform farmers and ranchers on available information and resources for prescribed burning	Increse the number of landowners conducting prescribed burns and inform county officials about the importance of prescribed burning	Increse the number of certified prescribed burn managers in the state (both commercial and private)
	Create online courses for independent learning				
	Create, identify, and distribute relevant information on prescribed burning	landowners, land managers, county officials, VFDs		Increase the use of prescribed burning as a management practice on private lands	Impact the long-term sustainability of agricultural operations through the use of prescribed burning
Technology - Internet applications and portals			Collect and organize relevant information that assists land owners in prescribed burning		
	Work with local media	producers	Introduce landowners to local partners and assistance	Create foundation of collaboration among landowners and partners for mutual conservation benefits	Create network among prescribed burn associations that will facilitate training, resources, and stakeholder involvment
Partners: NRCS, Academia, TDA, TPWD, NGOs, Private Sector	Promote and organize local events	producers			