



Update: Post Oak Savannah Groundwater Conservation District Monitoring Update

Gary Westbrook & Doug Box

Cameron Rotary Club
February 13, 2019

BOARD OF DIRECTORS

POST OAK SAVANNAH GROUNDWATER CONSERVATION DISTRICT

Appointed by County
Commissioners



Sidney Youngblood
Board President
Milam Co Industrial



Steven Wise
Board Vice President
Milam Co At Large



Tommy Tietjen
Board Secretary
Burleson Co Municipal



Lee Alford
Director
Burleson Co Industrial



Becky Goetsch
Director
Burleson Co At Large



Durwood Tucker
Director
Milam Co Agriculture



Chris Whittaker
Director
Milam Co Municipal



Jay Wilder
Director
Burleson Co Agriculture



Bob Wilson
Director
Milam Co Rural Water



Ed Savage
Director
Burleson Co Rural Water

STAFF

POST OAK SAVANNAH GROUNDWATER CONSERVATION DISTRICT



Gary Westbrook
General Manager



Bobby Bazan
Water Resources
Specialist



Elaine Gerren
Administrative
Assistant



Ralph Sifuentes
Field Technician



Doug Box
Education
Coordinator

Current GCD Accountability Metrics

A review of accountability mechanisms in effect

A summary of current accountability mechanisms is provided to improve the dialogue on Groundwater Conservation District (GCD) performance. Current evaluation methods ensure statutory compliance and accountability on three levels: local, legislative & judiciary, and state agencies.

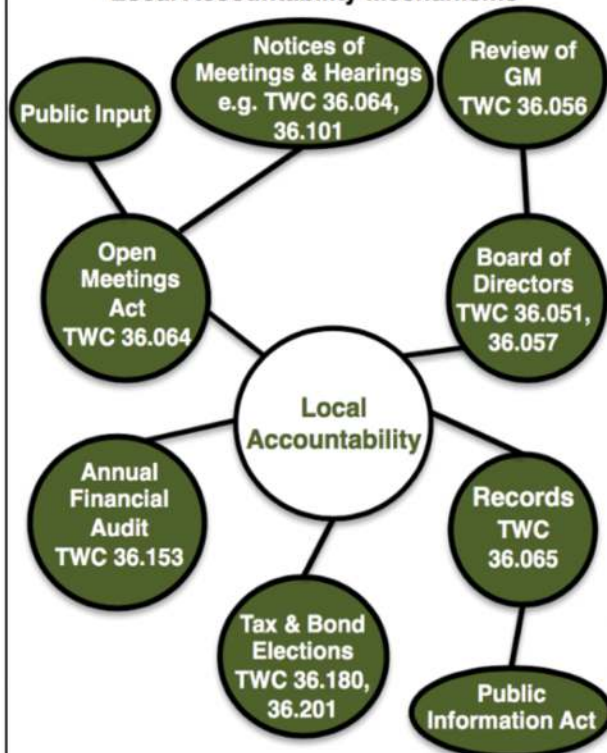
----- Local ----- Legislature & Judiciary ----- State Agencies -----

Local Constituents
Board of Directors

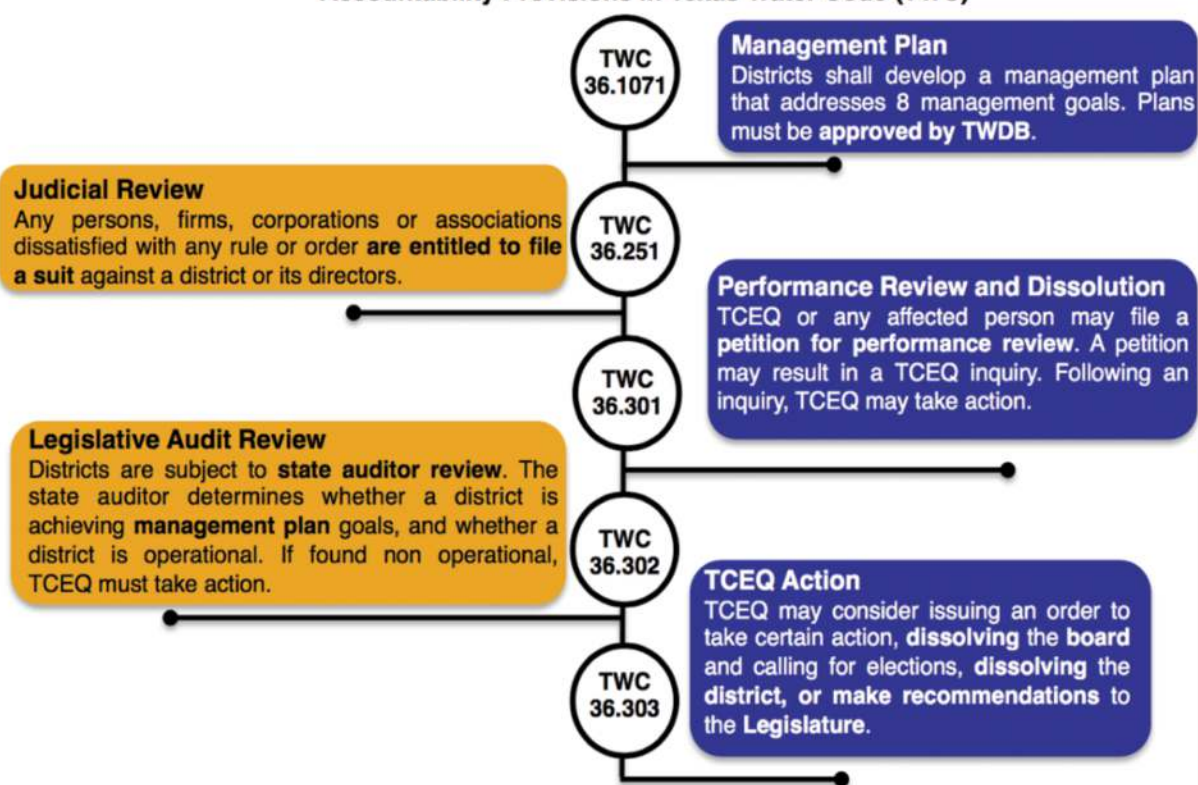
Texas Legislature
Judicial Review
Emerging Case Law

Texas Water Development Board (TWDB)
Texas Commission on Environmental Quality (TCEQ)
State Auditor Office (SAO)

Local Accountability Mechanisms



Accountability Provisions in Texas Water Code (TWC)



PURPOSE

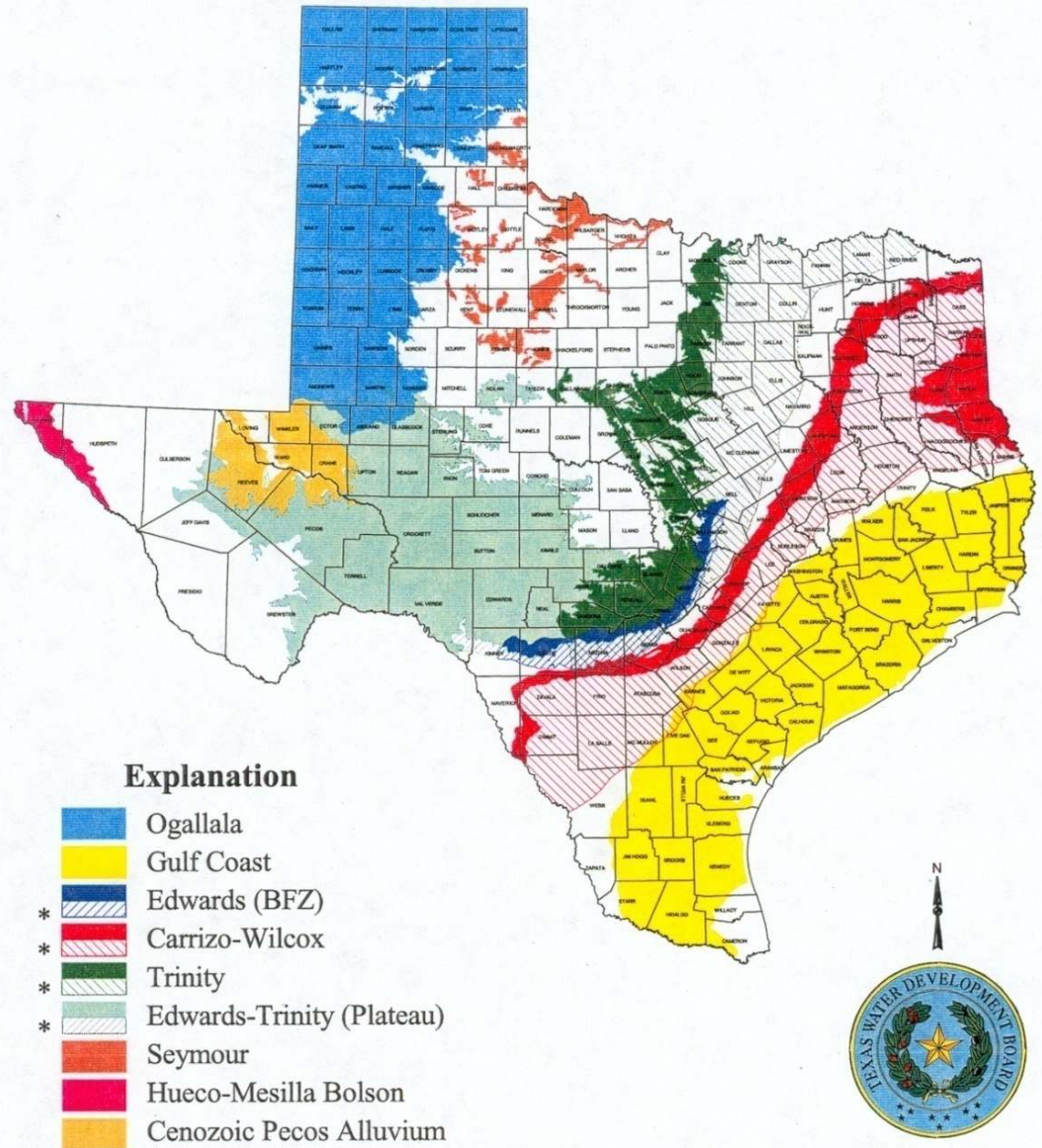
Chapter 36.0015

- **Provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater** (Also must provide for most efficient use of the groundwater resources)
- **Groundwater Conservation Districts are the state's preferred method of groundwater management through rules developed, adopted, and promulgated by a district**

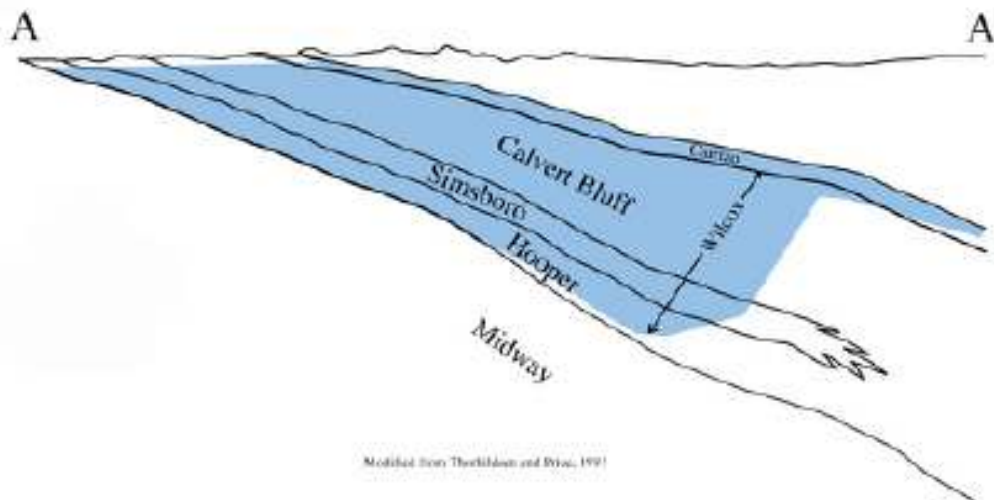
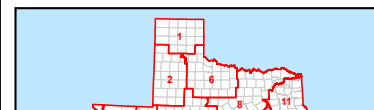
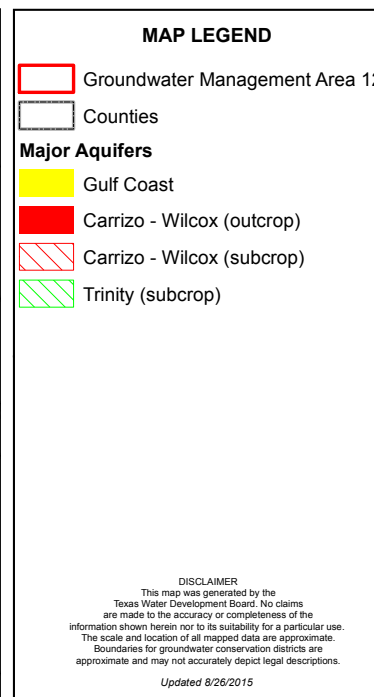
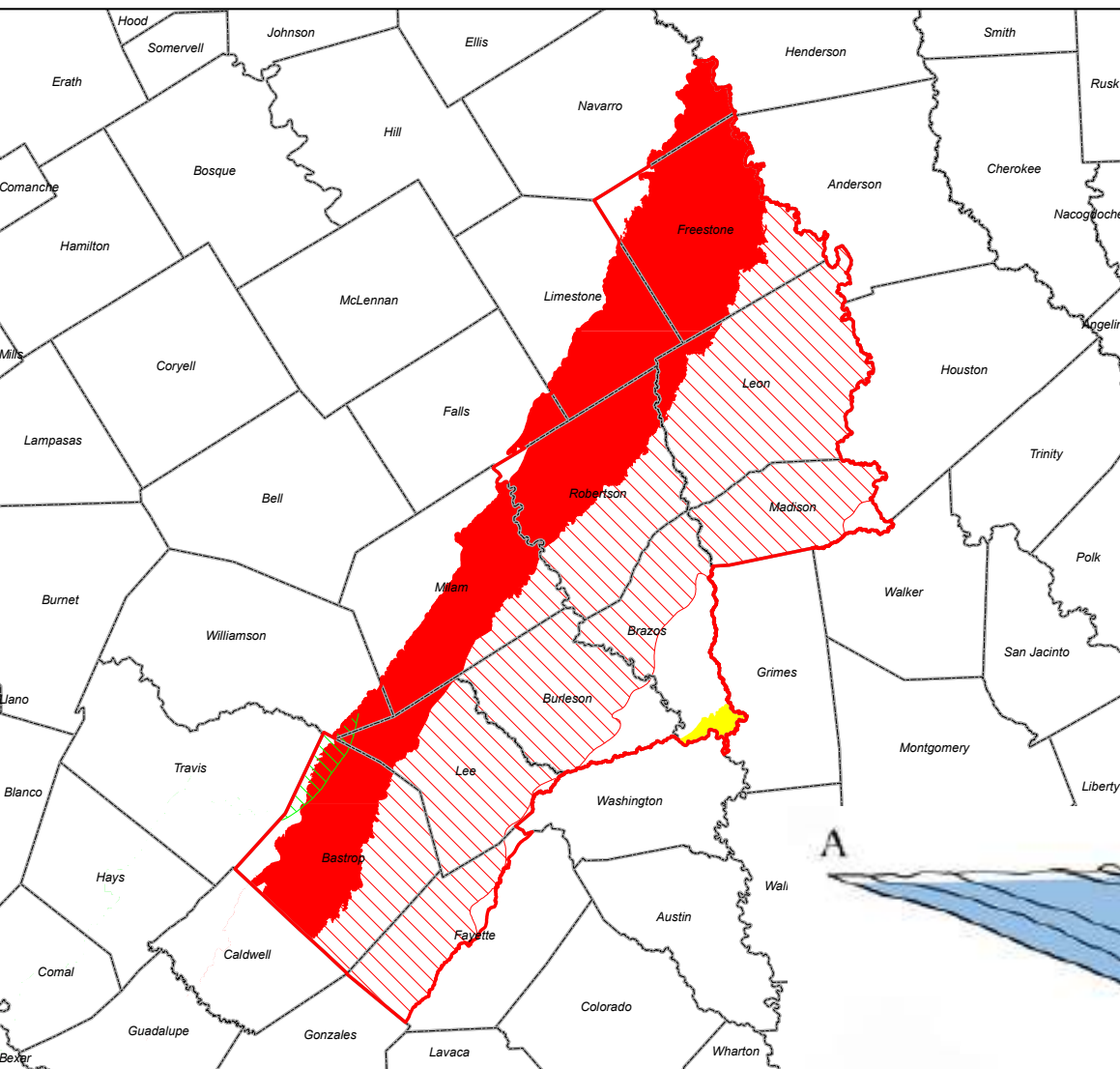
Major Aquifers of Texas

POSGCD

Carrizo-Wilcox



Groundwater Management Area 12



Modified from Therrell and Davis, 1991



Management Strategies of POSGCD

Groundwater Management

- Protection of water levels
 - Overall Desired Future Conditions
 - Shallow zones restrictions
 - District Monitor well network
- Respect for Property Rights
 - To produce
 - When not producing**

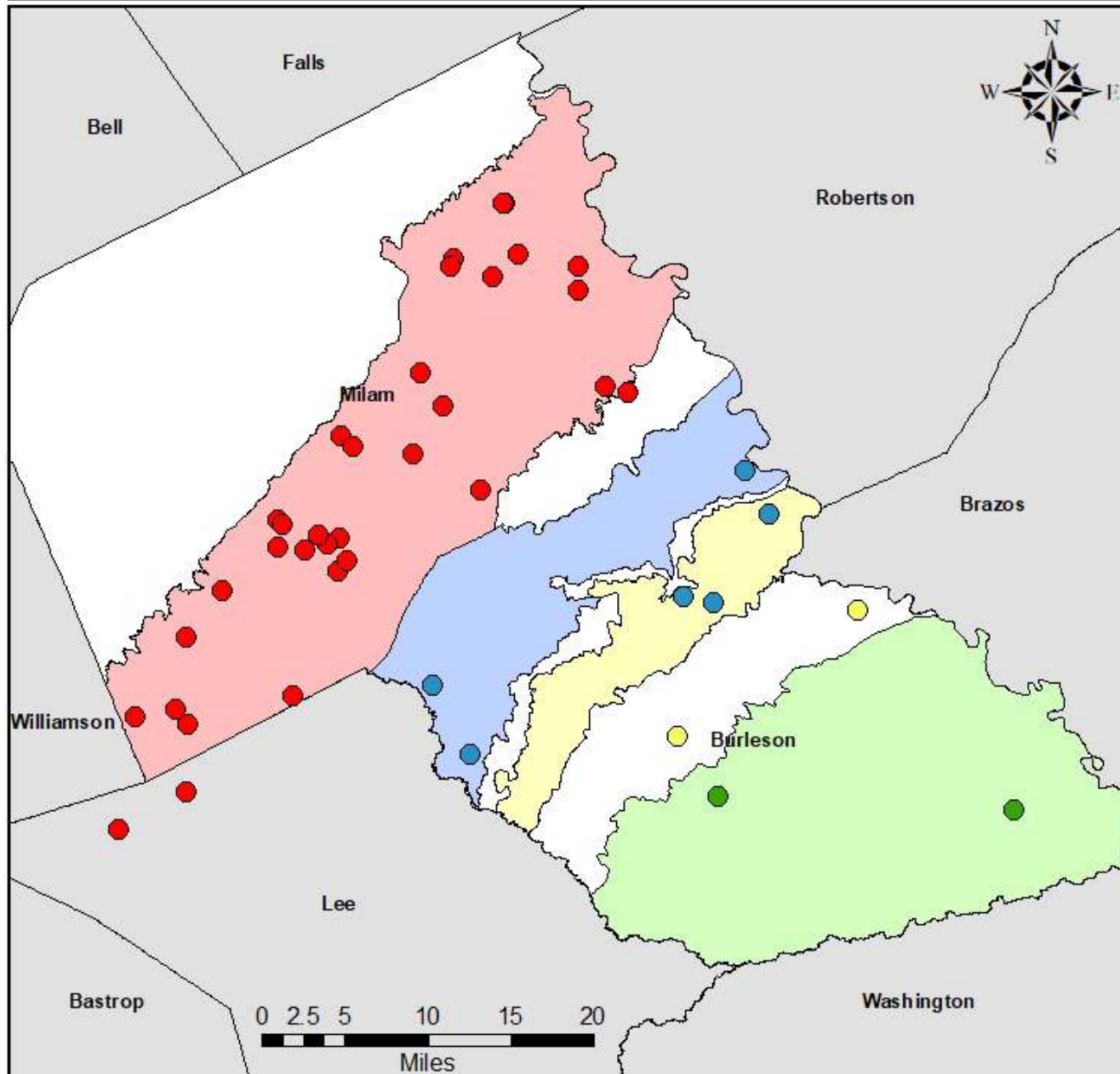
POSGCD Toolbox for Conservation

Post Oak Savannah GCD Toolbox are the strategies and practices used by the District to manage groundwater.

- Spacing requirements
- Contiguous acreage requirements
- Maximum Production limits
- Ability To Adjust Permit terms
- Monitoring water levels
- Desired Future Conditions
- Protective drawdown limits
- **-NEW tool-**
- **Aquifer conservancy program (ACP)**



District Monitoring Wells - Shallow (<400) Management Zone



This map illustrates the wells in the District's Monitoring Network that are identified to be in the shallow management zone set for 400 feet. The District makes an effort to make management decisions that are supported through best available science. In an effort to improve this science, more wells are needed to increase the quantity and quality of data. While the Carrizo-Wilcox has been prioritized, there is a strong need for some shift towards the minor aquifers in regards to number of shallow monitoring wells. This document is for DRAFT ONLY.

Legend

Monitor Wells <400

- Carrizo-Wilcox
- Queen City
- Sparta
- Yegua - Jackson
- Carrizo-Wilcox Outcrop
- Queen City Outcrop
- Sparta Outcrop
- Yegua-Jackson Outcrop



MONITORING WELLS

35% Increase

for 2018

NEW NEXT GENERATION MONITORING ACOUSTIC MEASUREMENT TECHNOLOGY



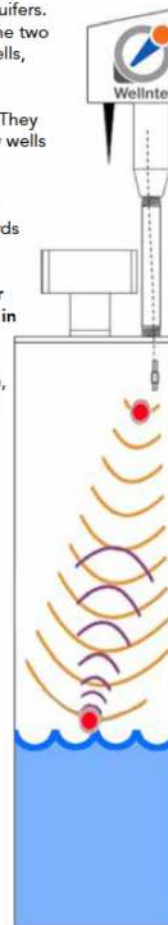
Well Monitoring is one of the most important tools Post Oak Savannah Groundwater Conservation District has to track the health of the Aquifers. At the present time the District has over 200 Monitor Wells across the two counties which include Rural Water Suppliers, landowner exempt wells, and wells the District has drilled for the sole purpose of monitoring.

Monitor wells give us a snapshot of the water levels in the aquifers. They also give us a tool for making better decisions on installation of new wells and the amounts of water available for pumping.

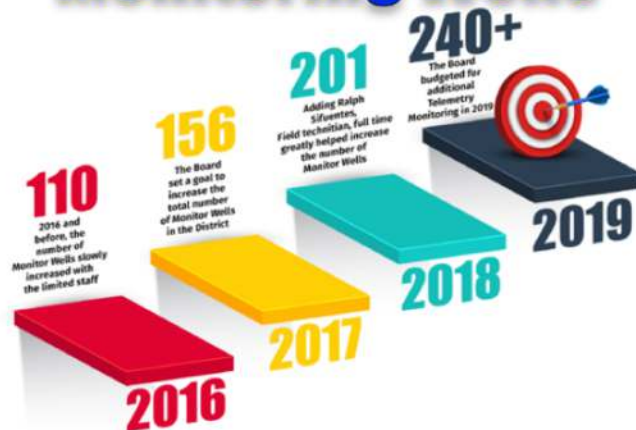


Ralph Sifuentes, POSGCD Field Technician, measures most monitor wells at least once a year. We take the date and water level he records and enter everything into our database. We are then able to use our hydrological models to make better decisions about managing these aquifers. **The more monitoring wells we have help us better understand the Aquifers and how pumping impacts water levels in specific areas.**

New for this year, we are implementing a patented, next-generation, acoustic measurement technology. These include remote telemetry, and a cloud platform to collect accurate and reliable groundwater level measurements.



Monitoring Wells













POSGCD Website

Public Interface



POSGCD Programs

EDUCATION SCHOOLS

Post Oak Savannah GCD offers educational tools and presentations to 4th and 7th grade classrooms to schools in our District. The POSGCD Water Wizard Program covers the state required subject matter about how natural events and human activity impact groundwater and surface water in a watershed. Within the presentation, students get a chance to see a groundwater model in action, as well as learn about human effects through pumping and recharge. Students also learn about the importance of water conservation and different ways that we can all do our part to protect our groundwater resources.

EDUCATION PRESENTATIONS

4th GRADE

We work with 4th grade teachers in the District assisting them with the Texas state requirements

7th GRADE

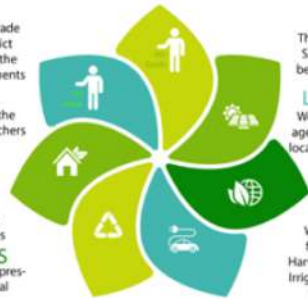
We also work with the local 7th grade teachers to assist them

AgriLife

We work with the AgriLife Extension Agents in Burleson and Milam Counties

SERVICE CLUBS

We are available to present programs at local service clubs



SUMMIT

The annual Groundwater Summit has some of the best speakers in the state

LOCAL GROUPS

We offer programs for all ages that are available for local libraries or anywhere your group meets

OUTREACH

We offer classes at our facilities on Rainwater Harvesting, Landscaping, Irrigation Alternatives for the Rainfall Harvester



ADULT EDU

The District provides community services and educational presentations to the citizens of the District concerning groundwater and conservation:

- Annual Milam & Burleson Counties Groundwater Summit
- Printed Publications
- Social Media



District Education Program

- Public presentations (Master Gardeners, groups, service clubs, Co. Extension events, Big Spring Clean, etc.)
- Milam and Burleson Counties Groundwater Summit
- Commissioners Court Annual Updates
- Website- www.posgcd.org
- Newspapers
- Newsletters
 - Quarterly Paper
 - Monthly Email
- Schools- Public and private
 - Water Wise- 4th and 5th grades
 - In person presentations- 6th & 7th grade science
 - Additional resources- Water IQ for all levels
 - Extension Service

POSGCD GROUNDWATER CONSERVATION GRANTS

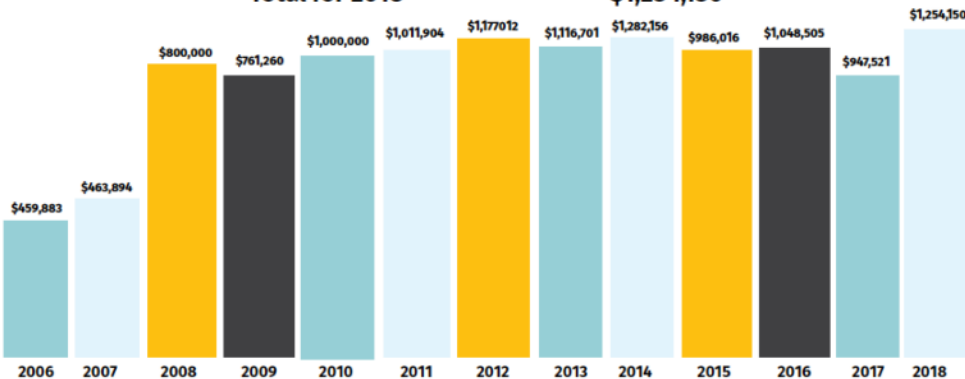
Post Oak Savannah Groundwater Conservation District has had Grant programs in the District since 2006, just 4 years after it was formed. The Board of Directors realized that one of the best ways to encourage people in the District was to help with the expense. One of our first programs was to The objective of this program is to obtain the active participation and cooperation of local water utilities in the funding and successful completion of programs and projects that will result in the conservation of groundwater in the District. The qualifying water conservation projects and programs will include, as appropriate, projects that result in the conservation of groundwater and reduce the loss or waste of groundwater. The first year, 2006, the District helped five different applicants, the city of Rockdale, city of Somerville, Milano WSC, Birch Creek WSC and Lyons WSC to remove and improve obsolete and deteriorating water lines for a total of \$459,883.

Since that first year, the program has continued thru the present day, we have helped over 25 different local water utilities for a total of over \$12,309,003.97. We estimate that we have saved over 173.55 Million gallons of water per year and growing.

LOCAL WATER UTILITIES GROUNDWATER CONSERVATION GRANTS

Total for 2018

\$1,254,150



Total for the years 2006 - 2018 **\$12,309,003.97**

District Groundwater Conservation Grants

>>Local Water Utilities in District

Must be used for conservation of groundwater or recharge of aquifer(s)

History (since 2006)

- Awarded 85 grants
- 23 different Local Water Utilities (All in District)
- Approximately \$12.3 Million
- 2018 Four Recipients totaling \$1,254,150
- 2019 Budgeted amount of \$1 Million

FIRE DEPARTMENT REIMBURSEMENT GRANT

14 ProPaks	FOAM Replacement	9 VFD's Milam County	9 VFD's Burleson County
ProPaks aid the Fire Fighters in reducing the amount of water need to extinguish the fire by delivering foam to the fire. These units are refillable.	The foam deprives the fire of oxygen, thereby reducing heat. By Suppressing combustion, the foam reduces the use of water by making the equivalent 15,000 gallons of water from only 250.	Rockdale VFD, Thorndale VFD, Milano VFD, Minerva VFD, Bartlett-Davilla FD, Cameron VFD, Burlington VFD, Buckholts VFD, Gause VFD	Caldwell Fire & Rescue, Somerville VFD, Snook VFD Black Jack Volunteer FD, Beaver Creek VFD, Birch Creek Area VFD, Cooks Point VFD, Deanville VFD, Cade Lake VFD

Post Oak Savannah GCD Board of Directors continued its support of local Fire Departments and efforts in water conservation in the District by providing a check for \$6,975 to the Milam County and \$13,486 to Burleson County Fire Chiefs Association for the purchase of nine new ProPaks that use foam to suppress fires instead of water. This fire fighting system is portable and self-contained to better combat both Class A (combustibles) and Class B (flammable liquids) fires. The replaceable ProPaks attach to the end of a fire hose to coat the fire in foam which deprives the fire of oxygen, thereby reducing heat. By suppressing combustion, the foam reduces the use of water by making the equivalent 15,000 gallons of water from only 250 gallons.

Additional benefits for using foam include:

- Reduction of water necessary to suppress fires
- Reduction of man-hours and equipment needed
- Reduction of number of trips needed to deliver suppressant
- Reduced air pollution
- Lessens firefighter risk of exposure to airborne carcinogens
- Lowers amount of runoff & water pollution
- Less water damage to property



Post Oak Savannah Groundwater Conservation District is thankful for the service of our fire departments and proud to support safer, more environmentally friendly alternatives for fighting fires by these local heroes.



District Groundwater Conservation Grants (continued)

>> Fire Departments in the District (\$25,000 per year)

Available for water conservation materials and equipment

- Absorbent materials
- Foam
- Foam dispersing nozzles
- ProPaks

RAINWATER CONSERVATION GRANT PROGRAM

POST OAK SAVANNAH
GROUNDWATER CONSERVATION DISTRICT

BUSHELSON AND MILAM COUNTIES AVERAGE
= 37 INCHES
OF RAIN PER YEAR

1000 SQUARE FOOT ROOF
(TAKES) 550 GALLONS OF WATER
IN A 1" RAIN

RAINWATER HARVESTING BENEFITS

- REDUCES CONTAMINATION OF SURFACE WATER
- CONSERVES WATER
- REDUCES RUN-OFF
- REDUCES EROSION
- CONSERVES ENERGY
- REDUCES PERSONAL WATER BILLS

RAINWATER

- IT SUPPORTS LANDSCAPE HEALTH
- IS FREE OF SODIUM AND CHLORINE
- PH IS OPTIMIZED TO SUPPORT PLANT
- IMPROVES MICROBIAL SOIL LIFE
- HELPS RECHARGE AQUIFERS
- RAINWATER IS FREE
- PREVENT IMPACT OF STORMWATER RUN-OFF

RAINWATER CAN BE USED

- LANDSCAPE USE
- LAWN WATERING
- IND. WASHING
- POOL MAINTENANCE
- WASHING VEHICLES
- EMERGENCY BACKUP
- IRRIGATION
- SHOWERING
- USE

POST OAK SAVANNAH
GROUNDWATER CONSERVATION DISTRICT



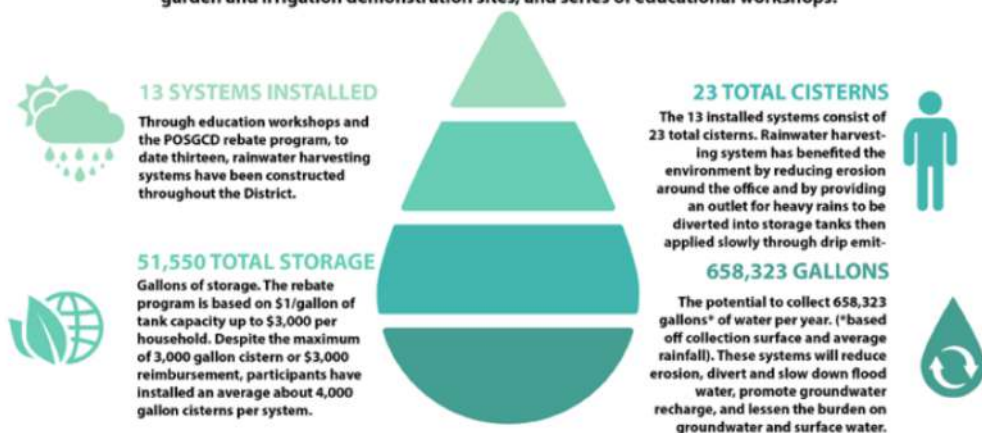
District Groundwater Conservation Grants (continued)

Rainwater Harvesting Grants

- \$1.00 per gallon capacity rebate
- amount includes: tank, gutter, tank foundation, overflow, and miscellaneous materials which make up the system. For example, you purchase a 550 gallon tank; install gutter, overflow and miscellaneous fittings. You would receive a \$550 rebate that covers the complete system including the tank, gutter, miscellaneous fittings etc.
- 1) Applicant must be a resident or landowner in the District.
- 2) The system must be installed within the District.
- 3) Applicants must complete an approved Rainwater Harvesting 101 Workshop to qualify for the reimbursement.

RAINWATER HARVESTING

In September of 2017, Post Oak Savannah Groundwater Conservation District (POSGCD) and Texas A&M AgriLife Extension Service (AgriLife) collaborated to offer a Water Conservation Program through the District. The program includes: a rainwater harvesting system, rainwater harvesting rebate program, drought-tolerant garden and irrigation demonstration sites, and series of educational workshops.



District Groundwater Conservation Grants

(continued)

Groundwater Well Assistance Program (GWAP)

Purposes-

- Increase # of monitoring wells*
- Predict and correct issues with water supply*

>>Well Plugging (\$25,000 per year)

District reimburses 100% of expense up to \$2500

To Protect the Water Quality in the Aquifers

GROUNDWATER SUMMIT

5th Annual Milam & Burleson Co Summit



The 2018 Milam and Burleson Counties Groundwater Summit

Central Texas residents gathered on August 15, 2018 for the fifth annual Groundwater Summit at the Caldwell Civic Center for information and education on groundwater topics relevant to our local communities. We had a great attendance with over 220 people registered from Burleson, Milam, Brazos, Travis, Robertson, and Lee counties!



Topics presented at the Summit included:

- Overview of the Carrizo-Wilcox Aquifer
- Groundwater Availability Models (GAMs)
- Groundwater Property Rights & Rule of Capture
- POSGCD/AgriLife Programs
- POSGCD Monitoring Update
- Oil & Gas Fracking and Disposal Wells
- The NEW Aquifer Conservancy Program



This years Groundwater Summit was a big success

Everyone enjoyed the great venue, food, door prizes, and the speaker presentations about the aquifers and water law. It was a great opportunity for the District to contribute and connect with the public about groundwater conservation and the legacy of stewardship. We hope to see YOU at the Groundwater Summit next year!



**Groundwater
Summit
Wednesday
Aug 14
FREE
Well
Water
Testing**

AQUIFER CONSERVANCY PROGRAM

AQUIFER CONSERVANCY PROGRAM

THE PURPOSE OF THE ACP

- Empower landowners through stewardship
- Conserve groundwater for future generations
- Establish a legacy of conservation
- Complement current sustainable practices
- Add a long-term tool to POSGCD toolbox of management strategies provided by state law.

WHY THE AQUIFER CONSERVANCY PROGRAM

As Texas continues to grow, demands on groundwater resources increase. In response to these concerns, together with local landowners we have developed this proactive solution. (The legislative purpose of the District is to provide balance between production and

HOW DOES THE ACP HELP CONSERVE THE AQUIFERS

Do I lose my property or water rights? No!
Do I have to commit ALL my land? No!
Can I still have my personal well? Yes!

The program survives the current Board and management. This is a longterm commitment by citizens toward the sustainability of the aquifers and water for future generations.



The Post Oak Savannah Aquifer Conservancy Program (ACP) continues to pave the way for future of water conservation as program outreach and interest increase!

The program was founded to support local landowner legacies through long-term, sustainable stewardship of groundwater resources. The Board of Directors hold landowner interests and concerns with high regard and have made recent changes in response to local concerns:

- First, an enrollment incentive of \$10/acre for 2019 will be available for the first annually recurring 90-day enrollment period (dates to be announced).

- Second, after receiving input from the public, the Board modified the program to address concerns. Now, any change in ownership of property enrolled in

the program will end the commitment, with the option to continue available to the new owner.

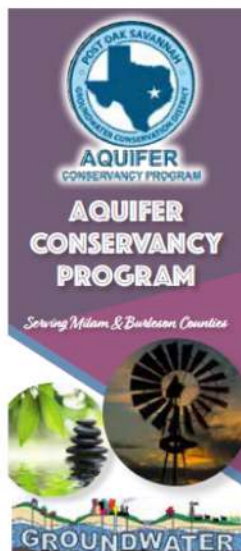
- Third, the Board has implemented Flexible Commitment Options.

The following terms of commitment will receive the identified annual payment:

- (A) Five years- \$5/acre/year
- (B) Ten years- \$8/acre/year
- (C) Twenty years- \$10/acre/year.

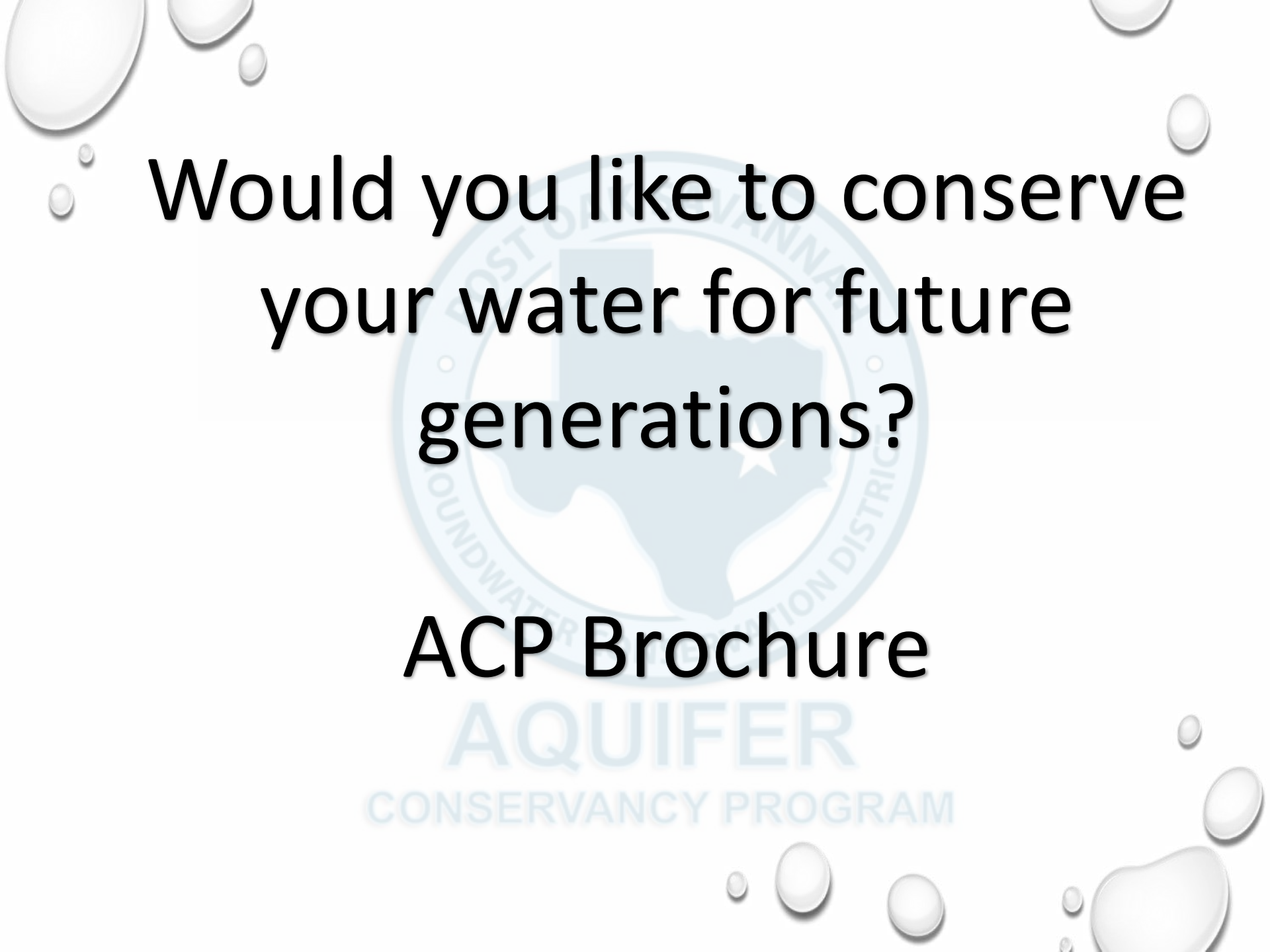
The Directors continue to work diligently on this program to conserve the local legacies of the communities it represents, and plan to publish the formal draft for public comment again October 2.

For the most current updates, review of the program details, and answers to frequently asked questions, refer to <https://posgcd.org/pacp> main page.



POSGCD Aquifer Conservancy Program (ACP)

AQUIFER
CONSERVANCY PROGRAM



**Would you like to conserve
your water for future
generations?**

ACP Brochure

AQUIFER
CONSERVANCY PROGRAM

The Purpose of ACP

- Empower landowners through stewardship
- Establish a legacy of conservation
- Compliment current sustainable practices of the District
- Conserve groundwater
- Add a long-term tool to the current Toolbox of management strategies

**Would You Like To
Help?**

**Become an ACP
Ambassador!**

**Next Meeting - Thurs Night
Elizabeth Lutheran
6:30pm**



Post Oak Savannah Groundwater Conservation District

Aquifer Conservancy Program
For more info see our website

www.POSGCD.org

or call our office
512-455-9900