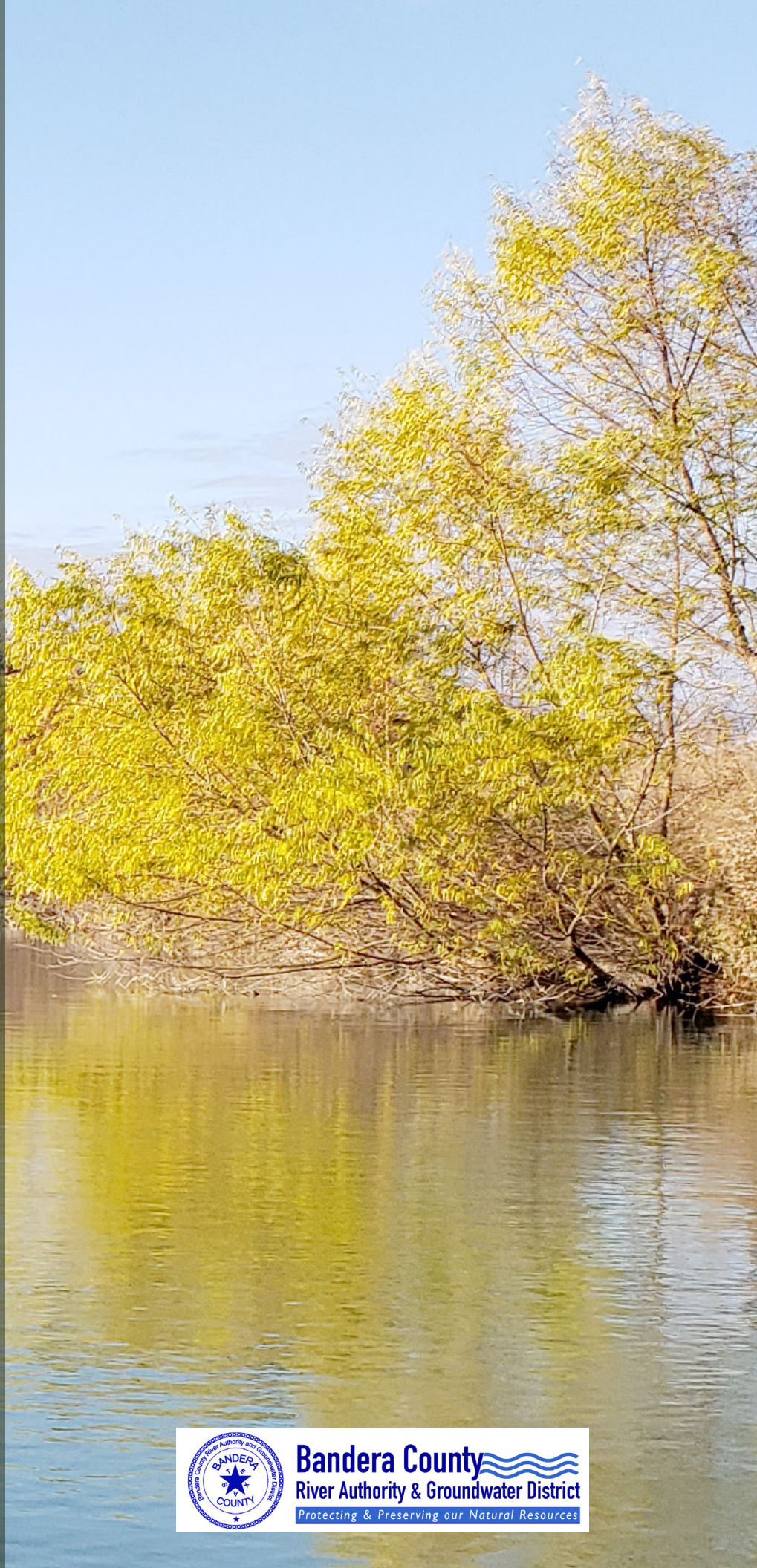
FY 2019 ANNUAL REPORT

Bandera County River Authority and Groundwater District



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Published April 2020

Photo Courtesy of Clinton Carter

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

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 accountabilty 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

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About the District

1971

Bandera County River Authority

- HB 988 of the 62nd Texas Legislature
- Article XVI, Section 59 of the Texas Constitution
- Vested with all of the rights, powers, privileges, authority and duties of a WCID

1989

Springhills Water Management District

- SB 1636 of the 71st Texas Legislature
- Joint surface and groundwater district
- Chapter 50, 52 of Texas Water Code + BCRA
- 9 directors

2003

Bandera County River Authority & Groundwater District

- TCEQ authorized name change
- Continues all programs and activities of SWMD
- Chapter 36, 49, and 51 of the Texas Water Code

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.

Purpose of a District

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 hydroelectric 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)

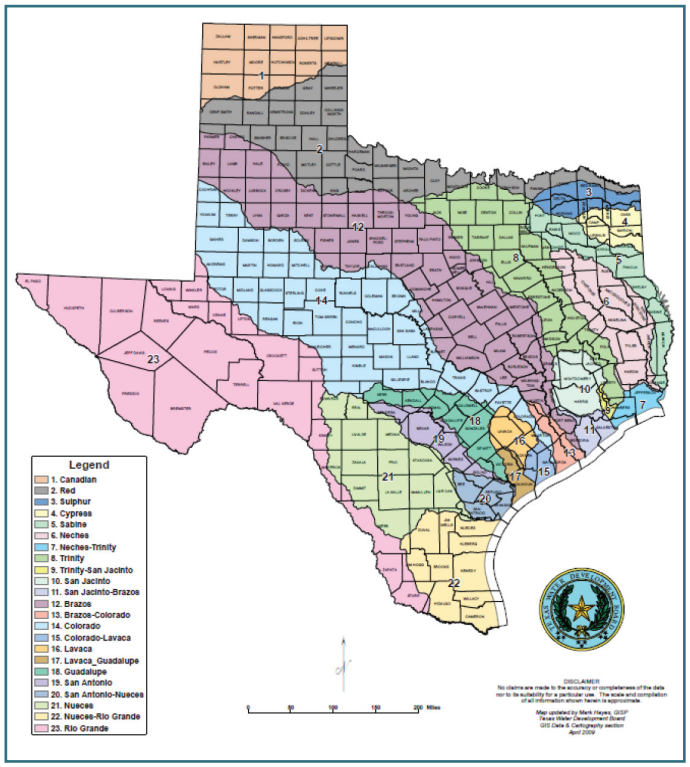
In order to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater, and of groundwater reservoirs or their subdivisions, and to control subsidence caused by withdrawal of water from those groundwater reservoirs or their subdivisions, consistent with 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.

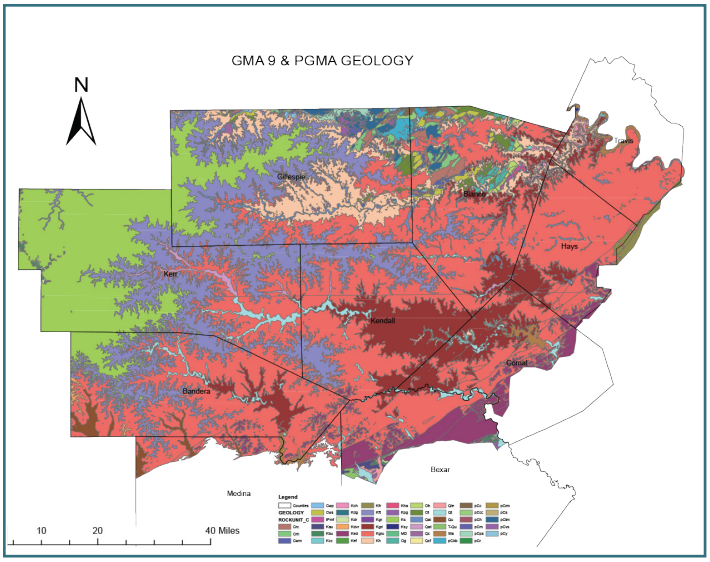


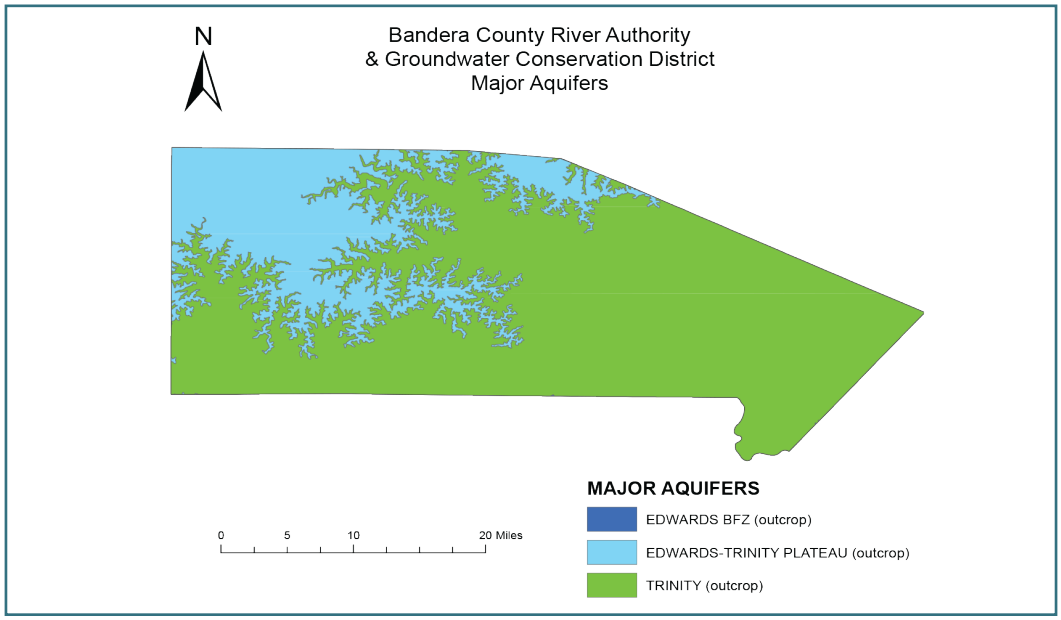
Major Aquifers

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 Hosston members of the Travis Peak Formation of the

Trinity Group of Cretaceous age. Downdip 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 anhydrate 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

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 groundwater 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 manner. 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 District Operations Manager is responsible for maintaining and implementing the Groundwater Monitoring and Protection Programs. The Groundwater District Operations Manager serves as the supervisor for all groundwater operations. Some of the primary duties include implementing the District's Well Permitting and Registration Programs, Monitor Well Program, Well Plugging Program, serving as the District's Compliance and Enforcement Officer (Code Enforcement Officer), and serving as liaison for Groundwater Management Area 9.

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. This position is also tasked with providing complex and high level administrative assistance to the General Manager. Some of the primary duties include serving as the District's Finance Coordinator, Human Resources representative, completing Annual Finance Audits and Annual Reports, and serving as the District Records Management 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.

Intergovernmental Affairs Manager, Hayli Phillips

Under the direction of the General Manager, 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 changes, and any other political or policy issue. She is also tasked with Board Meeting coordination, meeting minutes, agendas, Public Relations, updating the District's Social Media pages and Newsletters, and serving as the District's Election Coordinator. This position is also tasked with providing confidential, complex, and high level administrative assistance to the General Manager.

District Staff

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 education 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. In addition, she is tasked with keeping up with her CEUs to maintain her Teacher Certification and aligning her curriculum with the TEKS.

Chief Data Officer, Larry B. Thomas

Under the direction of the General Manager, the Chief Data Officer is primarily responsible for maintaining, reviewing, and ensuring that quality control measures are implemented in regards to District data. The Chief Data Officer is ultimately responsible for ensuring the integrity and retrievability of the District's data. The Chief Data Officer serves as the liaison between the District and other organizations as needed and serves as the Project Manager to the District's Flood Early Warning System (FEWS) Projects. In addition, he also assists the Natural Resource Specialist, Groundwater District Operations Manager, and Field Technician with field work as required.

Natural Resource Specialist, Clinton Carter

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. His primary duties include implementing the District's laboratory operations, In-House Sampling program, Clean Rivers Program, EAA Sampling program, environmental investigations, invasive species programs, and enforcement. The Natural Resource Specialist works closely with the River Authority Operations Manager and Groundwater District Operations Manager to assure that the District's goals and policies are met in a timely fashion.

Office Coordinator, Charley Curd

Under the direction of the Office Manager and the Education & Outreach Manager, the Office Coordinator is primarily responsible for supporting and assisting the Office Manager and Education & Outreach 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 to 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 and maintaining the District's website.

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.

District Teams

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

Performance Management and Quality Improvement

Water Resource Management and Policy

Education and Community Outreach

Flood Warning and Awareness

Data Management

General Manager's Statement

Bandera County tends to experience either periods of drought or heavy rainfall. Unfortunately, it seems that we are starting to fall back into severe drought conditions once again.

Additionally, this region is one of the most flash flood prone areas in the world. In recent years, 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 Flood Early Warning System (FEWS) 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, and had its completion date just this Fiscal Year, in May of 2019. Citizen training for the project is underway and will continue to be held throughout FY 2020.

Our region continues to be 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 obstruct 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 Respectfully,

Dave Mauk
General Manager

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District Programs and Initiatives

District Programs and Initiatives

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

EAA Sampling

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 Flood Early Warning System (FEWS) Sabinal River- TWDB Flood Protection Grant

USGS Flood Early Warning System (FEWS) Medina River

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

US Department of Agriculture

Natural Resource Conservation Services

State Technical Committee

Collaboration Highlights

BCRAGD highlights many of the local, regional, and state agencies and organizations that assist with programs and initiatives each year.

United States Geological Survey

BCRAGD contracted USGS to finalize and provide training for the Flood Early Warning System (FEWS) Tool Set for Bandera County and the Sabinal River under the grant awarded to the District by Texas Water Development Board. In addition, BCRAGD contracted USGS to implement the tool set for the USGS Flood Early Warning System (FEWS) of the Medina River.

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

EAA Sampling, 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

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

US Dept of Agriculture-Natural Resource Conservation Services

State Technical Committee

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 Electric Cooperative

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

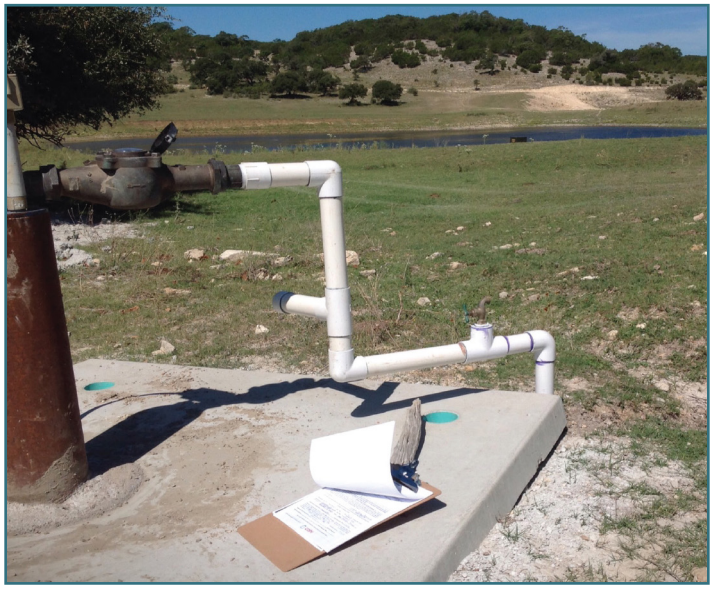
All Texas Groundwater Conservation Districts are required to develop and implement a TWDB approved management plan to effectively manage their groundwater resources. BCRAGD revised and approved its Management Plan on February 8th, 2018. TWDB approved the Management Plan on March 15th, 2018 and all parties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

During FY 2019, 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 2019 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.
- 98 Registrations were issued in FY 2019.

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 2019 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.
- 6 Permits were issued in FY 2019.

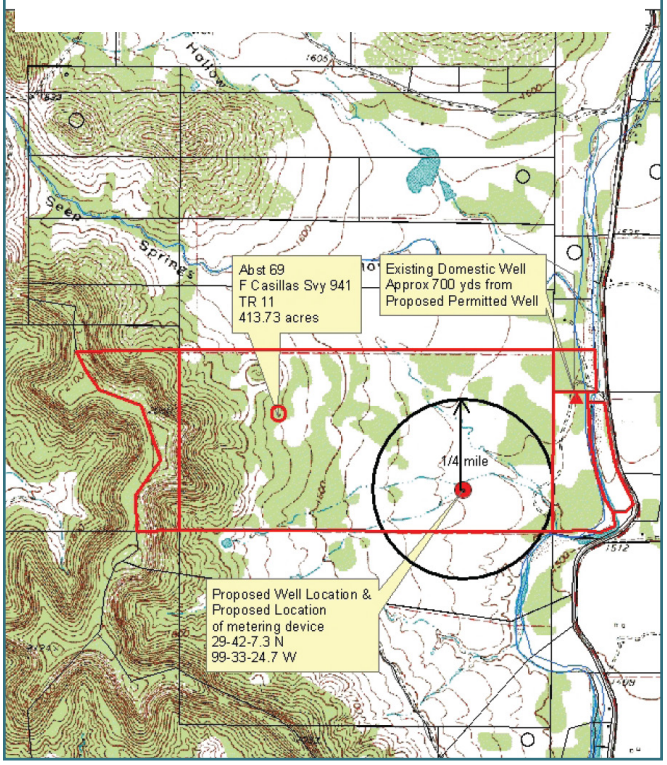
Monitor Well Program

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 2019 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.

Proposed Well Location



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.

BCRAGD's Natural Resource Specialist, Clinton Carter, collecting a Monitor Well sample.

Groundwater Programs

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.

BCRAGD's Groundwater District Operations Manager, Michael Redman, logging a well in Bandera County.

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.

Michael Redman performing a District Well Camera Run in Bandera County.

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 2019:

- 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.

Shown here are lithological samples that drillers are required by BCRAGD Rules to provide.

This photo shows BCRAGD staff analyzing the water quality of a Monitor Well using a probe while in the field. Some of the measurements taken here were temperature, pH, conductivity, and total dissolved solids.

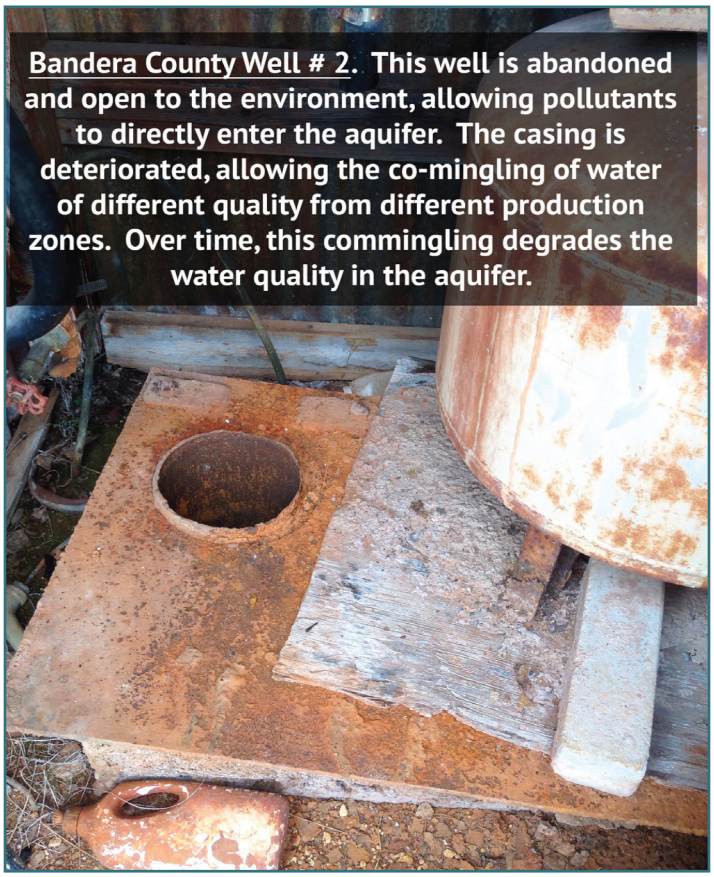
Graphics from a presentation given to the State Legislature illustrating the importance of plugging wells to protect groundwater quality for the public.

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 FY2019 Abandoned Well Program accomplishments:

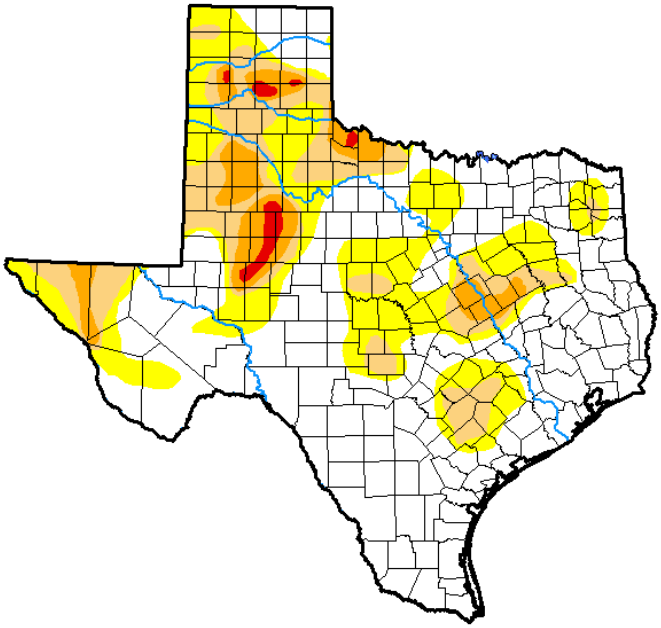
- The District plugged 1 well for the general public during the Fiscal Year 2019.
- BCRAGD issued violations to well owners to plug or repair abandoned wells.
- The District contributed abandoned well information to presentation and aquifer model components of the Nueces River Authority Water Resource Stewardship Program and other outreach efforts.



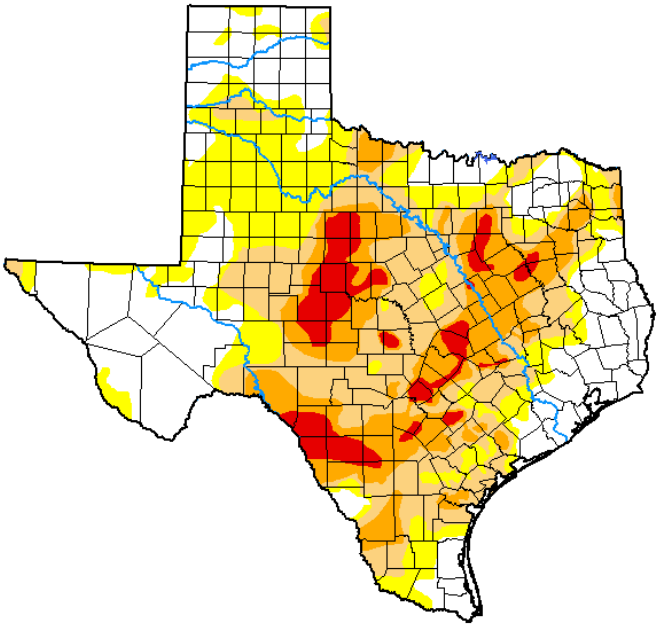
Drought Management Plan

During FY 2019, BCRAGD:

- 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.



September 25, 2018
(Released Thursday, Sep. 27, 2018)
Valid 8 a.m. EDT



October 1, 2019
(Released Thursday, Oct. 3, 2019)
Valid 8 a.m. EDT

Drought Classification

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

Rainfall Monitoring Program

Gages and Weather Station:

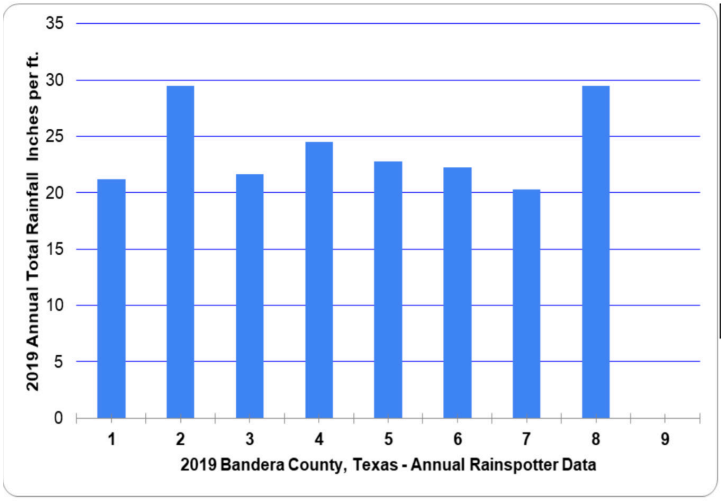
BCRAGD is partnered with Bandera County and the Bandera Electric Cooperative in sponsorship of a USGS streamflow station for water surface stage and river flow and a rainfall gage at Patterson Road in Medina. This gage displays all parameters real time via a telemetry unit, and is accessible to the public through the USGS website (www.usgs.gov). 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. BCRAGD records rainfall data, and contrasts rainfall data with monitor well results. The results are available to USDA and the County Extension office.

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

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.



2019 Annual (8) Rainspotter Monthly Totals
21.21
29.45
21.63
24.47
22.75
22.23
20.31
29.45

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 the Medina River, and summarized to the right. FY 2019 sample dates were: November 20, 2018; November 27, 2018; November 29, 2018; January 8, 2019; January 15, 2019; April 11, 2019; April 18, 2019; June 18, 2019; and June 25, 2019. The District was audited by SARA for the TCEQ Clean Rivers Program on June 18, 2019.

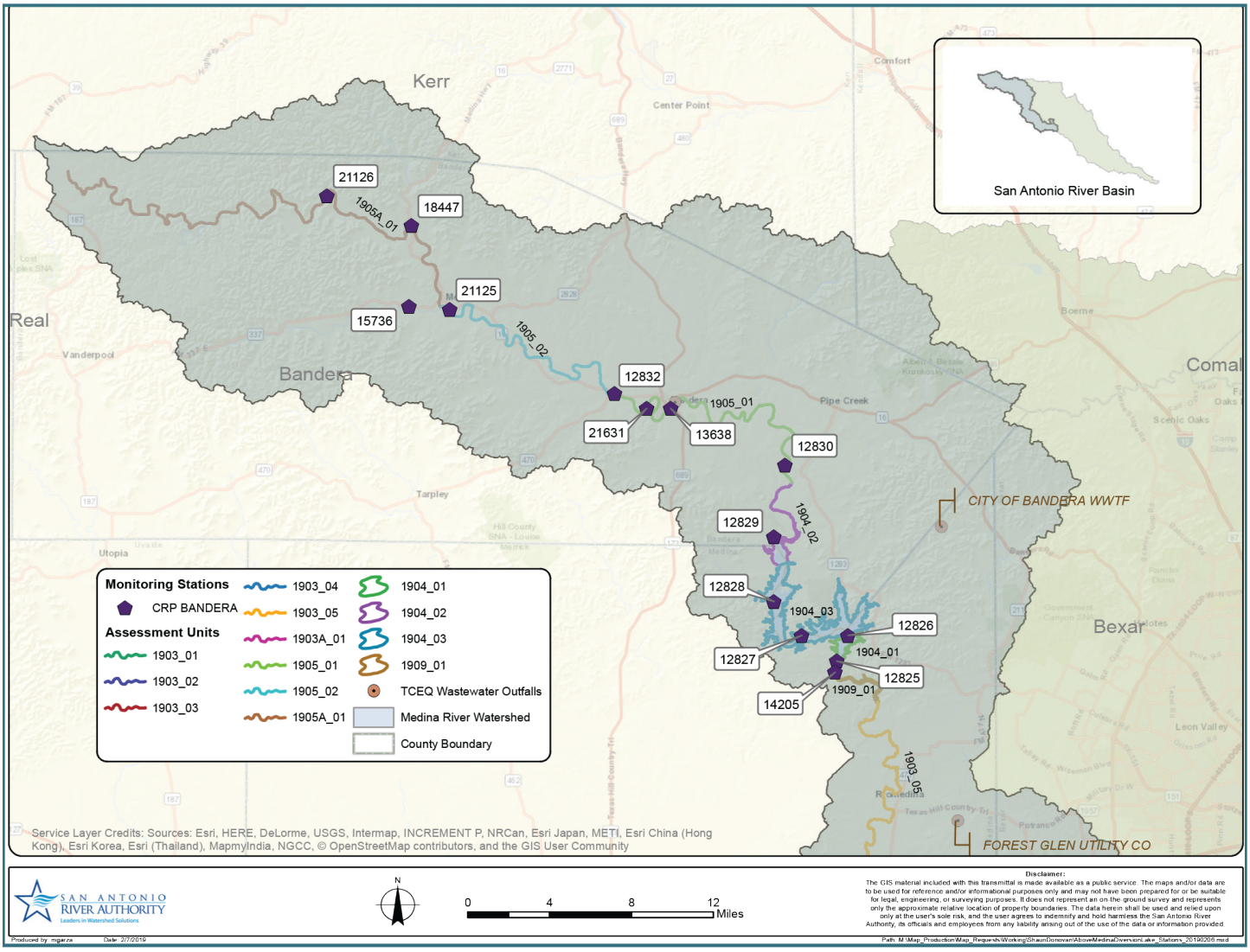
At the end of FY 2016, BCRAGD added 5 CRP sites on Medina Lake along with 1 CRP site on Diversion Lake, partnering with SARA. The sample dates for Medina Lake were: October 25, 2018; October 30, 2018; February 13, 2019; February 20, 2019; May 14, 2019; May 28, 2019; July 16, 2019; and August 29, 2019. The sample dates for Diversion Lake were October 11, 2018; February 12, 2019; May 9, 2019; and August 1, 2019.

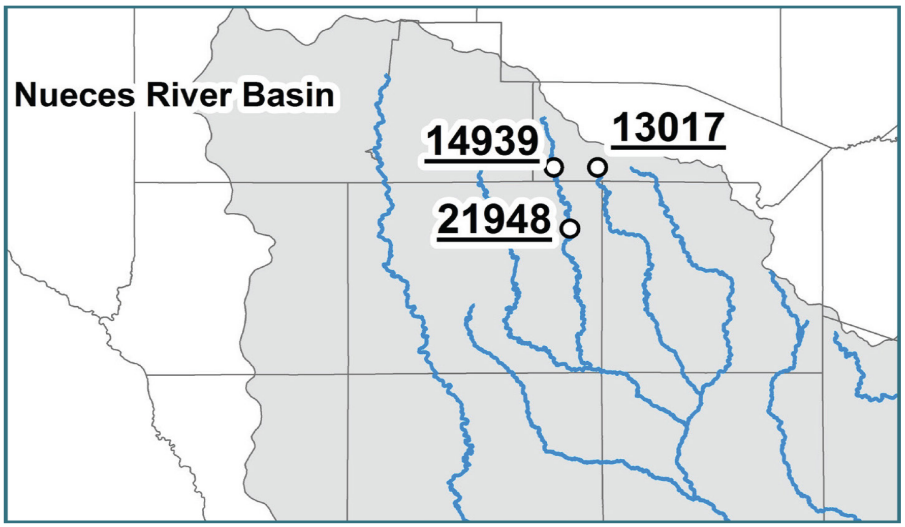
BCRAGD partnered with Nueces River Authority (NRA) in 2016 to participate in the Clean Rivers Program in the Nueces River Basin. BCRAGD staff are responsible for 3 sites shown in the chart to the right. The FY 2019 sample dates for the Nueces River Basin were October 2, 2018; February 27, 2019; May 7, 2019; and August 13, 2019.

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 on the next page 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 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
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


Kerr
Real
Bandera
Comal
Bexar
San Antonio River Basin
21126
18447
1905A_01
21125
15736
1905_02
12832
21631
13638
1905_01
12830
1904_02
12829
12828
1904_03
12826
12827
1904_01
12825
14205
1909_01
1903_05
CITY OF BANDERA WWTF
FOREST GLEN UTILITY CO
Monitoring Stations
CRP BANDERA
Assessment Units
1903_01
1903_02
1903_03
1903_04
1903_05
1903A_01
1905_01
1905_02
1905A_01
1904_01
1904_02
1904_03
1909_01
TCEQ Wastewater Outfalls
Medina River Watershed
County Boundary
Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community
SAN ANTONIO RIVER AUTHORITY
Leaders in Watershed Solutions
N
0 4 8 12 Miles
Disclaimer:
The GIS material included with this transmittal is made available as a public service. The maps and/or data are to be used for reference and/or informational purposes only and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on the ground survey and represents only the approximate relative location of property boundaries. The data herein shall be used and relied upon only at the user's sole risk, and the user agrees to indemnify and hold harmless the San Antonio River Authority, its officials and employees from any liability arising out of the use of the data or information provided.
Produced by: mgarza
Date: 2/7/2019


Nueces River Basin
14939
13017
21948

Surface Water Programs

Pictured above is District River Authority Operations Manager, Levi Sparks, measuring the flow of Coalkiln West Prong on the Medina River in April 2019.

The pictures above show equipment and bottles used by BCRAGD's River Authority Operations Manager and Natural Resource Specialist during Clean Rivers Program sampling events.

Surface Water Programs

During FY 2019, BCRAGD District Staff did the following events related to Surface Water:

- Attended a Women's Land Stewardship Conference by AgriLife Extension Office on 01-02-OCT-2018.
- Facilitated a Medina Lake Clean Up Meeting on 03-OCT-2018.
- Completed a Medina Lake Buoy Deployment Retrieval & Debris Clean Up 10-OCT-2018.
- Gave a TCEQ Presentation over Issues with Groundwater vs. Surface Water 21-OCT-2018.
- Completed Natural Resources Training on 05-NOV-2018.
- Attended an Urban Riparian Restoration Program on 06-NOV-2018.
- Attended a SWQM Workshop on 13-14-NOV-2018.
- Attended and Presented at the Healthy Creeks Initiative Meeting on 07-DEC-2018.
- Completed the Annual Ethics Training-Watershed Monitoring/Stormwater on 11-DEC-2018.
- Collaborated and attended a discussion over Riparian Workshops on 12-DEC-2018.
- Hosted the Medina River Protection Fund Board Meeting in which 2 BCRAGD Staff Members were Voted on as Board Members on 23-JAN-2019.
- Attended the Texas Chapter- American Fisheries Society (TCAFS) Meeting on 23-27-JAN-2019.
- Held the First Meeting at the District Office with Edwards Aquifer Authority to Begin the EAA Sampling Program- 07-FEB-2019.
- Attended and presented at the Texas Riparian and Stream Ecosystem Workshop in collaboration with Texas Water Resource Institute on 06-MAR-2019.
- Consulted on a Riparian Restoration Event on 11-MAR-2019.
- Attended the USDA NRCS Technical Committee Meeting on 02-APR-2019.
- Set up for the LAMCOS Meeting on 16-APR-2019.
- Attended the LAMCOS Meeting on 18-APR-2019.

Surface Water Programs

- Attended the Annual Medina River Clean-Up @ Bandera City Park on 04-MAY-2019.
- Monitored Aquatic Life on the Medina River with SARA on 23-MAY-2019.
- Attended Fish ID Training on 29-30-MAY-2019.
- Attended the SCTWRIG Meeting on 01-JUN-2019.
- Completed HCI Training on 02-JUN-2019.
- Planned CRP Sampling & Lab Supply Orders on 01-AUG-2019.
- Held an Internal Meeting Over Sampling Procedures & Safety on 15-AUG-2019.
- Updated the Website with Summer In-House Results & Specifications on 27-AUG-2019.
- Reviewed a Webinar on Natural Resource from AgriLife Extension: Native Grasses on 05-SEP-2019.
- Attended the Women's Bennett Land Stewardship Conference on 30-SEP-2019.

A healthy Riparian located at the North Prong.

Surface Water Programs

District In-House Sampling Programs

In order to preserve and protect the headwaters of the Medina and Sabinal Rivers, as 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

The Surface Water Quality 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 and the District website 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 and Sabinal Rivers, as well as Medina Lake, and follow up with an immediate investigation.

From October 2018 to September 2019, there were 7 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 MPN, further investigations are made.

Site #	Location	Site #	Location
ML-1.04	Medina Lake @ County Park NE of Boat Ramp	MP-3.01	Medina R @ Moffett Park
MR-1.01	Medina R @ English Crossing	MRN-3.01	N. Prong Medina R @ Rocky Creek Crossing FM 2107
MR-1.02	Medina R @ Bridlegate Park	MRN-3.03	N. Prong Medina R @ Brewington Crossing FM 2107
MR-1.03	Medina R @ Bandera River Ranch Park	WC-3.01	N. Prong Medina R @ Wallace Creek
BC-2.01	Bandera Creek @ SH 16	MRW-3.01	W. Prong Medina R @ Coal kiln Rd RR 337
LMC-2.01	Lower Mason Creek @ Chipman Ln.	MRW-3.03	W. Prong Medina R @ Carpenter Creek @ RR 337
MR-2.025	Above Sewage Treatment Plant Effluent	SC-4.01	Seco Creek @ RR 470 Crossing
MR-2.03	Medina R @ Bandera City Park HWY 173	CC-4.01	Sabinal R @ Cornelius Rd Crossing

EAA Sampling

This Fiscal Year, The Bandera County River Authority & Groundwater District has partnered with the Edwards Aquifer Authority to collect water samples along a seven-mile reach of the Medina River. BCRAGD staff collect grab samples bi-weekly at the following three locations: Bridlegate, Coal Springs, and English Crossing. The EAA is interested in analyzing the stable isotopic structure of the water in this area of the river along with many other segments across the region.

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

Below is the combined summary of BCRAGD's In-House, Clean Rivers Program, and EAA Sampling:

1st Quarter: (October 2018-December 2018)

- Oct 2nd- Sabinal River CRP
- Oct 11th- Diversion Lake CRP
- Oct 25th & Oct 30th- Medina Lake CRP
- Nov 20th, Nov 27th, & Nov 29th- Medina River CRP
- Dec 12th & 13th- Quarterly In-House Sampling

2nd Quarter: (January 2019-March 2019)

- Jan 8th & Jan 15th- Medina River CRP
- Feb 7th- 1st EAA Sampling Meeting- Logistics
- Feb 12th- Diversion Lake CRP
- Feb 13th & Feb 20th- Medina Lake CRP
- Feb 27th- Sabinal River CRP
- Mar 8th & Mar 22nd- EAA Sampling
- Mar 14th- Quarterly In-House Sampling

3rd Quarter: (April 2019-June 2019)

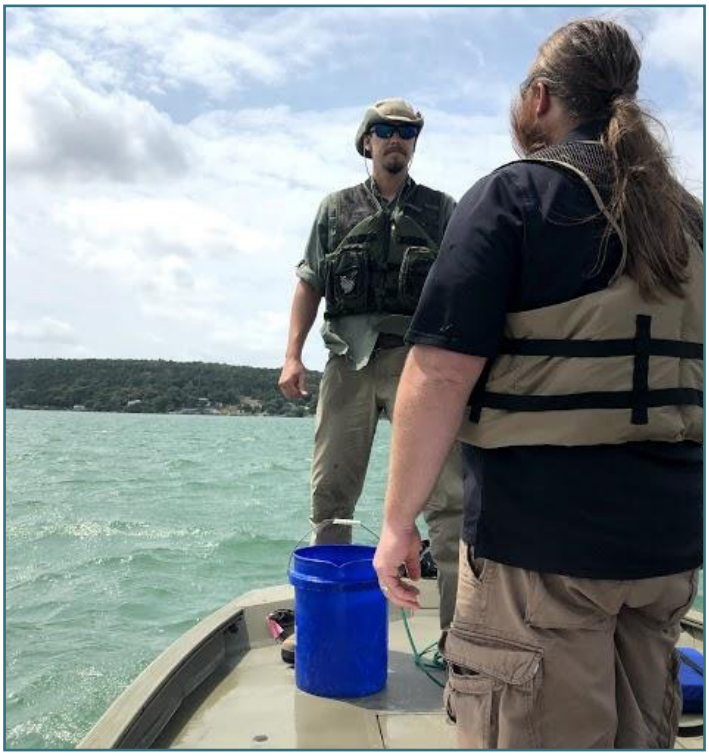
- Apr 3rd- Medina CRP CMM
- Apr 5th & 17th- EAA Sampling
- Apr 11th & Apr 18th- Medina River CRP
- May 3rd, May 16th, & May 31st- EAA Sampling
- May 7th- Sabinal River CRP
- May 9th- Diversion Lake CRP

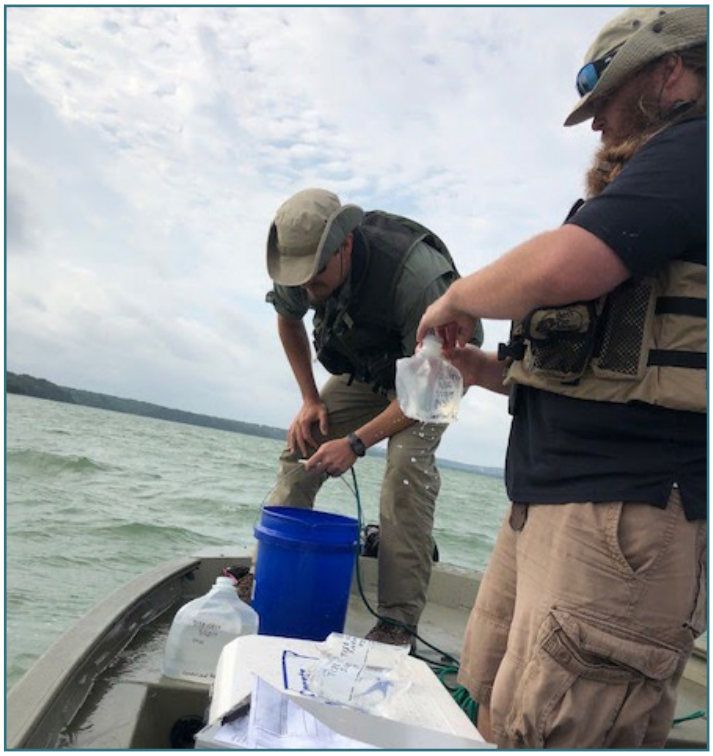
- May 14th & May 28th- Medina Lake CRP
- Jun 13th & Jun 27th- Quarterly/Summer In-House Sampling
- Jun 13th & Jun 27th- EAA Sampling
- Jun 18th- CRP Audit
- Jun 18th & Jun 25th- Medina River CRP

4th Quarter: (July 2019-September 2019)

- Jul 11th- EAA Sampling
- Jul 11th & Jul 24th- Quarterly/Summer In-House Sampling
- Jul 16th- Medina Lake CRP
- Aug 1st- Diversion Lake CRP
- Aug 7th & Aug 22nd- EAA Sampling
- Aug 7th & Aug 22nd- Quarterly/Summer In-House Sampling
- Aug 13th- Sabinal CRP
- Aug 29th- Medina Lake CRP
- Sep 4th- EAA Sampling
- Sep 4th- Quarterly/Summer In-House Sampling

Surface Water Programs





BCRAGD River Authority Operations Manager and Natural Resources Specialist taking water quality samples from Medina Lake for the Clean Rivers Program.

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 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 decade. 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.

The District is currently implementing 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 which began in the summer of 2018, and maintains ongoing monitoring and re-treatment as needed. If you have Arundo donax on your property and want more information on how to properly control it, please call BCRAGD at (830) 796-7260. To learn more about the Healthy Creeks Initiative, visit the Texas Parks and Wildlife Department website: https://tpwd.texas.gov/landwater/water/aquatic-invasives/healthy-creeks.phtml.

BCRAGD also monitors Zebra Mussels- small, fresh-water mussels that spread by 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.

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 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's Clint Carter and Levi Sparks conducted another round of Zebra Mussel veliger sampling on Medina Lake on June 20th, 2019.

Surface Water Programs

During FY 2019, BCRAGD District Staff did the following for Invasive Species Management:

- Attended an Urban Riparian Restoration Meeting on 6-NOV-2018.
- Attended a SWQM Workshop on 13-14-NOV-2018.
- Presented a Case Clinic over Creating and Enhancing Demonstration Sites, Discussion, Best Practices, and Lessons Learned at the Healthy Creeks Initiative Meeting in which groups networked to problem-solve Watershed Scale Stewardship & Restoration Strategies in the TX Hill Country and Erosion Control Projects on 07-DEC-2018.
- Attended the Annual Ethics Training Watershed Monitoring/Stormwater on 11-DEC-2018.
- Held a Riparian Workshop Discussion Meeting on 12-DEC-2018.
- Held an Arundo donax meeting w/ City of Bandera on 28-JAN-2019.
- Presented and Attended the Texas Riparian & Stream Ecosystem Workshop in Collaboration with Texas Water Resource Institute on 06-MAR-2019.
- Consulted over Riparian Restoration on 11-MAR-2019.
- Completed Zebra Mussels Watercraft Inspection Training on 12-MAR-2019.
- Attended Healthy Creeks Initiative over Arundo Control on 16-APR-2019.
- Performed Aquatic Life Monitoring on the Medina River with SARA on 23-MAR-2019.
- Conducted an Arundo Survey on 22-MAY-2019.
- Had an Internal Meeting Update over Arundo Mapping & Expenditures 11-JUN-2019.
- Conducted an Arundo Survey on 11-12-JUN-2019.
- Was audited during the Annual CRP Audit with SARA & NRA on 18-JUN-2019.
- Conducted an Arundo Survey 19-JUN-2019.
- Conducted Zebra Mussel Sampling on Medina Lake on 20-JUN-2019.
- Conducted an Arundo Survey on 26-JUN-2019.
- Scouted for Arundo donax on the West Prong in a Helicopter with TPWD on 28-JUN-2019.
- Conducted an Arundo Survey on 02-JUL-2019.
- Conducted an Arundo Survey on 03-JUL-2019.
- Conducted an Arundo Survey on 05-JUL-2019.
- Sent out Arundo Postcards to citizens of Bandera County for Awareness on 08-JUL-2019.
- Conducted an Arundo Survey on 10-JUL-2019.
- Sent out Arundo Postcards to citizens of Bandera County for Awareness on 10-JUL-2019.
- Conducted an Arundo Survey on 14-AUG-2019.
- Conducted an Arundo Survey on 15-AUG-2019.

Untreated Arundo donax.

This photo shows a good example of what treated Arundo donax looks like.

Levi Sparks underneath an untreated Arundo donax canopy on the North Prong.

On March 12, 2019, Levi Sparks and Clint Carter attended Watercraft Inspection Training Course and Certification. There they both received a certificate of completion for Watercraft Inspection for Aquatic Invasive Species.

Surface Water Programs

On May 23, 2019, District Staff-Clint and Levi- assisted members of the San Antonio River Authority on an Aquatic Life Monitoring event at a site in the Medina River.

On June 28th, 2019, BCRAGD's Levi Sparks went on a helicopter ride with members of TPWD to scout potential Arundo donax points along the Medina River, specifically the West Prong.

Surface Water Programs

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 and a popular recreational site, but it also is an important drinking water reservoir for the entire region. The waters in the lake are some of the most pristine in the county. 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 recent years, the organization has created a Zebra Mussel monitoring program in partnership with TPWD. The District also monitors 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. BCRAGD Staff acquired a Hazard Buoy for immediate deployment in the lake to warn boaters of hazards. 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. BCRAGD also participated in numerous Fish Surveys and Fish Stockings completed by TPWD in the lake over the past few years.

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 2019, 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

The image below 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.

Chapter 36 Administrative Requirements

During FY 2019, the District maintained and reviewed policies mandated by Chapter 36 of the Texas Water Code including: 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 2019, BCRAGD's Groundwater District Operations Manager / Code Enforcement Officer as well as the District's Natural Resource Specialist and other staff attended the following:

- Illegal Dumping Training: 11-12-OCT-2018
- AACOG-RETF Meeting: 15-OCT-2018
- TCEQ Presentation: Issues with Groundwater vs. Surface Water: 21-OCT-2018
- Hosted AACOG Meeting: 23-OCT-2018
- Plateau Water Planning Group Region J Meeting: 24-OCT-2018
- GMA-9 Meeting: 4-NOV-2018
- Natural Resources Training: 5-NOV-2018
- SCTWRIG Meeting: 4-DEC-2018
- South Central Texas RETF Quarterly Meeting: 6-DEC-2018
- Annual Ethics Training- Watershed Monitoring/Stormwater: 11-DEC-2018
- TAGD Business Meeting: 22-JAN-2019
- Region J Meeting: 30-JAN-2019
- Environmental Investigation: 31-JAN-2019
- GMA-9 Meeting: 04-FEB-2019
- Environmental Investigation: 05-FEB-2019
- Environmental Investigation: 07-FEB-2019
- GMA-9 Technical Planning: 12-MAR-2019
- Nuisance Complaint Follow Up: 12-MAR-2019
- Texas Environmental Law Enforcement Association (TELEA) Conference: 01-04-APR-2019
- USDA NRCS Technical Committee: 02-APR-2019
- LAMCOS Meeting: 18-APR-2019
- GMA-9 Meeting: 22-APR-2019
- Bennett Trust Stewardship: 25-26-APR-2019
- Environmental Investigations: 07-08-MAY-2019
- Region J Meeting: 15-MAY-2019
- Nuisance Complaint: 30-MAY-2019
- SCTWRIG Meeting: 01-JUN-2019
- TAGD Business Meeting: 03-04-JUN-2019
- Headwater GCD Meeting: 11-JUN-2019
- Rules & Proposed Amendments to District Rules Discussion: 12-JUN-2019
- GMA-9 Meeting: 17-JUN-2019
- Texas Water Foundation Meeting: 25-JUN-2019
- Environmental Investigation: 03-JUL-2019
- Meeting with CCGCD: 08-AUG-2019
- SARA Environmental Meeting: 08-AUG-2019
- Staff Meeting: Surface Water & Groundwater Laws & Regulations in Texas: 14-AUG-2019
- Region J Meeting: 15-AUG-2019
- NRCS State Technical Committee Meeting: 05-SEP-2019
- TAGD Summit Conference: 20-22-AUG-2019
- Code Enforcement Training: 20-SEP-2019
- Staff Meeting: Registered vs. Permitted Wells: 24-SEP-2019

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.

USGS Flood Early Warning System (FEWS)

On August 25, 2016, The Texas Water Development Board awarded $265,150 in Flood Protection Grant funding to BCRAGD for the Medina River Flood Early Warning System for Bandera County. Working with USGS, this project protects the lives of our local residents as well as the communities downstream through a flood early warning tool set. Two additional stream gages are installed upstream, which in turn improves response strategies and planning through advanced modeling and mapping. Parts of the Midwest have successfully implemented this tool set, and Bandera County serves as an example to the rest of Texas. This project is fully functional and online as of this fiscal year.

BCRAGD's Chief Data Officer, Larry B. Thomas, presenting the installed USGS stream gages to the Texas Water Development Board.

The following existing USGS stream-gage stations are of the Medina River Flood Early Warning System (FEWS) (and can be found at www.bcragd.org/early-flood-warning-system/). These stations are routinely monitored daily by USGS and by BCRAGD staff during storm related events and are significant for providing storm related information of impending storms. They are:

- USGS National Water Information System https://waterdata.usgs.gov/nwis/
- North Prong gage at Brewington Creek https://waterdata.usgs.gov/nwis/inventory/?site_no=08178861
- West Prong gage at Carpenter Creek Road https://waterdata.usgs.gov/nwis/inventory/?site_no=08178871
- Patterson gage https://waterdata.usgs.gov/nwis/inventory/?site_no=0817887350
- Bandera gage https://waterdata.usgs.gov/tx/nwis/inventory/?site_no=08178880
- USGS Texas Water Dashboard https://txpub.usgs.gov/txwaterdashboard/
- USGS WaterAlert https://water.usgs.gov/wateralert/
- USGS Water On-The-Go https://txpub.usgs.gov/water-onthego/
- USGS Twitter
  - #TX RainWatch
    https://twitter.com/USGS_TexasRain
    #TX FloodWatch
    https://twitter.com/USGS_TexasFlood
    #USGS[streamgage number]
    (e.g. #USGS08178880)
- National Weather Service River Forecast – only available for Bandera gage (USGS gage number 08178880, NWIS identifier BDAT2)
  https://water.weather.gov/ahps2/hydrograph.php?wfo=ewx&gage=bdat2

Development of a 'Hydrologic Engineering Center' - 'River Analysis System' (HEC-RAS) Flood Inundation Map (FIM) was created for the Medina River watershed, Bandera County, and currently ongoing for the Sabinal River watershed. In addition to the Medina River FEWS, the Sabinal River FEWS was funded $230,000 by TWDB Grant and BCRAGD and USGS cost

shares. USGS is completing tasks as the 3rd Party contractor. A USGS stream gage installation has been completed at the Sabinal River Bridge located on FM-1050 (see photo), below Utopia Park at Utopia, TX as Station ID#08197970. Larry B. Thomas, BCRAGD's Chief Data Officer, also serves as the Project Manager for all Flood Early Warning Systems. Additional USGS Stream gages along the Sabinal River and West Sabinal River above Utopia are planned - Pending Landowner access and right of way permissions.

BCRAGD hosted and attended multiple meetings concerning flood awareness as well as administratively prepared flood data spearheaded by BCRAGD's Chief Data Officer. See details below:

- Flood Work Online Data Management Review USGS- Oct 16, 2018
- Flood Date Review- Oct 17, 2018
- Compile USGS Edwards Well #1 Rainfall Data & Rainspotters Data- Oct 23, 2018
- Process Rainspotter Data, BCRAGD Flood Plan, USGS Letter- Oct 24, 2018
- USGS Data Entry- Oct 30, 2018
- Rainspotters Quarterly Forms w/Prepared Attachments/Thank Yous- Oct 31, 2018
- TWDB Quarterly Reports Flood Warning-Flood Management- Nov 5-6, 2018
- Edit/Review Flood Confluence Article- Nov 12, 2018
- USGS/TWDB Communication Flood Warning Systems-Management- Nov 13, 2018
- Rainspotters Forms & Data to Mail & Draft Flood Plan Work- Nov 14, 2018
- Draft Flood Plan, Flood Management- TWDB Communication- Nov 15, 2018
- Meeting Room Prep Flood Project Meeting Tool Set- Nov 28, 2018
- Flood Project Mtg- USGS & TWDB on County's Warning System- Nov 28, 2018
- HCWI Meeting- Dec 7, 2018
- Sabinal Flood Project- Jan 4, 2019
- Sabinal RWDB Contracts SOW- Jan 6, 2019
- TWDB Sabinal Contract Completed- Jan 8, 2019
- Medina TWDB Correspondence Payment Request No. 10/11- Jan 14, 2019
- Rainspotters Annual Data- Jan 15, 2019
- DUN Processing- Jan 22-23, 2019
- TWDB Sabinal Contract Language/Signature Pages- Jan 29, 2019
- Public Meeting for Flood Early Warning System- Feb 26, 2019
- Medina Patterson Gage visit with TWDB / Operational Overview- Feb 26, 2019
- Medina & Sabinal Flood Grant Quarterly Reports- Mar 6-7, 2019

This picture shows the Sabinal River USGS Gage located in Utopia, TX, at FM1050.

Education & Outreach Programs

- TWDB/USGS/BCRAGD Flood Grant Invoices, Payments, & Dues- Mar 12, 2019
- TWDB Work Books- Mar 13, 2019
- Contacted USGS for Meeting to Complete TWDB Report- Mar 20, 2019
- Contacted USGS Invoicing Finals for Medina Flood Project- Mar 21, 2019
- TWDB / USGS Invoicing & Planned Meeting Topics for USGS Meeting- Mar 27, 2019
- TWDB / USGS Reports- Mar 30, 2019
- TWDB Reports/USGS Invoices/BCRAGD Flood Plan- Apr 2-3, 2019
- USGS Invoices / TWDB Quarterly & Final Draft Reports- Apr 9-10, 2019
- TWDB Final Report Drafting- Apr 15, 2019
- 1st Draft Flood Project Report Editing & Reviewing- Apr 17, 2019
- USGS Invoice Review- Apr 17, 2019
- TWDB Final Report Drafting- Apr 18, 2019
- Researching Grant Opportunities for Flood Projects- Apr 18, 2019
- Drafting Quarterly Reports for TWDB- Apr 19, 2019
- TFFC Meeting- Apr 24, 2019
- Drafting TWDB Report- May 1, 2019
- Rev/Edit USGS Portion TWDB Draft Final Report Medina Flood Proj- May 14-16, 2019
- Meeting: Bandera Flood TWDB Report- May 20, 2019
- TWDB Final Report Drafting / BCRAGD Flood Plan- May 21-22, 2019
- Review Final Report Flood Warning Tool Set Development & Agendas- May 22, 2019
- Drafting TWDB Final Report / BCRAGD Flood Plan- May 27, 2019
- Read, Review, Edit Flood Report- May 28, 2019

BCRAGD, USGS, and TWDB unveiled to members of the local government the preliminary results for the Flood Early Warning System Project on November 28, 2018.

On December 4th, 2018, General Manager D. Mauk gave a presentation with Namjeong Choi of USGS and Doug Schnoebelen of USGS at SCTWRIG over the Flood Early Warning System (FEWS) Project.

- TWDB Flood Doc Intro Letter Drafting & Completing - Final Mailed- May 29, 2019
- Reviewed Sabinal FEWS- Jun 4, 2019
- Worked on TWDB Quarterly Report- Jun 5, 2019
- Budget Work TWDB Medina FEWS / BCRAGD Flood Plan- Jun 6, 2019
- TWDB Quarterly Reports for Medina & Sabinal- Jun 11, 2019
- Flood Project Public Meeting (Medina) - Jun 12, 2019
- Flood Project Public Meeting (Sabinal) - Jun 12, 2019
- Rainspotter Data & TWDB / USGS Invoice Confirmations- Jul 3, 2019
- Medina & Sabinal Flood Account Budget- Jul 8-10, 2019
- Edit TWDB Final Report, Requested USGS Report- Jul 16, 2019
- Edits for TWDB Final Report & Rainspotter Data- Jul 17, 2019
- Deposit Flood Acct- Jul 18, 2019
- LCRA Community Development Grant Application Inquiry- Jul 22, 2019
- Review & Edit Flood Project Report- Jul 22, 2019
- Review LCRA Grant Possibility & Meeting- Jul 23, 2019
- Sabinal Grant Schematic of Funding for TWDB / USGS- Jul 24, 2019
- Conference Call NOAA- Jul 24, 2019
- Sabinal Spreadsheet Billing & Payment Requests- Jul 29, 2019
- Flood Project / Invoices TBP Organization- Jul 30, 2019
- Contacted USGS Report Status- Aug 6, 2019
- Editorials TWDB Draft Report Revision to Final- Aug 7, 2019
- USGS / TWDB / BCRAGD Confirmations of Invoicing for Flood Grant- Aug 8, 2019
- Bookkeeper Meeting: Flood Project- Aug 12, 2019
- Edit TWDB Final Report & TWDB Flood Outreach Meeting & Invoicing- Aug 13, 2019
- Flood Project Report & Editing Meeting & Final TWDB Review- Aug 14, 2019
- Final Flood Early Warning System Tool Set Report Completion- Aug 15, 2019
- Board Meeting Room Prep for Joint Press Release Meeting- Aug 19, 2019
- USGS Flood Project Deposit- Aug 20, 2019
- Begin Sabinal #3 Quarterly Report- Aug 21, 2019
- Joint Press Release Conference BCRAGD,

USGS, & TWDB- Aug 26, 2019
- Sabinal Quarterly Report & USGS Invoice for TWDB- Aug 27, 2019
- TFMA (Texas Floodplain Managers Association) Conference- Aug 28-30, 2019
- Sabinal Quarterly Report & Payment Request from USGS- Aug 28, 2019
- Completed Sabinal Progress Report- Sep 3, 2019
- Medina Quarterly Reports for 2019- Sep 5, 2019
- Completed Sabinal Quarterly Reports- Sep 10, 2019
- Investigate USGS Gage Locations- Sep 11, 2019
- Processed Sabinal FEWS / USGS Invoice for TWDB Cost Share- Aug 17-18, 2019
- Rainspotter Data / Rainfall Monitoring Program Data Entry (as received): Oct 10, 2018; Oct 23, 2018; Oct 30, 2018; Jan 4, 2019; Jan 15, 2019; Jan 22-23, 2019; Feb 7, 2019; Jun 11, 2019; Jul 16, 2019; Aug 8, 2019; Aug 20, 2019
- Drought Stage Monitor posted at Bandera Courthouse & BCRAGD board/website- Nov 1, 2018; Dec 10, 2018; Feb 7, 2019; Apr 5, 2019; May 2, 2019; Jun 10, 2019, Aug 15, 2019; Sep 19, 2019

The 2013 Light Detection and Ranging (LiDAR) data acquisition enhances the modeling and mapping capabilities for this Flood Early Warning System (FEWS) 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.

Public Safety- Flood Preparation Programs

BCRAGD has several Certified Floodplain Managers in its employ and is an active member of the Texas Floodplain Management Association.

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.

Pictured here is the Texas Water Development Board congratulating the Bandera County River Authority and Groundwater District with a certificate for the completion of the Medina River Flood Early Warning System at the Joint Press Release Conference on August 26, 2019. From left to right: Don Sloan, (BCRAGD Board President), Kathleen Jackson, (TWDB Board Member), and David Mauk (BCRAGD General Manager).

Public Education and Outreach Programs

The District prioritizes the education of students and the public regarding surface water and groundwater in Bandera County. Educational strategies emphasize hands-on activities, presentations, and workshops. On September 27-28, 2019, BCRAGD's Education and Outreach Manager and Coordinator attended the Texas Association for Environmental Education (TAEE) Training Conference to assist in implementing education strategies.

Educational Programs in the ISDs

Since 2012, BCRAGD 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 nonpoint source pollution. The BCRAGD Education & Outreach Manager and the Education & Outreach Coordinator held Educational Programs with NRA during the following dates: Hill Country Elementary for Bandera ISD on February 11, 2019; Utopia ISD on March 27, 2019; Medina ISD on April 29, 2019; and May 20th-21st and May 23rd-24th to all of the 7th graders in Bandera Middle School.

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, BCRAGD has collaborated with Nueces River Authority at this event. For FY 2019, this event took place on 05.OCT.2018 and approximately two hundred 6th grade students were in attendance. 6th graders were from Bandera ISD, Medina ISD, and Utopia ISD. Students were engaged in performing water quality tests and discussions about water conservation issues and solutions.

Education & Outreach Programs

On October 20, 2018 Corrina Fox and Charley Curd represented Bandera County River Authority and Groundwater District at the Bandera ISD Fall Festival at Hill Country Elementary School. Approximately 40 students from grades Pre-K to 5th participated in a coloring contest by grade. Students were to review and choose their favorite picture illustrating water conservation and color it. As each student chose their picture to color, Mrs. Fox and Ms. Curd discussed the water conservation tip or issue occurring in the picture with the student.

On August 4, 2019, the BCRAGD Outreach Team attended the Bandera I.S.D. Back to School Bash in Lakehills, Texas. The event had over 600 participants. BCRAGD provided an activity for all age groups testing the water knowledge of individuals. These individuals were quizzed over water conservation facts to earn tickets to a raffle for their chance to win a basket containing school supplies.

BCRAGD presented to the Bandera Boys and Girls Club at Alkek Elementary on June 20, 2019. Kids ranged from 2nd to 5th grade. The same presentation was made on June 24, 2019 at the Medina Library in Medina, Texas to kids ranging from pre-K to 5th grade. The presentations covered topics regarding freshwater availability, ways to conserve water, how water is used, and how water flows from a smaller waterway to a larger waterway. Kids participated in a hands-on activity to demonstrate how water is used by various groups and how humans impact the quality of the water by not disposing of trash properly and how that trash will end up in the nearest waterway. The activity was set up to show how water flows from a home, farm, or factory to a creek, and then to the river. Kids were able to visualize and understand how the river went from clean to polluted with just a few people. Discussions related to preventing the contamination of water, and how to conserve water, were initiated by BCRAGD Staff and the kids participating.

District Education and Outreach Manager, Corrina Fox, presenting at the 6th Grade Ag Day at Mansfield Park in Bandera, TX on October 5th, 2018.

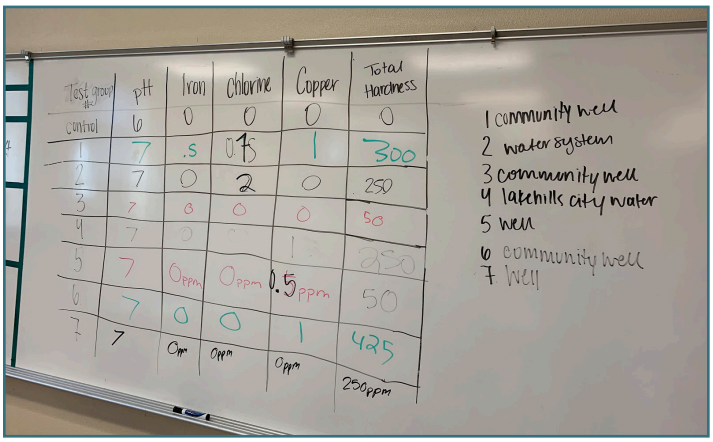
Education & Outreach Programs

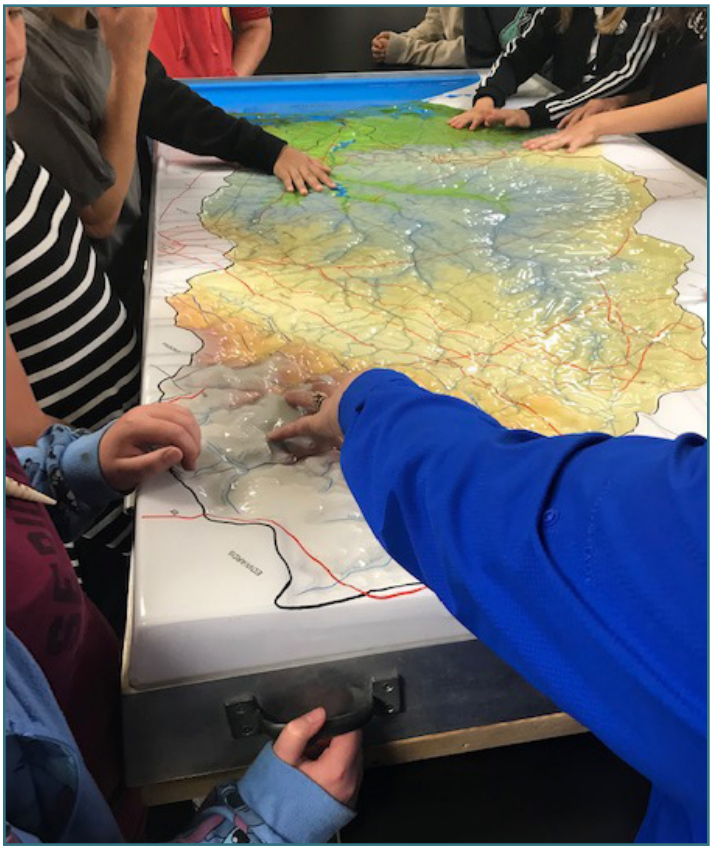
The Photo above is from an educational event at the Medina Library in which District Staff, Corrina Fox and Hayli Phillips, presented.

District Staff Corrina Fox and Charley Curd presenting at the Bandera Boys and Girls Club (2nd-3rd grade) on June 20, 2019.

Education & Outreach Programs

BCRAGD presented to the Bandera Boys and Girls Club (6th grade -12th grade) on June 25, 2019. Kids engaged in an activity where they discussed the types of pollution created by people at various locations (homes, schools, restaurants, rural areas, and gas stations) and how water moves through a watershed. This prompted conversations about solutions to preserve and conserve water.





Demonstration of a surface water runoff model and an aquifer model, with an emphasis on nonpoint source pollution.

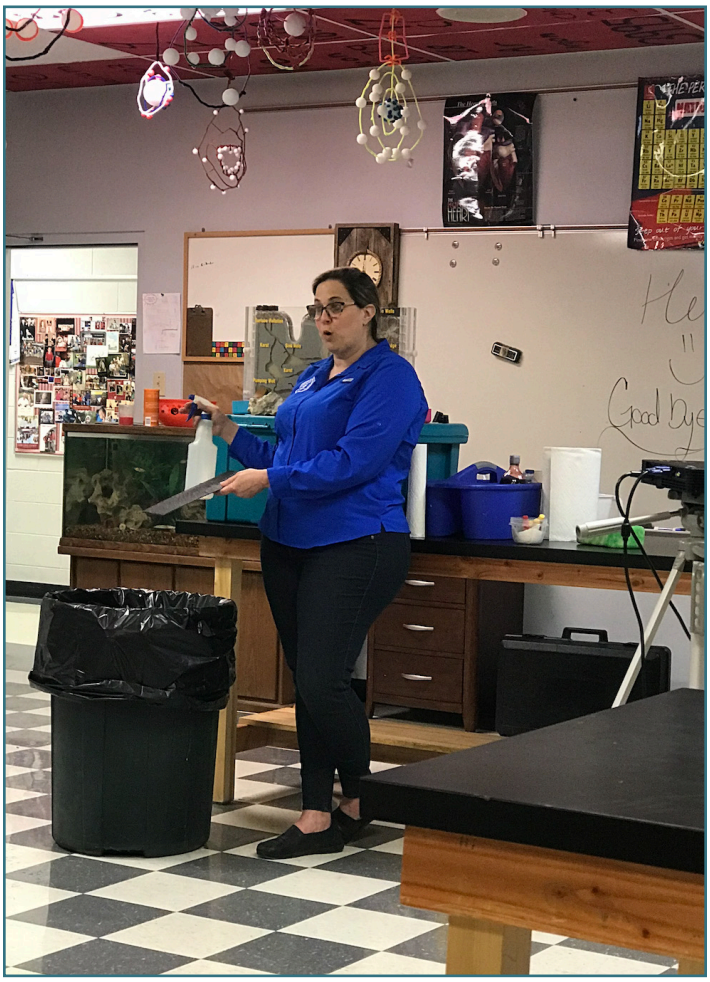
On July 29, 2019, BCRAGD Education Team facilitated an Aquifer Science presentation and activity at the Medina Public Library in Medina, Texas. The 22 participants were shown what an aquifer is and how it works and how important preserving the integrity of the aquifer is. Participants were able to create their own aquifer and see how contaminants can go into the aquifer and how it can quickly spread.

BCRAGD presented to Bandera Middle School 7th graders on April 30th and May 1st and again on May 7th and 8th of this fiscal year. Students learned about various sources of pollution including point and nonpoint source pollution and hazardous contaminants present in water and the effects of these contaminants on humans. Students engaged in laboratory experimentation by collecting water samples to determine water quality.

Education & Outreach Programs

For FY2019, the District did the following for Education & Community Outreach:

- Women's Land Stewardship Conference by AgriLife Extension Office- 1-2.OCT.2018
- 6th Grade AgriLife Extension Event- 5.OCT.2018
- Medrano Garden Club- 18.OCT.2018
- Hill Country Elementary School PTO Fall Festival- 20.OCT.2018
- WET Project Training- 25.OCT.2018
- Natural Resources Training- 05.NOV.2019
- Meeting- Templates for Future Newsletter- 06.NOV.2018
- Expanding Your Horizons- 10.NOV.2018
- SWQM Workshop-13-14.NOV.2018
- Flood Project Mtg- USGS & TWDB on County's Warning System- 28.NOV.2018
- HCWI Meeting & Presentation-07.DEC.2018
- Meeting-Riparian Workshop Discussion-12. DEC.2018
- Annual District Water Conservation Christmas Event-19.DEC.2018
- Publisher Computer Software Training- 28.DEC.2018
- TAGD Business Meeting- 22.JAN.2019
- MRPF Board Meeting (C. Clint & C. Fox Voted as Board Members)- 23.JAN.2019
- Hill Country Elementary School Visit with NRA- 11.FEB.2019
- Instagram Water Wednesday Post (Info Slideshow)- 20.FEB.2019
- Instagram Post District Activities (Madrona Garden Club Attendance)- 21.FEB.2019
- Madrona Garden & Social Club (Landscaping w/ Native Plants NPST)- 21.FEB.2019
- Instagram Post Staff Highlights- 25.FEB.2019
- Water Wednesday Post Instagram / Facebook- 27.FEB.2019
- Riparian Event- 06.MAR.2019
- Madrona Garden & Social Club- 21.MAR.2019
- Water Wednesday Post Instagram / Facebook- 27.MAR.2019
- USDA NRCS Technical Committee- 02.APR.2019
- Meeting: County Extension Office Agent- 03.APR.2019
- Meeting: Training Events, Ideas for Future Events, & Implementations- 10.APR.2019



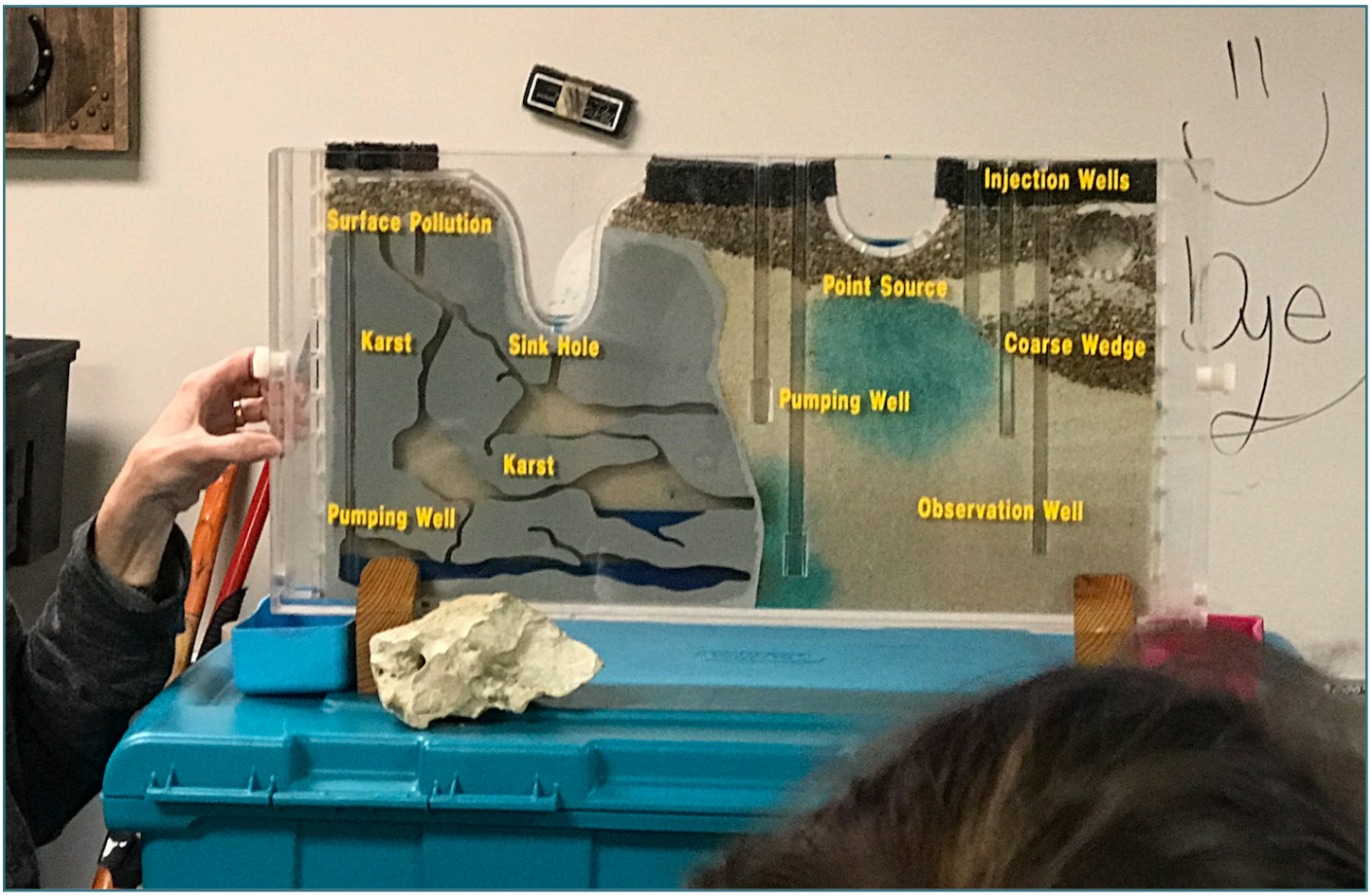
BCRAGD presented to Utopia 5th and 7th graders in Bandera County schools with NRA.

- Healthy Creeks Initiative- Arundo Control- 16.APR.2019
- Madrona Garden & Social Club- Field Trip to SA Botanical Gardens- 18.APR.2019
- LAMCOS Meeting- 18.APR.2019
- Extension Office Forum Discussion- 25.APR.2019
- Medina School Visit with NRA 5th & 7th Grade- 29.APR.2019
- Meeting with Nature Conservancy & NRA- 29.APR.2019
- BMS 7th Grade Pollution & Water Quality- 30.APR.2019-01.MAY.2019
- Medina River Cleanup- 04.MAY.2019
- BMS 7th Grade Pollution & Water Quality- 07.MAY.2019-08.MAY.2019
- Bandera Middle School w/ NRA- 20.MAY.2019-

21.MAY.2019
- Castle Lake Ranch Volunteer Fire Department Presentation- 21.MAY.2019
- Bandera Middle School w/ NRA- 23.MAY.2019-24.MAY.2019
- Meeting: Boys & Girls Club- 01.JUN.2019
- TAGD Meeting- 03.JUN.2019-04.JUN.2019
- Flood Project Public Meetings- (Medina & Sabinal)- 12.JUN.2019
- Bandera Boys & Girls Club- 20.JUN.2019
- Medina Library 1st-4th Grade Activity- 24.JUN.2019
- Bandera Boys & Girls Club- 25.JUN.2019
- Meeting: Juvenile Probation Educational Inquiry- 26.JUN.2019
- Social Media Facebook (33), Instagram (12) and Twitter Posts (15) for Q3
- Meeting: Prep for Bandera Boys & Girls Club / Medina Library- 09.JUL.2019
- Meeting: Education & Upcoming Plans- 09.JUL.2019
- Educational Shop Prep- 16.JUL.2019
- Boys & Girls Club Educational Event- 23.JUL.2019
- Medina Library Educational Event- 29.JUL.2019
- Back to School Bash- 04.AUG.2019
- PSA Planning, Distributing, and Responses- 14.AUG.2019-15.AUG.2019
- TAGD Summit Conference- 20.AUG.2019-22.AUG.2019
- Meeting w/ NRA Education Team- 26.AUG.2019

BCRAGD presented to Utopia 5th and 7th graders in Bandera County schools with NRA.

Education & Outreach Programs



BCRAGD presented to Utopia 5th and 7th graders in Bandera County schools with NRA.

- Build Education Activity- 29.AUG.2019
- Bandera City Park Photos- 03.SEP.2019
- Meeting: Upcoming Events & Discussions- 10.SEP.2019
- Rainwater Harvesting 101- 11.SEP.2019-12.SEP.2019
- Conference Call- Grant Opportunities- 13.SEP.2019
- Curriculum for Adobe InDesign & Photoshop Internal Training- 13.SEP.2019
- Created & Implemented BCRAGD E-Newsletter- 16.SEP.2019
- Highway Clean-Up & Post Action Meeting- 25.SEP.2019
- E-Newsletter Completion- 07.SEP.2019
- TEAA Conference- 27.SEP.2019-28.SEP.2019
- Women's Bennett Land Stewardship Conference- 30.SEP.2019-01.OCT.2019

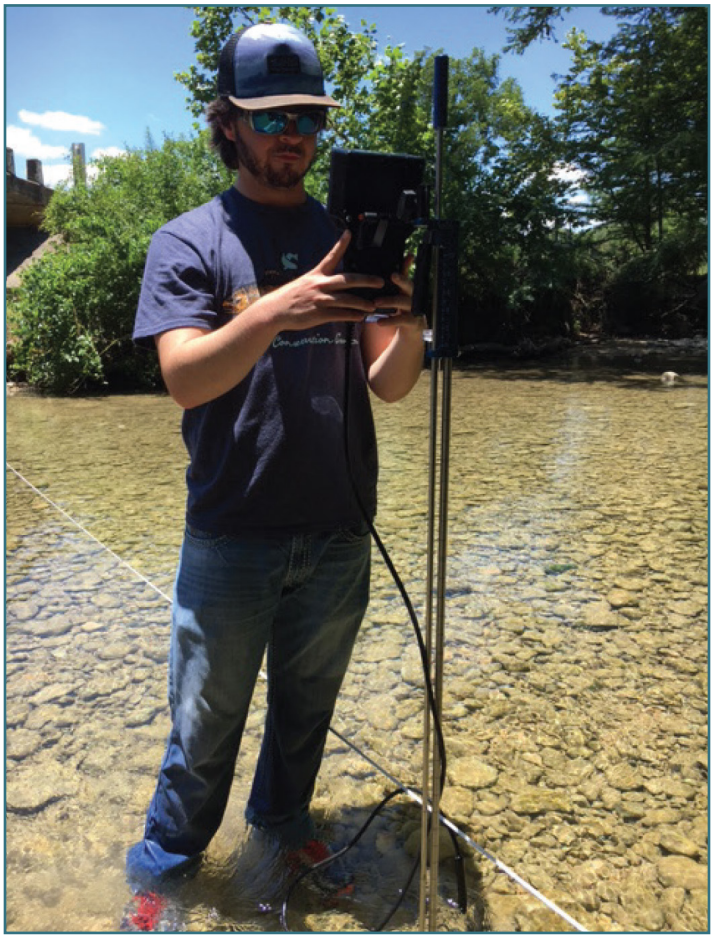
Expanding Your Horizons (EYH)

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. BCRAGD is invited each year to facilitate a lesson and activity. On November 10th, 2018, BCRAGD facilitated discussions regarding current issues about the limited availability of freshwater and the contamination of fresh water, not only in the community but in the world. These future scientists learned first-hand how important water quality testing is for the public by testing multiple freshwater samples and analyzing data from these experiments. Students left with a good understanding of what a conservation scientist does and ways to conserve water.

University Internship Program

Bandera County River Authority and Groundwater District actively participates in the Schreiner University Community Internship Program (CIP). This allows a qualified student the opportunity to work and learn at the District. The work includes both laboratory and field work.

During the first month of FY 2019, Jaime Perez, a student at Schreiner University, concluded his internship with the District. He hired on at the end of FY 2018 on September 4th, and completed his internship program in the beginning of FY 2019, on November 1st, 2018. While interning at the District, he performed tasks such as collecting flow measurement data, assisting with collecting samples for BCRAGD's In-House Surface Water Quality Monitoring Study, completing fieldwork, and assisting with BCRAGD's Monitor Wells Program, Well Plugging Program, and Clean Rivers Program.



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

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:

- Urban Riparian Restoration Program on 06-NOV-2018.
- Attended a SWQM Workshop on 13-14-NOV-2018.
- Presented a Case Clinic over Creating and Enhancing Demonstration Sites, Discussion, Best Practices, and Lessons Learned at the Healthy Creeks Initiative Meeting in which groups networked to problem-solve Watershed Scale Stewardship & Restoration Strategies in the TX Hill Country and Erosion Control Projects on 07-DEC-2018.
- Attended the Annual Ethics Training Watershed Monitoring/Stormwater on 11-DEC-2018.
- Held a Riparian Workshop Discussion Meeting on 12-DEC-2018.
- Arundo meeting with the City of Bandera on 28-JAN-2019.
- Presented and Attended the Texas Riparian & Stream Ecosystem Workshop in Collaboration with Texas Water Resource Institute on 06-MAR-2019.
- Riparian Restoration Consulting 11-MAR-2019.
- Completed Zebra Mussels Watercraft Inspection Training on 12-MAR-2019.
- Arundo Information Workshop for Medina River- Healthy Creeks Initiative to combat invasive Arundo and Riparian presentation by Hill Country Alliance on 16-APR-2019.
- Performed Aquatic Life Monitoring on the Medina River with SARA on 23-MAR-2019.
- Meeting: Arundo Mapping Update-Expenditure Options on 11-JUN-2019.
- Was audited during the Annual CRP Audit with SARA & NRA on 18-JUN-2019.
- Conducted Zebra Mussel Sampling on Medina Lake on 20-JUN-2019.
- Scouted for Arundo donax on the West Prong in a Helicopter with TPWD on 28-JUN-2019.

- Arundo Landowner post card mailers 7/8/19 and 7/10/19.
- Arundo site visits occurred over the course of several days. These days are as follows; 5/22/19, 6/11/19, 6/12/19, 6/19/19, 6/26/19, 7/2/19, 7/3/19, 7/5/19, 7/10/19, 8/14/19, and 8/15/19.

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.

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 2019, this public event was on December 19, 2018 and approximately 40 people from Bandera County and City of Bandera governmental offices were in attendance. The District Staff shared information regarding the District's ongoing projects. This event is part of the District's goal to improve intergovernmental relations and work collaboratively with other county and city agencies to better provide services to the community.

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.

Texas Riparian and Stream Ecosystem Workshop

On March 6, 2019, the District hosted a Riparian and Stream Ecosystem Training in collaboration with Texas Water Resource Institute. There were over 50 attendees for this informative workshop. Speakers included members from the USDA Natural Resource Conservation Service, Texas Parks and Wildlife Department, Bandera County Texas A&M Agrilife Extension, the Texas A&M Forest Service, the Texas A&M Natural Resource Institute, and Bandera County River Authority and Groundwater District. Educational workshops like this are a vital tool to educate and inform community members how to become better natural resource stewards. BCRAGD is proud to have developed and fostered relationships with the above-mentioned organizations to provide such high level expertise regarding important water issues. BCRAGD would like to recognize the Alamo Resource Conservation & Development Area Inc. for their generous donation that provided Riparian seed packets to all workshop attendees.

Levi Sparks was one of several speakers at the Texas Riparian and Stream Ecosystem Workshop in Collaboration with Texas Water Resource Institute on March 6, 2019. This event featured speakers from other organizations including: USDA Natural Resource Conservation Service, Texas Parks and Wildlife Department, Bandera County Texas A&M Agrilife Extension, the Texas A&M Forest Service, the Texas A&M Natural Resource Institute and of course Bandera County River Authority and Groundwater District.

Shown above are District staff team members, Education and Outreach Manager Corrina Fox, and Intergovernmental Affairs Manager Hayli Phillips, at the Texas Riparian and Stream Ecosystem Workshop on March 6, 2019.

Education & Outreach Programs

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

- Attended and presented with Nueces River Authority Water Resource Stewardship as part of Education and Community Outreach on February 11, 2019, Utopia ISD on March 27, 2019, Medina ISD on April 29, 2019, May 20th-21st and May 23rd-24th to all of the 7th graders in Bandera Middle School.
- 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 was held on May 4th, 2019. The District contributes toward the clean up each year. Staff also attended the MRPF meeting on 01/23/19 and 03/27/19.
- Three BCRAGD staff are members of Lake Medina Conservation Society (LAMCOS) and several staff members attended the LAMCOS meeting on 04/18/19.
- BCRAGD attends meetings with the Madrona Garden & Social Club. For FY 2019, the meetings were held on 10/18/18, 02/21/19, 03/21/19, and 04/18/19.
- On 06/01/19, BCRAGD Staff attended the SCTWRIG Meeting.
- BCRAGD is part of the Natural Resources Conservation Services (NRCS) State Technical Committee and attended meetings on 04/02/19 and 09/05/19.

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 (TPWD) and Hill Country Alliance (HCA) have been essential partners in various community outreach efforts.

On September 25, 2019, the BCRAGD Outreach Team and Staff fulfilled the District's commitment to TX DOT's Adopt a Highway program. Staff picked up trash and debris along a 2 mile stretch of Highway 16 south of Medina, Texas.

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 2019, the 19th annual Medina River Clean Up was held on May 4th, 2019. BCRAGD District staff volunteered, along with BCRAGD Director Don Sloan. There were about 250 participants from 35 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. The cleanup removed approximately 7,000 pounds of recyclable metal including an entire automobile. A second dumpster was filled with trash that could not be recycled.

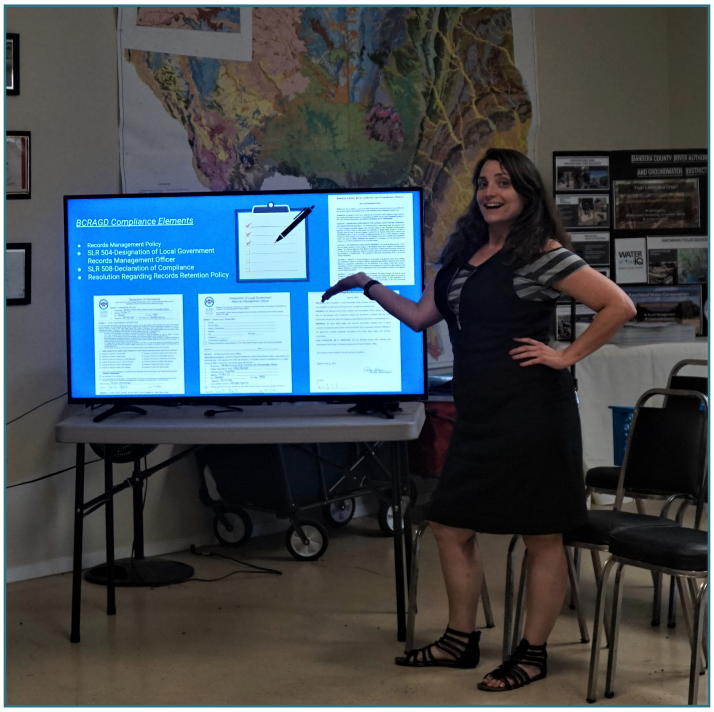
The recycling effort produced dividends for the Medina River Protection Fund, which hosts the clean up each year. Kerrville Recycling loaned the dumpster. For more information or if you would like to become a volunteer please visit: **www.medinariver.net**.

Above are the logos for the Lake Medina Conservation Society and the Medina River Cleanup. The picture below shows the volunteers and their haul from the Medina River Cleanup held on May 4th, 2019.

District Office Highlights

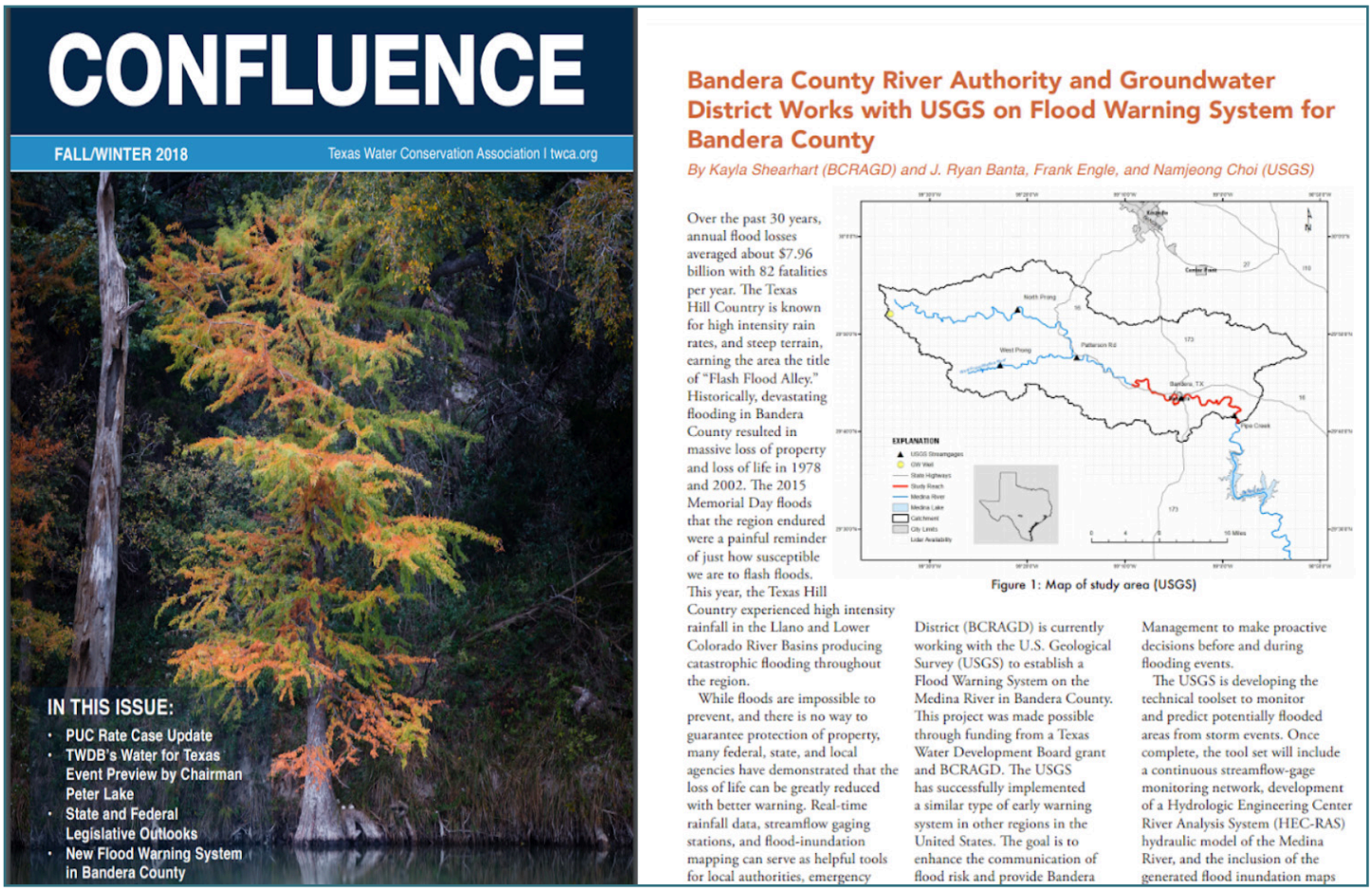
As of July 17, 2019, The District has implemented a monthly Lunch & Learn Staff Meeting Session in which Staff members take turns in their area of expertise and give a presentation to the team. Presenting to other Team members gives the District employees additional knowledge-based information that they can apply to their daily operations as well as provides more cross-training, boosts office morale, and provides a set time in which announcements, planning, and scheduling can be done as an entire team. In addition to the July Session, General Manager D. Mauk gave a presentation in August over Texas Water Law and Groundwater District Operations Manager M. Redman gave a presentation in September over Registered Wells vs. Permitted Wells.

BCRAGD's Office Coordinator, Charley Curd, swore in the newly Uncontested Elected Officials during a Called Meeting on November 15, 2018.



District Records Management Officer and Office Manager, Prari Blair, giving a formal presentation on July 17, 2019, that she compiled over Records Management and Compliance elements after her training at the Texas State Library and Archives Commission on May 15-16, 2019.

The ladies of the District were fortunate to attend the Bennett Trust Women's Land Stewardship Conference hosted by Texas A&M Agri-Life program held in Fredericksburg, TX, on September 30 - October 1, 2019.



CONFLUENCE

FALL/WINTER 2018 Texas Water Conservation Association | twca.org

IN THIS ISSUE:

- PUC Rate Case Update
- TWDB's Water for Texas Event Preview by Chairman Peter Lake
- State and Federal Legislative Outlooks
- New Flood Warning System in Bandera County

Bandera County River Authority and Groundwater District Works with USGS on Flood Warning System for Bandera County

By Kayla Shearhart (BCRAGD) and J. Ryan Banta, Frank Engle, and Namjeong Choi (USGS)

Over the past 30 years, annual flood losses averaged about $7.96 billion with 82 fatalities per year. The Texas Hill Country is known for high intensity rain rates, and steep terrain, earning the area the title of "Flash Flood Alley." Historically, devastating flooding in Bandera County resulted in massive loss of property and loss of life in 1978 and 2002. The 2015 Memorial Day floods that the region endured were a painful reminder of just how susceptible we are to flash floods. This year, the Texas Hill Country experienced high intensity rainfall in the Llano and Lower Colorado River Basins producing catastrophic flooding throughout the region.

While floods are impossible to prevent, and there is no way to guarantee protection of property, many federal, state, and local agencies have demonstrated that the loss of life can be greatly reduced with better warning. Real-time rainfall data, streamflow gaging stations, and flood-inundation mapping can serve as helpful tools for local authorities, emergency

Figure 1: Map of study area (USGS)

District (BCRAGD) is currently working with the U.S. Geological Survey (USGS) to establish a Flood Warning System on the Medina River in Bandera County. This project was made possible through funding from a Texas Water Development Board grant and BCRAGD. The USGS has successfully implemented a similar type of early warning system in other regions in the United States. The goal is to enhance the communication of flood risk and provide Bandera

Management to make proactive decisions before and during flooding events.

The USGS is developing the technical toolset to monitor and predict potentially flooded areas from storm events. Once complete, the tool set will include a continuous streamflow-gage monitoring network, development of a Hydrologic Engineering Center River Analysis System (HEC-RAS) hydraulic model of the Medina River, and the inclusion of the generated flood inundation maps

Shown above is the article that was published in the Texas Water Conservation Association's Confluence magazine for Fall and Winter 2018. BCRAGD's former Intergovernmental Affairs Manager, Kayla Shearhart, wrote an article in collaboration with USGS's J. Ryan Banta, Frank Engle, and Namjeong Choi about Bandera County River Authority and Groundwater District working with USGS on the Flood Warning System for Bandera County.

General Manager Dave Mauk presenting the New Tools for Flood Preparedness on August 26, 2019 at the District office.

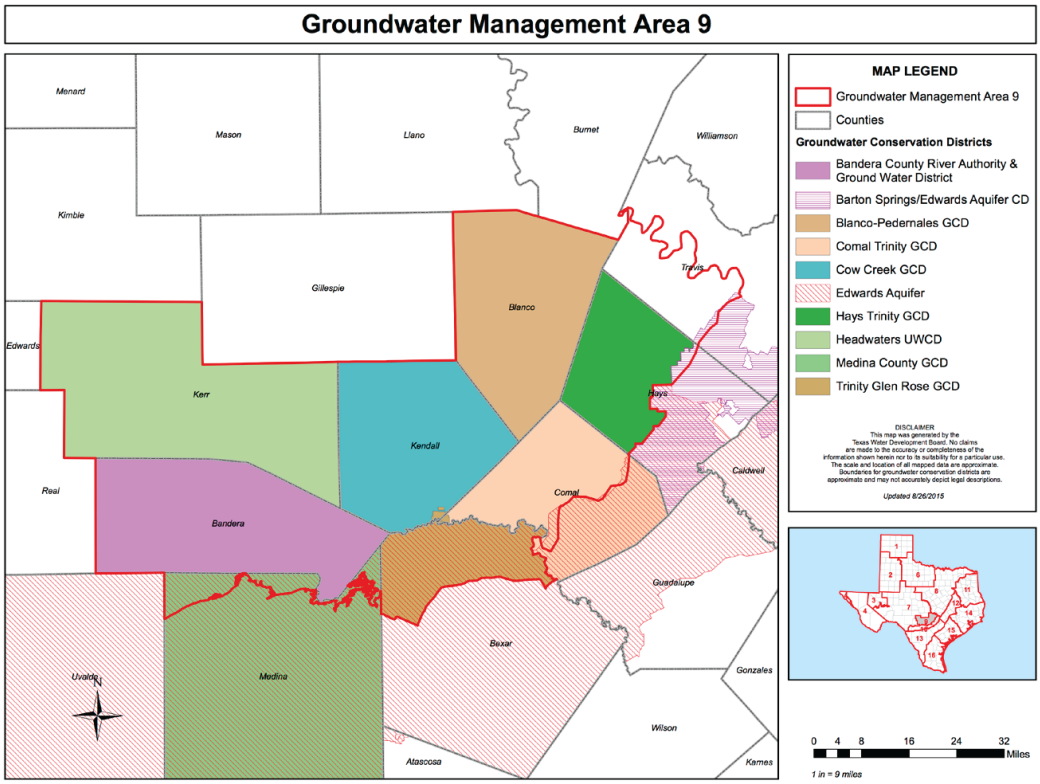
Groundwater Management Area 9 (GMA-9) Representative

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).

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.

Our District's involvement is summarized below:

- Attended and represented the District at the GMA-9 Public Meetings on 04.NOV.2018, 04.FEB.2019, 22.APR.2019, and 17.JUN.2019.
- Attended a GMA-9 Technical Planning Meeting on 12.MAR.2019.
- 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.
- District Management Approved by TWDB on 3/18/18.
- GMA-9 re-adopted the DFC on April 18th, 2016.



Map of GMA-9

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: https://texasgroundwater.org/what-we-do/.)

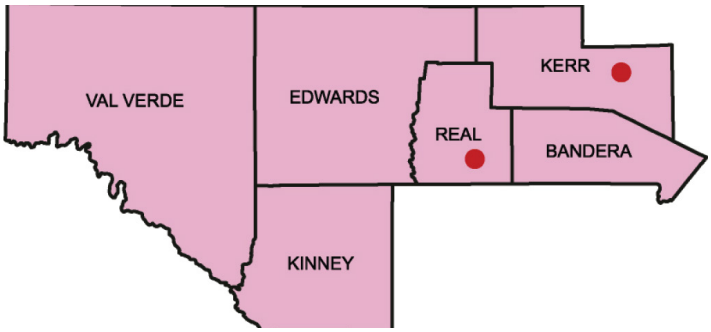
BCRAGD's General Manager was a guest speaker on a discussion panel regarding the interation of surface water and groundwater at the TAGD Annual Groundwater Summit on August 20-22, 2019.

During FY 2019, BCRAGD remained an active member:

- BCRAGD General Manager served as a representative on the Legislative Committee.
- District Staff members attended TAGD Leadership Training on 24.OCT.2018.
- A Conference call was made with BCRAGD & TAGD on GCD Index Audit on 09.NOV.2018 and the GCD Index Audit Call for BCRAGD was made on 14.NOV.2018.
- BCRAGD Staff members joined the TAGD Legislative Committee Conference Calls on the following dates: 08.MAR.2019, 15.MAR.2019, 29.MAR.2019, 05.APR.2019, 12.APR.2019, 26.APR.2019, 03.MAY.2019, 17.MAY.2019, 24.MAY.2019, and 31.MAY.2019.
- BCRAGD Staff attended the TAGD Business Meeting on 22.JAN.2019.
- BCRAGD Staff attended a TAGD Meeting on 03-04.JUN.2019.
- BCRAGD General Manager joined a TAGD Summit Conference call on 02.AUG.2019.
- Multiple District Staff members attended the TAGD Summit Conference on 20-22.AUG.2019. BCRAGD's General Manager was a guest speaker on a discussion panel regarding the interation of surface water and groundwater at the Texas Alliance of Groudwater Districts Annual Groundwater Summit.

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: 24.OCT.2018, 30.JAN.2019, 15.MAY.2019, and 15.AUG.2019.



Map of Region J - Plateau Regional Water Planning Group.

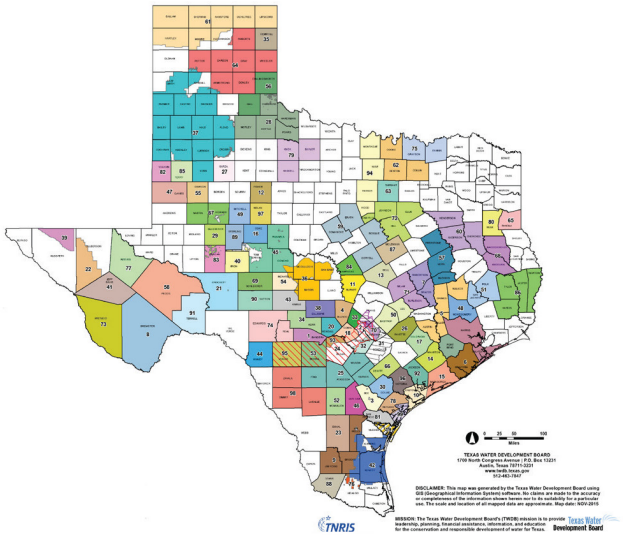
GSA BBASC Environmental Flows

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-bbest

District General Manager, Dave Mauk, serves as a BBASC Member, representing the Regional Water Planning Groups Interest Group. He joined a GSA BBASC Environmental Flows Conference call on 25.MAR.2019.

Other noteworthy Resource Planning & Collaboration events that the District attended in FY 2019 are as follows:

- The District Groundwater District Operations Manager / Code Enforcement Officer attended the AACOG-RETF (Regional Environmental Task Force) on 15.OCT.2018.
- Multiple District staff members attended the AACOG (Alamo Area Council of Governments) Meeting on 23.OCT.2018.
- BCRAGD's Groundwater District Operations Manager / Code Enforcement Officer and Natural Resources Specialist attended the South Central Texas RETF (Regional Environmental Task Force) Quarterly Meeting on 06.DEC.2018.
- BCRAGD's Intergovernmental Affairs Manager attended the USDA NRCS (United States Department of Agriculture Natural Resources Conservation Service) State Technical Committee Meeting, which the District is a member of, on 02.APR.2019 and on 05.SEP.2019.
- The District's Groundwater District Operations Manager attended the SCTWRIG (South Central Texas Water Research Interest Group) Meeting on 01.JUN.2019.
- BCRAGD's General Manager attended a Texas Water Foundation Meeting on 25.JUN.2019.
- District Staff collaborated with the Texas Water Foundation over Board Member Education on 28.JUN.2019.
- District Staff attended the TFMA (Texas Floodplain Management Association) Conference on 28-30.AUG.2019.
- BCRAGD's General Manager attended the TWCA (Texas Water Conservation Association) Meeting on 27.SEP.2019.



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

Newspaper Articles

Date	Article Title - Bandera Prophet
17.JUL.2019	BMA Change of Venue Request gets day in Court
14.AUG.2019	Toxic Algae a Dog-Killer
24.AUG.2019	Water Warning Signs Posted at Bandera City Park
28.AUG.2019	Bandera 1st in TX to use new Flood Early Warning System

Date	Article Title - Bandera Bulletin
10.OCT.2018	Water Quality Test Results Vary
21.NOV.2018	Sabinal Flood Warning System Authorized
26.DEC.2018	High E.Coli measures found in Utopia
20.FEB.2019	Notice to the Public: USGS FEWS
06.MAR.2019	Officials Review Flood Monitoring Improvements
27.MAR.2019	Giant Reed Threatens the Medina River
03.APR.2019	Sabinal's Bacterial Count not Hazardous
01.MAY.2019	Cleanup Protects Valued Asset
08.MAY.2019	Cleanup Makes Another Haul
08.MAY.2019	Cleanup Draws Record Support
29.MAY.2019	Public Notices: USGS FEWS
05.JUN.2019	Public Notices: USGS FEWS
26.JUN.2019	Bacterial Concentrations Worrisome for RiverFest
24.JUL.2019	Medina Lake Court Case not Relocating
28.AUG.2019	Area Flood-Warning Enhancements Outlined
28.AUG.2019	Notice for Public Hearing on Tax Rate
04.SEP.2019	Hearing Thursday on BCRAGD Tax Hike
04.SEP.2019	Water Warning Remain Despite Low Bacterial readings

Featured Newspaper Articles

October 1, 2018 - September 30, 2019

October 10, 2018

Water quality test results vary

For the Bulletin

E. coli bacterial concentrations exceeded the level considered acceptable by the Texas Commission on Environmental Quality at one of the 25 sites on Medina Lake and the Medina and Sabinal rivers checked by water quality officials last month and came close to the cut-off level at a second site.

The measurements taken by the Bandera County River Authority and Groundwater District on Sept. 25 showed that the E. coli bacterial concentration reached 428 MPN, or Most Probable Number, per 100 milliliters of water at the Lower Mason Creek test site.

Tests the same day at Bridlegate Park produced a concentration of 370 MPN per 100 milliliters of water.

The TCEQ has said that no "primary contact recreation should take place" when the E. coli reading exceeds 399 MPN at a site. "Primary contact recreation" is defined as any activity "that could result in the total submersion of the head under water."

The river authority said E. coli is bacteria found in the gut of warm-blooded animals that can cause illness in humans if ingested.

Officials also advised residents that they always face the threat of infection from E. coli or other waterborne illnesses no matter what an area's contamination readings are.

No one should drink river water unless it has been disinfected, and everyone should understand that they are swimming at their own risk in rivers, a groundwater district release said.

Among the 23 other sites tested by the district last month, the highest reading after Bridlegate Park was as at Bandera Creek and Highway 16 South, where a reading of 249 MPN was measured.

The only other site where a reading above 200 MPN was recorded was at Bandera City Park and Highway 173, which had a reading of 209 MPN.

Eleven other sites – at Medina Lake Park on PR 37, at English Crossing, at Bandera River Ranch Park, Bandera City Park and 1st Street, Tarpley Crossing, Ranger Crossing, Utopia City Park, the North Prong of Wallace Creek, Williams Creek in Tarpley, the Sabinal River and Cornelius Road and another site in Bandera – had readings of between 100 and 200 MPN.

The rest of the readings were below 100 MPN, the lowest being 10 MPN at the Sabinal River and Lost Maples.

The full report on the Sept. 25 readings can be found on the groundwater district's website, www.bcragd.org and on it Facebook page.

November 21, 2018

Sabinal flood warning system authorized

By Bill Pack
bill@banderabulletin.com

More than two years after getting a state grant for a cutting-edge flood warning system along the Medina River, the Bandera County River Authority & Groundwater District has won a second grant from the Texas Water Development Board for a similar early warning system along the Sabinal River Basin.

The water board announced on Nov. 12 that the river authority was one of eight applicants to win flood protection grants from its Floodplain Management Fund.

A total of $230,000 had been reserved for the Bandera County authority for the early flood warning system, which is half of the total cost of the improvements estimated by the U.S. Geological Survey in a proposal outlining the improvements to the river authority.

David Mauk, the general manager of the river authority, called the decision "great news for the county," one that will allow the innovative flood monitoring system that the USGS helped develop for the Medina River in Bandera County to extend over to the western portion of the county and the Sabinal River.

"This project should be a model early warning system for the state," Mauk said. "This is a phenomenal day."

While the newly expanded monitoring system once completed won't cover all the waterways in the county, it will allow the BCRAGD to keep tabs on waterflow conditions in the most flood-prone areas of Bandera County, the general manager said.

He called it an "incredibly cheap" investment compared to the amount of death and destruction that could occur along the river when no monitors are available to flood control officials.

Mauk also said the plans for the Sabinal system have been completed, so work on the improvements could get started fairly quickly.

The USGS estimated it would take three years to get the first phase of the improvements completed. That phase will cover from the Sabinal from near Vanderpool to just downstream of Utopia.

Bandera County Judge Richard Evans said he too was

SEE **FLOOD,** PAGE A5

FLOOD, CONTINUED *from A1*

pleased to hear that the river authority had won funding for the warning system.

"Any time we can get any type of data, particularly on a flood event, it's good," the judge said.

Evans said much of the monitoring system on the Medina River is up and running. It has provided helpful information about flooding levels and floodwater velocity and at some sites rainfall levels, he said.

The new system should provide the same type of information.

"It helps us, and it helps people downstream," said Evans.

Mauk said the grant for the system on the Medina River was for $265,000, which is slightly larger than the amount set aside for the Sabinal River system.

The Medina River upgrades required an equal amount to be raised locally for it to be completed. The City of Bandera, Bandera County and the Bandera Economic Development Corp. have contributed to the river authority to get the Medina River phase of the improvements implemented.

A similar amount of matching funds from local sources is expected to be required for the Sabinal River phase of the improvements, though that was not confirmed last week.

Mauk said work on the monitoring system along the Medina should be completed by May. The initial project included more improvements than had been planned initially, and it has produced flood warning data that exceeded the expectations of sponsoring agencies, he added.

"It shows what's going to flood and how deep and how fast the water is moving," the river authority chief said.

The warning system combines state-of-the-art stream gauges with flood inundation mapping tools to give emergency preparedness officials advance word about where the worst flooding is occurring across watersheds and how fast the water is moving.

The flood data will be measured every 15 minutes and will be transmitted by satellite hourly from the monitoring stations and posted on the internet, according to the USGS report on the improvements.

It's a system that the geological survey had used successfully to monitor flooding in the Midwest but never in Texas, officials said.

Mauk said it is an important monitoring tool in the Texas Hill Country which is one of the most flood-prone areas in the world.

He also said the state's decision to fund the Bandera County project was welcomed given how much competition the county faced for flood protection funding from areas that had been pummeled by Hurricane Harvey.

The water development board said it authorized funding for $1.8 million in grants during the current round of floodplain management allocations after receiving requests for more than $5.5 million in funds from 38 agencies.

High E. coli measures found in Utopia

By Bill Pack
bill@banderabulletin.com

E. coli bacterial concentrations were well within the acceptable water quality limits defined by the state at each of the 25 sites examined in area riverways and on Medina Lake earlier this month except one, at Utopia City Park, where the count was at unsafe levels two different times.

The Texas Commission on Environmental Quality has set a standard recommending that no "primary contact recreation," which means that no one should engage in activities that would result in him or her submerging their heads totally under water, when the E. Coli count exceeds 399 most probable number, or MPN, per 100 milliliters of water.

The Bandera County River Authority and Groundwater District, in its periodic evaluations of water quality in the Medina and Sabinal rivers and their tributaries, and in Medina Lake, recorded no E. coli concentrations in excess of 194 MPN at 25 checkpoints on Dec. 12 except in Utopia City Park.

There, the concentration was 517 MPN on Dec. 12, so it was checked again two days later to see if the earlier count could be trusted. The E. coli reading on Dec. 14 was 488 MPN.

There was no discussion in the report on why the readings were so high. Officials have said before that a variety of factors could contribute to high E. coli readings.

Of the remaining sites tested for E. coli, 19 sites had concentration levels of less than 100 MPN, including in Medina Lake at Medina Lake Park, where the reading was less than 1 MPN.

Five sites had readings above 100, but, aside from Utopia City park, none higher than 194 MPN, which was recorded at Bandera City Park and the Highway 173 bridge. Bandera City Park at First Street in Bandera had the third-highest reading at 157 MPN.

The river authority advised residents that using waterways always raises the risk of infection from E. coli or some other waterborne illness.

It said people should never drink river water without proper disinfection and should realize that they are swimming at their own risk whenever they swim in a natural waterway.

E. coli is bacteria found in the gut of warm-blooded animals, river authority officials said. The bacteria is known to cause illness in humans if ingested.

The river authority also said its lab is not certified by the state, so the measurements reported in the E. coli counts are for informational purposes only.

To get all the results from the Dec. 12-14 testing, visit the BCRAGD website, www.bcragd.org, or visit the river authority's Facebook page.

February 20, 2019

NOTICE TO THE PUBLIC

Bandera County River Authority and Groundwater District and USGS Flood Inundation Monitoring System for the Upper Sabinal River and Medina River

Bandera County River Authority and Groundwater District, Texas Water Development Board along with USGS will hold an open to the public meeting at 10:00am on February 26, 2019 at 440 FM 3240, Bandera, Texas 78003. This meeting will regard the grant received by Bandera County River Authority and Groundwater District from the Texas Water Development Board for the purpose of developing an early flood warning system. The first meeting regarding the Upper Sabinal River will begin at 10:00am and the second meeting regarding the Medina River will begin immediately following the adjournment of the first. The public is invited to attend, and written and oral comments are welcome. For more information, please contact Larry Thomas at (830)522-2775 or lthomas@bcragd.org , or Hayli Phillips at (830)796-7260 or hphillips@bcragd.org.

March 6, 2019

Officials review flood monitoring improvements

By Jade Menchaca
Special to the Bulletin

More details about the flood warning and management system that the U.S. Geological Survey is almost completed installing in the Medina River basin and is starting to install in the Sabinal River basin were divulged to a crowd attending a review session at the Bandera County River Authority and Groundwater District office on Feb. 26.

USGS officials Ryan Bantha and Frank Angle led the presentation, which looked at flood warning upgrades that have been under way in the Medina watershed since 2016 and just got funded for the Sabinal late last year.

David Mauk, general manager of the river authority which is the key, local partner in the warning system improvements, said the hearing was required to keep the public informed about the progress of the Texas Water Development Board grants that are helping complete the upgrades.

"It's going to give emergency management officials strong tools to determine where it's going to flood so they can get people out of the way," said Mauk. "This is going to save lives and property."

Improvements in the Medina basin should be fully implemented in August, and improvements in the Sabinal basin will take about another two years to complete, he said.

The innovative system uses some of the most advanced flood monitoring devices the geological survey has developed. The cabinet-sized gauges enable flood management officials to assess the height and flow of sections of the river every 15 minutes, officials said.

The gauge information is transmitted by satellite to the USGS database for officials to analyze before it is sent to the National Weather Service.

Bandera County Judge Richard Evans, another supporter of the system, raised concerns about monitoring capabilities for creeks in the Peaceful Valley area. The USGS is evaluating the option of installing a camera along a creek in the area to watch river levels there.

Improvements in the Sabinal basin will start in the Utopia area, which will get a new flood gauge, as will an area on the West Sabinal River, officials said.

USGS officials also plan to work with Texas Department of Transportation officials to remove longs and other debris from the river that can make it more difficult to establish how deep the river is in different areas.

March 27, 2019

Giant reed threatens the Medina River

By Robert Brischetto
Special to the Bulletin

COURTESY PHOTO

Jim Randle, in preparing for the May 4 Medina River Cleanup recently, locates a large stand of Arundo donax on the north prong of the Medina River near Three Mile Bridge. Cleanup volunteers are helping the Bandera County River Authority and Groundwater District locate the destructive reed so steps can be taken to limit its spread.

Landowners along the Medina River are key partners in a new effort to control the spread of an invasive giant reed along the river banks in Bandera County.

Arundo donax, also known as giant reed or carrizo cane, is a non-native, dominating plant that grows rapidly up to 30-feet tall in dense stands along the banks of creeks and rivers.

It was identified two years ago along the banks of the Medina River in Bandera County.

Last year, the Bandera County River Authority and Groundwater District joined with the Texas Parks & Wildlife Department to reach out to landowners along the river to control the spread of the troublesome reed.

The giant reed spreads rapidly with growth of up to four-inches-per-day, according to Levi Sparks, who heads the river authority's effort to map its spread along the west prong of the Medina River in Bandera County.

By interfering with the floodplain's natural ability to lessen flood energy, the plant changes the flow patterns and volumes of water in the river, leading to greater flood damage.

A thirsty plant, it can reduce stream flows and water quality, sucking up 24-48 acre-feet of water for each acre of infestation, officials said.

The roots of the giant reed form a thick mat near the surface with little deep root strength.

As such, floods can easily undercut the root mass, causing bank erosion with damage to property, structures and bridges.

It can also increase the danger and intensity of wildfires since the plant has a high wax content, providing an extremely volatile fuel.

By crowding out native plants and dominating the banks with its roots, the giant reed degrades the habitat for native fish and wildlife.

BCRAGD's partnership with the parks department allows landowners to participate cost-free in the Arundo control effort.

Sparks identified four steps in that effort:

• **Step 1:** Identify All landowners along the north prong of the Medina River received a packet from BCRAGD last May that provided a permission form for landowners to sign, allowing access to their property to locate and evaluate the extent of the giant reed.

• **Step 2:** Measure BCRAGD will follow up by contacting the owner of the property in order to measure and map Arundo stands. Landowners are asked not to attempt to remove the invasive plant since even tiny fragments of stalk or root material can spread it. Any cutting, mowing, tilling, bulldozing or shredding of the plant should be avoided, officials said.

• **Step 3:** Spray The river authority will turn its measurements and maps over to parks & wildlife to schedule spraying with an herbicide by a licensed expert, either during the spring or fall. The herbicide, approved by the EPA for use in or near rivers, will cause the plants to brown, and they will be left in place for two years.

• **Step 4:** Monitor For at least two years after the first spraying, the stands of Arundo will be watched to see whether additional spraying is needed.

Bandera is one of five counties in the Healthy Creeks Initiative to combat the reed, according to Angela England, Arundo specialist at the parks department. The initiative is concentrating on the Medina, Guadalupe, Pedernales and Blanco rivers.

So far, 44 landowners in Bandera County are cooperating in the effort, England said, and many more are expected.

SEE **MEDINA RIVER,** PAGE A5

MEDINA RIVER, CONTINUED *from A1*

Volunteers preparing for the May 4 Medina River Cleanup are now working with BCRAGD to identify and photograph stands of Arundo along the 50 miles of river designated for the cleanup.

Information on this year's cleanup can be found online at www.MedinaRiver.net.

Sightings of Arundo can be reported to Sparks at the river authority office by calling 830-796-7260 or by emailing him at lsparks@bcragd.org.

Robert Brischetto is the cleanup coordinator for the Medina River Protection Fund that puts on the annual Medina River Cleanup.

April 3, 2019

Sabinal's bacterial count not hazardous

Special to the Bulletin

E. coli bacterial counts that soared well past the hazardous level in the Sabinal River near the Utopia City park dam in the middle of March returned to minimal levels in tests by water authorities last week, allowing them to pull the "no swimming" warning that had been imposed in that area of the river.

David Mauk, the general manager of the Bandera County River Authority and Groundwater District that evaluates water quality in area rivers, said the new readings taken in the Sabinal on Wednesday, March 27, were "good news."

But officials also don't have a sound explanation for why the E. coli counts about 1,100 feet from the Utopia park dam and further upstream reached concentrations that were six times the hazardous level at its most heavily polluted point in measurements on March 13.

Mauk said the river authority will continue to take regular E. coli readings in the area of the river that had been heavily infested to keep track of the concentration levels and to take precautionary steps if the levels rise again.

SEE **SABINAL,** PAGE A3

SABINAL, CONTINUED *from A1*

"It's a public health issue, so we'll stay on top of it," he said.

E. coli is a bacteria that lives in the gut of warm-blooded animals and can cause humans to become ill if it is ingested, authorities said.

The Texas Commission on Environmental Quality has established a standard that whenever E. coli concentrations exceed 399 MPN – which stands for most probable number – per 100 milliliters of water, no swimming or activities that would result of the total submersion of someone's head under water should take place.

In the river authority's March 13 tests, E. coli levels raced to 1,203 MPN about 1,500 feet upstream from the dam and to 2,419 MPN at 1,800 feet from the dam.

In last week's report, the Sabinal was tested at nine spots upstream from the dam, and the E. coli concentrations never exceeded 87 MPN. At 1,500 feet upstream, the level was 59.4 MPN.

Mauk said officials speculate that the huge spike in the E. coli count last month could be related to a large population of vultures – estimated to be more than 100 – that had been seen roosting in a dead tree on an island in the middle of the river near where the high counts were recorded.

When the vultures left, the bacterial concentration fell, so the birds could be a contributing factor, the GM said.

Other tests have indicated the cause of the outbreak was not man-made, but more testing will be needed to help identify a cause, Mauk said.

"We don't want to see those (high) numbers going into summer," he said.

The river authority in its E. coli reports always advise anyone planning to use the river that he or she should always swim at his or her own risk and realize that an infection of E. coli or some other waterborne illness could occur at any time.

Cleanup protects valued asset

By Bill Pack
bill@banderabulletin.com

More than 200 volunteers from all over Texas and even from other states are expected to descend on Bandera again this Saturday, May 4, for the 19th annual Medina River Cleanup that can be counted on to pull tons of trash and debris out of the river.

Last year, 4,620 pounds of metal debris was pulled from the river and the river banks in Bandera County. Volunteers also collected about 2,000 pounds of other trash, officials said.

Much of the debris was that left over from the flood in 2017, officials said.

"Water is probably the most important resource we have for drinking, recreation and the economy," said Bandera County Judge

CLEANUP, CONTINUED *from A1*

"The cleanup, year after year, has been instrumental in keeping the river pristine," he said.

Robert Brischetto, the cleanup coordinator for the organization that puts on the annual event, The Medina River Protection Fund, said many paddlers call the Medina their favorite river to kayak because of its beauty. Some of those paddlers have been taking part in the cleanup each of the 19 years it has been put on, he said.

It's an effort, Brischetto said, by local residents and visitors "to protect our county's most valuable natural resource."

He said scout troops and paddling clubs from across Texas send volunteers to take part in the effort.

The turnout for the event should be particularly good this year because recent rains have created enough river flow to make paddling fun.

Volunteers can sign up to collect trash from the banks or within the river, but paddlers must bring their own canoes or kayaks.

Section heads have been named for the 12 sections that the river is broken up into for the cleanup. Volunteers wanting to be on the river should coordinate their activities with those leaders, officials said.

Aside from the cleanup duties, volunteers with trucks or trailers are called on to collect trash at pickup points along the river.

Volunteers also help the protection fund with registration activities and meal service.

Those wanting to take part can register for the cleanup that day, May 4, in Bandera City Park from 9 a.m. to noon.

The park runs between Maple Street and the river south of the Highway 173 bridge. An entrance to the park is at 8th Street and Maple.

Bandera County Commissioner Bobby Harris and his cooking crew make breakfast tacos and coffee for volunteers to enjoy at registration.

They also will provide a lunch for those taking part in the cleanup and a barbecue dinner from 5-7 p.m. in the park. Entertainment will be provided during the barbecue.

Officials said free tent camping will be available in city park and in Pioneer River Resort across Highway 173 from the park on Friday, May 3, and Saturday.

Anyone needing more information about the initiative is asked to email Brischetto, at rrbrischetto@gmail.com or to call him at 210-413-7264.

May 8, 2019

CLEANUP MAKES ANOTHER HAUL

BULLETIN PHOTO/Bill Pack

Levi Sparks and Mike Mulherin, left and second from left, deposit scrap metal into a dumpster while Patrick Cunningham, third from left, and David Cunningham wait for a tractor to pick up a feeder that had been washed into the Medina River and other metal that was disposed of during the Medina River Cleanup on Saturday, May 4. Please see the cleanup story on page A5.

Cleanup draws record support

By Bill Pack
bill@banderabulletin.com

Undeterred by heavy rains that fell Friday night, May 3, what's believed to be a record number of volunteers showed up for the 19th annual Medina River Cleanup on Saturday, May 3, and pulled thousands of pounds of scrap metal and trash from the river and its banks, officials said.

"We have never had this many people before," said Robert Brischetto, the cleanup coordinator for the Medina River Protection Fund that is responsible for the annual event. "I didn't expect this many."

The final attendance count for the cleanup showed that 234 people contributed to the effort, ranging in age from 2 – 92, Brischetto said.

That included people from 35 different Texas towns and one out-of-state community.

Brischetto said about 45 percent of the volunteers were from the Bandera County area.

Initial estimates indicated that about two tons of metal was collected during the day by Kerrville Recycling. It will pay the protection fund a fee for the metals it can recycle.

Volunteers were organized into teams to gather trash from different segments of the river.

About 46 percent of the volunteers used canoes or kayaks to pull debris from the river. The other contingent walked the banks collecting trash or helped cook and set up for the meals that were served the volunteers.

It's an event that demonstrates how much the health of the Medina River means to Bandera and to others who regularly enjoy its clean waters.

James Larkin, a kayaker from Helotes, said riding the Medina and other Hill Country rivers are particularly enjoyable.

"I don't mind putting in a little sweat to keep it looking good," said Larkin, who was participating in his third cleanup.

Jack Borns of Pearland is a friend of Brischetto's who has taken part in all 19 cleanups. He helped organize cleanup crews for seven boats this year. The rains that preceded the cleanup this year made it "a real good paddle" for those in the river, Borns said.

May 29, 2019

0000 PUBLIC NOTICES

Bandera County River Authority and Groundwater District and USGS Flood Inundation Monitoring System for the Upper Sabinal River and Medina River Bandera County River Authority and Groundwater District, in partnership with the US Geological Survey and the Texas Water Development Board (TWDB) will be holding a public meeting on Wednesday, June 12, 2019 at 2:00pm at the Bandera County River Authority and Groundwater District Office, located at 440 FM 3240, Bandera, Texas 78003. This meeting

June 5, 2019

0000 PUBLIC NOTICES

Bandera County River Authority and Groundwater District and USGS Flood Inundation Monitoring System for the Upper Sabinal River and Medina River Bandera County River Authority and Groundwater District, in partnership with the US Geological Survey and the Texas Water Development Board (TWDB) will be holding a public meeting on Wednesday, June 12, 2019 at 2:00pm at the Bandera County River Authority and Groundwater District Office, located at 440 FM 3240, Bandera, Texas 78003. This meeting will be a final update on the USGS

June 26, 2019

Bacterial concentrations worrisome for RiverFest

By Bill Pack
bill@banderabulletin.com

A year after problems arose because barbecue cookoff competitors were moved out of Bandera City Park, the Bandera RiverFest is ready to fill up the park with crowds and fun activities on Saturday, June 29, but is keeping a close eye on water quality in the Medina River.

The 22nd annual festival celebrating the river and the arrival of summer will go on no matter what, but kayak races, a river rodeo and other activities in the river could be curtailed if E. coli levels in the Medina stay as high as they were earlier in June.

The Bandera County River Authority and Groundwater District, in one of its routine E. coli concentration tests on the river and other waterways in the county, found that the bacterial level on June 13 was 488 MPN, or most probable number, per 100 milliliters of water at city park and the Highway 173 bridge, which is where the park starts.

That's 89 points above the concentration level that the Texas Commission on Environmental Quality has said is potentially unsafe for people to swim in.

No "primary contact recreation" is recommended in water with E. coli readings above 399 MPN, and "primary contact recreation" is any activity that leads someone to submerge his or her head under water.

It was the only site among 25 that were tested along the Medina and Sabinal rivers and on Medina Lake that had anywhere close to the hazardous E. coli concentration. The reading at city park and First Street was 34 MPN and upstream from Bandera's wastewater treatment plant it was 58 MPN.

SEE **RIVERFEST,** PAGE 10

RIVERFEST, CONTINUED *from 1*

Cindy Beckham, president of the Bandera Business Association that sponsors the annual festival, said the association is concerned about public safety and would suspend water activities if E. coli levels in the river are seen as potentially harmful.

But she also noted that a lot of rain has fallen in Bandera since the June 13 test was done, and she hopes that rain will dilute the bacterial level in the river and bring it down to safe levels. Beckham also hopes the river authority retests the bacteria at the Highway 173 bridge before Saturday to see if the levels have fallen.

David Mauk, the river authority's general manager, said officials planned to retest the E. coli levels on Tuesday, June 25, or later in the week if rains keep them out of the park Tuesday.

Spikes in E. coli levels have occurred before and then have receded quickly, and he suspected that would happen at the Highway 173 bridge crossing, but tests will have to confirm that.

Exactly what caused the bacterial spike at the bridge was unclear. Mauk said runoff from the recent rainfall could have washed the contaminants into the river or the high number of ducks and geese near the dam could be the source of the E. coli.

If bacterial concentrations stay high in a second test, the river authority will test E. coli concentrations through the whole length of city park to see where the problem starts and to get a better handle on the source.

A second, high reading also could convince officials to put up warning signs about the high concentration of E. coli in the water, which also has been done in the past.

E. coli comes from the gut of warm-blooded animals and can potentially cause illness in people if it is ingested.

It takes analysts a day to get test results back, so Wednesday, June 26, could be the earliest officials will know if the spike has receded.

The Bandera Bulletin will report the results online this week once they become available. River authority officials said the results also should be available on its website, wwwbcragd.org.

Beckham said while the RiverFest includes numerous activities in the river, it also has a long list of things to do outside the river.

That includes an open car show, a Hula Hoop contest, a Lone Star Barbecue Society cookoff with a $10,000 payout to winners, arts, crafts and food vendors and both a semi-final and final round of the Bandera Idol singing contest.

Those activities and more will run from 10 a.m. to 6 p.m. in city park, which has an entrance at 8th and Maple streets in Bandera.

For more information about the festival, go online to www.banderariverfest.com or call 210-215-1995.

July 24, 2019

Medina Lake court case not relocating

By Chuck McCollough
Bulletin Staff Writer

A nearly six-year-old court case between two regional water regulatory entities over jurisdictional rights at Medina Lake will remain in Bandera County, a state district judge ruled on Thursday, July 18.

Judge Rex Emerson denied a change of venue motion filed by the Bexar-Medina-Atascosa Counties Water Control and Improvement District No. 1 to move the legal dispute with the Bandera County River Authority and Groundwater District to Medina County.

The river authority brought suit against the water control and improvement district in 2013 to determine if the BMA could wield regulatory powers in Bandera County at Medina Lake, which straddles the border between Bandera and Medina counties.

Greg Ellis, the river authority's lead attorney in the case, said BCRAGD had to sue the BMA because the water control district "claimed jurisdiction over parts of Bandera County that are in the Bandera County River Authority and Groundwater District jurisdiction."

"The law does not allow two regulatory entities with similar powers to regulate the same property," he said.

While Emerson's ruling will keep the case in Bandera County, what impact the ruling will have on the progress of the dispute was unclear.

Ellis said the river authority "will discuss the best way to proceed now on the case."

No one from the BMA could be contacted to comment on the ruling earlier this week.

Emerson's ruling followed a hearing on the request to transfer the case to another county on July 16.

The original lawsuit challenged the BMA's claims to certain water rights in Medina Lake and to regulatory authority the improvement district was seeking to assert over shoreline properties, lakeside wells and septic tanks in Bandera County.

The river authority has sought a declaratory judgment denying BMA the authority to inspect water wells and enforce rules concerning groundwater and surface water in Bandera County.

The BMA challenged the claim and the court's jurisdiction in the matter since it said it had not attempted to exercise the powers that plaintiffs had claimed.

While the borders of the BCRAGD coincide with Bandera County, and the borders of the BMA are limited largely to Bexar, Medina and Atascosa counties, the issue is complicated by the fact that the BMA uses irrigation water from the lake to service farmers downstream from the lake.

Ellis said that BCRAGD earlier won a favorable ruling on the case from a district court before the Fourth Court of Appeals found problems in the way the case had been filed.

The appeals court said the river authority should have brought the case against the BMA's individual directors instead of BMA as a whole.

August 28, 2019

Area flood-warning enhancements outlined

By Chuck McCollough
Bulletin Staff Writer

During the hottest and driest part of the year, several water agencies on Monday, Aug. 26, unveiled groundbreaking upgrades that create a faster early warning flood system for the Medina River in Bandera County.

Officials noted the irony of announcing flood warning enhancements in such a dry environment, but they pointed out the hurricane season has started and the traditional fall and winter rainy season is only weeks

SEE **FLOOD,** PAGE 12

BULLETIN PHOTO/Bill Pack

From left, Don Sloan, president of the Bandera County River Authority & Groundwater District Board, Tim Raines, a director with the U.S. Geological Survey's Texas Water Science Center, Dr. Douglas Schnoebelen, chief of the USGS South Texas Program Office, Bandera County Judge Richard Evans and Kathleen Jackson, a member of the Texas Water Development Board, are photographed after a final report was made Monday, Aug. 26, on an innovative flood warning system that has been installed in Bandera County.

FLOOD, CONTINUED *from 1*

away.

New tools for flood preparedness are now in place and being used along the Medina River in Bandera County, said officials from the U.S. Geological Survey, the Bandera County River Authority and Groundwater District and the Texas Water Development Board at the BCRAGD office.

An upgraded monitoring network also is being installed along the Sabinal River.

Also attending Monday's event were officials from Bandera County and the City of Bandera. The county and city are longtime partners in flood preparedness and helped fund the improvements installed along the Medina River.

"All of the agency partners here are taking an integrated approach to addressing the flooding threat on the Medina River in Bandera County and celebrating the use of new infrastructure and resources," said Doug Schnoebelen, the chief of the South Texas Program Office for the USGS in San Antonio which helped develop the network.

Their resources include two new USGS real-time stream flow gaging stations upstream from Bandera, a series of flood-inundation maps for a 23-mile stretch along the Medina River and online communication tools.

The two newly installed USGS real-time streamgages are located on the west and north sections of the Medina River near Medina.

The gages are equipped with WaterAlert, a service that provides users with text or email messages when water exceeds a specific level set by the user.

Bandera County has been hit with a number of legendary floods, including devastating floods in 1978, which claimed 11 lives, in 2002 and 2015.

The need for more and faster flood information for residents upstream and downstream of the USGS Bandera streamgage was identified and addressed through the upgraded system, officials stressed.

"These new flood-preparedness tools will give emergency managers the ability to coordinate a precise response during flood events to help protect lives and property," said David Mauk, General Manager of the Bandera County River Authority and Groundwater District.

Each of the 29 flood-inundation maps illustrates the extent of flooding in an area at a particular water depth as measured by the Bandera streamgage station.

By referring to the appropriate map, emergency responders can determine the severity of flooding, identify roads and properties that may be underwater and make plans for the evacuation of residents.

"TWDB is pleased to partner on this project as part of our effort to help Texas communities better prepare themselves for flooding," said Water Development Board Chairman Peter Lake. "Science and planning are the foundations for implementing flood-mitigation projects in Texas that ultimately can save lives."

Bandera County Emergency Management Coordinator Carey Reed said cameras included in the monitoring stations will help emergency officials see what is happening in different areas without travelling to those area.

She expects that the number of cameras deployed in the monitoring network will grow.

"Definitely, we're very excited about it," said Reed.

Other USGS flood resources include the Texas "Water on The Go" application, which is an easy way for mobile users to access nearby water information while on the move.

Also USGS Texas Water Dashboard and accompanying Twitter feeds, @USGS_TexasFlood and @USGS_TexasRain, are also available to the public on a desktop or a smartphone or other mobile device to quickly provide water and weather information for an area.

Water District
Notice of Public Hearing on Tax Rate

The BCRAGD will hold a public hearing on a proposed tax rate for the tax year 2019 on 09/05/2019 at 9:00 AM at Bandera County River Authority and Groundwater District, 440 FM 3240, Bandera, TX 78003. Your individual taxes may increase or decrease, depending on the change in the taxable value of your property in relation to the change in taxable value of all other property and the tax rate that is adopted.

FOR the proposal: Don Sloan, Bob Williams, Jerry Sides, Sid Gibson, Rachel Mulherin, Conrad Striegl, Gene Wehmeyer, Ernest DeWinne, Neil Boultinghouse
AGAINST the proposal: None
PRESENT and not voting: None
ABSENT: None

The following table compares taxes on an average residence homestead in this taxing unit last year to taxes proposed on the average residence homestead this year.

	Last Year	This Year
Total tax rate (per $100 of value)	$0.040339/$100 Adopted	$0.042165/$100 Proposed
Difference in rates per $100 of value	+ $0.001826/$100	
Percentage increase/decrease in rates (+/-)	+ 4.53%	
Average appraised value	$171,619	$175,860
General exemptions available (excluding senior citizen's or disabled person's exemptions)	$6,961	$5,743
Average taxable value	$164,658	$170,117
Tax on average residence homestead	$66.42	$71.73
Annual increase/decrease in taxes if proposed tax rate is adopted (+/-)	+ $5.31	
and percentage of increase (+/-)	+ 7.99%	

NOTICE OF TAXPAYERS' RIGHT TO ROLLBACK ELECTION

If taxes on the average residence homestead increase by more than eight percent, the qualified voters of the district by petition may require that an election be held to determine whether to reduce the operation and maintenance tax rate to the rollback tax rate under Section 49.236(d), Water Code.

The BCRAGD proposes to use the tax rate increase for the purpose of completing the USGS Flood Warning system project that will provide Bandera County first responders with a science-based predictive tool to protect Bandera residents and property from flash flood events. To also be able to continue to fight court challenges and legislative issues that potentially impact Bandera County residents' property and water rights."

Hearing Thursday on BCRAGD tax hike

Special to the Bulletin

The Bandera County River Authority and Groundwater District has scheduled a Thursday, Sept. 5, public hearing on a proposed increase in the district's property tax rate next year.

The proposed tax rate recommended by the district's board would exceed 42 cents per $100 valuation compared to the current rate of just over 40 cents per $100 valuation, the river authority has reported. It reflects a jump of about 1.8 cents per $100 valuation, or an increase of about 4.5 percent from the old rate.

The average taxable value for a homestead and other property in the district for the 2020 fiscal year has jumped to $170,117, or almost $5,500 more than the average value for property this year.

Applying the proposed rate, the tax on the average homestead in the district next year would increase by $5.31 to $71.73, officials calculated. That equates to an increase of almost 8 percent.

The increased tax revenue will be used, the river authority said, to continue work on the innovative flood warning system that the U.S. Geological Survey is helping the agency implement along the Sabinal River and to take on court challenges and legislative issues that could affect property rights and water rights of district residents.

The flood warning system for the Sabinal is similar to the one that is being completed along the Medina River in Bandera County. River authority General Manager David Mauk said the systems will save lives.

The hearing will be at 9 a.m. Thursday at the authority's office, 440 FM 3240 in Bandera.

Water warnings remain despite low bacterial readings

Special to the Bulletin

E. coli bacterial concentrations did not approach hazardous levels in the most recent water quality assessments performed by the Bandera County River Authority & Groundwater District, but that should not suggest that the Medina and Sabinal rivers are safe for swimmers to get in again, the authority's general manager said last week.

BCRAGD General Manager David Mauk said despite the E. coli readings from water quality tests on Aug. 22, hot, dry conditions still make swimming and other recreational contact with the rivers hazardous.

Searing heat, which has pushed temperatures in the rivers into the high 80s, and little or no rainfall to get water flowing in both rivers continue to create unhealthy conditions and have convinced officials to keep the warnings advising visitors not to swim in the rivers in place, Mauk said.

Those warnings were first issues on Aug. 15.

"There could be a lot more stuff out there than E. coli," he said. "Until we get meaningful rain, I would not get back into parts of the river that are not flowing."

The Texas Commission on Environmental Quality has set a standard saying E. coli readings in excess of 399 most probable number – or MPN – per 100 milliliters of water are the point at which swimming and other "primary contact recreation" should cease in waterways where those readings were recorded.

The E. coli readings near the Highway 173 bridge on the Medina River in city park exceeded that level twice in June before falling to safer levels and got close to the hazard level at the city park intersection with First Street in Bandera in June and July before falling.

In the most recent measurements on Aug. 22, the highest E. coli readings among 11 sited tested were in city park at the Highway 173 bridge and at First Street, but the counts did not exceed 150 MPN at either spot.

SUDOKU

Fun By The Numbers

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Level: Intermediate

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Appendix A

Fiscal Year 2019 Performance & Management Goals

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.

➢ **<u>0 pump tests were conducted for subdivision test wells in fiscal year 2019 because there were no pump tests conducted on subdivision test wells, therefore no data could be obtained.</u>**

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

Quarter 1 FY 2019 MT		**Quarter 2 FY 2019 MT**	
Well	Dec 2018	Well	Mar 2019
Bandera County Park	78.4	Bandera County Park	76.4
Bandera Sports Complex	52.7	Bandera Sports Complex	66.8
Basinger	252.5	Basinger	260.4
Bowie	N/A	Bowie	210
Boultinghouse	313.4	Boultinghouse	312.1
Boyle	N/A	Boyle	88.8
Bridlegate	204.6	Bridlegate	207.4

Chancy	197.7	Chancy	190
Cielo Rio (Front)	173	Cielo Rio (Front)	177
Erfurt	16	Erfurt	18.6
Evans	200	Evans	200.5
Jeffery (yellow House)	140	Jeffery (yellow House)	130.5
Jeffery (Barn)	146.4	Jeffery (Barn)	136.7
Lakehills Co Yard	62.1	Lakehills Co Yard	72.5
Lakeshore VFD	23.1	Lakeshore VFD	21.9
Light	42.4	Light	44.2
Lost Maples	391.6	Lost Maples	395.1
Mason Creek Deep	192.3	Mason Creek Deep	191.4
Mason Creek Shallow	173.3	Mason Creek Shallow	170.8
Medina Springs	135.6	Medina Springs	137.2
Orchard Park	30	Orchard Park	36.4
Sidney Shores	96.2	Sidney Shores	95.6
Tarpley VFD	38.8	Tarpley VFD	38.6
Tecon	78	Tecon	75.4
Vanderpool	34.4	Vanderpool	34.6
Quarter 3 FY 2019 MT		**Quarter 4 FY 2019 MT**	
Well	Jun 2019	Well	Sept 2019
Bandera County Park	76.9	Bandera County Park	37.3
Bandera Sports Complex	64.2	Bandera Sports Complex	90.4
Basinger	254.4	Basinger	280.5
Bowie	212.5	Bowie	217.2
Boultinghouse	318	Boultinghouse	349.3
Boyle	103.2	Boyle	154.4
Bridlegate	208.1	Bridlegate	219.8
Chancy	186.6	Chancy	190.7
Cielo Rio (Front)	179.6	Cielo Rio (Front)	190
Erfurt	19	Erfurt	25.7
Evans	201.6	Evans	203.9
Jeffery (yellow House)	135.1	Jeffery (yellow House)	151
Jeffery (Barn)	141.8	Jeffery (Barn)	160.5

Lakehills Co Yard	N/A	Lakehills Co Yard	86
Lakeshore VFD	21.5	Lakeshore VFD	26.4
Light	44.2	Light	47.7
Lost Maples	389.1	Lost Maples	392.2
Mason Creek Deep	205.2	Mason Creek Deep	229.8
Mason Creek Shallow	178.1	Mason Creek Shallow	191
Medina Springs	135.5	Medina Springs	152.5
Orchard Park	36.2	Orchard Park	39.8
Sidney Shores	96.6	Sidney Shores	106.1
Tarpley VFD	38.9	Tarpley VFD	46.4
Tecon	75.2	Tecon	N/A
Vanderpool	34.4	Vanderpool	34.5
Quarter 1 FY 2019 LT		**Quarter 2 FY 2019 LT**	
Well	Dec 2018	Well	Mar 2019
Alkek	N/A	Alkek	377.8
Bandera City	406.7	Bandera City	395.2
Bandera Sports	348.4	Bandera Sports	340.9
Bridlegate LT	356	Bridlegate LT	350.6
Cielo Rio	262.6	Cielo Rio	276.3
Latigo	424.6	Latigo	427
TxDot	360	TxDot	365
Quarter 3 FY 2019 LT		**Quarter 4 FY 2019 LT**	
Well	Jun 2019	Well	Sept 2019
Alkek	368.4	Alkek	417.6
Bandera City	398.8	Bandera City	423
Bandera Sports	340.8	Bandera Sports	353.2
Bridlegate LT	365	Bridlegate LT	356.3
Cielo Rio	283.3	Cielo Rio	314.4
Latigo	430.4	Latigo	456.1
TxDot	360.9	TxDot	N/A
Quarter 1 FY 2019 Edwards-Trinity		**Quarter 2 FY 2019 Edwards-Trinity**	
Well	Dec 2018	Well	Mar 2019
Edwards	245.29	Edwards	246.54

Quarter 3 FY 2019 Edwards-Trinity		Quarter 4 FY 2019 Edwards-Trinity	
Well	Jun 2019	Well	Sept 2019
Edwards	247.15	Edwards	247.25

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.

- **6 Permits Issued**
- **98 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 6 well permits and a total of 98 well registrations issued in the 2019 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. (12 meetings): 10/11/2018, 11/15/2018, 12/19/2018, 01/10/2019, 02/14/2019, 02/26/2019, 04/11/2019, 06/12/2019, 07/11/2019, 08/08/2019, 08/26/2019, 09/05/2019.**

- **October 5th, 2018: The local Soil and Water Conservation Board invites the District to participate and present at the 6th grade Ag Day at Mansfield Park in**

Bandera. In recent years, BCRAGD has collaborated with Nueces River Authority at this event. For FY 2019, this event took place on 05.OCT.2018 and approximately two hundred 6th grade students were in attendance. 6th graders were from Bandera ISD, Medina ISD, and Utopia ISD. Students were engaged in performing water quality tests and discussions about water conservation issues and solutions.

- **On October 20, 2018, BCRAGD's Education and Outreach Manager and Education and Outreach Coordinator represented Bandera County River Authority and Groundwater District at the Bandera ISD Fall Festival at Hill Country Elementary School. Approximately 40 students from grades Pre-K to 5th participated in a coloring contest by grade. Students were to review and choose their favorite picture illustrating water conservation and color it. As each student chose their picture to color, the BCRAGD Education team discussed the water conservation tip or issue occurring in the picture with the student.**

- **On October 21, 2018, BCRAGD's General Manager Gave a TCEQ Presentation over Issues with Groundwater vs. Surface Water at the Tarpley School House.**

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- **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 was held on May 4th, 2019. The District contributes toward the clean up each year. Staff also attended the MRPF meeting on 01/23/19 (in which 2 BCRAGD Staff members were voted on as MRPF Board Members) and 03/27/19.**

- **On February 26, 2019, BCRAGD held an informative Public Meeting for the Flood Early Warning System (FEWS) at the District office.**

- **BCRAGD attends meetings with the Madrona Garden & Social Club in which information is exchanged. For FY 2019, the meetings were held on 10/18/18, 02/21/19 (Landscaping w/ Native Plants NPST), 03/21/19, and 04/18/19 (SA Botanical Gardens Trip).**

- **The BCRAGD Education & Outreach Manager and the Education & Outreach Coordinator held Educational Programs and presentations with NRA during the following dates: Hill Country Elementary for Bandera ISD on February 11, 2019; Utopia ISD on March 27, 2019; Medina ISD on April 29, 2019; and May 20th-21st and May 23rd-24th to all of the 7th graders in Bandera Middle School. 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.**

- **On March 6th, 2019, BCRAGD Presented and Attended the Texas Riparian & Stream Ecosystem Workshop in Collaboration with Texas Water Resource**

Institute. The District hosted a Riparian and Stream Ecosystem Training in collaboration with Texas Water Resource Institute. There were over 50 attendees for this informative workshop. Speakers included members from the USDA Natural Resource Conservation Service, Texas Parks and Wildlife Department, Bandera County Texas A&M Agrilife Extension, the Texas A&M Forest Service, the Texas A&M Natural Resource Institute, and Bandera County River Authority and Groundwater District. Educational workshops like this are a vital tool to educate and inform community members how to become better natural resource stewards. BCRAGD is proud to have developed and fostered relationships with the above-mentioned organizations to provide such high level expertise regarding important water issues.

- **The BCRAGD Education Team presented to Bandera Middle School 7th graders on April 30th and May 1st and again on May 7th and 8th. Students learned about various sources of pollution including point and nonpoint source pollution and hazardous contaminants present in water and the effects of these contaminants on humans. Students engaged in laboratory experimentation by collecting water samples to determine water quality.**

- **On May 4th, 2019, was the public Medina River Cleanup event. 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 2019, the 19th annual Medina River Clean Up was held on May 4th, 2019, and our District staff volunteered, along with BCRAGD Director Don Sloan. There were about 250 participants from 35 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. The cleanup removed approximately 7,000 pounds of recyclable metal including an entire automobile. 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.**

- **On May 21, 2019, District Staff members gave a presentation to Castle Lake Ranch Volunteer Fire Department.**

- **On June 12, 2019, BCRAGD hosted Flood Early Warning System (FEWS) Flood Project Public Meetings for the Medina & Sabinal Rivers.**

- **On June 20, 2019, BCRAGD Education Team presented to the Bandera Boys and Girls Club at Alkek Elementary. Kids ranged from 2nd to 5th grade. The**

same presentation was made on June 24, 2019 at the Medina Library in Medina, Texas to kids ranging from pre-K to 5th grade. The presentations covered topics regarding freshwater availability, ways to conserve water, how water is used, and how water flows from a smaller waterway to a larger waterway. Kids participated in a hands-on activity to demonstrate how water is used by various groups and how humans impact the quality of the water by not disposing of trash properly and how that trash will end up in the nearest waterway. The activity was set up to show how water flows from a home, farm, or factory to a creek, and then to the river. Kids were able to visualize and understand how the river went from clean to polluted with just a few people. Discussions related to preventing the contamination of water, and how to conserve water, were initiated by BCRAGD Staff and the kids participating.

- **On June 25, 2019, the BCRAGD Education Team presented to the Bandera Boys and Girls Club (6th grade -12th grade). Kids engaged in an activity where they discussed the types of pollution created by people at various locations (homes, schools, restaurants, rural areas, and gas stations) and how water moves through a watershed. This prompted conversations about solutions to preserve and conserve water.**

- **On July 23, 2019, the BCRAGD Education team visited the Bandera County Boys and Girls Club in Bandera, Texas to present on watershed information, conservation, and preservation.The 40 participants were grouped together to discuss what a watershed is and looks like. Each group was given materials to design a watershed and create a rain event showing the flow of pollution through that watershed.**

- **On July 29, 2019, the District Education Team facilitated an Aquifer Science presentation and activity at the Medina Public Library in Medina, Texas. The 22 participants were shown what an aquifer is and how it works and how important preserving the integrity of the aquifer is. Participants were able to create their own aquifer and see how contaminants can go into the aquifer and how it can quickly spread.**

- **On August 4, 2019, the District Education and Outreach Team attended the Bandera I.S.D. Back to School Bash in Lakehills, Texas. The event had over 600 participants. BCRAGD provided an activity for all age groups testing the water knowledge of individuals. These individuals were quizzed over water conservation facts to earn tickets to a raffle for their chance to win a basket containing school supplies.**

- **On August 20-22, 2019, BCRAGD's General Manager was a guest speaker on a discussion panel regarding the interaction of surface water and groundwater at the Texas Alliance of Groundwater Districts Annual Groundwater Summit.**

- **On August 26, 2019, a Joint Press Release Conference occurred between BCRAGD, USGS, & TWDB over the Medina River Flood Early Warning System (FEWS). The BCRAGD General Manager gave his presentation over "New Tools for Flood Preparedness- Bandera County, TX.". During this event, the Texas Water Development Board congratulated the Bandera County River Authority and Groundwater District with a certificate for the completion of the Medina River Flood Early Warning System at the Joint Press Release Conference. The BCRAGD Board President and the BCRAGD General Manager accepted the certificate on behalf of the District.**

- **Additional information is posted regularly on the District's website at www.bcragd.org and on BCRAGD's Social Media Pages including Facebook, Twitter, and Instagram as well as the newly implemented BCRAGD Newsletter.**

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 FY 2019- 10/11/2018, 01/10/2019, 04/11/2019, 07/11/2019.)**

- **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 a complete Groundwater Annual Evaluation Report, please refer to Management Goal 13.1.2.**

Annual Evaluation of the Surface Water Quality in Bandera County FY 2019

Summary of Surface Water Sampling Events: From October 2018 to September 2019, there were 301 samples taken between the Clean Rivers Program and the District's In-House Surface Water Quality Testing Program. This FY, BCRAGD also added EAA Sampling. There were 7 instances with E. coli counts over the TCEQ standard of 399 MPN (Most Probable Number) per 100 mL of sample water. Medina Lake began with the water level at 69.5% on October 1, 2018, and ended at 89.2% on September 24, 2019.

Medina Lake Evaluation:
Per Texas Water Development Board's Water Data for Texas website:

FY 2019 Quarter	Date	Capacity (% full)
1st	October 02, 2018 December 02, 2018	69.5% 94.5%
2nd	January 02, 2019 March 02, 2019	98.4% 99.9%
3rd	April 02, 2019 June 02, 2019	98.9% 99.7%
4th	July 24, 2019 September 24, 2019	99.5% 89.2%

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 2019 CRP sample dates were: November 20, 2018; November 27, 2018; November 29, 2018; January 8, 2019; January 15, 2019; April 11, 2019; April 18, 2019; June 18, 2019; and June 25, 2019. The District was audited by SARA for the TCEQ Clean Rivers Program on June 18, 2019.

At the end of FY 2016, BCRAGD added 5 CRP sites on Medina Lake along with 1 CRP site on Diversion Lake, partnering with SARA.The sample dates for Medina Lake were: October 25, 2018; October 30, 2018; February 13, 2019; February 20, 2019; May 14, 2019; May 28, 2019; July 16, 2019; and August 28, 2019. The sample dates for Diversion Lake were October 11, 2018; February 12, 2019; May 9, 2019; and August 1, 2019.

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 2019 sample dates for the Nueces River Basin were: October 2, 2018; February 27, 2019; May 7, 2019; and August 13, 2019.

Station ID	Site Name
	Medina River CRP
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.
	Medina Lake CRP
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
	Diversion Lake CRP
14205	Medina R. Downstream Medina Reservoir in Mico, TX @ low water crossing
	Nueces River CRP
21948	Sabinal R. @ FM 187 S. of Utopia
13017	Seco Creek @ RR 470
14939	Sabinal River @ FM 187

CRP water quality data can be viewed at:
https://www80.tceq.texas.gov/SwqmisWeb/public/crpweb.faces

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 2018 to September 2019, there were 7 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).

ML-1.04	Medina Lake @ County Park NE of Boat Ramp	**MP-3.01**	Medina R @ Moffett Park
MR-1.01	Medina R @ English Crossing	**MRN-3.01**	N. Prong Medina R @ Rocky Creek Crossing FM 2107
MR-1.02	Medina R @ Bridlegate Park	**MRN-3.03**	N. Prong Medina R @ Brewington Crossing FM 2107
MR-1.03	Medina R @ Bandera River Ranch Park	**WC-3.01**	N. Prong Medina R @ Wallace Creek
BC-2.01	Bandera Creek @ SH 16	**MRW-3.01**	W. Prong Medina R @ Coal kiln Rd RR 337
LMC-2.01	Lower Mason Creek @ Chipman Ln.	**MRW-3.03**	W. Prong Medina R @ Carpenter Creek @ RR 337
MR-2.025	Above Sewage Treatment Plant Effluent	**SC-4.01**	Seco Creek @ RR 470 Crossing
MR-2.03	Medina R @ Bandera City Park HWY 173	**CC-4.01**	Sabinal R @ Cornelius Rd Crossing
MR-2.05	Medina R @ Bandera City Park 1st Street Bridge	**SR-4.03**	Sabinal R in Vanderpool @ SH 187
MR-3.01	Medina R @ RR 337	**LM-4.03**	Sabinal R @ Lost Maples 1st Bridge
MR-3.04	Medina R @ Tarpley Crossing	**WVC-2.01**	Hill Country State Natural Area @ FM 1077
MR-3.05	Medina R @ Ranger Crossing HWY 16	**WC-4.01**	Williams Creek Crossing
UTOP	Utopia City Park		

EAA Sampling: This Fiscal Year, The Bandera County River Authority & Groundwater District has partnered with the Edwards Aquifer Authority to collect water samples along a seven-mile reach of the Medina River. BCRAGD staff collect grab samples bi-weekly at the following three locations: Bridlegate, Coal Springs, and English Crossing. The EAA is interested in analyzing the stable isotopic structure of the water in this area of the river along with many other segments across the region.

Annual Evaluation of the Groundwater Resources in Bandera County FY 2019

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 2019 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 2019. These averages were then compared to the 2008 water level measurements and these differences were recorded in the "Annual Report DFC Compliance FY 2019" excel sheet. New monitor wells that were added to the network before the beginning of FY 2019, use the first well measurement and then compared to the FY 2019 average.

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 "Annual Report DFC Compliance FY 2019" excel sheet.

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 "Annual Report DFC Compliance FY 2019" excel sheet. County maps with the grid averages are

found in Figures 1 (Middle Trinity) and 2 (Lower Trinity) for each Aquifer. The Middle Trinity Aquifer had a gain of +11.1. and the Lower Trinity Aquifer had a loss of -17.7 ft. for FY 2019. The Trinity Aquifer, overall, had a loss of -3.3 ft. in FY 2019 for compliance of the DFC.

The average loss or gain for the monitor well that is located in the Edwards can be located in the "Annual Report DFC Compliance FY 2019" excel sheet. Figure 3 depicts the gain or loss of the Edwards Monitor Well. The Edwards Well showed a gain of +7.4 ft.

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 a 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.

➢ **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.**

➢ **On October 24, 2018, BCRAGD Groundwater District Operations Manager attended the Region J Meeting in Leakey, TX.**

- **On January 30, 2019, BCRAGD Groundwater District Operations Manager, Natural Resource Specialist, and a BCRAGD Board Member attended the Region J Meeting in Leakey, TX.**

- **On May 15, 2019, the District Groundwater District Operations Manager attended the Region J Meeting in Leakey, TX.**

- **On August 15, 2019, the District Groundwater District Operations Manager and the Intergovernmental Affairs Manager attended the 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: 23 total**
- **Notices of Violation: 1 total**
- **Illegal Dumping Mitigation Cases Resolved: 23 total**
- **Total Surface Water Test samples taken (including CRP): 301; see 4.1.2B**
- **Total number of Groundwater Tests: 372**
- **Both (Bacteria & Mineral)-169**
- **Bacteria Only-164**
- **Mineral Only-39**

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 33 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. (12 meetings): 10/11/2018, 11/15/2018, 12/19/2018, 01/10/2019, 02/14/2019,**

02/26/2019, 04/11/2019, 06/12/2019, 07/11/2019, 08/08/2019, 08/26/2019, 09/05/2019.

- **October 5th, 2018: The local Soil and Water Conservation Board invites the District to participate and present at the 6th grade Ag Day at Mansfield Park in Bandera. In recent years, BCRAGD has collaborated with Nueces River Authority at this event. For FY 2019, this event took place on 05.OCT.2018 and approximately two hundred 6th grade students were in attendance. 6th graders were from Bandera ISD, Medina ISD, and Utopia ISD. Students were engaged in performing water quality tests and discussions about water conservation issues and solutions.**

- **On October 20, 2018, BCRAGD's Education and Outreach Manager and Education and Outreach Coordinator represented Bandera County River Authority and Groundwater District at the Bandera ISD Fall Festival at Hill Country Elementary School. Approximately 40 students from grades Pre-K to 5th participated in a coloring contest by grade. Students were to review and choose their favorite picture illustrating water conservation and color it. As each student chose their picture to color, the BCRAGD Education team discussed the water conservation tip or issue occurring in the picture with the student.**

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this are a vital tool to educate and inform community members how to become better natural resource stewards. BCRAGD is proud to have developed and fostered relationships with the above-mentioned organizations to provide such high level expertise regarding important water issues.

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- **On May 21, 2019, District Staff members gave a presentation to Castle Lake Ranch Volunteer Fire Department.**

- **On June 12, 2019, BCRAGD hosted Flood Early Warning System (FEWS) Flood Project Public Meetings for the Medina & Sabinal Rivers.**

- **On June 20, 2019, the BCRAGD Education Team presented to the Bandera Boys and Girls Club at Alkek Elementary. Kids ranged from 2nd to 5th grade. The same presentation was made on June 24, 2019 at the Medina Library in Medina, Texas to kids ranging from pre-K to 5th grade. The presentations covered topics regarding freshwater availability, ways to conserve water, how water is used, and how water flows from a smaller waterway to a larger waterway. Kids participated in a hands-on activity to demonstrate how water is used by various groups and how humans impact the quality of the water by not disposing of trash properly and how that trash will end up in the nearest**

waterway. The activity was set up to show how water flows from a home, farm, or factory to a creek, and then to the river. Kids were able to visualize and understand how the river went from clean to polluted with just a few people. Discussions related to preventing the contamination of water, and how to conserve water, were initiated by BCRAGD Staff and the kids participating.

- **On June 25, 2019, the BCRAGD Education Team presented to the Bandera Boys and Girls Club (6th grade -12th grade). Kids engaged in an activity where they discussed the types of pollution created by people at various locations (homes, schools, restaurants, rural areas, and gas stations) and how water moves through a watershed. This prompted conversations about solutions to preserve and conserve water.**

- **On July 23, 2019, the BCRAGD Education team visited the Bandera County Boys and Girls Club in Bandera, Texas to present on watershed information, conservation, and preservation.The 40 participants were grouped together to discuss what a watershed is and looks like. Each group was given materials to design a watershed and create a rain event showing the flow of pollution through that watershed.**

- **On July 29, 2019, the District Education Team facilitated an Aquifer Science presentation and activity at the Medina Public Library in Medina, Texas. The 22 participants were shown what an aquifer is and how it works and how important preserving the integrity of the aquifer is. Participants were able to create their own aquifer and see how contaminants can go into the aquifer and how it can quickly spread.**

- **On August 4, 2019, the District Education and Outreach Team attended the Bandera I.S.D. Back to School Bash in Lakehills, Texas. The event had over 600 participants. BCRAGD provided an activity for all age groups testing the water knowledge of individuals. These individuals were quizzed over water conservation facts to earn tickets to a raffle for their chance to win a basket containing school supplies.**
- **On August 20-22, 2019, BCRAGD's General Manager was a guest speaker on a discussion panel regarding the interaction of surface water and groundwater at the Texas Alliance of Groundwater Districts Annual Groundwater Summit.**

- **On August 26, 2019, a Joint Press Release Conference occurred between BCRAGD, USGS, & TWDB over the Medina River Flood Early Warning System (FEWS). The BCRAGD General Manager gave his presentation over "New Tools for Flood Preparedness- Bandera County, TX.". During this event, the Texas Water Development Board congratulated the Bandera County River Authority and Groundwater District with a certificate for the completion of the**

Medina River Flood Early Warning System at the Joint Press Release Conference. The BCRAGD Board President and the BCRAGD General Manager accepted the certificate on behalf of the District.

- **Additional information is posted regularly on the District's website at www.bcragd.org and on BCRAGD's Social Media Pages including Facebook, Twitter, and Instagram as well as the newly implemented BCRAGD Newsletter.**

-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.

- **October 5th, 2018: The local Soil and Water Conservation Board invites the District to participate and present at the 6th grade Ag Day at Mansfield Park in Bandera. In recent years, BCRAGD has collaborated with Nueces River Authority at this event. For FY 2019, this event took place on 05.OCT.2018 and approximately two hundred 6th grade students were in attendance. 6th graders were from Bandera ISD, Medina ISD, and Utopia ISD. Students were engaged in performing water quality tests and discussions about water conservation issues and solutions.**

- **On October 20, 2018, BCRAGD's Education and Outreach Manager and Education and Outreach Coordinator represented Bandera County River Authority and Groundwater District at the Bandera ISD Fall Festival at Hill Country Elementary School. Approximately 40 students from grades Pre-K to 5th participated in a coloring contest by grade. Students were to review and choose their favorite picture illustrating water conservation and color it. As each student chose their picture to color, the BCRAGD Education team discussed the water conservation tip or issue occurring in the picture with the student.**

- **November 10, 2018: Schreiner University sponsors the Expanding Your Horizons (EYH) Network educational event annually in Kerrville for 6th-8th grade female students, specifically promoting STEM—science, technology,**

engineering, and mathematics. BCRAGD is invited each year to facilitate a lesson presentation and activity. 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. On November 10th, 2018, BCRAGD facilitated discussions regarding current issues about the limited availability of freshwater and the contamination of freshwater, not only in the community but in the world. These future scientists learned first-hand how important water quality testing is for the public by testing multiple freshwater samples and analyzing data from these experiments. Students left with a good understanding of what a conservation scientist does and ways to conserve water.

- **The BCRAGD Education & Outreach Manager and the Education & Outreach Coordinator held Educational Programs and presentations with NRA during the following dates: Hill Country Elementary for Bandera ISD on February 11, 2019; Utopia ISD on March 27, 2019; Medina ISD on April 29, 2019; and May 20th-21st and May 23rd-24th to all of the 7th graders in Bandera Middle School. 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.**

- **The BCRAGD Education Team presented to Bandera Middle School 7th graders on April 30th and May 1st and again on May 7th and 8th. Students learned about various sources of pollution including point and nonpoint source pollution and hazardous contaminants present in water and the effects of these contaminants on humans. Students engaged in laboratory experimentation by collecting water samples to determine water quality.**

- **On May 4th, 2019, was the public Medina River Cleanup event. 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 2019, the 19th annual Medina River Clean Up was held on May 4th, 2019, and our District staff volunteered, along with BCRAGD Director Don Sloan. There were about 250 participants from 35 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. The cleanup removed approximately 7,000 pounds of recyclable metal including an entire automobile. 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.

- **On June 20, 2019, BCRAGD Education Team presented to the Bandera Boys and Girls Club at Alkek Elementary. Kids ranged from 2nd to 5th grade. The same presentation was made on June 24, 2019 at the Medina Library in Medina, Texas to kids ranging from pre-K to 5th grade. The presentations covered topics regarding freshwater availability, ways to conserve water, how water is used, and how water flows from a smaller waterway to a larger waterway. Kids participated in a hands-on activity to demonstrate how water is used by various groups and how humans impact the quality of the water by not disposing of trash properly and how that trash will end up in the nearest waterway. The activity was set up to show how water flows from a home, farm, or factory to a creek, and then to the river. Kids were able to visualize and understand how the river went from clean to polluted with just a few people. Discussions related to preventing the contamination of water, and how to conserve water, were initiated by BCRAGD Staff and the kids participating.**

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- **On July 29, 2019, the District Education Team facilitated an Aquifer Science presentation and activity at the Medina Public Library in Medina, Texas. The 22 participants were shown what an aquifer is and how it works and how important preserving the integrity of the aquifer is. Participants were able to create their own aquifer and see how contaminants can go into the aquifer and how it can quickly spread.**

- **On August 4, 2019, the District Education and Outreach Team attended the Bandera I.S.D. Back to School Bash in Lakehills, Texas. The event had over 600 participants. BCRAGD provided an activity for all age groups testing the water knowledge of individuals. These individuals were quizzed over water**

conservation facts to earn tickets to a raffle for their chance to win a basket containing school supplies.

- **Additional information is posted regularly on the District's website at www.bcragd.org and on BCRAGD's Social Media Pages including Facebook, Twitter, and Instagram as well as the newly implemented BCRAGD Newsletter.**

- **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 is provided at all District public meetings. (12 meetings): 10/11/2018, 11/15/2018, 12/19/2018, 01/10/2019, 02/14/2019, 02/26/2019, 04/11/2019, 06/12/2019, 07/11/2019, 08/08/2019, 08/26/2019, 09/05/2019.**

- **Rainwater Harvesting Materials are always available on the website by clicking on the "Tools for Sustainability" tab under the Education tab.**

- **On October 1st & 2nd, the District's Education & Outreach Manager and the Office Coordinator attended the Women's Land Stewardship Conference by the AgriLife Extension Office at which Rainwater Harvesting was discussed.**

- **On December 19, 2018, BCRAGD hosted their Annual District Water Conservation Christmas Event. During FY 2019, this public event was attended by approximately 40 people from Bandera County and City of Bandera governmental offices. The District Staff shared information regarding the District's ongoing projects. This event is part of the District's goal to improve intergovernmental relations and work**

collaboratively with other county and city agencies to better provide services to the community and to exchange information. Information provided at this event included Rainwater Harvesting and Riparian.

- **On March 6th, 2019, BCRAGD Presented and attended the Texas Riparian & Stream Ecosystem Workshop in Collaboration with Texas Water Resource Institute. The District hosted a Riparian and Stream Ecosystem Training in collaboration with Texas Water Resource Institute. There were over 50 attendees for this informative workshop. Speakers included members from the USDA Natural Resource Conservation Service, Texas Parks and Wildlife Department, Bandera County Texas A&M Agrilife Extension, the Texas A&M Forest Service, the Texas A&M Natural Resource Institute, and Bandera County River Authority and Groundwater District. Educational workshops like this are a vital tool to educate and inform community members how to become better natural resource stewards. BCRAGD is proud to have developed and fostered relationships with the above-mentioned organizations to provide such high level expertise regarding important water issues.**

- **On September 11 & 12, 2019, BCRAGD's Education & Outreach Manager and Office Coordinator attended training on Rainwater Harvesting 101 for the District held at Post Oak Savannah Groundwater Conservation District (POSGCD).**

- **On September 30, 2019, BCRAGD's Office Coordinator, Education & Outreach Manager, Intergovernmental Affairs Manager, and Office Manager attended the Women's Bennett Trust Land Stewardship Conference in which Rainwater Harvesting and Riparian efforts and best practices were discussed.**

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 October 1st & 2nd, the District's Education & Outreach Manager and the Office Coordinator attended the Women's Land Stewardship Conference by the AgriLife Extension Office at which Rainwater Harvesting and Riparian efforts and best practices were discussed.**

➢ **On November 5th, 2018, the Districts Natural Resources Specialist attended Natural Resources Training at which Riparian efforts were discussed.**

➢ **On November 6th, 2018, BCRAGD's River Authority Operations Manager and Natural Resources Specialist attended the Urban Riparian Restoration Program.**

➢ **On November 13 & 14, 2018, BCRAGD's Natural Resources Specialist and River Authority Operations Manager attended SWQM Training Workshop.**

➢ **On December 7th, 2018, BCRAGD River Authority Operations Manager attended and presented at the HCWI Meeting. The District River Authority Operations Manager presented a Case Clinic over Creating and Enhancing Demonstration Sites, Discussion, Best Practices, and Lessons Learned at the Healthy Creeks Initiative Meeting in which groups networked to problem-solve Watershed Scale Stewardship & Restoration Strategies in the TX Hill Country and Erosion Control Projects.**

- **On December 11, 2018, BCRAGD's River Authority Operations Manager, Natural Resources Specialist, and Chief Data Officer attended the Annual Ethics Training over Watershed Monitoring and Stormwater.**

- **On December 12, 2018, a meeting occurred between the District's Education & Outreach Manager and a member of the community about holding a Riparian Workshop.**

- **On December 19, 2018, BCRAGD hosted their Annual District Water Conservation Christmas Event. During FY 2019, this public event was attended by approximately 40 people from Bandera County and City of Bandera governmental offices. The District Staff shared information regarding the District's ongoing projects. This event is part of the District's goal to improve intergovernmental relations and work collaboratively with other county and city agencies to better provide services to the community and to exchange information. Information provided at this event included Rainwater Harvesting and Riparian.**

- **On January 28, 2019, BCRAGD held an Arundo donax invasive species meeting with the City of Bandera.**

- **On March 6th, 2019, BCRAGD Presented and attended the Texas Riparian & Stream Ecosystem Workshop in Collaboration with Texas Water Resource Institute. The District hosted a Riparian and Stream Ecosystem Training in collaboration with Texas Water Resource Institute. There were over 50 attendees for this informative workshop. Speakers included members from the USDA Natural Resource Conservation Service, Texas Parks and Wildlife Department, Bandera County Texas A&M Agrilife Extension, the Texas A&M Forest Service, the Texas A&M Natural Resource Institute, and Bandera County River Authority and Groundwater District. Educational workshops like this are a vital tool to educate and inform community members how to become better natural resource stewards. BCRAGD is proud to have developed and fostered relationships with the above-mentioned organizations to provide such high level expertise regarding important water issues.**

- **On March 11, 2019, BCRAGD's River Authority Operations Manager consulted about Riparian Restoration.**

- **On March 12, 2019, the District's Natural Resources Specialist and River Authority Operations Manager completed the invasive species Zebra Mussels Watercraft Inspection Training.**

- **On March 23, 2019, BCRAGD's River Authority Operations Manager and Natural Resources Specialist performed Aquatic Life Monitoring on the Medina River with San Antonio River Authority.**

- **On April 16, 2019, the District's River Authority Operations Manager, Office Coordinator, Education & Outreach Manager, and Intergovernmental Affairs Manager attended a Healthy Creeks Initiative hosted BCRAGD and Texas Parks and Wildlife over Arundo Control and Riparian.**

- **On April 18, 2019, BCRAGD's General Manager, Intergovernmental Affairs Manager, River Authority Operations Manager, Office Coordinator, and Education & Outreach Manager attended the LAMCOS (Lake Medina Conservation Society) Meeting at the Lakehills Civic Center where Riparian efforts were discussed.**

- **The following dates were when BCRAGD conducted an Arundo Survey: May 22, 2019; June 11, 2019; June 12, 2019; June 19, 2019; June 26, 2019; July 2, 2019; July 3, 2019; July 5, 2019; July 10, 2019; August 14, 2019; and August 15, 2019.**

- **On May 4th, 2019, was the public Medina River Cleanup event. 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 2019, the 19th annual Medina River Clean Up was held on May 4th, 2019, and our District staff volunteered, along with BCRAGD Director Don Sloan. There were about 250 participants from 35 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. The cleanup removed approximately 7,000 pounds of recyclable metal including an entire automobile. 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.**

- **On June 20, 2019, BCRAGD conducted a Zebra Mussel Sampling event on Medina Lake.**

- **On June 28, 2019, BCRAGD's River Authority Operations Manager scouted for Arundo donax on the West Prong in a helicopter with the Texas Parks and Wildlife Department.**

- **Arundo Postcards were sent out to citizens of Bandera County for awareness over the invasive species on July 8 & 10, 2019.**

- **On September 5th, 2019, BCRAGD's River Authority Operations Manager and Natural Resources Specialist reviewed a webinar on Natural Resources from AgriLife Extension over Native Grasses.**

- **On September 30, 2019, BCRAGD's Office Coordinator, Education & Outreach Manager, Intergovernmental Affairs Manager, and Office Manager attended the Women's Bennett Trust Land Stewardship Conference in which Rainwater Harvesting and Riparian efforts and best practices were discussed.**

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: 18 total**
- **Water Analysis Performed on New Wells: 100 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. In addition, BCRAGD started EAA Sampling (See 4.1.2) for FY 2019. 301 total samples were taken between these two programs during FY 2019 and are summarized below:

1st Quarter Oct. 2018-Dec. 2018
Oct. 2, 2018 (CRP; 3 Sabinal R. sites)
Oct. 11, 2018 (CRP; 1 Diversion L. site)
Oct. 25, 30, 2018 (CRP; 5 Medina L. sites)
Nov. 20, 27, 29, 2018 (CRP; 8 Medina R. sites)
Dec. 12, 13, 2018 (18 Medina R.,1 Medina L.,6 Sabinal R.)

2nd Quarter Jan. 2019-Mar. 2019
Jan. 8, 15, 2019 (CRP; 8 Medina R. sites)
Jan. 15, 2019 (ALM; 1 Medina R. site)
Feb. 12, 2019 (CRP; 1 Diversion L. site)
Feb. 13, 20, 2019 (CRP; 5 Medina L. sites)
Feb. 27, 2019 (CRP; 3 Sabinal R. sites)
Mar. 8, 2019 (EAA; 3 Medina R. sites)
Mar. 14, 2019 (18 Medina R.,1 Medina L.,6 Sabinal R.)
Mar. 22, 2019 (EAA; 3 Medina R. sites)

3rd Quarter Apr. 2019-June 2019
Apr. 11, 18, 2019 (CRP; 8 Medina R. sites)
Apr. 5, 17, 2019 (EAA; 6 Medina R. sites)
May 3, 16, 31, 2019 (EAA; 9 Medina R. sites)
May 7, 2019 (CRP; 3 Sabinal R. sites)
May 9, 2019 (CRP; 1 Diversion L. site)
May 14, 2019 (CRP; 5 Medina L. sites)
May 28, 2019 (ALM; 1 Medina R. site)
June 13, 2019 (18 Medina R., 1 Medina L., 6 Sabinal R.)
June 13, 27, 2019 (EAA; 6 Medina R. sites)
June 18, 25, 2019 (CRP; 8 Medina R. sites)
June 27, 2019 (1 Medina L., 8 Medina R., 2 Sabinal R.)

4th Quarter Jul. 2019-Sep.2019
Jul. 2, 2019 (1 Medina R. site)
Jul. 11, 2019 (1 Medina L., 8 Medina R., 2 Sabinal R.)
Jul. 11, 24, 2019 (EAA; 6 Medina R. sites)
Jul. 16, 2019 (CRP; 3 Medina L. sites)
Jul. 24, 2019 (1 Medina L., 8 Medina R., 2 Sabinal R.)
Jul. 25, 2019 (ALM; 1 Medina R. site)
Aug. 1, 2019 (CRP; 1 Diversion L. site)
Aug. 7, 2019 (1 Medina L., 8 Medina R., 2 Sabinal R.)
Aug. 7, 22, 2019 (EAA; 6 Medina R. sites)
Aug. 13, 2019 (1 Sabinal R. site)
Aug. 13, 2019 (CRP; 3 Sabinal R. sites)
Aug. 22, 2019 (1 Medina L., 7 Medina R., 2 Sabinal R.)
Aug. 29, 2019 (CRP; 2 Medina L. sites)
Sep. 4, 2019 (17 Medina R., 1 Medina L., 6 Sabinal R.)
Sep. 4, 19, 2019 (EAA; 6 Medina R. sites)

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 2019

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 2019 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 2019. These averages were then compared to the 2008 water level

measurements and these differences were recorded in the "Annual Report DFC Compliance FY 2019" excel sheet. New monitor wells that were added to the network before the beginning of FY 2019, use the first well measurement and then compared to the FY 2019 average.

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 "Annual Report DFC Compliance FY 2019" excel sheet.

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 "Annual Report DFC Compliance FY 2019" excel sheet. County maps with the grid averages are found in Figures 1 (Middle Trinity) and 2 (Lower Trinity) for each Aquifer. The Middle Trinity Aquifer had a gain of +11.1. and the Lower Trinity Aquifer had a loss of -17.7 ft. for FY 2019. The Trinity Aquifer, overall, had a loss of -3.3 ft. in FY 2019 for compliance of the DFC.

The average loss or gain for the monitor well that is located in the edwards can be located in the "Annual Report DFC Compliance FY 2019" excel sheet. Figure 3 depicts the gain or loss of the Edwards Monitor Well. The Edwards Well showed a gain of +7.4 ft.

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.

Figure 1 Middle Trinity Map

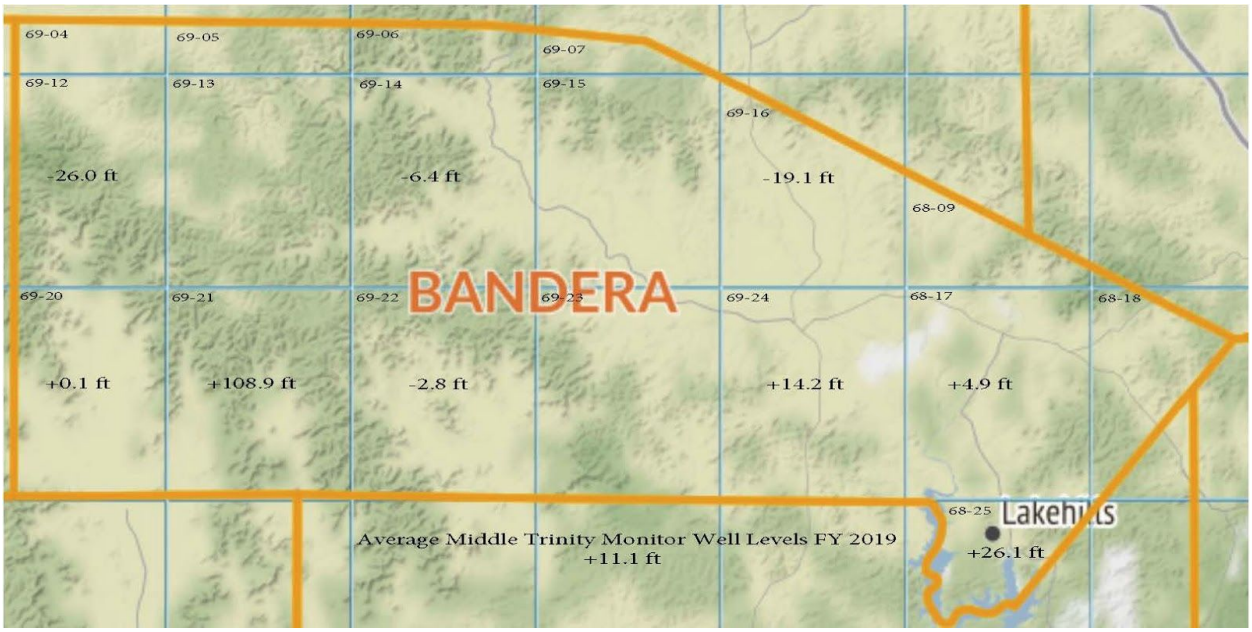


Figure 2 Lower Trinity Map

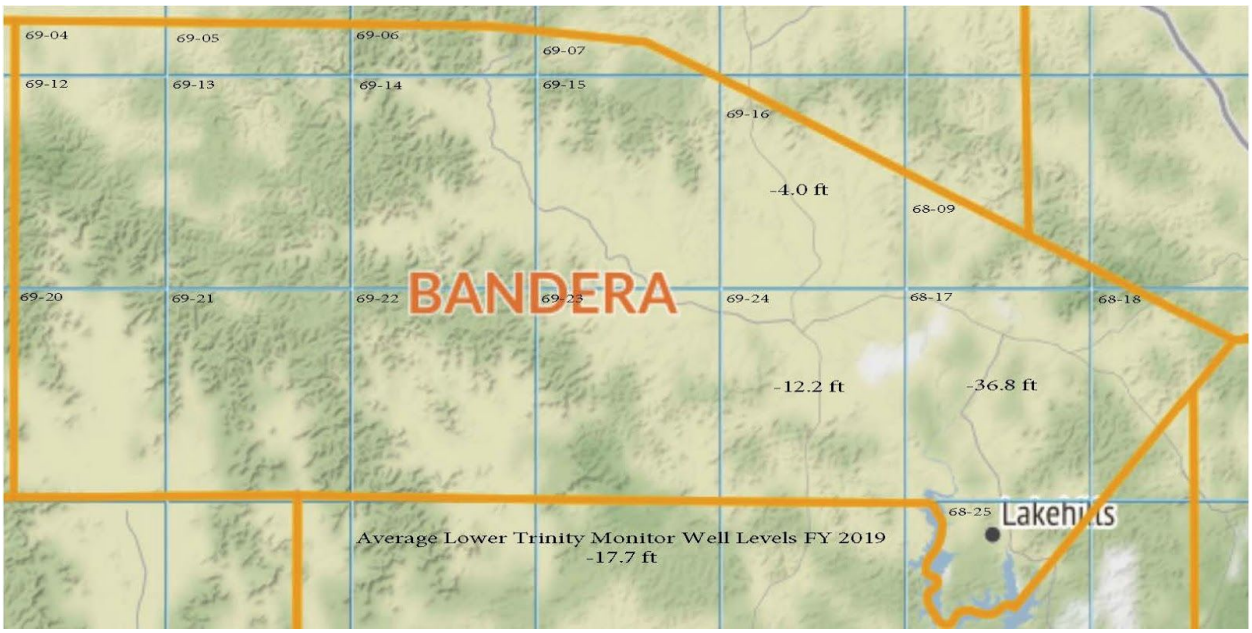
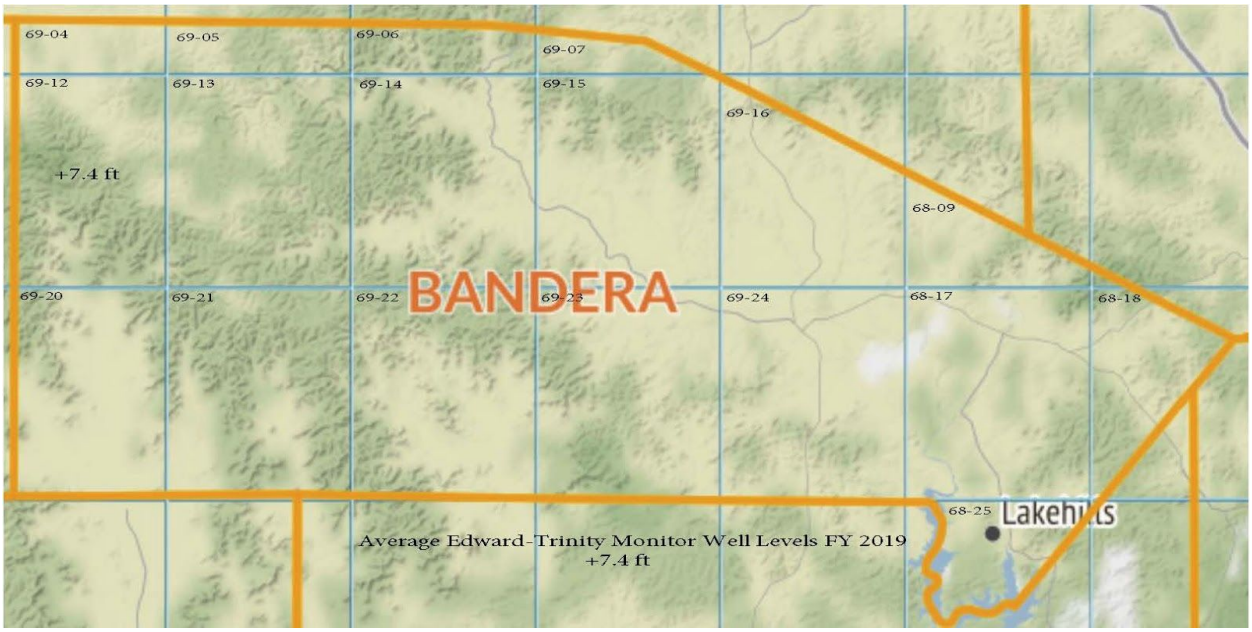


Figure 3 Edwards-Trinity Map



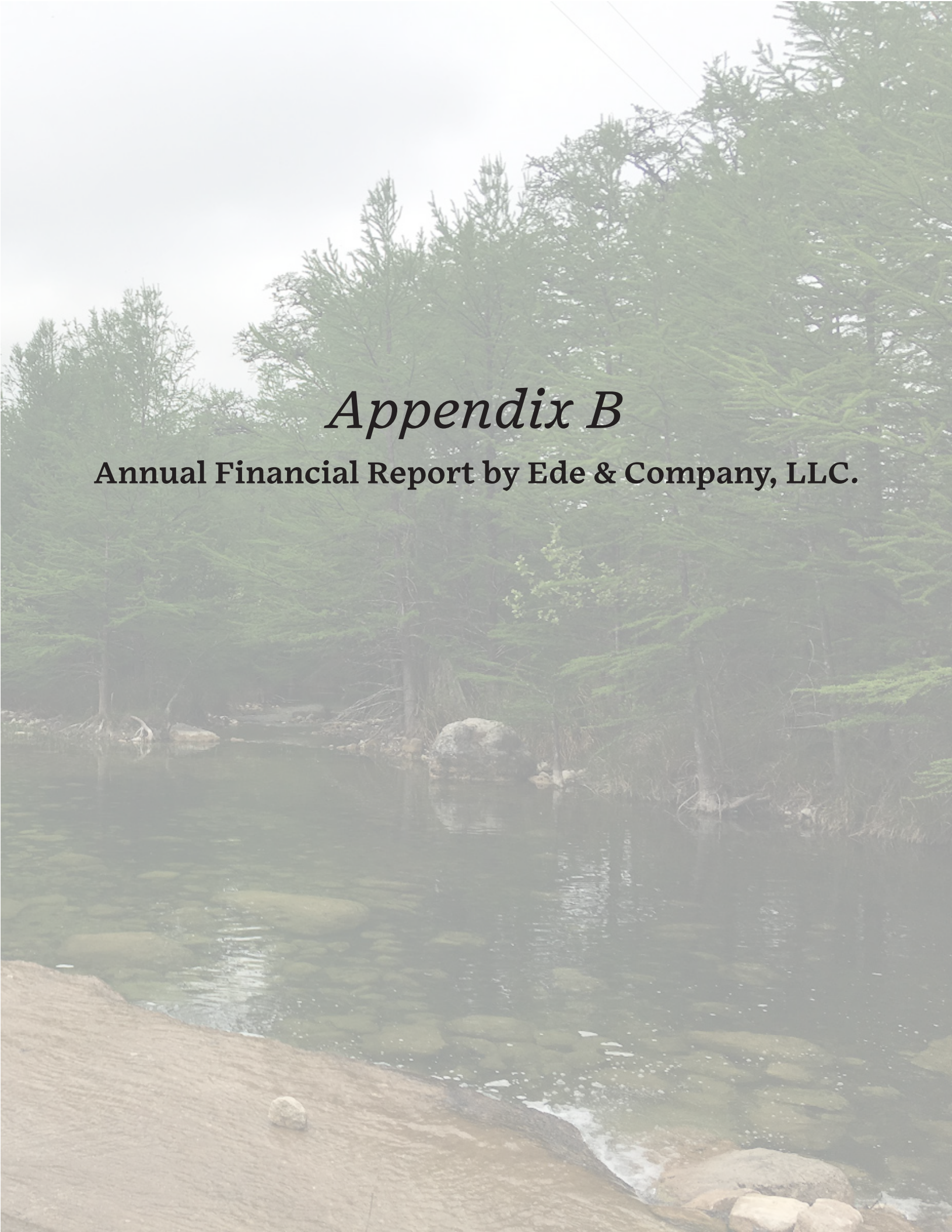
Non Exempt Pumping Report Amounts:

Permit/Entity	Amount in acre-feet
P-1091	1.25
P-1137	3.77
P-1123	0.004
P-1049	9.52
P-1045	13.33
P-1058	10.58
P-1042	8.47
P-1050	9.77
P-1155	55.14
P-1138	1.39
P-1147	25.29
P-1151	0.51
P-1080	0
P-1153	4.33
P-1047	13.05
P-1088	2.52
P-1125	0.012
P-1112	6.63
P-1020 & 1131	33.74

Permit/Entity	Amount in acre-feet
P-1141	14.63
P-1095	0.4
P-1106	11.2
P-1015	19.35
P-1129	20.62
P-1128	11.47
P-1109	0
P-1018	8.12
P-1048	10.16
P-1052	6.77
Comanche Cliffs	12.55
San Julian	6.71
P-1029	11.94
P-1157	6.99
Lakewood	73.4
P-1061	0
P-1067	0
P-1063	0
P-1064	0

Permit/Entity	Amount in acre-feet
P-1065	0
P-1124	36.97
P-1032	32.52
Lake Medina Shores	60.56
River Bend	15.41
P-1137	3.77
P-1026	0.16
P-1001	0.64
P-1152	0.004
P-1019	5.79
P-1146	1.98
P-1075	15.65
P-1133	83.17
P-1134	31.17
P-1135	106.7
P-1150	11.8
P-1119	5.4
P-1116	11.43
P-1117	5.4

Permit/Entity	Amount in acre-feet
P-1073	9
P-1118	15.19
P-1144	11.74
P-1140	0.67
P-1035	0.012
P-1028	72.04
P-1023	0.044
P-1098	0.14
P-1081	0
P-1083	0
P-1086	0
P-1082	0
P-1046	1.47
P-1115	4.12
P-1013	0
P-1113	6.66
P-1114	51.5



Appendix B

Annual Financial Report by Ede & Company, LLC.

Bandera County River Authority and Groundwater District

Annual Financial Report
For the Year Ended September 30, 2019

Ede & Company, LLC
Certified Public Accountants

BANDERA COUNTY RIVER AUTHORITY AND GROUND WATER DISTRICT

Annual Financial Report

For the Year Ended September 30, 2019

BANDERA COUNTY RIVER AUTHORITY AND GROUND WATER DISTRICT

Annual Financial Report

For the Year Ended September 30, 2019

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ANNUAL FILING AFFIDAVIT

THE STATE OF TEXAS X
X
COUNTY OF BANDERA X

I, DONALD 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 9th day of January, 2020, its annual audit report for the year ended September 30, 2019 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 1/9/2020 ,2020

By: Donald Sloan
(Signature of District Representative)

DONALD SLOAN - PRESIDENT
(Type Name & Title of above District Representative)

Sworn to and Subscribed to before me this 9 day of January, 2020

CHARLEY CURD
Notary Public, State of Texas
Comm. Expires 07-24-2022
Notary ID 131654182

Charley Curd
(Signature of Notary)

Commission Expires on 07-24-2022

Charley Curd
(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, 2019 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, 2019, 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

Ede & Company, LLC
Certified Public Accountants
Knippa, Texas

January 7, 2020

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, 2019. 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 $521,453.56 at September 30, 2019.
- During the year, the District's expenses were $87,237.90 more than the $1,142,703.85 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 $150,848.59.
- The District's net position decreased $87,238 which represents a 14.75 percent decrease from 2018.

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 $521.5 thousand at September 30, 2019. (See Table A-1).

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

	Governmental Activities 2019	Governmental Activities 2018	Total Percentage Change 2019 - 2018
Current assets:			
Cash and cash equivalents	$ 169.8	$ 265.5	-36.05%
Accounts receivable	-	94.5	-100.00%
Property taxes receivable	58.2	53.6	8.58%
Due from other governments	0.8	1.3	-38.46%
Prepayments	6.6	5.7	15.79%
Total current assets	235.4	420.6	-44.03%
Noncurrent assets:			
Capital Assets	590.9	590.9	0.00%
Less accumulated depreciation	(278.6)	(256.0)	8.83%
Total noncurrent assets	312.3	334.9	-6.75%
Total Assets	547.7	755.5	-27.50%
Current liabilities:			
Accounts payable and accrued liabilites	26.3	143.9	-81.72%
Total Liabilities	26.3	143.9	-81.72%
Net Position:			
Invested in capital assets	312.4	334.9	-6.72%
Unrestricted	209.1	276.8	-24.46%
Total Net Position	$ 521.5	$ 611.7	-14.75%

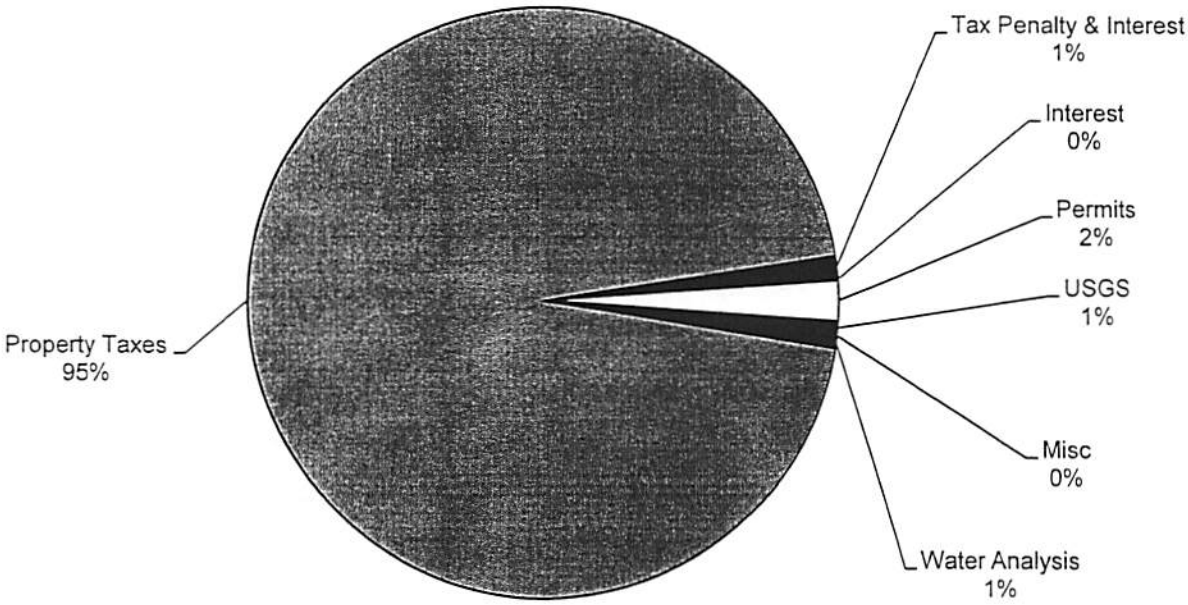
Changes in net position. The District's total revenues were 1,142.7 thousand. A significant portion, 95 percent, of the District's revenue comes from property taxes. (See Figure A-3.) and 2% from permits on new wells.

The total cost of all programs and services was $1,229.9 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 2019	Governmental Activities 2018	Total Percentage Change 2019-2018
General Revenue			
Property Taxes	905.4	841.9	7.54%
Penalty & Interest	11.3	11.1	1.80%
USGS	197.1	196.8	0.15%
New Well Applications & Permits	20.8	17.5	18.86%
Other	8.1	27.5	-70.55%
Total Revenue	1,142.7	1,094.8	4.38%
Program Expenses			
General Government	1,229.9	1,007.2	22.11%
Total Expense	1,229.9	1,007.2	22.11%
Increase (Decrease) in Net Position	$ (87.2)	$ 87.6	-199.54%

2019 Revenue Sources



2019 Expenses

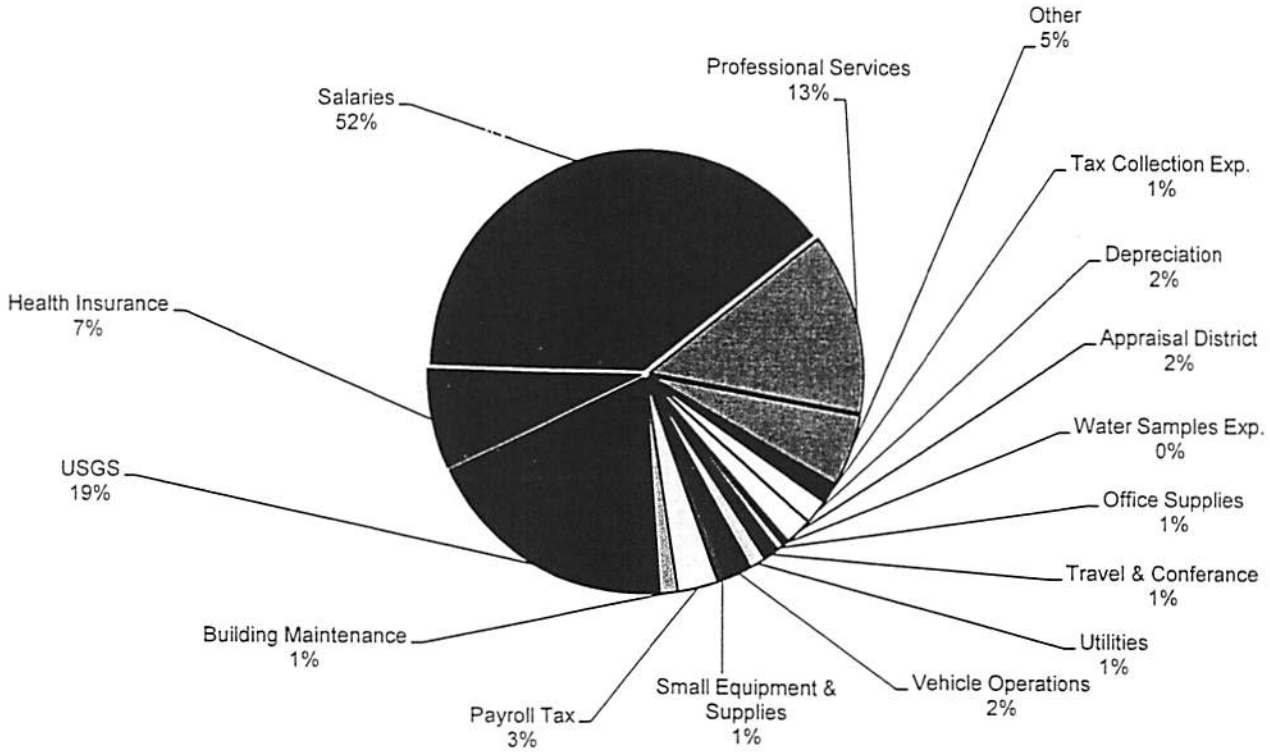


Table A-3 presents the cost of each of the District's largest functions as well as the major administrative categories.

- The cost of all *governmental* activities this year was 1,229.9 thousand.

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

	Total Costs of Services		
	2019	2018	Percent Change
Salaries	479.8	363.0	32.18%
Professional Services	164.4	123.6	33.01%
Health Insurance	91.0	42.0	116.67%
Small Equipment & Supplies	8.2	13.4	-38.81%
Vehicle Operations	23.7	20.9	13.40%
Utilities	15.4	18.9	-18.52%
Travel & Conferance	13.7	16.8	-18.45%
Office Supplies	6.7	6.1	9.84%
Water Samples Exp.	5.6	6.7	-16.42%
Appraisal District	25.4	22.4	13.39%
Depreciation	22.5	26.6	-15.41%
Tax Collection Exp.	18.2	16.4	10.98%

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, 2019

	General Fund	Special Revenue Fund	Total Governmental Funds	Adjustments	Statement of Net Position
ASSETS					
Cash and investments	$ 169,741.31	$ 24.99	$ 169,766.30	$ -	$ 169,766.30
Accounts receivable	24.99	-	24.99	-	24.99
Taxes receivable	58,235.81	-	58,235.81	-	58,235.81
Due from other governments	757.05	-	757.05	-	757.05
Prepayments	6,553.87	-	6,553.87	-	6,553.87
Capital assets (net of accumulated depreciation)					
Land	-	-	-	150,000.00	150,000.00
Building	-	-	-	129,062.39	129,062.39
Monitoring wells & equipment	-	-	-	9,425.82	9,425.82
Vehicles	-	-	-	23,880.95	23,880.95
Total assets	$ 235,313.03	$ 24.99	$ 235,338.02	312,369.16	547,707.18
LIABILITIES					
Accounts payable	$ 22,496.63	$ 24.99	$ 22,521.62	-	22,521.62
Payroll liabilities	3,732.00	-	3,732.00	-	3,732.00
Total liabilities	26,228.63	24.99	26,253.62	-	26,253.62
DEFERRED INFLOW OF RESOURCES					
Unavailable Revenue- Property Taxes	58,235.81	-	58,235.81	(58,235.81)	-
Total Deferred Inflows of Resources	58,235.81	-	58,235.81	(58,235.81)	-
FUND BALANCES/NET POSITION					
Fund balances:					
Committed	71,282.00	-	71,282.00	(71,282.00)	-
Unassigned	79,566.59	-	79,566.59	(79,566.59)	-
Total Fund Balance	150,848.59		150,848.59	(150,848.59)	-
Total liabilities deferred inflows and fund balances	$ 235,313.03	$ 24.99	$ 235,338.02		
Net Position:					
Invested in capital assets, net of related debt				312,369.16	312,369.16
Unrestricted				209,084.40	209,084.40
Total net position				$ 521,453.56	$ 521,453.56

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, 2019

	General Fund	Special Revenue Fund	Total Governmental Funds	Adjustments	Statement of Activities
Revenues:					
Property taxes	$ 897,817.69	$ -	$ 897,817.69	$ 7,620.67	$ 905,438.36
Property taxes penalty & interest	11,266.45	-	11,266.45	-	11,266.45
Interest income	1,041.30	-	1,041.30	-	1,041.30
Permits and deposits	20,750.00	-	20,750.00	-	20,750.00
USGS Flood Project Funding	-	190,300.00	190,300.00	-	190,300.00
USGS Gauge Station	6,800.00	-	6,800.00	-	6,800.00
Miscellaneous	1,247.21	-	1,247.21	-	1,247.21
Non Compliance Penalty	-	-	-	-	-
Water analysis	5,860.53	-	5,860.53	-	5,860.53
Total revenues	944,783.18	190,300.00	1,135,083.18	7,620.67	1,142,703.85
Expenditures/expenses:					
Service operations:					
Appraisal District	25,398.00	-	25,398.00	-	25,398.00
Bonds & Insurance	8,582.14	-	8,582.14	-	8,582.14
Building Maintenance	16,240.60	-	16,240.60	-	16,240.60
Dues & Subscriptions	8,842.02	-	8,842.02	-	8,842.02
Education	14,347.45	-	14,347.45	-	14,347.45
Computer Software and Support	6,018.68	-	6,018.68	-	6,018.68
Small Equipment & Supplies	8,171.64	-	8,171.64	-	8,171.64
Health Insurance	91,048.89	-	91,048.89	-	91,048.89
Retirement	6,562.72	-	6,562.72	-	6,562.72
Monitoring Units	1,500.14	-	1,500.14	-	1,500.14
Office Supplies	6,682.20	-	6,682.20	-	6,682.20
Office Rent	3,600.00	-	3,600.00	-	3,600.00
Payroll Tax	37,347.99	-	37,347.99	-	37,347.99
Postage	991.67	-	991.67	-	991.67
Professional Services	164,400.77	-	164,400.77	-	164,400.77
Salaries	479,807.67	-	479,807.67	-	479,807.67

Tax Collection Exp.	18,164.04	-	18,164.04	-	18,164.04
GMA Expense		-	-	-	-
Travel & Conferences	13,712.82	-	13,712.82	-	13,712.82
Employee Training	7,623.82	-	7,623.82	-	7,623.82
Utilities	15,438.06	-	15,438.06	-	15,438.06
USGS - Gauges		-	-	-	-
USGS - Flood Control Project	45,150.00	190,300.00	235,450.00	-	235,450.00
Vehicle Operations	23,730.79	-	23,730.79	-	23,730.79
Water Quality Project	91.23	-	91.23	-	91.23
Water Samples Exp.	5,590.45	-	5,590.45	-	5,590.45
Well Plugging & Logging	743.80	-	743.80	-	743.80
Clean Rivers Program	5,816.18	-	5,816.18	-	5,816.18
Medina River Cleanup	998.99	-	998.99	-	998.99
Riparian Project	81.26	-	81.26	-	81.26
Brush Control	465.48	-	465.48	-	465.48
Depreciation	-	-	-	22,492.25	22,492.25
Total expenditures/expenses	1,017,149.50	190,300.00	1,207,449.50	22,492.25	1,229,941.75
Excess (deficiency) of revenues over expenditures	(72,366.32)	-	(72,366.32)	(14,871.58)	(87,237.90)
Other financing sources (uses)					
Transfers in	-	-	-	-	-
Transfers out	-	-	-	-	-
Total other financing sources (uses)	-	-	-	-	-
Change in fund balance/net position	(72,366.32)	-	(72,366.32)	(14,871.58)	(87,237.90)
Fund balance/net position:					
Beginning of the year	223,214.91	-	223,214.91	385,476.55	608,691.46
End of the year	$ 150,848.59	$ -	$ 150,848.59	$ 370,604.97	$ 521,453.56

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, 2019

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

A. Reporting Entity

The Bandera County River Authority was created by Acts of the 71st 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.

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 the 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.

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

Reconciliation of General Fund Balance to Net Position of Governmental Activities September 30, 2019

Total General Fund Balance	$	150,848.59
Amounts reported in governmental activities in the statement of net position are different because:		
Capital assets used in the governmental activities are not financial resources and therefore are not reported in the funds.		334,861.41
Accumulated depreciation has not been included in the general fund financial statements.		(22,492.25)
Revenue reported as deferred revenue in the general fund was recorded as revenue in the government-wide financial statements.		58,235.81
Net Position of Governmental Activities	$	521,453.56

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

Net Change in Governmental Fund Balances	$	(72,366.32)
Amounts reported for the governmental activities in the statement of activities are different because:		
Various other reclassifications and eliminations are necessary to convert from the modified accrual basis of accounting to accrual basis		7,620.67
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.		(22,492.25)
Change in Net Position of Governmental Activities	$	(87,237.90)

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 polices 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.

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, 2019, 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, 2019, was as follows:

	Beginning Balances	Increases	Decreases	Ending Balances
Governmental activities:				
Capital assets not being depreciated:				
Land	150,000	-	-	150,000
Total capital assets not being depreciated	150,000	-	-	150,000
Capital assets being depreciated:				
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	38,719	4,302	-	43,021
Vehicles	96,472	8,403	-	104,875
Monitoring Wells & Equipment	120,934	9,787	-	130,721
Total accumulated depreciation	256,124	22,492	-	278,617
Total capital assets being depreciated, net	184,861	(22,492)	-	162,369
Governmental activities capital assets, net	$ 334,861	$ (22,492)	$ -	$ 312,369

Required Supplementary Information

BANDERA COUNTY RIVER AUTHORITY AND GROUND WATER DISTRICT

Budgetary Comparison Statement - General Fund

For Year Ended September 30, 2019

	Actual	Original Budget	Final Amended Budget	Variance Positive (Negative)
Revenues:				
Property taxes	$ 897,817.69	$ 906,000.00	$ 906,000.00	$ (8,182.31)
Property taxes penalty & interest	11,266.45	-	-	11,266.45
Interest income	1,041.30	250.00	250.00	791.30
Permits and deposits	20,750.00	15,000.00	15,000.00	5,750.00
USGS Gauge Station	6,800.00	6,800.00	6,800.00	-
Miscellaneous	1,247.21	2,500.00	2,500.00	
Non Compliance Penalty	-			
Water analysis	5,860.53	6,000.00	6,000.00	(139.47)
Total revenues	944,783.18	936,550.00	936,550.00	9,485.97
Expenditures:				
Service operations:				
Appraisal District	25,398.00	25,785.00	25,785.00	387.00
Bonds & Insurance	8,582.14	9,000.00	9,000.00	417.86
Building Maintenance	16,240.60	15,000.00	15,000.00	(1,240.60)
Dues & Subscriptions	8,842.02	4,500.00	4,500.00	(4,342.02)
Education	14,347.45	18,500.00	18,500.00	4,152.55
Computer Software and Support	6,018.68	8,000.00	8,000.00	1,981.32
Small Equipment & Supplies	8,171.64	18,000.00	18,000.00	9,828.36
Health Insurance	91,048.89	70,000.00	70,000.00	(21,048.89)
Retirement	6,562.72	14,000.00	14,000.00	7,437.28
Monitoring Units	1,500.14	1,500.00	1,500.00	(0.14)
Office Supplies	6,682.20	6,000.00	6,000.00	(682.20)
Office Rent	3,600.00	3,600.00	3,600.00	-
Payroll Tax	37,347.99	32,000.00	32,000.00	(5,347.99)
Postage	991.67	750.00	750.00	(241.67)
Professional Services	164,400.77	111,500.00	111,500.00	(52,900.77)
Salaries	479,807.67	454,780.00	454,780.00	(25,027.67)
Tax Collection Exp.	18,164.04	-	-	(18,164.04)
GMA Expense	-	-	-	-
Travel & Conferences	13,712.82	17,000.00	17,000.00	3,287.18
Employee Training	7,623.82	7,000.00	7,000.00	(623.82)
Utilities	15,438.06	17,000.00	17,000.00	1,561.94
USGS - Gauges	-	16,580.00	16,580.00	16,580.00
Election	-	6,000.00	6,000.00	6,000.00

BANDERA COUNTY RIVER AUTHORITY AND GROUND WATER DISTRICT
Budgetary Comparison Statement - General Fund
For Year Ended September 30, 2019

	Actual	Original Budget	Final Amended Budget	Variance Positive (Negative)
Expenditures: (Continued)				
USGS - Flood Control Project	45,150.00	82,000.00	82,000.00	36,850.00
Vehicle Operations	23,730.79	17,000.00	17,000.00	(6,730.79)
Water Quality Project	91.23	8,000.00	8,000.00	7,908.77
Water Samples Exp.	5,590.45	9,000.00	9,000.00	3,409.55
Well Plugging & Logging	743.80	6,000.00	6,000.00	5,256.20
Clean Rivers Program	5,816.18	8,000.00	8,000.00	2,183.82
Medina River Cleanup	998.99	1,000.00	1,000.00	1.01
Riparian Project	81.26	1,000.00	1,000.00	918.74
Brush Control	465.48	1,500.00	1,500.00	1,034.52
Illegal Dumping -Litter Abatement	-	1,000.00	1,000.00	1,000.00
Invasives - Zebra Mussels	-	1,000.00	1,000.00	1,000.00
Medina Lake Water Quality - USGS	-	-	-	-
Contingencies	-	1,000.00	1,000.00	1,000.00
	1,017,149.50	992,995.00	992,995.00	(24,154.50)
Excess (deficiency) of revenues over expenditures	(72,366.32)	(56,445.00)	(56,445.00)	(14,668.53)
Other financing sources (uses)				
Transfers out	-	-	-	-
Total other financing sources (uses)	-	-	-	-
Change in fund balance/net position	(72,366.32)	(56,445.00)	(56,445.00)	(14,668.53)
Fund balance:				
Beginning of the year	223,214.91	223,214.91	223,214.91	-
End of the year	$ 150,848.59	$ 166,769.91	$ 166,769.91	$ (14,668.53)

BANDERA COUNTY RIVER AUTHORITY AND GROUND WATER DISTRICT

Schedule of Delinquent Taxes Receivable

For the Year Ended September 30, 2019

LAST TEN YEARS ENDED SEPTEMBER 30,	TAX RATE	ASSESSED VALUE FOR TAX PURPOSES (in thousands)	BEGINNING BALANCE 10/1/18	CURRENT YEAR TOTAL LEVY	ENTIRE YEAR'S ADJUSTMENTS	TOTAL COLLECTIONS	BALANCE 9/30/19
2009 & Prior	Var	Var	$ 8,771.83		$ (2,309.11)	$ 402.69	$ 6,060.03
2010	.024000	1,683,008	1,268.79		42.22	109.84	1,201.17
2011	.023414	1,796,477	1,638.24		(18.13)	173.33	1,446.78
2012	.024474	1,842,781	2,061.85		(103.65)	159.37	1,798.83
2013	.026001	1,878,945	2,682.07		(80.05)	305.99	2,296.03
2014	.028058	1,903,192	3,401.12		(33.60)	693.16	2,674.36
2015	.034739	2,015,732	5,554.67		(45.75)	1,277.13	4,231.79
2016	.037300	2,088,705	9,842.94		(122.51)	2,952.84	6,767.59
2017	.039280	2,151,203	18,369.71		(305.50)	7,798.75	10,265.46
Current	.040339	2,245,731		905,438.36	-	883,944.59	21,493.77
			$ 53,591.22	$ 905,438.36	$ (2,976.08)	$ 897,817.69	$ 58,235.81