# Texas State Soil and Water Conservation Board
# Clean Water Act §319(h) Nonpoint Source Grant Program
# FY 2021 Workplan 21-12

| SUMMARY PAGE | | | |
|---|---|---|---|
| Title of Project | Implementing and Tracking Success of Agricultural Management Measures in Four Texas Watersheds | | |
| Project Goals | • Implementation of agricultural BMPs in targeted watersheds<br>• Facilitate expanded implementation of agricultural management measures identified in the project area's Watershed Protection Plans<br>• Conduct a digital agricultural demonstration to better illustrate to the agricultural community the value, benefits, and protection that the featured BMPs can have on their land<br>• Coordinate and/or conduct water resources and related environmental outreach/education efforts across the project watersheds | | |
| Project Tasks | (1) Project Administration; (2) Development and Distribution of Educational Materials; (3) Facilitation and Participation in Education Programs; (4) Demonstration of Stocking Strategies on Forage Production | | |
| Measures of Success | • Facilitate and promote watershed protection plan implementation with regard to agricultural management measures<br>• Deliver educational materials to key stakeholders across the four watersheds.<br>• Increase in the number of Conservation Plans and Water Quality Management Plans adopted<br>• Increase watershed stewardship among stakeholders | | |
| Project Type | Implementation (X); Education (X); Planning ( ); Assessment ( ); Groundwater ( ) | | |
| Status of Waterbody on *2020 Texas Integrated Report* | Segment ID | Parameter of Impairment or Concern | Category |
| | 0612 | Bacteria | 5c |
| | 1213A | Bacteria, Nitrate | 5b, CS |
| | 1902 | Bacteria, Macrobenthic Community, Habitat, Nitrate, Total Phosphorus | 5c, CN, CS |
| | 1913 | Nitrate, Total Phosphorus | CS |
| | 1209 | Bacteria, Nitrate, Total Phosphorus | 5a, CN, CS |
| | 1209C | Bacteria, Chlorophyll-a, Nitrate, Total Phosphorus | NS, CS |
| | 1209E | Bacteria | 5b |
| | 1209G | Depressed Dissolved Oxygen, Bacteria | CS, CN |
| | 1209H | Bacteria, Depressed Dissolved Oxygen | 5c, 5b, CS, NS |
| | 1209I | Bacteria, Depressed Dissolved Oxygen | 5b, 5c, CS, NS |
| | 1209J | Bacteria | 5c |
| | 1209K | Bacteria | 5b |
| | 1209L | Bacteria, Nitrate | NS, CS |
| Project Location (Statewide or Watershed and County) | Attoyac Bayou: Nacogdoches, San Augustine, Shelby, Rusk<br>Big Elm Creek: Bell, Falls, McLennan, Milam<br>Mid and Lower Cibolo Creek: Bexar, Comal, Guadalupe, Karnes, Wilson<br>Navasota River: Brazos, Grimes, Leon, Limestone, Madison, Robertson | | |
| Key Project Activities | Hire Staff ( ); Surface Water Quality Monitoring ( ); Technical Assistance ( ); Education (X); Implementation (X); BMP Effectiveness Monitoring ( ); Demonstration (X); Planning ( ); Modeling ( ); Bacterial Source Tracking ( ); Other ( ) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| *2017 Texas NPS Management Program* Reference | • Component 1 LTG 1, Objectives 1, 3, 6, 7<br>• STG 2, Objective D<br>• STG 3, Objective A, B, D, G | | | | | |
| Project Costs | Federal | $389,101 | Non-Federal | $259,401 | Total | $648,502 |
| Project Management | • Texas A&M AgriLife Extension Service, Texas Water Resources Institute | | | | | |
| Project Period | September 17, 2021 – August 31, 2025 | | | | | |

## Part I – Applicant Information

| **Applicant** | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Lead | T. Allen Berthold, PhD | | | | | | |
| Title | Assistant Director | | | | | | |
| Organization | Texas A&M AgriLife Extension Service, 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 | TX | Zip Code | 77843 |
| Telephone Number | 979-845-2028 | | | Fax Number | 979-845-8554 | | |

| **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 Service, Texas Water Resources Institute (TWRI) | TWRI will manage the project, develop and distribute educational resources, participate in in-person education programs, and coordinate the production of a field day and produce it digitally. |
| Texas A&M AgriLife Research & Extension Center at Overton | Faculty at the Overton Center will assist with the development and distribution of educational materials as well as the production of a digital field day, as a product of their ongoing efforts to provide education on proper grazing practices. |

## 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. | Attoyac Bayou WPP<br>Mid and Lower Cibolo WPP<br>Navasota River WPP<br>Big Elm Creek WPP | | | | | | |
| If yes, identify the agency/group that developed and/or approved the document. | Texas Water Resources Institute | | | Year Developed | 2014<br>2020<br>2017<br>TBD | | |

| **Watershed Information** | | | | |
|---|---|---|---|---|
| Watershed or Aquifer Name(s) | Hydrologic Unit Code (12 Digit) | Segment ID | Category on 2020 IR | Size (Acres) |
| Attoyac Bayou | 120200050301-307; 401-406; 501 | 0612 | 5c | 364,481 |
| Big Elm Creek | 120702040201-207 | 1213A | 5b, CS | 207,106 |
| Mid and Lower Cibolo Creek | 12100304202-206; 301-305; 401-405 | 1913, 1902 | 5c, CS, CN | 377,144 |
| Navasota River | 120701030201-204; 0307, 0309; 0401-0407; 0501-0510; 0601-0604; 0701-0707; 0801-0804 | 1209, 1209C, 1209E, 1209G, 1209H, 1209I, 1209J, 1209K, 1209L | 5a, 5b, 5c, CN, CS | 1,002,056 |

**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: *2020 Texas Integrated Report*, Clean Rivers Program Basin Summary/Highlights Reports, or other documented sources.

**Impairments**

**SegID 0612: Attoyac Bayou: From a point 3.9 km (2.4 mi) downstream of Curry Creek in Nacogdoches/San Augustine County to FM 95 in Rusk County**

| Parameter | Category | Year |
|---|---|---|
| Bacteria | 5c | 2004 |

0612_01: From the lower boundary approximately at confluence with Granberry Branch upstream to confluence with Polly Branch

0612_02: From a point immediately upstream of Polly Branch confluence upstream to confluence with Bear Bayou
0612_03: From a point immediately upstream of Bear Bayou upstream to upper boundary at FM 95

**SegID 1213A: Big Elm Creek: From the confluence with Little River in Milam county, 4.5 km northeast of the City of Cameron, upstream to its headwaters in McLennan County, 0.7 km west of Moody**

| Parameter | Category | Year |
|---|---|---|
| Bacteria | 5b | 2010 |

1213A_01: Portion of Big Elm Creek from the confluence with the Little River upstream to confluence with Little Elm Creek

**SegID 1902: Lower Cibolo Creek: From the confluence with the San Antonio River in Karnes County to a point 100 meters (110 yards) downstream of IH 10 in Bexar/Guadalupe County**

| Parameter | Category | Year |
|---|---|---|
| Bacteria | 5c | 2004 |

1902_01: From the confluence with the San Antonio River in Karnes County upstream to the confluence with Mulifest Creek
1902_02: From the confluence with Mulifest Creek upstream to the confluence with Pulaski Creek
1902_03: From the confluence with Pulaski Creek upstream to the confluence with Clifton Branch

**SegID 1209: Navasota River Below Lake Limestone: From the confluence with the Brazos River in Grimes County to Sterling C. Robertson Dam in Leon/Robertson County**

| Parameter | Category | Year |
|---|---|---|
| Bacteria | 5a | 2002 |

1209_05: Portion of Navasota River from the confluence with Camp Creek upstream to Lake Limestone Dam in Robertson County

**SegID 1209E: Wickson Creek: Perennial stream from the confluence with an unnamed first order tributary (approximately 1.3 km upstream of Reliance Road crossing) upstream to the confluence with an unnamed first order tributary approximately 15 meters upstream of Dilly Shaw Road**

| Parameter | Category | Year |
|---|---|---|
| Bacteria | 5b | 2006 |

1209E_01: Perennial stream from the confluence with an unnamed first order tributary (approximately 1.3 km upstream of Reliance Road crossing) upstream to the confluence with an unnamed first order tributary approximately 15 meters upstream of Dilly Shaw Road

**SegID 1209H: Duck Creek: From the confluence with the Navasota river in Robertson County to Twin Oak Reservoir dam in Robertson County**

| Parameter | Category | Year |
|---|---|---|
| Bacteria | 5c | 2006 |
| Depressed Dissolved Oxygen | 5b | 2012 |

1209H_01: Portion of Duck Creek from confluence with Navasota River upstream to confluence with Mineral Creek in Robertson County
1209H_02: Portion of Duck Creek from confluence with Mineral Creek in Robertson County upstream to Twin Oak Reservoir dam in Robertson County

**SegID 1209I: Gibbons Creek: From confluence with Navasota River in Grimes County to SH 90 in Grimes County**

| Parameter | Category | Year |
|---|---|---|
| Bacteria | 5b | 2002 |
| Depressed Dissolved Oxygen | 5c | 2016 |

1209I_01: Portion of Gibbons Creek from confluence with Navasota River upstream to confluence with Dry Creek in Grimes County
1209I_02: Portion of Gibbons Creek from confluence with Dry Creek upstream to Gibbons Creek Reservoir dam in Grimes County

**SegID 1209J: Shepherd Creek: From the confluence with Navasota River in Madison County to a point 0.7 mi upstream of FM 1452 in Madison County**

| Parameter | Category | Year |
|---|---|---|
| Bacteria | 5c | 2002 |

1209I_01: From the confluence with the Navasota River in Madison County to a point 0.7 mi upstream of FM 1452 in Madison County

**SegID 1209K: Steele Creek: From confluence with Navasota River in Robertson County to a point 2.4 mi upstream of FM 147 in Limestone County**

| Parameter | Category | Year |
|---|---|---|
| Bacteria | 5b | 2002 |

1209K_02: From confluence with Navasota River in Robertson County to a point 2.4 mi upstream of FM 147 in Limestone County

**Concerns**

**SegID 0612: From a point 3.9 km (2.4 mi) downstream of Curry Creek in Nacogdoches/San Augustine County to FM 95 in Rusk County**

| Parameter | Level of Concern |
|---|---|
| Bacteria | NS |

0612_01: From the lower boundary approximately at confluence with Granberry Branch upstream to confluence with Polly Branch
0612_02: From a point immediately upstream of Polly Branch confluence upstream to confluence with Bear Bayou
0612_03: From a point immediately upstream of Bear Bayou upstream to upper boundary at FM 95

**SegID 1213A: From the confluence with Little River in Milam county, 4.5 km northeast of the City of Cameron, upstream to its headwaters in McLennan County, 0.7 km west of Moody**

| Parameter | Level of Concern |
|---|---|
| Bacteria | NS |

1213A_01: Portion of Big Elm Creek from the confluence with the Little River upstream to confluence with Little Elm Creek

| Parameter | Level of Concern |
|---|---|
| Nitrate | CS |

1213A_01: Portion of Big Elm Creek from the confluence with the Little River upstream to confluence with Little Elm Creek

**SegID 1902: From the confluence with the San Antonio River in Karnes County to a point 100 meters (110 yards) downstream of IH 10 in Bexar/Guadalupe County**

| Parameter | Level of Concern |
|---|---|
| Bacteria | NS |

1902_01: From the confluence with the San Antonio River in Karnes County upstream to the confluence with Mulifest Creek
1902_02: From the confluence with Mulifest Creek upstream to the confluence with Pulaski Creek
1902_03: From the confluence with Pulaski Creek upstream to the confluence with Clifton Branch

| Parameter | Level of Concern |
|---|---|
| Bacteria | CN |

1902_05: From the confluence with Elm Creek upstream to a point 100 meters (110 yards) downstream of IH 10 in Bexar/Guadalupe County

| Parameter | Level of Concern |
|---|---|

| | |
|---|---|
| Macrobenthic Community | CN |

1902_02: From the confluence with Mulifest Creek upstream to the confluence with Pulaski Creek

| Parameter | Level of Concern |
|---|---|
| Habitat | CS |

1902_03: From the confluence with Pulaski Creek upstream to the confluence with Clifton Branch

| Parameter | Level of Concern |
|---|---|
| Nitrate | CS |

1902_03: From the confluence with Pulaski Creek upstream to the confluence with Clifton Branch
1902_04: From the confluence with Clifton Branch upstream to the confluence with Elm Creek
1902_05: From the confluence with Elm Creek upstream to a point 100 meters (110 yards) downstream of IH 10 in Bexar/Guadalupe County

| Parameter | Level of Concern |
|---|---|
| Total Phosphorus | CS |

1902_04: From the confluence with Clifton Branch upstream to the confluence with Elm Creek
1902_05: From the confluence with Elm Creek upstream to a point 100 meters (110 yards) downstream of IH 10 in Bexar/Guadalupe County

**SegID 1913: From a point 100 meters (110 yards) downstream of IH 10 in Bexar/Guadalupe County to the Missouri-Pacific Railroad bridge west of Bracken in Comal County**

| Parameter | Level of Concern |
|---|---|
| Nitrate | CS |

1913_01: From 100 meters downstream of I10 up to unnamed tributary approximately 0.3 mi upstream of Weir Road, Bexar County, Texas
1913_02: From the confluence with unnamed tributary approximately 0.3 mi upstream of Weir Road, Bexar County, Texas up to 100 meters upstream of the Cibolo Creek Municipal

| Parameter | Level of Concern |
|---|---|
| Total Phosphorus | CS |

1913_01: From 100 meters downstream of I10 up to unnamed tributary approximately 0.3 mi upstream of Weir Road, Bexar County, Texas
1913_02: From the confluence with unnamed tributary approximately 0.3 mi upstream of Weir Road, Bexar County, Texas up to 100 meters upstream of the Cibolo Creek Municipal

**SegID 1209: From the confluence with the Brazos River in Grimes County to Sterling C. Robertson Dam in Leon/Robertson County**

| Parameter | Level of Concern |
|---|---|
| Bacteria | NS |

1209_05: Portion of Navasota River from the confluence with Camp Creek upstream to Lake Limestone Dam in Robertson County

| Parameter | Level of Concern |
|---|---|
| Bacteria | CN |

1209_01: Portion of Navasota River from confluence with Brazos River upstream to confluence with Rocky Creek in Grimes County

| Parameter | Level of Concern |
|---|---|
| Nitrate | CS |

1209_01: Portion of Navasota River from confluence with Brazos River upstream to confluence with Rocky Creek in Grimes County

| Parameter | Level of Concern |
|---|---|
| Total Phosphorus | CS |

1209_01: Portion of Navasota River from confluence with Brazos River upstream to confluence with Rocky Creek in Grimes County

**SegID 1209C: Perennial Stream from the confluence with the Navasota River upstream to the confluence of an unnamed tributary 0.5 km upstream of FM 158**

| Parameter | Level of Concern |
|---|---|
| Bacteria | NS |

1209C_01: Perennial Stream from the confluence with the Navasota River upstream to the confluence of an unnamed tributary 0.5 km upstream of FM 158

| Parameter | Level of Concern |
|---|---|
| Chlorophyll-a | CS |

1209C_01: Perennial Stream from the confluence with the Navasota River upstream to the confluence of an unnamed tributary 0.5 km upstream of FM 158

| Parameter | Level of Concern |
|---|---|
| Nitrate | CS |

1209C_01: Perennial Stream from the confluence with the Navasota River upstream to the confluence of an unnamed tributary 0.5 km upstream of FM 158

| Parameter | Level of Concern |
|---|---|
| Total Phosphorus | CS |

1209C_01: Perennial Stream from the confluence with the Navasota River upstream to the confluence of an unnamed tributary 0.5 km upstream of FM 158

**SegID 1209E: Perennial stream from the confluence with an unnamed first order tributary (approximately 1.3 km upstream of Reliance Road crossing) upstream to the confluence with an unnamed first order tributary approximately 15 meters upstream of Dilly Shaw Road**

| Parameter | Level of Concern |
|---|---|
| Bacteria | NS |

1209E_01: Perennial stream from the confluence with an unnamed first order tributary (approximately 1.3 km upstream of Reliance Road crossing) upstream to the confluence with an unnamed first order tributary approximately 15 meters upstream of Dilly Shaw Road

**SegID 1209G: From the confluence with the Navasota River in Brazos County to the confluence with Moores Branch and Rocky Branch in Robertson County**

| Parameter | Level of Concern |
|---|---|
| Bacteria | CN |

1209G_01: From the confluence with the Navasota River in Brazos County to the confluence with Moores Branch and Rocky Branch in Robertson County

| Parameter | Level of Concern |
|---|---|
| Depressed Dissolved Oxygen | CS |

1209G_01: From the confluence with the Navasota River in Brazos County to the confluence with Moores Branch and Rocky Branch in Robertson County

**SegID 1209H: From the confluence with the Navasota river in Robertson County to Twin Oak Reservoir dam in Robertson County**

| Parameter | Level of Concern |
|---|---|
| Depressed Dissolved Oxygen | NS, CS |

1209H_01: Portion of Duck Creek from confluence with Navasota River upstream to confluence with Mineral Creek in Robertson County
1209H_02: Portion of Duck Creek from confluence with Mineral Creek in Robertson County upstream to Twin Oak Reservoir dam in Robertson County

| Parameter | Level of Concern |
|---|---|
| Bacteria | NS |

1209H_02: Portion of Duck Creek from confluence with Mineral Creek in Robertson County upstream to Twin Oak Reservoir dam in Robertson County

**SegID 1209I: From confluence with Navasota River in Grimes County to SH 90 in Grimes County**

| Parameter | Level of Concern |
|---|---|
| Depressed Dissolved Oxygen | NS, CS |

1209I_01: Portion of Gibbons Creek from confluence with Navasota River upstream to confluence with Dry Creek in Grimes County

| Parameter | Level of Concern |
|---|---|
| Bacteria | NS |

1209I_01: Portion of Gibbons Creek from confluence with Navasota River upstream to confluence with Dry Creek in Grimes County
1209I_02: Portion of Gibbons Creek from confluence with Dry Creek upstream to Gibbons Creek Reservoir dam in Grimes County

**SegID 1209J: From the confluence with Navasota River in Madison County to a point 0.7 mi upstream of FM 1452 in Madison County**

| Parameter | Level of Concern |
|---|---|
| Bacteria | NS |

1209J_01: From the confluence with Navasota River in Madison County to a point 0.7 mi upstream of FM 1452 in Madison County

**SegID 1209K: Portion of Steele Creek from confluence with Willow Creek upstream to headwaters in Limestone County**

| Parameter | Level of Concern |
|---|---|
| Bacteria | NS |

1209K_01: Portion of Steele Creek from confluence with Willow Creek upstream to headwaters in Limestone County

**SegID 1209L: From the confluence with Carters Creek in College Station, upstream to its headwaters located 0.4 miles east of Fin Feather Lake in Brazos County**

| Parameter | Level of Concern |
|---|---|
| Bacteria | NS |

1209L_01: From the confluence with Carters Creek in College Station, upstream to its headwaters located 0.4 miles east of Fin Feather Lake in Brazos County

| Parameter | Level of Concern |
|---|---|
| Nitrate | CS |

1209L_01: From the confluence with Carters Creek in College Station, upstream to its headwaters located 0.4 miles east of Fin Feather Lake in Brazos County

**Sources**

**SegID 0612: From a point 3.9 km (2.4 mi) downstream of Curry Creek in Nacogdoches/San Augustine County to FM 95 in Rusk County**

**Attoyac Bayou: AUDID 0612_01**
*E.coli*
Non-point sources: Unknown

**Attoyac Bayou: AUDID 0612_02**
*E.coli*
Point sources: Municipal Point Source Discharges
Non-point sources: Unknown

**Attoyac Bayou: AUDID 0612_03**
*E.coli*
Point sources: Municipal point source discharges
Non-point sources: Unknown

**SegID 1213A: From the confluence with Little River in Milam county, 4.5 km northeast of the City of Cameron, upstream to its headwaters in McLennan County, 0.7 km west of Moody**

**Big Elm Creek: AUDID 1213A_01**
*E.coli, Nitrate*
Non-point sources: Unknown

**SegID 1902: From the confluence with the San Antonio River in Karnes County to a point 100 meters (110 yards) downstream of IH 10 in Bexar/Guadalupe County**

**Lower Cibolo Creek: AUDID 1902_01**
*E.coli*
Point sources: Unknown
Unknown: Unknown

**Lower Cibolo Creek: AUDID 1902_02**
*Macrobenthic Community, E.coli*
Point sources: Unknown
Unknown: Unknown

**Lower Cibolo Creek: AUDID 1902_03**
*Habitat, Nitrate, E. coli*
Unknown: Unknown

**Lower Cibolo Creek: AUDID 1902_04**
*Nitrate, Total Phosphorus*
Point sources: Unknown
Unknown: Unknown

**Lower Cibolo Creek: AUDID 1902_05**
*Nitrate, Total Phosphorus, E. coli*
Point sources: Unknown
Unknown: Unknown

**SegID 1913: From a point 100 meters (110 yards) downstream of IH 10 in Bexar/Guadalupe County to the Missouri-Pacific Railroad bridge west of Bracken in Comal County**

**Mid Cibolo Creek: AUDID 1913_01**
*Nitrate, Total Phosphorus*
Unknown: Unknown

**Mid Cibolo Creek: AUDID 1913_02**
*Nitrate, Total Phosphorus*
Unknown: Unknown

**SegID 1209: From the confluence with the Brazos River in Grimes County to Sterling C. Robertson Dam in Leon/Robertson County**

**Navasota River Below Lake Limestone: AUDID 1209_01**
*E. coli, Nitrate, Total Phosphorus*

Non-point Sources: Municipal (Urbanized High Density Area), On-Site Treatment Systems (Septic Systems and Similar Decentralized Systems)
Point Sources: Municipal Point Source Discharges

**Navasota River Below Lake Limestone: AUDID 1209_05**
*E. coli*
Non-point Sources: Municipal (Urbanized High Density Area), On-Site Treatment Systems (Septic Systems and Similar Decentralized Systems)
Point Sources: Municipal Point Source Discharges

**SegID 1209C: Perennial Stream from the confluence with the Navasota River upstream to the confluence of an unnamed tributary 0.5 km upstream of FM 158**

**Carters Creek: AUDID 1209C_01**
*E. coli, Nitrate, Total Phosphorus, Chlorophyll-a*
Non-point Sources: Unknown, Animal Feeding Operations, Rangeland Grazing, Unspecified Urban Stormwater
Point Sources: Municipal Point Source Discharges

**SegID 1209E: Perennial stream from the confluence with an unnamed first order tributary (approximately 1.3 km upstream of Reliance Road crossing) upstream to the confluence with an unnamed first order tributary approximately 15 meters upstream of Dilly Shaw Road**

**Wickson Creek: AUDID 1209E_01**
*E. coli*
Non-point Sources: Unknown

**SegID 1209G: From the confluence with the Navasota River in Brazos County to the confluence with Moores Branch and Rocky Branch in Robertson County**

**Cedar Creek: AUDID 1209G_01**
*E. coli, Dissolved Oxygen Grab*
Unknown: Unknown

**SegID 1209H: From the confluence with the Navasota river in Robertson County to Twin Oak Reservoir dam in Robertson County**

**Duck Creek: AUDID 1209H_01**
*Dissolved Oxygen Grab*
Non-point Sources: Unknown, Natural Sources

**Duck Creek: AUDID 1209H_02**
*Dissolved Oxygen Grab, E. coli*
Non-point Sources: Unknown, Natural Sources

**SegID 1209I: From confluence with Navasota River in Grimes County to SH 90 in Grimes County**

**Gibbons Creek: AUDID 1209I_01**
*Dissolved Oxygen Grab, E. coli*
Non-point Sources: Unknown, Natural Sources

**Gibbons Creek: AUDID 1209I_02**
*E. coli*

Non-point Sources: Unknown

**SegID 1209J: From the confluence with Navasota River in Madison County to a point 0.7 mi upstream of FM 1452 in Madison County**

**Shepherd Creek: AUDID 1209J_01**
*E. coli*
Non-point Sources: Unknown

**SegID 1209K: Portion of Steele Creek from confluence with Willow Creek upstream to headwaters in Limestone County**

**Shepherd Creek: AUDID 1209K_02**
*E. coli*
Non-point Sources: Unknown, Natural Sources

**SegID 1209L: From the confluence with Carters Creek in College Station, upstream to its headwaters located 0.4 miles east of Fin Feather Lake in Brazos County**

**Burton Creek: AUDID 1209L_01**
*E. coli, Nitrate*
Point Sources: Municipal Point Source Discharges

**Project Narrative**

Problem/Need Statement

The water quality issues vary slightly from one project area to another. However, the main issues are elevated bacteria concentrations, depressed dissolved oxygen, and elevated nutrient levels. Therefore, contact recreation use is not supported, excessive nutrients are possibly contributing to high levels of Chlorophyll-a, and in some instances the microbenthic community is impaired. In the absence of nutrient criteria for these waters, the elevated nutrient levels are listed as concerns.

TWRI has been involved in all of the project areas for multiple years and have assisted stakeholders with development of their WPPs. Through the WPP development process, potential sources of the impairments were identified through input from stakeholder groups, review of available data, and modeling the potential sources of impairments. A common potential source of loading in all the projects of bacteria, nutrients, and oxygen depleting substances was runoff from agricultural operations. Management measures to address these potential loadings were developed and integrated in all of the WPPs. TWRI has been working with stakeholders in all the project watersheds to get on-the-ground implementation of agricultural BMPs since completion of the WPPs.

A major component of each of these agricultural management measures includes education and outreach about proper stocking strategies, practices that can be adopted to improve grazing, and sources of technical and financial assistance for these practices. The most common method of delivering education and outreach has been through traditional in-person programs, but as agricultural producer demographics begin to change and shift to a younger age bracket, the need to reach them digitally has increased. More agricultural producers are using digital sources of information now more than at any time in our history and there has been an overall cultural shift to using digital resources in response to Covid-19. In order to effectively reach them, we must create digital media that they can easily access on their desktop computers, tablets, and mobile devices. Additionally, we need to deliver information that is easy to digest using a method that is proven to facilitate behavioral change.

Rogers (2003) describes a process, the Innovation-Decision Process, that all individuals go through when they are deciding whether to adopt an innovation or practice. The stages of this process are 1) Knowledge, where an individual first learns of an innovation, 2) Persuasion, where several attributes persuade an individual to adopt, 3) Decision, where an individual decides to adopt or not, 4) Implementation, where an individual implements the practice if they have decided to adopt, and 5) Confirmation, where an individual decides to continue the practice or go back to a method in which they were operating before.

As watershed managers, we can only influence the first two stages of Rogers Innovation-Decision Process. We make agricultural producers aware of practices by first raising awareness and introducing an innovation in an area of their operation. Following this, we can help in persuading producers to adopt practices by showing them that 1) it is better than what they were doing before, 2) it fits within the current method of operation, 3) it is easy to adopt, 4) they can try it on a partial basis before deciding to fully adopt, and 5) they can see that it works, which often times comes through field demonstrations.

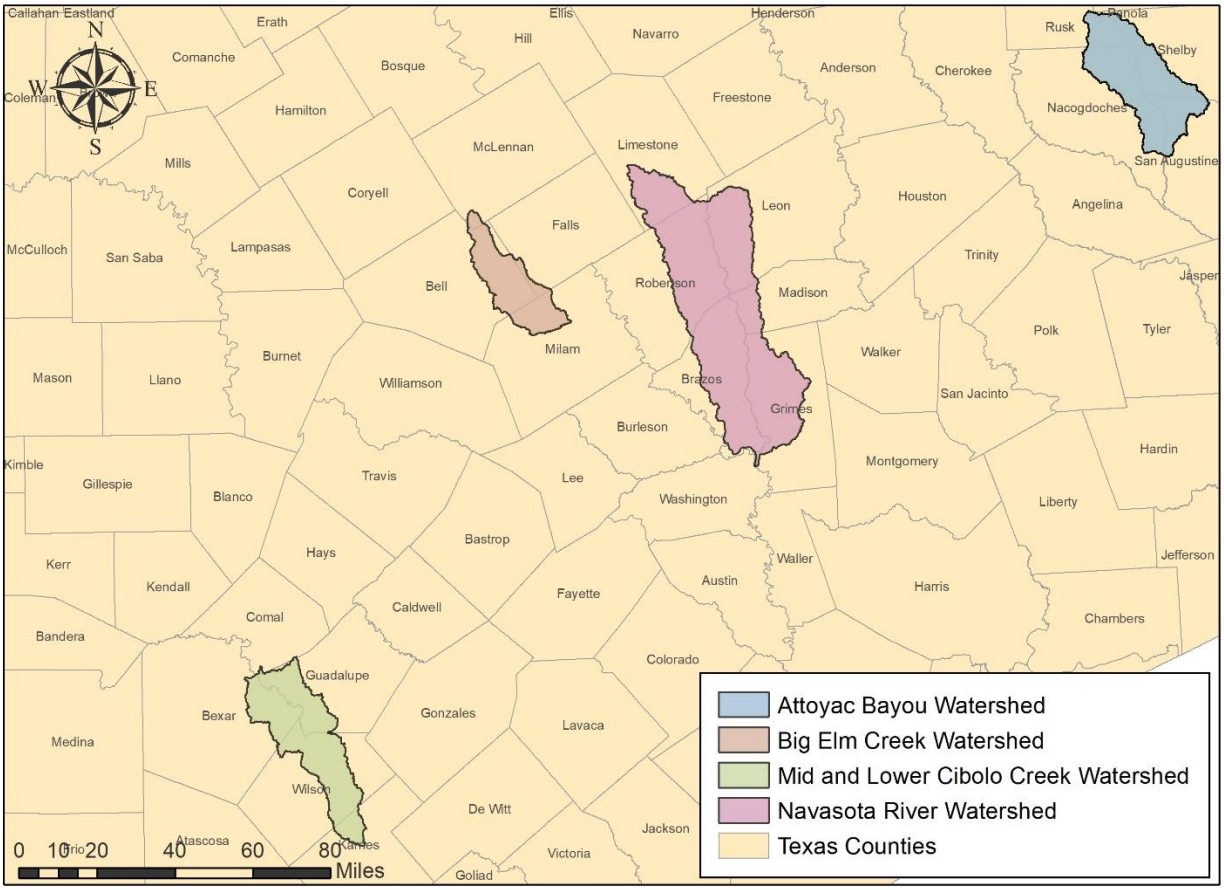
Following these key attributes to encourage producers to adopt BMPs that improve water quality is crucial to WPP implementation success. Grazing management practices are similar from one watershed to the other, so a cost-effective approach would be to use the same content across watersheds and have that content follow a proven behavior change theory.

As such, TWRI proposes to develop content that facilitates behavior change amongst the grazing community and delivers that content in various places where agricultural producers receive information to increase a positive impact, not only in the watersheds of interest, but across the state.

Rogers, E. M. (2003). Diffusion of innovations. New York: Free Press.

**Project Narrative**

General Project Description (Include Project Location Map)




TWRI will facilitate collaborative efforts among project partners to implement agricultural management measures for the project watersheds. Until now, TWRI's approach to implementation of agricultural management measures has been to approach each project watershed independently of other watersheds. Currently, individual watershed coordinators assist stakeholders with development of the WPP, and then enter implementation. Though the watershed coordinators are part of TWRI, efforts to implement agricultural management measures have been solely at the discretion of each watershed coordinator. This new approach/method will be at a larger, coordinated multiple-watershed scale that, once developed, could be used a statewide tool or approach to greater implementation of agricultural BMPs.

The majority of the WPPs that TWRI is currently engaged in all have increased implementation of agriculture management measures as a requirement for successfully addressing a contact recreation impairment or nutrient concerns.

Successful and long-lasting implementation of agricultural BMPs requires completion of multiple steps. Following Roger's Diffusion of Innovation Theory, the steps necessary for successful implementation of BMPs should address the relative advantage, compatibility, complexity, trialability, and observability of the management practices. The proposed new approach is a full package that addresses each of the key steps for successful implementation. TWRI, with the assistance of project partners, will develop educational materials covering effective BMPs for the agricultural community. Then, through cooperative outreach methods, the materials will be distributed and marketed specifically to the agricultural producers. The culmination of the project will be the educational field day, or demonstration day, where the producers across all of the watersheds, will have the opportunity to see the implementation of these BMPs in a

digital format. It is believed that this process will have the greatest impact on greater implementation of BMPs and a resulting impact on the receiving streams water quality.

This proposal will be for a multi-faceted approach. Key components include Education, Outreach, and Demonstration.

The education component will involve the development of educational materials that will describe the BMPs, estimated cost of initial implementation, available financial/technical assistance, profitability estimates, and maintenance costs.

Outreach will consist of the methods used to contact the agricultural community utilizing the educational materials developed. This will include:

- Direct mailings
- Newspaper
- Videos
- Social media

TWRI will work with project partners to organize one education program in each watershed per year that discusses stocking strategies and grazing management. The program may include elements of riparian education, beef cattle management and production, or other ranching topics. Visual demonstrations will be provided with these trainings, such as a rainfall simulation/runoff demonstration, to better illustrate the effects of BMP utilization.

Finally, demonstration of the BMPs will be showcased during the Digital Field Day. This will be the culmination of extensive coordination with project partners, especially faculty at the Texas A&M AgriLife Research and Extension Center in Overton. The Overton Center has the distinct honor of currently conducting the longest continuous stocking experiment in the United States. Through this Digital Field Day, producers will be able to see the value of rotational grazing and the potential to improve forage production, ultimately improving water quality. To extend the reach and impact of this event, it will be produced in an online, digital format, that can be viewed on desktop computers, tablets, and mobile devices.

| **Tasks, Objectives and Schedules** | | | | | | |
|---|---|---|---|---|---|---|
| Task 1 | Project Administration | | | | | |
| Costs | Federal | $23,346 | Non-Federal | $15,564 | Total | $38,910 |
| 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 1st of January, April, July and October. QPRs shall be distributed to all Project Partners. | | | | | |
| | Start Date | Month 1 | Completion Date | Month 48 | | |
| 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 48 | | |
| 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 48 | | |
| 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 30 | Completion Date | Month 48 | | |
| Deliverables | • QPRs in electronic format<br>• Reimbursement Forms and necessary documentation in hard copy format<br>• Final Report in electronic and hard copy formats | | | | | |

| **Tasks, Objectives and Schedules** | | | | | | |
|---|---|---|---|---|---|---|
| Task 2 | Development and Distribution of Outreach and Educational Materials | | | | | |
| Costs | Federal | $171,205 | Non-Federal | $114,136 | Total | $285,341 |
| Objective | To raise awareness amongst the agricultural community on stocking strategies and best management practices that improve grazing land management (as well as sources for technical and financial assistance), ultimately improving water quality, through the use of materials across all watersheds in a method consistent with behavioral change theory. | | | | | |

<table>
<tr><td>Subtask 2.1</td><td>TWRI will develop and distribute outreach materials with the goal of raising awareness about grazing best management practices that can be adopted to improve water quality, as well as technical and financial resources for these practices. Materials may include the following but will be developed by using content from existing materials such as best management practice one pagers on the Lone Star Healthy Streams website or other Extension materials available. These include:<br>- direct mailing post cards – one post card with consistent messaging<br>- newspaper articles – up to three<br>- short videos – up to six<br>- social media schedules – 10 per year<br><br>All materials will be produced on a general level such that they can be used across multiple project watersheds. However, local contact information to SWCD/NRCS offices will be included and specific to the county where materials are being distributed. Number of contacts will be reported in quarterly progress reports.<br><br>In order to reach as many landowners as possible in a cost-efficient manner, TWRI will coordinate with local stakeholders to develop a schedule of delivery for outreach materials within a given year. However, over the course of the project, materials will be distributed using the schedule below for each of the four watersheds. Number of contacts will be reported in quarterly progress reports (see Task 1).<br>Year 1<br>- direct mailing post cards – delivered three times<br>- newspaper article – one article<br>- short videos distributed via social media – six videos total<br>- grazing BMP social media schedules – 10 per year<br>Year 2<br>- direct mailing post cards – delivered once<br>- newspaper article – one article<br>- short videos distributed via social media – six videos total<br>- grazing BMP social media schedules – 10 per year<br>Year 3<br>- direct mailing post cards – delivered once<br>- newspaper article – one article<br>- short videos distributed via social media - six videos total<br>- grazing BMP social media schedules – 10 per year<br>distribution of demonstration video from Task 4 – distributed across four watersheds</td></tr>
<tr><td></td><td>Start Date | Month 1 | Completion Date | Month 48</td></tr>
<tr><td>Subtask 2.2</td><td>TWRI will work with local watershed coordinators and NRCS/SWCDs to measure success of the outreach effort and will report on an annual basis. Metrics may include number of inquiries into conservation plans/WQMPs (henceforth called plans), site visits by local technicians/conservationists, number of plans developed, web analytics, and social media views and engagements.</td></tr>
<tr><td></td><td>Start Date | Month 1 | Completion Date | Month 48</td></tr>
<tr><td>Deliverables</td><td>• Educational Videos – 6 total<br>• Direct mailing post card – 1 total<br>• newspaper articles – 1 annually<br>• 10 social media schedules/yr – submitted quarterly<br>• Measures of success – submitted annually</td></tr>
</table>

| **Tasks, Objectives and Schedules** | | | | | | |
|---|---|---|---|---|---|---|
| Task 3 | Facilitation and Participation in Education Programs | | | | | |
| Costs | Federal | $77,820 | Non-Federal | $51,880 | Total | $129,700 |
| Objective | To deliver in-person programs as well as demonstrate to agricultural producers the benefits of good grazing management and the impacts to runoff under various pasture scenarios, demonstrating additional phases of behavioral change theory. | | | | | |
| Subtask 3.1 | TWRI will work with collaborating entities to organize one education program in each watershed per year that discusses stocking strategies and grazing management. The program may include but is not limited to 1) Riparian Education and 2) Lone Star Healthy Streams (Beef Cattle component), or the Ag in the Evening Program Series. In addition, a rainfall simulation/runoff demonstration will be given to better illustrate the effects of BMP utilization. | | | | | |
| | Start Date | Month 1 | Completion Date | Month 48 | | |
| Subtask 3.2 | Using a rainfall simulation/runoff demonstration as described in subtask 3.1 as well as other materials, TWRI will participate in at least one in-person county extension program per watershed per year about grazing management to help landowners make the connection between good grazing management and water quality. | | | | | |
| | Start Date | Month 1 | Completion Date | Month 48 | | |
| Subtask 3.3 | TWRI will assist education program leads in the administration of program evaluations that may determine intentions to adopt, knowledge gained, anticipated monitory gain, or other metrics that may be useful to enhance future programs. | | | | | |
| | Start Date | Month 1 | Completion Date | Month 48 | | |
| Deliverables | • Press releases, agendas, and other materials available for programs<br>• Program evaluations | | | | | |

| **Tasks, Objectives and Schedules** | | | | | | |
|---|---|---|---|---|---|---|
| Task 4 | Demonstration of Stocking Strategies on Forage Production | | | | | |
| Costs | Federal | $116,730 | Non-Federal | $77,821 | Total | $194,551 |
| Objective | To demonstrate to producers the benefit of proper stocking strategies on forage production which leads to improvements in water quality, a final step in behavioral change theory | | | | | |
| Subtask 4.1 | TWRI will work with the Texas A&M AgriLife Research and Extension Center in Overton, TX where the longest continuous stocking rate experiment in the United States is being conducted. At this site, information will continue to be collected that demonstrates to producers the benefits to improving forage growth for their operations, which ultimately improves water quality. At this site, information such as forage height, regrowth rate, animal performance, and other information of interest to producers will be collected and distributed in the digital field day (subtask 4.2). | | | | | |
| | Start Date | Month 1 | Completion Date | Month 24 | | |
| Subtask 4.2 | Using information from subtask 4.1, TWRI will work to collect raw video footage necessary to create an in-depth, stocking rate/rotational grazing field day video that can be used across multiple watersheds. This video will be shared through targeted social media, websites, CEA and Watershed Coordinator newsletters, the Overton website, the ForageFax website, and other avenues necessary to reach landowners. | | | | | |
| | Start Date | Month 18 | Completion Date | Month 48 | | |
| Deliverables | • Grazing demonstration measurements<br>• Draft and final digital field day<br>• Distribution schedule for digital field day | | | | | |

**Project Goals (Expand from Summary Page)**

The primary goal of the proposed project is to increase landowner adoption of best management practices through a cost-effective approach that aligns with changing landowner and producer demographics as well as the Covid-19 era. To achieve this goal, TWRI will develop and deliver educational materials directly to landowners through mail, newspaper, radio, social media, and in person. The educational material will include concise and relevant information for landowners explaining why program participation is important and how to participate. We estimate that this project will repeatedly put best practice information directly in the hands of high priority landowners that may otherwise not receive information through just one method of outreach and education.

**Measures of Success (Expand from Summary Page)**

Overall, this project will be successful when educational materials are delivered to key stakeholders across the four watersheds. Through the distribution of the educational materials to the stakeholders, we anticipate that the number of Conservation Plans and Water Quality Management Plans will increase.

| ***2017 Texas NPS Management Program* Reference (Expand from Summary Page)** |
|---|
| Components, Goals, and Objectives |
| Long-Term Goal One– Protect and restore water quality affected by NPS pollution through assessment, implementation, and education.<br>• Objective 1 – Focus NPS abatement efforts, implementation strategies, and available resources in watersheds and aquifers identified as impacted by nonpoint source pollution.<br>• Objective 3 – Support the implementation of state, regional, and local programs to reduce NPS pollution, such as the implementation of strategies defined in TMDL I-Plans, WPPs, and other water planning efforts in the state.<br>• Objective 6 – Develop partnerships, relationships, memoranda of agreement, and other instruments to facilitate collective, cooperative approaches to manage NPS pollution.<br>Objective 7 – Increase overall public awareness of NPS issues and prevention activities. |
| Short-Term Goal Two – Implementation<br>• Objective D – Implement TMDL I-Plans, WPPs, and other state, regional, and local plans developed to restore and maintain water quality in water bodies identified as impacted by NPS pollution. |
| Short-Term Goal Three – Education<br>• Objective A – Enhance existing outreach programs at the state, regional, and local levels to maximize the effectiveness of NPS education.<br>• Objective B – Administer programs to educate citizens about water quality and their potential role in causing NPS pollution.<br>• Objective D – Conduct outreach through the CRP, AgriLife Extension, SWCDs, and others to enable stakeholders and the public to participate in decision-making and provide a more complete understanding of water quality issues and how they relate to each citizen.<br>• Objective G – Implement public outreach and education to maintain and restore water quality in water bodies by NPS pollution. |

| **Estimated Load Reductions Expected (Only applicable to Implementation Project Type)** |
|---|
| Load reductions from this project will vary based on landowner response to education efforts. Expected load reductions from landowner adoption of conservation plans and WQMPs are described in each of the WPPs where educational efforts will be targeted. |

| **EPA State Categorical Program Grants – Workplan Essential Elements**<br>**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 | $ 389,101 | % of total project | 60% |
| Non-Federal | $ 259,401 | % of total project | 40% |
| Total | $ 648,502 | Total | 100% |

| Category | Federal | Non-Federal | Total |
|---|---|---|---|
| Personnel | $ 153,082 | $ 126,026 | $ 279,108 |
| Fringe Benefits | $ 42,646 | $ 29,881 | $ 72,527 |
| Travel | $ 10,275 | $ 0 | $ 10,275 |
| Equipment | $ 0 | $ 0 | $ 0 |
| Supplies | $ 38,858 | $ 0 | $ 38,858 |
| Contractual | $ 0 | $ 0 | $ 0 |
| Construction | $ 0 | $ 0 | $ 0 |
| Other | $ 93,488 | $ 0 | $ 93,488 |
| | | | |
| Total Direct Costs | $ 338,349 | $ 155,907 | $ 494,256 |
| Indirect Costs (≤ 15%) | $ 50,752 | $ 53,640 | $ 104,392 |
| Unrecovered IDC | $ 0 | $ 49,854 | $ 49,854 |
| Total Project Costs | $ 389,101 | $ 259,401 | $ 648,502 |

| **Budget Justification (Federal)** | | |
|---|---|---|
| Category | Total Amount | Justification |
| Personnel | $ 153,082 | TWRI Assistant Director: $83,118 annually @ 3 months (8.33% per year) – $22,042<br>Extension Forage Specialist: $101,736 annually @ 1.44 months (4% per year) – $12,956<br>TBD Program Manager $64,970 annually @ 3 months (8.33% per year) – $16,728<br>Program Specialist IV: $77,500 annually @ 12.6 months (35% per year) – $86,356<br>Graduate Student worker: $15/hr, 20 hrs/week for 50 weeks – $15,000<br>*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<br>*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.<br>*cell phone allowances for project calls/emails during & after business hours & travel are occasionally factored into salaries & fringe, but again, will not exceed overall dollar amount. |
| Fringe Benefits | $ 42,646 | Fringe for faculty and staff is calculated at 18.5% salary plus $771 per month.<br>Fringe for students is calculated at 11% salary plus $558 per month.<br>*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<br>*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.<br>*cell phone allowances for project calls/emails during & after business hours & travel are occasionally factored into salaries & fringe, but again, will not exceed overall dollar amount. |
| Travel | $ 10,275 | TWRI travel to watersheds to participate in programs<br>- State vehicle mileage for 18 trips at 162 miles round trip per trip @ state rate ($1,458)<br>- Per diem at state rate for 2 people, 12 days ($1,320)<br>- Lodging at state rate for 2 people, 6 nights ($1,152)<br>Overton travel to watersheds<br>- Mileage for 3,000 miles to project sites and watersheds throughout the project @ state rate ($1,500)<br>Overton travel to field days, regional conferences and planning meetings @13 trips for 1 person<br>- Per diem for 29 days at state rate ($1,672)<br>- Lodging for 17 nights at state rate ($1,902)<br>- Rental car for 24 days at state rate ($621)<br>- Airfare ($650) |
| Equipment | $ 0 | N/A |
| Supplies | $ 38,858 | Project supplies, including, but not limited to: printer, paper, pens, toner, fuel, field supplies, etc. ($5,458), electric fencing ($4,500), fertilizer ($28,500)<br>Webinar Supplies (microphone and headset) – $200, Cordless lapel microphone – $200 |
| Contractual* | $ 0 | N/A |
| Construction | $ 0 | N/A |

| | | |
|---|---|---|
| Other | $ 93,488 | Communications Services (videos, social media, articles) – $23,400<br>Printing: 14,987 cards for 5 mailings total – $11,990<br>Postage: 14,987 cards for 5 mailings total – $13,488<br>Rainfall Simulator – $3,250<br>Education Demonstration Setup and Maintenance (input costs, equipment rental, practice input costs) ($10,270/yr) - $30,810<br>Video Camera – $3,500<br>Professional Zoom License – $1,200<br>Video Editing Software – $1,000<br>Computer and computer equipment – $1,500<br>Portable tripod – $350<br>Conference/ training registrations and facility rental fees – $3,000 |
| Indirect | $ 50,752 | 15% of Total Direct Costs (TDC) |

| **Budget Justification (Non-Federal)** | | |
|---|---|---|
| Category | Total Amount | Justification |
| Personnel | $ 126,026 | TWRI Director: $209,180 annually @ 4.56 months (12.66 per year) – $84,278%<br>Professor: $133,778 annually @ 2.16 months (6% per year) – $25,554<br>Extension Forage Specialist: $101,736 annually @ 1.8 months (5% per year) – $16,194<br>*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<br>*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 | $ 29,881 | Fringe for faculty and staff is calculated at 18.5% salary plus $771 per month. Fringe for students is calculated at 11% salary plus $558 per month.<br>*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<br>*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. |
| 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 | $ 53,640 | Texas A&M AgriLife Extension Service's federally negotiated indirect cost rate (IDC) is 30% of modified total direct costs (MTDC). Texas A&M AgriLife Research's federal negotiated indirect cost rate is 51.5% MTDC. MTDC includes up to $25,000 of each subcontract and excludes tuition, facility rental and equipment over $5,000.<br>- AgriLife Extension – TWRI Director, Extension Forage Specialist: $123,961 MTDC * 0.3 = $37,188<br>- AgriLife Research – Professor: $31,946 * 0.515 = $16,452<br>- $37,188 + $16,452 = $53,640 |
| Unrecovered IDC | $ 49,854 | Unrecovered IDC: 30% MTDC – 15% TDC<br>• IDC on MTDC: $335,349 MTDC * 30% = $100,606<br>• IDC on TDC: $338,349 TDC * 15% = $50,752<br>Total Unrecovered IDC: $100,606 – $50,752 = $49,854 |