Texas State Soil and Water Conservation Board
Clean Water Act §319(h) Nonpoint Source Grant Program
FY 2012 Workplan 12-06

SUMMARY PAGE	
Title of Project	Statewide Delivery of Lone Star Healthy Streams Feral Hog Component and Providing Technical Assistance on Feral Hog Management in Priority Watersheds
Project Goals	• Facilitate statewide implementation of feral hog damage management education through watershed-based group trainings. • Promote healthy watersheds by increasing citizen awareness, understanding, and knowledge about the biology, impacts and economics, methods of removal, and laws and regulations concerning the management of feral hogs. • Enhance watershed education across the State as it relates to the reduction of feral hog damage in Texas. • Empower individuals and communities to find creative solutions to improve watershed health by reducing populations of the non-native invasive feral hog.
Project Tasks	(1) Project Administration; (2) Coordinate and deliver watershed-based feral hog education trainings in selected watersheds throughout Texas; (3) Evaluate the effectiveness of the feral hog education trainings; (4) Distribute and manage computer-based training
Measures of Success	• Deliver a minimum of 24 watershed-based feral hog trainings in selected watersheds • Numbers of citizens participating in watershed-based feral hog trainings • Increased knowledge and plans for practice adoption of feral hog population reduction techniques, as measured by retrospective post-tests.
Project Type	Implementation ( ); Education (X); Planning ( ); Assessment ( ); Groundwater ( )

Status of Waterbody on *2010 Texas Integrated Report*	Segment ID:	Parameter	Category
	1103	Bacteria	5a
		Depressed DO	5a
	1103A	Bacteria	5a
	1103B	Bacteria	5a
	1103C	Bacteria	5a
		Depressed DO	5c
	1103D	Bacteria	5c
	1103E	Bacteria	5b
	1104	Bacteria	5a
		Depressed DO	5c
	1804A	Bacteria	5c
	1428C	Bacteria	4a
	1004E	Bacteria	5a
	1008	Bacteria	5a
		Depressed DO	5b
	1008H	Bacteria	5a
	1009	Bacteria	5a
	1009C	Bacteria	5a
	1009D	Bacteria	5a
	1009E	Bacteria	5a
	1010	Bacteria	5a
	1011	Bacteria	5a
	1810	Bacteria	4b
	1217B	Depressed DO	5c
	1217D	Depressed DO	5b
	1221	Bacteria	5b
	1221A	Depressed DO	5c
		Bacteria	5b
	1221B	Bacteria	5b
	1221D	Bacteria	5b
	1221F	Bacteria	5b
	1901	Bacteria	4a
	1301	Bacteria	5c
	1302	Bacteria	5b
	1302A	Bacteria	5b
	1302B	Bacteria	5b
		Depressed DO	5c
	1245	Depressed DO	5a
	1245C	Bacteria	5b
	1245D	Bacteria	5b
	1245F	Bacteria	5b
	1245I	Bacteria	5b

Project Location (Statewide or Watershed and County)	Bastrop Bayou Watershed in Brazoria County; Dickinson Bayou in Brazoria and Galveston Counties; Geronimo Creek Watershed in Guadalupe and Comal Counties; Gilleland Creek in Travis County; Lake Granbury Watershed in Hood, Parker, Palo Pinto, Ranger, Erath, and Jack Counties; Lake Houston Area Watersheds in Grimes, Harris, Liberty, Montgomery, San Jacinto, Walker, and Waller Counties; Lampasas River Watershed in Bell, Burnet, Coryell, Hamilton, Lampasas, Mills, and Williamson Counties; Leon River Watershed below Proctor Lake and above Belton Lake in Comanche, Hamilton, Erath, Coryell, Mills and Bell Counties; Lower San Antonio River Watershed in DeWitt, Goliad, Guadalupe, Karnes, Refugio, Victoria, and Wilson Counties; Plum Creek Watershed in Caldwell, Hays, and Travis Counties; San Bernard River Watershed in Austin, Colorado, Wharton, Fort Bend, and Brazoria Counties; Upper Oyster Creek in Fort Bend County					
Key Project Activities	Hire Staff (X); Surface Water Quality Monitoring ( ); Technical Assistance ( ); Education (X); Implementation ( ); BMP Effectiveness Monitoring ( ); Demonstration ( ); Planning ( ); Modeling ( ); Bacterial Source Tracking ( ); Other ( )					
Texas NPS Management Program Elements	• Element One – LTGs 1, 2, 3, 4 • Element One – STGs 3A, 3B, 3F • Elements Two & Three					
Project Costs	Federal	$491,227	Non-Federal	$312,768	Total	$803,995
Project Management	• Texas AgriLife Extension Service					
Project Period	November 1, 2012 – October 31, 2014					

Part I – Applicant Information

Applicant							
Project Lead	James C. Cathey						
Title	Associate Professor and Extension Wildlife Specialist						
Organization	Texas AgriLife Extension Service						
E-mail Address	jccathey@tamu.edu						
Street Address	Wildlife and Fisheries Sciences 2258TAMU						
City	College Station	County	Brazos	State	Texas	Zip Code	77843
Telephone Number	979-845-7471			Fax Number	979-845-7103		

Project Partners	
Names	Roles & Responsibilities
Texas State Soil and Water Conservation Board (TSSWCB)	Provide state oversight and management of all project activities and ensure coordination of activities with related projects and TCEQ.
Texas AgriLife Extension Service – Department of Wildlife and Fisheries Sciences (Extension)	Provide overall project management including project coordination, submission of quarterly and final reports, delivery of feral hog management education workshops, distribution and support of computer-based training, and evaluation of program effectiveness.

Part II – Project Information

Project Type							
Surface Water	X	Groundwater					
Does the project implement recommendations made in (a) a completed WPP, (b) an adopted TMDL, (c) an approved I-Plan, or (d) a Comprehensive Conservation and Management Plan developed under CWA §320?				Yes	X	No	
If yes, identify the document.	Draft Bastrop Bayou Watershed Protection Plan; Eight Total Maximum Daily Loads for Indicator Bacteria in Dickinson Bayou and Three Tidal Tributaries; Draft Geronimo and Alligator Creeks Watershed Protection Plan; Implementation Plan for One Total Maximum Daily Load for Bacteria in Gilleland Creek; Lake Granbury Watershed Protection Plan; Fifteen TMDLs for Indicator Bacteria in Watersheds of the Lake Houston Area; Watershed Protection Plan for the Leon River Below Proctor Lake and Above Belton Lake, One Total Maximum Daily Load for Bacteria in the Lower San Antonio River; Plum Creek Watershed Protection Plan; San Bernard River Watershed Protection Plan; One TMDL for Bacteria in Upper Oyster Creek						

If yes, identify the agency/group that developed and/or approved the document.	Bastrop Bayou Stakeholder Group facilitated by Houston-Galveston Area Council, Galveston Bay Estuary Program and TCEQ; TCEQ, University of Houston, and CDM; The Geronimo and Alligator Creeks Watershed Partnership facilitated by GBRA, Texas AgriLife Extension Service and TSSWCB; TCEQ and the Lower Colorado River Authority; The Lake Granbury Watershed Protection Plan Stakeholders Committee facilitated by the Brazos River Authority and TCEQ; TCEQ and James Miertschin & Associates, Inc.; Brazos River Authority; TCEQ and James Miertschin & Associates, Inc.; Plum Creek Watershed Partnership facilitated by Texas AgriLife Extension Service and TSSWCB; Houston-Galveston Area Council and TCEQ; TCEQ and Texas Institute of Applied Environmental Research	Year Developed	2011; 2012, 2012, 2007, 2011, 2011; 2011; 2008; 2008; 2011; 2007

Watershed Information				
Watershed Name(s)	Hydrologic Unit Code (12Digit)	Segment ID	305(b) Category	Size (Acres)
Bastrop Bayou Tidal	120402050400	1105	2	188,965
Dickinson Bayou	120402040200	1103	5a	63,287
Geronimo Creek (including its tributary, Alligator Creek)	121002020110, 121002020111	1804A	5c	44,152
Gilleland Creek	120903010106	1428C	4a	52,866
Lake Granbury	120602010601 – 0608, 120602010701 – 0706, 120602010801 – 120602010809, 120602010901 – 120602010907, 120602011001 – 120602011004, 120602011101 – 120602011110, 120602011201 – 120602011208	1205	2	1,335,138
Stewarts Creek	120401010401	1004E	5a	21,051
Spring Creek	120401020201, 120401020205, 120401020209, 120401020212, 120401020213	1008	5a, 5b	100,148
Willow Creek	120401020210	1008H	5a	35,310

Cypress Creek	120401020103, 120401020104, 120401020106, 120401020107	1009	5a	24,299
Faulkey Gully	120401020106	1009C	5a	35,082
Spring Gully	120401020106	1009D	5a	35,082
Little Cypress Creek	120401020105	1009E	5a	34,687
Caney Creek	120401030101, 120401030102, 120401030104, 120401030105, 120401030110	1010	5a	114,773
Peach Creek	120401030106 – 120401030109	1011	5a	308,922
Lampasas River (Lampasas River above Stillhouse Hollow Lake, Rocky Creek, Sulphur Creek, Simms Creek)	120702030101 – 120702030509	1217 1217A 1217B 1217C	5c 2 2 2	839,800
Leon River below Proctor Lake and above Belton Lake	120702010501 – 120702010509, 120702010601 – 120702010605, 120702010701 – 120702010705, 120702010801 – 120702010806, 120702010901 – 120702010908, 120702011002	1221	5a	871,488
Lower San Antonio River	121003030202, 121003030205, 121003030206, 121003030403, 121003030404, 121003030501, 121003030503, 121003030505, 121003030604 – 121003030608, 121003040405	1901	4a	776,863

Plum Creek	110901050702, 110901050703, 111002030102, 111301050208, 111302090204, 120100040204, 120301010104, 120500030306, 120601020401, 120702010804, 120702010805, 120800020403, 121002030401 – 121002030403	1810	4b	288,240
San Bernard River	120904010101, 120904010102, 120904010104, 120904010109, 120904010205, 120904010207, 120904010302, 120904010304 – 120904010306, 120904010308	1301 1302 1302A 1302B	5c 5a 5c 5c	672,000
Upper Oyster Creek	120402050100, 120402050200, 120701040403	1245	5a	65,649

Water Quality Impairment

Describe all known causes (pollutants of concern) of water quality impairments or concerns from any of the following sources: *2010 Texas Integrated Report*, Clean Rivers Program Basin Summary/Highlights Reports or other documented sources.

Segment ID	Body Name	Impairment	Code
1103	Dickinson Bayou Tidal	Bacteria	5a
		Depressed DO	5a
1103A	Bensons Bayou	Bacteria	5a
1103B	Bordens Gully	Bacteria	5a
1103C	Geisler Bayou	Bacteria	5a
		Depressed DO	5c
1103D	Gum Bayou	Bacteria	5c
1103E	Cedar Creek	Bacteria	5b
1104	Dickinson Bayou Above Tidal	Bacteria	5a
		Depressed DO	5c
1804A	Geronimo Creek	Bacteria	5c
1428C	Gilleland Creek	Bacteria	4a
1004E	Stewarts Creek	Bacteria	5a
1008	Spring Creek	Bacteria	5a
		Depressed DO	5b
1008H	Willow Creek	Bacteria	5a
1009	Cypress Creek	Bacteria	5a
1009C	Faulkey Gully	Bacteria	5a
1009D	Spring Gully	Bacteria	5a
1009E	Little Cypress Creek	Bacteria	5a
1010	Caney Creek	Bacteria	5a
1011	Peach Creek	Bacteria	5a
1810	Plum Creek	Bacteria	4b
1217B	Sulphur Creek	Depressed DO	5c
1217D	North Fork Rocky Creek	Depressed DO	5b
1221	Leon River below Proctor Lake	Bacteria	5b
1221A	Resley Creek	Depressed DO	5c
		Bacteria	5b
1221B	South Leon River	Bacteria	5b
1221D	Indian Creek	Bacteria	5b
1221F	Walnut Creek	Bacteria	5b
1901	Lower San Antonio River	Bacteria	4a
1301	San Bernard River Tidal	Bacteria	5c
1302	San Bernard River Above Tidal	Bacteria	5b
1302A	Gum Tree Branch	Bacteria	5b
1302B	West Bernard Creek	Bacteria	5b
		Depressed DO	5c
1245	Upper Oyster Creek	Depressed DO	5a
1245C	Bullhead Bayou	Bacteria	5b
1245D	Unnameed Tributary of Bullhead Bayou	Bacteria	5b
1245F	Alcorn Bayou	Bacteria	5b
1245I	Steep Bank Creek	Bacteria	5b
Water Quality Concerns			
1105	Bastrop Bayou Tidal	Bacteria	CN

		Depressed DO	CS
1105A	Flores Bayou	Depressed DO	CS
1105B	Austin Bayou Tidal	Depressed DO	CN
1105C	Austin Bayou Above Tidal	Depressed DO	CS
1105E	Brushy Bayou	Depressed DO	CS
1103	Dickinson Bayou Tidal	Chlorophyll-a	CS
		Depressed DO	CS
1103B	Bordens Gulley	Depressed DO	CS
1103C	Geisler Bayou	Depressed DO	CS
1103D	Gum Bayou	Bacteria	CN
1103E	Cedar Creek	Depressed DO	CS
1104	Dickinson Bayou Above Tidal	Depressed DO	CS
1804A	Geronimo Creek	Nitrate	CS
1428C	Gilleland Creek	Bacteria	CN
		Nitrate	CS
		Orthophosphorus	CS
1008	Spring Creek	Depressed DO	CS
		Nitrate	CS
		Orthophosphorus	CS
		Total phosphorus	CS
1008H	Willow Creek	Nitrate	CS
		Orthophosphorus	CS
		Total phosphorus	CS
1009	Cypress Creek	Nitrate	CS
		Orthophosphorus	CS
		Total phosphorus	CS
1009C	Faulkey Gully	Nitrate	CS
		Orthophosphorus	CS
		Total phosphorus	CS
1009D	Spring Gully	Nitrate	CS
		Orthophosphorus	CS
		Total phosphorus	CS
1009E	Little Cypress Creek	Nitrate	CS
		Orthophosphorus	CS
		Total phosphorus	CS
1011	Peach Creek	Bacteria	CN
1217B	Sulphur Creek	Depressed DO	CS
1221	Leon River Below Proctor lake	Chlorophyll-a	CS
		Depressed DO	CS
1221A	Resley Creek	Chlorophyll-a	CS
		Nitrate	CS
		Bacteria	CN
		Orthophosphorus	CS
1221B	South Leon River	Depressed DO	CS
1221D	Indian Creek	Depressed DO	CN
		Nitrate	CS
		Orthophosphorus	CS
1205	Lake Granbury	Chlorophyll-a	CS
1901	Lower San Antonio River	Bacteria	CN
		Chlorophyll-a	CS

		Nitrate	CS
		Orthophosphorus	CS
		Total phosphorus	CS
1810	Plum Creek	Depressed DO	CS
		Nitrate	CS
		Orthophosphorus	CS
		Total phosphorus	CS
1301	San Bernard River Tidal	Chlorophyll-a	CS
1302	San Bernard River Above Tidal	Depressed DO	CS
1302A	Gum Tree Branch	Bacteria	CN
		Depressed DO	CS
1302B	West Bernard Creek	Depressed DO	CS
1245	Upper Oyster Creek	Chlorophyll-a	CS
		Depressed DO	CS
		Nitrate	CS
		Orthophosphorus	CS
1245A	Red Gully	Bacteria	CN
		Nitrate	CS
		Orthophosphorus	CS
1245E	Flewellen Creek	Bacteria	CN
1245F	Alcorn Bayou	Nitrate	CS
		Orthophosphorus	CS
1245I	Steep Bank Creek	Orthophosphorus	CS
1245J	Stafford Run	Bacteria	CN
Special Interest			
1105	Bastrop Bayou Tidal	Bacteria	WAP
1205	Lake Granbury	Bacteria	WAP
1217	Lampasas River Above Stillhouse Hollow Lake	Bacteria	WAP

Project Narrative

Problem/Need Statement

All watersheds in Texas are threatened by nonpoint source (NPS) pollution which is detrimental to the valuable water resources of the state. To help combat this threat, federal and state water resource management agencies have adopted the Watershed Approach for managing water quality. One vital component of this approach involves engaging local stakeholders to become actively involved in planning and implementing water resource management and protection programs in their watershed. Many watershed protection plans (WPP) and Total Maximum Daily Loads (TMDLs) being developed now call for the removal of feral hogs to reduce their negative effects on water quality (e.g., Plum Creek, Leon River). Providing education to landowners about effective management strategies is crucial to the success of reducing feral hog populations.

Feral hogs are quickly emerging as, and soon will be, one of the greatest wildlife damage management challenges in the United States. Feral hogs have established themselves across Texas and pose a variety of challenges, including agricultural damage, predation, transmittal of disease and parasites, and environmental damage to both urban and rural environments. Between 1900 and 1990, the national population size and distribution of these animals in the United States had been relatively constant, including between 500,000 to 2 million animals found in 18 to 21 states. Today, the National Feral Swine Mapping System program currently reports 37 states with established populations of wild pigs. Nationwide, the population is now estimated at more than 4 million animals with an estimated 2.6 million head in Texas alone, making them one of the most abundant large invasive animal species to be found in the United States at present.

The yearly crop damages and control costs were reported to be >$1.5 billion across the United States, annually (Pimental, 2007). Feral hogs have caused a high level of economic, biologic, and natural resource damage as their numbers rapidly expand and their impact is now considered a national threat. This non-native invasive species is a liability to Texas waterways and ecosystems. Effects of their activities impacting water resources include increased sediments loads, algae blooms, oxygen depletion, and bank erosion. In areas where high numbers of hogs are present or where animals spend a significant portion of their time in and near streams, they can be a potentially major contributor of bacteria and nutrients, which can substantially impact water quality. In addition to water quality issue, destruction of habitat for native wildlife and the predation of wildlife is a concern keeping ecosystems intact.

Evidence of feral hog activity and damage is observed frequently in many watersheds. Their local population and range appear to be expanding, and analyses demonstrate these animals are likely a source of NPS pollution to streams. Further, financial losses to the agricultural community in Texas are estimated at $52 million on an annual basis. Landowners spend an estimated $7 million annually on their control and/or correction of damage. However, these values are far underestimated, as damage to suburban areas was not included in the assessment. Likewise, monetary effects of problems associated with erosion, nutrient cycling, and water quality are just now being assessed by researchers. Additionally, it is clear that feral hogs have the potential to contribute *E.coli*, some of which could pathogenic, that further degrade water quality but more importantly contribute to current bacteria impairments in Texas streams.

Through TSSWCB project 08-07, *Implementing Agriculture Nonpoint Source Components of the Plum Creek Watershed Protection Plan*, feral hogs gained considerable attention in the planning phase, resulting in an education campaign to describe techniques used by the public for feral hog removal. A full time Extension Assistant was hired to spearhead educational efforts in Travis, Hays, and Caldwell counties. Education outlets took several forms including: 56 one-on-one technical guidance site visits; 25 face-to-face community presentations with 3,301 attendees; development of web-based reporting tools to gather information on number of feral hog sightings, hogs removed, and methods of capture; a project description tri-fold pamphlet; 10 news releases with an audience considered to be several hundred thousand people; 12 hardcopy peer-edited articles, 7 of which were translated to Spanish; over 11,115 combined internet downloads/reads of 12 peer-edited articles; 13 internet web-videos viewed over 83,000 times; 2 voice-over presentations; 2 radio interviews having a 98 county-area broadcast with the potential to be heard by 6.5 million people.

Public education and outreach regarding feral hog management measures has been successfully implemented in the Plum

Creek WPP and through additional programming of the Texas AgriLife Extension Service. This agency and specifically the Wildlife and Fisheries Extension Unit provides quality, relevant outreach and continuing education programs and services to the people of Texas and the demand for information related to the management of feral hogs is high among many clientele groups in Texas. However, funds to continue these programs are nearing their end or have been greatly diminished.

Through TSSWCB project 09-06, *Development of a Synergistic, Comprehensive Statewide Lone Star Healthy Streams Program*, many of the feral hog educational resources developed for the Plum Creek Watershed have been incorporated into the Lone Star Healthy Streams (LSHS) Program. The goal of the LSHS Program is the protection of Texas waterways from bacterial contamination originating from livestock operations and feral hogs. To achieve this goal, LSHS's objective is the education of Texas farmers, ranchers, and landowners about proper grazing, feral hog management, and riparian area protection to reduce the levels of bacterial contamination in streams, rivers, and other waterbodies. The Program's major goal is the protection of Texas waterways from bacterial contamination originating from beef cattle, dairy cattle, horses, poultry, and feral hogs. The framework for LSHS is five resource manuals that focus on bacterial runoff management for beef cattle, dairy cattle, horses, poultry, and feral hogs.

Through enhanced education regarding riparian protection and vegetation management on grazing lands, LSHS will further protect Texas waterways from sediment, nutrient, and pesticide runoff with the concomitant loss of water and topsoil. LSHS is the state's primary coordinated and comprehensive educational program to address NPS pollution and water quality impacts from livestock operations and feral hogs. This project will deliver the feral hog component of the LSHS Program in priority watersheds.

In the last 5 years, the Wildlife and Fisheries Extension Unit's outreach and educational efforts relative to feral hog damage abatement were delivered to the public by County Extension Agents at the county, multi-county, regional and state levels with the support of Extension Wildlife Specialists and Associates via direct contact (i.e., phone, e-mail, publications, one-on-one), mass media, group meetings as applied research/result demonstrations. The return on outreach education's benefit/cost ratio was 22.63 : 1.00 or $22.63 return per $1.00 invested.

Based on evaluations conducted statewide program participants reported damage in the following categories: pastures-75%; fences, water troughs or other improvements-38%; owner/employee time-40%; commodity crops-29%; loss of hunting lease value, wildlife food plots/feeders-23%; wetlands-23%; loss of land value-23%; equipment/vehicles-21%; specialty crops-16%; livestock-11%; stored commodities-5%; and personal injuries-3%.

Increases in knowledge among program participants reveled the following on specific subjects (before vs. after a program) included: feral hog biology-75%; legal control options-69%; efficient trap/bait techniques-69%; types/extent of hog damage-47%. Ninety-eight percent of respondents increased their general knowledge of feral hogs and their control.

Program evaluations revealed the following practice adoptions by percentage: use larger traps-56%; pre-bait traps to encourage consistent feral swine visits-51%; scout for feral swine-49%; use baits with scent appeal-40%; market trapped feral swine to offset economic impacts-39%; set traps whenever fresh sign appears-37%; vary/change baits used in traps at different locations-34%; and use protective eyewear/gloves during field dressing as a disease precaution-16%.

Feral hog damage management is an important educational process in Texas and our past efforts show a track record of productivity and high return on the dollar invested. This project will initiate statewide implementation, in targeted watersheds with bacteria impairments and WPPs/TMDLs, of the feral hog educational program to support and enhance current and future watershed management and protection efforts by watershed partnerships, agencies and natural resource organizations in Texas.

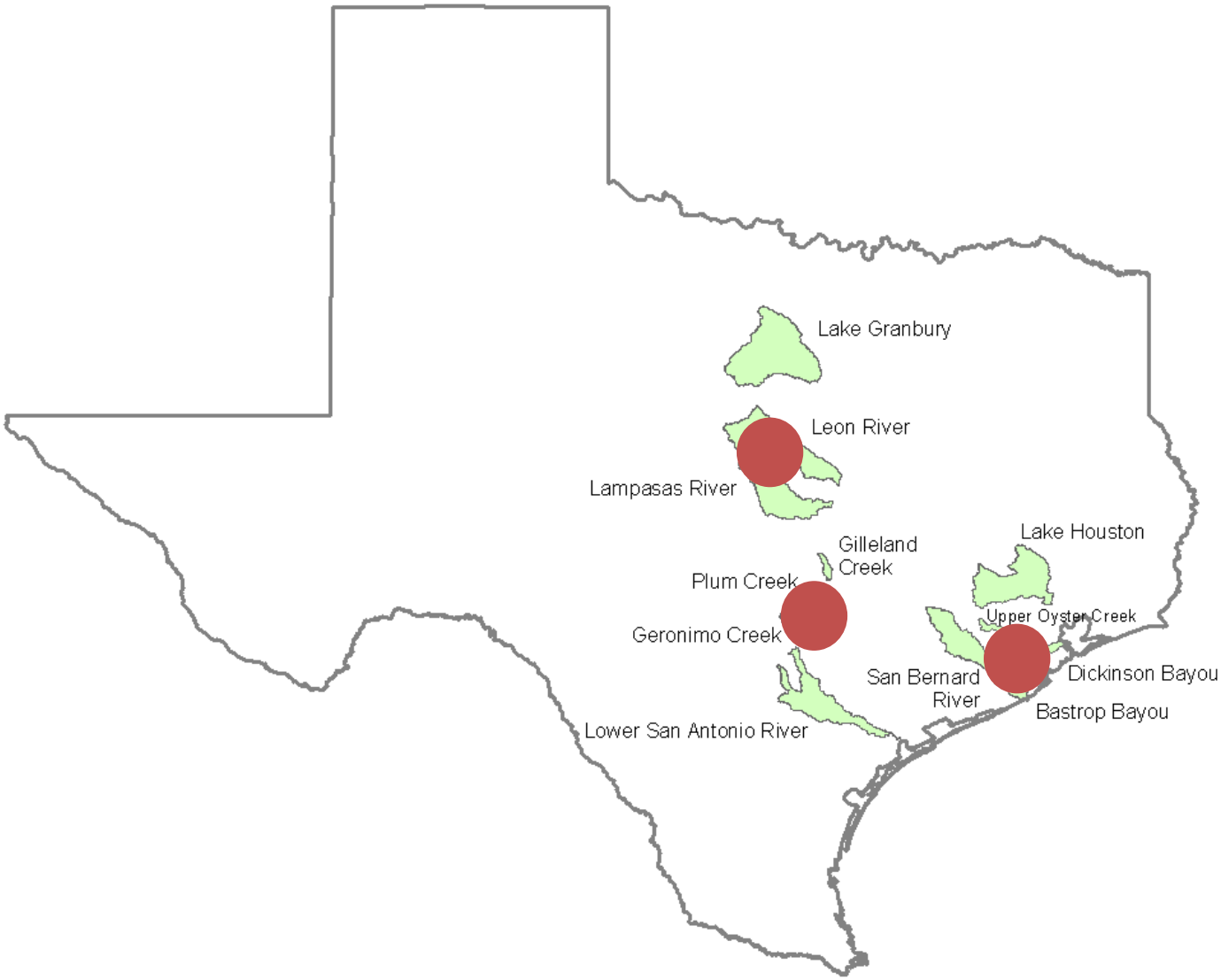
Project Narrative

General Project Description (Include Project Location Map)

This project will initiate statewide implementation of the feral hog management education program by conducting watershed-based trainings in selected watersheds. Priority watersheds will be selected in collaboration with TSSWCB and primarily represent those developing or in implementation phases of WPPs or TMDLs. Other watersheds may be selected based on need and in response to collaborations with other groups and organizations, including river authorities, SWCDs, local citizen groups/watershed associations, etc. Watersheds will be selected consistent with the State's implementation of the *Texas NPS Management Program* and specific CWA §319(h)-funded projects.

Priority watersheds selected for feral hog education trainings will be identified for water quality impairments resulting from high feral hog activity. Watershed-based feral hog education trainings will be tailored as much as possible to the watershed to convey biology, best management practices removal techniques and laws and regulations associated with managing populations of this invasive species. Priority watersheds will include, but are not limited to, Plum Creek, Leon River, Geronimo Creek, Dickinson Bayou, Gilleland Creek, Lake Granbury, Lower San Antonio River, Bastrop Bayou, Upper Oyster Creek, Lampasas River, San Bernard River and the Bacteria Implementation Group (BIG).

Watershed-Based Feral Hog Educational Trainings. The watershed-based trainings will be delivered as 1-day, 5-hour training events or a 1-hour presentation at county Extension programs, focusing on biology, removal techniques, laws and regulations associated with feral hog management that will help improve watershed impairments. Extension will work in concert with state organizations and County Extension Agents to select and schedule locations for the watershed-based feral hog education training events. Priority will be given to locations currently involved in WPP or TMDL processes and those planning future watershed efforts. Preliminary focal areas shown generally by the red circles below include: 1) Plum, Geronimo, Gilleland, Lower San Antonio River, 2) Leon, Lampasas, Granbury, and 3) Lake Houston, Dickinson, Bastrop Bayou, Upper Oyster, and San Bernard. A minimum of six, 4-hour workshops and six, 1-hour county programs will be conducted annually in selected watersheds. Continuing Education Unit credits, as approved by the Texas Department of Agriculture, will be made available to participants who hold Pesticide Applicators Licenses.



Evaluation and Assessment. Both 4-hour and 1-hour educational programs will include an evaluation component to assess program effectiveness by assessing knowledge gained, dollars saved and plans to adopt damage abatement practices. An evaluation instrument has already been developed and is in use by Extension-WFSC. This instrument must be used to maintain the integrity of a long-term data set. Descriptive, correlative, and analysis of variance statistical procedures will be utilized in this evaluation. Results will be summarized in a project final report and shared at the local level with the County Extension Agent.

Development of AgriLife Communication News Releases. News releases will be developed with assistance from AgriLife Communications to announce educational events and schedules, new extension articles and other pertinent information.

Development of Extension Educational Publications. At least 2 new extension articles regarding feral hog management will be produce (1/yr). Production of 12 feral hog management articles in the Plum Creek Watershed Partnership demonstrates the ability to identify needs of landowners and deliver educational materials to reduce feral hog numbers. Appeal of the articles was demonstrated by several thousand read/downloads by internet users and hardcopies are popular at public meetings.

Development of Extension Educational Videos. At least 2 new extension web-videos will be produced and posted on the Wildlife and Fisheries Extension Unit's YouTube channel. Appeal of this site and videos was demonstrated as 13 feral hog videos have been viewed over 83,000 times.

Connection with Extension Social Media. Educational materials will be linked via internet resources taking advantage of outlets, such as Facebook, YouTube and others. Connectivity among websites for Extension, TSSWCB, natural resource NGOs and other state agencies is a must to gain greater impact of educational resources. When appropriate, materials developed here will be incorporated into a separate, ongoing educational Extension outlet at the national level. The Feral Hog Community of Practice hosted by eXtension.org represents a group of experts from 17 states involved in feral hog research and education outreach. This group is led by Extension WFSC and soon we will launch the site that houses at least 100 Frequently Asked Questions, 50 Educational Articles, Webinars and set of Ask the Expert questions.

This project will support 3 Extension Associates who will collaborate with existing Extension-WFSC members to educate landowners on strategies to reduce and mange feral hog populations. The Extension Associates will be under the direction of the PI in WFSC-Extension. Landowners will be encouraged to remove and report the number of feral hogs in their watershed to abate the potential for environmental damage and degradation of water quality. Additionally, 2 Professors/Extension Wildlife Specialists/Extension Program Specialist and 1 Extension Associate will assist with the development and delivery of feral hog educational workshops in their geographic area of responsibility.

In addition to tracking feral hog damage management activities, this team will be a vital contact point with the community by disseminating educational materials, promoting feral hog management strategies, and fostering communication and partnership between landowners and stakeholders in general.

Tasks, Objectives and Schedules						
Task 1	Project Administration					
Costs	Federal	$49,123	Non-Federal	22,277	Total	$71,400
Objective	To administer, coordinate and monitor all work performed under this project including technical and financial supervision and preparation of status reports.					
Subtask 1.1	Extension will prepare electronic quarterly progress reports (QPRs) for submission to TSSWCB. QPRs shall document all activities performed within a quarter and shall be submitted by the 15th of January, April, July and October. QPRs shall be distributed to all project partners.					
	Start Date	Month 1	Completion Date	Month 24		
Subtask 1.2	Extension will perform accounting functions for project funds and will submit appropriate Reimbursement Forms to TSSWCB at least quarterly.					
	Start Date	Month 1	Completion Date	Month 24		
Subtask 1.3	Extension will host coordination meetings or conference calls, at least quarterly, with project partners to discuss project activities, project schedule, communication needs, deliverables, and other requirements. Extension will develop lists of action items needed following each project coordination meeting and distribute to project personnel.					
	Start Date	Month 1	Completion Date	Month 24		
Subtask 1.4	Extension will develop a final report summarizing all project activities.					
Deliverables	• Quarterly progress reports in electronic format • Reimbursement forms and necessary documentation in hard copy format • Lists of action items from project coordination meetings • Final Report in electronic and hard copy formats					

Tasks, Objectives and Schedules						
Task 2	Coordinate and deliver watershed-based feral hog educational trainings in selected watersheds throughout Texas					
Costs	Federal	$392,981	Non-Federal	$178,214	Total	$571,195
Objective	Facilitate statewide delivery of feral hog education programs to increase understanding of the adverse impact feral hogs can have on habitats and water resources, and to provide understanding of biology, best management practices reduction techniques and laws and regulations in abatement processes.					
Subtask 2.1	Extension will employ 3 Extension Associates. One Extension Associate will serve as the field contact and be responsible for the general oversight and coordination of project activities, as well as servicing multiple watersheds near the Plum Creek watershed area, one Extension Associate will be servicing multiple watersheds near the Leon River watershed area, and one Extension Associate will service watersheds near the San Bernard River watershed. As appropriate these employees will provide local landowners with on-site general technical guidance on feral hog management.					
	Start Date	Month 1	Completion Date	Month 3		
Subtask 2.2	Extension will work in concert with state, local organizations and County Extension Agents to select locations for the watershed-based feral hog education training events. Extension will coordinate efforts with state agencies and organizations already involved in WPP/TMDL processes or who are planning future WPP/TMDL processes in specific watersheds. Programming will focus on watershed areas such as 1) Plum, Geronimo, Gilleland, Lower San Antonio River, 2) Leon, Lampasas, Granbury, and 3) Lake Houston, Dickinson, San Bernard.					
	Start Date	Month 1	Completion Date	Month 24		
Subtask 2.3	Extension will actively market watershed-based feral hog education trainings through news releases (AgriLife Communications), internet postings, newsletter announcements, public/conference presentations, flyers, etc. TSSWCB must review and approve all project-related content in any materials prior to distribution.					
	Start Date	Month 1	Completion Date	Month 24		
Subtask 2.4	Extension will deliver at least six, 4-hour and six, 1-hour feral hog education training events in selected watersheds, annually. Extension will be working closely with our colleagues conducting Lone Star Healthy Streams (LSHS) and share educational resources for delivery to constituents. Resources will be incorporated with LSHS Resource Manuals.					
	Start Date	Month 1	Completion Date	Month 24		
Subtask 2.5	At least 2 new extension articles (hardcopy and electronic) and 2 new videos will be produced and made available to the public through social media outlets commonly used in extension programming.					
	Start Date	Month 1	Completion Date	Month 24		
Subtask 2.6	At least 1 Extension Associate will attend and participate in prioritized meetings, as appropriate, in order to communicate project goals, activities and accomplishments to affected parties. Such meetings may include, but are not limited to, Clean Rivers Program Basin Steering Committees, the Texas Watershed Planning Short Course, Texas Watershed Coordinator Roundtables, the TSSWCB Regional Watershed Coordination Steering Committee, and the annual meeting of Texas Soil and Water Conservation District Directors.					
	Start Date	Month 1	Completion Date	Month 24		
Subtask 2.7	Extension will promote and utilize the public online reporting system as developed through TSSWCB project 08-07 *Implementing Agricultural Nonpoint Source Components of the Plum Creek Watershed Protection Plan* to document sightings of feral hog activities and/or damage. Extension will track feral hog management activities conducted by cooperating landowners in priority areas as identified in the WPP and with guidance from the online reporting system.					
	Start Date	Month 1	Completion Date	Month 24		

Deliverables	• List of specific watersheds where feral hog trainings have been implemented • Schedules, agendas, meeting materials, and attendance lists for feral hog education trainings • Press releases, newspaper articles, newsletters, public information statements, etc., as developed and disseminated • Activity assessment for online reporting system included in each QPR and in Final Report • Summary of landowner management efforts in priority watersheds included in each QPR and in Final Report

Tasks, Objectives and Schedules						
Task 3	Evaluate the effectiveness of the watershed-based feral hog education trainings.					
Costs	Federal	$49,123	Non-Federal	$22,277	Total	$71,400
Objective	To measure both knowledge gained and plans for practice adoption of individuals participating in the program.					
Subtask 3.1	Extension will administer a post-test retrospective evaluation instrument to evaluate increased knowledge gained, dollars saved and plans for practice adoption by individuals within the selected watersheds to evaluate participant satisfaction with the program, and to evaluate participant's intentions to adopt abatement practices.					
	Start Date	Month 1	Completion Date	Month 24		
Subtask 3.2	Extension will analyze results obtained from evaluations using standard statistical procedures. Results will be incorporated into the Final Report and shared with County Extension Agents.					
	Start Date	Month 1	Completion Date	Month 24		
Deliverables	• Post-test retrospective evaluations for feral hog educational trainings. • Results from evaluations included in the final report.					

Tasks, Objectives and Schedules						
Task 4	Distribute and manage computer-based training					
Costs	Federal	$0	Non-Federal	$90,000	Total	$90,000
Objective	To use social media and web-based outlets to convey feral hog management information to clientele.					
Subtask 4.1	Extension will use web-sites like Wild Wonderings Blog, WFSC Extension YouTube, Trinity Waters, Lone Star Healthy Streams and others to distribute promotional material, news releases, videos, and extension articles. Extension social media outlets are assessed with Google Analytics or similar features. Extension will report metrics such as the number of unique visitors, pageviews, video views, and reads that indicate use by clientele.					
	Start Date	Month 1	Completion Date	Month 24		
Subtask 4.2	Extension will incorporate new materials into the eXtension.org Feral Hog Community of Practice in three ways: 1) FAQs, 2) articles, and 3) Ask the Expert questions answered. The number of each item added to the community of practice will be reported.					
	Start Date	Month 1	Completion Date	Month 24		
Deliverables	• Results of information delivered through social media outlets. • A list of FAQ, articles, and Ask the Expert questions delivered through eXtension.org Feral Hog Community of Practice.					

Project Goals (Expand from Summary Page)
• Facilitate statewide implementation of the feral hog damage management education program through watershed-based group trainings. Increase stakeholder involvement in abatement of feral hogs and their damage to aid WPP and/or TMDL implementation or development processes by educating local citizens. • Promote healthy watersheds by increasing citizen awareness, understanding, and knowledge about the potential impairments caused by non-native invasive feral hogs and the abatement practices to reduce their numbers that should minimize NPS pollution. • Enhance watershed education across the State as it relates to the reduction of feral hog damage in Texas. Enhance learning opportunities for watershed education across the state and establish a larger, more well-informed citizen base. • Empower individuals and communities to find creative solutions to improve watershed health by properly managing populations of the non-native invasive feral hog.

Measures of Success (Expand from Summary Page)
• Deliver a minimum of 12 watershed-based feral hog education trainings annually in selected watersheds (Six 4-hour and six 1-hour programs per year) • Numbers of citizens participating in watershed-based feral hog education trainings • Increased knowledge gained and plans to adopt abatement practices by individuals participating in the program, as measured by post-test retrospective evaluations

***2005 Texas Nonpoint Source Management Program* Reference (Expand from Summary Page)**
Goals and/or Milestone(s)
Element 1 – Explicit short- and long-term goals, objectives and strategies that protect surface…water LTG: To protect and restore water quality from NPS pollution through assessment, implementation and education 1. Focus NPS abatement efforts …and available resources in watersheds identified as impacted by NPS pollution. 2. Support the implementation of state, regional, and local programs to prevent NPS pollution through assessment …and education. 3. Develop partnerships, [and] relationships …to facilitate collective, cooperative approaches to manage NPS pollution. 4. Increase overall public awareness of NPS issues and prevention activities. STG 3– Education: Conduct education and technology transfer activities to help increase awareness of NPS pollution and prevention activities contributing to the degradation of waterbodies… by NPS. • Objective A – Enhance existing outreach programs at the state, regional, and local levels to maximize the effectiveness of NPS education. • Objective B – Administer programs to educate citizens about water quality and their potential role in causing NPS pollution. • Objective F – Implement public outreach and education to maintain and restore water quality in waterbodies impacted by NPS pollution.
Element 2 – Working partnerships and linkages to appropriate, state, interstate, tribal, regional, and local entities, private sector groups, and Federal agencies.
Element 3 – Balanced approach that emphasizes both statewide NPS programs and on-the-ground management of individual watersheds

Part III – Financial Information

Budget Summary			
Federal	$ 491,227	% of total project	61.10
Non-Federal	$ 312,768	% of total project (≥ 40%)	38.90
Total	$ 803,995	Total	100%

Category	Federal	Non-Federal	Total
Personnel	$ 274,798	$ 112,221	$ 387,019
Fringe Benefits	$ 85,931	$ 27,288	$ 113,219
Travel	$ 43,425	$ 0	$ 43,425
Equipment	$ 0	$ 0	$ 0
Supplies	$ 6,000	$ 0	$ 6,000
Contractual	$ 0	$ 0	$ 0
Construction	$ 0	$ 0	$ 0
Other	$ 17,000	$ 90,000	$ 107,000
Total Direct Costs	$ 427,154	$ 229,509	$ 656,663
Indirect Costs (≤ 15%)	$ 64,073	$ 36,272	$ 100,345
Unrecovered IDC	$ 0	$ 46,987	$ 46,987
Total Project Costs	$ 491,227	$ 312,768	$ 803,995

The TSSWCB CWA §319(h) NPS Grant Program has a 60/40% match requirement. The cooperating entity will be reimbursed 60% from federal funds and must contribute a minimum of 40% of the total costs to conduct the project. The 40% match must be from non-federal sources and should be described in the budget justification. Reimbursable indirect costs are limited to no more than 15% of total federal direct costs. The project budget generally covers a three year period.

Budget Justification (Federal)		
Category	Total Amount	Justification
Personnel	$ 274,798	• Extension Wildlife Specialist 9% FTE yrs 1-2 ($15,561) • Extension Wildlife and Fisheries Specialist 10% FTE yrs 1-2 ($17,291) • Extension Wildlife Specialist 9% FTE yrs 1-2 ($17,146) • Extension Program Specialist 9% FTE yrs 1-2 ($11,650) • 3 Extension Associates 100% FTEs yrs 1-2 ($213,150)
Fringe Benefits	$ 85,931	Fringe benefits for Faculty/Staff are calculated at a rate of 17.2% of salary to cover FICA, UCI, WCI, and retirement. An additional amount of $474/mo/FTE is calculated for group health insurance. These estimates are in accordance with the TAMUS Office of Budget and Accounting estimating procedures established for FY2012.
Travel	$ 43,425	• 3 individuals for training events at 12 locations/year: lodging ($77/night) and per diem ($46/day) ($8,856) • Mileage (trips for educational programming and associated project meetings range from 100-500 miles): approximately 62,286 total miles @ $0.555 per mile ($34,569)
Equipment	$ 0	N/A
Supplies	$ 6,000	• Two computers ($2,200 each) and external storage drives ($100) will be used for program delivery • Workshop Supplies (Certificates $232, paper $276, toner cartridges $618, name tags $100, plastic bins $144, office supplies $130, etc.) ($1,500)
Contractual	$ 0	N/A
Construction	$ 0	N/A
Other	$ 17,000	• Facility Rental for Workshops ($7,000) • Advertising and Postage ($1,500) • Copy-editing, copy design, printing for at least 2 Extension publications. o $100/hr (copy edit and design) X 10 hrs labor = $1,000 + [$2.50 X 1,500 copies] = $3,750 X 2 publications = $8,500
Indirect	$ $64,073	15% of Modified Total Direct Costs of Federal Funds (DHHS approved negotiated rate 26%)

Budget Justification (Non-Federal)		
Category	Total Amount	Justification
Personnel	$ 112,221	• Extension Wildlife Specialist 28% FTE yr 1-2 ($34,579) • Extension Wildlife and Fisheries Specialist - 13% FTE yr 1-2($38,808) • Extension Program Specialist 30% FTE in yrs 1-2 ($38,834)
Fringe Benefits	$ 27,288	Fringe benefits for Faculty/Staff are calculated at a rate of 17.2% of salary to cover FICA, UCI, WCI, and retirement. An additional amount of $474/mo/fte is calculated for group health insurance. These estimates are in accordance with the TAMUS Office of Budget and Accounting estimating procedures established for FY2012.
Travel	$ 0	N/A
Equipment	$ 0	N/A
Supplies	$ 0	N/A
Contractual	$ 0	N/A
Construction	$ 0	N/A
Other	$ 90,000	Educational Programming and Training (Task 4): Associated with the eXtension.org feral hog community of practice.
Indirect	$ 36,272	26% of Modified Total Direct Costs of Non-Federal Funds (DHHS approved negotiated rate 26%)
Unrecovered IDC	$ 46,987	Unrecovered Indirect Costs of 11% of Modified Total Direct Costs of Federal Funds (difference between project-allowed indirect costs (15%) and the standard Texas AgriLife Extension Service indirect cost rate of 26%)