Texas State Soil and Water Conservation Board
Clean Water Act §319(h) Nonpoint Source Grant Program
FY 2020 Workplan 20-04

SUMMARY PAGE						
Title of Project	The Statewide Delivery of the Lone Star Healthy Streams Program					
Project Goals	• Facilitate continued and enhanced statewide implementation of the Lone Star Healthy Streams (LSHS) program through local and distance educational events to help reduce bacterial contamination originating from feral hogs, grazing and dairy cattle, poultry, and horses in Texas' surface waters. • Evaluate program success by measuring changes in producer knowledge and understanding regarding bacteria pollution and BMPs to minimize bacterial contamination as well as intentions to adopt recommended BMPs.					
Project Tasks	(1) Project Administration; (2) Coordinate and deliver LSHS locally or through distance education; (3) Evaluate the effectiveness of the LSHS program					
Measures of Success	• Delivery of a minimum of 10 LSHS local and 3 distance education trainings per year • Number of livestock producers and landowners participating in educational events delivered locally or through distance education; • Number of unique visitors to the LSHS project website (http://lshs.tamu.edu); • Number of factsheets, publications, and other educational materials distributed regarding the LSHS program and BMPs to reduce bacterial contamination; • Increased knowledge and understanding of livestock producers and landowners on bacteria pollution and BMPs to reduce bacteria runoff and increased understanding of the expected adoption of BMPs.					
Project Type	Implementation (X); Education (X); Planning ( ); Assessment ( ); Groundwater ( )					
Status of Waterbody on *2014 Texas Integrated Report*	Segment ID Statewide	Parameter of Impairment or Concern Statewide	Category Statewide			
Project Location (Statewide or Watershed and County)	Statewide					
Key Project Activities	Hire Staff ( ); Surface Water Quality Monitoring ( ); Technical Assistance ( ); Education (X); Implementation (X); BMP Effectiveness Monitoring ( ); Demonstration ( ); Planning ( ); Modeling ( ); Bacterial Source Tracking ( ); Other ( )					
2017 Texas NPS Management Program Reference	• Component One LTGs 1, 2, 4 • Component One STGs 3A, 3B, 3F • Component Two • Component Three					
Project Costs	Federal	$382,461	Non-Federal	$255,099	Total	$637,560
Project Management	• Texas A&M AgriLife Extension (Extension)					
Project Period	March 1, 2021 – October 31, 2024					

Part I – Applicant Information

Applicant							
Project Lead	Larry A. Redmon						
Title	Professor, Associate Department Head & Program Leader						
Organization	Texas A&M AgriLife Extension						
E-mail Address	l-redmon@tamu.edu						
Street Address	2474 TAMU						
City	College Station	County	Brazos	State	TX	Zip Code	77843-2474
Telephone Number	979-862-8072			Fax Number	979-845-0604		

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 A&M AgriLife Extension – Department of Soil & Crop Sciences	Provide overall project management including project coordination, submission of quarterly and final reports, delivery of LSHS through local and distance education, and evaluation of project effectiveness.
Texas A&M AgriLife Extension – Department of Animal Science (Extension)	Provide guidance on poultry, dairy, and horse components and assist in program 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.	Bastrop Bayou Watershed Protection Plan; 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; 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; A Watershed Protection Plan for the Pecos River in Texas; Plum Creek Watershed Protection Plan; San Bernard River Watershed Protection Plan; One TMDL for Bacteria in Upper Oyster Creek, Lampasas River Watershed Protection Plan.						

If yes, identify the agency/group that developed and/or approved the document.	Bastrop Bayou Stakeholder Group facilitated by Houston-Galveston Area Council, Buck Creek Watershed Partnership facilitated by Texas Water Resources Institute and TSSWCB; Galveston Bay Estuary Program and TCEQ; TCEQ, University of Houston, and CDM; The Geronimo and Alligator Creeks Watershed Partnership facilitated by GBRA, Texas A&M 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.; Landowners and entities in the Pecos River watershed, facilitated by AgriLife Extension, TWRI and TSSWCB; Plum Creek Watershed Partnership facilitated by Texas A&M AgriLife Extension Service and TSSWCB; Houston-Galveston Area Council and TCEQ; TCEQ and Texas Institute of Applied Environmental Research	Year Developed	2011; 2012; 2012, 2012, 2007, 2011, 2011; 2011; 2008; 2008; 2008; 2011; 2007; 2013

Watershed Information				
Watershed or Aquifer Name(s)	Hydrologic Unit Code (12 Digit)	Segment ID	Category on 2014 IR	Size (Acres)
Attoyac Bayou	120200050301 – 120200050307, 120200050401 – 120200050406, 120200050501	0612	5b	426,880
Bastrop Bayou Tidal	120402050400	1105	2	188,965
Buck Creek	111201050204, 111201050208, 111201050303, 111201050305 – 111201050307, 111201050401 – 111201050407, 111201050501 – 111201050502	0207A	2	187,270
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

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	2311	5c	8,958,079

	130700080501 - 130700080508; 130700080601 - 130700080604 130700080701 - …0703; 130700090101 - …0109 130700090201 - …0210; 130700090301 - …0307			
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 (i.e., pollutants of concern) and sources (e.g., agricultural, silvicultural) of water quality impairments or concerns from any of the following sources: Draft *2016 Texas Integrated Report,* Clean Rivers Program Basin Summary/Highlights Reports, or other documented sources.

Segment ID	Body Name	Impairment	Code
0612	Attoyac Bayou	Bacteria	5b
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
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
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			
0612	Attoyac Bayou	Bacteria	CN
0207A	Buck Creek	Nitrate	CS
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
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
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
0207A	Buck Creek	Bacteria	WAP
1205	Lake Granbury	Bacteria	WAP
1217	Lampasas River Above Stillhouse Hollow Lake	Bacteria	WAP

Project Narrative

Problem/Need Statement

Excessive levels of fecal indicator bacteria (e.g. *E. coli*) remain a major cause of water quality impairment throughout Texas. Fecal indicator bacteria are common inhabitants of the intestines of all warm-blooded animals, including livestock. Although watersheds can be affected by microbial pollution from a wide variety of sources, livestock are increasingly under scrutiny. For example, bacterial source tracking (BST) results in the Lampasas River Watershed revealed livestock (cattle, avian livestock, and other non-avian livestock) accounted for a total of 22% of the *E. coli* identified while in the Leon River Watershed, livestock accounted for a total of 19%. One mechanism for reducing bacterial contamination from livestock species is to promote greater adoption, implementation, and maintenance of best management practices (BMPs) by livestock producers and landowners across the state. However, to accomplish this, significant resources are needed to educate and inform livestock producers and landowners about bacteria impairments, their causes, and most importantly, BMPs that can be implemented to help reduce bacterial contamination.

Surface water contamination by bacteria is not isolated to one watershed or region, but is instead a significant statewide issue. Consequently, through the joint vision of the TSSWCB and Extension, the LSHS program was developed and pilot tested through TSSWCB project 09-06 entitled, *Development of a Synergistic, Comprehensive Statewide Lone Star Healthy Streams Program*. This piloting period provided an opportunity to refine the program materials and components in preparation for statewide implementation of the program. Through TSSWCB project 12-08, *Statewide Delivery of the Beef Cattle, Dairy Cattle, Poultry and Horse Components of the Lone Star Healthy Streams Program*, over 30 education and training events have been conducted to date reaching over 50 counties and nearly 1,600 citizens with demand for the program increasing. Through both of these projects, presentations were developed, manuals were published, and other resources made available for online delivery. It is estimated that for every $1 spent on water-related conservation programs in Texas, $4-$7 are saved, yielding a potential economic impact of the Lone Star Healthy Streams program to be $1.26 to $2.2 million.

Another component of TSSWCB project 12-08 was a statewide evaluation targeting beef cattle producers in Texas. The goal of this effort was to evaluate potential barriers to the adoption and implementation of water quality BMPs. Results of the evaluation have been analyzed and submitted for publication in appropriate journals. An executive summary is being developed and will enable conservation program managers to better understand BMP adoption behavior by livestock producers in the state. Consequently, it is imperative these results be shared with state water quality and natural resource agencies to improve design practices and programs that encourage and secure participation, facilitate sustained adoption of practices, and meet water quality goals in the most cost effective manner. Extension, with the help of the TSSWCB, will facilitate meetings with state water quality and natural resource agencies to disseminate the results so identified barriers to BMP adoption can be addressed.

The LSHS program is an important water quality education initiative in Texas. To help meet increasing demands for the program, this project will provide continued statewide implementation to support and enhance current and future watershed protection efforts in Texas and provide a basis for gaining landowner participation and adoption of BMPs.

Project Narrative

General Project Description (Include Project Location Map)

This project will continue statewide delivery of the Lone Star Healthy Streams program through local and distance education events in targeted watersheds across Texas.

Local Watershed and Distance Education. Extension will work with its Regional Program Leaders, County Extension Agents, watershed coordinators, and Extension Specialists around the state to deliver the LSHS program in bacteria impaired watersheds through local and distance training events. Events will be coordinated through local County Extension Agents and their program planning committees. The LSHS website, lshs.tamu.edu, online training course, and resource manuals will continue to be used for program implementation; additional written materials will be developed as needed.

Locations for training programs will be selected in concert with the TSSWCB and will target bacteria impaired watersheds where livestock and poultry have been identified as potential contributors, as well as those watersheds currently undergoing development and/or implementation of a WPP, TMDL, or I-Plan. Training programs will also be conducted at field days, conferences, and other county extension events as necessary. Incorporating LSHS programs into other types of events will enhance coordination among various state projects and entities also conducting water-related education, and maximize contact with producers at all levels of operation.

Both local and distance education programs will vary in length and topic depending on the audience or location of the program. Distance education events will be delivered utilizing various digital video conferences platforms including Zoom, TEAMS etc. Interested participants log in from a remote site to listen and view the presentation live. Presentations can also be recorded so that individuals who miss the live presentation can log on and see the event at a later time. A minimum of 10 local events and 3 distance education events will be conducted annually. Curriculum and training materials have already been developed to address topics and BMPs related to beef cattle, dairy cattle, poultry, and horses. As part of each training program, participants will learn about water quality law and policy, sources of bacteria in Texas waterways, bacteria fate and transport, benefits of voluntary conservation practices, sources of financial and technical assistance, and livestock-specific BMPs that are designed to reduce bacterial contamination of runoff.

Evaluation and Assessment. The impacts and effectiveness of the LSHS program will be assessed using a multi- stage evaluation approach. The first stage will use a pre-test/post-test evaluation strategy at the beginning and end of both watershed and computer-based training programs. The pre-test will pose knowledge-based questions that include a combination of multiple choice and true/false questions. The post-test will measure the same knowledge-based questions to determine the knowledge gained. In addition, the post-test will include 'satisfaction' and 'intentions to adopt' questions. The 'intentions to adopt' questions will focus on BMPs that participants should adopt based on what they have learned and the practice's ability to reduce bacterial contamination.

Tasks, Objectives and Schedules						
Task 1	Project Administration					
Costs	Federal	$76,492	Non-Federal	$51,019	Total	$127,511
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	Extension 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 1st of January, April, July and October. QPRs shall be distributed to all Project Partners.					
	Start Date	Month 1	Completion Date	Month 46		
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 46		
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 46		
Subtask 1.4	Extension will develop a Final Report that summarizes activities completed and conclusions reached during the project and discusses the extent to which project goals and measures of success have been achieved.					
	Start Date	Month 1	Completion Date	Month 46		
Deliverables	• QPRs in electronic format • Reimbursement Forms and necessary documentation in hard copy format • Final Report in electronic and hard copy formats					

Tasks, Objectives and Schedules						
Task 2	Coordinate and deliver LSHS locally or through distance education					
Costs	Federal	$267,723	Non-Federal	$178,571	Total	$446,294
Objective	Continue delivery of a statewide educational program that provides livestock producers and landowners applicable information on water quality law and policy, sources of bacteria in Texas waterways, bacteria fate and transport, benefits of voluntary conservation practices, sources of technical assistance and financial incentives, and livestock-specific BMPs that are designed to reduce bacterial contamination of runoff. Extension will work in cooperation with the TSSWCB and other agencies and organizations as appropriate to guide program delivery and selection of training locations.					
Subtask 2.1	Extension will employ a Program Specialist who will serve under the leadership of the Extension State Forage Specialist as the full-time LSHS Program Coordinator and will be responsible for promoting, coordinating, and delivering local and distance education LSHS training events.					
	Start Date	Month 1	Completion Date	Month 46		
Subtask 2.2	Extension will work in concert with state and local organizations to select locations for the watershed-based TWS 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. Additional watersheds will be selected based on impairment status, environmental sensitivity, and/or other priority issues identified by a partner agency or organization. Extension and TSSWCB will periodically make a collaborative decision to re-prioritize and add to/remove from the list of watersheds. Extension will actively market LSHS programs through news releases (AgriLife News and local media outlets), internet postings, radio, newsletter announcements, public/conference presentations, flyers, etc., to enhance program participation and resource utilization. TSSWCB will be provided all promotional materials for review at least 2 to 3 weeks prior to distribution					

	Start Date	Month 1	Completion Date	Month 46
Subtask 2.3	Extension will coordinate with Extension Regional Program Leaders, County Extension Agents, local SWCDs, NRCS, TSSWCB, watershed coordinators, and others to deliver the LSHS educational program to bacteria-impaired or threatened watersheds throughout the state. Trainings will include the standardized resources. Production characteristics of each watershed will dictate the LSHS component(s) to be discussed and the mode of delivery (local or distance). Delivery of a minimum of 10 watershed-based education trainings per year and availability of computer-based training components of the program as requested.			
	Start Date	Month 1	Completion Date	Month 46
Subtask 2.4	Extension will participate in meetings as appropriate in order to efficiently and effectively achieve project goals and summarize activities and achievements made throughout the course of this project. Such meetings may include, but are not limited to, local soil and water conservation districts (SWCDs), the Texas Watershed Planning Short Course, Texas Watershed Coordinator Roundtables, the TSSWCB Regional Watershed Coordination Steering Committee, the annual meeting of Texas Soil and Water Conservation District Directors, the National Water Quality Conference, and the Society for Range Management annual meeting.			
	Start Date	Month 1	Completion Date	Month 46
Subtask 2.5	Extension, with assistance from TWRI, will continue to host and maintain a website (http://lshs.tamu.edu/) to serve as a public clearinghouse for all project related information. All workshop information as well as other material will be available on this website. The number of unique visitors to the website and distribution of Lone Star Healthy Streams educational materials will be tracked to assess impact and reported each quarter.			
	Start Date	Month 1	Completion Date	Month 46
Deliverables	• LSHS Website • Collection of press releases, newspaper articles, newsletters, public information statements, etc., as developed and disseminated • Tracking report of website usage • Schedule of program delivery, participation in workshops and educational events, and related activities • List of participants from educational events			

Tasks, Objectives and Schedules						
Task 3	Evaluate the effectiveness of the LSHS Program					
Costs	Federal	$38,246	Non-Federal	$25,509	Total	$63,755
Objective	To measure both knowledge and behavior changes of individuals participating in the LSHS program using a pre/post evaluation approach.					
Subtask 3.1	Extension will utilize pre-test/post-test evaluations (for both local and distance education events) to measure changes in knowledge of participants regarding water quality law and policy, sources of bacteria in Texas waterways, bacteria fate and transport, benefits of voluntary conservation practices, sources of financial and technical assistance, and livestock-specific BMPs that are designed to reduce bacterial contamination of runoff; to evaluate participant satisfaction with the program; and to evaluate participant's intentions to change their behavior as a result of the program					
	Start Date	Month 1	Completion Date	Month 46		
Subtask 3.2	Extension will analyze test results using descriptive, correlational, and analysis of variance statistical procedures. Results will be used to periodically evaluate and modify LSHS program materials and incorporated into the final report.					
	Start Date	Month 1	Completion Date	Month 46		
Deliverables	• Pre-/post-test evaluations for watershed- and computer-based LSHS trainings. • Results from pre/post evaluations					

Project Goals (Expand from Summary Page)

The goal of this project is to promote healthy watersheds and improve water quality through continued delivery of the Lone Star Healthy Streams program, using both local and distance education in targeted watersheds across the state. This will be accomplished through education of Texas livestock and landowners on how to best protect Texas waterways from bacterial contributions associated with the production of livestock and poultry.

Measures of Success (Expand from Summary Page)

- Delivery of a minimum of 10 LSHS local and 3 distance education trainings per year.
- Number of livestock producers and landowners participating in educational events delivered locally or through distance education.
- Number of unique visitors to the LSHS project website.
- Number of factsheets, publications, and other educational materials distributed regarding the LSHS program and BMPs to reduce bacterial contamination.
- Increased knowledge and understanding by producers and landowners of bacterial pollution and BMPs to reduce bacterial runoff and increased understanding of the expected adoption of BMPs.

2017 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 and groundwater. 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 waterbodies impacted by NPS pollution.
Component 2 – Working partnerships and linkages to appropriate state, interstate, tribal, 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

Estimated Load Reductions Expected (Only applicable to Implementation Project Type)
N/A

EPA State Categorical Program Grants – Workplan Essential Elements FY 2018-2022 EPA Strategic Plan Reference
Strategic Plan Goal – Goal 1 Core Mission: Deliver a cleaner, safer, and healthier environment for all Americans and future generations by carrying out the Agency's core mission.
Strategic Plan Objective – Objective 1.2 Provide for Clean and Safe Water to ensure waters are clean through improved water infrastructure and, in partnership with states and tribes, sustainably manage programs to support drinking water, aquatic ecosystems, and recreational, economic, and subsistence activities.

Part III – Financial Information

Budget Summary				
Federal	$	382,461	% of total project	60%
Non-Federal	$	255,099	% of total project	40%
Total	$	637,560	Total	100%

Category	Federal	Non-Federal	Total
Personnel	$ 230,390	$ 126,743	$ 357,133
Fringe Benefits	$ 68,786	$ 31,112	$ 99,898
Travel	$ 24,249	$ 0	$ 24,249
Equipment	$ 0	$ 0	$ 0
Supplies	$ 900	$ 0	$ 900
Contractual	$ 0	$ 0	$ 0
Construction	$ 0	$ 0	$ 0
Other	$ 8,250	$ 0	$ 8,250
Total Direct Costs	$ 332,575	$ 157,855	$ 490,430
Indirect Costs (≤ 15%)	$ 49,886	$ 47,357	$ 97,243
Unrecovered IDC		$ 49,886	$ 49,886
Total Project Costs	$ 382,461	$ 255,099	$ 637,560

Budget Justification (Federal)		
Category	Total Amount	Justification
Personnel	$ 230,390	Extension Program Specialist (1.0 FTE) • (3% raise built in for Yr 1, 2 & 3) • Year 1: $62,800 • Year 2: $65,400 • Year 3: $67,800 • Year 4: $34,390 (6 months) • TOTAL: $230,390
Fringe Benefits	$ 68,786	Extension Specialists – 18.5% of personnel cost at effort plus $7471/mo/FTE group health insurance
Travel	$ 24,249	Travel to/from Educational Programs, Project Meetings, and Conferences: Estimates were calculated based on 10 locations/year and 1 annual conference/year + Mileage (at or below State rate), Fuel, or Rental Vehicle for trips ranging from 100-500 miles roundtrip + 2 days per diem for 2 people, Airfare.
Equipment	$ 0	N/A
Supplies	$ 900	Office Supplies, Printer paper, etc.
Contractual*	$ 0	N/A
Construction	$ 0	N/A
Other	$ 8,250	Computer/software updates, printing, facility rental, conference fees and telecommunication devices and fees. Online training user fee at $1 per user for an estimated 500 users ($500)
Indirect	$ 49,886	15% of Total Direct Costs.

Budget Justification (Non-Federal)		
Category	Total Amount	Justification
Personnel	$ 126,743	Professor & Extension Specialist – Dr. Larry Redmon (0.16 FTE) • Annual Salary = $172,412 * 1.03 (3% raise built in for Yr 1, 2 & 3) • Year 1: $28,398 • Year 2: $29,250 • Year 3: $30,127 • TOTAL: $87,775 Associate Professor & Extension Specialist – Dr. Vanessa Olson (0.12 FTE) • Annual Salary = $101,737 * 1.03 (3% raise built in for Yr 1, 2 & 3) • Year 1: $12,607 • Year 2: $12,985 • Year 3: $13,376 • TOTAL: $38,968
Fringe Benefits	$ 31,112	18.5% of personnel cost at effort plus $7471/mo/FTE group health insurance
Travel	$ 0	N/A
Equipment	$ 0	N/A
Supplies	$ 0	N/A
Contractual*	$ 0	N/A
Construction	$ 0	N/A
Other	$ 0	N/A
Unrecovered IDC	$ 49,886	Texas A&M AgriLife Extension negotiated IDC 30% TDC -15% MTDC limited=15%
Indirect	$ 47,357	30% of TDC The entity may claim additional match through unrecovered indirect costs waived for the federal reimbursement. Generally, this is done by calculating the difference between the standard indirect rate of the entity and the reduced rate of 15% for federal costs. Itemize the indirect costs for the non-federal match and the unrecovered indirect costs for the federal portion separately.