

# FY 2018 Annual Report

*Bandera County River Authority and Groundwater District*

## Board of Directors

Don Sloan, *President*  
Bob Williams, *Vice President*  
Jerry Sides, *Secretary-Treasurer*  
Ernest DeWinne  
Conrad Striegl  
Rachel Mulherin  
Gene Wehmeyer  
Neil Boultinghouse  
Sid Gibson



**Bandera County**  
River Authority & Groundwater District  
*Protecting & Preserving our Natural Resources*

*Published April 2019*



## **Mission Statement**

The principle mission of the Bandera County River Authority and Groundwater District is to protect and preserve the County's water and natural resources for the citizens of Texas. The District is also tasked with maintaining local accountability of the County's water resources to help safeguard the property rights of the citizens of Bandera County.

## **Core Values**

Professionalism, Dedication to Science, Honor and Integrity,  
Public Service, Stewardship, Leadership and Collaboration,  
Accountability and Transparency

## **Contact Information**

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Phone: (830) 796-7260

Website: [www.bcragd.org](http://www.bcragd.org)

Social Media:

[www.facebook.com/bcragd/](http://www.facebook.com/bcragd/)

[http://twitter.com/BCRAGD\\_TX](http://twitter.com/BCRAGD_TX)

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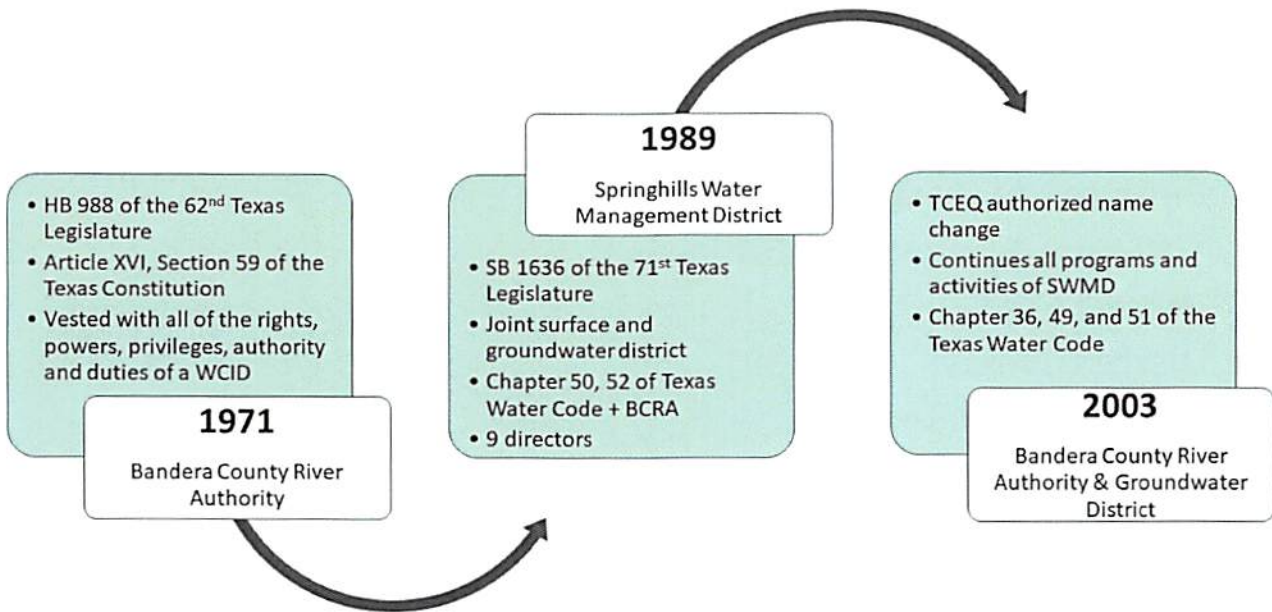
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# About the District



## Bandera County River Authority

In 1971, the 62nd Texas Legislature created the Bandera County River Authority under House Bill 988. It was created as a conservation and reclamation district under and pursuant to Article XVI, Section 59, of the Texas Constitution. As defined by Article 8280-526, Vernon's Texas Civil Statutes, the River Authority encompassed all of the territory contained in Bandera County except the territory included in the Bandera County Fresh Water Supply District No.1 (Pebble Beach) and the Bandera County Water Control and Improvement District No.1 (City of Bandera). According to the provisions of the legislation, the Bandera County River Authority shall have and exercise and is hereby vested with all of the rights, powers, privileges, authority and duties conferred and imposed by the general laws of this state now in force or hereafter enacted, applicable to water control and improvement districts created under authority of Article XVI, Section 59 of the Texas Constitution; but to the extent that the Provisions of any such general laws may be in conflict or inconsistent with the provisions of this Act, the provisions of this Act shall prevail. All such general laws are hereby adopted and

incorporated by reference with the same effect as if incorporated in full in this Act.

## Springhills Water Management District

In 1985, the Board of Directors began working with State and local officials, and concerned citizens to determine the most advantageous method to manage groundwater in Bandera County. After numerous public meetings, the decision was made to pursue legislation creating a joint surface and groundwater district in Bandera County. The result was the creation of the Springhills Water Management District.

Springhills Water Management District was created under Senate Bill 1636. The District's enabling legislation, appearing as Act of June 17, 1989, Ch. 654, 1989, Tex. Gen. Laws 2155 (Vernon), granted the District the rights, powers, privileges, authority, functions, and duties provided by Chapters 50 and 52; and the rights, powers, purposes, authority, and functions of the Bandera County River Authority. The legislation defines the District's boundaries as all of the territory contained within Bandera County. The legislation further stipulates that the Board of Directors will be comprised of nine



(9) directors. The directors will be elected from commissioner precincts with one director at large. The Springhills Water Management District continued all of the programs and activities initiated by the River Authority, and implemented the programs required of a groundwater conservation district.

## ***Bandera County River Authority and Groundwater District***

On April 10, 2003, the Texas Commission on Environmental Quality (TCEQ) authorized changing the District's name to Bandera County River Authority and Groundwater District (BCRAGD). The BCRAGD continues all the programs and activities of Springhills Water Management District. BCRAGD has all of the rights, powers, privileges, authority, functions, and duties now provided by Chapter 36, 49, and 51 of the Texas Water Code.

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## ***Purpose of a District***

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### **Texas Water Code, Chapter 51, Water Control and Improvement District**

#### **51.121. Purposes of a District (River Authority)**

A water control and improvement district organized under the provisions of Article XVI, Section 59, of the Texas Constitution, may provide for:

1. The control, storage, preservation, and distribution of its water and floodwater and the water of its rivers and streams for irrigation, power, and all other useful purposes;
2. The reclamation and irrigation, power, and all other useful purposes;
3. The reclamation, drainage, conservation, and deployment of its forests, water, and hydro-electric power;
4. The navigation of its coastal and inland water;
5. The control, abatement, and change of any shortage or harmful excess of water;
6. The protection, preservation, and restoration of the purity and sanitary condition of water within the state; and
7. The preservation and conservation of all natural resources of the state.

### **Texas Water Code, Chapter 36, Groundwater Conservation Districts**

#### **36.0015. Purpose (Groundwater)**

In order to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater, and of groundwater reservoirs or their subdivisions, and to control subsidence caused by withdrawal of water from those groundwater reservoirs or their subdivisions, consistent with the objective of Section 59, Article XVI, Texas Constitution, groundwater conservation districts may be created as provided by this chapter. Groundwater conservation districts created as provided by this chapter are the state's preferred method of groundwater management.

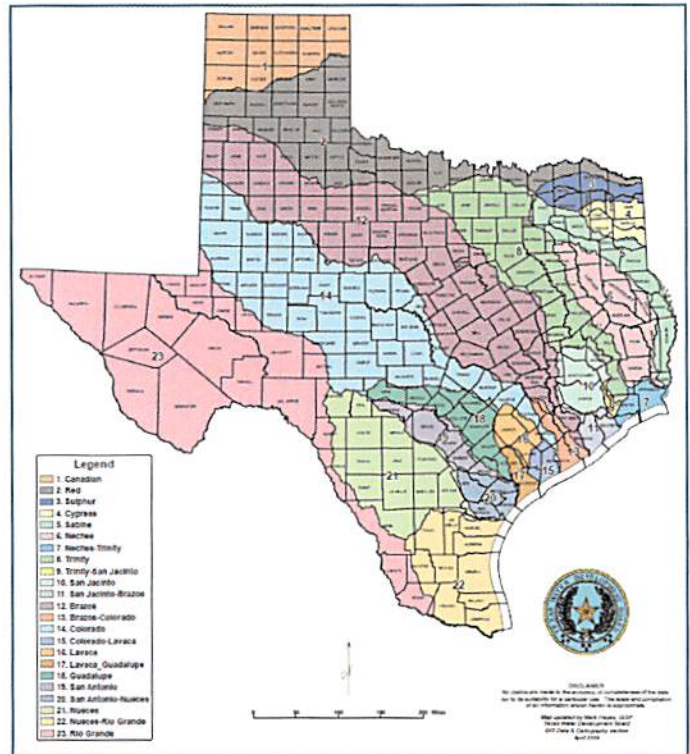
## Location

The District's office is located at 440 FM 3240 Bandera, Texas. Bandera County lies in the south central part of Texas, in the hill country region of the Edwards Plateau. The County has an aerial extent of 768 square miles, or 491,520 acres. The County seat, the city of Bandera, is centrally located at the

intersection of South Highways 16 and 173. Kerr, Kendall, Bexar, Medina, Uvalde, and Real Counties bound the County, in a clockwise pattern. Bandera County River Authority and Groundwater District encompasses all of Bandera County.

## River Basins

Bandera County contains parts of three major drainage basins. The Nueces River basin occupies approximately 25 percent of the County to the west and southwest, with drainage to the south. The San Antonio River basin occupies approximately 73 percent of the County; located from the north central, to the southeastern portion of the County, where the river has been dammed to form Medina Lake. Drainage from the San Antonio River basin is to the southeast. The Guadalupe River basin occupies approximately 2 percent of the County as a small portion of the central northern section. The two major rivers in the County are the Sabinal River, located in the Nueces River basin, and the Medina River, located in the San Antonio River Basin. The larger rivers are dominantly effluent and form wide valleys. Two dominant types characterize the smaller creeks and streams: the perennial spring-fed streams and the intermittent creeks that only transport precipitation runoff.



## Major Aquifers

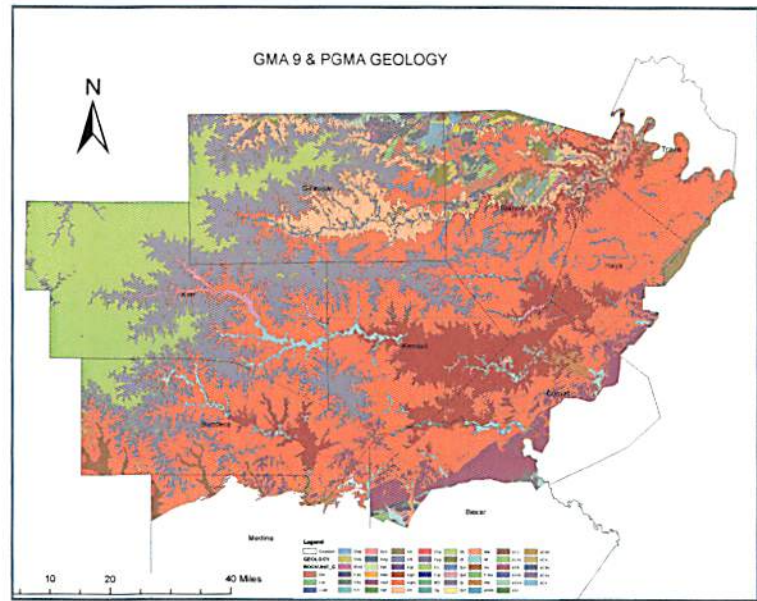
The Trinity Group aquifer underlies all of Bandera County, underlying the Edwards Plateau aquifer in the northwest portion of the County and extending south into Medina and Uvalde counties and east into Kendall and Bexar counties. The Trinity Group aquifer is the primary source of groundwater in Bandera County. This aquifer is divided into three groups: the Upper Trinity, Middle Trinity, and Lower Trinity. The

Upper Trinity aquifer contains the Upper Glen Rose Limestone. The Middle Trinity aquifer contains the Lower Glen Rose Limestone, the Hensell Sand, and the Cow Creek Limestone. The Lower Trinity aquifer is composed of the Sligo Limestone and Hosston Sands. The Trinity Group aquifer yields groundwater from the Upper and Lower units of the Glen Rose Formation; and the Hensell, Cow Creek, Sligo, and



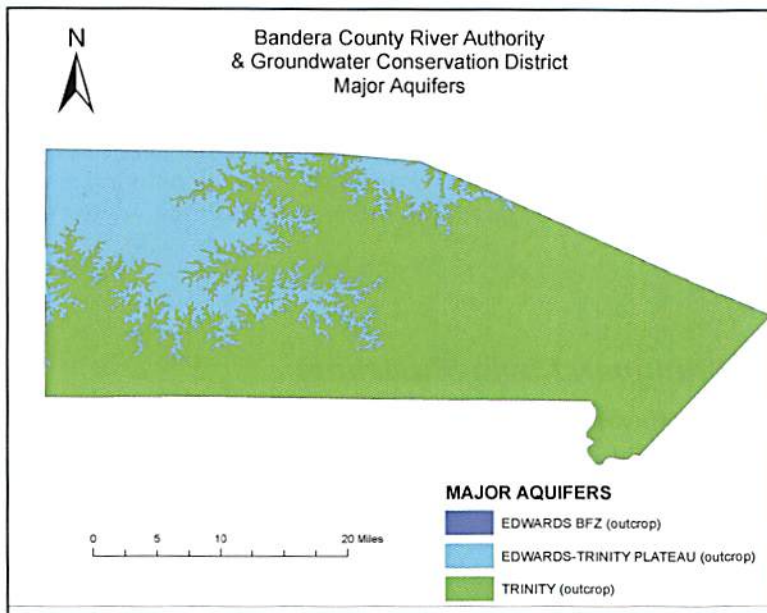
# Major Aquifers

Hosston members of the Trinity Peak Formation of the Trinity Group of Cretaceous age. Down dip from the outcrop area, in the artesian pressure portion of the aquifer, groundwater production supplies water to all wells. Primary sources of recharge to the Trinity Group aquifer include the infiltration of precipitation on the outcrops to the north and northwest of Bandera County and infiltration of surface water from lakes and streams through vertical leakage from overlying formations. The Trinity Group aquifer primarily exists under water-table conditions along the outcrop and under artesian conditions downdip, where confining beds of limestone and shale bound the water-bearing units. Movement of shallow groundwater is primarily down gradient, from high to low elevations, and at right angles to the potentiometric surface contours, which denote the configuration of the water table. The overall groundwater movement is to the southeast with local movement away from groundwater highs, and along the



surface drainage system, with groundwater lows that have developed as a result of production in large well fields.

Alluvial deposits are found in the flood plain of the major tributaries of streams, which make up the surface drainage system in the county. The alluvial deposits are highly permeable with a maximum thickness of approximately 50 feet and small areal extent. They yield only small amounts of good quality water. Due to the naturally occurring anhydrite and gypsum beds, the overall quality of groundwater obtained from the Upper Trinity aquifer, which contains the Upper Glen Rose formation is of poor quality, with small yield. The Middle Trinity aquifer, which contains the Lower Glen Rose Limestone, Hensell Sand, and Cow Creek Limestone formations, yields small to moderate amounts of water with a good to excellent water quality. The lower Trinity aquifer that contains the Sligo Limestone and Hosston Sand yields moderate to large quantities of water of good to excellent quality.





# ***District Staff***

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***General Manager, Dave Mauk***

The General Manager is the Chief Executive Officer responsible for the planning, development, and implementation of policies of the District for the protection, management, and conservation of ground and surface water, or any other natural resource within the District. The General Manager works closely with the elected Board of Directors to assure that the District's goals and policies are met in a timely fashion. The General Manager is responsible for hiring, discharging, and supervising District staff.



***Groundwater District Operations Manager, Michael Redman***

Under the direction of the General Manager, the Groundwater Resources Manager is responsible for maintaining and implementing the Groundwater Monitoring and Protection Programs. The Groundwater District Operations Manager serves as the supervisor for the groundwater operations. Some of the primary duties include implementing the District's Well Permitting and Registration Programs, Monitor Well Program, Well Plugging Program, and serving as the District's Compliance and Enforcement Officer (Code Enforcement Officer).



***River Authority Operations Manager, Levi Sparks***

Under the direction of the General Manager, the River Authority Operations Manager is primarily responsible for supporting the General Manager with the implementation of the District's surface water quality, natural resources, watershed protections, and monitoring programs. The River Authority Operations Manager serves as the supervisor for the River Authority field operations and oversees the District's laboratory operations. Some of the primary duties include implementing the District's In-House Sampling program and the Clean Rivers Program.



***Office Manager, Prari Blair***

Under the direction of the General Manager, the Office Manager is primarily responsible for supporting the General Manager in implementing all District policies and programs; ensuring office operations are conducted efficiently, properly, and in accordance with District, Federal, and State rules, policies, and regulations. The Office Manager serves as the supervisor for all office operations. Some of the primary duties include serving as the District's Finance Coordinator, Human Resources representative, and Records Management Officer.



***Intergovernmental Affairs Manager, Kayla Shearhart***

The Intergovernmental Affairs Manager is primarily responsible for supporting the General Manager in implementing all District policies and programs. The Intergovernmental Affairs Manager serves as the supervisor for all intergovernmental affairs operations. Some of the primary duties include assisting the General Manager with issues during the Legislative session, interim charges, and any other political or policy issue. This position is also tasked with providing confidential, complex, and high level administrative assistance to the General Manager.



# ***District Staff***

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## ***Education and Outreach Manager, Corrina Fox***

Under the direction of the General Manager, the Education & Outreach Manager is primarily responsible for promoting science-based educational programs and best management practices that promote water conservation and water quality protection. The Education & Outreach Manager serves as the supervisor for all educational operations. Some of the primary duties include providing educational presentations and hands-on learning activities to local schools that promote water conservation and water quality protection.



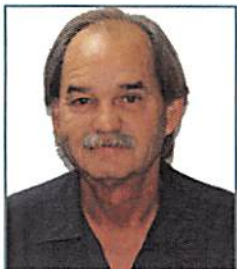
## ***Chief Data Officer, Larry B. Thomas***

Under the direction of the General Manager, the Data Chief Officer is primarily responsible for maintaining, reviewing, and ensuring that quality control measures are implemented in regards to District data. The Data Chief Officer is ultimately responsible for ensuring the integrity and retrievability of the District's data. The Data Chief Officer serves as project manager to the District's flood warning projects.



## ***Office Coordinator, Charley Curd***

Under the direction of the Office Manager, the Office Coordinator is primarily responsible for supporting and assisting the Office Manager in implementing all District policies and programs; ensuring office operations are conducted efficiently, properly, and in accordance with District, Federal, and State rules, policies, and regulations. The Office Coordinator also assists the Education & Outreach Manager during educational presentations and hands-on learning activities to local schools that promote water conservation and water quality protection. Some of the primary duties include citizen assistance, front desk operations, and serving as the District's Public Information Request Coordinator.



## ***Field Technician-Well Inspector, Jay McEwen***

Under the direction of the Groundwater District Operations Manager, the Field Technician-Well Inspector is primarily responsible for conducting site visits before and while registered and permitted wells are being drilled, as well as after they have been completed, to verify that they are in adherence to applicable rules and construction standards for all programs administered by the District.

## ***Welcoming New Staff in FY2019!***

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### ***Natural Resource Specialist, Clinton Carter (Started October 2018)***

Under the direction of the River Authority Operations Manager, the Natural Resource Specialist is primarily responsible for supporting the implementation of the District's surface water quality, natural resources, and monitoring programs. The Natural Resource Specialist works closely with the River Authority Operations Manager and the Groundwater Operations Manager to assure that the District's goals and policies are met in a timely fashion.



### ***Intergovernmental Affairs, Hayli Phillips (Started January 2019)***

Under the direction of the Intergovernmental Affairs Manager, the Intergovernmental Affairs position is primarily responsible for assisting the Intergovernmental Affairs Manager and General Manager with issues during the Legislative session, interim charges, and any other political or policy issue. She is also tasked with board meeting coordination, meeting minutes, agendas, and legal matters, as well as serving as the District's Election Coordinator. The Intergovernmental Affairs position also assists the Office Manager and Education & Outreach Manager as needed to ensure that the District's goals and policies are met in a timely manner.

## ***District Teams***

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Staff members are organized into nine teams. Many employees serve on more than one team:

General Management

Office Operations

Groundwater District Operations

River Authority Operations

Flood Warning and Awareness

Water Resource Management and Policy

Education and Community Outreach

Performance Management and Quality Improvement

Data Management





# General Manager's Statement

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Bandera County tends to experience either periods of drought or heavy rainfall. Although we recovered from our recent drought, it seems that we are starting to fall back into drought conditions once again.

Additionally, this region is one of the most flash flood prone areas in the world. Recently, several rain events in our area have threatened life and property. Seeing the public safety need, the District applied for and received a TWDB grant for a USGS flood warning project in 2016. The warning system utilizes river gages and basin modeling, which will give Emergency Managers in Bandera County a set of predictive tools that will allow them to anticipate what areas will potentially flood during an event. This science-based project is currently being implemented, with a completion date of May 2019.

Our region has been threatened by the spread of invasive species. The District is particularly concerned with *Arundo donax* and zebra mussels. *Arundo donax* is a noxious weed native to Europe and Asia which is easily spread and can literally choke out habitat along our watercourses. The District has partnered with the Nueces River Authority and TPWD to aggressively control the weed in both the Sabinal and Medina river basins. Zebra mussels are a fingernail-sized mollusk native to lakes in Ukraine and Southern Russia. Zebra mussels spread primarily by clinging to boat hulls, bait buckets, and boat bilge tanks. This invasive species hinders water recreation and destroys aquatic ecosystems. The District, in conjunction with TPWD, have instituted a zebra mussel surveillance program for Medina Lake.

The District continues to promote conservation, rainwater harvesting, and drought awareness. District personnel have assisted and counseled landowners on how to protect both their water quantity and quality. The District will continue to enforce rules and follow our management plan. BCRAGD continues to host events and educational talks over water conservation, drought awareness, invasive species management, and riparian information that is open to the public.

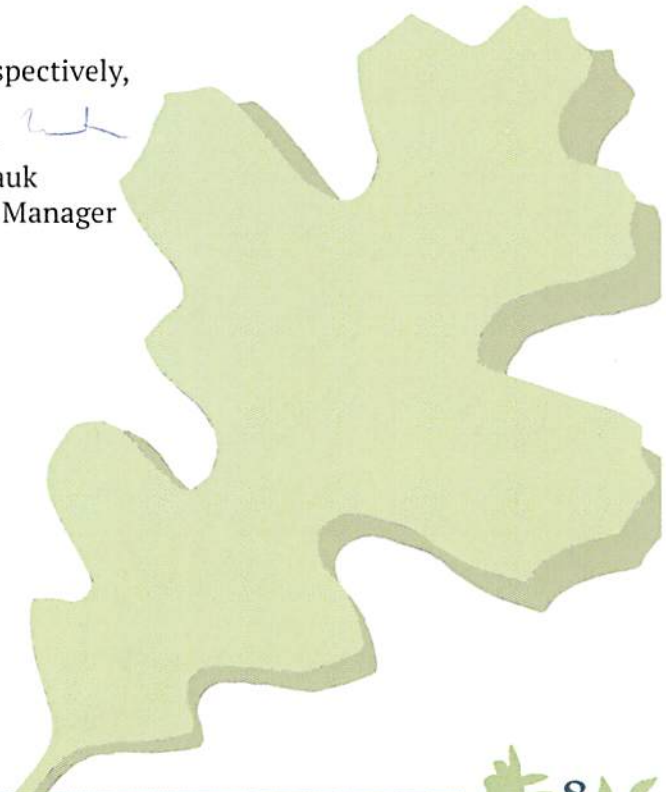
The District will continue to implement key conservation and water quality programs including the Clean Rivers Program, Aquifer Monitor Well Program, Community Outreach and Education, Illegal Dumping Abatement, and our Flood Awareness Program. District personnel are constantly revisiting and improving operating procedures. We continue to strive to be as transparent as possible. As General Manager, I have an open door policy, making myself available for any citizen's questions and concerns.

As a District, we continue to be a regional player to help safeguard the rights and natural resources of the people of Bandera County. We have been an active participant in the Regional Water Planning Groups, GMA-9, TCEQ's Clean Rivers Program, and Bay and Basin Stakeholder Committee. Our District has established lasting collaborations with other Districts and community organizations. The District will continue to improve its programs and processes to further the policies of the Board. This continued progress and regional engagement will help ensure that the interests and water resources are protected for the people of Bandera County and the entire basin.

Very Respectively,

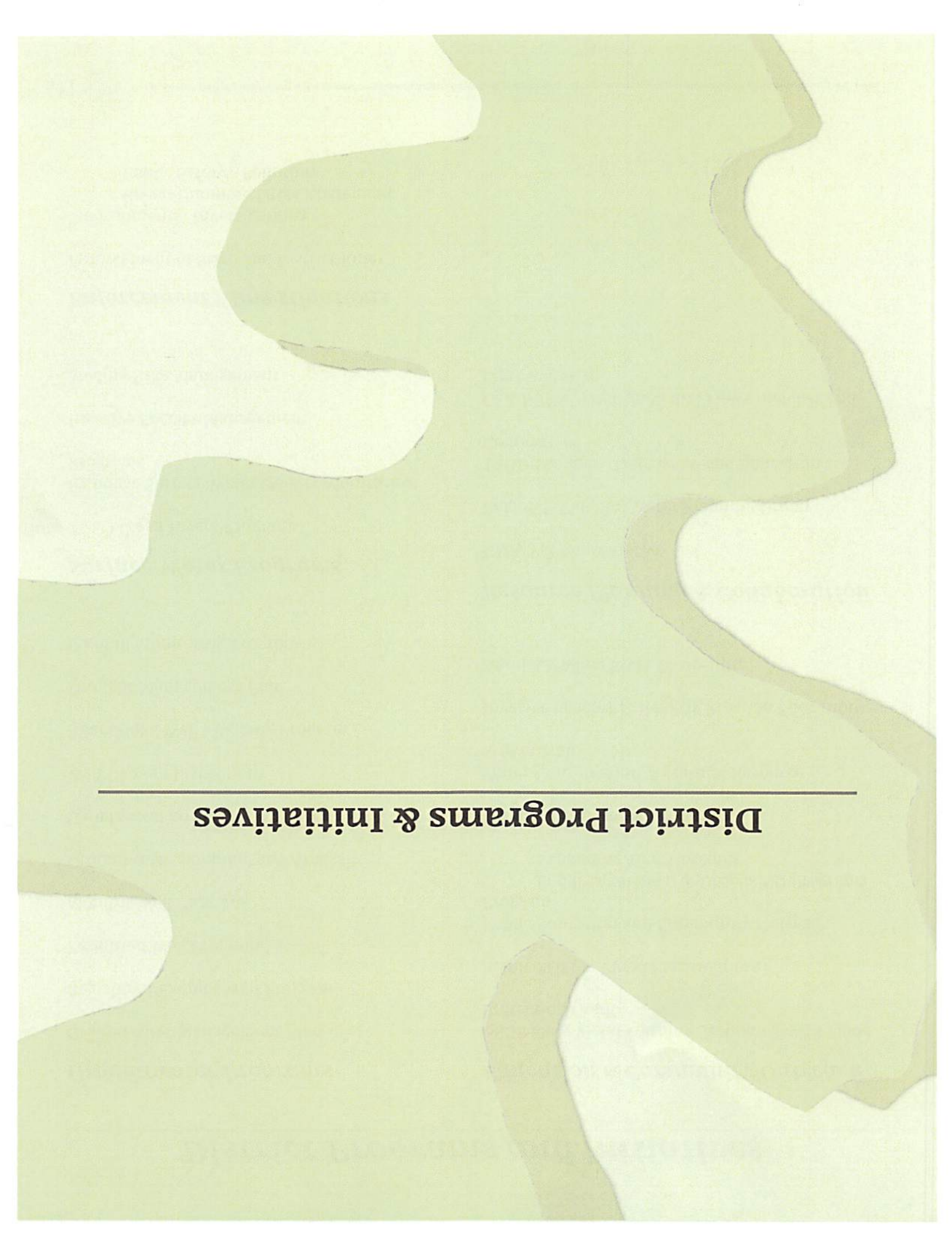


Dave Mauk  
General Manager



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## **District Programs & Initiatives**

# ***District Programs and Initiatives***

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## ***Groundwater Programs***

Groundwater Management Plan  
Registered/Exempt Well Program  
Permitted Well Program  
Monitor Well Program  
Groundwater Sampling and Analysis  
Geophysical Logging  
Well Camera Inspections  
Abandoned Well Plugging Program  
Drought Management Plan  
Rainfall Monitoring Program

## ***Surface Water Programs***

TCEQ Clean Rivers Program  
In-house Surface Water Quality Monitoring Programs  
Invasive Species Management  
Medina Lake Management

## ***Enforcement / Investigations***

Enforcement of State and District Rules  
Environmental Investigations  
    Illegal Dumping Litter Abatement  
    Public Safety / Pollution

## ***Education & Community Outreach***

USGS Early Flood Warning System - TWDB Flood Protection Grant  
Public Safety - Flood Preparedness  
Public Education and Community Outreach Program  
    Bandera, Medina, & Utopia ISD Programs  
    Expanding Your Horizons  
University Internship Program  
Water Conservation & Natural Resource Stewardship  
Invasive Species & Healthy Riparian Education  
Annual Medina River Clean-up

## ***Resource Planning & Collaboration***

GMA-9 Representative  
Region J (Plateau) Water Planning Group  
TAGD Member - Legislative and Education Committees  
GSA BBASC Environmental Flows member and representative



# Collaboration Highlights

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BCRAGD would like to highlight many of the local, regional, and state agencies and organizations that assist with programs and initiatives each year.

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## **United States Geological Survey**

BCRAGD has contracted USGS to expand the early flood warning system tool set for Bandera County under the grant awarded to the District by Texas Water Development Board.

## **Texas Water Development Board**

On August 25, 2016 TWDB awarded \$265,150 in Flood Protection Grant funding to BCRAGD for Bandera County. Working with USGS, this project will protect the lives of local residents and also the communities downstream through a flood warning tool set.

## **Texas Commission on Environmental Quality**

Environmental Investigations

## **San Antonio River Authority**

Clean Rivers Program partners; Aquatic Life Monitoring collaborators; Laboratory services

## **Nueces River Authority**

Clean Rivers Program partners; ISD education collaboration; Invasive plant collaboration - Arundo donax

## **Edwards Aquifer Authority**

Aquifer science, streamflow study collaboration, rainfall gages

## **TAMU AgriLife Extension Service**

Educational Outreach; water conservation and land stewardship workshops

## **Schreiner University**

Expanding Your Horizons Program  
Internship Program

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Texas Water Development Board (TWDB)

United States Geological Survey (USGS)

Texas Commission on Environmental Quality (TCEQ)

Texas Department of Licensing and Regulation (TDLR)

Texas Parks and Wildlife Department (TPWD)

Texas Alliance of Groundwater Districts (TAGD)

Texas Water Resources Institute

GSA BBASC Environmental Flows

Groundwater Management Area-9

Region J Water Plateau Planning Group

Texas Water Conservation Association (TWCA)

Texas A&M AgriLife Extension

USDA-NRCS

San Antonio River Authority (SARA)

Nueces River Authority

Edwards Aquifer Authority

Blanco Pedernales Groundwater District

Central Texas Groundwater Conservation District

Hill Country Groundwater Conservation District

Schreiner University

Bandera City Economic Development Corp.

Bandera Electric Co-op

Bandera County Constables

Bandera County Sheriff's Department

Bandera, Medina, and Utopia ISDs

Bandera Co. Commissioners' Court

City of Bandera

LAMCOS

Medina River Protection Fund

Hill Country Alliance

# Groundwater Programs

## Groundwater Management Plan

All Texas Groundwater Conservation Districts are required to develop and implement a TWDB approved management plan to effectively manage their groundwater resources. BCRAGD revised and approved its management plan on February 8th, 2018. TWDB approved the management plan on March 15th, 2018 and all parties approved the management plan on April 12, 2018.

During FY 2018, BCRAGD:

- Upheld management plan as required by TCEQ, TWDB, and the DFC process.
- Ensured management goals were met and documented to compliance.

## Registered / Exempt Well Program

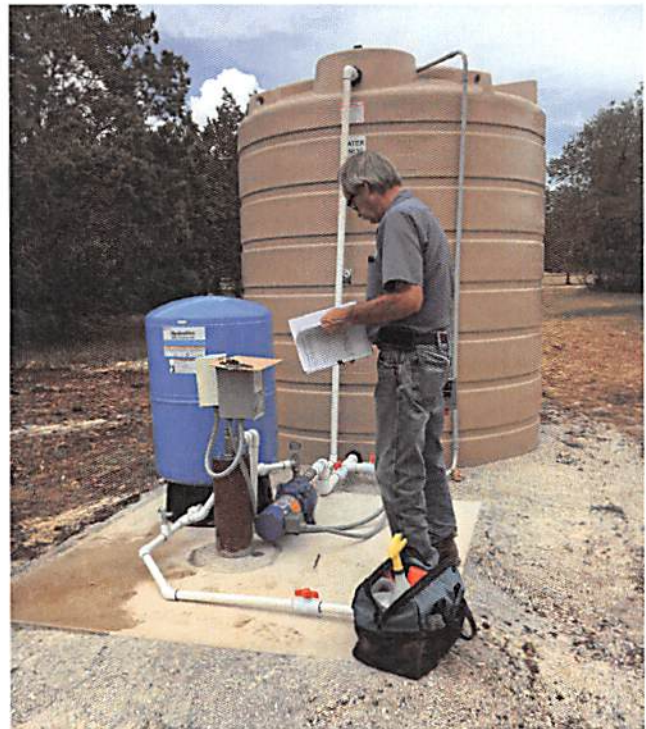
All exempt wells to be drilled are registered, approved, and inspected by the District to ensure compliance with both State and District rules and requirements. BCRAGD maintains a proactive policy of inspecting well sites before well registrations are issued. District staff inspect wells during the drilling and completion phases to ensure compliance with District and State rules. This approach has helped protect both the landowners and groundwater resources in Bandera County.



A registered well in the middle of being inspected by Jay McEwen, the BCRAGD Well Inspector.

In order to protect groundwater resources in FY 2018 BCRAGD:

- Registered and issued authorization to drill domestic and livestock wells.
- Registered existing exempt wells.
- Ensured registered wells met exempt requirements.
- Maintained files and database of registered wells.
- Provided water logs to the general public when requested.
- 111 Registrations were issued in FY 2018.



Well Inspector, Jay McEwen, going through his post-drilling inspection of a registered well.

## Permitted Well Program

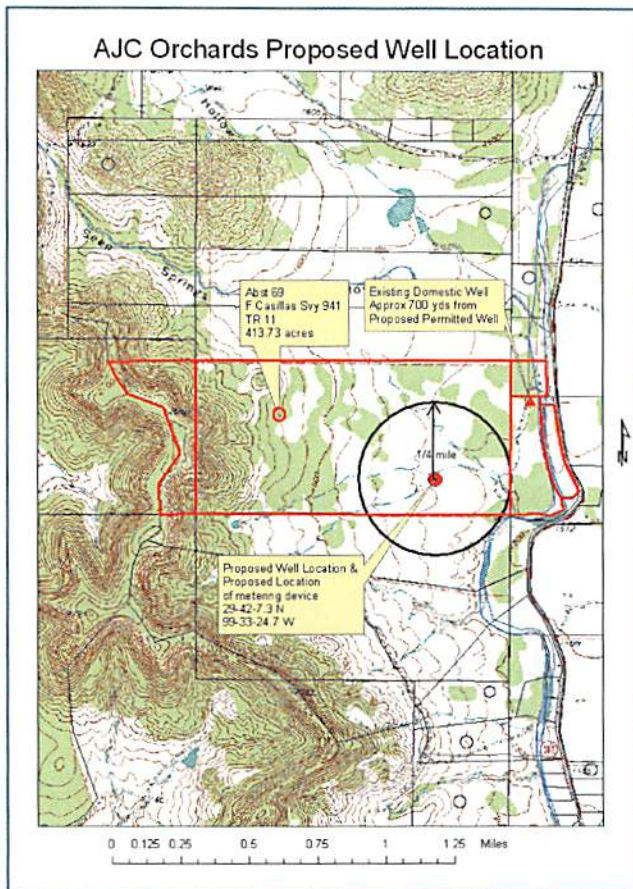
The District maintains a permitting program for non-exempt wells. Pumping reports are collected each January and the amount of water is tabulated. Newly permitted wells are inspected to ensure compliance with District and State rules and requirements. These pumping amounts will help the District to evaluate the groundwater resources in the county for Desired Future Conditions (DFC) compliance and management.



# Groundwater Programs

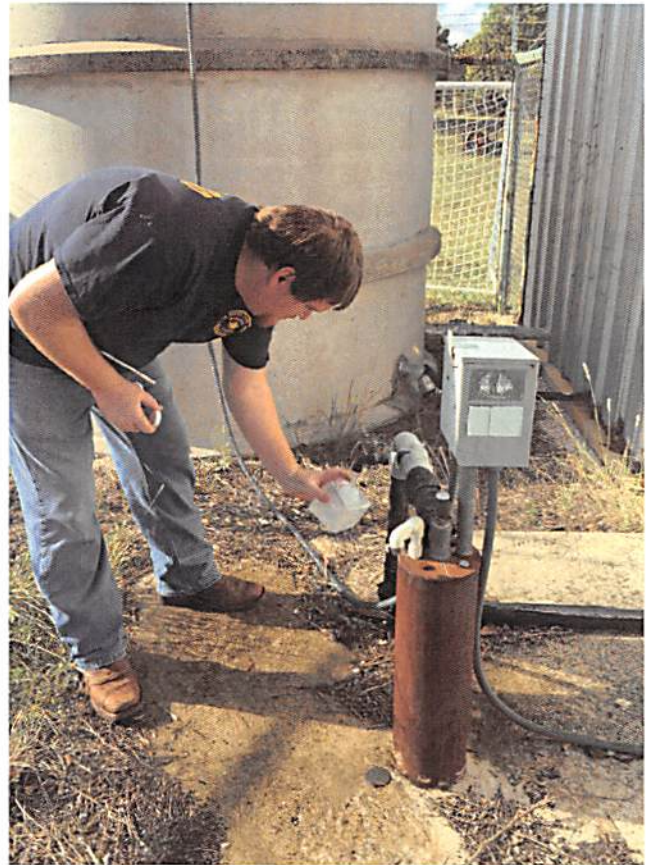
In order to protect groundwater resources in FY 2018 BCRAGD:

- Identified wells that needed to be permitted.
- Permitted existing wells which required permits.
- Prepared permit applications for Board approval.
- Posted permit hearing information as required by District rules and by the Open Meetings Act.
- Gave permit recommendations to the Board as needed.
- Conducted contested case hearings.
- Ensured compliance with annual pumping reporting requirements.
- Transferred permits for changes in property ownership.
- Identified permits that require permit amendments.
- Tracked annual usage for DFC purposes.
- 4 Permits were issued in FY 2018.



One portion of BCRAGD's permit application includes a map of the proposed well location with the property line and any other existing wells in the immediate area.

## Monitor Well Program



Michael Redman taking a water sample from one of BCRAGD's monitor wells.

The District maintains and operates a monitor well program to track and assess aquifer conditions in Bandera County. This is done through periodic water level measurements and quarterly water quality sample collection from designated monitor wells.

As a result of this program, during FY 2018 the District:

- Conducted surveillance of aquifer conditions.
- Tracked aquifer recharge.
- Managed for Desired Future Conditions (DFC). Reported data to Texas Water Development Board for DFC purposes.
- Kept the public informed via the District's website and quarterly meetings.
- Submitted to the local newspaper level aquifer information when available.



# Groundwater Programs

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## *Geophysical Logging Program*

BCRAGD is partnered with Blanco Pedernales Groundwater Conservation District, Hill Country Underground Water Conservation District, and Central Texas Groundwater Conservation District in shared ownership of a geophysical logging trailer, in which the geophysical properties of our aquifers are regularly recorded and monitored. Data recorded further informs aquifer science and groundwater management in the region.



*BCRAGD logging a well in the logging trailer shared by other districts in the region.*

## *Well Camera Inspection*

BCRAGD's WellVu Camera is a recorded media used to assess collapsed and/or damaged wells. It can also be used as a tool to investigate compliance with district well construction rules.

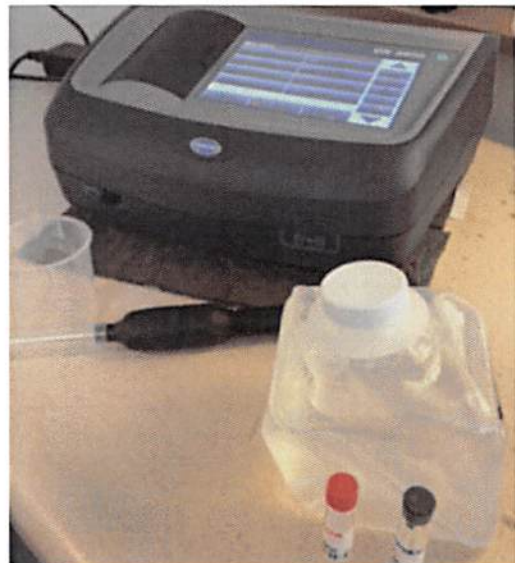
The District provides a camera well inspection service to identify problems and assess damaged wells to determine if the well needs rehabilitated or plugged.

## *Groundwater Sampling and Water Analysis Program*

BCRAGD operates a non-certified laboratory that tests for the presence/absence of total fecal coliforms and E. coli, as well as mineral testing, including total hardness, pH, TDS and EC of water samples. BCRAGD tests groundwater samples collected from newly inspected wells at no cost to the owner and offers groundwater testing services to the public for an at-cost fee.

Below is a breakdown of BCRAGD's efforts during FY 2018:

- Conducted chemical and bacterial analysis of monitor well samples.
- Sampled and analyzed samples from newly drilled wells when possible.
- Tested groundwater samples brought in by the public.
- Provided information to the public on avoiding sources of contamination and disinfecting identified contaminated wells.
- Investigated complaints relating to contaminants and waste.
- Educated and counseled citizens about sources of possible contamination.
- Advised citizens about corrective and preventive measures for contamination.





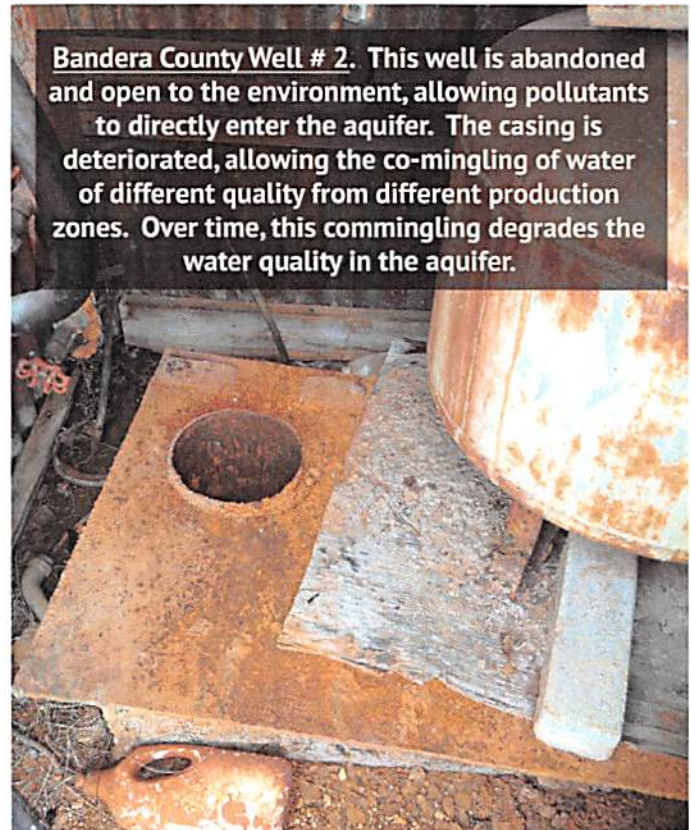
# Groundwater Programs

## Abandoned Well Plugging Program

There is a high environmental risk associated with abandoned/deteriorated wells, as they are a direct conduit from the surface to our groundwater resources. In response to the existence and threat of abandoned wells to the health of Bandera County's groundwater, BCRAGD offers the public a well plugging program.

Below are descriptions of the FY2018 Abandoned Well Program accomplishments:

- The District plugged 6 wells for the general public during the Fiscal Year 2018.
- BCRAGD issued violations to well owners to plug or repair abandoned wells.
- The District contributed abandoned well information to presentation and aquifer model components of the Nueces River Authority Water Resource Stewardship Program and other outreach efforts.



**Bandera County Well # 2.** This well is abandoned and open to the environment, allowing pollutants to directly enter the aquifer. The casing is deteriorated, allowing the co-mingling of water of different quality from different production zones. Over time, this commingling degrades the water quality in the aquifer.



**Bandera County Well # 1.** This well is improperly capped. The open wellhead is covered only by a piece of plastic and some wood. The well is abandoned and the casing has deteriorated.

*Graphics from a presentation given to the State Legislature illustrating the importance of plugging wells to protect groundwater quality for the public.*

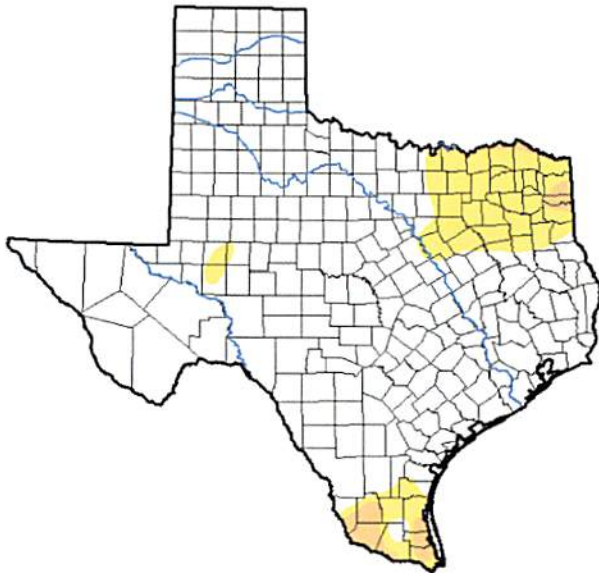


# Groundwater Programs

## Drought Management Plan

During FY 2018, BCRA GD:

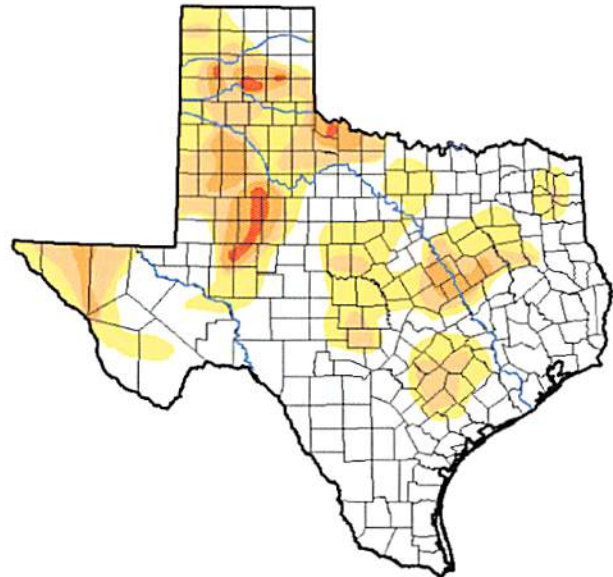
- Implemented drought stages.
- Notified permit holders of drought stages and restrictions.
- Investigated allegations of waste and issued Notices of Violation as warranted.
- Reported drought conditions at quarterly meetings.
- Record the Drought Severity Index each month, and when drought conditions exist, post the drought stage and any appropriate drought restrictions at the District's office.
- Reviewed Drought Management Plan.



**October 3, 2017**

*(Released Thursday, Oct. 5, 2017)*

Valid 8 a.m. EDT



**September 25, 2018**

*(Released Thursday, Sep. 27, 2018)*

Valid 8 a.m. EDT

### Drought Classification

None    D0 (Abnormally Dry)    D1 (Moderate Drought)    D2 (Severe Drought)    D3 (Extreme Drought)    D4 (Exceptional Drought)



# Groundwater Programs

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## *Rainfall Monitoring Program*

### Gages and Weather Station:

BCRAGD is partnered with Bandera County and the Bandera Electric Coop in sponsorship of a USGS discharge and rain gage at Patterson Road in Medina. This gage displays all parameters real time via a telemetry unit, and is accessible to the public through the USGS website. The Flood Protection Grant will allow significant expansion in USGS gages along with a more comprehensive flood warning tool set for Bandera County.

The District maintains an official Weather Station utilizing HOBOLink courtesy of the EAA's gage at BCRAGD's District office. Conditions can be accessed from the District's website, [www.bcragd.org](http://www.bcragd.org). BCRAGD records rainfall data, and contrasts rainfall data with monitor well results. The results are available to USDA and the County Extension office.

### Rain Spotters Program:

The District continues to support its all-volunteer Rain Spotters Program. Bandera County residents report monthly rainfall amounts from their District issued gages on a quarterly basis. During each BCRAGD Quarterly Board Meeting, the data is presented in report form.



*The image above shows the EAA weather station and rain gage that provides information to the HOBOLink.*

# Surface Water Programs

## TCEQ Texas Clean Rivers Program

BCRAGD partnered with San Antonio River Authority (SARA) to participate in the Clean Rivers Program in the San Antonio River Basin in 2012. BCRAGD staff are responsible for sampling 8 sites, which are in Bandera County on Medina River, and summarized to the right. FY 2018 CRP sample dates were October 17, 2017, October 24, 2017, November 1, 2017 November 14-15, 2017, January 22, 2018, February 6-7, 2018, February 15, 2018, April 11, 2018, April 18, 2018, April 24, 2018, May 9, 2018, and June 7, 2018. The District was audited by the SARA for the TCEQ Clean Rivers Program on May 9, 2018.

At the end of FY 2016, BCRAGD added five CRP sites on Medina Lake along with one CRP site on Diversion Lake, partnering with SARA. The sample dates for Medina Lake were October 10-11, 2017 February 27-28, 2018, May 15-16, 2018, and August 14-15, 2018. The sample dates for Diversion Lake were October 10-11, 2017, February 7, 2018, April 24, 2018 and July 11 and 25, 2018.

BCRAGD partnered with Nueces River Authority (NRA) in 2016 to participate in the Clean Rivers Program in the Nueces River Basin. BCRAGD staff are responsible for 3 sites shown in the chart to the right. The FY 2018 sample dates for the Nueces River Basin was May 15-16, 2018.

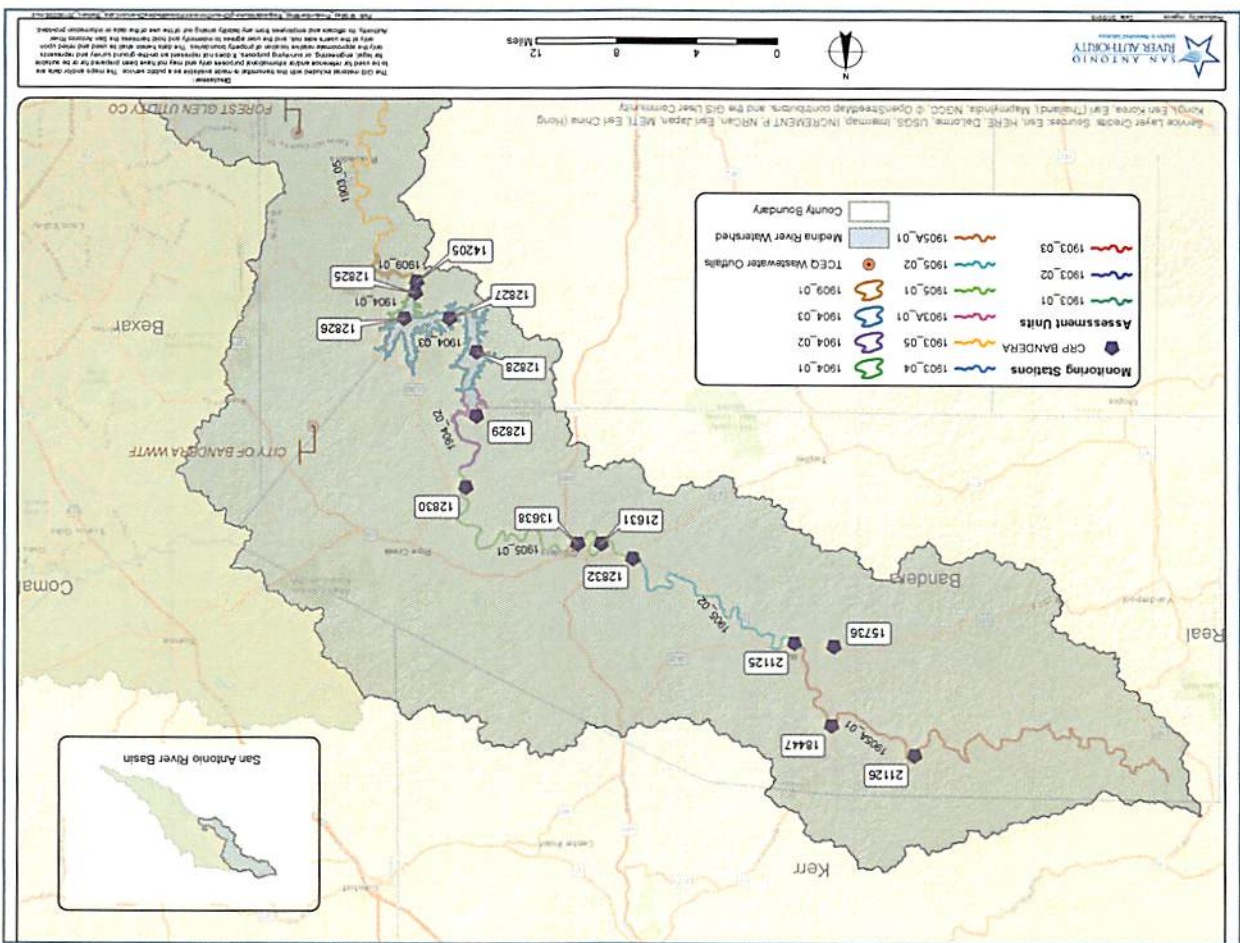
The table to the right lists all of the CRP sites that BCRAGD sampled each quarter. They are separated into sections as follows: Medina River sites, Medina Lake sites, Diversion Lake sites, and Sabinal Basin sites.

The maps shown in the next two pages show all of the CRP sites covered by San Antonio River Authority and Nueces River Authority. The sites sampled by BCRAGD are included in both.

Station ID	Site Name
12830	Medina River @ English Crossing
18447	North Prong Medina R. @ Hwy 16 - Wallace Creek
13638	Medina R. @ S Hwy 173 (Bandera City Park)
12832	Medina R. @ FM 470 - Tarpley Crossing
21125	Medina R. @ Moffett Park
21126	N. Prong Medina R. @ FM 2107 - Brewington
15736	W. Prong Medina R. - Coalkiln Road
21631	Medina R. @ The Mayan Ranch
12829	Medina Lake Mid near Headwater
12828	Medina Lake between Cypress & Spettel Coves
12827	Medina Lake @ Mormon Bluff
12826	Medina Lake near Red Cove
12825	Medina Lake @ ML Dam West of San Antonio
14205	Medina R. Downstream Medina Reservoir in Mico, TX @ low water crossing
13017	Seco Creek @ RR 470
14939	Sabinal River @ FM 187
21948	Sabinal River @ Onion Creek



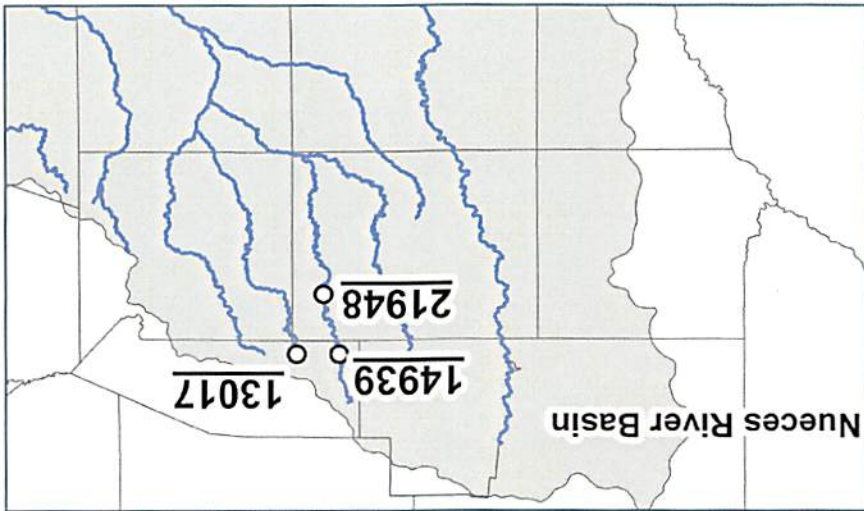
# Surface Water Programs



Above is a map of all of the CRP sites sampled by BCRAGD in the Medina River Basin, including Medina and Diversion Lakes. Below is a picture of the River Authority Operations Manager, Levi Sparks, measuring cross-sectional flow using the FlowTracker on Medina River at the Mayan Ranch site.



## Surface Water Programs



The map shows all of the CRP sites BCRAGD samples in the Nueces River Basin. The left photo shows the River Authority Operations Manager, Levi Sparks, recording field measurements for Sabinal CRP sites. The top right photo is a picture of the Onion Creek CRP site, and the bottom right photo shows bottles and other equipment often used during CRP sampling.



# Surface Water Programs

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During FY 2018 BCRAGD District staff also:

- Joined a Conference Call with SARA, TPWD, GBRA (Zebra Mussels) 10/2/17
- Completed an Arundo GPS along N. Prong of Medina R. - 11/3/17
- Attended a SWQM Workshop - 11/6-8/17
- Held an Arundo control discussion - 11/13/17
- Performed a Zebra Mussel sampling @ Medina Lake - 11/13/17
- Attended a Texas Invasives Committee meeting - 12/14/17
- Attended the TCAFS Conference 1/25-27/18
- Completed Ethics and Data Integrity Training with SARA - 2/1/18
- Hosted the Medina River Protection Fund Meeting @ BCRAGD - 2/7/18
- Watched a "Support of the Recovering America's Wildlife Act" Webinar 2/22/18
- Hosted the Medina River Protection Fund Meeting @ BCRAGD - 3/26/18
- Attended the San Antonio River Authority CMM Meeting - 4/5/18
- Assisted SARA with Aquatic Life Monitoring @ Mayan Ranch- 4/19/18
- Prepared for the Medina River Clean-Up - 5/3/18
- Attended the Annual Medina River Clean-Up @ Bandera City Park- 5/5/18
- Held an Arundo Program Update Meeting @ District Office- 5/7/18
- Visited an Arundo Site & held Training @ Medina River- 5/17/18
- Met with new City Administrator & City Council Member @ District - 5/30/18
- Visited an Arundo Site in Bandera County - 6/5/18
- Visited an Arundo Site in Bandera County - 6/18/18
- Visited an Arundo Site in Bandera County- 6/21/18
- Visited an Arundo Site in Bandera County - 6/26/18
- Attended a Workshop- Healthy Creeks Initiative to Combat Arundo - 6/28/18
- Visited an Arundo site in Bandera County - 7/3/18
- Visited an Arundo site in Bandera County - 7/10/18
- Attended Mayan ALM @ Mayan Ranch - 7/16/18
- Visited an Arundo site in Bandera County - 7/17/18
- Completed Summer In-House Sampling - 7/25/18
- Visited an Arundo site in Bandera County - 7/26/18
- Attended a Texas Freshwater Mussel Workshop - 8/7-10/18



BCRAGD and SARA staff during an Aquatic Life Monitoring event at the Mayan Ranch CRP site.



# Surface Water Programs

## District In-House Sampling Programs

In order to preserve and protect the headwaters of the Medina and Sabinal rivers and well as Medina Lake, BCRAGD conducts multiple In-House programs to monitor water quality and inform the public of any potential concerns.

### Surface Water Quality Monitoring

This surface water sampling program was initiated in order to monitor water quality throughout Bandera County. It has been modified to better serve the community by increasing the number of sites for a more representative data collection, reporting E. coli counts via local newspapers to the citizens of Bandera County for safety. BCRAGD's In-House Surface Water Sampling program allows District staff to detect bacteria spikes in the Medina or Sabinal River and Medina Lake and follow up with an immediate investigation.

From October 2017 to September 2018 there were 4 instances with E. coli counts over the TCEQ standard of 399 MPN (most probable number) per 100 mL of sample water. The District recommends no swimming to take place in areas where the count is over the limit. That sample site area was then investigated, beginning with a re-sample effort. If the MPN remains above 399, further investigations are made.



Above is an example of the BCRAGD warning signs. The District posts these in areas that test above 399 MPN after re-samples.

Site #	Location	Site #	Location
MR-2.05	Medina R. Bandera City Park @ 1st St	MR-3.05	Medina R. @ Ranger Crossing HWY 16
MR-2.03	Medina R. Bandera City Park - Hwy 173	MR-3.01	Medina R. @ RR 377
MR-1.01	Medina R. @ English Crossing	MR-2.025	Above Sewage Treatment Plant Effluent
LM-4.01	Sabinal R. @ Lost Maples 1st Bridge	WVC-2.01	Hill Country State Natural Area @ FM 1077
MP-3.01	Medina R. @ Moffett Park	ML-1.04	Medina Lake @ County Park NE of ramp
MRN-3.01	North Prong - FM 2107 @ Rocky Creek	CC-4.01	Sabinal R. @ Cornelius Crossing
MR-3.04	Medina R. @ Tarpley Crossing	WC-4.01	Sabinal R @ Williams Creek Crossing
WC-3.01	North Prong @ Wallace Creek	SC-4.01	Seco Creek @ RR 470 Crossing
MRN-3.03	North Prong @ Brewington Crossing FM 2107	UTOP	Sabinal R @ Utopia
MRW-3.01	W. Prong @ Coalkiln Rd RR 377		



# Surface Water Programs

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*Medina River at Brewington Crossing, FM 2107*

Below is a combined summary of our In-house and CRP sampling:

## 1st Quarter:

- Oct. 2017 - Dec. 2017
- Oct. 10-11, 2017 (CRP; 5 Medina L. Sites)
- Nov. 1 & 14, 2017 (CRP; 8 Medina R. Sites)
- Nov. 15, 2017 (CRP; 1 Diversion L. Site)
- Nov. 21, 2017 (CRP; 3 Sabinal R. Sites)
- Dec. 27-28, 2017 (6 Sabinal R. Sites, 17 Medina R. Sites, 1 Medina L. Site)

## 2nd Quarter:

- Jan. 2018 - March 2018
- Jan. 22, 2018 (CRP; 3 Sabinal R. Sites)
- Feb. 7, 2018 (CRP; 1 Diversion L. Site)
- Feb. 13 & 15, 2018 (CRP; 8 Medina R. Sites)
- Feb. 27-28, 2018 (CRP; 5 Medina L. Sites)
- March 22, 27 & 29, 2018 (6 Sabinal R. Sites, 17 Medina R. Sites, 1 Medina L. Site)

## 3rd Quarter:

- April 2018 - June 2018
- April 11 & 18, 2018 (CRP; 8 Medina R. Sites)
- April 24, 2018 (CRP; 1 Diversion L. Site)
- May 9, 2018 (CRP; 3 Sabinal R. Sites)
- May 15-16, 2018 (CRP; 5 Medina L. Sites)

- May 30-31, 2018 (6 Sabinal R. Sites, 17 Medina R. Sites, 1 Medina L. Site)
- June 7 & 12, 2018 (CRP; 8 Medina R. Sites)
- June 14, 2018 (2 Sabinal R. Sites, 6 Medina R. Sites, 1 Medina L. Site)

## 4th Quarter:

- July 2018 - Sept. 2018
- July 11, 2018 (2 Sabinal R. Sites, 6 Medina R. Sites, 1 Medina L. Site)
- July 11 & 15, 2018 (CRP; 1 Diversion L. Site)
- July 16, 2018 (CRP; 8 Medina R. Sites)
- July 18, 2018 (2 Medina R. Sites)
- July 25, 2018 (2 Sabinal R. Sites, 6 Medina R. Sites, 1 Medina L. Site)
- Aug. 14-15, 2018 (CRP; 5 Medina L. Sites)
- Aug. 16, 2018 (2 Sabinal R. Sites, 7 Medina R. Sites, 1 Medina L. Site)
- Aug. 22, 2018 (2 Sabinal R. Sites)
- Aug. 23, 2018 (2 Sabinal R. Sites, 7 Medina R. Sites, 1 Medina L. Site)
- Sept. 25, 2018 (6 Sabinal R. Sites, 17 Medina R. Sites, 2 Medina L. Site)



# Surface Water Programs

## Invasive Species Management

BCRAGD staff monitor invasive species activity in Bandera County. Of particular interest is the invasive and noxious species *Arundo donax* (Giant Reed), classified as a “noxious plant species” under the Texas Administrative Code, Title 4, Part 1, Chapter 19, Subchapter T. The classification means *Arundo donax* has “serious potential to cause economic or ecological harm to the state.”

The Nueces River Authority has been actively and successfully managing *Arundo donax* along a portion of the Sabinal River in Bandera County for the last nine years. BCRAGD has provided funding for the Nueces River Authority to continue treating the *Arundo donax* within their original project boundaries. BCRAGD staff has also assisted the Nueces River Authority in the chemical treatment and physical removal of *Arundo*.



*Levi Sparks assisting the Texas Parks and Wildlife to map and record information about Arundo patches along the North Prong of the Medina River.*

The District is currently beginning *Arundo donax* management on the headwaters of the Medina River by joining the Healthy Creeks Initiative partnership with the Texas Parks and Wildlife Department. This initiative offers workshops, no-cost treatment of *Arundo* beginning in Summer 2018, and ongoing monitoring and re-treatment as needed.

If you have *Arundo donax* on your property and want more information on its control, please call BCRAGD at (830) 796-7260. To learn more about the Healthy Creeks Initiative, visit the Texas Parks and Wildlife Department website: <http://tpwd.texas.gov/healthy-creeks>.



*The above picture shows Texas Parks and Wildlife contractors spraying an Arundo patch with herbicide at the Bandera City Park. Below shows Levi Sparks and TPWD staff taking samples to test for the presence of Zebra Mussels in Medina Lake.*

BCRAGD also monitors Zebra Mussels—small, freshwater mussels that spread clinging to boat hulls, bilges, and bait buckets. Zebra mussels hinder water recreation, destroy aquatic ecosystems, ruin beaches, and damage municipal water supplies and intake structures. To prevent this, remove all debris from your boat and trailer, drain all water from the boat, engine, and bait bucket. Then, let the boat dry for at least a week or wash it with high-pressure, hot, soapy water before boating on another waterbody.





# Surface Water Programs

During FY 2018, BCRAGD District staff did the following for Invasive Species Management:

- Joined a Conference Call with SARA, TPWD, GBRA (Zebra Mussels) 10/2/17
- Completed an Arundo GPS along N. Prong of Medina R. - 11/3/17
- Held an Arundo control discussion - 11/13/17
- Performed a Zebra Mussel sampling @ Medina Lake - 11/13/17
- Attended a Texas Invasives Committee meeting - 12/14/17
- Held an Arundo Program Update Meeting @ District Office- 5/7/18
- Visited an Arundo Site & held Training @ Medina River- 5/17/18
- Visited an Arundo Site in Bandera County - 6/5/18
- Visited an Arundo Site in Bandera County - 6/18/18
- Visited an Arundo Site in Bandera County- 6/21/18
- Visited an Arundo Site in Bandera County - 6/26/18
- Attended a Workshop- Healthy Creeks Initiative to Combat Arundo - 6/28/18
- Visited an Arundo site in Bandera County - 7/3/18
- Visited an Arundo site in Bandera County - 7/10/18
- Visited an Arundo site in Bandera County - 7/17/18
- Visited an Arundo site in Bandera County - 7/26/18

## Medina Lake Management

Medina Lake is an important natural resource for the citizens of Texas. The lake serves not only as an irrigation water source, a popular recreational site, but an important drinking water reservoir for the entire region. The waters in the lake are some of the most pristine in the country. It is imperative that the Lake be preserved and protected.

The Bandera County River Authority and Groundwater District is committed to protecting, preserving, and monitoring Medina Lake. Since 2015, the BCRAGD has taken a much more active approach in protecting the quality of Medina Lake. In the recent years, the organization has created a zebra mussel monitoring program in partnership with TPWD and monitoring the quality of the water through the CRP program and a study in partnership with USGS.

The BCRAGD has an interest in the human health and safety associated with Medina Lake as well. Staff have acquired a Hazard buoy for immediate deployment in the lake to warn boaters of hazard. Staff have also advised numerous people all around the lake on potential best management practices for improvements of both their land and reducing the environmental impacts harmful practices could have on Medina Lake. Along with the above mentioned, BCRAGD has also participated in numerous Fish surveys and Fish stockings done by TPWD in the lake.

## ZEBRA MUSSELS HIDE HERE.

Protect our Lake and Rivers from Invasive Species



**IT'S THE LAW:** Remove invasive plants and debris and drain all water before leaving this water body.

TexasInvasives.org



**CLEAN, DRAIN AND DRY**  
YOUR BOAT AND GEAR EVERY TIME

**TEXAS**  
PARKS & WILDLIFE

**Bandera County**  
River Authority & Groundwater District



# ***Enforcement / Investigations***

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## ***Enforcement of State & District Rules***

BCRAGD proactively enforces both State and District rules for well drilling. These rules are taken from TDLR Administrative Code and BCRAGD's Adopted Chapter 36 Rules. As a result of this program, during FY 2018, the District:

- Inspected all permitted and registered wells in Bandera County to ensure compliance with both District and State rules
- Investigated nuisance complaints
- Issued Notice of Violations and ensured compliance with Notice of Violations
- Conducted investigations with TDLR

### Chapter 36 Required Administrative Requirements

During FY 2018, the District maintained and reviewed policies mandated by Chapter 36 of the Texas Water Code including the Public Funds Investment Policy, Ethics Policy, Financial Management Policy, and Travel Policy. Additionally, the District reviewed and adjusted rules and District activities.



## ***Environmental Investigations***

### Illegal Dumping Litter Abatement Program

BCRAGD operates an illegal dumping litter abatement program to proactively protect and manage surface water and groundwater resources. The District adopted rules out of Chapter 51 of the Texas Water Code, dealing specifically with illegal dumping that affects water quality. The rules are in both the civil and penal code.

During FY 2018, BCRAGD's Groundwater District Manager / Code Enforcement Officer:

- Attended BRWM Illegal Dumping Enforcement Training- 10/26-27/17
- Attended TX Environmental Law Enforcement Association (TELEA) Conference- 4/9-12/18
- Attended TAGD Groundwater Summit- 8/28-30/18



*The image to the left shows a picture from a nuisance complaint from 2014 regarding a leaking septic. The image above shows an on-going environmental investigation from 2014 regarding an illegal tire dump.*

### Public Safety / Pollution

BCRAGD serves as a first responder in cases of possible surface water or groundwater pollution or contamination. They investigate and identify the potential problem and refer to outside regulatory agencies when warranted.

The District's in-house surface water quality programs allow staff to detect bacteria spikes and follow up with immediate investigation and re-sampling.



# Education & Outreach Programs

## *USGS Early Flood Warning System Nearing Completion*

On August 25, 2016 The Texas Water Development Board awarded \$265,150 in Flood Protection Grant funding to BCRAGD for Bandera County. Working with USGS, this project is currently underway and will protect the lives of our local residents and also the communities downstream through a flood warning tool set. Two additional stream gages are already installed upstream, which in turn will improve response strategies and planning through advanced modeling and mapping. Parts of the Midwest have successfully implemented this tool set, and Bandera County will be an example to the rest of Texas. We envision this project to be fully functional and online by August of 2019.

BCRAGD staff held and attended multiple meetings concerning flood awareness. See details below:

- Webinar: PIE Resiliency Scorecard (Flood Management) - October 4, 2017
- TFMA Outreach Discussion - October 20, 2017
- CFM Exam - October 25, 2017
- Flash Flood Public Information Meeting - October 28, 2017
- Webinar: CRS Series (Flood Management)- October 30, 2017 & November 6, 2017
- USGS/BCRAGD Meeting-- November 28, 2017
- Flood Education TFMA Outreach Committee Call- December 8, 15, 18, 2017
- West Gulf River Forecast Center Presentation Flood Project Update - February 27, 2018
- TFMA Conference & Training - March 6-9, 2018
- TWCA - Flood Warning Tool Set Presentation - June 14-15, 2018
- USGS Flood Conference Call - July 9, 2018
- Sabinal Flood Grant Submittal to TWDB - July 11, 2018
- USGS Meeting in SA (Rainfall Monitor & Flood Protection Grant) - August 21, 2018
- S. Central TX Emergency Managers Mtg Flood Warning System Presentation- August 31, 2018
- Updated Rainfall Report Submitted - September 26, 2018
- "All You Want to Know About Flood Prevention" SA Presentation- September 29, 2018



*Data Chief, Larry B. Thomas, presents the newly installed USGS stream gages to the Texas Water Development Board.*

The 2013 Light Detection and Ranging (LiDAR) data acquisition will enhance the modeling and mapping capabilities for this flood warning tool set. The LiDAR data for Bandera County was the result of a partnership between BCRAGD, Texas Water Development Board, Edwards Aquifer Authority, San Antonio River Authority, Bandera County, and Bandera City EDC. This data improves the accuracy of FEMA's risk map, flood risk and emergency planning, watershed protection, water resource and invasive species monitoring.



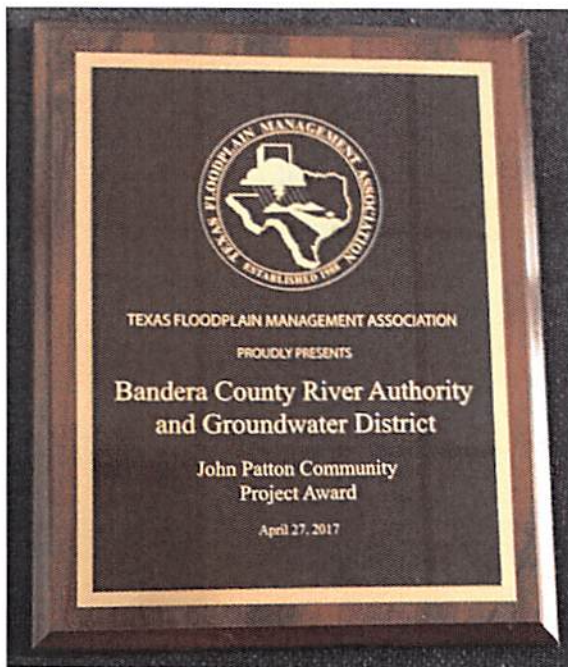
# Education & Outreach Programs



## Public Safety - Flood Preparation Programs

BCRAGD has many Certified Floodplain Managers in its employ and is an active member of the Texas Floodplain Management Association. The District partnered with Bandera County Emergency Management, West Gulf River Forecast Center, and the National Weather Service to hold Flash Flood Education workshops on February 27, 2018 and put out several flash flood awareness radio public service announcements.

## Educational Recognition for Flood Awareness

The District won the 2017 John Patton Community Service Award in April 2017 from the Texas Floodplain Management Association (shown below). This was awarded to BCRAGD for promotions and educational activities initiated in schools and in the community to promote awareness over flood hazards. The award was presented to the BCRAGD board on Thursday, July 13th at the BCRAGD Quarterly Meeting. BCRAGD Board President Don Sloan and the previous Water Conservation and Community Outreach Coordinator, Morgen Ayers, accepted the award on behalf of BCRAGD.





### West Gulf River Forecast Center Presentation

The "Other" National Weather Service  
by Greg Waller

Hosted by the Medina Lake Betterment Association (MLBA)  
at the Lakehills Civic Center  
Located at 11225 Park Road 37, Lakehills, Texas 78063  
February 27, 2018 from 6:00-7:30 p.m.






Photo courtesy of Mr. Lynn Post

**West Gulf River Forecast Center:**  
What they Do and How they Serve the Community

**Bandera County Emergency Management:**  
Emergency Mass Communications

**Bandera County River Authority  
and Groundwater District:** Flood Project Update

Kindly RSVP to Kayla Shearhart at [kshearhart@bcragd.org](mailto:kshearhart@bcragd.org) or by calling BCRAGD at (830) 796-7260



Above was the flyer for the Flash Flood Education event hosted by BCRAGD and put on by the West Gulf River Forecast Center, Bandera County Emergency Management, and BCRAGD. Below is a picture from the event.





# Education & Outreach Programs

## Public Education and Outreach Programs

The District prioritizes the education of students and the public regarding surface water and ground-water in Bandera County. Educational strategies emphasize hands-on activities, presentations, and workshops. On July 24th-25th, 2018, BCRA GD's Education and Outreach Manager attended CRASER Training for the WET Project to assist in implementing their education strategies.

### Educational Programs in the ISDs

Since 2012, BCRA GD has sponsored and co-facilitated the Nueces River Authority Water Resource Stewardship Education Program for Bandera, Medina, and Utopia middle school students. The program features a water use and conservation presentation, and presented the demonstration of a surface water runoff model and an aquifer model, with an emphasis on non point source pollution.



Above is a picture of the Education & Outreach Manager, Corrina Fox, teaching students about water quality at one of the Water Resource Stewardship programs.

The local Soil and Water Conservation Board invites the District to participate in 6th grade Ag Day at Mansfield Park in Bandera. In recent years, BCRA GD has collaborated with Nueces River Authority at this event. For FY 2018, this event took place on 06/01/18.

On 08/14/18, BCRA GD's Community Outreach Manager held a Back to School Bash Water Conservation Presentation to Bandera Middle School.



The top picture shows Corrina Fox at the BCRA GD booth for the BISD Back to School Bash. The bottom picture shows students and parents testing their water knowledge at the BCRA GD booth.



# Education & Outreach Programs

## Expanding Your Horizons (EYH)

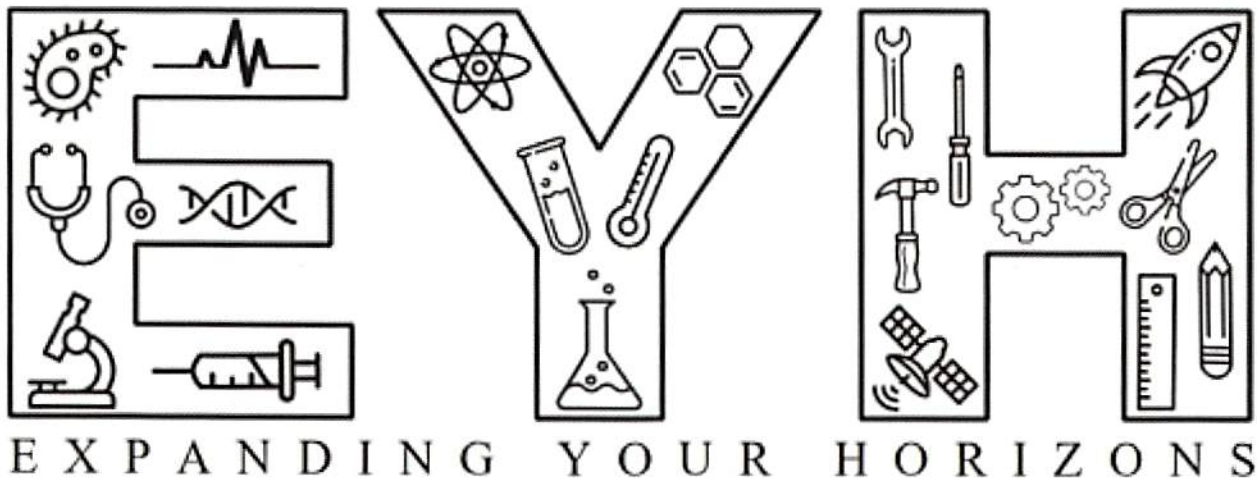
The Expanding Your Horizons (EYH) Network is a global platform that seeks to increase female participation in the fields of math and science (as a part of the STEM effort) by facilitating local conferences that inspire middle school and high school aged girls with hands-on workshops.

Schreiner University sponsors this educational event annually in Kerrville for 6th-8th grade female students, specifically promoting STEM--science, technology, engineering, and mathematics. BCRA GD is invited each year to facilitate a lesson and activity build in the greenhouse. On November 18th, 2017 BCRA GD facilitated a water resource presentation followed by an aquifer model build activity to demonstrate aquifer science. The emphasis were the aquifer's natural filtration and storage capabilities due to a variation of substrate and formation types. We also gave out water conservation,

rainwater harvesting, flood awareness, and invasive species management literature. On 04/23/18, District Education and Outreach Manager held an EYH SU Planning Meeting.



*EYH participants constructing their aquifer models using different substrates in plastic bottles.*



*The Expanding Your Horizons logo used by Schreiner University for the 2018 event. Obtained through the following website: <https://schreiner.edu/academics/expanding-your-horizons/>*

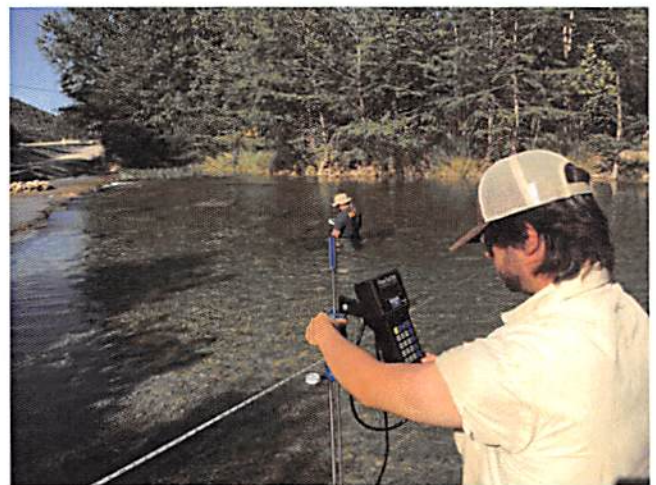
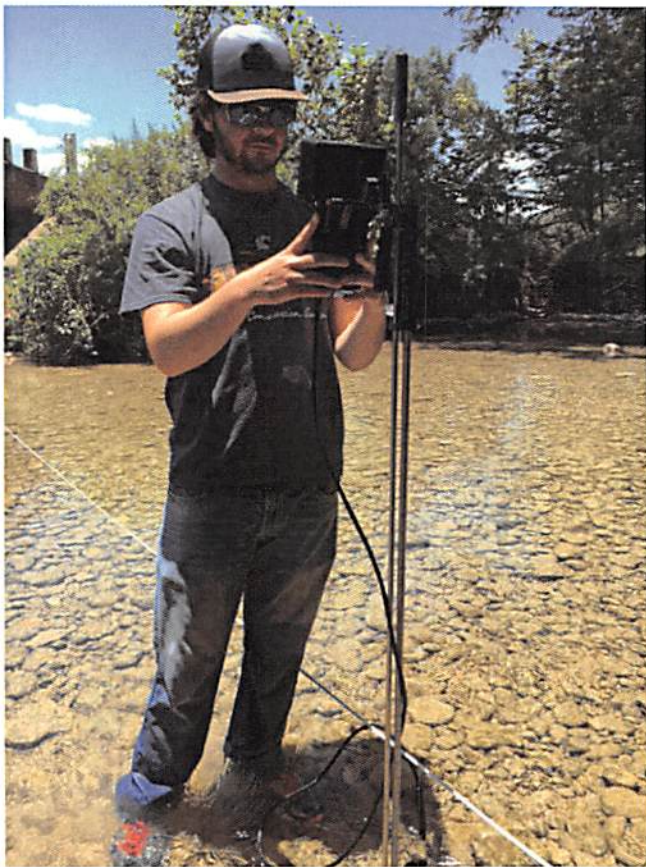


# Education & Outreach Programs

## University Internship Program

The District participates in the Schreiner University Community Internship Program (CIP). Each year a qualified student is given the opportunity to work and to learn at the District. The work includes both laboratory and field work.

Jaime Perez, a student at Schreiner University, interned with BCRAGD from September 4th of 2018 to November 1st of 2018. During his internship, he collected flow measurement data using the Flowtracker AVM (Acoustic Velocity Meter), worked on BCRAGD's In-house Surface Water Quality Monitoring Study, completed fieldwork, and assisted with BCRAGD's Monitor Wells Program, Well Plugging Program, and BCRAGD's Clean Rivers Program.



The images above show BCRAGD intern, Javier Perez, learning the various aspects of water management. The top right picture shows him learning how to take the static level measurement of a monitor well. The two bottom pictures show him using the FlowTracker to calculate flow of a stream.



# Education & Outreach Programs

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## *Invasive Species / Healthy Riparian Education Programs*

In addition to working in the field to manage invasive species, BCRAGD provided many different educational programs and presentations to spread awareness:

- Arundo Project Cost Share Conference Call with TPWD on 10/24/17.
- Arundo GPS along N. Prong of Medina River on 11/03/17.
- Arundo control discussion with Monica from TPWD on 11/13/17.
- Arundo Landowner package and parcel spreadsheet discussion 11/20/17 and 11/22/17.
- Texas Invasive Committee Meeting on 12/14/2017.
- An in-house arundo program meeting occurred on 5/7/18.
- Arundo Site Visit and Training on 5/17/18.
- Arundo Information Workshop for Medina River- Healthy Creeks Initiative to combat invasive Arundo and Riparian presentation by Hill Country Alliance on 6/28/18.
- Arundo site visits occurred over the course of several days. These days are as follows: 6/05/18, 06/06/18, 6/21/18, 6/26/18, 07/03/18, 7/10/18, 7/17/18, and 7/26/18.
- Zebra Mussels Workshop - 8/7-10/18.

If you identify any invasive species on your property such as Arundo donax or zebra mussels, take a picture of it, record the location, and call BCRAGD at (830) 796-7260.



*Corrina Fox gives a presentation at an Arundo workshop hosted by BCRAGD, Hill Country Alliance, and TPWD to educate landowners on the noxious weed.*





# Education & Outreach Programs

## Water Conservation Programs & Natural Resource Stewardship

The District prioritizes the conservation of Bandera County's surface and groundwater, as well as the stewardship of natural resources as a whole. This priority is reflected in the execution of District programs and initiatives, as well as being an integral part of the District's overall Education and Community Outreach Program.

Annually, BCRAGD hosts a Water Conservation Christmas Event. During FY 2018, this public event was on 12/21/17 and featured a watershed protection and conservation presentation.



The Nueces River Authority Water Resource Stewardship Program in collaboration with BCRAGD heavily emphasizes water conservation, water quality protection, and natural resource systems to the 5th and 7th grade students in Bandera County throughout each Spring season. Our District sponsors and co-facilitates the program every year.



These pictures show the Education & Outreach Manager, Corrina Fox, demonstrating the impact of water pollution to Bandera Middle School students.

District staff serve on various local groups focused on water conservation and watershed protection:

- Attended and presented with Nueces River Authority Water Resource Stewardship 03/19/18, 03/28/18, and 05/01/18 as part of Education and Community Outreach at Bandera and Medina ISDs. The District also participated in BMS Tinker Tuesday on 11/28/17 & 12/12/17.
- BCRAGD Education and Outreach Coordinator serves on the local Ag and Natural Resource Committee and attended the Ag & Natural Resources Committee Meetings on 11/07/17, and 02/27/18.
- Multiple staff serve on the Medina River Protection Fund Board (MRPF), which meets numerous times at the District office during the Spring to organize the annual Medina River Clean up which

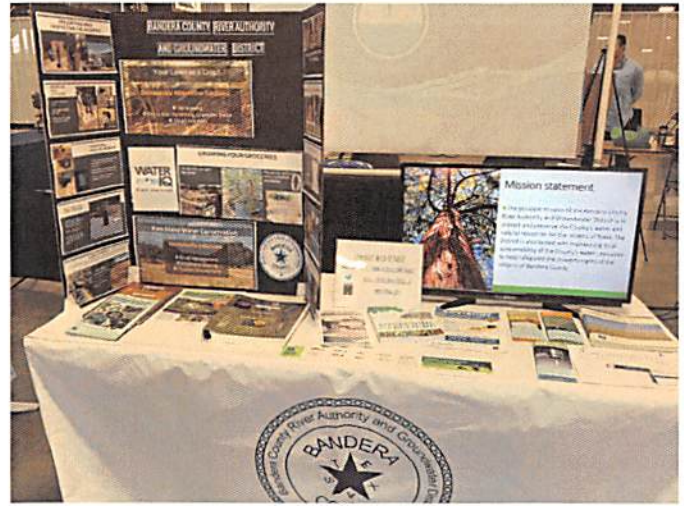


# Education & Outreach Programs

## Water Conservation Programs & Natural Resource Stewardship

- was held on May 5th, 2018. The District contributes toward the clean up each year. Staff also attended the MRPF meeting on 02/07/18, 3/28/18, and 5/3/18.
- Two BCRAGD staff are members of Lake Medina Conservation Society (LAMCOS) and several staff members attended the LAMCOS meeting on 1/08/18.
- BCRAGD attends meetings with the Madrona Garden & Social Club. For FY 2018, the meetings were held on 12/12/17 and 4/19/18. Our District also assisted in the Alkek Elementary Native wildflower planting with Madrona Garden & Social Club on 11/2/17. On 12/07/17, District Staff attended the Madrona Social/Garden Club Christmas Event.
- On 04/25/18, BCRAGD staff attended TWRI Stream and Riparian Ecosystems- in Goliad for area residents interested in land and water stewardship in the Mission, Aransas, and Lower San Antonio watersheds.
- On 12/06/17, BCRAGD staff attended the SCT-WRIG Meeting.
- On 12/11/17, BCRAGD attended the RLAT Board Meeting.

The District continues to partner with local entities to educate the community on natural resource stewardship. Bandera's Texas A&M AgriLife Extension Service (AgriLife) and Texas Parks and Wildlife and Hill Country Alliance (HCA) have been essential partners in various community outreach efforts. BCRAGD staff attended a Rainwater Revival Event hosted by HCA on 11/04/17. Also hosted by HCA the Education and



The picture above shows the BCRAGD table at the Hill Country Alliance's Texas Water Symposium.

Outreach Manager attended the Texas Water Symposium on 5/30/18.

The District team also attended the TWCA Conference in Montgomery where General Manager Dave Mauk and Douglas J Schnoebelen of USGS presented over the "Development of a Flood Warning Tool Set for Bandera Texas" on 6/14/18-6/15/18.



The picture to the right shows General Manager, Dave Mauk, and Doug Schnoebelen of the USGS giving a presentation at the TWCA Conference on June 14-15, 2018.



# Education & Outreach Programs

## Annual Medina River Cleanup

The Medina River Cleanup is an annual event that is held the first Saturday in May, and supports a healthy ecosystem through the organization of volunteers to remove trash and debris from the Medina River. BCRAGD supports and participates annually through donation and advertising in local papers, radio ads, District social media, the District's website, and at the District's office.

For FY 2018, the 18th annual Medina River Clean Up, our district staff volunteered, along with BCRAGD Director Don Sloan. There were about 206 participants from 27 cities and towns in Texas that attended, and two large dumpsters were filled with debris removed from the river- one of which was full of metal that was recycled. Kerrville Recycling measured 3,180 lbs. of scrap metal retrieved from the river on cleanup day, 900 lbs. less than last year's cleanup. A second dumpster was filled with trash that could not be recycled.

The recycling effort produced dividends for the Medina River Protection Fund, which hosts the clean-

up each year. Kerrville Recycling loaned the dumpster and contributed the \$180 collected from recycling the metal.



Above are the logos for the Lake Medina Conservation Society and the Medina River Cleanup. The picture to the left shows the volunteers and their haul from the Medina River Cleanup.



# Resource Planning & Collaboration

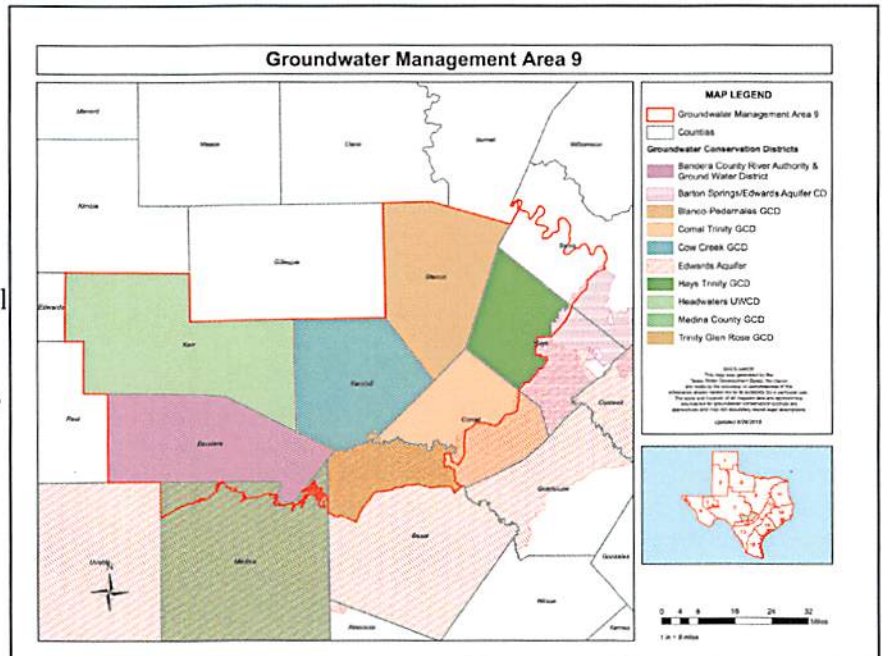
## Groundwater Management Area 9 (GMA-9) Representative

Groundwater Management Areas were created “in order to provide for the conservation, preservation, protection, recharging, and prevention of waste of the groundwater, and of groundwater reservoirs or their subdivisions, and to control subsidence caused by withdrawal of water from those groundwater reservoirs or their subdivisions, consistent with the objectives of Section 59, Article XVI, Texas Constitution, groundwater management areas may be created...” (Texas Water Code §35.001) Added by Acts 1995, 74th Leg., ch. 933, §2, eff. Sept. 1, 1995.

BCRAGD has been a member of GMA-9, a regional water management group since 2005. More information on the group, including data and reports can be found at [http://www.twdb.texas.gov/groundwater/management\\_areas/gma9.asp](http://www.twdb.texas.gov/groundwater/management_areas/gma9.asp)

Our District's involvement is summarized below:

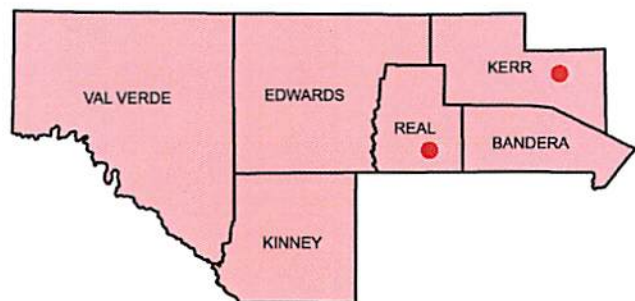
- Attended and represented the District at the GMA 9 public meetings on 1/29/18.
- Supplied groundwater data to TWDB for determination of aquifer conditions.
- Maintained program to require measurement of permitted well usage as required by the state to determine water usage for the county.
- Attended adjacent GMA meetings for DFC's compliant strategies.
- District Management Approved by TWDB on 3/18/18.
- GMA-9 re-adopted the DFC on April 18th, 2016.



Map of GMA-9

## Region J - Plateau Regional Water Planning Group

BCRAGD is a representative Groundwater Conservation District on the Region J Plateau Regional Planning Group, and represents Bandera County in the design of viable water management strategies in the region. BCRAGD attends planning group meetings, and proactively participates with Region J's consultants in the creation of the Region J Water Plan. The Region J Meetings that were attended by BCRAGD staff were on 11/9/17, 1/4/18, 5/17/18, 9/6/18.



Map of Region J - Plateau Regional Water Planning Group.



# Resource Planning & Collaboration

## *Texas Alliance of Groundwater Districts Member*

Founded in 1988, the Texas Alliance of Groundwater Districts (TAGD) “works to promote and support sound management of groundwater based on local conditions and good science. TAGD provides educational and technical assistance to member districts and the public, serves as a resource on groundwater issues with state officials, assists members in keeping current with state law, and is a central point of contact for information on groundwater issues and practices.” (excerpt from TAGD’s website, <http://www.texasgroundwater.org/>). During FY 2018, BCRAGD remained an active member:

- BCRAGD General Manager served as a representative on the Legislative Committee
- The District’s General Manager was invited to speak during a Texas Alliance of Groundwater Summit.



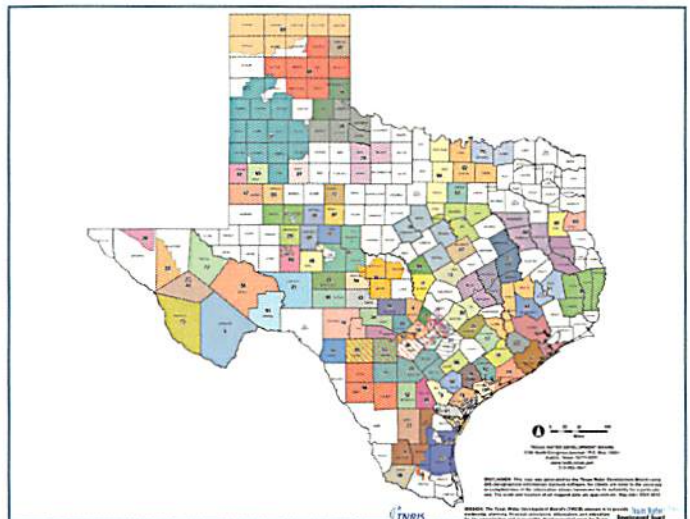
Several Members of The District attended the Groundwater Summit from 8/28/18-8/30/18. The District also attended TAGD Leadership Training on 11/16/17, and the TAGD Meeting regarding Public Funds Investment Act training. BCRAGD also attended the general business meeting held on 1/30/18-1/31/18.

## *GSA BBASC Environmental Flows*

BCRAGD is a member of the Guadalupe, San Antonio, Mission, and Aransas Rivers and Mission, Copano, Aransas, and San Antonio Bays Basin and Bay Stakeholder Committee (GSA BBASC). It was “created by the 80th Texas Legislature in recognition of the importance that the ecological soundness of our riverine, bay, and estuary systems and riparian lands have on the economy, health, and well-being of our state”.

The above excerpt and more information can be found at the following website: [https://www.tceq.texas.gov/permitting/water\\_rights/wr\\_technical-resources/eflows/guadalupe-sanantonio-bbasc](https://www.tceq.texas.gov/permitting/water_rights/wr_technical-resources/eflows/guadalupe-sanantonio-bbasc)

District General Manager, Dave Mauk, serves as a BBASC Member, representing the Regional Water Planning Groups Interest Group.



There are about 99 Groundwater Conservation Districts in the State of Texas, and a good majority belong to the Texas Alliance of Groundwater Districts.

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## Articles, Publications, & Press Releases

# Articles / Publications / Press Releases

	<u>Article Title</u>	<u>Date</u>	<u>Newspaper Published</u>
1.	Flash Flood Public Information Meeting	10/19/2017	Bandera County Courier
2.	System Upgrading Flood Assessment Capabilities	11/1/2017	Bandera Bulletin
3.	Medina River Cleanup Returns May 5	4/25/2018	Bandera Bulletin
4.	Medina River Cleanup Welcomes Volunteers	5/2/2018	Bandera Bulletin
5.	Volunteers Backbone of Cleanup	5/9/2018	Bandera Bulletin
6.	Texas Commission on Environmental Quality: Notice of an Application for a water use Permit	5/9/2018	Bandera Bulletin
7.	River Cleanup Makes Big Haul	5/23/2018	Bandera Bulletin
8.	Sixth Graders Receive Conservation Lessons	6/6/2018	Bandera Bulletin
9.	Water use Limits Imposed in City	6/20/2018	Bandera Bulletin
10.	E. coli Levels in Area Waters Acceptable	6/27/2018	Bandera Bulletin
11.	Potentially Hazardous E. coli Levels Found	7/18/2018	Bandera Bulletin
12.	E. coli Bacteria Readings at acceptable Levels	7/25/2018	Bandera Bulletin
13.	Bacterial Concentration High at Park Site	8/1/2018	Bandera Bulletin
14.	Candidate Filing Period Ends Soon	8/8/2018	Bandera Bulletin
15.	Water District Notice of Public Hearing on Tax Rate	8/22/2018	Bandera Bulletin
16.	Getting Ready for New School Year	8/22/2018	Bandera Bulletin
17.	Extreme Conditions Trigger River Water Concerns	8/28/2018	Bandera Bulletin
18.	Groundwater District Tax Hike Approved	9/12/2018	Bandera Bulletin
19.	Youth Camp Stirring Environmental Concerns	9/19/2018	Bandera Bulletin





October 1, 2017 - September 30, 2018

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**Featured Newspaper Articles**



BCC 10/19/2017

**Bandera County**  
River Authority & Groundwater District  
Protecting & Preserving our Natural Resources

## *Flash Flood Public Information Meeting*

**October 28, 2017**

9:00 a.m.-11:00 a.m.

Bandera Electric Cooperative 3172 State Highway 16 N, Bandera, TX 78003

- The National Weather Service will present on local flash flood risks and community resources
- Bandera County Emergency Management will discuss how the public can sign up for mass communications about emergencies
- BCragd will give an update of progress on the Flood Protection Project in cooperation with the TWDB and USGS for Bandera County

Please RSVP by emailing [mayers@bcragd.org](mailto:mayers@bcragd.org) or calling BCragd at 830-796-7260



**Coffee and snacks  
will be served!**



Bandera County Courier, published October 19, 2017



# System upgrading flood assessment capabilities

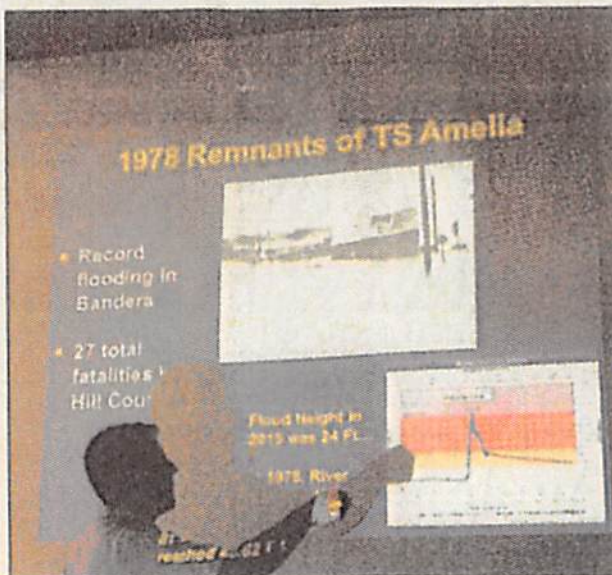
By **Chuck McCollough**  
Bulletin Staff Writer

The next time a massive rain storm strikes Bandera and residents remember the impact of past floods, they should be able to worry a little less.

The number of rain gauges on the Medina River in the area has grown from two to five and the sophistication of those gauges has improved as part of a project designed to improve the monitoring of potential flooding and to upgrade the area's early alert system, especially for flash flooding, officials said at a meeting on Saturday, Oct. 28.

Flooding and flash flooding events have killed 148 people in South and Central Texas in 21 years, officials with the Bandera County River Authority and Groundwater District said.

That includes 27 deaths in the Hill Country in 1978



BULLETIN PHOTO/Chuck McCollough

Paul Yura, a warning coordination meteorologist with the National Weather Service in New Braunfels, reviews information associated with past flooding, including the catastrophic flooding associated with Tropical Storm Amelia in 1978, during a Flash Flood Public Information Meeting in Bandera on Saturday, Oct. 28.

when Tropical Storm Amelia pummeled the area.

Now technology, science and data from past floods are being brought together with the goal of

reducing deaths from future flooding, and Bandera is at ground zero.

That was the message at the Bandera river authority's Flash Flood Informa-

tion Meeting on Saturday.

The meeting included an update on the flood protection grant awarded to Bandera County by the Texas Water Development Board. Also involved in that grant is the U.S. Geological Survey.

BCRAGD, Bandera County and Bandera's Economic Development Corp. are the local funding partners for the grant.

BCRAGD General Manager David Mauk said federal officials are looking at the ongoing improvements in Bandera's flash flood monitoring and early warning system as a teaching tool for other Texas towns.

"USGS has used the model we are implementing in the Midwest and other areas but not Texas. Bandera is the first to use the model, and USGS wants to tout our community as a model," Mauk said.

SEE FLOOD, PAGE A5

## FLOOD, CONTINUED from A1

A key message from the informational meeting concerned Bandera's topography and rocky underground that make it more likely floods will become flash floods than they would in areas that are flatter and have deep, sub-surface soil that can absorb

rainwater.

The flood monitoring model now in use in Bandera is ever evolving with each flooding or flash flood event presenting new data and insight into the flooding and flash flooding trends on the Medina River, officials said.

With multiple data collection points studying rain volume and rain frequency, models can be built to predict where and when a flash flood may occur through the Medina River basin.

With improved information, first responders and emergency management

officials locally should have a better idea about when and where to set up barriers at river crossings and to take other actions, including evacuations, that could save lives, said officials.

For more information on the improvements, go to [www.bcragd.org](http://www.bcragd.org).





COURTESY PHOTO

Some of the approximately 200 volunteers who turned out for the Medina River Cleanup in 2017 pose with dumpsters that were filled with a portion of the nearly three tons of trash that volunteers removed from the river and its banks during the event. It cleanup returns for its 18th edition on Saturday, May 5. Registration will start at 9 a.m. at Bandera City Park.

## Medina River Cleanup welcomes volunteers

### *Special to the Bulletin*

The rainfall that started Tuesday was a welcome sign to organizers of the Medina River Cleanup, which will return to Bandera City Park and throughout the length of the river in Bandera County, on Saturday, May 5.

If the rain continued to fall through the middle of the week, it could increase the water flow in the river enough to get more canoeists out to pull metal debris and other trash from the river and could open up some sections of the river that will be closed down during the event because they did not have enough water, said Bob Brischetto, who coordinates the cleanup.

Even if the rain stops, organizers expect to see about 200 volunteers turn out for the 18th annual cleanup like they did last year. A better water flow will mean more debris removal will be done in the river itself, rather than along the banks, where many of the teams are assigned.

The initiative, which the Medina River Protection Fund puts on every year, cleaned

out almost three tons of debris from the river last year.

Brischetto suspects that less trash will be removed this year because it's been over a year since the area has experienced a big flood, which is what carries away much of the trash and debris that needs to be removed by cleanup volunteers.

Still, he and others know it will be valuable community event that generates concern for the wellbeing of the river and helps make the revered natural resource look as good as it can for those who visit it.

David Mauk, the general manager of the Bandera County River Authority and Groundwater District, said it's an effective, well-run initiative that helps the district protect the county's valuable water resources.

"It's good for us, it's good for the community and it's good for the whole county," Mauk said.

Anyone can volunteer for the cleanup. Volunteers can register beginning at 9 a.m. on May 5 in Bandera City Park near the spillway at Highway 173. The main entry to the

park is at Eighth and Maple streets in Bandera.

There is no cost to participate. Volunteers will be assigned sections of the river to clean at registration if they are cleaning on land. Those who plan to paddle the river should consult with the head of one of the groups assigned to the 12 sections of the river that will be cleaned, officials said.

Those sections are identified and other information about the cleanup is provided online at [www.MedinaRiver.net](http://www.MedinaRiver.net).

Volunteers will receive breakfast tacos when they sign up and hot dogs for lunch. A barbecue dinner prepared by Bandera County Commissioner Bobby Harris' cooking team will be served beginning at 5 p.m.

Music also will be performed at the dinner by musician Rodney Joe Smith.

Organizers said the Pioneer River Resort will provide free tent camping for volunteers on Friday, May 4, and Saturday, May 5.

Brischetto can be reached at 210-413-7264 for more information. His email address is [rbrischetto@gmail.com](mailto:rbrischetto@gmail.com).

### Saturday, May 5

Organizers of 18th annual Medina River Cleanup are expecting about 200 volunteers to turn out to clean the 50-mile stretch of the river in Bandera County when the cleanup is held, beginning with registration at 9 a.m. There is no fee to take part in the cleanup, which is based in Bandera City Park near the Maple Street, Highway 173 South intersection. Breakfast, lunch and a barbecue dinner will be served to volunteers as part of a beautification project put on by the Medina River Protection Fund. Maps of the cleanup sections the river has been divided into and other information about the event can be found at [www.MedinaRiver.net](http://www.MedinaRiver.net).

5/2/18 Bulletin

Bandera Bulletin, published  
May 2, 2018



# VOLUNTEERS BACKBONE OF CLEANUP

C.Darus | Posted: Tuesday, May 8, 2018 3:11 pm



Alan McWilliams picks up trash near the Rugh Hill bridge in Bandera City Park on Saturday, May 5, as part of the 18th annual Medina River Cleanup that the Medina River Protection Fund put on. About 200 volunteers were expected to turn out to clean trash in the river and on the banks in an annual event designed to beautify the river and to get the community behind its overall well being.



COURTESY PHOTO

Some of the 206 volunteers who took part in the 18th annual Medina River Cleanup on May 5 gather for a photo in front of one of the dumpsters they filled with trash that day. Officials said 3,180 pounds of scrap metal were pulled from the river along with almost a ton of trash that could not be recycled.

## River cleanup makes big haul

### *Special to the Bulletin*

Bandera became the destination for packtrails from 27 towns throughout Texas and from Cambridge, Maryland

who helped clean the Medina River during the May 5 Medina River Cleanup, organizers of the event said.

A total of 206 volunteers, including area residents, came

to help out in the eighteenth year of the cleanup, officials said. The participants ranged in age from 1 to 90.

The cleanup was coordinated by the Medina River Protection Fund and received the cooperation of Bandera city and county government, as well as private businesses and individuals who contributed supplies and funds.

Sponsors included the Lake Medina Conservation Society, Bandera County Commissioners' Court, the City of Bandera, Bandera's Economic Development Corp., the Bandera Business Association, Bandera County River Authority and Groundwater District, Kerrville Recycling, Johnny Boyle Bandera True Value and Bandera Wine

& Spirits, H-E-B grocers, Pioneer River Resort and The Medina River Co.

Boy Scout Troops 501 from Cibola and Troops 346 and 145 from San Antonio took part, as did one Girl Scout troop from San Antonio.

Although no flooding preceded this year's cleanup, as much as 3,180 pounds of scrap metal left from prior floods were collected by the volunteers and were recycled.

Kerrville Recycling contributed the \$180 collected from the recycled metal to the Medina River Protection Fund, which puts on the cleanup.

A second dumpster was filled with nearly a ton of trash that could not be recycled, officials said.

Bandera Bulletin, published  
May 23, 2018



# Sixth graders receive conservation lessons

6/6/18  
Buletin



COURTESY PHOTO

Dale Bransford with the Texas Department of Parks and Wildlife shows how closely the skeleton of bats can resemble humans and the importance of bats in the environment during a program the Bandera Soil and Water Conservation District held for area sixth graders.

came from the U.S. Department of Agriculture, the Texas Department of Parks and Wildlife, the Bandera County River Authority and Groundwater District and from private enterprise.

Last Chance Forever, a birds of prey preservation and educational organization, gave a program on how raptors and birds of prey help the environment and nature. Hondo National Bank has sponsored that component of the program for many years, officials said.

Also at the event, Travis Langford, a former director with the Bandera SWCD, was presented a plaque of appreciation for his 17 years of service with the district.

For the 33rd year, the Bandera Soil and Water Conservation District has put on a program giving Bandera County sixth graders a look at aspects of conservation of the areas natural resources.

Approximately 150 students attended this year's program to see presentations by experts in their respective fields and to enjoy lunch that was served by directors of the district.

Topics covered at the meeting were grazing management of rangelands, bats, bees, soils and soil conservation, watershed management, ground-water and rainfall.

Speakers for the event

6/27/18

# E. coli levels in area waters acceptable

## For the Bulletin

E. coli levels in the Medina River, Medina Lake, Sabinal River and their tributaries were well below the level the Texas Commission on Environmental Quality considers potentially hazardous for humans when those levels were examined by water officials on July 14.

The Bandera County River Authority & Groundwater District examined nine locations on the two rivers and Medina Lake on July 14 and only found one spot – at Bandera City Park and the Highway 173 bridge – where the E. coli concentration came anywhere close to the level the TCEQ has set as the concentration at which human contact with the

water should be limited.

The commission's standard is that no "primary contact recreation" should take place when the reading exceeds 399 MPN, or most probable number, per 100 milliliters of water.

The reading at Bandera City Park was 211 MPN per 100 milliliters on July 14, BCRAGD officials found.

At no other sites that were tested did E. coli concentrations even approach 100 MPN and that was at Bandera City Park and First Street in Bandera. The reading there was 91 MPN.

The state commission recommends that when E. coli levels exceed 399 MPN, or most probable number, per 100 milliliters of water,

no "primary contact recreation" should take place.

"Primary contact recreation" is defined as any activity that result in the total submersion of a person's head under water.

Officials advised the public to never drink or ingest river water without proper disinfection and to recognize that any swimming is done at their own risk.

The river authority said any contact with water raises the possibility of an infection from E. coli or another waterborne illness.

Other readings reported by the river authority were 75 MPN in the Sabinal River and Utopia, 43 MPN at English Crossing on the Medina River, 39 MPN at

Ranger Crossing, 16 MPN at the Sabinal River and Lost Maples, 8 MPN at Moffett Park in Medina and less than 4 MPN at Medina Lake and the park at Park Road 37.

A test was planned for the Bandera River Ranch, but the river there was dry.

E. coli is bacteria from the gut of warm-blooded animals that can cause illness in humans when ingested.

BCRAGD periodically tests area waters for E. coli levels. Its lab is not a certified lab, so the results were released for informational purposes only, a news release said.

The sampling results can be found on the BCRAGD website, [www.bcragd.org](http://www.bcragd.org), or on the river authority's Facebook page, the release said.



July 18, 2018

## Potentially hazardous E. coli levels found

### For the Bulletin

Two sites on the Medina River had E. coli bacterial concentrations in excess of the level deemed potentially hazardous for people to be exposed to when the sites were tested by the Bandera County River Authority & Groundwater District on Wednesday, July 11, the groundwater district said.

Those sites were at English Crossing, where the E. coli concentrations reached 870 MPN, or most probably number, per 100 milliliters of water, and at Bandera City Park near Highway 173, where the concentration level was estimated at 582 MPN per 100 milliliters.

The Texas Commission on Environmental Quality has stated that when E. coli concentrations exceed 399 MPN, no "primary contact

recreation" should take place in that water, meaning no one should engage in activities there that could result in the total submersion of a person's head under water.

Groundwater district officials said the spikes may have been caused by recent rainfall washing runoff into the river in those areas. The district intends to take readings at the two sites again this week to see if the concentration levels are still high.

E. coli is a bacteria found in the gut of warm-blooded animals that is known to cause illness in humans if ingested, a release by the groundwater district said.

It said since there always is a risk of infection from E. coli or another waterborne illness, anyone swimming in rivers should be aware that the risk exists, and no one should drink river water if it has not

been properly disinfected.

The district regularly tests sites along the Medina and Sabinal rivers and on Medina Lake to measure E. coli concentrations.

In its latest assessment on July 11, nine sites were tested.

In addition to the two sites where an excessive amount of E. coli was detected, the other sites that were reviewed and their concentration levels were Medina Lake Park off Park Road 37, 12 MPN; Bandera River Ranch Park, 149 MPN; Bandera City Park and 1st Street, 187 MPN; Ranger Crossing, 219 MPN; Moffett Park in Medina, 197 MPN; the Sabinal at Lost Maples, 48 MPN; and the Sabinal in Utopia, 91 MPN.

The groundwater district does not operate a certified lab, so the bacterial numbers are provided for informational purposes only, officials said.



# GETTING READY FOR NEW SCHOOL YEAR

BULLETIN PHOTO/Bill Pack | Posted: Wednesday, August 22, 2018 12:53 pm

From left, Carol Niccum, Carlye Niccum, Travis Niccum and Alfred Quintero lean about a game testing their understanding of water issues that the Bandera County River Authority and Groundwater District put on during the Bandera Independent School District's Back to School Bash on Aug. 14. A variety of school and community groups manned tables at the event to help get students and parents ready for the beginning of the new school year on Monday, Aug. 27.



## Extreme 8/28 conditions trigger river water concerns

By Bill Pack  
bill@banderabulletin.com

A lengthy stretch of extreme heat and sparse rainfall have all but stopped the flow of the Medina and Sabinal rivers through Bandera County and have convinced officials with the Bandera County River Authority and Groundwater District that the rivers may be too contaminated for people to swim in.

Those concerns convinced the groundwater district to erect signs along the Medina River and to issue warnings about the Sabinal River early in August saying swimming in the waters "may be hazardous to your health."

"With 100-degree temperatures and no flow (in the rivers), we don't advise people to get in that water," said David Mauk, general manager of the BCRAGD.

Heavy rains that fell in the area a few weeks ago had the river authority considering whether to lift the warnings, but it decided against it. And now, conditions could be worse than they were before, said Mauk.

"It's just sitting there and baking," Mauk said about what little water remains in some areas of the rivers.

That increases the likelihood that contamination levels will rise in the rivers.

E. coli bacteria that comes from the gut of warm-blooded animals and can cause illnesses in humans if it is ingested has been found at levels exceeding the concentration that the Texas Commission on Environmental Quality considers safe for "primary contact recreation." That means activities that cause someone's head to be submerged totally under water.

A measurement on Aug. 16 showed one violation out of 10 sites that were tested for E. coli. That was on the Medina River in Bandera City Park near First Street, where the bacteria was found at a concentration of 523 MPN, or most probable number, per 100 milliliters of water.

That's 124 MPN above the threshold level the TCEQ sets as an indicator that the concentration has become potentially hazardous.

SEE WATER, PAGE A5

Bandera Bulletin, published August 28, 2018. Continued on next page.



Continued.

None of the other sites tested on Aug. 16 were within 258 MPN of the threshold, even at the Highway 173 bridge in city park just a little more than a mile from the First Street intersection with the river.

The sites were retested last week, and none of the sites exceeded the threshold level, but Mauk said *E. coli* is just one of the pathogens that could contaminate the water, particularly water that is not moving, and other contaminants could be worse.

"With these kinds of conditions, there could be other stuff in the water that could cause you some concern," the GM said. "As I like to say, there's a reason we chlorinate swimming pools."

Mauk said the river authority knew of anecdotal evidence showing that people had gotten sick from exposure to dangerous bacteria, but authorities can't be certain the exposure was from one of the rivers.

On Saturday, Aug. 25,



Bandera City Park was not heavily crowded with visitors, but several continued to lounge in or swim in the river, despite the warning signs advising visitors against swimming that were placed throughout the park.

Alyssa Ayala was with a group from San Antonio who had noticed the signs and detected a funny color in the water, but many in her group swam in the river anyway.

Ayala was one of them, but she said she did not get

her face under water and would make sure to take a good shower once she got home.

Mauk said much of the Sabinal River is so dry, there is not enough water for people to swim in. The same thing is arising in the Medina River, he said.

The river authority says in its periodic reporting about *E. coli* concentrations that people using rivers always face the possibility of an infection from *E. coli* or some other waterborne illness.

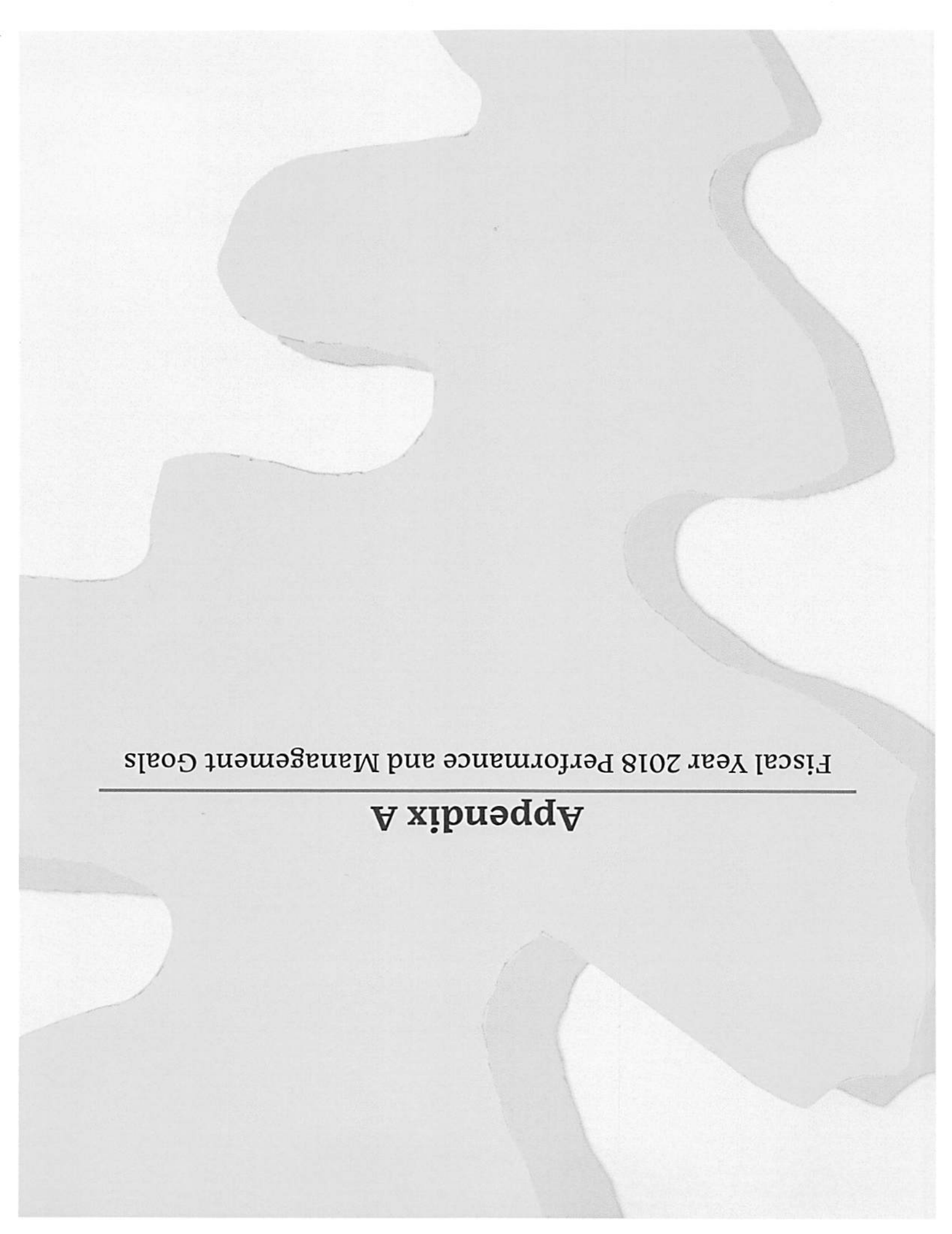
BULLETIN PHOTO/Bill Pack

One of the warning signs alerting visitors to potential health hazards in the Medina River is seen on a river bank in Bandera City Park. The Bandera County River Authority and Groundwater District has raised concerns after extreme weather left the Medina and Sabinal rivers with little water flow.

It advised visitors never to ingest river water without proper disinfection and to understand that they always swim at their own risk.

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Fiscal Year 2018 Performance and Management Goals

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## **Appendix A**

## The Necessity for Setting and Achieving Goals

The 75th Texas Legislature in 1997 enacted Senate Bill 1 (“SB1”) to establish a comprehensive statewide water planning process. In particular, SB1 contained provisions that required groundwater conservation districts to prepare management plans to identify the water supply resources and water demands that will shape the decisions of each district. SB1 designed the management plans to include management goals for each district to manage and conserve the groundwater resources within their boundaries.

Each year the Bandera County River Authority and Groundwater District’s staff prepares an annual report for the Board of Directors. This report outlines District activities and documents progress with fulfilling these management goals. Copies of this report are available for the public at the District’s office.

### **Management Goal 1**

#### **1.0.0 Manage groundwater in order to provide the most efficient use of groundwater resources.**

##### **1.1.1 Management Objective**

Implement a program to develop data on the aquifers for better modeling of the aquifers.

##### **1.1.2 Performance Standard**

- a. Collect pump test data from subdivision test wells after water availability studies are conducted.

➤ **0 pump tests were conducted for subdivision test wells in fiscal year 2018 because there were no pump tests conducted on subdivision test wells, therefore no data could be obtained.**

- b. Collect water level data from a minimum of 10 wells on a semi-annual basis.

Quarter 1 FY 2018 MT		Quarter 2 FY 2018 MT	
Well	Dec 2017	Well	Mar 2018
Bandera County Park	88	Bandera County Park	91.8
Bandera Sports Complex	0	Bandera Sports Complex	85.6
Basinger	272.4	Basinger	0
Bowie	220.2	Bowie	212.6
Boultinghouse	320.9	Boultinghouse	337.2
Boyle	0	Boyle	134.6
Bridlegate	224.2	Bridlegate	224.2



Bug Scuffle	276.3	Chancey	157
Chancey	189.3	Cielo Rio (Front)	192.3
Cielo Rio (Front)	190.8	Erfurt	22.7
Erfurt	23.2	Evans	204.8
Evans	203.6	Jeffery (yellow House)	153.5
Jeffery (yellow House)	154.4	Jeffery (Barn)	164
Lakehills Co Yard	112	Lakehills Co Yard	0
Lakeshore VFD	80.8	Lakeshore VFD	50.6
Light	47.3	Light	47.6
Lost Maples	390.4	Lost Maples	385.6
Mason Creek Deep	204	Mason Creek Deep	209.6
Mason Creek Shallow	181.3	Mason Creek Shallow	183.8
Medina Springs	149.3	Medina Springs	0
Orchard Park	37	Orchard Park	37.8
Sidney Shores	108.3	Sidney Shores	113.1
Tarpley VFD	51.4	Tarpley VFD	46.6
Tecon	85.8	Tecon	89
Vanderpool	34.4	Vanderpool	34.5
Williams	0	Williams	0
<b>Quarter 3 FY 2018 MT</b>		<b>Quarter 4 FY 2018 MT</b>	
Well	Jun 2018	Well	Sept 2018
Bandera County Park	102.3	Bandera County Park	91.3
Bandera Sports Complex	94.8	Bandera Sports Complex	97.7
Basinger	317.8	Basinger	0
Bowie	215.4	Bowie	0
Boultinghouse	354.2	Boultinghouse	340.8
Boyle	119.6	Boyle	112.2
Bridlegate	224.9	Bridlegate	219.8
Chancey	196.7	Chancey	176
Cielo Rio (Front)	197.6	Cielo Rio (Front)	192.2
Erfurt	25.6	Erfurt	18.6
Evans	208.4	Evans	202.2

Jeffery (yellow House)	157.6	Jeffery (yellow House)	157.4
Jeffery (Barn)	169	Jeffery (Barn)	165.8
Lakehills Co Yard	130.7	Lakehills Co Yard	56.2
Lakeshore VFD	48.6	Lakeshore VFD	37.8
Light	47.8	Light	39.4
Lost Maples	395.6	Lost Maples	394
Mason Creek Deep	248.3	Mason Creek Deep	222.1
Mason Creek Shallow	198.6	Mason Creek Shallow	192.1
Medina Springs	0	Medina Springs	123.2
Orchard Park	40	Orchard Park	34
Sidney Shores	122.4	Sidney Shores	109.5
Tarpley VFD	53.2	Tarpley VFD	44.8
Tecon	92	Tecon	91.4
Vanderpool	34.4	Vanderpool	0
Williams	0	Williams	0
<b>Quarter 1 FY 2018 LT</b>		<b>Quarter 2 FY 2018 LT</b>	
Well	Dec 2017	Well	Mar 2018
Alkek	0	Alkek	0
Bandera City	418.6	Bandera City	408.2
Bandera Sports	0	Bandera Sports	348.8
Bridlegate LT	357.7	Bridlegate LT	350
Cielo Rio	261.4	Cielo Rio	261.4
Flying A	0	Flying A	0
Latigo	423.3	Latigo	425
TxDot	362	TxDot	361.4
<b>Quarter 3 FY 2018 LT</b>		<b>Quarter 4 FY 2018 LT</b>	
Well	Jun 2018	Well	Sept 2018
Alkek	436.1	Alkek	403.4
Bandera City	429.9	Bandera City	415.7
Bandera Sports	354.7	Bandera Sports	354.8
Bridlegate LT	383.3	Bridlegate LT	376.6
Cielo Rio	304	Cielo Rio	264.6



Flying A	0	Flying A	0
Latigo	429.9	Latigo	426.8
TxDot	360.9	TxDot	361.8
<b>Quarter 1 FY 2018 Edwards-Trinity</b>		<b>Quarter 2 FY 2018 Edwards-Trinity</b>	
Well	Dec 2017	Well	Mar 2018
Edwards	248.16	Edwards	248.87
<b>Quarter 3 FY 2018 Edwards-Trinity</b>		<b>Quarter 4 FY 2018 Edwards-Trinity</b>	
Well	Jun 2018	Well	Sep 2018
Edwards	249.11	Edwards	248

**1.2.1 Management Objective**

Maintain a program of issuance of well permits for non-exempt wells and registrations for exempt wells.

**1.2.2 Performance Standard**

Maintain an ongoing program of issuance of well permits each year. Provide the number of permits issued each year and the number of registrations issued each year in an annual report to the Board of Directors.

- 4 Permits Issued
- 111 Registrations Issued

**Management Goal 2**

**2.0.0 Control and prevent the waste of groundwater.**

**2.1.1 Management Objective**

Provide literature to the public on the efficient use of water and water saving devices in the home.

**2.1.2 Performance Standard**

- a. Provide handouts with well permits and registrations to educate the public on water saving devices. The District will report the number of handouts with well permits and registrations in an annual report to the Board of Directors.

- For every well permit and registration, literature was provided. There were a total of 4 well permits and a total of 111 well registrations issued in the 2018 fiscal year.

b. Coordinate a minimum of one public presentation per year. Provide the number of shows, demonstrations, events, or educational talks at which literature or information is provided to the public, in an annual report to the Board of Directors.

- Water conservation literature is provided at all District public meetings. (11 meetings): 10/12/2017, 11/16/2017, 12/21/2017, 01/11/2018, 02/08/2018, 04/12/2018, 06/22/2018, 07/12/2018, 08/16/2018, 09/06/18, 09/20/2018.
- On October 28th, 2017, the District, in conjunction with NWS and Emergency Management, gave a Flash Flood Public Information Meeting at BEC.
- On November 2nd, 2017, the District's Education & Outreach Coordinator provided education and information when assisting the Alkek Elementary Native Wildflower planting with Madrona Garden Social Club.
- On November 4th, 2017, BCragd's Education & Outreach Coordinator had a booth at the Hill Country Alliance Rainwater Revival in which she handed out literature, provided information, and answered questions.
- On November 18th, 2017 the District's Education & Outreach Coordinator facilitated a water resource presentation followed by an aquifer model build activity to demonstrate aquifer science for the Expanding Your Horizons Educational Event. This event is sponsored by Schreiner University for 6th-8th grade female students, specifically promoting STEM (science, technology, engineering, and mathematics). During this event, the Education & Outreach Coordinator handed out water conservation literature, rainwater harvesting manuals, flood awareness information, and invasive species management literature.
- On November 16th, 2017, BCragd's Groundwater Operations Manager facilitated training in Salado, TX as a member of the Texas Alliance of Groundwater Districts. There, he covered aquifer science, equipment types for measuring static levels of wells, as well as proper record keeping procedures. BCragd General Manager, D. Mauk, continues to serve on TAGD's Legislative Committee.
- On November 28th & December 12th, 2017, BCragd's Education & Outreach Coordinator provided educational information for Tinker Tuesday at Bandera Middle School.



- On December 21st, 2017, BCRA GD held their annual Christmas Celebration of Collaborations and Water Conservation. Literature and information on Water Conservation was provided to the public.
- On January 8th, 2018, BCRA GD's River Authority Operations Manager, Intergovernmental Affairs Manager, and Chief Data Officer attended the LAMCOS Meeting at which the River Authority Operations Manager presented over invasive species.
- On January 25th-27th, 2018, BCRA GD's River Authority Operations Manager presented his professional and academic graduate school thesis at the TCAFS conference regarding information about landscape influences on fish in the state of Texas, New Mexico, and Oklahoma.
- On February 7th and March 26th, 2018, BCRA GD's General Manager, Education & Outreach Manager, and River Authority Operations Manager hosted and attended the Medina River Protection Fund Meeting in which information was given out and literature was provided.
- On February 27th, 2018, BCRA GD's General Manager, Data Chief Officer, and River Authority Operations Manager attended the West Gulf River Forecast Center Presentation hosted by the Medina Lake Betterment Association at the Lakehills Civic Center. The West Gulf River Forecast Center gave a presentation over what they do and how they serve the community and Bandera County Emergency Management gave a presentation over emergency mass communications. BCRA GD's General Manager gave a presentation over the flood project update.
- On March 6th-9th, 2018, BCRA GD's General Manager and Education & Outreach Manager attended the TFMA Conference and Training where General Manager D. Mauk gave a presentation over the flood project update.
- On March 28th, 2018, the District's Education & Outreach Manager, in collaboration with Nueces River Authority, presented information to 7th grade environmental students at Bandera Middle School. Students participated in a hands-on activity to replicate how pollution moves through a river basin to the ocean. A model representing two types of Aquifers was used to demonstrate how pollutants move through the Aquifer to contaminate the Groundwater. Students discussed and learned ways to protect the Watershed and groundwater from pollutants and were given litter bags to collect debris near rivers and streams.
- On May 1st, 2018, BCRA GD's Education & Outreach Manager gave a presentation to 5th grade Hill Country Elementary students over water

conservation and watershed protection to 85 students with Nueces River Authority.

- On June 1st, 2018, the District's Education & Outreach Manager gave a Water Conservation Presentation and Workshop for Bandera SWCD to 6th graders at Mansfield Park with the NRA.
- On June 14th & 15th, 2018, BCRAGD's Education & Outreach Manager, Office Manager, and General Manager attended TWCA. At this conference, General Manager D. Mauk gave a presentation over the "Development of a Flood Warning System in Bandera County" with Douglas J. Schnobelen of USGS.
- On June 28th, 2018, BCRAGD's River Authority Operations Manager gave a presentation to the community regarding information on combating the invasive species, *Arundo donax*. This workshop event was held at the District office and was hosted by BCRAGD, Hill Country Alliance, and the Texas Parks and Wildlife for Bandera County landowners. Residents learned the importance of maintaining Riparian Ecosystems, how to identify *Arundo donax*, and how to properly control it. Land owners were given an opportunity to sign up and partner with BCRAGD and Texas Parks and Wildlife in a joint on-going project to map and control *Arundo donax* in the Northern part of the Medina River area. Also in attendance were BCRAGD's Education & Outreach Manager, Office Coordinator, General Manager, Texas Parks & Wildlife, The Nature Conservancy, and Hill Country Alliance.
- On August 14th, 2018, BCRAGD's Education & Outreach Manager and Office Coordinator represented the District at Bandera Middle School's "Back to School Bash." The event included organizations, professionals, groups, and businesses from the community. BCRAGD tested community member's knowledge of water by having them play a fun, engaging game where they answered questions regarding water issues. Participants could win a raffle ticket for each question answered correctly. The raffle prize was a basket full of school supplies and contained useful water saving items and information. This event was a great platform to educate community members about current water conservation issues and to teach the community ways to conserve water.
- On August 31st, 2018, the District's General Manager, D. Mauk, gave a Flood Warning System Presentation at the South Central Texas Emergency Managers Meeting in Bandera.
- On September 13th, 2018, BCRAGD's General Manager gave a Texas Natural Resources Committee Testimony Presentation on Interim Charge 8. The Powerpoint Presentation studied the hazards presented by abandoned and



deteriorated groundwater wells and made recommendations to address the contamination and other concerns these wells represent.

- On September 29th, 2018, BCRA GD General Manager and Data Chief Officer attended and gave a presentation in San Antonio entitled “All You Want to Know About Flood Prevention.” Both employees provided information and spoke about flood prevention monitoring.
- Additional information is posted regularly on the District’s website at [www.bcragd.org](http://www.bcragd.org) and on BCRA GD’s Social Media Pages including Facebook, Twitter, and the upcoming Instagram page beginning FY2019.

#### **2.2.1 Management Objective**

Promote public awareness about preventing the waste of water resources.

#### **2.2.2 Performance Standard**

Record the number of speaking appearances and/or shows, demonstrations, or events at which literature or information is provided to the public on preventing the waste of water resources. The District will report the number of aforementioned events in the annual report to the Board of Directors.

-See 2.1.2 B

### **Management Goal 3**

#### **3.0.0 Control and prevent subsidence.**

The control and prevention of subsidence is not a concern of this District as the formations are carbonates and do not contain the water saturated clays which can cause subsidence if dewatered; therefore, this management goal is not applicable to the District.

### **Management Goal 4**

#### **4.1.0 Address conjunctive surface water management issues.**

##### **4.1.1 Management Objective**

Make at least one annual evaluation of the groundwater resources and surface water quality in Bandera County and include the results of the evaluation in the annual report to the Board of Directors.

##### **4.1.2 Performance Standard**

- a. Record the number of reports and evaluations provided to the Board of Directors on the groundwater resources and the surface water quality in the annual report.

- The General Manager gives a District Report of Groundwater Resources and the Surface Water Quality to the Board at every Quarterly Meeting. (4 meetings total in FY2018- 10/12/2017, 01/11/2018, 04/12/2018, 07/12/2018.)
- The General Manager gives a complete Groundwater Resources and Surface Water Quality Report every fiscal year to the Board of Directors during the April Quarterly Meeting.
- For complete Groundwater Annual Evaluation Report, please refer to Management Goal 13.1.2.

### **Annual Evaluation of the Surface Water Quality in Bandera County FY 2018**

**Summary of Surface Water Sampling Events: From October 2017 to September 2018, there were 224 samples taken between the Clean Rivers Program and the District's In-House Surface Water Quality Testing Program. There were 4 instances with E. coli counts over the TCEO standard of 399 MPN (Most Probable Number) per 100 mL of sample water. Medina Lake began with the water level at 74.5% on October 1, 2017, and ended at 68.8% on September 30, 2018.**

#### **Medina Lake Evaluation:**

Per Texas Water Development Board's Water Data for Texas website:

FY 2018 Quarter	Date	Capacity (% full)
1st	October 1, 2017 December 31, 2017	74.5% 66.5%
2nd	January 1, 2018 March 31, 2018	66.5% 61.0%
3rd	April 1, 2018 June 30, 2018	60.9% 52.4%
4th	July 1, 2018 September 30, 2018	52.2% 68.8%



**Clean Rivers Program:**

BCRAGD partnered with SARA to participate in the Clean Rivers Program in the San Antonio River Basin in 2012. BCRAGD staff are responsible for sampling 8 sites, which are in Bandera County, and summarized to the right. FY 2018 CRP sample dates were November 1 & 14, 2017, February 13 & 15, 2018, April 11 & 18, 2018, and June 7 & 12, 2018.

At the end of FY 2016, BCRAGD added five CRP sites on Medina Lake along with one CRP site on Diversion Lake, partnering with SARA. The sample dates for Medina Lake were October 10-11, 2017, February 27-28, 2018, May 16 & 24, 2018, and August 14-15, 2018. The sample dates for Diversion Lake were November 15, 2017, February 7, 2018, April 24, 2018, and August 7, 2018.

BCRAGD partnered with Nueces River Authority (NRA) in 2016 to participate in the Clean Rivers Program in the Nueces River Basin. BCRAGD staff are responsible for 3 sites shown in the chart to the right. The FY 2018 sample dates for the Nueces River Basin was November 21, 2017, January 22, 2018, May 9, 2018, and August 22, 2018.

Station ID	Site Name
	<b><u>Medina River CRP</u></b>
12830	Medina R. @ English Crossing
18447	North Prong Medina R. @ Hwy 16- Wallace Creek
13638	Medina R. @ S Hwy 173 (Bandera City Park)
12832	Medina R. @ FM 470-Tarpley Crossing
21125	Medina R. @ Moffett Park
21126	N. Prong Medina R. @ FM 2107- Brewington
21631	Medina R. @ Mayan Ranch
15736	W. Prong Medina R. @ Coalkiln Rd.
	<b><u>Medina Lake CRP</u></b>
12829	Medina Lake Mid near Headwater
12828	Medina Lake between Cypress & Spettel Coves
12827	Medina Lake @ Mormon Bluff
12826	Medina Lake near Red Cove
12825	Medina Lake @ ML Dam West of San Antonio
	<b><u>Diversion Lake CRP</u></b>
14205	Medina R. Downstream Medina Reservoir in Mico, TX @ low water crossing
	<b><u>Nueces River CRP</u></b>
21948	Sabinal R. @ FM 187 S. of Utopia
13017	Seco Creek @ RR 470

14939	Sabinal River @ FM 187
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**CRP water quality data can be viewed at:**

<http://www80.tceq.texas.gov/SwqmisWeb/public/crpmap.html>

**In-house sampling:** This surface water sampling program was initiated in order to monitor water quality throughout Bandera County. It has been modified to better serve the community by increasing the number of sites for a more representative data collection, and reporting E. coli counts via local newspapers to the citizens of Bandera County for safety. From October 2017 to September 2018, there were 4 instances with E. coli counts over the TCEQ standard of 399 MPN (Most Probable Number) per 100 mL of sample water. The District recommends no swimming to take place in areas where the count is over the limit. That sample site area is then investigated, beginning with a re-sample effort, and further investigation if the count remains above the standard (see dates on 12.2.2).

MR-2.05	Medina R. Bandera City Park @1 <sup>st</sup> St.	MR-3.05	Medina R. @ Ranger Crossing HWY 16
MR-1.02	Medina R. @ Bridlegate Park	MR-3.01	Medina R. @ RR 377
MR-1.03	Medina R. @ Bandera River Ranch	BC-2.01	Bandera Creek @ SH16
MR-2.03	Medina R City Park—Hwy 173	LMC-2.01	Lower Mason Creek @ Chipman Ln.
MR-1.01	Medina R. @ English Crossing	MR-2.025	Above Sewage Treatment Plant Effluent
LM-4.03	Sabinal R. @ Lost Maples 1 <sup>st</sup> Bridge	WVC-2.01	Hill Country State Natural Area @ FM 1077
MP-3.01	Medina R. @ Moffett Park	ML-1.04	Medina Lake @ County Park NE of ramp
MRN- 3.01	Medina R.-FM 2107 @ Rocky	MRW-3.03	W. Prong Medina R. @ Carpenter Creek
MR-3.04	Medina R. @ Tarpley Crossing	CC- 4.01	Sabinal R @ Cornelius Crossing
WC-3.01	North Prong. @ Wallace Creek	WC-4.01	Sabinal R @ Williams Creek Crossing
MRN-3.03	Medina R @ Brewington Crossing FM 2107	SC-4.01	Seco Creek @ RR 470 Crossing
MRW-3.01	W. Prong Medina R @ Coal kiln Rd FM 337	UTOP	Sabinal R @ Utopia City Park
SR-4.03	Sabinal R. @ Vanderpool		



## **Annual Evaluation of the Groundwater Resources in Bandera County FY 2018**

### **INTRODUCTION**

The desired future condition (DFC) of the Trinity Aquifer for Bandera County was adopted by the District's Board based on the Texas Water Development Board's (TWDB) 2008 model run and Groundwater Availability Model (GAM) Run 10-005. A maximum of 30 ft. of drawdown after 50 years for the Trinity Aquifer was adopted, which was a total for both the Middle and Lower Aquifers. The Upper Trinity Aquifer does not supply sufficient water and is generally not used in Bandera County, therefore, it was not used in the TWDB 2008 model run or the GAM Run 10-005. The District's Board readopted the above DFC's in 2015 and was provided GAM Run 16-023.

Also included in this groundwater evaluation report, are the reports of non-exempt and exempt use. The non-exempt use estimate is provided by groundwater permit holders on an annual basis, which is attached. The exempt use estimate is provided by TWDB and can be found in the District's Management Plan adopted March 18, 2018.

### **FY 2018 EVALUATION**

For the Hill Country Trinity Aquifer DFC evaluation, the 2008 July monitor well levels were used as the comparing factor in order to stay consistent with the first GAM run for the DFC process, GAM Run 10-005. An average level was calculated for each monitor well using data points taken throughout FY 2018. These averages were then compared to the 2008 water level measurements and these differences were recorded in the "FY 2018 DFC Achievement" document. New monitor wells that were added to the network before the beginning of FY 2018, use the first well measurement and then compared to the FY 2018 average. A Lower Trinity monitor well located in Kerr county was also used in this study because the well was close in proximity to the Bandera-Kerr County line.

There is only one monitor well for the Edwards-Trinity Plateau DFC evaluation because the aquifer is located in high elevations, so very few residential wells are utilizing it for water needs. Therefore, the estimates for domestic (exempt) use in the aquifer are small. In addition, District rules prohibit production permits for the use of Edwards-Trinity Plateau aquifer. The DFC evaluation for the Edwards-Trinity Plateau can be found in the "FY 2018 DFC Achievement" document.

The USGS 7.5 grid was used to obtain a better County-wide average. The majority of the monitoring well data is located in the eastern part of the County. To improve the evaluation of the County as a whole, water levels in each grid were averaged, then the average of all of the grids was taken for the Hill Country Trinity Aquifer total average within Bandera County.

## **RESULTS OF THE DFC EVALUATION**

The average loss or gain for monitor wells in their respective grids are shown in the “FY 2018 DFC Achievement” document. County maps with the grid averages are found in Figures 1 and 2 for each the Middle Trinity and Lower Trinity Aquifers. The Middle Trinity Aquifer had a gain of +9.68 ft. and the Lower Trinity Aquifer had a loss of -23.84 ft. for FY 2018. The Trinity Aquifer, overall, had a loss of -7.08 ft. in FY 2018 for compliance of the DFC.

## **FUTURE CONSIDERATIONS**

For future evaluations, below are a few bulleted items that may need to be addressed in future studies:

- The over abundance of groundwater data on the eastern side of the county could possibly bias the results of this evaluation. However, by utilizing the grid system, bias becomes minimal.
- There is a lack of Lower Trinity Well data across the county.
- More monitor wells in the western half of the county will ultimately assist with the comparison across the county.

**\*\*\*For complete Groundwater Annual Evaluation Report, please refer to Management Goal 13.1.2.\*\*\***

- b. Maintain at the District Office an annual report of District activities available to the public.

➤ **The annual report, annual financial audit, and the budget are readily available at the District and on the District’s website for the public to view or copy.**

### **4.2.1 Management Objective**

Each year the District will participate in the regional planning process by attending Region J Regional Planning Group meetings.

### **4.2.2 Performance Standard**

The attendance of a district representative at any Region J Regional Planning Group will be noted in the annual report to the Board of Directors.

- **On November 9th, 2017, the District’s Groundwater Operations Manager attended the Region J Meeting in Leakey, TX.**
- **On January 4th, 2018, BCRAGD’s Groundwater Operations Manager attended the Region J Meeting in Kerrville, TX at UGRA.**



- **On May 17th, 2018, the District's Groundwater Operations Manager and Hydrogeologist Consultant attended the Plateau Water Planning Group Region J Meeting in Leakey, TX.**

## **Management Goal 5**

### **5.0.0 Address natural resource issues.**

#### **5.1.1 Management Objective**

The District is an active participant in the TCEQ Clean Rivers Program. This program is the gold standard in Texas for monitoring the water quality in the State. The District also tests groundwater from newly drilled wells and existing wells. The District will investigate, or refer to the proper agency, any citizen's or District initiated complaint related to surface water, groundwater, or any natural resource within the District. These investigations are a valuable tool to help the District protect the natural resources in the County.

#### **5.1.2 Performance Standard**

The General Manager will report the number of nuisance complaints, Notice of Violations issued, natural resources investigations, surface water tests, and groundwater tests to the Board of Directors in an annual report.

- **Nuisance Complaints: 12 total**
- **Notice of Violations: 1 total**
- **Illegal Dumping Mitigation Cases Resolved: 0 total**
- **Total Surface Water Test samples taken (including CRP): 224; see 4.1.2B**
- **Total number of Groundwater Tests: 335**
- **Both (Bacteria & Mineral)-170**
- **Bacteria Only-132**
- **Mineral Only-33**

## **Management Goal 6**

### **6.0.0 Address drought conditions.**

#### **6.1.1 Management Objective**

Record the Drought Severity Index each month and when drought conditions exist, post the drought stage and any appropriate drought restrictions at the District's office.

#### **6.1.2 Performance Standard**

In conjunction with the drought index, the General Manager may utilize flow rates from the Sabinal and Medina Rivers to determine appropriate drought stages. The General Manager shall post the drought stage and any appropriate drought restrictions at the District's office each month.

- The appropriate drought stage is implemented when warranted by the Drought Management Plan. The Drought Stage is posted on the District's website, bulletin board, and on the sign at the road in front of the District's office. The appropriate drought stage is continuously posted at the Bandera County Courthouse. The drought stage is presented to the Board at every Quarterly Meeting.

#### **6.2.1 Management Objective**

Evaluate groundwater availability each year by monitoring water levels of the aquifer from monitor wells within Bandera County.

#### **6.2.2 Performance Standard**

Record number of wells monitored each year in the annual report to the Board of Directors.

- The District has a monitor well network that consists of 42 monitor wells that are monitored at least quarterly.

### **Management Goal 7**

#### **7.0.0 Address conservation**

##### **7.1.1 Management Objective**

Promote public awareness of the need for water conservation.

##### **7.1.2 Performance Standard**

A minimum of one public water quality/conservation show, demonstration, event, or educational talk will be held each year. The number of events, shows, or talks should be reported in the annual report to the Board of Directors.

- Everytime the District provides a public show, demonstration, event or educational talk, water conservation is either discussed or water conservation literature and/or information is provided.
- Water conservation literature is provided at all District public meetings. (11 meetings): 10/12/2017, 11/16/2017, 12/21/2017, 01/11/2018, 02/08/2018, 04/12/2018, 06/22/2018, 07/12/2018, 08/16/2018, 09/06/18, 09/20/2018.



- On October 28th, 2017, the District, in conjunction with NWS and Emergency Management, gave a Flash Flood Public Information Meeting at BEC.
- On November 2nd, 2017, the District's Education & Outreach Coordinator provided education and information when assisting the Alkek Elementary Native Wildflower planting with Madrona Garden Social Club.
- On November 4th, 2017, BCragd's Education & Outreach Coordinator had a booth at the Hill Country Alliance Rainwater Revival in which she handed out literature, provided information, and answered questions.
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conference regarding information about landscape influences on fish in the state of Texas, New Mexico, and Oklahoma.

- On February 7th and March 26th, 2018, BCRAGD's General Manager, Education & Outreach Manager, and River Authority Operations Manager hosted and attended the Medina River Protection Fund Meeting in which information was given out and literature was provided.
- On February 27th, 2018, BCRAGD's General Manager, Data Chief Officer, and River Authority Operations Manager attended the West Gulf River Forecast Center Presentation hosted by the Medina Lake Betterment Association at the Lakehills Civic Center. The West Gulf River Forecast Center gave a presentation over what they do and how they serve the community and Bandera County Emergency Management gave a presentation over emergency mass communications. BCRAGD's General Manager gave a presentation over the flood project update.
- On March 6th-9th, 2018, BCRAGD's General Manager and Education & Outreach Manager attended the TFMA Conference and Training where General Manager D. Mauk gave a presentation over the flood project update.
- On March 28th, 2018, the District's Education & Outreach Manager, in collaboration with Nueces River Authority, presented information to 7th grade environmental students at Bandera Middle School. Students participated in a hands-on activity to replicate how pollution moves through a river basin to the ocean. A model representing two types of Aquifers was used to demonstrate how pollutants move through the Aquifer to contaminate the Groundwater. Students discussed and learned ways to protect the Watershed and groundwater from pollutants and were given litter bags to collect debris near rivers and streams.
- On May 1st, 2018, BCRAGD's Education & Outreach Manager gave a presentation to 5th grade Hill Country Elementary students over water conservation and watershed protection to 85 students with Nueces River Authority.
- On June 1st, 2018, the District's Education & Outreach Manager gave a Water Conservation Presentation and Workshop for Bandera SWCD to 6th graders at Mansfield Park with the NRA.
- On June 14th & 15th, 2018, BCRAGD's Education & Outreach Manager, Office Manager, and General Manager attended TWCA. At this conference, General Manager D. Mauk gave a presentation over the "Development of a Flood Warning System in Bandera County" with Douglas J. Schnoebelen of USGS.



- On June 28th, 2018, BCRAGD's River Authority Operations Manager gave a presentation to the community regarding information on combating the invasive species, *Arundo donax*. This workshop event was held at the District office and was hosted by BCRAGD, Hill Country Alliance, and the Texas Parks and Wildlife for Bandera County landowners. Residents learned the importance of maintaining Riparian Ecosystems, how to identify *Arundo donax*, and how to properly control it. Land owners were given an opportunity to sign up and partner with BCRAGD and Texas Parks and Wildlife in a joint on-going project to map and control *Arundo donax* in the Northern part of the Medina River area. Also in attendance were BCRAGD's Education & Outreach Manager, Office Coordinator, General Manager, Texas Parks & Wildlife, The Nature Conservancy, and Hill Country Alliance.
- On August 14th, 2018, BCRAGD's Education & Outreach Manager and Office Coordinator represented the District at Bandera Middle School's "Back to School Bash." The event included organizations, professionals, groups, and businesses from the community. BCRAGD tested community member's knowledge of water by having them play a fun, engaging game where they answered questions regarding water issues. Participants could win a raffle ticket for each question answered correctly. The raffle prize was a basket full of school supplies and contained useful water saving items and information. This event was a great platform to educate community members about current water conservation issues and to teach the community ways to conserve water.
- On August 31st, 2018, the District's General Manager gave a Flood Warning System Presentation at the South Central Texas Emergency Managers Meeting in Bandera.
- On September 13th, 2018, BCRAGD's General Manager gave a Texas Natural Resources Committee Testimony Presentation on Interim Charge 8. The Powerpoint Presentation studied the hazards presented by abandoned and deteriorated groundwater wells and made recommendations to address the contamination and other concerns these wells represent.
- On September 29th, 2018, BCRAGD General Manager and Data Chief Officer attended and gave a presentation in San Antonio entitled "All You Want to Know About Flood Prevention." Both employees provided information and spoke about flood prevention monitoring.
- Additional information is posted regularly on the District's website at [www.bcragd.org](http://www.bcragd.org) and on BCRAGD's Social Media Pages including Facebook, Twitter, and the upcoming Instagram page beginning FY2019.

**-See 2.1.2 B**

### **7.2.1 Management Objective**

The District will contract with Nueces River Authority (NRA) or similar organizations to provide information on efficient use of groundwater to students in Bandera County.

### **7.2.2 Performance Standard**

The General Manager will report the instances that educational conservation information was given to students in Bandera County in the annual report to the Board.

- **On November 2nd, 2017, the District's Education & Outreach Coordinator provided education and information when assisting the Alkek Elementary Native Wildflower planting with Madrona Garden Social Club.**
- **On November 18th, 2017 the District's Education & Outreach Coordinator facilitated a water resource presentation followed by an aquifer model build activity to demonstrate aquifer science for the Expanding Your Horizons Educational Event. This event is sponsored by Schreiner University for 6th-8th grade female students, specifically promoting STEM (science, technology, engineering, and mathematics). During this event, the Education & Outreach Coordinator handed out water conservation literature, rainwater harvesting manuals, flood awareness information, and invasive species management literature.**
- **On November 28th & December 12th, 2017, BCRA GD's Education & Outreach Coordinator provided educational information for Tinker Tuesday at Bandera Middle School.**
- **On March 28th, 2018, the District's Education & Outreach Manager, in collaboration with Nueces River Authority, presented information to 7th grade environmental students at Bandera Middle School. Students participated in a hands-on activity to replicate how pollution moves through a river basin to the ocean. A model representing two types of Aquifers was used to demonstrate how pollutants move through the Aquifer to contaminate the Groundwater. Students discussed and learned ways to protect the Watershed and groundwater from pollutants and were given litter bags to collect debris near rivers and streams.**



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- Additional information is posted regularly on the District's website at [www.bcragd.org](http://www.bcragd.org) and on BCragd's Social Media Pages including Facebook, Twitter, and the upcoming Instagram page beginning FY2019.
- The District gave educational water related talks to local groups when requested.

## **Management Goal 8**

### **8.0.0 Address rainwater harvesting**

#### **8.1.1 Management Objective**

The District will promote rainwater harvesting and provide advice, information, and literature regarding the benefits of rainwater harvesting.

#### **8.1.2 Performance Standard**

Provide Rainwater Harvesting material to the public in handouts. Each year provide rainwater harvesting information on at least one occasion by one of the following methods:

- Article to local newspapers
- Distribution of conservation literature handouts
- Public presentation by District Staff
- Information on District website
- District exhibit/display booth at a public booth

- Rainwater Harvesting Materials and literature are made available during every public Board Meeting. (11 meetings): 10/12/2017, 11/16/2017, 12/21/2017, 01/11/2018, 02/08/2018, 04/12/2018, 06/22/2018, 07/12/2018, 08/16/2018, 09/06/18, 09/20/2018.
- Rainwater Harvesting Materials are always available on the website by clicking on the “Tools for Sustainability” tab under the Education tab.
- On November 4, 2017, The BCragd staff facilitated a booth at the Rainwater Revival Festival Event hosted by Hill Country Alliance.

#### **Management Goal 9**

##### **9.0.0 Address recharge enhancement.**

The District does not currently have the financial resources to buy property and construct recharge structures; therefore, this goal is not applicable to the District at this time.

#### **Management Goal 10**

##### **10.0.0 Address precipitation enhancement.**

Precipitation enhancement over Bandera County is financed by the Edwards Aquifer Authority and operates from Pleasanton, Texas; therefore, this goal is not applicable to the District at this time.

#### **Management Goal 11**

##### **11.0.0 Address brush control.**

###### **11.1.1 Management Objective**

Provide to the public available information on brush control including riparian health, along with native and invasive plant species management.

###### **11.1.2 Performance Standard**

Each year provide brush control, including riparian health, along with native and invasive plant species management information on at least one occasion by one of the following methods and include it in an annual report to the Board of Directors:

- article to local newspaper
- distribution of conservation literature handouts
- public presentation by District Staff
- information on District’s website
- District exhibit/display booth at a public event



- Brush Control information, including riparian health, along with native and invasive plant species management information is always available on the website by clicking on the “Tools for Sustainability” tab under the Education tab.
- On June 28, 2018, BCRAGD hosted an Arundo Information Workshop for Medina River- Healthy Creeks Initiative to Combat Invasive Arundo.

## **Management Goal 12**

### **12.0.0 Addressing water quality.**

#### **12.1.1 Management Objective**

Continue the existing program to monitor groundwater quality in the District.

#### **12.1.2 Performance Standard**

Continue to monitor water quality from wells in the monitoring system on a semi-annual basis, and from newly drilled wells when samples can be obtained. Report the number of samples obtained to the Board of Directors in an annual report.

- Monitor Well Water Samples taken: 30 total
- Water Analysis Performed on New Wells: 90 total

#### **12.2.1 Management Objective**

Continue the existing program to monitor surface water quality in the District.

#### **12.2.2 Performance Standard**

Continue to monitor water quality from a minimum of 6 locations in the county from the Sabinal and Medina River basins on a quarterly basis. Report the number of samples obtained to the Board of Directors in an annual report.

BCRAGD continued partnership with SARA to participate in the Clean Rivers Program in the Bandera County portion of San Antonio River Basin. BCRAGD is responsible for sampling 8 sites along the Medina River, 5 sites on Medina Lake, and 1 site on Diversion Lake. BCRAGD continues its partnership with Nueces River Authority to participate in the CRP in the Nueces River Basin; BCRAGD is responsible for 3 sites along the Sabinal River in Bandera County. The District continued its In-House Surface Water Quality Testing Program along the Medina and Sabinal rivers for the protection of the citizens of Bandera County. 224 total samples were taken between these two programs during FY 2018 and are summarized below:

1<sup>st</sup> Quarter: Oct 2017-Dec 2017

Oct 10-11, 2017 (CRP; 5 Medina Lake sites)  
Nov 1, 2017-- (CRP; 4 Medina R. sites)  
Nov 14, 2017-- (CRP; 4 Medina R. sites)  
Nov 15, 2017 (CRP; 1 Diversion L. site)  
Nov 21, 2017 (CRP; 3 Sabinal R. sites)  
Dec 27-28, 2017 (18 Medina R., 1 Medina L, 6 Sabinal R.)

2<sup>nd</sup> Quarter: Jan 2018 to March 2018

Jan 22, 2018 (CRP; 3 Sabinal R. sites)  
Feb 7, 2018-- (CRP; 1 Diversion L. site)  
Feb 13, 2018 (CRP; 4 Medina R. sites)  
Feb 15, 2018-- (CRP; 4 Medina R. sites)  
Feb 27-28, 2018 (CRP; 5 Medina Lake sites)  
March 22, 27, 29 2018-- (18 Medina R., 1 Medina L, 6 Sabinal R.)

3<sup>rd</sup> Quarter: April 2018 to June 2018

April 11, 2018-- (CRP; 4 Medina R. sites)  
April 18, 2018-- (CRP; 4 Medina R. sites)  
April 19, 2018-- (ALM; 1 Medina R. sites)  
April 24, 2018 (CRP; 1 Diversion L. sites)  
May 9, 2018 (CRP; 3 Sabinal R. sites)  
May 16, 2018 (CRP; 3 Medina Lake sites)  
May 24, 2018 (CRP; 2 Medina Lake sites)  
May 30-31, 2018 (18 Medina R., 1 Medina L, 6 Sabinal R.)  
June 7, 2018 (CRP; 4 Medina R. sites)  
June 12, 2018 (CRP; 4 Medina R. sites)  
June 14, 2018 (1 Medina L., 6 Medina R., 2 Sabinal R.)  
June 28, 2018 (1 Medina L., 6 Medina R., 2 Sabinal R.)

4<sup>th</sup> Quarter: July 2018 to September 2018

July 11, 2018 (1 Medina L., 6 Medina R., 2 Sabinal R.)  
July 16, 2018-- (ALM; 1 Medina R. sites)  
July 25, 2018 (1 Medina L., 6 Medina R., 2 Sabinal R.)  
Aug 7, 2018 (CRP; 1 Diversion L. sites)  
Aug 14-15, 2018 (CRP; 5 Medina Lake sites)  
Aug 16, 2018 (1 Medina L., 6 Medina R., 2 Sabinal R.)  
Aug 22, 2018 (CRP; 3 Sabinal R. sites)  
Aug 23, 2018 (1 Medina L., 6 Medina R., 2 Sabinal R.)  
Sep 25, 2018 (18 Medina R., 1 Medina L, 6 Sabinal R.)

**Management Goal 13**

**13.0.0 Addressing in a Quantitative Manner the Desired Future Conditions.**

**13.1.1 Management Objective**

To achieve the Desired Future Condition adopted by GMA 9 For the Edwards Group of the Edwards Trinity (Plateau) and the Hill Country Trinity Aquifer.

**13.1.2 Performance Standard**

Groundwater Management Area 9 has adopted a Desired Future Condition (DFC) for the Edwards Trinity Plateau and the Hill Country Trinity aquifer.

District rules do not allow permitted wells in the Edwards Trinity Plateau Aquifer. The District has established a monitor well in the Edwards Aquifer and is monitoring the water level and rainfall on a real-time basis. A comparison of the annual water level measurements and the cumulative water level trend to the adopted Desired Future Condition will be made annually. The water levels will be included in



the District database and a discussion of the water level trend-Desired Future Condition comparison will be reported to the Board of Directors on an annual basis and documented in the annual report.

The District will notate the Hill Country Trinity Aquifer water level trends from the District's Monitor Wells in order to track the District's progress in complying with the average drawdown as stated in the GAM Run 16-023 MAG for Bandera County. The General Manager will report annually to the District Board of Directors the progress of achieving the Desired Future Condition. The General Manager will complete an annual groundwater report that details groundwater production from non-exempt wells combined with exempt well pumping estimates supplied by the Texas Water Development Board. This report will be included in the annual report provided to the District's Board of Directors.

## **Annual Evaluation of the Groundwater Resources in Bandera County FY 2018**

### **INTRODUCTION**

The desired future condition (DFC) of the Trinity Aquifer for Bandera County was adopted by the District's Board based on the Texas Water Development Board's (TWDB) 2008 model run and Groundwater Availability Model (GAM) Run 10-005. A maximum of 30 ft. of drawdown after 50 years for the Trinity Aquifer was adopted, which was a total for both the Middle and Lower Aquifers. The Upper Trinity Aquifer does not supply sufficient water and is generally not used in Bandera County, therefore, it was not used in the TWDB 2008 model run or the GAM Run 10-005. The District's Board readopted the above DFC's in 2015 and was provided GAM Run 16-023.

Also included in this groundwater evaluation report are the reports of non-exempt and exempt use. The non-exempt use estimate is provided by groundwater permit holders on an annual basis, which is attached. The exempt use estimate is provided by TWDB and can be found in the District's Management Plan adopted March 18, 2018.

### **FY 2018 EVALUATION**

For the Hill Country Trinity Aquifer DFC evaluation, the 2008 July monitor well levels were used as the comparing factor in order to stay consistent with the first GAM run for the DFC process, GAM Run 10-005. An average level was calculated for each monitor well using data points taken throughout FY 2018. These averages were then compared to the 2008 water level measurements and these differences were recorded in the "FY 2018 DFC Achievement" document. New monitor wells that were added to the network before the beginning of FY 2018, use the first well measurement and then compared to the FY 2018 average. A Lower Trinity monitor well located in Kerr county was also used in this study because the well was close in proximity to the Bandera-Kerr County line.

There is only one monitor well for the Edwards-Trinity Plateau DFC evaluation because the aquifer is located in high elevations, so very few residential wells are utilizing it for water needs. Therefore, the estimates for domestic (exempt) use in the aquifer are small. In addition, District rules prohibit production permits for the use of Edwards-Trinity Plateau aquifer. The DFC evaluation for the Edwards-Trinity Plateau can be found in the “FY 2018 DFC Achievement” document.

The USGS 7.5 grid was used to obtain a better County-wide average. The majority of the monitoring well data is located in the eastern part of the County. To improve the evaluation of the County as a whole, water levels in each grid were averaged, then the average of all of the grids was taken for the Hill Country Trinity Aquifer total average within Bandera County.

## **RESULTS OF THE DFC EVALUATION**

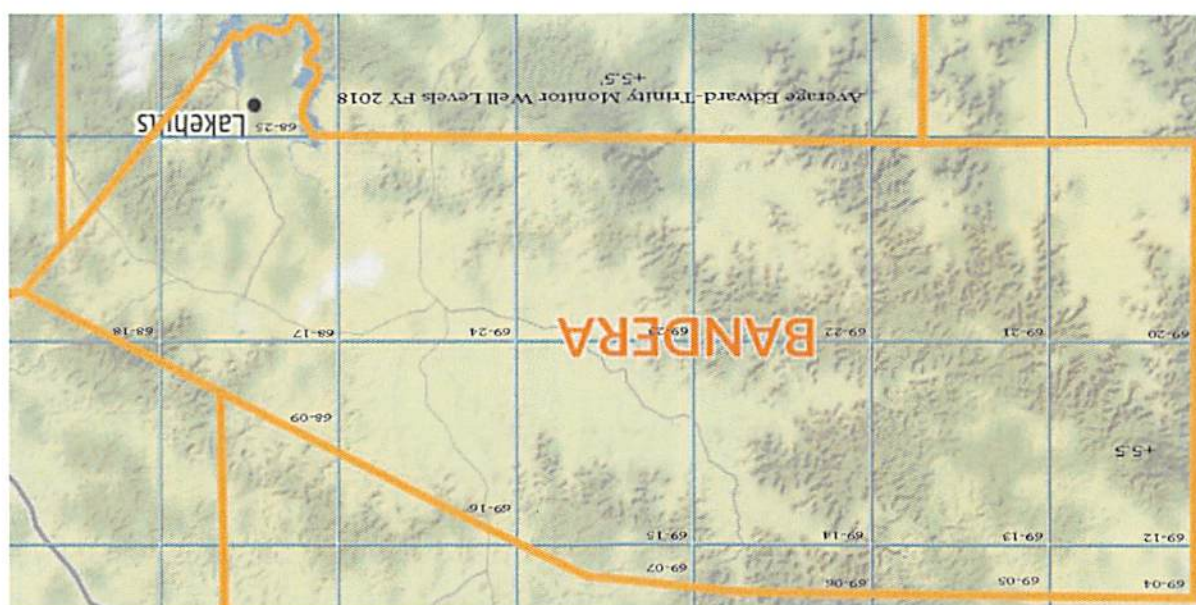
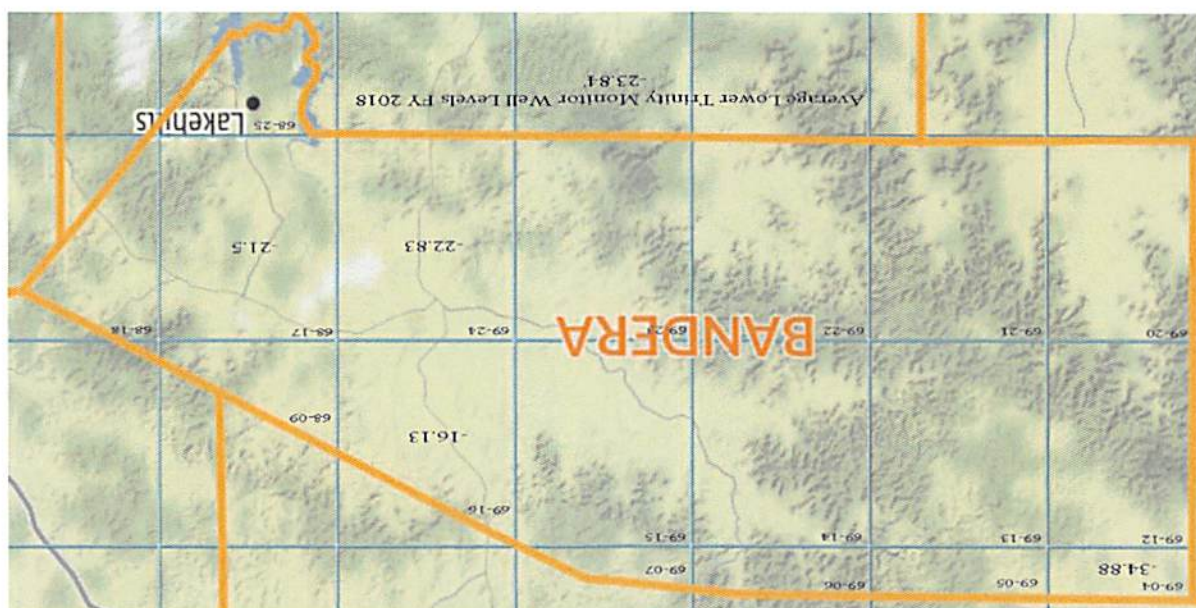
The average loss or gain for monitor wells in their respective grids are shown in the “FY 2018 DFC Achievement” document. County maps with the grid averages are found in Figures 1 and 2 for each the Middle Trinity and Lower Trinity Aquifers. The Middle Trinity Aquifer had a gain of +9.68 ft. and the Lower Trinity Aquifer had a loss of -23.84 ft. for FY 2018. The Trinity Aquifer, overall, had a loss of -7.08 ft. in FY 2018 for compliance of the DFC.

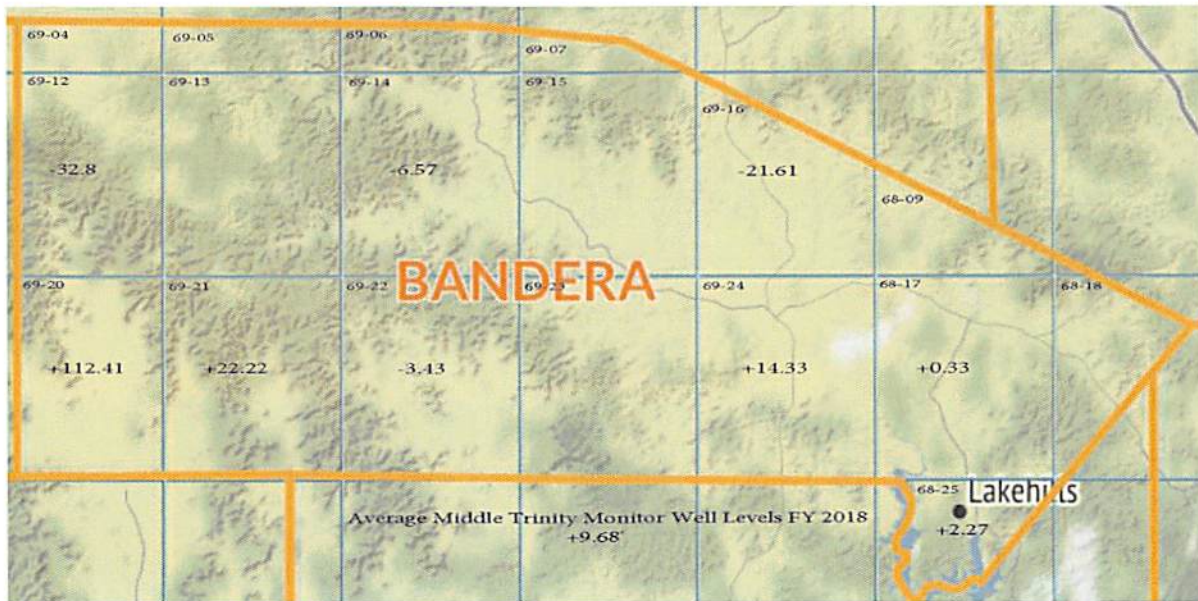
## **FUTURE CONSIDERATIONS**

For future evaluations, below are a few bulleted items that may need to be addressed in future studies:

- The over abundance of groundwater data on the eastern side of the county could possibly bias the results of this evaluation. However, by utilizing the grid system, bias becomes minimal.
- There is a lack of Lower Trinity Well data across the county.
- More monitor wells in the western half of the county will ultimately assist with the comparison across the county.







NON EXEMPT USAGE		
Permit Number	Total Gallons Pumped	Acre-Feet
P-1054	0	0.00
P-1035	2,000	0.01
P-1090	44,700,000	137.18
Enchanted River Well 1	5,314,000	16.31
Enchanted River Well 2	7,479,000	22.95
River Bend	5,702,500	17.50
Lake Medina Shores	21,241,000	65.19
P-1095	127,940	0.39
P-1028	22,800,000	69.97
P-1025	2,457,755	7.54
P-1026	55,960	0.17
P-1125	3,321	0.01
P-1133	29,311,300	89.95
P-1134	17,149,000	52.63
P-1135, P-1150	28,210,000	86.57
P-1075	6,391,000	19.61
P-1137	1,770,370	5.43



P-1105	5,015,000	15.39
P-1104	8,700,020	26.70
P-1103	0	0.00
P-1102	0	0.00
P-1101	0	0.00
P-1003	5,015,000	15.39
P-1002	30,501,457	93.61
P-1098	37,545	0.12
P-1046	225,000	0.69
P-1001	128,470	0.39
P-1140	173,600	0.53
P-1127	0	0.00
P-1128	4,762,000	14.61
P-1129	7,921,000	24.31
P-1015	7,380,000	22.65
P-1106	5,408,000	16.60
P-1080	0	0.00
P-1122	69,770	0.21
P-1049	3,224,000	9.89
P-1045	6,300,000	19.33
P-1058	3,347,000	10.27
P-1042	1,033,000	3.17
P-1050	2,330,000	7.15
P-1089	896,150	2.75
P-1113	1,350,700	4.15
P-1114	17,514,000	53.75
P-1116	3,210,600	9.85
P-1117	215,670	0.66
P-1073	5,814,464	17.84
P-1118	5,441,890	16.70
Bandera River Ranch	79,440	0.24
P-1119	1,416,700	4.35
P-1018	1,837,900	5.64
P-1048	17,193	0.05

P-1052	22,035	0.07
P-1013	0	0.00
P-1047	3,128,881	9.60
P-1030	0	0.00
P-1031	0	0.00
P-1157	3,242,000	9.95
P-1136	4,508,000	13.83
P-1029	1,556,000	4.78
Lakewood	22,274,000	68.36
San Julian	1,645,000	5.05
Blue Medina	4,118,000	12.64
P-1061	0	0.00
P-1062	435,403	1.34
P-1063	0	0.00
P-1064	973,823	2.99
P-1065	0	0.00
P-1055	2,171,960	6.67
P-1056	1,286,040	3.95
P-1071	70,956,700	217.76
P-1078	3,960,000	12.15
P-1124	1,573,000	4.83
<b>TOTAL</b>	<b>443,931,557</b>	<b>1362.38</b>
	<b>Gallons</b>	<b>Acre-feet</b>



Annual Financial Report by Ede & Company, LLC.

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## Appendix B

**BANDERA COUNTY RIVER AUTHORITY  
AND GROUND WATER DISTRICT  
Annual Financial Report  
For the Year Ended September 30, 2018**



**BANDERA COUNTY RIVER AUTHORITY  
AND GROUND WATER DISTRICT  
Annual Financial Report  
For the Year Ended September 30, 2018**

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Analysis of Taxes Receivable	21

ANNUAL FILING AFFIDAVIT

THE STATE OF TEXAS       X  
                                      X  
COUNTY OF BANDERA       X

I, DONALD G. SLOAN of the BANDERA COUNTY RIVER AUTHORITY AND GROUND WATER DISTRICT hereby swear, or affirm, that the district named above has reviewed and approved at a meeting of the Board of Directors of the District on the 10th day of January, 2019, its annual audit report for the year ended September 30, 2018 and that copies of the annual report have been filed in the district office located, at BANDERA, TX.

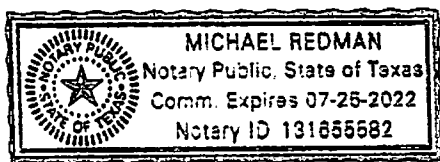
This annual filing affidavit and the attached copy of the annual audit report are being submitted to the Texas Commission on Environmental Quality in satisfaction of all annual filing requirements within Section 49.194 of the Texas Water Code.

Dated 1/10/2019, 2019

By: Donald G. Sloan  
(Signature of District Representative)

DONALD G. SLOAN, PRESIDENT  
(Type Name & Title of above District Representative)

Sworn to and Subscribed to before me this 10 day of January, 2019



Michael Redman  
(Signature of Notary)

Commission Expires on 2022

Michael Redman  
(Print Name of Notary)

Notary Public in and for the State of Texas.

# **EDE & COMPANY, LLC**

**Certified Public Accountants**

**Eric Ede  
Donna Ede Jones**

**P. O. Box 219  
Knippa, Texas 78870  
Telephone (830) 934-2148  
Fax (830) 934-2799  
Email: edecpa@hotmail.com**

## **INDEPENDENT AUDITOR'S REPORT**

**Board of Directors  
Bandera County River Authority  
and Groundwater District  
P. O. Box 177  
Bandera, Texas 78003**

We have audited the accompanying financial statements of the governmental activities, each major fund, and the aggregate remaining fund information of the Bandera County River Authority and Groundwater District, as of and for the year ended September 30, 2018 and the related notes to the financial statements, which collectively comprise the District's basic financial statements as listed in the table of contents.

### **Management's Responsibility for the Financial Statements**

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

### **Auditor's Responsibility**

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

### **Opinions**

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, each major fund, and the aggregate remaining fund information of the Bandera County River Authority and Groundwater District, as of September 30, 2018, and the respective changes in financial position and, where applicable, cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.



## Other Matters

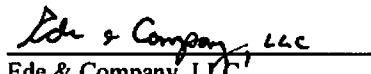
### *Required Supplementary Information*

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and budgetary comparison information as listed in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

### *Other Information*

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the Bandera County River Authority and Groundwater District's basic financial statements. The analysis of taxes receivable is presented for purposes of additional analysis and are not a required part of the basic financial statements.

The analysis of taxes receivable is the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. This schedule is the responsibility of management and was derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. The Schedule of Delinquent Taxes Receivable has not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on it.

  
Ede & Company, LLC  
Certified Public Accountants  
Knippa, Texas

January 8, 2019

## MANAGEMENT'S DISCUSSION AND ANALYSIS

In accordance with Governmental Accounting Standards Board ("GASB") Statement No. 34, the management of the Bandera County River Authority and Ground Water District (the "District") offers the following narrative on the financial performance of the District for the year ended September 30, 2018. Please read it in connection with the District's financial statements that follow.

For purposes of GASB Statement No. 34, the District is considered a special purpose government. This allows the District to present the required fund and government-wide statements in a single schedule. The requirement for fund financial statements that are prepared on the modified accrual basis of accounting is met with the "Total Governmental Funds" column. An adjustment column includes those entries needed to convert to the full accrual basis government-wide statements. Government-wide statements are comprised of the Statement of Net Position and the Statement of Activities.

### FINANCIAL HIGHLIGHTS

- The District's total combined net position was \$611,667.53 at September 30, 2018.
- During the year, the District's expenses were \$87,684.83 less than the \$1,094,839.98 generated in taxes, service fees and other revenues for governmental activities.
- The total cost of the District's programs increased during the current year.
- The general fund reported a fund balance this year of \$223,214.91.
- The District's net position increased \$87,685 which represents a 10.58 percent increase from 2017

### OVERVIEW OF THE FINANCIAL STATEMENTS

This annual report consists of three parts—management's discussion and analysis (this section), the basic financial statements, and required supplementary information. The basic financial statements include two kinds of statements that present different views of the District: The *Statement of Net Position and Governmental Funds Balance Sheet* includes a column (titled "Total Governmental Funds") that represents a balance sheet prepared using the modified accrual basis of accounting. The adjustments column converts those balances to a balance sheet that more closely reflects a private-sector business. Over time, increases or decreases in the District's net position will indicate financial health. The *Statement of Activities and Governmental Funds Revenues, Expenditures, and Changes in Fund Balances* includes a column (titled "Total Governmental Funds") that derives the change in fund balances resulting from current year revenues, expenditures, and other financing sources or uses. These amounts are prepared using the modified accrual basis of accounting. The adjustments column converts those activities to full accrual, a basis that more closely represents the income statement of a private-sector business.

The financial statements also include notes that explain some of the information in the financial statements and provide more detailed data. The statements are followed by a section of *required supplementary information* that further explains and supports the information in the financial statements.

## FINANCIAL ANALYSIS OF THE DISTRICT AS A WHOLE

The District's combined net position was \$611.7 thousand at September 30, 2018. (See Table A-1).

**Table A-1**  
BANDERA COUNTY RIVER AUTHORITY AND  
GROUND WATER DISTRICT

	Governmental Activities		Total Percentage Change 2018 - 2017
	2018	2017	
Current assets:			
Cash and cash equivalents	\$ 265.5	\$ 156.5	69.65%
Accounts receivable	94.5	77.6	21.78%
Property taxes receivable	53.6	50.5	6.14%
Due from other governments	1.3	1.6	-18.75%
Prepayments	5.7	5.2	9.62%
Total current assets	<u>420.6</u>	<u>291.4</u>	<u>44.34%</u>
Noncurrent assets:			
Capital Assets	741.0	741.0	0.00%
Less accumulated depreciation	(256.1)	(229.5)	11.59%
Total noncurrent assets	<u>484.9</u>	<u>511.5</u>	<u>-5.20%</u>
Total Assets	<u>905.5</u>	<u>802.9</u>	<u>12.78%</u>
Current liabilities:			
Accounts payable and accrued liabilities	143.9	129.9	10.78%
Total Liabilities	<u>143.9</u>	<u>129.9</u>	<u>10.78%</u>
Net Position:			
Invested in capital assets	334.9	511.5	-34.53%
Unrestricted	<u>276.8</u>	<u>161.5</u>	<u>71.39%</u>
Total Net Position	<u>\$ 611.7</u>	<u>\$ 673.0</u>	<u>-9.11%</u>

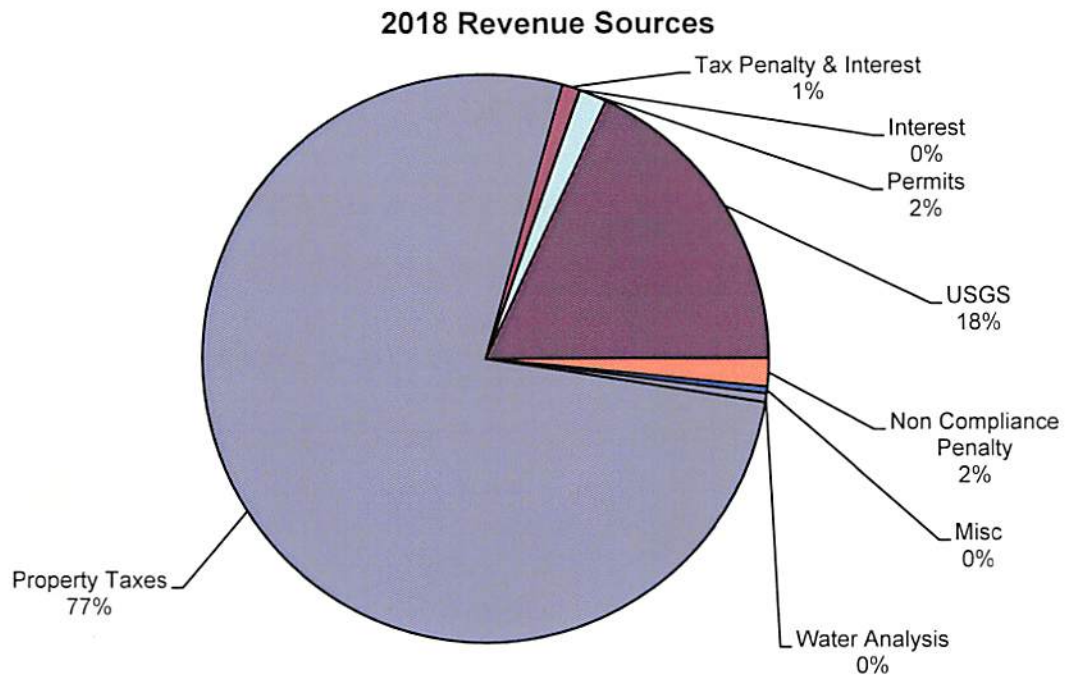
Changes in net position. The District's total revenues were 1,094.8 thousand. A significant portion, 82 percent, of the District's revenue comes from property taxes. (See Figure A-3.) and 2% from permits on new wells.

The total cost of all programs and services was \$1,007.2 thousand; 100 percent of these costs are for General Government.



**Table A-2**  
**Changes in Bandera County River Authority and Groundwater District's Net Position**  
*(In thousands dollars)*

	Governmental Activities		Total Percentage Change 2018-2017
	2018	2017	
General Revenue			
Property Taxes	841.9	777.1	8.34%
Penalty & Interest	11.1	10.1	9.90%
USGS	196.8	131.8	49.32%
New Well Applications & Permits	17.5	15.4	13.64%
Other	27.5	6.6	316.67%
Total Revenue	<u>1,094.8</u>	<u>941.0</u>	<u>16.34%</u>
Program Expenses			
General Government	<u>1,007.2</u>	<u>876.8</u>	<u>14.87%</u>
Total Expense	<u>1,007.2</u>	<u>876.8</u>	<u>14.87%</u>
Increase (Decrease) in Net Position	<u>\$ 87.6</u>	<u>\$ 64.2</u>	<u>36.45%</u>



### 2018 Expenses

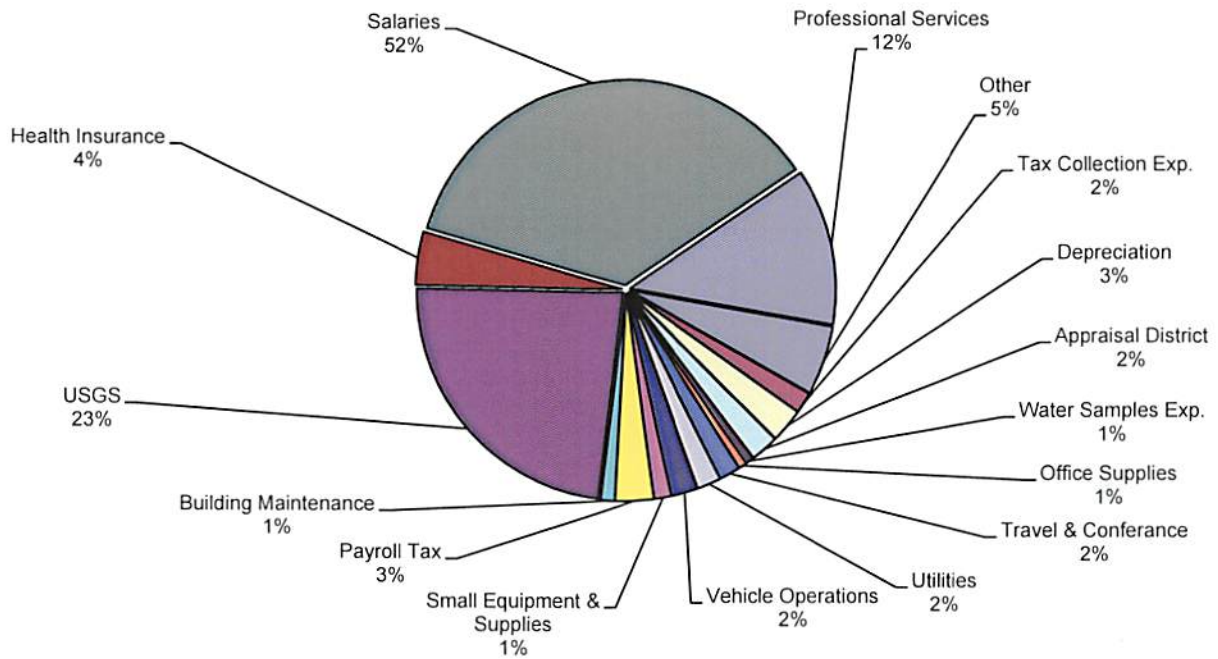


Table A-3 presents the cost of each of the District's largest functions as well as the major administrative categories.

- The cost of all *governmental* activities this year was 1,007.2 thousand.

**Table A-3**  
Net Cost of Selected District Functions & Major Administrative Categories  
(in thousands of dollars)

	Total Costs of Services		
	2018	2017	Percent Change
Salaries	363.0	360.5	0.69%
Professional Services	123.6	251.8	-50.91%
Health Insurance	42.0	26.8	56.72%
Small Equipment & Supplies	13.4	5.3	152.83%
Vehicle Operations	20.9	8.9	134.83%
Utilities	18.9	14.3	32.17%
Travel & Conference	16.8	14.8	13.51%
Office Supplies	6.1	3.9	56.41%
Water Samples Exp.	6.7	8.2	-18.29%
Appraisal District	22.4	19.8	13.13%
Depreciation	26.6	28.7	-7.32%
Tax Collection Exp.	16.4	14.2	15.49%

**CONTACTING THE DISTRICT'S FINANCIAL MANAGEMENT**  
This financial report is designed to provide our citizens, taxpayers, customers, and investors and creditors with a general overview of the District's finances and to demonstrate the District's accountability for the money it receives. If you have questions about this report or need additional financial information, contact the District's Business Office.



## Basic Financial Statements

**BANDERA COUNTY RIVER AUTHORITY  
AND GROUND WATER DISTRICT**  
**Statement of Net Position and Governmental Funds Balance Sheet**  
**September 30, 2018**

	General Fund	Special Revenue Fund	Total Governmental Funds	Adjustments	Statement of Net Position
<b>ASSETS</b>					
Cash and investments	\$ 265,021.44	\$ 499.99	\$ 265,521.43	\$ -	\$ 265,521.43
Accounts receivable	-	94,500.01	94,500.01	-	94,500.01
Taxes receivable	53,591.22	-	53,591.22	-	53,591.22
Due from other governments	1,319.16	-	1,319.16	-	1,319.16
Prepayments	5,736.39	-	5,736.39	-	5,736.39
Capital assets (net of accumulated depreciation)					
Land	-	-	-	150,000.00	150,000.00
Building	-	-	-	133,364.47	133,364.47
Monitoring wells & equipment	-	-	-	33,667.84	33,667.84
Vehicles	-	-	-	17,829.09	17,829.09
Total assets	<u>\$ 325,668.21</u>	<u>\$ 95,000.00</u>	<u>\$ 420,668.21</u>	<u>334,861.40</u>	<u>755,529.61</u>
<b>LIABILITIES</b>					
Accounts payable	\$ 48,862.08	\$ 95,000.00	\$ 143,862.08	-	143,862.08
Total liabilities	<u>48,862.08</u>	<u>95,000.00</u>	<u>143,862.08</u>	<u>-</u>	<u>143,862.08</u>
<b>DEFERRED INFLOW OF RESOURCES</b>					
Unavailable Revenue- Property Taxes	53,591.22	-	53,591.22	(53,591.22)	-
Total Deferred Inflows of Resources	<u>53,591.22</u>	<u>-</u>	<u>53,591.22</u>	<u>(53,591.22)</u>	<u>-</u>
<b>FUND BALANCES/NET POSITION</b>					
Fund balances:					
Committed	71,282.00	-	71,282.00	(71,282.00)	-
Unassigned	151,932.91	-	151,932.91	(151,932.91)	-
Total Fund Balance	<u>223,214.91</u>		<u>223,214.91</u>	<u>(223,214.91)</u>	<u>-</u>
Total liabilities deferred inflows and fund balances	<u>\$ 325,668.21</u>	<u>\$ 95,000.00</u>	<u>\$ 420,668.21</u>		
<b>Net Position:</b>					
Invested in capital assets, net of related debt				334,861.40	334,861.40
Unrestricted				276,806.13	276,806.13
Total net position				<u>\$ 611,667.53</u>	<u>\$ 611,667.53</u>

The accompanying notes are an integral part of this statement.

**BANDERA COUNTY RIVER AUTHORITY  
AND GROUND WATER DISTRICT**  
**Statement of Activities and Governmental Funds**  
**Revenues, Expenditures and Changes in Fund Balances**  
**For the Year Ended September 30, 2018**

	General Fund	Special Revenue Fund	Total Governmental Funds	Adjustments	Statement of Activities
<b>Revenues:</b>					
Property taxes	\$ 839,669.96	\$ -	\$ 839,669.96	\$ 2,184.20	\$ 841,854.16
Property taxes penalty & interest	11,115.19	-	11,115.19	-	11,115.19
Interest income	275.45	-	275.45	-	275.45
Permits and deposits	17,500.00	-	17,500.00	-	17,500.00
USGS Flood Project Funding	-	190,000.00	190,000.00	-	190,000.00
USGS Gauge Station	6,800.00	-	6,800.00	-	6,800.00
Miscellaneous	4,230.18	-	4,230.18	-	4,230.18
Non Compliance Penalty	17,500.00	-	17,500.00	-	17,500.00
Water analysis	5,565.00	-	5,565.00	-	5,565.00
Total revenues	<u>902,655.78</u>	<u>190,000.00</u>	<u>1,092,655.78</u>	<u>2,184.20</u>	<u>#####</u>
<b>Expenditures/expenses:</b>					
<b>Service operations:</b>					
Appraisal District	22,381.27	-	22,381.27	-	22,381.27
Bonds & Insurance	7,062.94	-	7,062.94	-	7,062.94
Building Maintenance	10,760.80	-	10,760.80	-	10,760.80
Dues & Subscriptions	5,706.57	-	5,706.57	-	5,706.57
Education	8,837.17	-	8,837.17	-	8,837.17
Computer Software and Support	4,764.70	-	4,764.70	-	4,764.70
Small Equipment & Supplies	13,444.80	-	13,444.80	-	13,444.80
Health Insurance	41,977.44	-	41,977.44	-	41,977.44
Website	263.53	-	263.53	-	263.53
Monitoring Units	160.18	-	160.18	-	160.18
Office Supplies	6,116.18	-	6,116.18	-	6,116.18
Office Rent	3,600.00	-	3,600.00	-	3,600.00
Payroll Tax	30,047.08	-	30,047.08	-	30,047.08
Postage	664.76	-	664.76	-	664.76
Professional Services	123,598.89	-	123,598.89	-	123,598.89
Salaries	363,026.14	-	363,026.14	-	363,026.14



Tax Collection Exp.	16,436.70	-	16,436.70	-	16,436.70
GMA Expense	1,056.71	-	1,056.71	-	1,056.71
Travel & Conferences	16,804.30	-	16,804.30	-	16,804.30
Employee Training	6,441.95	-	6,441.95	-	6,441.95
Utilities	18,882.12	-	18,882.12	-	18,882.12
USGS - Gauges	-	-	-	-	-
USGS - Flood Control Project	45,074.94	190,000.00	235,074.94	-	235,074.94
Vehicle Operations	20,940.25	-	20,940.25	-	20,940.25
Water Quality Project	7,561.77	-	7,561.77	-	7,561.77
Water Samples Exp.	6,735.65	-	6,735.65	-	6,735.65
Well Plugging	1,410.23	-	1,410.23	-	1,410.23
Illegal Dumping Litter Abatement	680.00	-	680.00	-	680.00
Medina River Cleanup	1,207.40	-	1,207.40	-	1,207.40
Brush Control	3,922.37	-	3,922.37	-	3,922.37
Flood Awareness	957.02	-	957.02	-	957.02
Depreciation	-	-	-	26,631.29	26,631.29
Total expenditures/expenses	<u>790,523.86</u>	<u>190,000.00</u>	<u>980,523.86</u>	<u>26,631.29</u>	<u>#####</u>
Excess (deficiency) of revenues over expenditures	<u>112,131.92</u>	<u>-</u>	<u>112,131.92</u>	<u>(24,447.09)</u>	<u>87,684.83</u>
Other financing sources (uses)					
Transfers in	-	-	-	-	-
Transfers out	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total other financing sources (uses)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Change in fund balance/net position	112,131.92	-	112,131.92	(24,447.09)	87,684.83
Fund balance/net position:					
Beginning of the year	111,082.99	-	111,082.99	412,899.71	523,982.70
End of the year	<u>\$ 223,214.91</u>	<u>\$ -</u>	<u>\$ 223,214.91</u>	<u>\$ 388,452.62</u>	<u>\$ 611,667.53</u>

The accompanying notes are an integral part of this statement.

**Bandera County River Authority and  
Ground Water District  
Notes to the Financial Statements  
For the Year Ended September 30, 2018**

**NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**

**A. Reporting Entity**

The Bandera County River Authority was created by Acts of the 71<sup>st</sup> Legislature of the State of Texas. The District was established as a conservation and reclamation district. The authority of the Bandera County River Authority was incorporated into the Springhills Water Management District through enabling legislation appearing as Act of June 17, 1989, Ch. 654, 1989, Tex. Gen. Laws 2155 (Vernon) The Springhills Water Management District, continued all of the programs and activities initiated by the River Authority, and implemented the programs required of a ground water conservation district. On April 10, 2003 the TCEQ authorized changing the District's name to the Bandera County River Authority and Ground Water District.

The District's Board of Directors, a nine member group, has governance responsibilities over all activities related to the District's operations within the jurisdiction of Bandera County River Authority and Ground Water District. Because members of the Board of Directors are elected by the public, they have the primary accountability for fiscal matters. The District is not included in any other governmental "reporting entity" as defined in Section 2100, Codification of Governmental Accounting and Financial reporting Standards.

The District receives no funding from local, state, or federal sources.

**B. Government-wide and Fund Financial Statements**

For purposes of GASB Statement No. 34, the District is considered a special purpose government. This allows the District to present the required fund and government-wide statements in a single schedule. The requirement for fund financial statements that are prepared on the modified accrual basis of accounting is met with the "Total Governmental Funds" column. An adjustment column includes those entries needed to convert to the full accrual basis government-wide statements. Government-wide statements are comprised of the statement of net position and the statement of activities.

The government-wide financial statements report information on all of the activities of the District. The effect of interfund activity has been removed from these statements.

The statement of activities demonstrates what the District did with the revenue it raised.. The government-wide financial statements (i.e., the statement of net position and the statement of changes in net position) report information on all of the nonfiduciary activities of the primary government.

**C. Measurement Focus, Basis of Accounting, and Financial Statement Presentation**

The government-wide financial statements are reported using the economic resources measurement focus and the accrual basis of accounting. Revenues are recorded when earned, and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows. Property taxes are recognized as revenues in the year for which they are levied.

The total governmental fund column of the government-wide financial statements is reported using the current financial resources measurement focus and the modified accrual basis of accounting. Revenues are recognized as soon as they are both measurable and available. Revenues are considered to be available when they are collectible within the current period or soon enough thereafter to pay liabilities of the current period. For this purpose, the government considers revenues to be available if they are collected within thirty-one days of the end of the current fiscal period. Expenditures generally are recorded when a liability is incurred, as under accrual accounting.

No accrual for property taxes collected within sixty days of year end has been made as such amounts are deemed immaterial; delinquent property taxes at year end are reported as deferred inflows of resources.

**Bandera County River Authority and  
Ground Water District  
Notes to the Financial Statements  
For the Year Ended September 30, 2018**

**Fund Accounting**

The District uses funds to maintain its financial records during the year. A fund is defined as a fiscal and accounting entity with a self-balancing set of accounts. The District only uses governmental funds.

**Governmental Funds**

Governmental funds are those through which most governmental functions typically are financed. Governmental funds reporting focuses on the sources, uses and balances of current financial resources.

Expendable assets are assigned to the various governmental funds according to the purpose for which they will be paid. The difference between governmental fund assets and liabilities is reported as fund balance.

The District reports the following major governmental funds:

**General Fund** – The General Fund is used to account for all financial resources of the District except those required to be accounted for in another fund.

**Special Revenue Fund** – The Special Revenue Fund is used to account for grant funds.

**D. Capital Assets**

General capital assets generally result from expenditures in the governmental funds. These assets are reported in the statement of net position column of the government-wide statement of net position but are not reported in the general fund column.

All capital assets are capitalized at cost (or estimated historical cost) and updated for additions and retirements during the year. The District maintains a capitalization threshold of \$5,000 for equipment, and all additions to infrastructure are capitalized. Improvements are capitalized; the cost of normal maintenance and repairs that do not add to the value of the asset or materially extend the asset's life are not.

**E. Estimates**

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results may differ from those estimates.



# Bandera County River Authority and Ground Water District

## Notes to the Financial Statements For the Year Ended September 30, 2018

### F. Reconciliation of Government-wide and General Fund Financial Statements

#### Reconciliation of General Fund Balance to Net Position of Governmental Activities September 30, 2018

<b>Total General Fund Balance</b>	<b>\$ 223,214.91</b>
<b>Amounts reported in governmental activities in the statement of net position are different because:</b>	
Capital assets used in the governmental activities are not financial resources and therefore are not reported in the funds.	361,492.69
Accumulated depreciation has not been included in the general fund financial statements.	(26,631.29)
Revenue reported as deferred revenue in the general fund was recorded as revenue in the government-wide financial statements.	<u>53,591.22</u>
<b>Net Position of Governmental Activities</b>	<b><u>\$ 611,667.53</u></b>

#### Reconciliation of the Statement of Revenues, Expenditures and Changes in Fund Balances of Governmental Funds to the Statement of Activities

<b>Net Change in Governmental Fund Balances</b>	<b>\$ 112,131.92</b>
<b>Amounts reported for the governmental activities in the statement of activities are different because:</b>	
Various other reclassifications and eliminations are necessary to convert from the modified accrual basis of accounting to accrual basis	2,184.20
Governmental funds report capital outlays as expenditures. However, they are reported as increases in capital assets in the government-wide financial statements.	-
Depreciation is not recognized as an expense in governmental funds since it does not require the use of current financial resources. The effect of the current year's depreciation is to decrease net position.	<u>(26,631.29)</u>
<b>Change in Net Position of Governmental Activities</b>	<b><u>\$ 87,684.83</u></b>

**Bandera County River Authority and  
Ground Water District**  
**Notes to the Financial Statements**  
**For the Year Ended September 30, 2018**

**NOTE 2 – DEPOSITS, SECURITIES AND INVESTMENTS**

**District Policies and Legal and Contractual Provisions Governing Deposits**

**Custodial Credit Risk for Deposits** State law requires governmental entities to contract with financial institutions in which funds will be deposited to secure those deposits with insurance or pledged securities with a fair value equaling or exceeding the amount on deposit at the end of each business day. The pledged securities must be in the name of the governmental entity and held by the entity or its agent. Since the District complies with this law, it has no custodial credit risk for deposits.

**Foreign Currency Risk** The District limits the risk that changes in exchange rates will adversely affect the fair value of an investment or a deposit by not participating in foreign currency transactions.

**District Policies and Legal and Contractual Provisions Governing Investments**

**Compliance with the Public Funds Investment Act**

The Public Funds Investment Act (Government Code Chapter 2256) contains specific provisions in the areas of investment practices, management reports, and establishment of appropriate policies. Among other things, it requires a governmental entity to adopt, implement, and publicize an investment policy. That policy must address the following areas: (1) safety of principal and liquidity, (2) portfolio diversification, (3) allowable investments, (4) acceptable risk levels, (5) expected rates of return, (6) maximum allowable stated maturity of portfolio investments, (7) maximum average dollar-weighted maturity allowed based on the stated maturity date for the portfolio, (8) investment staff quality and capabilities, (9) and bid solicitation preferences for certificates of deposit.

Statutes authorize the entity to invest in (1) obligations of U.S. Treasury, certain U.S. agencies, and the State of Texas, (2) certificates of deposit, (3) certain municipal securities, (4) money market savings accounts, (5) repurchase agreements, (6) bankers acceptances, (7) mutual funds, (8) investment pools, (9) guaranteed investment contracts, (10) and common trust funds. The Act also requires the entity to have independent auditors perform test procedures related to investment practices as provided by the Act. The District is in substantial compliance with the requirements of the Act and with local policies.

Additional policies and contractual provisions governing deposits and investments are specified below:

**Credit Risk** To limit the risk that an issuer or other counterparty to an investment will not fulfill its obligations the District limits investments to depository bank certificates of deposits and state sponsored investment pools.

**Custodial Credit Risk for Investments** To limit the risk that, in the event of the failure of the counterparty to a transaction, a government will not be able to recover the value of investment or collateral securities that are in possession of an outside party the District requires counterparties to register the securities in the name of the District and hand them over to the District or its designated agent. All of the securities are in the District's name and held by the District or its agent.

**Concentration of Credit Risk** To limit the risk of loss attributed to the magnitude of a government's investment in a single issuer, the District investments in both depository bank certificates of deposits and state sponsored investment pools.

**Interest Rate Risk** To limit the risk that changes in interest rates will adversely affect the fair value of investments, the District requires the investment portfolio to have maturities of less than one year on a weighted average maturity basis.

**Foreign Currency Risk for investments** The District limits the risk that changes in exchange rates will adversely affect the fair value of an investment by not investing in foreign currencies.

**Bandera County River Authority and  
Ground Water District  
Notes to the Financial Statements  
For the Year Ended September 30, 2018**

**NOTE 3 – DUE FROM OTHER GOVERNMENTS**

This balance represents taxes and penalty and interest that were collected by the Tax Assessor-Collector, before September 30, 2018, but not remitted to the District.

**NOTE 4 – PENSION PLAN OBLIGATIONS**

The District's employees do not participate in a public retirement system, but are covered by Social Security.

**NOTE 5 – CAPITAL ASSET ACTIVITY**

Capital asset activity for the twelve months ended September 30, 2018, was as follows:

	Beginning Balances	Increases	Decreases	Ending Balances
<b><u>Governmental activities:</u></b>				
<i>Capital assets not being depreciated:</i>				
Land	150,000	-	-	150,000
Total capital assets not being depreciated	150,000	-	-	150,000
<i>Capital assets being depreciated:</i>				
Buildings and Improvements	172,083	-	-	172,083
Vehicles	114,301	-	-	114,301
Monitoring Wells & Equipment	154,602	-	-	154,602
Total capital assets being depreciated	440,986	-	-	440,986
Less accumulated depreciation for:				
Buildings and Improvements	34,417	4,302	-	38,719
Vehicles	88,068	8,403	-	96,472
Monitoring Wells & Equipment	107,008	13,926	-	120,934
Total accumulated depreciation	200,767	26,631	-	256,124
Total capital assets being depreciated, net	240,218	(26,631)	-	184,861
Governmental activities capital assets, net	\$ 390,218	\$ (26,631)	\$ -	\$ 334,861



Required Supplementary Information

**BANDERA COUNTY RIVER AUTHORITY  
AND GROUND WATER DISTRICT  
Budgetary Comparison Statement - General Fund  
For Year Ended September 30, 2018**

	Actual	Original Budget	Final Amended Budget	Variance Positive (Negative)
<b>Revenues:</b>				
Property taxes	\$ 839,669.96	\$ 843,500.00	\$ 843,500.00	\$ (3,830.04)
Property taxes penalty & interest	11,115.19	-	-	11,115.19
Interest income	275.45	450.00	450.00	(174.55)
Permits and deposits	17,500.00	12,000.00	12,000.00	5,500.00
USGS Gauge Station	6,800.00	6,800.00	6,800.00	-
Miscellaneous	4,230.18	2,500.00	2,500.00	1,730.18
Non Compliance Penalty	17,500.00	-	-	17,500.00
Water analysis	5,565.00	6,000.00	6,000.00	(435.00)
Total revenues	<u>902,655.78</u>	<u>871,250.00</u>	<u>871,250.00</u>	<u>31,405.78</u>
<b>Expenditures:</b>				
<b>Service operations:</b>				
Appraisal District	22,381.27	21,820.00	22,946.00	564.73
Bonds & Insurance	7,062.94	8,770.00	8,770.00	1,707.06
Building Maintenance	10,760.80	15,000.00	15,000.00	4,239.20
Dues & Subscriptions	5,706.57	4,500.00	5,700.00	(6.57)
Education	8,837.17	17,000.00	17,000.00	8,162.83
Computer Software and Support	4,764.70	7,530.00	5,030.00	265.30
Small Equipment & Supplies	13,444.80	18,400.00	18,400.00	4,955.20
Elections	-	-	-	-
Public Relations	-	-	-	-
Health Insurance	41,977.44	35,000.00	42,000.00	22.56
Website	263.53	1,500.00	1,500.00	1,236.47
Monitoring Units	160.18	2,500.00	1,500.00	1,339.82
Office Supplies	6,116.18	5,500.00	6,100.00	(16.18)
Office Rent	3,600.00	3,600.00	3,600.00	-
Payroll Tax	30,047.08	32,000.00	32,000.00	1,952.92
Postage	664.76	750.00	750.00	85.24
Professional Services	123,598.89	185,800.00	166,000.00	42,401.11
Salaries	363,026.14	356,000.00	364,000.00	973.86
Tax Collection Exp.	16,436.70	-	-	(16,436.70)
GMA Expense	1,056.71	4,000.00	1,500.00	443.29
Travel & Conferences	16,804.30	17,000.00	17,000.00	195.70
Employee Training	6,441.95	7,000.00	7,000.00	558.05
Utilities	18,882.12	16,000.00	19,000.00	117.88
USGS - Gauges	-	16,580.00	16,580.00	16,580.00

**BANDERA COUNTY RIVER AUTHORITY  
AND GROUND WATER DISTRICT  
Budgetary Comparison Statement - General Fund  
For Year Ended September 30, 2018**

	<u>Actual</u>	<u>Original Budget</u>	<u>Final Amended Budget</u>	<u>Variance Positive (Negative)</u>
<b>Expenditures: (Continued)</b>				
USGS - Flood Control Project	45,074.94	32,000.00	46,000.00	925.06
Vehicle Operations	20,940.25	15,000.00	21,605.00	664.75
Water Quality Project	7,561.77	16,000.00	12,609.00	5,047.23
Water Samples Exp.	6,735.65	9,000.00	9,000.00	2,264.35
Well Plugging	1,410.23	2,500.00	2,500.00	1,089.77
Illegal Dumping Litter Abatement	680.00	2,500.00	1,500.00	820.00
Medina River Cleanup	1,207.40	1,000.00	1,210.00	2.60
Brush Control	3,922.37	3,500.00	3,950.00	27.63
Flood Awareness	957.02	1,500.00	1,500.00	542.98
ASR & Water Catchment Projects	-	1,000.00	-	-
Medina Lake Water Quality - USGS	-	10,000.00	-	-
Contingencies	-	1,000.00	-	-
	<u>790,523.86</u>	<u>871,250.00</u>	<u>871,250.00</u>	<u>80,726.14</u>
 Excess (deficiency) of revenues over expenditures	 <u>112,131.92</u>	 <u>-</u>	 <u>-</u>	 <u>112,131.92</u>
 <b>Other financing sources (uses)</b>				
Transfers out	-	-	-	-
Total other financing sources (uses)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
 Change in fund balance/net position	 112,131.92	 -	 -	 112,131.92
 <b>Fund balance:</b>				
Beginning of the year	111,082.99	111,082.99	111,082.99	-
End of the year	<u>\$ 223,214.91</u>	<u>\$ 111,082.99</u>	<u>\$ 111,082.99</u>	<u>\$ 112,131.92</u>



**BANDERA COUNTY RIVER AUTHORITY  
AND GROUND WATER DISTRICT  
Schedule of Delinquent Taxes Receivable  
For the Year Ended September 30, 2018**

LAST TEN YEARS ENDED SEPTEMBER 30,	TAX RATE	ASSESSED VALUE FOR TAX PURPOSES (in thousands)	BEGINNING BALANCE 10/1/17	CURRENT YEAR TOTAL LEVY	ENTIRE YEAR'S ADJUSTMENTS	TOTAL COLLECTIONS	BALANCE 9/30/18
2008 & Prior	Var	Var	\$ 7,664.87		\$ (29.63)	\$ 193.84	\$ 7,441.40
2009	.026849	1,544,243	1,389.85		17.26	76.68	1,330.43
2010	.024000	1,683,008	1,437.93		(64.94)	104.20	1,268.79
2011	.023414	1,796,477	1,815.52		(2.22)	175.06	1,638.24
2012	.024474	1,842,781	2,215.44		193.70	347.29	2,061.85
2013	.026001	1,878,945	3,078.09		156.04	552.06	2,682.07
2014	.028058	1,903,192	4,193.00		257.02	1,048.90	3,401.12
2015	.034739	2,015,732	8,425.80		232.78	3,103.91	5,554.67
2016	.037300	2,088,705	20,244.42		182.09	10,583.57	9,842.94
Current	.039280	2,151,203		844,992.42	(3,138.26)	823,484.45	18,369.71
			<u>\$ 50,464.92</u>	<u>\$ 844,992.42</u>	<u>\$ (2,196.16)</u>	<u>\$ 839,669.96</u>	<u>\$ 53,591.22</u>