Texas State Soil and Water Conservation Board
State Nonpoint Source Grant Program
FY 2021 Workplan 21-51

SUMMARY PAGE			
Title of Project	HAWQS-SELECT for Texas		
Project Goals	Incorporate SELECT into a version of HAWQS for Texas		
Project Tasks	(1) Administration; (2) Incorporate SELECT into HAWQS and adapt HAWQS and SELECT for use in Texas; (3) Maintain TBET software developed by BREC including improving and updating where needed		
Measures of Success	Ability to easily and cost-effectively conduct spatially explicit assessments of point and nonpoint sources of E. coli, sediment, and nutrients in Texas streams, rivers, and reservoirs.		
Project Type	Implementation (); Education (); Planning (); Assessment (X); Groundwater ( )		
Status of Waterbody on *2020 Texas Integrated Report*	Segment ID All Watersheds in Texas	Parameter of Impairment or Concern E. coli, sediment, forms of N and P	Category
Project Location (Statewide or Watershed and County)	Statewide		
Key Project Activities	Hire Staff (); Surface Water Quality Monitoring (); Technical Assistance (); Education (); Implementation ( ); BMP Effectiveness Monitoring ( ); Demonstration ( ); Planning (X); Modeling (X); Bacterial Source Tracking ( ); Other ( )		
2017 Texas NPS Management Program Reference	• Component 1: LTG • Component 1: STG 1C		
Project Costs	$204,000		
Project Management	Blackland Research and Extension Center (BREC), TAMUS		
Project Period	December 30, 2020 – June 30, 2023		

Part I – Applicant Information

Applicant							
Project Lead	Dr. R. Srinivasan						
Title	Director, Blackland Research and Extension Center						
Organization	Texas A&M University System						
E-mail Address	r-srinivasan@tamu.edu						
Street Address	720 E. Blackland Road						
City	Temple	County	Bell	State	TX	Zip Code	76502
Telephone Number	979-777-9822			Fax Number			

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.
Blackland Research and Extension Center (BREC)	Conduct all project activities and ensure coordination of activities with TSSWCB

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		No	X
If yes, identify the document.							
If yes, identify the agency/group that developed and/or approved the document.				Year Developed			

Watershed Information				
Watershed or Aquifer Name(s)	Hydrologic Unit Code (12 Digit)	Segment ID	Category on 2014 IR	Size (Acres)
Statewide				

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.
Sources will include human, pet, wildlife, and livestock fecal nonpoint and point source contamination, sediment, and nutrient (N and P) from urban, agricultural, and silvicultural land uses.

Project Narrative

Problem/Need Statement

Microbial contamination from human, pet, wildlife, and livestock fecal nonpoint and point sources from urban, agricultural, and silvicultural land uses is a water quality concern in many Texas streams, rivers, and reservoirs. TSSWCB needs an easily used and scientifically based method/platform to evaluate, compare, and assess potential sources and amounts of microbial contamination in watersheds statewide. The method/platform should use public data sources and methods and should be capable of supporting analyses not only of microbial contamination, but also of other types of water quality concerns, including sediment and nutrients (N and P forms). The method/platform should be a free and open-source, internet-accessible, and use a point-and-click interface and powerful output visualization tools.

Project Narrative

General Project Description (Include Project Location Map)

The overall objective of this project is to incorporate the Spatially Explicit Load Enrichment Tool (SELECT) into the Hydrologic and Water Quality System (HAWQS) SWAT-based hydrologic and water quality modeling platform. Through this project BREC will modify HAWQS for Texas using the best available weather, soils, topography, land use, and related livestock, wildlife, pet and human fecal deposition data. With input by TSSWCB, BREC will make changes in HAWQS input and output utilities required to adapt the software for the needs in Texas.

Tasks, Objectives and Schedules

Task 1	Project Administration			
Costs	$15,000			
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	BREC 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 December, March, June and September. QPRs shall be distributed to all Project Partners.			
	Start Date	Month 1	Completion Date	Month 30
Subtask 1.2	BREC 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 30
Subtask 1.3	BREC will host meetings or conference calls, at least quarterly, with Project Partners to discuss project activities, project schedule, communication needs, deliverables, and other requirements. will develop lists of action items needed following each project coordination meeting and distribute to project personnel.			
	Start Date	Month 1	Completion Date	Month 30
Subtask 1.4	BREC will develop a user guide that explains the use of the tools developed and completed for each objective.			
	Start Date	Month 1	Completion Date	Month 30
Deliverables	• QPRs in electronic format • Reimbursement Forms and necessary documentation in hard copy format • User Guides in electronic and hard copy formats			

Tasks, Objectives and Schedules				
Task 2	Maintain SELECT developed from previous project with incorporating the stakeholder's suggestions and Incorporate SELECT into HAWQS and adapt HAWQS and SELECT for use in Texas			
Costs	$169,000			
Objective	Maintain SELECT developed and further improve based on stakeholder's input. Incorporate SELECT and the best available Texas input data into HAWQS to facilitate its use in Texas			
Subtask 2.1	Texas A&M BREC will incorporate SELECT algorithms into HAWQS, with necessary modifications to HAWQS inputs and outputs			
	Start Date	Month 1	Completion Date	Month 30
Subtask 2.2	Texas A&M BREC will consult with TSSWCB and modify SELCT for use in Texas.			
	Start Date	Month 4	Completion Date	Month 12
Subtask 2.3	Develop all TX-HAWQS inputs at the HUC-12 scale for all watersheds within and draining into Texas. Data will include: – National Land Cover Data Base for 2016, – Crop Data Layers for 2015, 2016, and 2017, – SSURGO soils data, – 30-meter digital elevation data - daily weather station data for Texas (and surrounding states, as needed) from National Weather Service and cooperating state weather stations from 1980 through 2018. – Work with the TCEQ, and TSSWCB to develop more detailed point-source water quantity and quality inputs into TX-HAWQS. - Purchase and set up a dedicated server for TX-HAWQS at Texas A&M and maintain TX-HAWQS software and hardware support for two years. - Calibrate TX-HAWQS monthly streamflow outputs at 4-digit HUC outlets (and other locations where measured streamflow data are available).			
	Start Date	Month 13	Completion Date	Month 30
Subtask 2.4	Test operability of HAWQS-SELECT and correct/verify its performance.			
	Start Date	Month 18	Completion Date	Month 30
Deliverables	• An version of HAWQS-SELECT modified for Texas			

Tasks, Objectives and Schedules				
Task 3	Maintain TBET software developed by BREC including improving and updating where needed			
Costs	$20,000			
Objective	Maintain TBET developed and further improve based on stakeholder's input. Incorporate TBET and the best available Texas input data to further facilitate its use in Texas			
Subtask 3.1	Texas A&M BREC will process additional data and algorithms into TBET software, with necessary modifications to TBET inputs and outputs			
	Start Date	Month 1	Completion Date	Month 30
Subtask 3.2	Texas A&M BREC will consult with TSSWCB and modify TBET for use in Texas.			
	Start Date	Month 4	Completion Date	Month 12
Subtask 3.3	Incorporate into TBET the best available weather, soils, topography, land use, and related data for Texas based on stakeholder's input.			
	Start Date	Month 13	Completion Date	Month 30
Subtask 3.4	Test operability of TBET and correct/verify its performance.			
	Start Date	Month 18	Completion Date	Month30
Deliverables	• An updated version of TBET modified for Texas			

Project Goals (Expand from Summary Page)
The goal of the project is to improve the algorithms used in SELECT into a version of HAWQS (HAWQS-SELECT) adapted for use in Texas. HAWQS-SELECT will facilitate spatially explicit analysis of sources of microbial, sediment, and nutrient (N and P) contamination of Texas streams and rivers. It will consist of a free and open-source, internet-accessible platform using a point-and-click interface and powerful output visualization tools. It will include the best available natural resources and microbial and nutrient (N and P) source data available for Texas.

Measures of Success (Expand from Summary Page)
This project will be considered a success if it substantially increases the ability of TSSWCB staff and cooperators to easily and cost-effectively conduct spatially explicit assessments of point and nonpoint sources of microbial, sediment, and nutrient contamination of Texas streams, rivers, and reservoirs.

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 to restore and protect surface and groundwater, as appropriate.
Long Term Goal- Protect and restore water quality affected by nonpoint source pollution through assessment, implementation, and education. Objective B- Support the implementation of state, regional, and local programs to prevent nonpoint source pollution through assessment, implementation and education.
Short-Term 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, vulnerable and impacted aquifers, or areas where additional information is needed.
Short-Term Objective: Evaluate the condition of the state's waters, on a biennial basis, and prepare a report containing this evaluation, as required by CWA §305(b) Texas Nonpoint Source Management Program 24 to determine: a) waters not meeting water quality standards due, at least in part, to NPS pollution, and b) the cause of the impairment or degradation. C. Conduct special studies to determine sources of NPS pollution and gain information to target water quality planning and BMP implementation.

Part III – Financial Information

Category	Total
Personnel	$ 128,157
Fringe Benefits	$ 38,613
Travel	$ 372
Equipment	$ 10,000
Supplies	$ 0
Contractual	$ 0
Construction	$ 0
Other	$ 250
Total Direct Costs	$ 177,392
Indirect Costs (≤ 15%)	$ 26,608
Total Project Costs	$ 204,000

Budget Justification Texas A&M AgriLife Research

Category	Total Amount	Justification
Personnel	$ 128,157	Senior Programmer – 6 months per 2-year = $ $37,311 GIS Analyst – 6 months per 2-year = $ $22,811 Principle Research Scientist –2 months per 2-year = $47,000 Graduate student – 2 month per 2-year = $4,058 Postdoc – 4 month per 2-year = $16,977 *PI salary is budgeted with a 3% annual pay increase in all years; Other Personnel salary is budgeted with a 3% pay increase in years after year 1 *(Salary estimates are based on average monthly percent effort for the entire contract. Actual percent effort may vary more or less than estimated between months; but in the aggregate, will not exceed total effort estimates for the entire project.)
Fringe Benefits	$ 38,613	Fringe benefits are calculated at 16.8% of salary plus $746/month insurance for staff and faculty, and calculated at 10% of salary and $422/month insurance for graduate student workers. *(Fringe benefits estimates are based on salary estimates listed. Actual fringe benefits will vary between months coinciding with percent effort variations; but in the aggregate, will not exceed the overall estimated total.)
Travel	$ 372	Travel to meet with stakeholders in San Antonio – mileage and per diem @ state rate ($372)
Equipment	$ 10,000	Server to host TBET, SELECT and HAWQS systems
Supplies	$ 0	N/A
Contractual*	$ 0	N/A
Construction	$ 0	N/A
Other	$ 250	Meeting Registration fee ($250)
Indirect	$ 26,608	15% of Modified Total Direct Cost