

**Texas State Soil and Water Conservation Board
 State Nonpoint Source Grant Program
 FY 2020 Workplan 20-54**

SUMMARY PAGE															
Title of Project	Continued Surface Water Quality Monitoring for Middle Yegua Creek, Davidson Creek, and Deer Creek Watersheds														
Project Goals	<ul style="list-style-type: none"> Supplement existing water quality and quantity data through water quality monitoring Update existing Watershed Characterization Report for Middle Yegua, Davidson, and Deer Creeks 														
Project Tasks	(1) Project Administration; (2) Quality Assurance; (3) Continued Surface Water Quality Monitoring; (4) Update Characterization Report														
Measures of Success	<ul style="list-style-type: none"> Collection and analysis of quality assured data generated for watershed sampling sites Updated estimated source loadings and needed reductions Updated analysis of existing data 														
Project Type	Implementation (); Education (); Planning (X); Assessment (); Groundwater ()														
Status of Waterbody on 2016 Texas Integrated Report	<table border="1"> <thead> <tr> <th>Segment ID</th> <th>Parameter of Impairment or Concern</th> <th>Category</th> </tr> </thead> <tbody> <tr> <td>Davidson Creek 1211A</td> <td>Bacteria, depressed dissolved oxygen</td> <td>5b, 5c</td> </tr> <tr> <td>Middle Yegua Creek 1212A</td> <td>Bacteria, depressed dissolved oxygen, impaired habitat</td> <td>5b, CS, CS</td> </tr> <tr> <td>Deer Creek 1242J</td> <td>Bacteria, impaired macrobenthic community</td> <td>5c, CN</td> </tr> </tbody> </table>	Segment ID	Parameter of Impairment or Concern	Category	Davidson Creek 1211A	Bacteria, depressed dissolved oxygen	5b, 5c	Middle Yegua Creek 1212A	Bacteria, depressed dissolved oxygen, impaired habitat	5b, CS, CS	Deer Creek 1242J	Bacteria, impaired macrobenthic community	5c, CN		
Segment ID	Parameter of Impairment or Concern	Category													
Davidson Creek 1211A	Bacteria, depressed dissolved oxygen	5b, 5c													
Middle Yegua Creek 1212A	Bacteria, depressed dissolved oxygen, impaired habitat	5b, CS, CS													
Deer Creek 1242J	Bacteria, impaired macrobenthic community	5c, CN													
Project Location (Statewide or Watershed and County)	Davidson Creek watershed in Milam and Burleson counties Middle Yegua Creek watershed in Lee, Bastrop, Williamson, and Milam counties Deer Creek watershed in Falls, McLennan, and Bell counties														
Key Project Activities	Hire Staff (); Surface Water Quality Monitoring (X); Technical Assistance (); Education (); Implementation (); BMP Effectiveness Monitoring (); Demonstration (); Planning (X); Modeling (); Bacterial Source Tracking (); Other ()														
2017 Texas NPS Management Program Reference	<ul style="list-style-type: none"> Component 1: LTG 1, 2, 6 Component 1: STG 1A, 1B, 1C Component 2, 3, 7 														
Project Costs	Total Cost	\$127,485													
Project Management	<ul style="list-style-type: none"> Texas A&M AgriLife Research, Texas Water Resources Institute 														
Project Period	March 1, 2020 – Feb 28, 2022														

Part I – Applicant Information

Applicant							
Project Lead	T. Allen Berthold						
Title	Sr. Research Scientist						
Organization	Texas A&M AgriLife Research, Texas Water Resources Institute						
E-mail Address	taberthold@ag.tamu.edu						
Street Address	578 John Kimbrough Blvd., 2260 TAMU						
City	College Station	County	Brazos	State	Texas	Zip Code	77843
Telephone Number	979-845-2028			Fax Number	979-845-0662		

Project Co-Lead	Dr. Lucas Gregory						
Title	Sr. Research Scientist and QA Officer						
Organization	Texas A&M AgriLife Research, Texas Water Resources Institute						
E-mail Address	lfgregory@ag.tamu.edu						
Street Address	578 John Kimbrough Blvd., 2260 TAMU						
City	College Station	County	Brazos	State	Texas	Zip Code	77843
Telephone Number	979-845-7869			Fax Number	979-845-0662		

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 the Texas Commission on Environmental Quality (TCEQ).
Texas A&M AgriLife Research, Texas Water Resources Institute (TWRI)	Provide project administration, coordination, and quality assurance, water quality monitoring and modeling.

Part II – Project Information

Project Type							
Surface Water	<input checked="" type="checkbox"/>	Groundwater	<input type="checkbox"/>				
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 <i>Texas Coastal NPS Pollution Control Program</i> , or (f) the <i>Texas Groundwater Protection Strategy</i> ?				Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
If yes, identify the document.		N/A					
If yes, identify the agency/group that developed and/or approved the document.		N/A		Year Developed	N/A		

Watershed Information				
Watershed or Aquifer Name(s)	Hydrologic Unit Code (12 Digit)	Segment ID	Category on 2016 IR	Size (Acres)
Davidson Creek watershed	120701020401-120701020406	1211A	5b, 5c	139,367
Middle Yegua Creek watershed	120701020101-120701020111	1212A	5b, CS	281,798
Deer Creek watershed	120701010109-120701010111	1242J	5c, CN	73,476

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: *2016 Texas Integrated Report*, Clean Rivers Program Basin Summary/Highlights Reports, or other documented sources.

IMPAIRMENTS

SegID: 1211A: Davidson Creek: Intermittent stream with perennial pools from the confluence with Yegua Creek to 1.7 km above CR 322, Milam County

Parameter	Category	Year
Bacteria	5b	2002

1211A_02: Intermittent stream with perennial pools from the confluence with Yegua Creek upstream of 0.2 km above SH 21 near the city of Caldwell; App D

Parameter	Category	Year
Depressed Dissolved Oxygen	5c	2010

1211A_02: Intermittent stream with perennial pools from the confluence with Yegua Creek upstream of 0.2 km above SH 21 near the city of Caldwell; App D

SegID: 1212A: Middle Yegua Creek: From the confluence with East Yegua and Yegua Creeks in Lee County to the County/Williamson County line

Parameter	Category	Year
Bacteria	5b	2010

1212A_02: From the confluence with West Yegua Creek upstream to the headwaters of water body in Williamson County

SegID: 1242J: Deer Creek: Perennial stream from the confluence of the Brazos River upstream to the confluence of Dog Branch northwest of Lott

Parameter	Category	Year
Bacteria	5c	2006

1242J_01: Deer Creek and Appendix D perennial stream from the confluence of the Brazos River upstream to the confluence of Dog Branch northwest of Lott

CONCERNS (2016 Texas Water Quality Inventory)

SegID: 1212A: Middle Yegua Creek: From the confluence with East Yegua and Yegua Creeks in Lee County to the County/Williamson County line

Assessment Unit	Concern	Level of Support
1212A_02	Dissolved Oxygen	CS (Concern screening levels)
1212A_02	Habitat	CS (Concern screening levels)

SegID: 1242J: Deer Creek: Perennial stream from the confluence of the Brazos River upstream to the confluence of Dog Branch northwest of Lott

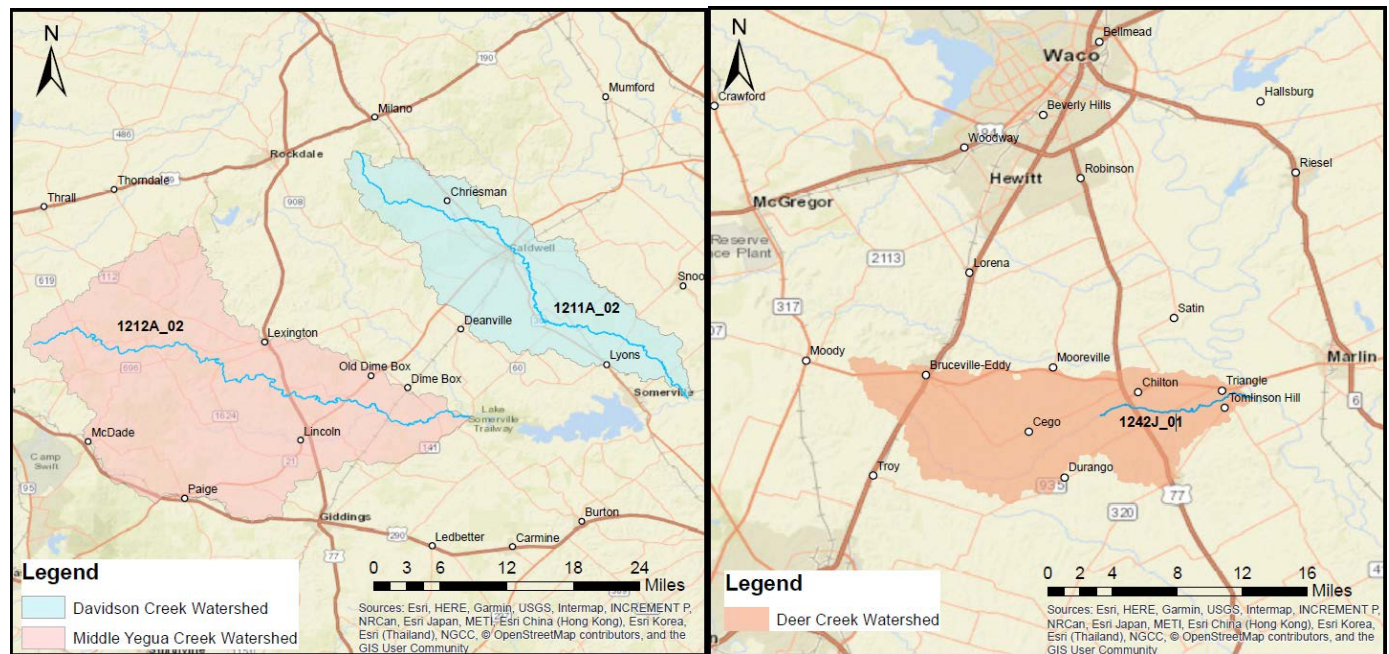
<u>Assessment Unit</u>	<u>Concern</u>	<u>Level of Support</u>
1242J_01	Macrobenthic Community	CN (Concern for near non-attainment)
SOURCES (2016 Texas Integrated)		
Davidson Creek: Segment ID 1211A, AU ID 1211A_02		
<i>E. coli, Dissolved Oxygen 24hr Avg., Dissolved Oxygen 24hr Min.</i>		
Point sources: Unknown		
Non-point sources: Agriculture and natural sources		
Middle Yegua Creek: Segment ID 1212A, AU ID 1212A_02		
<i>E. coli, Dissolved Oxygen Grab, Habitat</i>		
Point sources: Unknown		
Non-point sources: Unknown		
Deer Creek: Segment ID 1242J		
<i>E. coli and Macrobenthic Community</i>		
Point sources: Unknown		
Non-point sources: Permitted runoff from confined animal feeding operations (CAFOs)		

Project Narrative
Problem/Need Statement
<p>The Texas Integrated Report and 303(d) List has identified Middle Yegua Creek (SegID 1212A), Davidson Creek (SegID 1211A), and Deer Creek (SegID 1242J) as impaired for not meeting the state's water quality standard for contact recreation. The following AUs are impaired for elevated levels of bacteria: 1212A_02, 1211A_02, and 1242J_01. Davidson Creek is also impaired for depressed dissolved oxygen for AU 1211A_02.</p> <p>Due to a lack of water quality data available for Middle Yegua, Davidson, and Deer Creeks, additional surface water quality monitoring data is necessary to provide a good foundation for future watershed planning and implementation activities. Also, this additional data can be used to update the existing characterization report, which will give stakeholders and other interested parties current knowledge of water quality issues in the watersheds.</p>

Project Narrative

General Project Description (Include Project Location Map)

To supplement existing data and attempt to fill data gaps and improve analysis, additional water quality will be collected at 8 sites monthly (2 sites in the Deer Creek watershed and 3 sites in each of the Middle Yegua Creek and Davidson Creek watersheds). Flow data will be collected as well at the Middle Yegua Creek and Davidson Creek sites. Flow will be estimated for the Deer Creek watershed using a qualitative streamflow estimation method due to inaccessibility at those sites. This additional surface water quality monitoring data will be used to update loading reductions in the Middle Yegua, Davidson, and Deer Creeks Characterization Report. These load reductions are needed to accomplish water quality standards, and goals will be calculated using Load Duration Curves.



Tasks, Objectives and Schedules				
Task 1	Project Administration			
Costs	\$19,123			
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 1 st of March, June, September and December. QPRs shall be distributed to all Project Partners.			
	Start Date	Month 1	Completion Date	Month 24
Subtask 1.2	TWRI 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	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 24
Subtask 1.4	TWRI 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 24
Deliverables	<ul style="list-style-type: none"> • 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	Quality Assurance			
Costs	\$5,099			
Objective	To develop data quality objectives (DQOs) and quality assurance/control (QA/QC) activities to ensure data of known and acceptable quality are generated through this project.			
Subtask 2.1	TWRI will develop a QAPP for activities in Task 3 and Task 4 consistent with the most recent versions of <i>EPA Requirements for Quality Assurance Project Plans (QA/R-5)</i> and the <i>TSSWCB Environmental Data Quality Management Plan</i> . All monitoring procedures and methods prescribed in the QAPP shall be consistent with the guidelines detailed in the <i>TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods for Water, Sediment, and Tissue (RG-415)</i> and <i>Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data (RG-416)</i> . [Consistency with Title 30, Chapter 25 of the Texas Administrative Code, <i>Environmental Testing Laboratory Accreditation and Certification</i> , which describes Texas' approach to implementing the National Environmental Laboratory Accreditation Conference (NELAC) standards, shall be required where applicable.]			
	Start Date	Month 1	Completion Date	Month 6
Subtask 2.2	TWRI will implement the approved QAPP. TWRI will submit revisions and necessary amendments to the QAPP as needed.			
	Start Date	Month 6	Completion Date	Month 24
Deliverables	<ul style="list-style-type: none"> • QAPP approved by TSSWCB in both electronic and hard copy formats • Approved revisions and amendments to the QAPP, as needed • Data of known and acceptable quality as reported through Task 3 and Task 4 			

Tasks, Objectives and Schedules			
Task 3	Continued Surface Water Quality Monitoring for Middle Yegua, Davidson, and Deer Creeks		
Costs	\$82,865		
Objective	To continue collecting surface water quality and flow data to supplement existing data in the watershed characterization report.		
Subtask 3.1	TWRI will conduct monthly ambient water quality monitoring at two sites in the Deer Creek watershed and three sites in each of the Middle Yegua and Davidson Creeks watersheds. Sampling will include routine field parameters (Temperature, pH, DO, conductivity) and collection of water samples of the volume required by the QAPP in Task 2. Flow data will also be collected only for Middle Yegua and Davidson Creeks. Water samples will be delivered to Aqua-Tech Laboratories Inc. within the appropriate holding time for analysis. Water samples returned to the lab will be analyzed for <i>E. coli</i> bacteria.		
	Start Date	Month 3	Completion Date Month 21
Subtask 3.2	Aqua-Tech Laboratories Inc. will transfer completed lab analysis data to TWRI who will maintain a master database of collected data. Data will be submitted to TSSWCB by TWRI for submission to SWQMIS on a quarterly basis.		
	Start Date	Month 3	Completion Date Month 21
Deliverables	<ul style="list-style-type: none"> • Documentation of sampling events in QPRs • Quarterly data submissions (data summary and checklist, event and result files, and validator report) after successful upload into SWQMIS test environment 		

Tasks, Objectives and Schedules			
Task 4	Update of Existing Middle Yegua, Davidson, and Deer Creeks Characterization Report		
Costs	\$20,398		
Objective	To update data and information collected in the Middle Yegua, Davidson, and Deer Creek watersheds characterization report.		
Subtask 4.1	TWRI will use any new data and information pertaining to water quality impairments and issues in the watersheds to update the GIS analysis. The data collected from the continued water quality monitoring in Task 3 will be used to update LDCs and estimated pollutant loadings. All newly acquired data and information will be assembled into an updated version of the Middle Yegua, Davidson, and Deer Creeks watersheds characterization report.		
	Start Date	Month 16	Completion Date Month 24
Deliverables	<ul style="list-style-type: none"> • Updated watershed characterization report • Documentation of updated LDC Analysis • Documentation of updated GIS Analysis (if updates were necessary) 		

Project Goals (Expand from Summary Page)

The goals of this project are focused on collecting additional surface water quality data to better characterize causes and sources of pollution in each of the watersheds. The primary goal for the Middle Yegua Creek, Davidson Creek, and Deer Creek watersheds is to use the surface water quality monitoring data to update LDCs and develop an updated characterization report.

To accomplish these goals TWRI will (1) collect surface water quality data; (2) update existing water quality and watershed data relative to potential pollutant loadings; and (3) establish current pollutant loads and update needed pollutant loading reductions to meet applicable water quality standards.

Measures of Success (Expand from Summary Page)

This project will be successful when the Middle Yegua, Davidson, and Deer Creek watersheds have been characterized with additional collected data to update loadings and loading reductions from previous calculations. Progress will be reported in quarterly progress reports and results will be provided in a final report.

2017 Texas NPS Management Program Reference (Expand from Summary Page)
<p>Components, Goals, and Objectives</p>
<p>Component 1: Explicit short- and long-term goals, objectives and strategies that protect surface ... water.</p> <p>Long-Term Goal – Protect and restore water quality affected by NPS pollution through assessment,..., and education.</p> <p>Objectives</p> <ul style="list-style-type: none"> • 1 – Focus NPS abatement efforts, ...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. • 6 – Develop partnerships, relationships... to facilitate collective, cooperative approaches to manage NPS pollution. <p>Short-term Goals</p> <p>Goal One – Data Collection and Assessment: Coordinate with appropriate federal, state, regional and local entities, and stakeholder groups to target water quality assessment activities in high priority, NPS-impacted watersheds...and areas where additional information is needed.</p> <ul style="list-style-type: none"> • Objective A – Identify surface water bodies...from the IR... that need additional information to characterize non-attainment of designated uses and water quality standards. • Objective B – Ensure that monitoring procedures meet quality assurance requirements and are in compliance with EPA-approved TSSWCB Quality Management Plans. • Objective C – Conduct special studies to determine sources of NPS pollution and gain information to target TMDL and BMP implementation.
<p>Component 2: Working partnerships and linkages with appropriate state, ... regional, and local entities, private sector groups and Federal agencies.</p>
<p>Component 3: Balanced approach that emphasizes both statewide NPS programs and on-the-ground management of individual watersheds.</p>
<p>Component 7: Manage and implement the NPS program efficiently and effectively, including necessary financial management</p>

Part III – Financial Information

Budget Summary	
Category	State
Personnel	\$ 73,813
Fringe Benefits	\$ 21,428
Travel	\$ 5,361
Equipment	\$ 0
Supplies	\$ 100
Contractual	\$ 0
Construction	\$ 0
Other	\$ 10,154
Total Direct Costs	\$ 110,856
Indirect Costs ($\leq 15\%$)	\$ 16,629
Unrecovered IDC	
Total Project Costs	\$ 127,485

Budget Justification		
Category	Total Amount	Justification
Personnel	\$ 73,813	Senior Research Scientist: \$75,563 annually @ 0.48 months Senior Research Scientist & QAO: \$86,771 annually @ 0.48 months Research Associate: \$50,692 annually @ 0.91 months Year 1 and 0.96 months Year 2 Research Assistant: \$39,500 annually @ 7.2 months Program Manager: \$59,064 annually @ 2 months Undergraduate Student Laborer: \$12 per hour @ 20 hours per week @ 50 weeks *named positions are budgeted with a 3% annual pay increase in all years; TBD positions 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 aggregate, will not exceed total effort estimates for the entire project.
Fringe Benefits	\$ 21,428	Fringe for faculty and staff is calculated at 18.2% salary plus \$746 per month. Fringe for hourly students is calculated at 10.7% salary plus \$412 per month. *Fringe benefits estimates are based on salary estimates listed. Actual fringe benefits will vary between months coinciding with percent effort variations; but in aggregate, will not exceed the overall estimated total.
Travel	\$ 5,361	Monitoring Mileage: 189.81 miles * \$0.50 per mile * 3 people * 18 trips = \$5,125 Watershed Mileage (SWCD meetings, etc) – 236 miles per year * \$0.50 per mile * 2 years = \$236
Equipment	\$ 0	N/A
Supplies	\$ 100	General Project Supplies
Contractual*	\$ 0	N/A
Construction	\$ 0	N/A
Other	\$ 10,154	Sampling Equipment Rental: \$225 per month * 18 months: \$4,050 Lab Analysis: 8 samples per month * \$41 per sample * 18 months: \$5,904 Software Licenses (ArcGIS, EndNote): \$200
Indirect	\$ 16,629	15% of Total Direct Costs