

**Texas State Soil and Water Conservation Board
Clean Water Act §319(h) Nonpoint Source Grant Program
FY 2019 Workplan 19-07**

SUMMARY PAGE					
Title of Project	Surface Water Quality Monitoring to Support the Implementation of the Geronimo and Alligator Creeks Watershed Protection Plan				
Project Goals	<ul style="list-style-type: none"> • Generate data of known and acceptable quality for surface and ground water quality monitoring of main stem and tributary stations • Collect water quality data for use in assessing water quality improvement and progress in achieving restoration • Communicate water quality conditions to the public and the Partnership in order to support adaptive management and to expand public knowledge on Geronimo and Alligator Creeks water quality data • Coordinate and conduct water resources and related environmental outreach/education efforts across the watershed 				
Project Tasks	(1) Project Administration; (2) Quality Assurance; (3) Water Quality Data Collection and Analysis				
Measures of Success	<ul style="list-style-type: none"> • Data of known and acceptable quality are generated for surface water quality monitoring of main stem and tributary stations and groundwater monitoring of shallow wells from the Leona Aquifer • Water quality data is communicated to the public and the Partnership • Increased watershed stewardship among Geronimo Creek watershed stakeholders • Provide technical assistance to the Geronimo Creek Partnership • Maintain project webpage to communicate water quality data, provide information to stakeholders, and provide access to education and outreach 				
Project Type	Implementation (X); Education (X); Planning (); Assessment (X); Groundwater (X)				
Status of Waterbody on 2014 Texas Integrated Report	<u>Segment ID</u> 1804A	<u>Parameter of Impairment or Concern</u> Bacteria Nitrate-Nitrogen	<u>Category</u> 5c CN		
Project Location (Statewide or Watershed and County)	Geronimo and Alligator Creeks in Guadalupe and Comal Counties				
Key Project Activities	Hire Staff (); Surface Water Quality Monitoring (X); Technical Assistance (X); Education (X); Implementation (X); BMP Effectiveness Monitoring (X); Demonstration (); Planning (); Modeling (); Bacterial Source Tracking (); Other ()				
2017 Texas NPS Management Program Reference	<ul style="list-style-type: none"> • Component 1 LTGs 1, 3, 7 • Component 1 STGs 1B, 1E, 3G • Component 3 				
Project Costs	Federal	\$190,574	Non-Federal	\$127,297	Total \$317,871
Project Management	• Guadalupe-Blanco River Authority				
Project Period	October 24, 2019 – September 30, 2023				

Part I – Applicant Information

Applicant							
Project Lead		Elizabeth Edgerton					
Title		Water Quality Program Supervisor					
Organization		Guadalupe-Blanco River Authority					
E-mail Address		eedgerton@gbra.org					
Street Address		933 East Court Street					
City	Seguin	County	Guadalupe	State	TX	Zip Code	78155
Telephone Number		830-379-5822			Fax Number		830-379-7478

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.
Guadalupe-Blanco River Authority	Provide project administration, water quality monitoring, data and analysis review, outreach and education , technical assistance

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 checked="" type="checkbox"/>	No	<input type="checkbox"/>
If yes, identify the document.		Geronimo and Alligator Creeks Watershed Protection Plan							
If yes, identify the agency/group that developed and/or approved the document.		Geronimo and Alligator Creek Watershed Partnership facilitated by AgriLife Extension, GBRA and TSSWCB			Year Developed		2012		

Watershed Information

Watershed or Aquifer Name(s)	Hydrologic Unit Code (12 Digit)	Segment ID	Category on 2014 IR	Size (Acres)
Geronimo Creek (including its tributary, Alligator Creek)	121002020110, 121002020111	1804A	5c	44,152

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: *2014 Texas Integrated Report*, Clean Rivers Program Basin Summary/Highlights Reports, or other documented sources.

2014 Texas Integrated Report - Geronimo Creek was listed as impaired on the 2006 303(d) List due to bacterial contamination. The data from that period of record showed that the geometric mean for *E. coli* bacteria exceeded the stream standard. The geometric mean of Geronimo Creek was 162 cfu/ 100 mL. The geometric mean of the *E. coli* data collected on Geronimo Creek between December 1, 2003 and November 30, 2010 (150 samples) and assessed in 2012 by TCEQ, was 199 organisms per 100 mL, higher than the reported geometric mean of 161 organisms per 100 mL (81 samples) in the 2010 assessment. The geometric mean of the *E. coli* data collected on Geronimo Creek between December 1, 2005-November 30, 2012 was 187 organisms per 100ml (157 samples) in the 2014 assessment.

Clean Rivers Program 2018 Basin Summary Report - The 2018 Clean Rivers Program Basin Summary Report for the Guadalupe River Basin states that the analysis of the nitrate nitrogen concentration at the most downstream monitoring station 20747 near the Guadalupe River confluence indicated that they are significantly increasing over the 10 year study period. The report suggests that this change may be associated with additional sources of nonpoint runoff in the lower urbanized portion of the watershed. The report claims that TKN concentrations at the Alligator Creek station 20743 near the headwaters springs is significantly decreasing over the same time. The report claims that this change may be an early indicator that nutrient management efforts associated with the WPP are reducing fertilizer runoff in the upper agriculturally dominated portions of the watershed.

The Basin Summary report supports the likelihood that the source of the nitrates is groundwater by noting that the low nitrate values occur during high flow events that dilute the influence of groundwater with high nitrates. The upper portions of the watershed are located in Comal County. Census data has identified Comal as the second fastest growing county in the nation, with a 5.1% population growth between 2016 and 2017. The statistical analyses of the bacteriological data collected from 2003 through 2017 found that the geometric mean for *E. coli* at the Haberle Road station is 182 organisms per 100 mL. This number has risen slightly from the 162 MPN/100 ml geometric mean identified in the 2006 303(d) list. The relative stability of bacteria concentrations in the watershed speaks to the effectiveness of WPP bacteria reduction efforts that began in 2010, in the face of massive population growth and associated nonpoint source runoff.

Clean Rivers Program Basin Highlights Reports - The Clean Rivers Program Basin Highlights Reports for the Guadalupe River Basin since 2004 comment on the elevated nitrate-nitrogen concentrations, suggesting that the source appears to be groundwater seepage. The private wells that have been monitored in the area are shallow and have concentrations in excess of 20 mg/L. The 2016 Basin Highlights Report described the process for agricultural producers in the watershed to develop a certified Water Quality Management Plan (WQMP) in order to receive funding towards the implementation of best management practices to reduce nonpoint source pollution in the watershed.

2017 Nonpoint Source Management Program - Nonpoint source contamination is widespread in many Texas aquifers. While there are a variety of pollutants of concern in groundwater, the most widespread contaminant is nitrate. Potential nitrate sources may include failing septic systems, infiltration of stormwater runoff, over application of fertilizer on urban and agricultural land, and naturally occurring nitrate derived from the aquifer matrix. Sampling and analysis of drinking water wells conducted by the Texas Water Development Board (TWDB) in 2013 for the Gulf Coast Aquifer showed 12 wells of 317 sampled exceeded primary maximum contaminant levels for nitrate. From 2003 through 2013, the TWDB sampled 4,645 wells across the state for nitrate, with 1,429 presenting nitrate concentrations that exceeded the maximum contaminant level. An additional 1,751 wells showed the presence of nitrate, but did not exceed the maximum contaminant level (2014 Texas Integrated Report for the Clean Water Act Sections 305(b) and 303(d)). This sampling and analysis underscores the reason for the state's concern for the groundwater quality in Texas and potential impact from nonpoint source pollution.

2015-2016 USGS Study to identify the Sources Nitrate, and Chemical Loadings in the Geronimo Creek and Plum Creek Watersheds – The TSSWCB funded the GBRA and USGS to conduct a study of the groundwater and surface water in the Geronimo Creek Watershed during four synoptic surveys events at varying stream flows. The purpose of this study was to characterize the sources of elevated nitrate nitrogen concentrations in the Geronimo Creek and underlying Leona aquifer by analyzing Nitrate-N concentrations and stable isotopes of nitrate including delta nitrogen-15 of nitrate ($\delta^{15}\text{N-NO}_3$) and delta oxygen-18 of nitrate ($\delta^{18}\text{O-NO}_3$) throughout the watershed. The report generated by this study found that the analysis of nitrogen isotope values indicates that all of the sites in the Geronimo Creek watershed share one or more common sources of elevated nitrate. The report also stated that the sources of the nitrates in the groundwater and springs are most likely from diffuse sources that occur in conjunction with the mixing of nitrate from fertilizer applications and septic systems. The best management practices that were described and implemented in the Geronimo Creek WPP are designed to address both sources of nonpoint source pollution.

Project Narrative

Problem/Need Statement

In 2007, the TSSWCB Regional Watershed Coordination Steering Committee, using established criteria, ranked Geronimo Creek in the top 3 watersheds for selection of WPP development. The TSSWCB project 08-06 entitled, *Development of a Watershed Protection Plan for Geronimo Creek*, was begun in June 2008. The project included water quality monitoring, water quality modeling and WPP development. The development of the WPP for Geronimo and Alligator Creeks has been a stakeholder driven process lead by Extension with support from the GBRA. The Geronimo and Alligator Creeks Watershed Partnership (the Partnership) Steering Committee includes local officials, land and business owners and citizens and is supported by state and federal agency partners. With technical assistance from project staff, the Steering Committee has identified issues that are of particular importance to the surrounding communities, and has contributed information on land uses and activities that has been helpful in identifying the sources of nutrient and bacterial impairments, and in guiding the development of the WPP.

Historical data identified the impairment for bacteria and a concern for nutrients. The water quality monitoring program attempted to fill gaps in the historical data but was severely hampered by the drought of 2008-09. Data collection in the project further verified that periodic elevations of *E. coli* levels continue to exist. Routine ambient water quality data is collected at one site (12576) by GBRA through the Clean Rivers Program (CRP). Through projects 08-06, 11-06, 14-09, and 17-08, GBRA conducted water quality monitoring that included additional routine ambient and targeted stream sites on Geronimo and Alligator Creeks and its tributaries, and quarterly monitoring of springs, and wells.

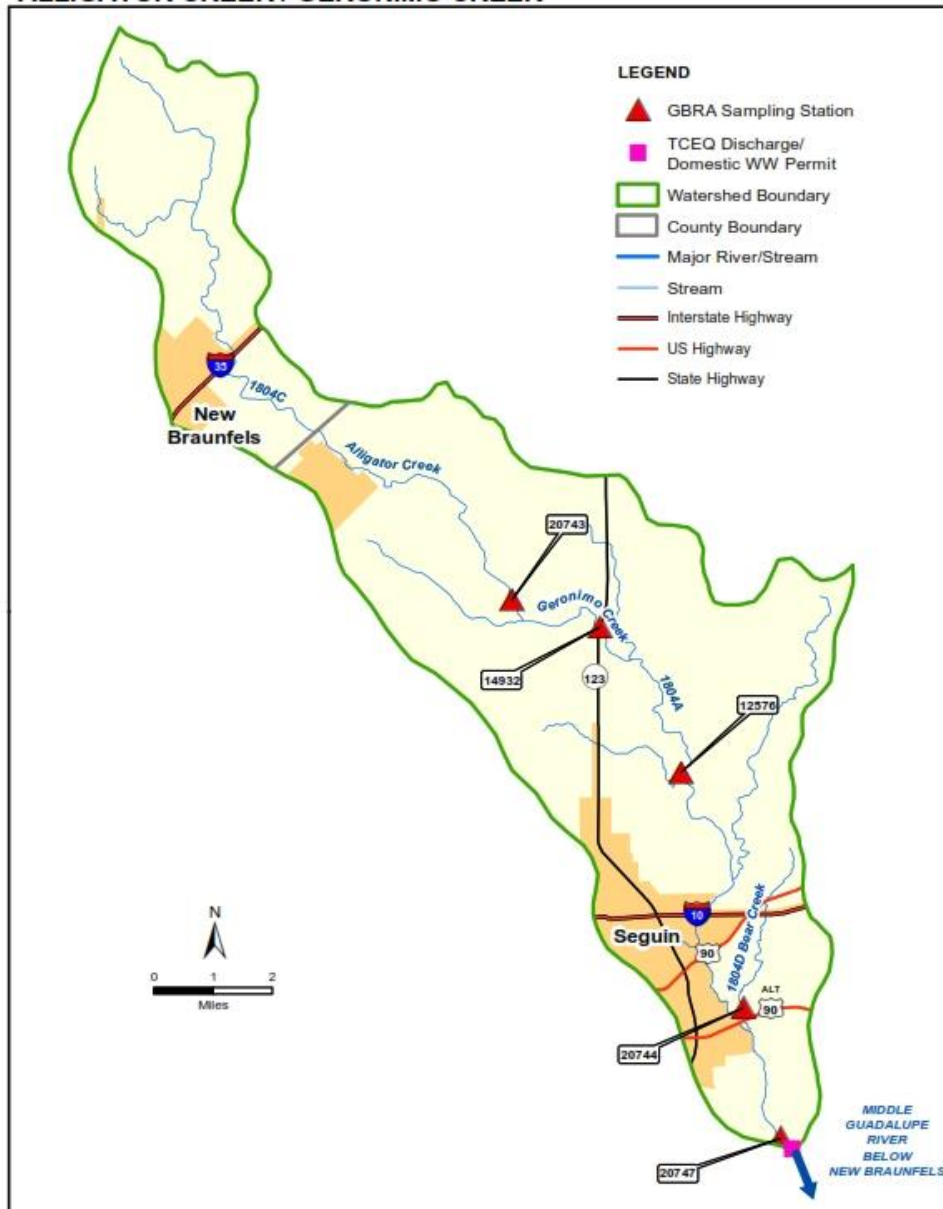
The Geronimo Creek WPP has been completed and accepted by EPA. This monitoring project is warranted to provide critical water quality data that will be used to judge the effectiveness of WPP implementation efforts and serve as a tool to quantitatively measure water quality restoration. This effort will continue stakeholder engagement by maintaining the project website, participating in the watershed partnership meetings to provide technical assistance and to share water quality data, and to provide outreach and education to stakeholders including local schools, municipal officials, and the Guadalupe County Master Naturalists.

Project Narrative

General Project Description (Include Project Location Map)

The sampling program will be continued in this project by retaining seven routine monthly sites and twelve targeted sites. The monitoring program will collect additional data, look for trends and fill data gaps identified in projects 08-06, 11-06 14-09 & 17-08. GBRA will continue to monitor the routine ambient monitoring location monthly under CRP. This project will also supplement the CRP monitoring by providing additional bimonthly nutrient analyses at station 12576, in order to fill data gaps and ensure that the same monitoring parameters are collected at all routine monitoring locations in the watershed.

ALLIGATOR CREEK / GERONIMO CREEK



One site will be located at Geronimo Creek at IH10 in order to collect routine and targeted monitoring downstream of the Oak Village North Subdivision. The City of Seguin has expanded its sanitary sewer service to the subdivision, taking the homes off of failing septic systems. The city also completed an associated CWA Section 319 project in 2016, that funded the decommissioning of the septic systems, expediting the hook-up of individual homes onto the city's collection system. A total of 131 septic tanks were decommissioned as a result of this project, with an estimated potential load reduction of 4.22×10^{13} cfu of *E. coli* per day.

An aquatic life monitoring event will be performed at the Geronimo Creek at Haberle Road (Station 12576), in order to gage the effects of WPP implementation efforts on the biological assemblages in the watershed. This monitoring will be accompanied by additional 24 hour dissolved oxygen, field and stream flow monitoring data.

GBRA will participate in the Geronimo Creek Watershed Partnership and assist stakeholder groups (cities,

counties, agricultural groups, local businesses, HOAs, etc.) and partner agencies (NRCS, SWCDs, TCEQ, etc.) in preparation of full implementation as outlined in the WPP.

A comprehensive watershed approach was used to focus on the most significant potential sources of agricultural NPS pollution contributing to the current impairments, while at the same time looking ahead at potential future sources of pollution from urban and suburban growth. The outcomes of the 08-06 project included data in the form of load allocations and watershed models developed in partnerships with local stakeholders and have benefited the local governmental entities as they formulate master plans and storm water management strategies. Recommended best management practices that were identified by the steering committee, work groups and partner agencies and written into the watershed protection plan are in the process of being installed or being considered for funding. An important benefit or outcome of this project will be the development of water quality data prior to, during and after the installation of implementation strategies that get ahead of growth so that it can be directed in an environmentally-safe and community-accepted direction

In 2010, a continuous water quality monitoring station was deployed in Geronimo Creek at SH123 (WQS No. 14932), under a TCEQ CWA Section 319 project, “GBRA – Continuous Water Quality Monitoring”. The project collected dissolved oxygen, specific conductance, temperature, turbidity and pH every 15 minutes. As a part of that project, an educational kiosk was linked to the monitoring station to provide access to the real-time network and to environmental and nonpoint source pollution educational modules. The project was concluded in August 2012. GBRA will continue to maintain a real-time water quality monitoring station on the Geronimo Creek at SH123 (Station no. 14932) that collects field parameters and turbidity every 15 minutes. The data from this station, as a part of the TCEQ Continuous Water Quality Monitoring Network (CWQMN), is available to the public through TCEQ’s CWQMN website.

List of monitoring locations and frequency of sample by type:

Segment	TCEQ Station ID	Site Description	Monitor	Monitor Type	Bacteria	Conventional	Flow	Field	24 Hr DO	AqHab	Benthics	Nekton
1804A	20742	Geronimo Creek at Huber Road, Upstream of the Alligator Creek Confluence	GB	RT	33	33	33	33				
1804A	20742	Geronimo Creek at Huber Road, Upstream of the Alligator Creek Confluence	GB	BF	11	11	11	11				
1804A	20743	Alligator Creek at Huber Road (Headwater)	GB	RT	33	33	33	33				
1804A	20743	Alligator Creek at Huber Road (Headwater)	GB	BF	11	11	11	11				
1804A	14932	Geronimo Creek at SH 123	GB	RT	33	33	33	33				
1804A	14932	Geronimo Creek at SH 123	GB	BF	11	11	11	11				
1804A	12576	Geronimo Creek at Haberle Road	GB	RT		17						
1804A	12576	Geronimo Creek at Haberle Road	GB	BF	11	11	11	11				
1804A	12576	Geronimo Creek at Haberle Road	GB	BS			2	2	2	2	2	2
1804A	20744	Bear Creek at East Walnut Street	GB	RT	11	11	11	11				
1804A	20744	Bear Creek at East Walnut Street	GB	BF	11	11	11	11				
1804A	20745	Geronimo Creek at HWY 90A	GB	RT	33	33	33	33				
1804A	20745	Geronimo Creek at HWY 90A	GB	BF	1111	11	11	11				
1804A	21260	Geronimo Creek at IH 10 near Seguin	GB	RT	33	33	33	33				
1804A	21260	Geronimo Creek at IH 10 near Seguin	GB	BF	11	11	11	11				

Segment	TCEQ Station ID	Site Description	Monitor	Monitor Type	Bacteria	Conventional	Flow	Field	24 Hr DO	AqHab	Benthics	Nekton
1804A	21261	Geronimo Creek at Hwy 90 (Seguin Outdoor Learning Center)	GB	RT	33	33	33	33				
1804A	21261	Geronimo Creek at Hwy 90 (Seguin Outdoor Learning Center)	GB	BF	11	11	11	11				
1804A	20747	Geronimo Creek at Hollub Lane, Downstream of the City of Seguin WWTF	GB	RT	33	33	33	33				
1804A	20747	Geronimo Creek at Hollub Lane, Downstream of the City of Seguin WWTF	GB	BF	11	11	11	11				
1804A	20748	Alligator Creek at FM 1102	GB	RT	11	11	11	11				
1804A	20748	Alligator Creek at FM 1102	GB	BF	11	11	11	11				
1804A	20749	Alligator Creek at FM 1101	GB	RT	11	11	11	11				
1804A	20749	Alligator Creek at FM 1101	GB	BF	11	11	11	11				
1804A	12575	Geronimo Creek at FM 20	GB	RT	11	11	11	11				
1804A	12575	Geronimo Creek at FM 20	GB	BF	11	11	11	11				
1804A	GB713	Water Well at Alligator Creek headwaters	GB	BS	11	11	11	11				
1804A	GB714	Water Well near Geronimo Creek at Laubach Road	GB	BS	11	11	11	11				
1804A	21262	Spring at Timmermann Property	GB	BS	11	11	11	11				

Tasks, Objectives and Schedules						
Task 1	Project Administration					
Costs	Federal	\$0	Non-Federal	\$15,000	Total	\$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	GBRA 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 January, April, July and October. QPRs shall be distributed to all Project Partners.					
	Start Date	Month 1		Completion Date	Month 48	
Subtask 1.2	GBRA 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	GBRA 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. GBRA 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	GBRA 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 48	
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	Federal	\$0	Non-Federal	\$2,000	Total	\$2,000
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	GBRA will develop a QAPP for activities in Task #3 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 3	
Subtask 2.2	GBRA will implement the approved QAPP. GBRA will submit revisions and necessary amendments to the QAPP as needed.					
	Start Date	Month 4		Completion Date	Month 48	
Deliverables	<ul style="list-style-type: none"> QAPP approved by TSSWCB and EPA in both electronic and hard copy formats Approved revisions and amendments to QAPP, as needed Data of known and acceptable quality as reported through Task #3 					

Tasks, Objectives and Schedules						
Task 3	Water Quality Data Collection & Analysis					
Costs	Federal	\$190,574	Non-Federal	\$110,297	Total	\$300,871
Objective	To collect water quality data in the Geronimo Creek watershed to have a continuous data record can be maintained during the implementation of the Geronimo Creek WPP.					
Subtask 3.1	The GBRA will conduct routine ambient monitoring at seven sites once per month, collecting field, conventional, flow and bacteria parameter groups. The sampling period extends over 33 months. The number of samples planned for collection through this subtask is 231. Currently, routine ambient monitoring is conducted monthly at one station by GBRA (12576) through the Clean Rivers Program. GBRA will also collect additional bimonthly ammonia nitrogen and total kjeldahl nitrogen at station 12576 as a part of this subtask, in order to supplement current bimonthly CRP sampling for these parameters. The number of supplemental nutrient samples planned for collection at station 12576 under this subtask is 17. Sampling through this subtask will complement existing routine ambient monitoring regimes such that the same comparable routine water quality monitoring is conducted monthly at eight sites in the Geronimo Creek watershed.					
	Field parameters are pH, temperature, dissolved oxygen and conductance. Conventional parameters are total suspended solids, turbidity, sulfate, chloride, nitrate nitrogen, ammonia nitrogen, total kjeldahl nitrogen, chlorophyll-a, pheophytin, total hardness, and total phosphorus. Flow parameters are flow collected by gage, electric, mechanical or Doppler, including severity. Bacteria parameter is <i>E. coli</i> .					
Start Date	Month 4		Completion Date	Month 48		

Subtask 3.2	GBRA will conduct routine ambient monitoring at four targeted sites once per quarter year, collecting field, conventional, flow and bacteria parameter groups; specific parameters are defined in Subtask 3.1. The QAPP developed in Task 2 will precisely identify the sites. The sampling period extends over eleven quarters. The number of samples planned for collection through this subtask is 44. Spatial and seasonal variation will be captured in these snapshots of watershed water quality. GBRA's Regional Laboratory will conduct sample analyses.	Start Date	Month 4	Completion Date	Month 48
Subtask 3.3	GBRA will conduct biased flow monitoring at 12 sites once per quarter year under wet conditions, collecting field, conventional, flow and bacteria parameter groups; specific parameters are defined in Subtask 3.1. These sites shall be the same as the sites for routine ambient monitoring described in subtasks 3.1-3.2. If a storm event was captured under routine monitoring in subtasks 3.1-3.2, a separate biased flow sample will not be collected under this subtask. The QAPP developed in Task 2 will precisely identify the sites. The sampling period extends over eleven quarters. The number of samples planned for collection through this subtask is 132. Spatial, seasonal and meteorological variation will be captured in these snapshots of watershed water quality. GBRA's Regional Laboratory will conduct sample analyses.	Start Date	Month 4	Completion Date	Month 48
Subtask 3.4	GBRA will conduct routine groundwater monitoring at three sites (e.g., one spring and two wells) once per quarter year, collecting field, conventional, flow and bacteria parameter groups; specific parameters are defined in Subtask 3.1. Chlorophyll-a, and pheophytin analysis will be excluded from water well sampling. The QAPP developed in Task 2 will precisely identify the sites. The sampling period extends over eleven yearly quarters. The number of samples planned for collection through this subtask is 33. GBRA's Regional Laboratory will conduct sample analyses.	Start Date	Month 4	Completion Date	Month 48
Subtask 3.5	GBRA will perform a multi-day aquatic life monitoring event on the Geronimo Creek at Haberle Road (Station 12576) in order to gage the effectiveness of implementation efforts on the abundance and diversity of aquatic life at this station. GBRA will perform an assessment of the biological assemblages and the biological habitat two times during the biological index period (March 15 - October 15). At least one of these assessments will occur during the biological critical period (July 1 – September 30). Native Texas wildlife specimens will be collected under a Texas Parks and Wildlife scientific collection permit. This event will be also be accompanied by 24 hr. dissolved oxygen monitoring, as well as field and flow parameter groups; specific parameters are defined in Subtask 3.1.	Start Date	Month 4	Completion Date	Month 48
Subtask 3.6	GBRA will transfer monitoring data from activities in subtasks 3.1-3.5 to TCEQ for inclusion in the TCEQ SWQMIS at least biannually. Data will be transferred in the correct format using the TCEQ file structure along with a completed Data Summary, as described in the most recent version of the <i>TCEQ Surface Water Quality Monitoring Data Management Reference Guide</i> . GBRA will post data from monitoring activities collected in subtasks 3.1-3.5 to the project website in a timely manner. Data Correction Request Forms will be submitted to TSSWCB whenever errors are discovered in data already reported. All monitoring data files, data summary reports and data correction request forms will also be provided to Extension. GBRA will input monitoring regime, as detailed in the QAPP, into the TCEQ CMS.	Start Date	Month 4	Completion Date	Month 48
Subtask 3.7	GBRA will continue to maintain a real-time water quality monitoring station on the Geronimo Creek at SH123 (Station no. 14932) that collects field parameters and turbidity every 15 minutes. The data from this station, as a part of the TCEQ Continuous Water Quality Monitoring Network (CWQMN), is available to the public through TCEQ's CWQMN website. The QAPP for this monitoring is maintained by TCEQ.	Start Date	Month 1	Completion Date	Month 14

Subtask 3.8	GBRA will develop a final Assessment Data Report summarizing water quality data collected through Task 3. The Report shall, at a minimum, provide an assessment of water quality with respect to effectiveness of BMPs implemented and a discussion of interim short-term progress in achieving the Geronimo Creek WPP water quality goals. GBRA will summarize the results from Task 3 in the GBRA’s Clean Rivers Program Basin Highlights Report. GBRA will provide updates on the results and activities of Task 3 to the Steering Committee.		
	Start Date	Month 4	Completion Date
	Month 48		
Deliverables	<ul style="list-style-type: none"> • Monitoring data files and Data Summary in electronic format • Data correction request forms (as needed) in electronic format • Monitoring data updates posted to the project webpage • Summary of findings from monitoring activities included in GBRA Clean Rivers Program (CRP) Basin Highlights Report (BHR) in both electronic and hardcopy formats • Final Assessment Data Report in both electronic and hard copy formats 		

Project Goals (Expand from Summary Page)
<ul style="list-style-type: none"> • Generate data of known and acceptable quality for surface and ground water quality monitoring (routine ambient, targeted watershed, aquatic life monitoring, and spring flow) of main stem and tributary stations for field and conventional parameters, flow, 24 hour dissolved oxygen, nekton, benthic macroinvertebrates, aquatic habitat, and bacteria parameters. As well as for groundwater monitoring of two shallow wells from the Leona Aquifer for conventional and bacteria parameters. • Support the implementation of the Geronimo Creek WPP by collecting water quality data for use in evaluating the effectiveness of BMPs, and in assessing water quality improvement and progress in achieving restoration. • Communicate water quality conditions to the public and to the Partnership on project results and activities in order to support adaptive management of the Geronimo Creek WPP and to expand public knowledge on Geronimo and Alligator Creeks water quality data.

Measures of Success (Expand from Summary Page)
<ul style="list-style-type: none"> • Provide technical assistance to the Partnership through collection and interpretation of water quality data. • Data of known and acceptable quality are generated for surface water quality monitoring (routine ambient, targeted watershed, aquatic life monitoring and spring flow) of main stem and tributary stations on Geronimo Creek for field and conventional parameters, flow, 24 hour dissolved oxygen, nekton, benthic macroinvertebrates, aquatic habitat and bacteria parameters. As well as for groundwater monitoring of shallow wells from the Leona Aquifer for conventional and bacteria parameters. • Water quality data is used to evaluate progress in implementing the Geronimo Creek WPP and achieving water quality restoration. • Water quality data is communicated to the public and the Partnership in a timely fashion.

2017 Texas NPS Management Program Reference (Expand from Summary Page)
Components, Goals, and Objectives
Component One – Explicit short and long-term goals, objectives and strategies to restore and protect surface and groundwater, as appropriate.
<p>Long-Term Goal – Protect and restore water quality affected by nonpoint source pollution through assessment, implementation, and education.</p> <ul style="list-style-type: none"> • Objective 1 – Focus nonpoint source abatement efforts, implementation strategies, and available resources in watershed and aquifers identified as impacted by nonpoint source pollution • Objective 3 – Support the implementation of state, regional, and local programs to reduce nonpoint source pollution, such as the implementation of strategies defined in TMDL I-Plans, WPPs, and other water quality planning efforts in the state • Objective 7 – Increase overall public awareness of nonpoint source issues and prevention activities
<p>Short-Term Goal One – Data Collection and Assessment</p> <ul style="list-style-type: none"> • Objective B – Ensure that monitoring procedures meet quality assurance requirements and are in compliance with EPA-approved TCEQ or TSSWCB Quality Management Plans • Objective E – Conduct monitoring to determine the effectiveness of TMDL I-Plans, WPPs and BMP implementation
<p>Short-Term Goal Three – Education</p> <ul style="list-style-type: none"> • Objective G – Implement public outreach and education to maintain and restore water quality in water bodies impacted by nonpoint source pollution
Component Three – Combination of statewide nonpoint source programs and on-the-ground projects achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.

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
Strategic Plan Objective – Objective 1.2 Provide for Clean and Safe Water

Part III – Financial Information

Budget Summary				
Federal	\$	190,574	% of total project	60%
Non-Federal	\$	127,297	% of total project	40%
Total	\$	317,871	Total	100%
Category		Federal	Non-Federal	Total
Personnel	\$	0	\$ 58,199	\$ 58,199
Fringe Benefits	\$	0	\$ 23,571	\$ 23,571
Travel	\$	1,310	\$ 0	\$ 1,310
Equipment	\$	12,988	\$ 0	\$ 12,988
Supplies	\$	8,562	\$ 2,165	\$ 10,727
Contractual	\$	0	\$ 0	\$ 0
Construction	\$	0	\$ 0	\$ 0
Other	\$	167,714	\$ 24,156	\$ 191,870
Total Direct Costs	\$	190,574	\$ 108,091	\$ 298,665
Indirect Costs (33%)	\$	0	\$ 19,206	\$ 19,206
Total Project Costs	\$	190,574	\$ 127,297	\$ 317,871

Budget Justification (Federal)		
Category	Total Amount	Justification
Personnel	\$ 0	N/A
Fringe Benefits	\$ 0	N/A
Travel	\$ 1,310	Mileage for sample collection at the federal rate (average of 65 miles per monitoring event for approximately 50 monitoring events)
Equipment	\$ 12,988	YSI EXO3 Sonde with attached sensors to measure temperature, dissolved oxygen, pH, specific conductance and turbidity - \$12,988
Supplies	\$ 8,562	Supplies for water quality monitoring bottles (\$2,654), field probe replacement parts: pH sensor, DO membrane, conductivity/temperature sensor (\$2,815), probe calibration reagents (\$2,068), write-in-rain paper (\$150), biological monitoring supplies (\$875)
Contractual*	\$ 0	N/A
Construction	\$ 0	N/A
Other	\$ 167,714	Analyses of water quality monitoring samples described in Task 3: <ul style="list-style-type: none"> • 7 Routine sites once per month for 45 months \$105,390 • Supplemental nutrients at 1 routine site bimonthly \$1,920 • 2 Well stations once per quarter for 15 quarters \$9,395 • 1 Spring station once per quarter for 15 quarters \$5,655 • 4 Dry weather targeted sites once per quarter for 15 quarters \$20,994 • 12 Wet weather targeted sites once per quarter for 5 quarters \$22,560 • Maintenance and repair costs for field equipment - \$1,800
Indirect	\$ 0	N/A

Budget Justification (Non-Federal)		
Category	Total Amount	Justification
Personnel	\$ 58,199	Water Quality Program Supervisor (0.10 FTE per year for 4 years) Aquatic Biologist (0.06 FTE per year for 4 years) Water Quality Field Technician (0.15 FTE per year for 2years) Habitat Conservation Plan Coordinator (0.06 FTE for 1 year)
Fringe Benefits	\$ 23,571	Fringe calculated at 40.5% of non-federal personnel
Travel	\$ 0	N/A
Equipment	\$ 0	N/A
Supplies	\$ 2,165	Supplies in support of water quality monitoring including waders, boots, field gear and clothing (\$700); monitoring supplies including buckets, seines, rubber gloves, measuring tapes (\$500); water quality equipment storage supplies (\$400); biological monitoring supplies (\$565).
Contractual*	\$ 0	N/A
Construction	\$ 0	N/A
Other	\$ 24,156	Clean Rivers Program monitoring at station 12576 (\$11,628); volunteer labor calculated at a rate of \$12/hour for approximately 63 volunteers for 3 hours/clean-up event at four events during the project period (\$12x63x3x4=\$9,072); GBRA Water Quality Intern at a rate of \$12 per hour for approximately 72 hours per year for three years (\$12x72x4=\$3,456)
Indirect	\$ 19,206	Indirect calculated at 33.0% of non-federal personnel