Texas State Soil and Water Conservation Board
Clean Water Act §319(h) Nonpoint Source Grant Program
FY 2015 Workplan 15-04

SUMMARY PAGE	
Title of Project	Statewide Delivery of Riparian and Ecosystem Education Program
Project Goals	• Facilitate the promotion of healthy watersheds and improve water quality through the delivery of riparian and stream ecosystem education programs with a focus on priority watersheds. • Increase citizen awareness, understanding, and knowledge about the nature and function of riparian zones, their benefits, and BMPs to protect them and minimize NPS pollution. • Connect landowners with local technical and financial resources to improve management and promote healthy watershed and riparian areas on their land.
Project Tasks	(1) Project Administration; (2) Deliver riparian education programs; (3) TFS Participation in Riparian Team and Program Delivery (4) Evaluate the effectiveness of education programs
Measures of Success	• Deliver a 24 riparian education programs in prioritized watersheds. • Coordinate 2 statewide riparian conferences • Increased knowledge and understanding of riparian function and implementation of BMPs by individuals participating in the program, as measured by pre-/post-tests and post follow-up evaluation
Project Type	Implementation (X); Education (X); Planning ( ); Assessment ( ); Groundwater ( )

Status of Waterbody on *2012 Texas Integrated Report*	Segment ID	Parameter of Impairment or Concern	Category
	0818	pH	5c
	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
	1217B	Depressed DO	5c
	1217D	Depressed DO	5b
	1009E	Bacteria	5a
	2311	Depressed DO	5c
	1810	Bacteria	4a
	1301	Bacteria	5c
	1302	Bacteria	5b
	1302A	Bacteria	5b
	1302B	Bacteria	5b
		Depressed DO	5c
	2485	Bacteria	5a
		Dissolved Oxygen	5c
	2485A	Bacteria	5a
	0805	Bacteria	4a
	0841	Dissolved Oxygen	4a
	0822	pH	4a
	1245	Bacteria	4a
	2107	Bacteria	5a
		Dissolved Oxygen	5b
	1416A	Dissolved Oxygen	5c
	1416B	Dissolved Oxygen	5c
	1416C	Dissolved Oxygen	5c
	1202K	Bacteria	5b
	1210A	Bacteria	5b
	1221	Bacteria	5a
		Dissolved Oxygen	5a
	1421	Bacteria	5c
	1423A	Dissolved Oxygen	5c
	1423B	Macrobenthics	5c
	1424	Bacteria	5c
	1425	Dissolved Oxygen	5c
	1425A	Macrobenthics	5c
	1913	Bacteria	5b
	1902	Dissolved Oxygen	5c
	1803C	Bacteria	5a
	1901	Bacteria	4a
	1815	Dissolved Oxygen	CS

	1101 1101B 1101D 1102 1102A 1102B 1102C 1102D 1102E 0837 0814 0836	Bacteria Bacteria Bacteria Bacteria Bacteria Bacteria Bacteria Bacteria Bacteria Dissolved Oxygen Clorophyll-*a* Nutrients	5a 5a 5c 5a 5c 5a 5c 5c 5c CS CS CS
Project Location (Statewide or Watershed and County)	Statewide with priorities for the following: Buck Creek Watershed in Childress, Collingsworth and Donley Counties; Cedar Creek Watershed in Henderson, Kaufman, Rockwall and Van Zandt Counties; Dickinson Bayou in Brazoria and Galveston Counties; Geronimo Creek Watershed in Guadalupe and Comal Counties; Gilleland Creek in Travis County; Hickory Creek in Denton County; Lampasas River Watershed in Bell, Burnet, Coryell, Hamilton, Lampasas, Mills, and Williamson Counties; Little Cypress Creek Watershed within Harris County; Pecos River Watershed in Texas in Crane, Crockett, Pecos, Reeves, Terrell, Upton, and Ward Counties; Plum Creek Watershed in Caldwell, Hays, and Travis Counties; San Bernard River Watershed in Austin, Colorado, Wharton, Fort Bend, and Brazoria Counties; Upper Llano River watershed in Edwards, Kerr, Kimble, Menard, Real, and Sutton Counties; Oso Creek/Bay in Nueces County; Adams and Cow Bayou in Orange, Jasper, and Newton Counties; Upper Oyster Creek Watershed in Fort Bend County; Atascosa River Watershed in Atascosa, Bexar, Frio, Live Oak, McMullen, Medina, Wilson Counties; Brady Creek Watershed in McCulloch, Concho, Menard, and San Saba Counties; Mill Creek in Van Zandt County; Navasota River Watershed in Brazos, Grimes, and Washington Counties; Leon River Watershed in Comanche, Coryell, Erath, Hamilton, Mills Counties; Concho River in Irion, Runnels, Sterling, Coke, Reagan, Tom Green, Schleicher, Concho Counties; Lower/Mid Cibolo Creek in Bexar, Guadalupe, Karnes, and Wilson Counties; Peach Creek in Bastrop, Caldwell, Fayette, Gonzales Counties; Lower San Antonio River in DeWitt, Goliad, Karnes, Refugio, Victoria Counties; Cypress Creek in Hays County; Clear Creek Watershed in Brazoria, Fort Bend, Galveston, and Harris Counties; Richland Chambers Reservoir in Navarro and Freestone Counties		
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 ( )		
2012 Texas NPS Management Program Reference	• Component One – LTGs 1, 2, 4 • Component One – STGs 3A, 3B, 3F • Components Two & Three		

Project Costs	Federal	$400,000	Non-Federal	$266,671	Total	$666,671
Project Management	• Texas Water Resource Institute					
Project Period	October 1, 2015 – September 30, 2018					

Part I – Applicant Information

Applicant							
Project Lead	Dr. Kevin Wagner						
Title	Associate Director						
Organization	Texas Water Resources Institute						
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Co-Applicant							
Project Lead	Nikki Dictson						
Title	Extension Program Specialist III						
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Co-Applicant							
Project Lead	Hughes Simpson						
Title	Program Coordinator II						
Organization	Texas A&M Forest Service						
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City	College Station	County	Brazos	State	Texas	Zip Code	77845-3424
Telephone Number	979-458-6685			Fax Number	979-458-6655		

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 Water Resources Institute (TWRI)	Provide overall program management including project coordination, submission of quarterly and final reports, marketing, registrations, delivery of riparian education programs, website development and management, and evaluation of program effectiveness.
Texas A&M Forest Service (TFS)	Riparian Team Member: Assist with program development, marketing, and delivery; assist with information on quarterly and final reports.
Texas A&M AgriLife Research and AgriLife Extension	Riparian Team Members: Assist with program development, marketing & delivery.
Texas Parks and Wildlife Department (TPWD)	Riparian Team Member: Assist with program development, marketing & delivery.
Nueces River Authority (NRA)	Riparian Team Member: Assist with program development, online tools marketing, and delivery.
USDA-Natural Resource Conservation Service (NRCS)	Riparian Team Member: Assist with program development, marketing, and delivery.
Texas Riparian Association (TRA)	Host Website; Riparian Team Member: Assist with program development, marketing, and delivery.
Texas Tech University Llano River Field Station (TTU-LRFS)	Riparian Team Member: Assist with program development, marketing, and delivery.

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, (d) a Comprehensive Conservation and Management Plan developed under CWA §320, (e) the *Texas Coastal NPS Pollution Control Program*, or (f) the *Texas Groundwater Protection Strategy*?				Yes	X	No	
If yes, identify the document.	Buck Creek Watershed Protection Plan; Eight Total Maximum Daily Loads for Indicator Bacteria in Dickinson Bayou and Three Tidal Tributaries; Geronimo and Alligator Creeks Watershed Protection Plan; Implementation Plan for One Total Maximum Daily Load for Bacteria in Gilleland Creek; Fifteen TMDLs for Indicator Bacteria in Watersheds of the Lake Houston Area; Pecos River Watershed Protection Plan; Plum Creek Watershed Protection Plan; Draft San Bernard River Watershed Protection Plan; Oso Bay and Oso Creek – A TMDL Project for Bacteria; Three Total Maximum Daily Loads for Chloride, Sulfate, and Total Dissolved Solids, Petronila Creek Above Tidal, Segment 2204; Upper San Antonio River Watershed Protection Plan; Orange County Watersheds – A TMDL Project for Bacteria, Dissolved Oxygen and pH; Upper Oyster Creek – A TMDL Project for Bacteria and Dissolved Oxygen; Lampasas River Watershed Protection Plan: Implementation Plan for Seventeen Total Maximum Daily Loads for Bacteria in the Greater Trinity River Region; Leon River Watershed Protection Plan; Concho River Watershed Protection Plan; One Total Maximum Daily Load for Bacteria in Peach Creek; Lower San Antonio: A TMDL for Bacteria; Cypress Creek Watershed Protection Plan; Clear Creek TMDLs: Bacteria.						
If yes, identify the agency/group that developed and/or approved the document.	Buck Creek Watershed Partnership facilitated by Texas Water Resources Institute and TSSWCB; 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 City of Denton in cooperation with CH2M HILL, Texas A&M University, and the University of North Texas; TCEQ and James Miertschin & Associates, Inc.; Landowners and entities in the Pecos River watershed, facilitated by AgriLife Extension, TWRI and TSSWCB; Plum Creek Watershed Partnership facilitated by Texas AgriLife Extension Service and TSSWCB; Houston-Galveston Area Council and TCEQ; Center for Coastal Studies at Texas A&M University, Corpus Christi and TCEQ; Nueces River Authority and TCEQ; Nueces River Authority, City of Corpus Christi Water Department, and TSSWCB; San Antonio River Authority, Bexar Regional Watershed Management Partnership, and TCEQ; Sabine River Authority and TCEQ; TCEQ, TSSWCB, Houston-Galveston Area Council; Texas AgriLife Blackland Research and Extension Center and TCEQ; North Central Texas Council of Government's Environment and Development Department and TCEQ		Year Developed		2012; 2012, 2012, 2007, 2008; 2011; 2008; 2008; 2011; 2006; 2007; 2012; 2006; 2007; 2014; 2008; 2013		

Watershed Information				
Watershed or Aquifer Name(s)	Hydrologic Unit Code (12 Digit)	Segment ID	Category on 2012 IR	Size (Acres)
Buck Creek	111201050204, 111201050208, 111201050303, 111201050305 – 111201050307, 111201050401 – 111201050407, 111201050501 – 111201050502	0207A	2	187,270
Cedar Creek	120301070101 – 120301070111; 120301070201 – 120301070206; 120301070301 - 120301070310	0818	5c	675,788
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
Hickory Creek – Tributary to Lewisville Lake	120301030804	0823	Not Assessed	110,634
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
Little Cypress Creek	120401020105	1009E	5a	34,687

Pecos River	130700010201 - 130700010207; 130700010301 - 130700010305 130700010401 - 130700010408; 130700010503 - 130700010506 130700010601 - 130700010605; 130700010701 - 130700010705 130700010801 - 130700010803; 130700010901 - 130700010906 130700011001 - 130700011006; 130700030101 - 130700030106 130700030201 - 130700030204; 130700030301 - 130700030308 130700030401 - 130700030403; 130700040101 - 130700040106 130700040301 - 130700040305; 130700040401 - 130700040406 130700040501 - 130700040506; 130700040601 - 130700040605 130700040701 - 130700040705; 130700040801 - 130700040806 130700050101 - 130700050106; 130700050201 - 130700050205 130700050301 - 130700050304; 130700060101 - 130700060105 130700060201 - 130700060206; 130700060301 - 130700060306 130700060401 - 130700060405; 130700060501 - 130700060506 130700060601 - 130700060605; 130700070206; 130700070209 130700070507; 130700070507 - 130700070510 130700070601 - 130700070607; 130700070701 - 130700070706 130700070801 - 130700070807; 130700070901 - 130700070903 130700071001 - 130700071006; 130700071101 - 130700071102 130700071201 - 130700071202; 130700071301 - 130700071305 130700071401 - 130700071406; 130700071501 - 130700071506 130700071601 - 130700071603; 130700071701 - 130700071709 130700071801 - 130700071806; 130700071901 - 130700071904 130700072001 - 130700072008; 130700072101 - 130700072106 130700080101 - 130700080109; 130700080201 - 130700080208 130700080301 - 130700080308; 130700080401 - 130700080405 130700080501 - 130700080508; 130700080601 - 130700080604 130700080701 - …0703; 130700090101 - …0109 130700090201 - …0210; 130700090301 - …0307	2311	5c	8,958,079

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 Llano	120902020101 – 120902020109; 120902020201 – 120902020206	1415	1	1,209,850

Water Quality Impairment

Describe all known causes (i.e., pollutants of concern) and sources (e.g., agricultural, silvicultural) of water quality impairments or concerns from any of the following sources: *2012 Texas Integrated Report*, Clean Rivers Program Basin Summary/Highlights Reports, or other documented sources.

Segment ID	Body Name	Impairment	Code
0818	Cedar Creek Reservoir	pH	5c
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
1009E	Little Cypress Creek	Bacteria	5a

2311	Upper Pecos River	Depressed DO	5c
1810	Plum Creek	Bacteria	4b
1217B	Sulphur Creek	Depressed DO	5c
1217D	North Fork Rocky Creek	Depressed DO	5b
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
2485	Oso Creek/Oso bay	Bacteria	5a
		Dissolved Oxygen	5a
2204	Petronila Creek	Chloride	SI
		Sulfate	SI
		Total Dissolved Solids	SI
2102	Lower Nueces	Clorophyll-*a*	4a
1911	Upper San Antonio	Bacteria	4a
0508	Adams Bayou Tidal	Bacteria	4a
		Dissolved Oxygen	4a
0511	Cow Bayou Tidal	pH	4a
		Dissolved Oxygen	4a
1245	Upper Oyster Creek	Bacteria	4a
1209	Navasota River Below Lake Limestone	Bacteria	5b
0805	Upper Trinity River	Bacteria	5a
0822	Cottonwood Branch and Grapevine Creek	Bacteria	5a
0841	Lower West Fork Trinity River	Bacteria	5a
Water Quality Concerns			
0207A	Buck Creek	Nitrate	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
1009E	Little Cypress Creek	Nitrate	CS
		Orthophosphorus	CS
		Total phosphorus	CS
1217B	Sulphur Creek	Depressed DO	CS
2311	Upper Pecos River	Bacteria	CN
		Chlorophyll-a	CS
		Depressed DO	CS
		Golden alga	CN
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
Special Interest			
0207A	Buck Creek	Bacteria	WAP
-	Hickory Creek	-	WAP
1217	Lampasas River Above Stillhouse Hollow Lake	Bacteria	WAP
1415	Upper Llano		WAP

Project Narrative

Problem/Need Statement

Riparian degradation is a major threat to water quality, in-stream habitat, terrestrial wildlife, aquatic species, and overall stream health. Conversely, proper management, protection, and restoration of riparian areas decrease bacteria, nutrient, and sediment loadings to water bodies; lower in-stream temperatures; improve dissolved oxygen levels; improve aquatic habitat; and ultimately improves macrobenthos and fish community integrity. In Texas, the water quality assessment indicates NPS pollution contributes to approximately 45 percent of the water quality impairments to rivers and streams and 48 percent of the water quality impairments to lakes in Texas. The continuation of the *Texas Riparian and Stream Ecosystem Education* program TSSWCB #12-07 would continue outreach across Texas through online methods, landowner workshops, conferences, and professional trainings.

To improve the management of these sensitive and vital ecosystems, riparian education programs are needed regarding the nature and function of riparian zones, their benefits, and BMPs for protecting them. This will not only reduce NPS pollution, it will provide tremendous ecosystem service benefits and direct economic benefits to the community.

The State of Texas has more than 192,000 miles of rivers and streams that, along with closely associated floodplain and upland areas, comprise corridors of great economic, social, cultural, and environmental value. These riparian corridors are complex ecosystems that include the land, plants, animals, and network of streams within them. They perform a number of ecological functions such as modulating stream flow, storing water, removing harmful materials from water, and providing habitat for aquatic and terrestrial plants and animals. Simply put, the health of riparian systems is paramount to stream health. Proper management of riparian areas will protect banks and reduce erosion rates of stream banks and sediment into the streams and reservoirs. Riparian vegetation functions to slow down the overland flow, capture sediment, nutrients, other pollutants and organic matter as well as allowing for increased infiltration in the flood plain/riparian area. Higher levels of runoff increase the chances for pesticides, fertilizers, and fecal matter to reach streams and worsen water quality (TWDB, 2013). When management activities leave very little or no vegetation, resulting in stream banks being more susceptible to incision and/or widening of the stream (Zygo, 1997). As a stream incises, it may become disconnected and flood the riparian area less frequently or not at all, greatly affecting the ability for water to infiltrate and deposit sediment and nutrients. This results in a loss of forage production, wildlife habitat, and recreational value. In-stream habitat for fish and other aquatic species is also lost as these creeks deepen and widen. In addition, landowners may suffer as more and more land erodes and falls into the stream, ultimately causing acreage loss and affecting their property value and future economic opportunities.

Poor management leads to high sediment loads carried by streams that reduce water storage capacity in reservoirs

where the sediment is deposited. Studies have shown that poorly managed stream banks can account for as much as 85% of the sediment contributed in a watershed (Wynn and Mostaghimi, 2006). The Texas Water Development Board (2009) calculated that the Richland-Chambers Reservoir in Navarro County loses 2,065 acre-feet of water capacity every year for a total loss of 43,361 acre-feet in the 20-year period since 1987, when it was impounded. Consequently, enough sediment has accumulated during that 20-year period to cover the bottom of the 43,384-acre reservoir to a depth of one foot. Texas A&M University researchers estimate that 84% of the sediment reaching the reservoir every year is from channel and stream bank erosion (Wang et al. 2010).

In Texas as a whole, it is estimated that major reservoirs lose 90,000 acre-feet of water storage capacity every year due to sedimentation, which is roughly equal to the amount of water that 180,000 families use in one year (TWDB, 2007). At this rate, the Texas Water Development Board estimates that by 2060, approximately 4.5 million acre-feet of reservoir capacity will be lost due to sedimentation, which is more than the capacity that would be gained through the construction of new major reservoirs (TWDB, 2007). This agency reported that dredging costs twice as much or more than constructing a new reservoir, making it impractical in many cases (TWDB, 2005). Therefore, focusing management efforts on quality land management to stabilize stream banks and riparian areas may be one of the most cost effective strategies for extending the operational life of the state's water supply reservoirs.

Streams and riparian zones reflect the sum of impacts of natural and man-induced disturbances of drainage areas or watersheds. Management of the land, streams, and riparian zones affects not only individual landowners, but also livestock, wildlife, aquatic life and ecosystem services for everyone downstream. By understanding the processes, key indicators and impacts of disturbances, activities that hinder recovery, landowners and other citizen-stakeholders can evaluate these systems and improve their management to produce desired conditions.

Changes within a surrounding ecosystem (e.g., watershed) will impact the physical, chemical, and biological processes occurring within a stream corridor. Stream systems normally function within natural ranges of flow, sediment movement, temperature, and other variables, in "dynamic equilibrium." Over the years, human activities have contributed to changes in the dynamic equilibrium of stream systems. These activities have manipulated stream corridor systems for a wide variety of purposes, including domestic and industrial water supplies, irrigation, transportation, hydropower, waste disposal, mining, flood control, timber management, recreation, aesthetics, and fish and wildlife habitat. Increases in human population along with industrial, commercial, and residential development place heavy demands on stream corridors. The cumulative effects of these activities result in significant direct and indirect changes, not only to stream corridors, but also to the ecosystems or watersheds they are located in. The direct changes include degradation of water quality, decreased water storage and conveyance capacity, loss of habitat for fish and wildlife, and decreased recreational and aesthetic values. While the indirect changes are harder to quantify such as air quality, decomposition of wastes, and other ecosystem services we all take for granted, there is direct economic benefits that can be calculated. Many cities, such as Austin, have found that improving creek and floodplain protection is needed to prevent unsustainable public expense to maintain drainage infrastructure.

Benefits of healthy riparian/stream systems:

- High quality habitat for both aquatic and riparian species
- Dissipation of flood energy and reduced downstream flood intensity and frequency
- Higher, longer-lasting and less variable baseflow between storm events
- Deposition of sediment in the floodplain, stabilizing it and maintaining downstream reservoir capacity longer
- Debris and nutrient use and filtering in the floodplain to improve water quality and dissolved oxygen levels in the aquatic system
- Riparian vegetation canopies to shade streams and reduce their temperatures, providing a food base for aquatic and riparian fauna
- Fewer invasions of exotic undesirable riparian species
- Higher biodiversity than terrestrial uplands

- "Stabilized" banks, which reduce erosion and protect ownership boundaries
- Increased economic value through wildlife, livestock, timber, and recreational enterprises
- Improved rural land aesthetics and real estate values

The continuation of the *Texas Riparian and Stream Ecosystem Education* program TSSWCB #12-07 would continue outreach across Texas through online methods, landowner workshops, conferences, and professional trainings. This program has held workshops across the state in impaired watersheds

Riparian education workshops have been offered in the past by agencies such as Texas A&M AgriLife Extension Service (e.g. Trinity River basin), Texas A&M AgriLife Research (e.g. Lampasas River), TRA, and most recently the Nueces River Authority and TPWD utilizing NRCS experts as instructors. TWRI has coordinated a Riparian Team with agencies and experts across the state that are working on riparian issues and or conducting trainings so that there is some coordination to reach more across the large state of Texas. A successful workshop format has already been established and field tested. Feedback from these workshops has been very positive. Further, TPWD has initiated a statewide riparian education effort targeting areas where there are additional habitat programs. This program will continue to coordinate closely with TPWD on both delivery and content to ensure landowners throughout the state are provided a consistent message of riparian enhancement and protection. The Texas A&M Research and Extension Center in Dallas is conducting stream restoration workshops. Additionally, groups like the Stream Teams coordinated by Texas A&M AgriLife Research at Blackland Research and Extension Center and the North Central Texas Council of Governments and USEPA-R6 were focused on providing technical assistance through consultations and recommendations, informal project review and ordinance review, and also worked to improve public awareness of the benefits of healthy streams and riparian areas through a geomorphology training workshops directed to local officials, city engineers, developers and consultants. The funding for these Stream Team efforts ended several years ago, but the structure is still in place to provide technical assistance as needed.

Riparian management is an important component of the Lone Star Healthy Streams program (TSSWCB 09-06 and 12-08). However, riparian management is not the focal point of Lone Star Healthy Streams which specifically targets BMPs for addressing bacteria contributions to streams (of which proper riparian management is one); but, it does not focus on the broader perspective of the nature and function of riparian zones (fluvial geomorphology, hydrology, vegetation) or the benefits and direct economic impacts from ecological services of healthy riparian zones.

Unfortunately, these programs cannot comprehensively meet the diverse needs of the entire state, and in many cases they lack funding to continue efforts even at the local scale. An evaluation of the NRA Riparian Network by Oregon State University concluded that barriers to continued program operation and improvements included limited staff time and availability to support the program, a limited number of riparian experts in the region available to facilitate workshops, and lack of secure funding. Chief among these barriers was the lack of a continuous, dedicated funding source.

There was a critical need to create synergy between the framework established by these programs and efforts. This initial project has created this synergy and built off of these successful local programs to establish the State's mechanism to deliver riparian education in high priority watersheds. The Riparian Team has linked agencies and universities across the state in partnership and a cohesive effort. This program will continue to implement a riparian education program to support and enhance riparian management and water quality protection efforts by all agencies and organizations actively engaged in watershed planning across Texas. This program will continue to benefit watershed efforts regardless of constituent targeted or whether the watershed is urban or rural. Further, by protecting these ecologically sensitive riparian areas, communities will be able to improve water quality while maintaining healthy ecosystems, providing wildlife habitat, opportunities for outdoor recreation and enhanced ecosystem services.

Project Narrative

General Project Description (Include Project Location Map)

TWRI will continue to coordinate the Riparian Team for this project that is composed of TFS, ESSM, TPWD, NRCS, TRA, NRA, TTU-LRFS, TSSWCB, TCEQ and others to assist with program development, marketing, and delivery. TWRI will expand on riparian trainings conducted in targeted watersheds (Fig. 1) and provide access to the program through web-based outreach and tools. TWRI will organize instructor teams for each event, composed of members of the Riparian Team, contractors, and others as needed to deliver the Riparian Education Programs.

The riparian workshops will continue to partner with and have expert instructors from the Riparian team at each training program. The basic existing framework established the past trainings conducted from the initial project (TSSWCB #12-07) will be utilized and expanded upon where possible. The morning session will include registration and pre-test, followed by indoor classroom style presentations. During lunch additional presentations may be provided that relate to the issues and/or landscape for the area, and local watershed planning effort update. The afternoon training session will be outside at one or more stream locations, where participants can see in the field firsthand the vegetation and functions they learned about in the classroom setting. One group will perform the stream walk instruction and the other will have additional discussions/presentations about stream functions and dynamics, flooding, etc. Each group will then switch and conduct the other task.

The program will be adapted to meet local needs. For example, the program will be adapted in coordination with the Riparian Team for urban areas as needed. TFS will continue to be integral for both adapting the program and delivering it in East Texas. Due to logging activities in this region and specific requirements placed on such operations, the program will be adapted in coordination with the TFS to meet the needs of landowners and issues these logging areas and ensure consistency with existing logger training programs. Further, TFS is the recognized expert in Texas with regards to bottomland hardwood forests and their vegetation and management. As these bottomland forests are vital to riparian protection and improvements, the TFS expertise will be needed to ensure the program retains the needed expertise to appropriately manage these critical systems. TFS has also developed an urban riparian forestry presentation.

To help market the program and further expand the reach of the program, presentations of varying length (15/30/45/60 min.) will be updated as needed and delivered to audiences throughout the state through county Extension programs, watershed stakeholder meetings, Clean Rivers Program Basin Steering committees, and other venues. These presentations will be available for delivery by anyone on the Riparian Team. Additionally, key elements and messages will be incorporated into presentations delivered by the TFS Program Coordinator, TWRI, and others on the Riparian Team throughout the state to generate greater interest in riparian protection efforts and increasingly expand requests for the program and its resources. TWRI will evaluate the potential use of stream rapid bioassessment techniques with volunteer citizen scientists to investigate potential benefits of this method of awareness. It is anticipated that this will continue to greatly increase program momentum and concurrently initiate implementation of riparian protection concepts by landowners, setting the stage for greater improvements in riparian habitat, stream stability, and water quality.

The program will coordinate with the TFS, NRCS, TRA, River Authorities, universities, local soil and water conservation districts (SWCDs), County Extension Agents (CEAs), and particularly the TPWD and its riparian programs. TWRI will coordinate Riparian Team meetings/teleconferences for planning workshops approximately every 6 months.

Riparian Landowner Trainings. Riparian landowner trainings (daylong, approx. 7 or more annually) will focus on the nature and function of riparian zones (fluvial geomorphology, hydrology, vegetation), the benefits and direct economic impacts from ecological services of healthy riparian zones, BMPs for enhancing and protecting riparian zones, and technical and financial resources and incentives available for implementing riparian BMPs and riparian protection

measures. Riparian education programs will cover an introduction to riparian principles, watershed processes, basic hydrology, erosion/deposition principles, riparian vegetation, potential causes of degradation and possible resulting impairment(s), and available local resources including technical assistance and tools that can be employed to prevent and/or resolve degradation. Existing resources and guides will be used for these trainings; however, where possible, regional information and curriculum will be developed. The goal is for participants to better understand and relate to riparian and watershed processes, the benefits that healthy riparian areas provide, and the tools that can be employed to prevent and/or resolve degradation and improve water quality. As a part of the training, participants will be educated on the importance of riparian protection activities. TWRI will evaluate the potential use of stream rapid bioassessment techniques with volunteer citizen scientists to investigate potential benefits of this method of awareness. A major goal of the program will be to foster implementation of riparian BMPs. Training will also emphasize the need for watershed planning that supports maintenance of a natural hydrograph. Restoration of riparian areas degraded by changes to the natural hydrologic regime must be conducted in concert with efforts to remedy those upstream disturbances. At the conclusion of the training, participants will receive a certificate of completion.

TWRI and the Riparian Team will work in coordination with state and local organizations to select and schedule locations for the riparian education programs. Priority will be given to agencies and organizations currently involved in WPP or TMDL processes and those planning future watershed efforts. Subsequently, additional watersheds will be selected based on impairment status, environmental sensitivity, and/or other priority issues. Due to the size of many watersheds in the state and in an effort to enhance outreach, riparian education programs, in both urban and rural settings, may be offered multiple times and at different locations within prioritized watersheds. In coordination with project partners approximately seven workshops will be offered each year in the highest priority watersheds.

Two Statewide Riparian Conferences will be held to provide additional riparian information to those interested. These may be held in conjunction with the TRA, professional societies, River Authorities, other institutes, etc. These conferences will continue the momentum began by previous conferences held in conjunction with this first grant 12-07 including the Southwest US Stream Restoration Conferences in 2013 and 2014 in San Antonio, Texas Riparian Association Annual Meeting 2013, and the Urban Riparian Symposium in 2015.

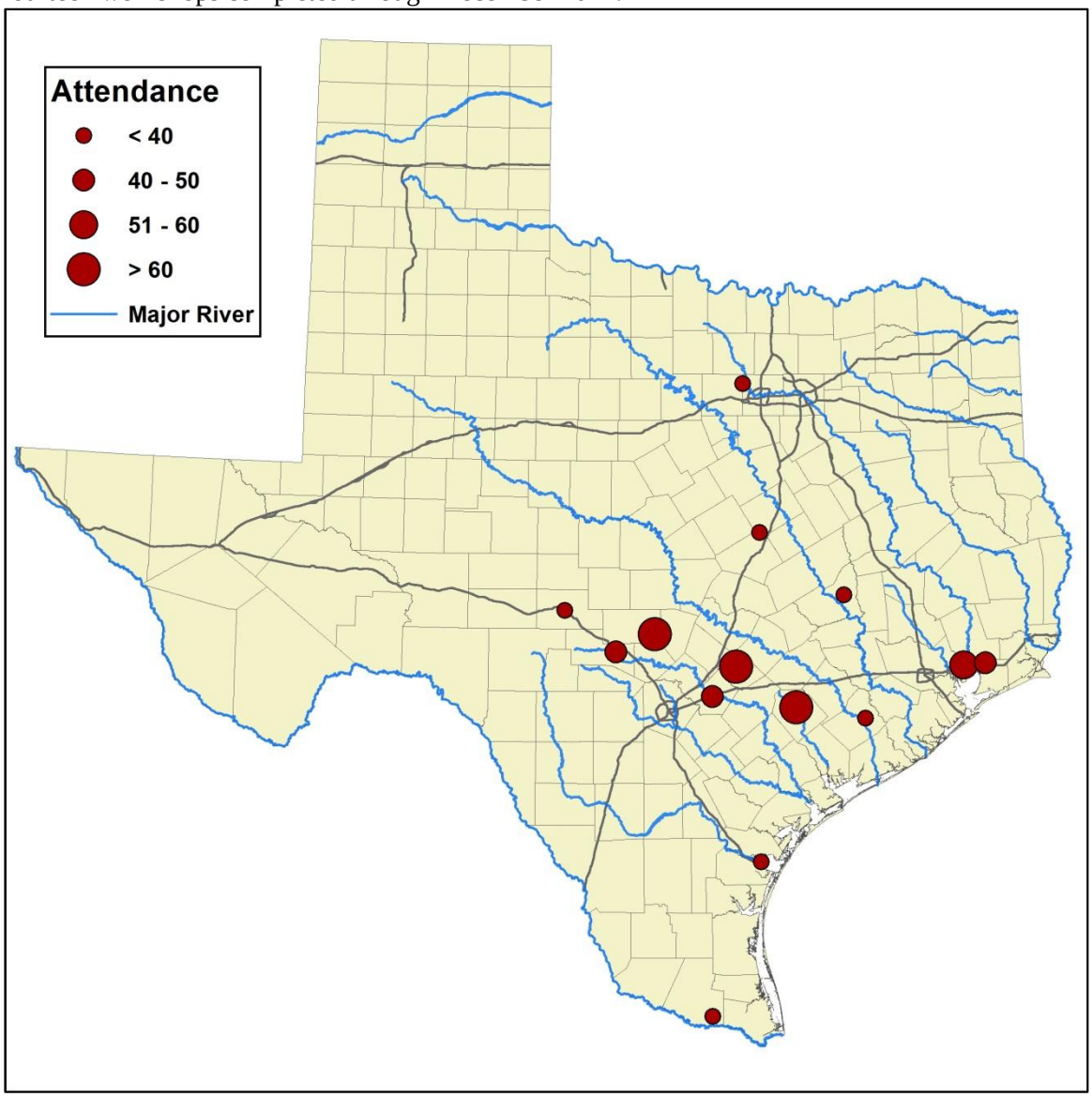
Evaluation and Assessment. The trainings will include an evaluation component to assess program effectiveness and to modify and enhance curriculum content to achieve project goals. A two-stage evaluation approach will be used to measure both knowledge and behavior changes of individuals participating in the program.

Stage 1. A pre-/post-test evaluation strategy will be implemented at the beginning and end of both the face-to-face educational program and web-based training program. The pre-test will ask knowledge-based questions and post-test will measure the same knowledge-based questions to determine the knowledge increase of participants. In addition, the post-test will include 'satisfaction' questions and 'intentions to change or adopt' questions.

Stage 2. A post follow-up assessment instrument will also be sent to participants via email to complete the assessment and ascertain what practices were actually adopted several months after participating in the program.

Results will be summarized in a project final report. Briefs also may be developed to document and enhance the success of future riparian education and similar training programs.

Figure 1. ***Texas Riparian and Stream Ecosystem Education*** program map identifying location and participation in fourteen workshops completed through December 2014.



Tasks, Objectives and Schedules						
Task 1	Project Administration					
Costs	Federal	$55,968	Non-Federal	$41,110	Total	$97,078
Objective	To effectively administer, coordinate and monitor all work performed under this project including technical and financial supervision and preparation of status reports.					
Subtask 1.1	TWRI will prepare electronic quarterly progress reports (QPRs) for submission to the 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 36		
Subtask 1.2	TWRI and SRS 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 36		
Subtask 1.3	TWRI 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. TWRI will develop lists of action items needed following each project coordination meeting and distribute to project personnel.					
	Start Date	Month 1	Completion Date	Month 36		
Subtask 1.4	TWRI will attend and participate in 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, Texas Watershed Planning Short Course, Texas Watershed Coordinator Roundtables, and the TSSWCB Southeast and South Central Texas Regional Watershed Coordination Steering Committee.					
	Start Date	Month 1	Completion Date	Month 36		
Subtask 1.5	TWRI and TRA will continue to host and maintain (Months 1-36) the http://texasriparian.org website to serve as a public clearinghouse for project-related information and the riparian program website and online RSVP system at http://nrt.tamu.edu/courses/texas-riparian/. These program websites serve as a means to disseminate information to stakeholders and the general public.					
	Start Date	Month 1	Completion Date	Month 36		
Subtask 1.6	TWRI will develop a Final Report that summarizes activities completed and conclusions reached during the project and discuss the extent to which project goals and measures of success have been achieved.					
	Start Date	Month 1	Completion Date	Month 36		
Deliverables	• QPRs in electronic format • Reimbursement Forms and necessary documentation in hard copy format • Lists of action items from project coordination meetings • Project website • Final Report in electronic and hard copy formats					

Tasks, Objectives and Schedules						
Task 2	Coordinate and deliver riparian education programs					
Costs	Federal	$257,239	Non-Federal	$133,606	Total	$390,845
Objective	Deliver riparian education programs to targeted watersheds to promote healthy riparian areas, thus healthy watersheds, by increasing citizen awareness, understanding, and knowledge about the nature and function of riparian zones, their benefits, and BMPs for protecting them and minimize NPS pollution.					
Subtask 2.1	TWRI will continue to coordinate the existing Riparian Team to direct this synergistic project. The Riparian Team includes TWRI, TFS, TPWD, NRCS, TRA, NRA and TTU-LRFS. The Riparian Team will continue to assist with program development, marketing, and delivery. This Riparian Team will serve as the primary pool of instructors to deliver the Riparian Education Program. The Riparian Team will meet as frequently as needed, likely quarterly in year 1 and semi-annually in years 2-3.					
	Start Date	Month 1	Completion Date	Month 36		
Subtask 2.2	TWRI will work in coordination with TSSWCB, TCEQ, TPWD, NRCS, TFS, and other state and local organizations to select locations for the riparian education training events. This project will deliver riparian education programs to targeted watersheds across the state. Priority watersheds will be selected in collaboration with TSSWCB, and with input from TCEQ and others, and primarily represent those with approved WPPs or TMDLs and those developing or planning development 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. Additional watersheds will be selected based on impairment status, environmental sensitivity, and/or other priority issues. TWRI and TSSWCB will periodically make collaborative decisions to re-prioritize and add to/remove from the list of watersheds.					
	Start Date	Month 1	Completion Date	Month 36		
Subtask 2.3	The TWRI and Riparian Team will continue establishing CEU credits for the riparian education program to encourage participation by landowners and water resource professionals.					
	Start Date	Month 1	Completion Date	Month 36		
Subtask 2.4	TWRI, with assistance of the Riparian Team, will actively market riparian education trainings through news releases (AgriLife News and local media outlets), internet postings, listserv, facebook, newsletter announcements, public/conference presentations, flyers, etc., to enhance awareness and utilization. TSSWCB must review and approve all project-related content in any materials prior to distribution.					
	Start Date	Month 3	Completion Date	Month 36		
Subtask 2.5	TWRI, with assistance of the Riparian Team, will deliver 24 riparian education training events in prioritized watersheds (Subtask 2.2) during the project period with approximately 8 per year. Certificates of completion will be provided to all participants in the trainings.					
	Start Date	Month 6	Completion Date	Month 36		
Subtask 2.6	TWRI in collaboration with the Riparian Team will update a series of riparian education presentations of various lengths (15/30/45/60 min.) and provide them to a variety of audiences and venues statewide such as those listed in Subtask 1.4, but also including county and multi-county Extension programs, landowner workshops, SWCD programs, and other suitable venues. Further, key elements of the program will be incorporated into presentations delivered by TFS, TWRI, and others on the Riparian Team and delivered to a variety of audiences throughout the state.					
	Start Date	Month 3	Completion Date	Month 36		
Subtask 2.7	TWRI will coordinate two statewide riparian conferences in coordination with the Texas Riparian Association, professional organizations, River Authorities, or other entities annual meetings.					
	Start Date	Month 13	Completion Date	Month 36		

Deliverables	• Summaries of Riparian Team meetings and action items • Standardized presentations of various lengths • CEU credits for Program • Periodically updated list of specific watersheds where riparian education trainings have been and will be implemented • Schedules, agendas, and attendance lists for riparian education trainings and statewide conferences • Collection of press releases, newspaper articles, newsletters, public information statements, etc., as developed and disseminated

Tasks, Objectives and Schedules						
Task 3	The Texas A&M Forest Service's role in the Riparian and Ecosystem Education Program.					
Costs	Federal	$44,817	Non-Federal	$61,123	Total	$105,940
Objective	Participate on Riparian Team and assist with planning program development, marketing, and delivery of riparian landowner programs, annual conferences, and other trainings as appropriate.					
Subtask 3.1	TFS will participate on Riparian Team by attend meetings/conference calls and reviewing program materials.					
	Start Date	Month 1	Completion Date	Month 36		
Subtask 3.2	TFS will assist with development, marketing, and delivery of riparian landowner programs, annual conferences, and other trainings. TFS will update Forestry and Urban presentations as appropriate for 15 trainings.					
	Start Date	Month 1	Completion Date	Month 36		
Subtask 3.3	TFS will assist by providing information for quarterly progress reports, annual reports, and final reports.					
	Start Date	Month 1	Completion Date	Month 36		
Deliverables	• TFS will be an instructor/speaker at 15 events. • TFS will assist with quarterly, annual and final reports.					

Tasks, Objectives and Schedules						
Task 4	Evaluate the effectiveness of the riparian education trainings.					
Costs	Federal	$41,976	Non-Federal	$30,832	Total	$72,808
Objective	To measure both knowledge and behavior changes of individuals participating in the program.					
Subtask 4.1	TWRI will conduct pre- and post-training evaluations to assess increased knowledge of participants on the nature and function of riparian zones, their benefits, and BMPs for protecting them and minimize NPS pollution; to evaluate participant satisfaction with the program; and to evaluate participant's intentions to change their behavior as a result of the program. Evaluate the potential of rapid stream bioassessments by volunteer citizen scientists and the benefit of this additional method. Additionally, TWRI will deliver a follow-up assessment via email post follow-up to ascertain behavior changes actually adopted by participants.					
	Start Date	Month 1	Completion Date	Month 36		
Subtask 4.2	TWRI will analyze results obtained from the pre-/post-tests and post follow-up assessment using descriptive, correlational, and analysis of variances statistical procedures. Results will be used to periodically evaluate and modify riparian education program materials and incorporated into the final report.					
	Start Date	Month 1	Completion Date	Month 36		
Deliverables	• Pre-/post-test evaluations for the watershed education programs • Follow-up assessments for the watershed • Results from the evaluations					

Project Goals (Expand from Summary Page)
• Facilitate the promotion of healthy watersheds and improve water quality through the delivery of riparian and stream ecosystem education programs with a focus on priority watersheds via group trainings. • To increase citizen awareness, understanding, and knowledge about the nature and function of riparian zones, their benefits, and BMPs to protect them and minimize NPS pollution. • To enhance riparian education and outreach across the state through online methods to establish a larger, more well-informed citizen base working to improve and protect local riparian and stream ecosystems. • To connect landowners with local technical and financial resources to improve management and promote healthy watershed and riparian areas on their land.

Measures of Success (Expand from Summary Page)
• Deliver a minimum of 24 riparian education programs in prioritized watersheds • Coordinate 2 statewide riparian conferences • Increased knowledge and understanding of riparian function and implementation of BMPs by individuals participating in the program, as measured by pre-/post-tests and 6-month follow-up assessment

***2012 Texas NPS Management Program* Reference (Expand from Summary Page)**
Components, Goals, and Objectives
Component 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. 4. Increase overall public awareness of NPS issues and prevention activities. STG Three – 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 water bodies impacted by NPS pollution.
Component 2 – Working partnerships…to appropriate, state,…regional, and local entities, private sector groups, and federal agencies.
Component 3 – Balanced approach that emphasizes both statewide NPS programs and on-the-ground management of individual watersheds

EPA State Categorical Program Grants – Work plan Essential Elements ***FY 2011-2015 EPA Strategic Plan* Reference**
Strategic Plan Goal – Goal 2 Protecting America's Waters
Strategic Plan Objective – Objective 2.2 Protect and Restore Watersheds and Aquatic Ecosystems

Part III – Financial Information

Budget Summary			
Federal	$ 400,000	% of total project	60%
Non-Federal	$ 266,671	% of total project	40%
Total	$ 666,671	Total	100%

Category	Federal	Non-Federal	Total
Personnel	$ 200,351	$ 65,440	$ 265,791
Fringe Benefits	$ 50,663	$ 13,151	$ 63,814
Travel	$ 16,470	$ 0	$ 16,470
Equipment	$ 0	$ 0	$ 0
Supplies	$ 2,400	$ 0	$ 2,400
Contractual	$ 44,817	$ 46,497	$ 91,314
Construction	$ 0	$ 0	$ 0
Other	$ 38,971	$ 0	$ 38,971
Total Direct Costs	$ 353,672	$ 125,088	$ 478,760
Indirect Costs	$ 46,328	$ 38,117	$ 84,445
Unrecovered IDC		$ 103,466	$ 103,466
Total Project Costs	$ 400,000	$ 266,671	$ 666,671

Budget Justification (Federal) – Texas Water Resources Institute		
Category	Total Amount	Justification
Personnel	$ 200,351	Program Specialist III, $65,439 @ 25 months ($136,331) TWRI Research Associate, $43,700 @ 8 months ($29,466) TWRI Extension Assistant, $30,000 @ 4 months ($10,000) TWRI Program Manager, $72,321 @ 2 months ($12,054) TWRI Graduate Research Assistant, $25,000 @ 6 months ($12,500) *named positions are budgeted with a 3% annual pay increase in all years; TBD positions and graduate students are budgeted with a 3% pay increase in years after year 1 **(Salary estimates are based on average monthly percent effort for the entire contract. Actual percent effort may vary more or less than estimated between months; but in the aggregate, will not exceed total effort estimates for the entire project.)
Fringe Benefits	$ 50,663	Salaried Employee Fringe Benefits Calculated 18% of salary plus $647/month; Graduate Student Fringe Benefits Calculated at:10.3% salary plus $300/month (Fringe benefits estimates are based on salary estimates listed. Actual fringe benefits will vary between months coinciding with percent effort variations; but in the aggregate, will not exceed the overall estimated total.)
Travel	$ 16,470	TWRI Travel includes: - 24 trainings in various locations throughout the state. Estimated costs include mileage at state rate for approximately 9,200 miles, fuel and/or rental vehicle ($4,603); per diem for approximately 48 days at the standard state rates for the areas ($2,498); hotel costs for approximately 24 stays at the state rate for the areas ($2,245); and other miscellaneous travel fees such as parking ($300). Concur travel booking fees are also included for each trip ($384) = $10,030. - TWRI travel for 1-3 people to 2 annual conferences. Estimated costs include per diem at $71 per day for 4 days for 2 people ($1,136); lodging at state rate for 2 people for 3 nights ($1,476); mileage at state rate, fuel and/or rental vehicle ($290); other miscellaneous travel fees such as parking ($200); Concur travel booking fees ($32) = $3,134. - TWRI miscellaneous travel for coordination/steering committee meetings in Columbus and other project-related meetings for 1-2 people. Estimates include state rate per diem ($568);state rate lodging ($492); mileage at state rate, fuel and /or rental vehicle ($2,214); and Concur travel system booking fees ($32) = $3,306.
Equipment	$ 0	N/A
Supplies	$ 2,400	TWRI supplies include materials for manuals such as, but not limited to: binders, paper, cartridges, name tags, etc.
Contractual*	$ 44,817	Texas A&M Forest Service ($44,817) internal subcontract, exempt from IDC
Construction	$ 0	N/A

Other	$ 38,971	Communications Services ($10,425) Geospatial Resources and Information Technology (GITR) Lab for website maintenance services ($7,725) TWRI printing meeting materials and manuals ($4,320) TWRI facility rental for meetings ($4,200) TWRI instructor fees x 12 programs plus conferences ($5,500) TWRI instructor travel at the state rates x 12 programs plus conferences ($4,501) TWRI computer, printer and monitor ($2,000) TWRI software license fees ($300)
Indirect	$ 46,328	15% of Modified Total Direct Costs

Budget Justification (Non-Federal) – Texas Water Resources Institute		
Category	Total Amount	Justification
Personnel	$ 65,440	TWRI Director, $205,400 annually @ 2.1 months ($37,796) Deputy Director, $126,875 @ 1.55 months ($16,394) GEOS Graduate Student, $50,000 annually for 2.7 months ($11,250) *named positions are budgeted with a 3% annual pay increase in all years; TBD positions and graduate students are budgeted with a 3% pay increase in years after year 1 **(Salary estimates are based on average monthly percent effort for the entire contract. Actual percent effort may vary more or less than estimated between months; but in the aggregate, will not exceed total effort estimates for the entire project.)
Fringe Benefits	$ 13,151	Fringe is calculated at 18% of salary plus $647/month for full-time staff/faculty; 10.3% salary plus $300/month for graduate students (Fringe benefits estimates are based on salary estimates listed. Actual fringe benefits will vary between months coinciding with percent effort variations; but in the aggregate, will not exceed the overall estimated total.)
Travel	$ 0	N/A
Equipment	$ 0	N/A
Supplies	$ 0	N/A
Contractual	$ 46,497	Texas A&M Forest Service
Construction	$ 0	N/A
Other	$ 0	N/A
Indirect	$ 141,583	Texas A&M AgriLife Research's negotiated indirect cost rate is 48.5% - 48.5% of non-federal modified total direct costs ($38,117) - 33.5% of unrecovered indirect costs on federal funds ($103,466)

Budget Justification (Federal) – Texas A&M Forest Service		
Category	Total Amount	Justification
Personnel	$ 26,256	TFS Program Coordinator II, $68,726 annually, 12% time plus a 3% increase annually
Fringe Benefits	$ 7,522	Fringe is calculated at 18% of salary plus $647/month
Travel	$ 3,684	TFS Travel includes: - 5 events per year in various locations throughout the state including trainings and conferences. Estimated costs include per diem at the state rates for the areas ($1,980) and hotel costs at the state rate for the areas ($1,704) = $3,684
Equipment	$ 0	N/A
Supplies	$ 1,509	TFS Fuel ($1,509)
Contractual*	$ 0	N/A
Construction	$ 0	N/A
Other	$ 0	N/A
Indirect	$ 5,846	15% of Modified Total Direct Costs

Budget Justification (Non-Federal) – Texas A&M Forest Service		
Category	Total Amount	Justification
Personnel	$ 25,162	TFS Program Coordinator II, $68,726 annually, 11.5% time plus a 3% increase annually
Fringe Benefits	$ 7,207	Fringe is calculated at 18% of salary plus $647/month
Travel	$ 0	N/A
Equipment	$ 0	N/A
Supplies	$ 0	N/A
Contractual*	$ 0	N/A
Construction	$ 0	N/A
Other	$ 0	N/A
Indirect	$ 14,128	Texas A&M Forest Service's negotiated indirect cost rate is 28%. - 28% of non-federal modified total direct costs ($9,063) - 13% of unrecovered indirect costs on federal funds ($5,065)