



**Texas State Soil and Water Conservation Board
Section 319(h) Nonpoint Source Program
FY 2006 Project 06-8 Grant Application**



NONPOINT SOURCE SUMMARY PAGE for the CWA, Section 319(h) Agricultural/Silvicultural Nonpoint Source Program					
Title of Project:	Education Program for Improved Water Quality in Copano Bay				
Project Goals/Objectives:	The overall goal of this project is to improve the water quality in Copano Bay and its tributaries by increasing awareness of the water quality issues throughout the watershed and providing education and demonstrations for landowners and livestock owners in the watershed on practices to decrease or prevent bacteria from entering waterways.				
Project Tasks:	(1) Project Coordination and Administration (2) Compile Existing Information (3) Develop Bacterial Education Programs For Horse Owners (4) Education and Outreach				
Measures of Success:	An increase in the awareness of water quality issues in Copano Bay. An increase in the knowledge level of landowners and livestock owners of BMPs for reducing bacteria runoff. This increase in awareness of water quality and BMPs to address them is expected to lead to greater implementation of BMPs in the watershed. TWRI and TCE will document project participation at all events and meetings. Selected programs will have a pre and post assessment survey where knowledge learned can be gauged. Follow-up surveys will be used to gauge implementation of BMPs. Overall success will be measured by the number of individual producers the project reaches.				
Project Type:	Statewide (); Watershed Implementation/Education (X); Watershed Planning/Assessment (); Watershed Protection ()				
Status of Water Body: 2002 Water Quality Inventory and 303(d) List	Segment ID: Copano Bay (2472)	Parameter: Bacteria	Category: 5a		
Project Location:	The educational project will cover all counties in the Copano Bay watershed, but will focus primarily on Aransas, Bee, Goliad, Refugio, and San Patricio counties (see Figure 1).				
Key Project Activities:	Hire Staff (X); Monitoring (); Regulatory Assistance (); Technical Assistance (); Education (X); Implementation (); Demonstration (X); Other ()				
NPS Management Program Elements:	This proposal will assist the State in meeting <u>Short-Term Goal Three</u> for NPS Management – Education by conducting education and technology transfer activities to help increase awareness of NPS pollution and prevent activities contributing to the degradation of water bodies, by NPS pollution. This proposal will assist the State in meeting the <u>objective</u> of reducing the amount of NPS pollution entering the water bodies of Texas through pollution prevention activities and education by: enhancing existing outreach programs at the state, regional, and local levels to maximize the effectiveness of NPS education; administering programs to educate citizens about water quality and their potential role in causing NPS pollution; and conducting outreach through the Texas Cooperative Extension to facilitate broader participation and partnerships. Finally, this proposal will assist the State in meeting <u>Milestone (F), implementing voluntary actions</u> in priority waterbodies.				
Project Costs:	Federal:	\$211,793	Non-Federal Match:	\$163,894	Total: \$375,687
Project Management:	<ul style="list-style-type: none"> • Texas Water Resources Institute • Texas Cooperative Extension 				
Project Period:	September 1, 2006 – August 31, 2009				

Part I – Applicant Information

Applicant							
Project Lead		C. Allan Jones					
Title		Director					
Organization		Texas Water Resources Institute					
E-mail Address		cajones@tamu.edu					
Street Address		1500 Research Parkway, Suite 240 2118 TAMU					
City	College Station	County	Brazos	State	TX	Zip Code	77843-2118
Telephone Number	979-845-1851			Fax Number	979-845-8554		
Project Co-Lead							
Project Co-Lead		Terry Lockamy					
Title		Regional Program Director – ANR South Region ANR					
Organization		Texas Cooperative Extension					
E-mail Address		TLockamy@ag.tamu.edu					
Street Address		2415 E. Hwy. 83					
City	Weslaco	County	Hidalgo	State	TX	Zip Code	78596
Telephone Number	956-968-5585			Fax Number	956-969-5639		

Project Partners	
Names	Roles & Responsibilities
Texas State Soil and Water Conservation Board (TSSWCB)	Project management
Texas Cooperative Extension (TCE)	Provides water quality education and demonstration
Texas Water Resources Institute (TWRI)	Coordination of project personnel and project reporting
Welder Wildlife Refuge	Assist with education and demonstration activities related to wildlife management and conservation

Part II – Project Information

Project Type

Surface Water	<input checked="" type="checkbox"/>	Groundwater	<input type="checkbox"/>				
Does the project implement recommendations made in a completed Watershed Protection Plan or approved TMDL Report or Implementation Plan?				Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
If yes, identify the document.							
If yes, identify the agency/group that developed and/or approved the document.					Year Developed		

Watershed Information

Watershed Name(s)	Hydrologic Unit Code (8 Digit)	Segment ID	305 (b) Category	Size (mi ²)
Copano Bay	12100405 - 12100407	2472	5a	2,652 mi ²

Project Narrative

Problem/Need Statement

Data assessed in 2002 showed that Copano Bay was not suitable for harvesting oysters because of elevated bacteria concentrations. In response to these conditions, a Total Maximum Daily Load (TMDL) was initiated by TCEQ to determine the sources of fecal coliform bacteria and the measures necessary to restore the oyster waters use in Copano Bay. In 2004, the tidal segments of the Aransas and Mission Rivers were added to the TMDL as a result of their listing on the 2004 303(d) list for contact recreation. The goal of the TMDL is to determine the load of bacteria that Copano Bay can receive and still support its designated uses and allocate reductions among all the potential sources of bacteria in the watershed.

TCEQ contracted the Center for Research in Water Resources at the University of Texas to compile a model to assess bacteria loading to Copano Bay and load reductions needed to meet the oyster water standard. Preliminary conclusions from this model estimated that bacteria from livestock must be reduced 90% to meet the contact recreation standard in the tidal segment of the Mission River. The model also estimated that a 85% reduction in bacteria from livestock was needed to meet the contact recreation standard in the tidal segment of the Aransas River. Finally, the model predicted that in order to meet the oyster water standard in the Bay, a 15% reduction in bacteria loading from livestock was needed in the Aransas River and a 20% reduction was needed in the Mission River. Additional reductions have been proposed for wastewater treatment plant discharges and urban runoff.

Results of bacterial source tracking performed by Texas A&M University – Corpus Christi indicates that 22% of the bacteria isolates in the Bay corresponded with human sources, 20% from cattle, 35% from horses, 21% from ducks, and 1% from wildlife and gulls.

As a result of these preliminary findings, a number of measures are being taken by the state. First, TCEQ will be funding a watershed coordinator to develop a TMDL – Implementation Plan for the Copano Bay watershed. The TSSWCB is working with the Nueces River Authority to perform additional routine and targeted monitoring to provide better information for the TMDL and Implementation Plan development processes. Finally, TWRI and TCE, with this project, propose to increase awareness of the water quality issues throughout the watershed and provide educational programs and demonstrations for landowners and livestock owners in the watershed on practices to decrease or prevent bacteria from entering waterways.

Project Narrative

General Project Description

This project will improve the water quality in Copano Bay and its tributaries (Figure 1) by increasing awareness of the water quality issues in the watershed and providing educational programs and demonstrations for landowners and livestock owners in the watershed on practices they can implement to decrease or prevent bacteria from entering waterways. This increase in awareness of water quality issues and BMPs to address them is expected to lead to greater implementation of BMPs in the watershed.

The educational project will cover all counties in the Copano Bay watershed, but will focus primarily on Aransas, Bee, Goliad, Refugio, and San Patricio counties. This project will be coordinated with the ongoing TMDL, upcoming TMDL - Implementation Plan development, and the proposed monitoring activities in order to provide the necessary support to these activities as well as the most up to date information on these activities to landowners as part of the educational programs. This project will also be coordinated with the proposed FY06, CWA §319 project, *Lone Star Healthy Streams*, to deliver educational programs and materials developed by that project to cattlemen in the watershed on measures they can take to reduce bacteria from entering streams.

The TWRI will lead and coordinate this project. The agency will maintain the excellent coordination among federal, state, and local agencies and entities, ensuring effective performance. The TWRI will supply all project deliverables to the TSSWCB project manager. Finally, the TWRI and TCE will cooperate with and involve SWCDs, NRCS, and TSSWCB field representatives in all project activities, as appropriate.

TCE will (1) assemble and evaluate existing information, (2) develop needed educational programs, and (3) deliver educational programs to improve water quality in the watershed. Through TCE's efforts to collect and evaluate existing information, needed data will be assembled to improve the TMDL, help develop the TMDL - Implementation Plan, and develop needed education programs. TCE will assemble and assess existing data on livestock, deer, and feral hog numbers and distribution in the watershed; investigate published bacteria loading coefficients from cattle and other livestock; perform a comparison of the bacteria levels present in Copano Bay to other coastal areas in Texas; and perform an evaluation of the historical bacterial levels in Copano Bay.

Through this project, TCE will also develop educational curriculum for horse owners that delivers current knowledge and training on measures they can take to reduce bacteria runoff.

Finally, TCE will deliver educational programs to landowners throughout the watershed. Result demonstrations, county programs, one-on-one landowner assistance, BMP exhibits, Ag Tours, publications, and other educational meetings will be used to reach the widest array of producers possible in the watershed. Nontraditional audiences, including new and absentee landowners, will also be targeted by many of these programs. Specific educational programs will be targeted to small landowners (Urban Rancher), cattlemen (*Lone Star Healthy Streams*), horse owners (developed through this project), and the general public.

TWRI and TCE will document project participation at all events and meetings. Selected programs will have a pre and post assessment survey where knowledge learned can be gauged. Follow-up surveys will be used to gauge implementation of BMPs. Overall success will be measured by the number of individual producers the project reaches.

Local media will be used to promote events, and publications will promote various BMPs to landowners and natural resource professionals. This will increase communication, maintaining frequent, periodic technology transfer between natural resource professionals and agricultural landowners. TCE will utilize its already developed resources and delivery system to educate producers on improved management and production techniques. Appropriate materials resulting from this program will be posted to the project website.

Water Quality Impairment

Describe all known causes (pollutants of concern) of water quality impairments from any of the following sources: 2002 Water Quality Inventory and 303(d) List, 2002 Summary of Waterbodies with Water Quality Concerns (Secondary Concerns List) or Other Documented Sources (ex. Clean Rivers Program Basin Summary or Basin Highlights Reports).

<u>Segment Name</u>	<u>Impairment</u>	<u>Concerns</u>
Copano Bay (2472)	Bacteria	Phosphorus & D.O.
Mission River Tidal (2001)	None	Bacteria
Mission River Above Tidal (2002)	None	D.O. & Bacteria
Aransas River Tidal (2003)	None	Phosphorus & Bacteria
Aransas River Above Tidal (2004)	None	Dissolved Oxygen (D.O.)

Project Goals

- 1.) Improve the water quality in Copano Bay and its tributaries
- 2.) Increase awareness of the water quality issues throughout the watershed
- 3.) Provide education and demonstrations for landowners and livestock owners in the watershed on practices to decrease or prevent bacteria from entering waterways

Tasks, Objectives and Schedules (Replicate or modify table as needed)

Task 1:	Project Coordination and Administration					
Costs:	Federal:	\$23,909	State:	\$2,287	Total:	\$26,196
Objective:	To effectively coordinate and monitor all work performed under this project including technical and financial supervision, preparation of status reports, and maintenance of project files and data. TWRI will organize an integrated team among the multiple agencies and groups involved with the project to efficiently and effectively achieve project goals and to summarize activities and achievements made throughout the course of the project. TWRI will perform accounting functions for project funds and be responsible for developing timely and accurate reports. Progress reports shall document all activities performed within a quarter and shall be submitted not later than thirty (30) days after the close of the quarter. An interactive internet website will also be created and maintained to provide the most current progress.					
Subtask 1.1:	Conduct quarterly TTVN meetings as appropriate with project participants to discuss project activities, project schedule, lines of responsibility, communication needs, and other requirements					
	Start Date:	Month 1	Completion Date:	Month 36		
Subtask 1.2:	TWRI will prepare electronic quarterly reports and submit them to the TSSWCB. All progress reports will also be provided to all project participants and placed on the project website maintained by TWRI					
	Start Date:	Month 1	Completion Date:	Month 36		
Subtask 1.3:	Representatives from TWRI will attend meetings with the TSSWCB project manager and other meetings, as needed, to review project status, deliverables, etc.					
	Start Date:	Month 1	Completion Date:	Month 36		
Subtask 1.4:	TWRI will submit appropriate Reimbursement Forms					
	Start Date:	Month 1	Completion Date:	Month 36		

Subtask 1.5:	<p>TWRI will develop (Months 1-3), host and maintain (Months 3-36) an internet website for the dissemination of information on educational, monitoring and demonstration activities taking place across the Copano Bay watershed. Website delivery of information will be the most time and cost effective way to disseminate information to interested people or groups. Information presented through the website will include:</p> <ul style="list-style-type: none"> • PDFs of all reports, journal articles, faculty papers and presentations generated from this project. • Links to all cooperating and/or participating agencies. • Links to all project primary investigators. • Links to university academic departments that are involved in the project. • Links to other related websites <ul style="list-style-type: none"> ○ Texas State Soil and Water Conservation Board ○ Texas Water Resource Institute ○ Environmental Protection Agency-Office of Water, CWA Section 319 ○ Soil and Water Conservation Districts ○ Texas Cooperative Extension ○ Welder Wildlife Refuge ○ TCEQ TMDL Projects • Schedule of upcoming meetings/programs dealing with this project. 			
	Start Date:	Month 1	Completion Date:	Month 36
Subtask 1.6:	TWRI and TCE will develop a final project report and submit to TSSWCB			
	Start Date:	Month 1	Completion Date:	Month 36
Deliverables	<ul style="list-style-type: none"> • Quarterly Progress Reports • Meeting notices, agendas, meeting materials, and number of attendees • Reimbursement Forms • Web site to publish results, bulletins, and reports • Final Project Report 			

Tasks, Objectives and Schedules (Replicate or modify table as needed)						
Task 2:	Compile Existing Information					
Costs:	Federal:	\$31,940	State:	\$27,473	Total:	\$59,413
Objective:	To collect and evaluate existing information to improve the TMDL, help develop the TMDL - Implementation Plan, and develop needed education programs.					
Subtask 2.1:	TCE will hire an Extension Assistant to compile existing information, develop education curriculum, and lead all outreach and education program efforts.					
	Start Date:	Month 1		Completion Date:	Month 12	
Subtask 2.2:	TCE will assemble and assess existing data on livestock, deer, and feral hog numbers and distribution in the watershed.					
	Start Date:	Month 1		Completion Date:	Month 12	
Subtask 2.3:	TCE will investigate published bacteria loading coefficients from cattle and other livestock to determine the most appropriate coefficients for use in the Copano Bay watershed.					
	Start Date:	Month 1		Completion Date:	Month 12	
Subtask 2.4:	TCE will perform a comparison of the bacteria levels present in Copano Bay to other coastal areas in Texas to evaluate the most realistic endpoint.					
	Start Date:	Month 1		Completion Date:	Month 12	
Subtask 2.5:	TCE will perform an evaluation of the historical bacterial levels in Copano Bay to assess any potential trends or changes that have occurred.					
	Start Date:	Month 1		Completion Date:	Month 12	

Deliverables	<ul style="list-style-type: none"> • Technical report describing livestock, deer, and feral hog numbers and distribution in the watershed. • Technical report describing appropriate bacteria loading coefficients for use in the Copano Bay watershed • Technical report comparing the bacteria levels present in Copano Bay to other coastal areas in Texas and identifying the most realistic endpoint • Technical report describing the historical bacterial levels in Copano Bay and any potential trends or changes that have occurred
--------------	--

Tasks, Objectives and Schedules (Replicate or modify table as needed)						
--	--	--	--	--	--	--

Task 3:	Develop Bacterial Education Programs For Horse Owners					
Costs:	Federal:	\$31,940	State:	\$27,473	Total:	\$59,413
Objective:	To develop an education program for horse owners. TCE will compile current knowledge regarding the effects of horses on bacterial levels and best management practices (BMPs) designed to minimize these impacts and develop educational programs that provide horse owners with a combination of production and environmental training enabling them to better manage and protect their valuable land and water resources.					
Subtask 3.1:	The TCE Extension Assistant will conduct a review of the literature to determine the state of current knowledge regarding the effects of horses on bacterial levels in water bodies and BMPs designed to minimize these impacts. TCE will assess and inventory education/training materials within TCE and related materials developed through similar efforts in other states addressing bacteria from horses.					
	Start Date:	Month 1	Completion Date:	Month 12		
Subtask 3.2:	TCE will facilitate the modification necessary to integrate existing materials from subtask 3.1 above into the education program.					
	Start Date:	Month 1	Completion Date:	Month 12		
Subtask 3.3:	TCE will develop a core horse management educational component that provides producers with state-of-the-art production technology training on fundamental BMPs and strategies which can be employed to protect and conserve water resources from bacterial and other NPS contamination originating from horse operations.					
	Start Date:	Month 1	Completion Date:	Month 12		
Subtask 3.4:	TCE will integrate and coordinate the horse management educational program with the proposed FY06 projects, <i>Lone Star Healthy Streams Program</i> and <i>Educational Programs Focused on Fecal Coliform Bacteria and Nutrient Runoff on Dairy Operations in the Leon Watershed</i> , to provide the state with a comprehensive program for addressing bacteria from the major sectors of agriculture.					
	Start Date:	Month 1	Completion Date:	Month 12		
Subtask 3.5:	TCE will develop and provide a certificate of completion, or other appropriate mechanism which enables individuals to take credit for participation in the education and training program.					
	Start Date:	Month 1	Completion Date:	Month 12		
Deliverables	<ul style="list-style-type: none"> • Horse management education curriculum addressing bacteria contamination of water bodies. 					

Tasks, Objectives and Schedules (Replicate or modify table as needed)						
Task 4:	Education and Outreach					
Costs:	Federal:	\$124,004	State:	\$106,660	Total:	\$230,664
Objective:	To conduct educational and outreach programs in the Copano Bay watershed to reduce bacterial runoff from agricultural lands by increasing water quality and BMP awareness of agricultural producers, landowners, natural resource professionals, new land owners, and the general public. TCE will host and participate in educational meetings and conduct result demonstrations.					
Subtask 4.1:	TCE will conduct educational and outreach programs in the Copano Bay watershed. TCE will coordinate with local SWCDs, TAES, NRCS, and others to deliver and evaluate the educational program. Specific educational programs to be delivered include: <ul style="list-style-type: none"> • Urban Rancher Programs for small landowners, • Lone Star Healthy Stream Programs for cattlemen, • Wildlife management programs for landowners, • Horse management curriculum developed through this project for horse owners, and • General water quality education for the general public. 					
	Start Date:	Month 1		Completion Date:	Month 36	
Subtask 4.2:	TCE will conduct result demonstrations and associated Ag Tours to show changes in livestock behavior and estimated reductions in bacterial runoff resulting from implementation of various value-added BMPs to area landowners and producers. GPS collars will be used to track livestock movement in correspondence with implementation of various BMPs to demonstrate changes in livestock behavior.					
	Start Date:	Month 1		Completion Date:	Month 36	
Subtask 4.3:	TCE will provide one-on-one assistance to landowners and producers on water quality issues and measures for improving them. When appropriate, TCE will facilitate communication between landowners and local soil and water conservation districts and the NRCS to encourage conservation plan development and participation in available cost-share programs.					
	Start Date:	Month 1		Completion Date:	Month 36	
Subtask 4.4:	TCE will distribute educational material and publications to landowners in the watershed through BMP exhibits, county programs, Ag Tours, and other educational programs.					
	Start Date:	Month 1		Completion Date:	Month 36	
Subtask 4.5:	TCE will utilize local media to promote events, and publications to promote various BMPs to landowners and natural resource professionals.					
	Start Date:	Month 1		Completion Date:	Month 36	
Subtask 4.6:	Utilizing participants surveys, TCE will evaluate changes in producer knowledge and awareness of important production and environmental issues.					
	Start Date:	Month 1		Completion Date:	Month 36	
Deliverables	<ul style="list-style-type: none"> • Agendas and course material for training workshops and other activities • Estimated group contacts • Estimated educational contact hours through group methods • Results from pre and post evaluation surveys conducted at select meetings • Promotional materials including news-releases, fact-sheets, etc. • List of tours and demonstrations focusing on BMPs to interested groups • Photos and log of display booth exhibits 					

Measures of Success

- Document project participation at all events and meetings.
- Conduct pre and post assessment surveys at education programs where knowledge gained can be gauged.
- Conduct follow-up surveys to gauge implementation of BMP.
- Report number of individual producers the project reaches.

2005 Texas Nonpoint Source Management Program Document Reference

Goals &/or Milestone(s)

This proposal will assist the State in meeting Short-Term Goal Three for NPS Management – Education by conducting education and technology transfer activities to help increase awareness of NPS pollution and prevent activities contributing to the degradation of water bodies, by NPS pollution.

This proposal will assist the State in meeting the objective of reducing the amount of NPS pollution entering the water bodies of Texas through pollution prevention activities and education by: enhancing existing outreach programs at the state, regional, and local levels to maximize the effectiveness of NPS education; administering programs to educate citizens about water quality and their potential role in causing NPS pollution; and conducting outreach through the Texas Cooperative Extension to facilitate broader participation and partnerships.

This proposal will assist the State in meeting Milestone (F) Implementation of voluntary actions in priority waterbodies.

Part III – Financial Information

Budget Summary

Federal 319(h)	\$211,793	% of total project	56%
Non-Federal Match	\$163,894	% of total project (at least 40%)	44%
Total \$ Cost	\$375,687	Total project %	100%
Category	Federal	Non-Federal Match	Total
Personnel	\$123,177	\$92,516	\$215,693
Fringe Benefits	\$36,442	\$21,480	\$57,922
Subtotal Personnel & Fringe	<u>\$159,618</u>	<u>\$113,996</u>	<u>\$273,615</u>
Travel	\$11,550		\$11,550
Equipment			
Supplies	\$7,920		\$7,920
Contractual			
Construction			
Other	\$5,080		\$5,080
Subtotal	<u>\$24,550</u>	<u>\$0</u>	<u>\$24,550</u>
Total Direct Costs	\$184,169	\$113,996	\$298,165
Indirect Costs (15%)	\$27,625	\$29,639	\$57,264
Unrecovered IDC (11%)	\$0	\$20,259	\$20,259
Total Project Costs	\$211,794	\$163,894	\$375,688

Budget Justification		
Category	Total Amount	Justification
Personnel & Fringe Benefits	\$273,614	Federal: <ul style="list-style-type: none"> • TWRI Project Manager = 5% effort • TWRI IT Associate = 5% effort • TCE Extension Asst = 100% effort Non-Federal Match: <ul style="list-style-type: none"> • TCE Agents (4) and Specialists (5) = 5% effort
Travel	\$11,550	Federal: <ul style="list-style-type: none"> • TWRI = 3 trips to Corpus Christi per year @ \$210 per trip (\$1,890) • TCE Extension Asst = 1 trip per week @ \$40 per trip for travel in watershed (\$6,240) • TCE Extension Specialists = 3 trips per year from Uvalde to Corpus Christi @ \$170 per trip and 3 trips per year from College Station to Corpus Christi @ \$210 per trip (\$3,420)
Equipment	\$	
Supplies	\$7,000	Federal: <ul style="list-style-type: none"> • GPS Collars for TCE = 2 @ \$3,500 per collar (\$7,000):
Contractual	\$	
Construction	\$	
Other	\$6,000	Federal: <ul style="list-style-type: none"> • TCE Agent Support (facility rental, program supplies, etc.) = \$400 per county per year (\$6,000)
Indirect	\$57,264	Federal: <ul style="list-style-type: none"> • 15% of Total Direct Federal Non-Federal Match: <ul style="list-style-type: none"> • 26% of Total Direct Non-Federal Match
Unrecovered Indirect	\$20,259	Non-Federal Match: <ul style="list-style-type: none"> • 11% of Total Direct Federal

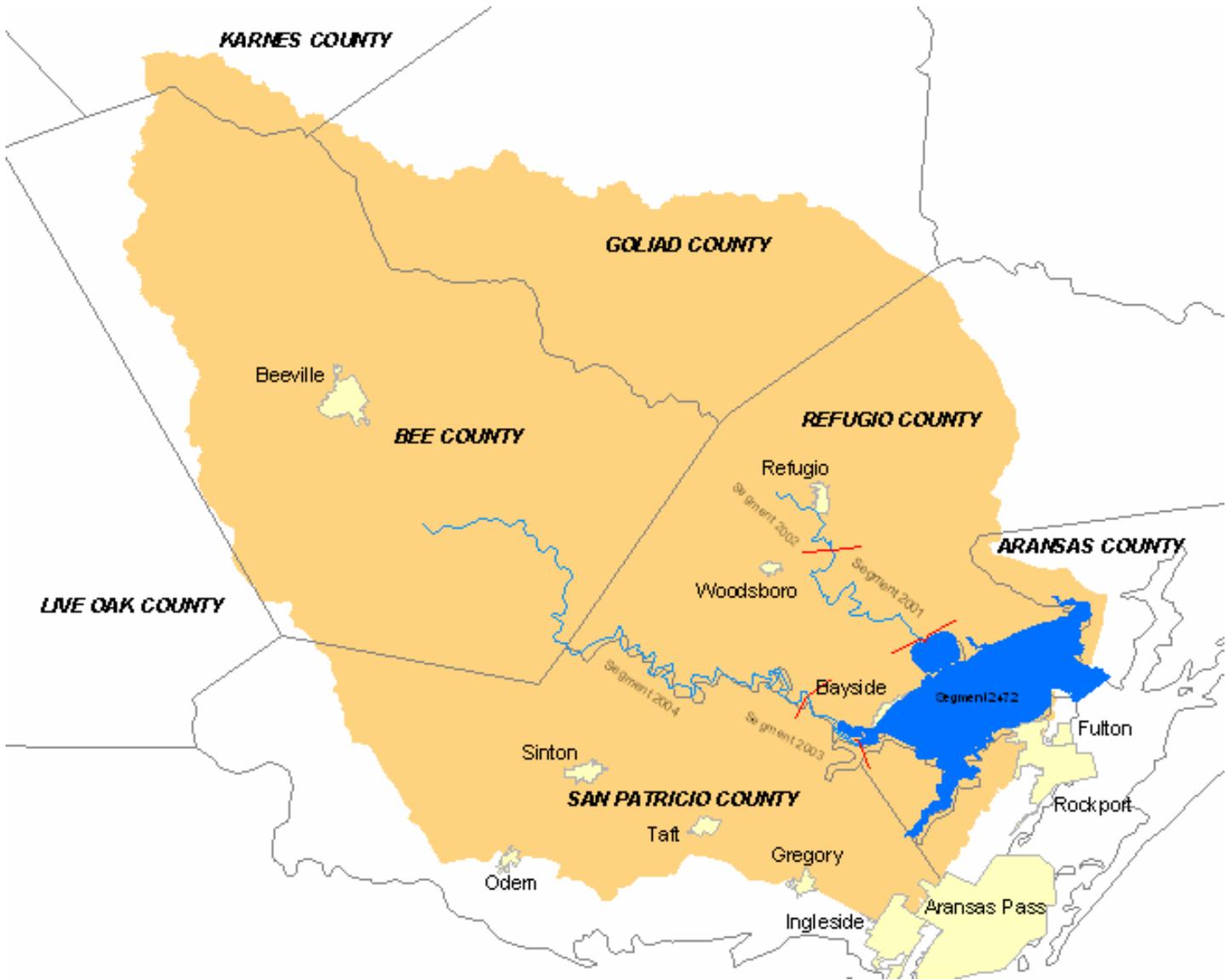


Figure 1. Copano Bay Watershed