# Far West Texas Groundwater Districts Adopt Data Management Software and Develop a Data-Sharing Module to See the Bigger Picture of Shared Aquifer Health

## Applicant

Big Bend Conservation Alliance
PO Box 1721
Alpine, Texas 79831

## Project Manager

Shelley Bernstein
Executive Director, Big Bend Conservation Alliance
PO Box 1721
Alpine, Texas 79831
shelley@bigbendconservationalliance.org
347-410-4319

**Notes: DUNS number will be provided within 30 days.**

4/20/21
3:26 PM

# Table of Contents



# Executive Summary

Date: March 23, 2021
Applicant Name: Big Bend Conservation Alliance (BBCA)
City, County, State: Alpine, Brewster County, Texas

Applicant Type: Category B - Big Bend Conservation Alliance is working to coordinate the grant application among the groundwater conservation districts of three counties in Texas—Presidio, Brewster, and Culberson—which are part of Texas Groundwater Management Area 4.

Project Summary: Big Bend Conservation Alliance—in partnership with Presidio County Underground Water Conservation District, Brewster County Groundwater Conservation District, and Culberson County Groundwater Conservation District—seeks to establish a common data management software platform in the region, to enable these districts to share data on the aquifers they share, to provide for better coordination of region-wide water management goals, and to disseminate technical

knowledge of the software. This project will purchase and deploy Halff's Groundwater Management System (GMS) database application for two groundwater districts in Groundwater Management Area 4. Additionally, Halff will develop a novel, shared data-reporting module compatible with the GMS database application, which will allow three districts to share information among each of the district's databases. This toolset will improve access to water resource data among board and staff in each district, while also giving a higher level picture of regional data among districts. The data-sharing module would be developed so that it is freely available to districts using the Halff platform for a nominal setup fee.

Completion: 1 year implementation from date of award

Federal Facility: No

# Technical Project Description

The Halff Groundwater Management System (GMS) will be deployed to Brewster and Culberson groundwater management districts—helping standardize the use of the same cloud-based, mobile-friendly platform throughout the region of Far West Texas. For each district, this would begin the process of uniting disparate data from spreadsheets and other sources with the data currently being collected from monitoring wells.

Halff GMS will allow each district to:

- Track information about wells, owners, drillers, production, water levels, permits and more from a secure, mobile-friendly, web-based application;
- Experience fully integrated GIS mapping capabilities with district and public web maps;
- Integrate data from the Texas Water Development Board, Texas Department of Licensing and Regulation, and local County-level appraisal districts;
- Upload and manage unlimited file attachments on the well, owner or driller;
- Associate and match records among wells, permits and owners through dynamic linking;
- Perform mobile field inspections;
- Eliminate redundancies and streamline processes;
- Access automated reporting and query tools.

The following GIS reference layers are a standard part of the base package:

- TWDB/USGS monitoring wells
- TWDB Major/Minor aquifers
- Ground surface elevation model
- Political jurisdictions
- Parcels from available appraisal districts
- TWDB groundwater index grid
- Groundwater Conservation District (GCD) boundaries • Groundwater Management Area (GMA) boundaries
- FEMA floodplains
- CCN boundaries
- Geologic Atlas of Texas
- Surface water features, i.e. streams and water bodies
- NWS rainfall measurements/accumulations

Basemap layers from Esri include:

- Aerial/Satellite imagery
- Streets
- Hybrid of imagery and streets
- Topographic
- National Geographic
- Light gray canvas

All web map GIS layers are stored in Esri's enterprise geodatabase format. The geodatabase format supports importing and exporting the GIS data from a variety of formats.

As part of the project, Halff will develop a novel, shared, data-reporting module compatible with the GMS database application, which will allow districts to share information about their groundwater wells, including the well's location, designated aquifer, recorded water level readings and reported water production. The new shared data reporting module will allow the individual districts to display well locations from all participating districts on their maps and run queries for generating water level and water production reports by aquifer, county, district, and groundwater management area. This toolset will improve access to water resource data among board and staff in each district, while also giving a higher-level picture of regional data among districts. The shared data module will be deployed to Brewster, Culberson, and Presidio groundwater management districts. Once developed, this tool will be available to any district which uses the Halff GMS platform for a nominal setup fee.

The Halff GMS database application has been deployed by 22 districts representing 35 counties and 49,290 square miles (31,545,600 acres) in Texas. Halff has been identified for this project because the platform is already in use at Presidio County Underground Water Conservation District, which is part of GMA 4, and neighboring Reeves and Middle-Pecos GCDs—all of which have had excellent experiences with it and could benefit from the data sharing module for a clearer picture of shared aquifer health.

# Project Location

The proposed project will implement software in two Texas counties which are part of Groundwater Management Area 4 (GMA 4), including Brewster and Culberson. Presidio County currently has the Halff software and would opt in to the data sharing module, so data will be shared among three Texas counties—Brewster, Culberson, and Presidio. GMA 4 is located in Far West Texas and districts in this region share the Edwards-Trinity (Plateau) and Pecos Valley major aquifers, and Bone Spring-Victorio Peak, Capitan Reef Complex, Igneous, Marathon, Rustler, and West Texas Bolsons minor aquifers.

# Data Management Practices

The spatially explicit data supported by the GMS application are developed using Esri's ArcGIS geographic information system (GIS) platform. The spatial data web services are published using the industry standard Representational State Transfer (REST) software architecture style which are then provided to users through web applications developed with JavaScript. The GIS data maintained in the GMS databases can also be published using the Open Geospatial Consortium (OGC) Web Map Service (WMS) standard protocol and the Keyhole Markup Language (KML) format used by Google Earth. The REST, WMS and KML data services can be used with a variety of open source GIS platforms. The GMS Shared Data Application will use these web technologies to display the spatial location of the wells with associated water level and water production data that have been shared to support groundwater management of aquifers that cross conservation district boundaries.

# Evaluation Criteria

E.1.1. Evaluation Criterion A — Benefits to Water Supply Reliability (40 points)

1. Describe the water management issue(s) that your project will address.

Water is vital for all life, especially in Far West Texas, an area that receives 8-14 inches of rainfall a year. The three counties, which are part of this proposal, cover 13,861 square miles of wild and vast territory in the Trans-Pecos region. The topography ranges from rolling plains to some of the highest and most rugged mountains in Texas. Land use in the area includes wildlife habitat, livestock grazing, agriculture, and recreation. The economy is based primarily on cattle ranching, hunting leases, agriculture, and tourism.

The area has been under severe to exceptional drought conditions for the past year and recently experienced its second-longest drought on record from 2011 to 2015. The very sparse surface waters of the region have been in decline for years with reduced natural springflow and decreased flow to and in the Rio Grande river.

The pressures of statewide population growth, "water ranching," and industrial expansion from the Permian Basin into these counties are also posing a number of challenges.

The factors underlying the explosive population growth in Texas are many. In addition to the threat of rising sea levels and intensifying hurricanes, pressure from the coronavirus crisis on the East coast and wildfires across the West coast are pushing people to the center of the country, including Texas. Earlier projections that Texas' population will double by 2040 are now considered too conservative. Though remote, Far West Texas will not be exempt from population growth. Several municipalities have drilled or are drilling new wells to accommodate this growth and domestic demands on the groundwater supply will only increase.

Population growth in the region's neighboring cities, such as Midland-Odessa and El Paso, will continue to drive so-called "water-ranching" activities in the Trans-Pecos region. Water ranching involves the purchase of large swaths of land by municipalities for the groundwater underneath. For example, the City of El Paso already owns land on the Presidio/Jeff Davis county line that could eventually be used for water ranching. Under the "rule of capture," Texas law awards ownership of the groundwater to the owner of the land above. Also known as the "law of the biggest pump," the legal right of landowners to withdraw as much water as they choose is checked only by the power of local groundwater districts to determine whether that water is being put to "beneficial use." Groundwater districts in Texas walk a fine line between the "rule of capture" and "beneficial use" and their management decisions will need to be more data-driven as foreseeable conflicts become reality.

The region is also experiencing an unprecedented expansion of unconventional oil and gas exploration in the greater Permian Basin that is also requiring ever-increasing volumes of water. A recent study by Duke University found that water use in the Permian Basin has risen by 770% since 2011. New innovations in horizontal drilling and other techniques could place even heavier demands on water in years to come. This thirst will be slaked in part through the buy-up of ranches for the groundwater underneath. With thousands of oil and gas wells projected for the region, the impacts on regional aquifers are potentially staggering. It is only a matter of time before this level of water depletion begins to affect neighboring counties in the Trans-Pecos. Landowners in Culberson County are already exporting 5.4 million gallons of water a day to the oil fields of the Greater Permian Basin.

The districts participating in this proposal are at a critical juncture given their proximity to the Permian Basin—they are just far enough away to have been spared the immediate impacts of one of the world's densest centers of hydraulic fracturing activity. But they are in a perfect position to gather the data necessary to help gauge the impacts of unconventional oil and gas development on groundwater depletion and quality among shared aquifers.

The economy of the region is also undergoing incredible diversification with the arrival of Blue Origin, the privately funded aerospace manufacturer and sub-orbital spaceflight services company founded by Jeff Bezos. The region's national and state parks are also drawing record numbers of visitors, while towns, such as Marfa, in Presidio County, continue to experience a boom in tourism that has been little affected by the coronavirus crisis.

On top of these daunting challenges, the groundwater districts of the region face a chronic lack of funding. The counties covered in this grant application are among the poorest in Texas. Groundwater districts are the preferred means of local control of groundwater resources under Texas law. Yet many of their mandates are unfunded. In order to meet their legal obligations and confront the many challenges ahead, groundwater districts need smarter tools, better data, and increased cooperation across the region.

The proposed data management platform would enable districts to gather and centralize data from ongoing monitoring programs, expand those programs and integrate existing historical data from spreadsheets and other storage locations. A streamlined database for each district would facilitate point-in-time decisions and provide the ability to easily query all of the data in the district's possession. These data would also be shareable and accessible in varying degrees to counties, cities, water supply corporations, consultants, planners, farmers, ranchers, and other landowners. This platform would

also save districts immense amounts of time by having information on hand to respond to public information requests and provide for integrated access to data from the Texas Water Development Board (TWDB), other state agencies, and county appraisal districts (CADs). Currently, drilling-application and data-logging processes are analog and data sources, such as the TWDB and local CADs, must be accessed separately and cross-referenced manually. The proposed platform would greatly enhance each district's ability to manage the fine line between the "rule of capture" and "beneficial use."

The proposed data management platform would also come at a crucial time for regional planning. The districts in this proposal are all part of Groundwater Management Area 4 (GMA 4). Under Texas law, groundwater management areas are required to formulate desired future conditions (DFCs) every five years. Desired future conditions involve the legally binding acceptance of a certain level of drawdown in area aquifers within a 50-year timeframe. The current DFC cycle is coming to an end and the districts of GMA 4 broadly agree that the science underlying this round of DFCs could benefit from substantial improvements in data collection and management. By not only standardizing the regional data platform, but also developing a tool to share data on the aquifers under shared jurisdiction, the funding from this grant will catapult the GCDs into a position where they can more effectively manage the groundwater resources within their districts, as well as visualize the bigger picture of groundwater needs today and in the future.

This novel, data-sharing tool would also be available to other districts in the region and throughout the state with the same data management system for a nominal setup fee.

2. Explain how your project will address the water management issues identified in your response to the preceding bullet.

District boundaries, and even groundwater management areas, are typically drawn along political subdivisions—not aquifer boundaries. The Halff software provides an easy way to share the information collected for a given aquifer among districts to support updates to groundwater availability models and DFCs. Having a structured database that identifies monitoring wells, along with the methods used to collect water level measurements, provides an efficient way to monitor the aquifer levels, groundwater management models, and DFCs over time at the district level and regional level and share this data with state agencies and other stakeholders. A shared database also provides more reliable data to help districts make informed permitting and management decisions based on science.

The reliability of the water supply and the management of water marketing activities will require more data from a wider variety of locations. Currently, the districts of the region are highly impaired by their inability to readily access the datasets they have and to constructively add to them. The Halff software provides graphing and mapping tools to identify trends and enable districts to grant permits based on gaugeable impacts in a definable area. As more monitoring wells come on line, the data can be easily uploaded to the system to enhance projections and drive decisions.

Drought is a huge concern in the Trans-Pecos region. The Halff software provides a map layer with rainfall totals by day, week, month, and year. This information can help districts keep local officials updated about drought conditions as well as provide a basis for drought contingency planning with local agencies and stakeholders. The software can also assist in the identification of recharge zones for future protection and enhancement. These data could also further the riparian restoration efforts of other regional agencies to restore watershed health, protect endangered species, and preserve habitat.

As mentioned above, districts walk a fine line in Texas between the "rule of capture" and "beneficial use." The administration of water rights is going to become increasingly important as demand for the groundwater grows. Districts are also facing pressure from state legislators, who are often in the thrall of powerful industries. At the Texas Groundwater Summit two years ago in San Antonio, State Senator Charles Perry warned districts that if they couldn't point to data as the basis for their decisions in denying or curtailing permits to industrial users, "I cannot help you." There is growing concern that groundwater districts could see their local control taken away by the central authorities in Austin if they do not take a more data-driven approach.

3. Describe the significance or magnitude of the benefits of your project, either quantitatively or qualitatively, in meeting one or more of the listed objectives.

Drought is a commonplace for this region, and dry conditions tend to persist more than wet conditions. The three counties, which are part of this proposal, cover 13,861 square miles of wild and vast territory and have been under severe to exceptional drought conditions for the past year. This database would help district managers track impacts of drought more effectively by measuring water levels throughout drought conditions and over time developing a baseline for extreme drought versus years with more rainfall. Culberson County GCD's drought management strategy, listed in its district rules, reduces water production and consumption during times of drought. Pairing this

drought strategy with accessible water level data would strengthen the district's ability to decide when to cut back on production. Additionally, groundwater is the sole water source for municipalities across the region. This database can help municipalities learn more about groundwater supplies that may be near their city wells and, in turn, help them implement conservation strategies in times of drought.

The DFC management tool directly impacts water supply reliability for the region because without consistent water level monitoring, production of wells cannot be tracked, managed, or known. If a more robust monitoring network and database do not exist, water supply for the region is dictated by a small sample of wells that may not provide all the data needed to know how much or how little groundwater sits below the surface. This shared database will provide critical information about the well networks throughout Presidio, Culberson, and Brewster counties giving district managers more information to make planning decisions. The database also generates information by aquifer versus political jurisdictions telling a more complete story of the health of the aquifer across county lines.

4. Explain how your project complements other similar applicable to the area where the project is located.

There have been efforts to share data in other parts of Texas which can serve as models, but none are in the Trans-Pecos region.

The Texas Water Development Board hosts Water Data for Texas. This project combines data from a limited number of groundwater level recorders in observation wells throughout the state, but the data set is limited.

The South Plains, Sandy Land, and Llano Estacado GCD model is most relevant to this proposal. The Hydrologic Data Explorer of the High Plains was developed by USGS, and compiled data from three counties in the Texas Panhandle, including Gaines, Terry and Yoakum. These three districts funded the project and provided data. Though this model has a public-facing component, the project proposed here aims to create the backend module with which to internally share data among groundwater boards and staff. A public facing component could be developed in the future given the basis for the data application would have already been developed on this project.

This project seeks to bring high-level data sharing to the Trans-Pecos region, with an eye toward data enabling sharing for any district using the Halff platform. This proposal would develop the module for sharing between the three districts in GMA 4—Brewster, Culberson, and Presidio. Once created, the data sharing module would be freely

available to districts that Halff serves for a nominal setup fee in each district. Currently, the Halff platform is used in 18 counties and, as one example in this use case, the Reeves and Middle-Pecos districts have recently come online and border GMA 4's boundary. Developing this module in a way that bordering districts can opt-in easily means the shared vision of water resources in the region gets larger and more robust over time.

### E.1.2. Evaluation Criterion B — Need for Project and Applicability of Project Results (20 points)

The proposed data management platform would enable districts to gather and centralize data from ongoing monitoring programs, expand those programs and integrate existing historical data from spreadsheets and other storage locations. A streamlined database for each district would facilitate point-in-time decisions and provide the ability to easily query all of the data in the district's possession.

This platform would save districts immense amounts of time by having information on hand to respond to public information requests and provide for integrated access to data from the Texas Water Development Board (TWDB), other state agencies, and county appraisal districts (CADs). Currently, drilling-application and data-logging processes are analog and data sources, such as the TWDB and local CADs, must be accessed separately and cross-referenced manually.

Beyond this, though, there are larger gains. By joining forces across county lines and acquiring a common data management platform, it gives the region a chance to get a shared view of each district's data on the aquifers they share and to provide for better coordination of region-wide water management goals. In this way, the districts are stronger together in enabling this larger view, which avoids siloed decisions. More coordination is the goal, especially important given that these districts share aquifers across geographic boundaries and are required to formulate DFCs for these shared aquifers.

Once the other districts in the region have installed the Halff software, Presidio County Underground Water Conservation District can assist them in also becoming data providers to the National Ground-water Monitoring Network of the USGS, which will unlock hundreds of thousands of dollars in future funding for water quality testing and infrastructure, such as drilling their own monitoring wells. A common data platform with access to more funding for expanded water-quality and water-quantity monitoring efforts for our entire region is well within reach.

Section E. Application Review Information

1. Will the project result in an applied science tool(s) or information that is readily applicable, and highly likely to be used by water resource managers in the West?

a. Explain who has expressed the need and describe how and where the need for the project was identified (even if the applicant is the primary beneficiary of the project).

Groundwater conservation district databases that are digital, accessible, shareable and useful are essential for the benefit of water conservation districts, and other users such as landowners, water supply companies, consultants, planners, the agriculture industry, and other water resources managers.

This need was originally identified by Presidio County in 2019, when it was clear a software platform could save the district time in public inquiry and provide the tracking ability in a consistent package. The Halff Groundwater Management System (GMS) was selected and has been in use since June 2020.

The platform has helped transform the work of the district by uniting disparate historical datasets—from spreadsheets and other sources—with current monitoring data from wells in the county into a cloud-based platform that has made data easy to access, query, report, and export. This package has also transformed the GCD's work with the public providing a free online query tool, where any interested party can see the data first-hand and online, at any time.

The broader need for data sharing became apparent to all districts with the upcoming joint planning process for DFCs. Districts could see the gains Presidio is experiencing because there was a local model; it was clear this was a critical moment to combine forces to begin tracking data using a consistent platform, and develop a way data can be shared across county lines, so that groundwater conservation districts can gauge how they are performing toward their DFC requirements.

This project will utilize Presidio's existing knowledge of the product to help two surrounding counties in Groundwater Management Area 4—Brewster and Culberson—with their own deploy, helping standardize the use of the same platform throughout the region of Far West Texas.

b. Will the results of your project inform water resource management actions and decisions immediately upon completion of the project, or will additional work be required?

The platform would be up and running in each district within 6 months after contract, and data sharing to follow within the next 6 months. The entire project will take 14 months for implementation. For each district, the organizational benefits of the base software package will be relevant within 6 months after contract—the Halff platform has a 4-6 month window for implementation. The data sharing module will take 4-6 months of development time, with additional 3 months to roll it out to each district.

Once developed, the database will be used as a resource by the districts to determine if the previous DFC goal was met. Districts can evaluate the data to make an informed decision on the next DFC in the next cycle of planning.

c. If applicable,will the results of your project be transferrable to other users and locations? Note: not all water management solutions are transferrable.

Once created, the data sharing module would be freely available to districts that Halff serves for a nominal setup fee in each district. Currently, the Halff platform is used in 18 counties.

d. If the applicant is not the primary beneficiary of the project (e.g., Category B applicant), describe how the project beneficiaries have been or will be involved in planning and implementing the project?

Each of the district boards have seen a presentation of the Halff platform, which used demonstration data from Presidio County, and Presidio County's Board President, Trey Gerfers, who was present at these meetings to answer questions and address concerns.

During project implementation, each district will work directly with the implementation team from Halff to deploy the package for their county and complete necessary data import into the system, if the county has historical data.

E.1.3. Evaluation Criterion C — Project Implementation (20 points)

1. Briefly describe and provide support for the approach and methodology that will be used to meet the objectives of the project.

During project implementation, each district will work directly with the team at Halff to deploy the package for their county and complete necessary data import into the

system, if the county has historical data. This process will take 4-6 months, which is the window Halff provides for implementation timing.

Once the Halff platform is up and running in each district, development work will begin at Halff on the data sharing module. This work will take 3-4 months to complete, at which point it will be integrated into the base system each district is using. This development work has a pre-defined scope, which has been compiled with the districts in this proposal:

Halff will develop a new shared data reporting module compatible with the Groundwater Management System (GMS) database application. This is the application currently being used by multiple GCDs in Texas. This new module will allow Districts to share information about their groundwater wells and will include the well's location, designated aquifer, recorded water level readings and reported water production. The new shared data reporting module will allow the individual districts to display well locations from all participating districts on their maps and run queries for generating water level and water production reports by aquifer, county, district, and groundwater management areas.

2. Describe the work plan for the project. Include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.

- **August 2021 -** Award
- **September 2021 - October 2021 -** Each district contracts with Halff.
- **November 2021 - April 2022 -** Each district implements base package and TWDB data import.
- **February 2022 - July 2022 -** Development of data sharing module.
- **August 2022 - October 2022 -** Deploy of data sharing module to each district.

3. Provide a summary description of the products that are anticipated to result from the project.

The Halff Groundwater Management System (GMS) base package will allow each district to:

- Track information about wells, owners, drillers, production, water levels, permits and more from a secure mobile-friendly, web-based application;
- Experience fully integrated GIS mapping capabilities with district and public web maps;

- Integrate data from Texas Water Development Board and County Appraisal Districts;
- Upload and manage unlimited file attachments on the well, owner or driller;
- Associate records between wells, permits and owners through dynamic linking;
- Perform mobile field inspections; and
- Have access to automated reporting and query tools.

The data sharing module will allow districts to share information about their groundwater wells and will include the well's location, designated aquifer, recorded water level readings and reported water production. The new shared data reporting module will allow the individual districts to display well locations from all participating districts on their maps and run queries for generating water level and water production reports by aquifer, county, district, and groundwater management areas.

4. Identify staff with appropriate credentials and experience and describe their qualifications.

a. Have the project team members accomplished projects similar in scope to the proposed project in the past either as a lead or team member?

Presidio County Underground Water Conservation District (PCUWCD) deployed the platform June 2020 and has experience managing the package on a daily basis and working directly with the Halff team for modifications. Additionally, PCUWCD has an hourly position on staff who has extensive experience in data entry and bulk importing needed to move historical data into the system once established. The experience of this District gives the other Districts in the region a benchmark to follow and a resource for support.

b. Is the project team capable of proceeding with tasks within the proposed project immediately upon entering into a financial assistance agreement?

Yes, funds have been allocated for all matches needed to begin and complete implementation.

E.1.4. Evaluation Criterion D — Dissemination of Results (10 Points)

Once the data sharing module has been implemented, the project team will hold a webinar for other Halff clients to demonstrate the module and share lessons learned. Additionally, the project will be shared at the Texas Groundwater Summit, the premier

groundwater event in the state, which brings together a diverse group of groundwater professionals over three days to discuss emerging trends and new research. The event provides a mix of expert presentations on all areas of groundwater management, as well as networking opportunities for the groundwater community. This event is attended by 350 groundwater industry leaders, community stakeholders, agency representatives, and elected officials.

# Budget

## Table 1. — Total Project Cost Table

| SOURCE | AMOUNT |
|---|---|
| Costs to be reimbursed with the requested Federal funding | $48,000 |
| Costs to be paid by the applicant (BBCA) | $15,000 |
| Costs to be paid by Brewster | $15,250 |
| Costs to be paid by Culberson | $15,250 |
| Costs to be paid by Presidio | $2,500 |
| **TOTAL PROJECT COST** | $96,000 |

## Table 2. — Budget Proposal Table

| BUDGET ITEM DESCRIPTION | $/Unit | Qty | Quantity Type | Total Cost |
|---|---|---|---|---|
| **Salaries and Wages** | | | | |
| Dan Shiman (Data Entry - Presidio) | $40/hr | 125 | Hourly Rate | $5000 |
| Dan Shiman (Data Entry - Brewster) | $40/hr | 125 | Hourly Rate | $5000 |
| Dan Shiman (Data Entry - Culberson) | $40/hr | 125 | Hourly Rate | $5000 |
| **Contractual** | | | | |
| Brewster - Halff Groundwater Management System (Base Package) | $10,000 | 1 | Flat Fee | $10,000 |

| | | | | |
|---|---|---|---|---|
| Brewster - Halff Query Tool | $4,000 | 1 | Flat Fee | $4,000 |
| Brewster - Halff Annual Hosting | $5,000 | 2 | Annual Subscription Fee | $10,000 |
| Brewster - Halff TWDB Seeding | $1,500 | 1 | Flat Fee | $1,500 |
| Culberson - Halff Groundwater Management System (Base Package) | $10,000 | 1 | Flat Fee | $10,000 |
| Culberson - Halff Query Tool | $4,000 | 1 | Flat Fee | $4,000 |
| Culberson - Halff Annual Hosting | $5,000 | 2 | Annual Subscription Fee | $10,000 |
| Culberson - Halff TWDB Seeding | $1,500 | 1 | Flat Fee | $1,500 |
| Halff Shared Data Module | $30,000 | 1 | Flat Fee | $30,000 |

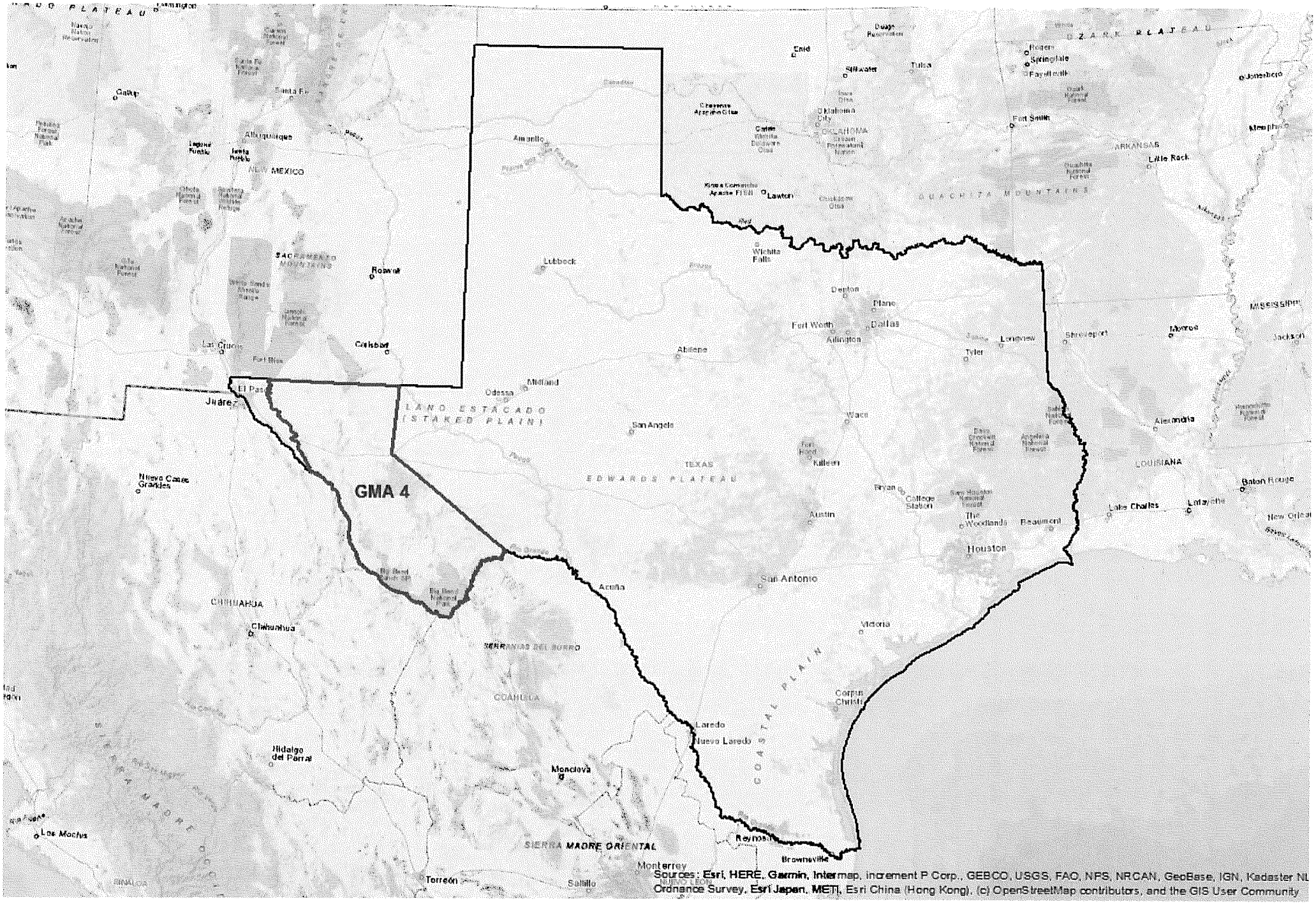
## Budget Narrative

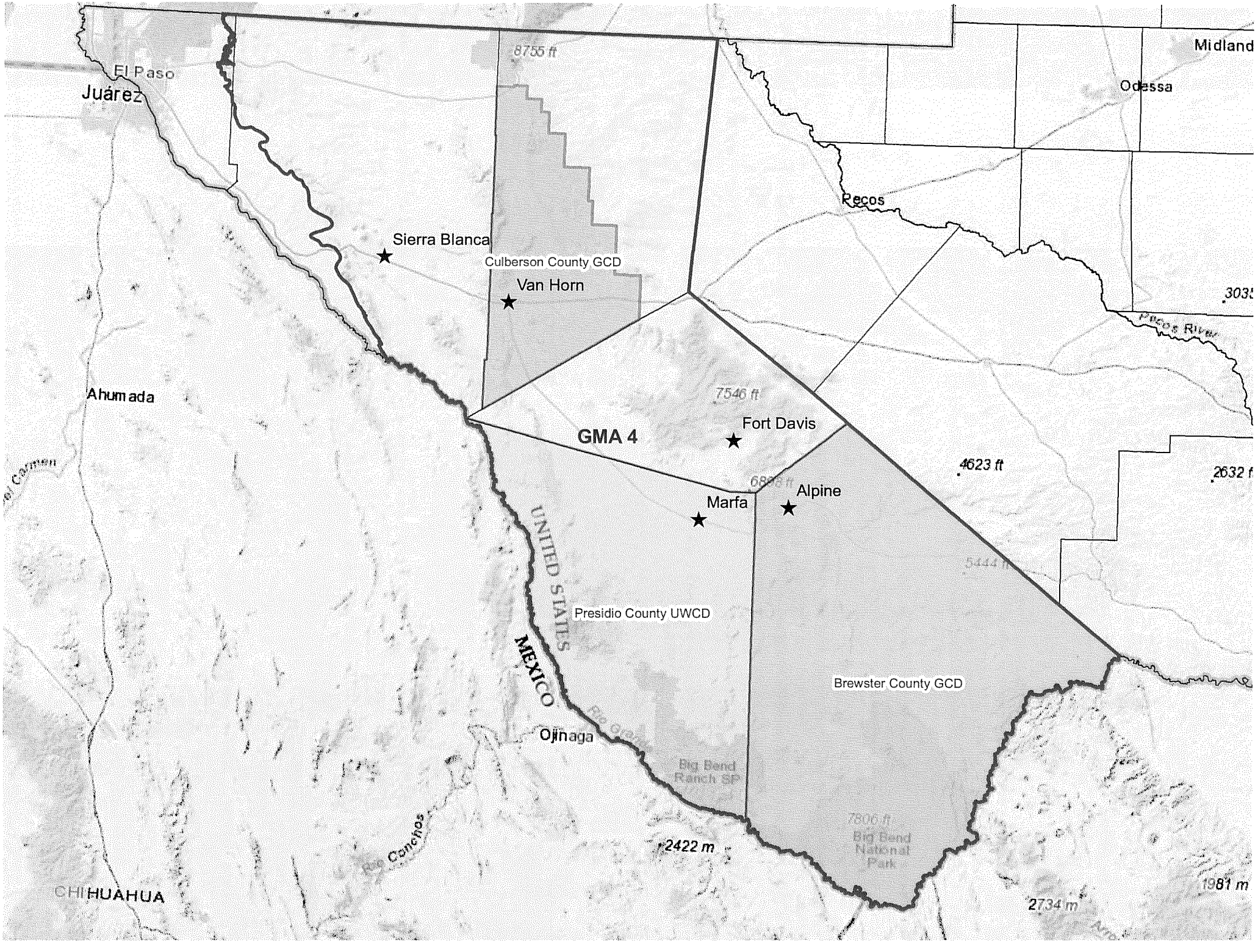
For groundwater districts that are part of this proposal, but currently do not have software, the Halff platform will be purchased. Brewster and Culberson will each need the following four components of the Halff platform, 1) the base package, 2) the query tool to search data, 3) the annual hosting fee for two years, and 4) seeding of information from TWDB. The 50% cost share will come from each of these participating GCDs.

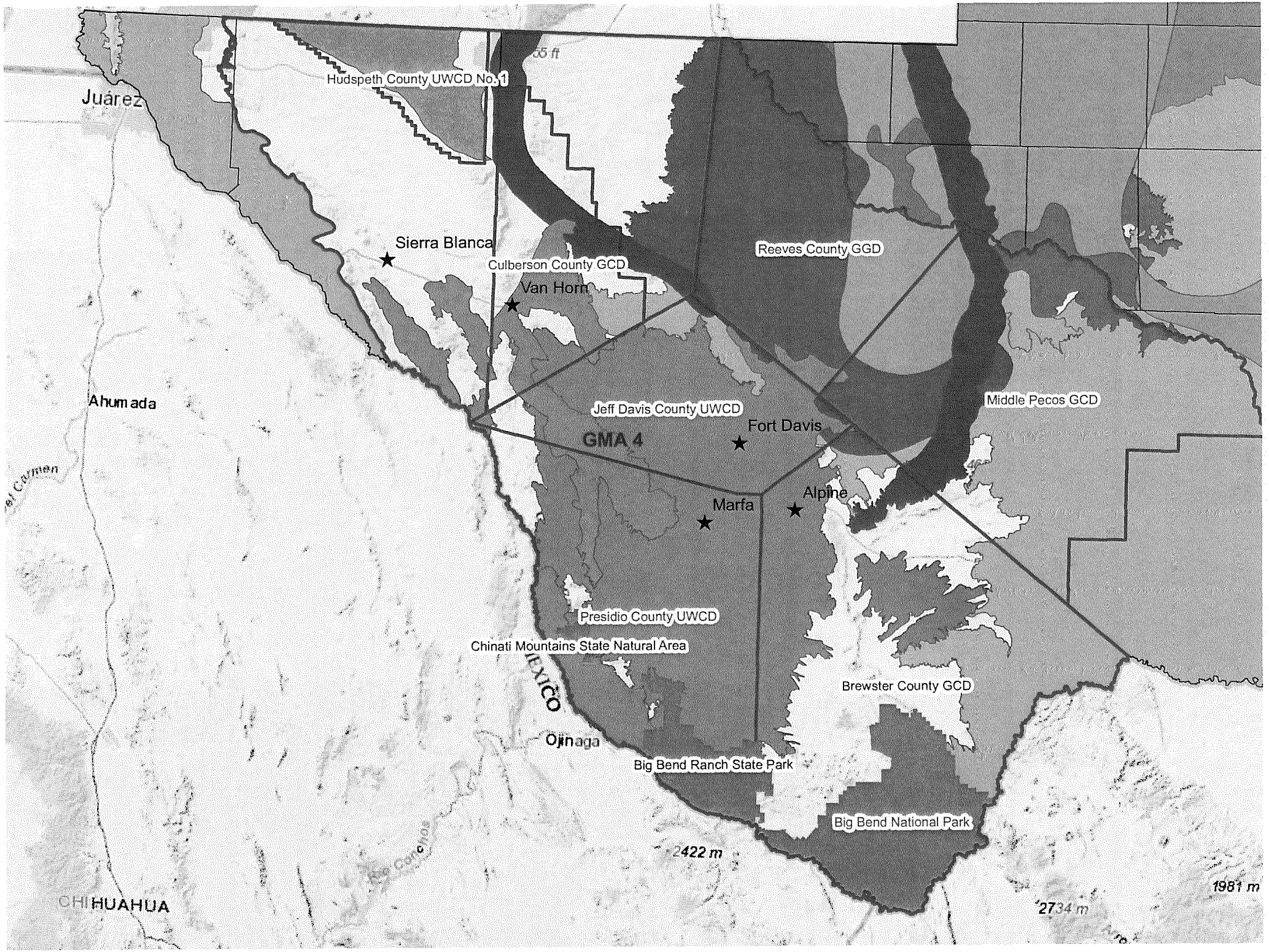
For each of the three counties, data entry hours have been added to the budget. The 50% cost share on these hours will come from each of the three counties.

The data sharing module will be developed by Halff, and as part of this proposal, will be integrated into Brewster, Culberson, and Presidio's Halff platforms. The 50% cost share for this module will come from Big Bend Conservation Alliance.

# Appendix A: Maps


GMA 4
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community


El Paso
Juárez
Midland
Odessa
Sierra Blanca
Culberson County GCD
Van Horn
Reeves
Pecos River
Ahumada
GMA 4
Fort Davis
Marfa
Alpine
UNITED STATES
MEXICO
Presidio County UWCD
Brewster County GCD
Ojinaga
Big Bend Ranch SP
Big Bend National Park
Río Conchos
CHIHUAHUA
8755 ft
7546 ft
4623 ft
2632 ft
5444 ft
7806 ft
2422 m
2734 m
1981 m


Hudspeth County UWCD No. 1
Juárez
Sierra Blanca
Culberson County GCD
Van Horn
Reeves County GGD
Ahumada
Jeff Davis County UWCD
GMA 4
Fort Davis
Middle Pecos GCD
Alpine
Marfa
Presidio County UWCD
Chinati Mountains State Natural Area
Brewster County GCD
Ojinaga
Big Bend Ranch State Park
Big Bend National Park
2422 m
1981 m
2734 m
CHIHUAHUA

# Appendix B: Letters of Support

JUDGE CINDERELA R. GUEVARA

P.O. Box 606, Marfa, TX 79843 — 300 North Highland Ave, Marfa, TX 79843

Bureau of Reclamation
Financial Assistance Support Section
Attn: Applied Science NOFO
P.O. Box 25007, MS 84-27133
Denver, CO 80225

March 31, 2021

To Whom It May Concern:

This letter is with respect to the application of the Big Bend Conservation Alliance in collaboration with the Presidio County Underground Water Conservation District and the other districts of Texas Groundwater Management Area 4 under the WaterSMART applied science grants program of the Bureau of Reclamation.

As the County Judge of Presidio County, it has been my pleasure to work with the Big Bend Conservation Alliance and the Presidio County Underground Water Conservation District for several years now. And I am very excited at the opportunity this grant would provide for our entire region to establish a common data platform.

Over the past few years, I have been continuously impressed by the dedication and resourcefulness of Shelley Bernstein, Executive Director of the Big Bend Conservation, and Trey Gerfers, Board Chairman of the Presidio County Underground Water Conservation District. Their enthusiasm for solving the many challenges we face as a County with very limited resources has been contagious. So I wasn't surprised one bit when they told me about the effort to get the whole region on the same data management software. I am also very pleased at the prospect of developing a state-of-the-art module to enable districts to share data from the aquifers they have in common. For me, this represents real progress.

Based on my experience, I have every confidence that the Big Bend Conservation Alliance, the Presidio County Underground Water Conservation District, and the other districts of Texas Groundwater Management Area 4 will make worthy partners in the WaterSMART applied science grants program and I look forward to all of the wonderful progress they will achieve with those funds.

Sincerely,

Cinderela Guevara

Presidio County Judge Cinderela Guevara

Ph 432.729.4452 Email countyjudge@co.presidio.tx.us Fax 432.729.4453

# BREWSTER COUNTY COMMISSIONERS COURT

Jim Westermann, Commissioner, Pct. 1 | Sara Colando, Commissioner, Pct. 2

Eleazar R. Cano, County Judge

Ruben Ortega, Commissioner, Pct. 3 | Mike Pallanez, Commissioner, Pct. 4

March 31, 2021

Bureau of Reclamation
Financial Assistance Support Section
Attn: Applied Science NOFO
PO Box 25007, MS 84-27133
Denver, CO 80225

Regarding: Brewster County Groundwater Conservation District in partnership with BBCA

Dear Bureau of Reclamation:

This letter is with respect to the application of the Brewster County Groundwater Conservation District in partnership with the Big Bend Conservation Alliance to apply for the WaterSMART Applied Science Grant for Fiscal Year 2021 with the Bureau of Reclamation.

The data that the GCD will be able to manage and further add will provide an invaluable insight to not only the District, local and potential landowners and well drillers; but also state wide to Texas Water Development Board, USGS, TCEQ and any other agency looking for our local information.

We want to express our full support for the implementation and expansion of the groundwater data management and monitoring network in our County to provide all interested stakeholders the data necessary to make future decisions about their groundwater needs. We are confident that the Brewster County Groundwater Conservation District will be a reliable partner in greatly furthering this important work.

Sincerely,

Jim Westermann, Commissioner, Pct. 1

Sara Colando, Commissioner, Pct. 2

Eleazar R. Cano, Brewster County Judge

Absent
Ruben Ortega, Commissioner, Pct. 3

Mike Pallanez, Commissioner, Pct. 4

CARLOS G. URIAS
CULBERSON COUNTY JUDGE

P.O. Box 927
Van Horn, Texas 79855

(432) 283-2059 | Fax (432) 283-9234
carlos.urias@co.culberson.tx.us

Bureau of Reclamation
Financial Assistance Support Section
Attn: Applied Science NOFO
PO Box 25007, MS 84-27133
Denver, CO 80225

April 12, 2021

Regarding: Culberson County Groundwater Conservation District in partnership with BBCA

Dear Bureau of Reclamation:

This letter is with respect to the application of the Culberson County Groundwater Conservation District in partnership with the BBCA to apply for the WaterSMART Applied Science Grant for Fiscal Year 2021 with the Bureau of Reclamation

The data that the GCD will be able to manage and further add will provide an invaluable insight to not only the District, local and potential landowners and well drillers; but also state wide to Texas Water Development Board, USGS, TCEQ and any other agency looking for our local information.

We want to express our full support for the implementation and expansion of the groundwater data management and monitoring network in our County to provide all interested stakeholders the data necessary to make future decisions about their groundwater needs. We are confident that the Culberson County Groundwater Conservation District will be a reliable partner in greatly furthering this important work.

Sincerely,

Judge Carlos Urias

Gilda Morales, Commissioner Pct. 3

Javier Mendoza, Commissioner Pct. 1

Adrian Norman, Commissioner Pct. 4

Raul Rodriguez, Commissioner Pct. 2

April 6, 2021

Bureau of Reclamation
Financial Assistance Support Section
Attn: Applied Science NOFO
P.O. Box 25007, MS 84-27133
Denver, CO 80225

**RE: Common Data Management Platform for Texas Groundwater Management Area 4**

To Whom It May Concern:

The Big Bend Conservation Alliance (BBCA) is applying for funding under the FY2021 WaterSMART Applied Science NOFO. The BBCA, in collaboration with regional groundwater conservation districts and stakeholders, will use USBR funding to develop a common data management platform to standardize data collection across all groundwater districts in the region and create a new software tool to enable districts to share data on the aquifers they share. Additionally, the application seeks funding to provide technical to the districts during implementation of the software platform.

The Far West Texas region has an arid climate with many areas receiving an average rainfall of about 8 inches. Far West Texas remained in perpetual drought conditions for the last 15 years. Every community in Far West Texas depends on groundwater to meet municipal water demand. Projects informing water conservation efforts are needed to meet existing and future water demands in the region.

Regional planning efforts will also be improved as groundwater data becomes available. The project proposed by the BBCA will support several groundwater management and infrastructure development strategies listed in the 2017 Texas State Water Plan. The Texas State Water Plan is developed by the Texas Water Development Board (TWDB) with input from local water users, historical water use data, and a system of prioritization for water management strategies led by regional water planning groups, including the Far West Texas Water Planning Group.

For these reasons, the Far West Texas Water Planning Group supports the water supply reliability project proposed by the BBCA and recommends its funding.

Sincerely,

Jesus Reyes
Chair
Far West Texas Water Planning Group

# MIDDLE PECOS GROUNDWATER CONSERVATION DISTRICT

P.O. Box 1644 Fort Stockton, TX 79735 Phone (432)336-0698 Fax (432)336-3407
405 North Spring Drive Fort Stockton, Texas 79735
Email: mpgcd@mpgcd.org Website: www.middlepecosgcd.org




Bureau of Reclamation
Financial Assistance Support Section
Attn: Applied Science NOFO
P.O. Box 25007, MS 84-27133
Denver, CO 80225

04/06/2021

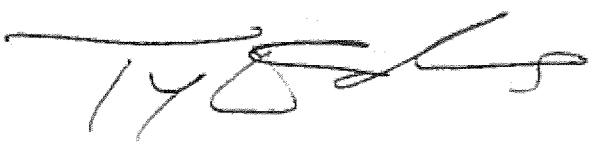
To Whom It May Concern:

As General Manager of the Middle Pecos Groundwater Conservation District, I am contacting you to lend my support for the proposal by the Big Bend Conservation Alliance and Groundwater Management Area 4 to implement a common data platform and a data-sharing tool for the Transpecos region with a WaterSMART Applied Science Grant from the Bureau of Reclamation.

Our District covers Pecos County which is just under 5,0000 square miles with 5 aquifers. This amount of data is hard to manage. We are currently implementing the same Halff data management software to help with this problem and we are looking forward to being able to share data with area landowners and stakeholders. It would also be very useful to be able to share data with our neighboring districts as well. We are a taxing groundwater district with a $1 million annual budget [or updated number]. But many of the districts in the region are fees-based and have a lot less money to work with, even though the responsibilities and obligations remain the same.

The proposal to create a common data platform is exactly what the region needs right now in order to prepare for the challenges ahead and provide better data to make decisions in the future. Your funding will make a huge difference and I respectfully urge you to approve this application.

Sincerely,



TEXAS PARKS & WILDLIFE

**Life's better outside.®**



Bureau of Reclamation
Financial Assistance Support Section
Attn: Applied Science NOFO
P.O. Box 25007, MS 84-27133
Denver, CO 80225

4/12/2021

To Whom It May Concern:

On behalf of the Big Bend Ranch State Park Complex, I am writing to express my strong support for the submission by the Big Bend Conservation Alliance (BBCA), in coordination with the Presidio County Underground Water Conservation District (PCUWCD) and Texas Groundwater Management Area (GMA) 4, to the WaterSMART Applied Science Grants Program.

The Big Bend Ranch State Park Complex's mission is "To manage the Big Bend Ranch State Park Complex to conserve natural and cultural resources while providing recreational and educational opportunities for future generations that foster an understanding and appreciation of the solitude and adventure inherent to the wilderness experience of the Chihuahuan Desert and La Junta Borderlands." The Big Bend Ranch State Park Complex oversees four State Parks within Texas GMA 4 totaling over ~350,000 acres of public land.

The BBCA, the PCUWCD, and the Big Bend Ranch State Park Complex serve as conservation partners in this underserved and far-flung region of Texas. We have been working with the PCUWCD in recent years to establish monitoring wells in our parks. The common data platform and data-sharing module described in this proposal will greatly enhance the region's ability to gauge impacts and project groundwater availability throughout Far West Texas.

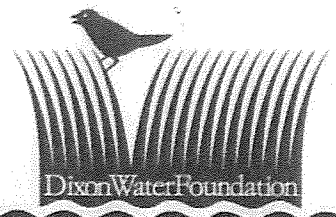
In the Chihuahuan Desert, water is precious and when speaking to resource conservation and preservation, the work of Texas GMA 4 is vitally important and goes hand in hand with the missions of the Texas Parks and Wildlife Department, Texas State Parks, and the Big Bend Ranch State Park Complex.

It is our sincere hope that Texas Groundwater Management Area 4 will establish a common data platform and develop a data-sharing module in order to deepen our understanding of aquifer levels and groundwater quality that will be a benefit to all regionally. If you have any questions or if you need any further clarification, please do not hesitate to contact me.

Sincerely,

Nathanael Gold
General Superintendent
Big Bend Ranch State Park Complex
21800 FM 170
Terlingua, TX 79852
432-424-3327

4200 SMITH SCHOOL ROAD
AUSTIN, TEXAS 78744-3291
512.389.4800
www.tpwd.texas.gov




Bureau of Reclamation
Financial Assistance Support Section
Attn: Applied Science NOFO
P.O. Box 25007, MS 84-27133
Denver, CO 80225

April 5, 2021

To Whom It May Concern:

As Director of Science and Communications for the Dixon Water Foundation, I would like to express my full support for the submission by the Big Bend Conservation Alliance to the Bureau of Reclamation's WaterSMART Applied Science Grants Program as a fine example of cross-regional cooperation to protect our vital groundwater resources.

The Dixon Water Foundation owns and operates several working cattle ranches, including the Mimms Unit and the Alamito Creek Preserve, covering 22,500 acres in Presidio County. Our mission is to promote healthy watersheds through environmentally and economically sound rangeland management.

We are very excited by the opportunities that the WaterSMART Applied Science Grant would provide to our vast and under-resourced region. The challenges ahead are many: drought, population growth, exportation of groundwater, industrial development. The concerted effort by the groundwater districts of Groundwater Management Area 4 in collaboration with the Big Bend Conservation Alliance is a tremendous step in the right direction and we are greatly encouraged by these efforts.

Our foundation has worked in recent years with our local district, Presidio County Underground Water Conservation District, on several projects. We were instrumental in coordinating a grant for the district to purchase an initial round of well monitoring equipment and we recently completed a water sampling project on our Alamito Creek Preserve property.

Based on these experiences, the Dixon Water Foundation will continue to look for ways to work with Presidio County Underground Water Conservation District and Groundwater Management Area 4 to better understand our aquifers. I respectfully urge you to grant the funding necessary to advance this important conservation work throughout Far West Texas.

Sincerely,

Philip Boyd
Director of Science and Communications
Dixon Water Foundation, Marfa, Texas

**SUL ROSS STATE UNIVERSITY**
A Member of the Texas State University System
ALPINE, TEXAS 79832

Rio Grande Research Center
Box C-139

Phone (432) 837-8648
Fax (432) 837-8654

Bureau of Reclamation
Financial Assistance Support Section
Attn: Applied Science NOFO
P.O. Box 25007, MS 84-27133
Denver, CO 80225

4/14/2021

To Whom It May Concern:

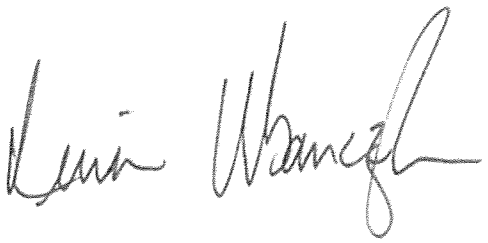
This letter is with respect to the application submitted by the Big Bend Conservation Alliance on behalf of the groundwater districts of Texas Groundwater Management Area 4 for a grant from the Bureau of Reclamation's WaterSMART Applied Science Grants Program.

As Director of the Rio Grande Research Center at Sul Ross State University in Alpine Texas, I would like to express my full support for this project. As a scientist, I am well aware that there is always a need for more data. Although many of the districts in our region have a lot of data, they haven't been able to manage it optimally due to a lack of funding and coordination. The Halff data management software package represents a great opportunity to create a common platform for two reasons: 1) It provides the districts with a standardized database to populate with their existing data. 2) It enables districts to manage their data moving forward in a uniform manner across the region.

I was also glad to learn about the data-sharing module that will be developed with funding from this grant. As a member of the Brewster County Groundwater Conservation District Board, I know that we can also use more data on the aquifers under the jurisdiction of multiple districts. This tool would open a new way forward to planning our joint Desired Future Conditions and would also give us a deeper knowledge when projecting the impacts of drilling applications along the borders of our district.

In my experience, this GIS-based software could be a real game-changer for our region and I wholeheartedly urge you to approve the application of the Big Bend Conservation Alliance.

Sincerely,



Kevin Urbanczyk, Ph.D.
Director, Rio Grande Research Center
Professor, Department of Biology, Geology and Physical Sciences

# Appendix C: Letters of Participation

**P**residio
**C**ounty
**U**nderground
**W**ater
**C**onservation
**D**istrict

P.O. Box 606, Marfa, TX 79843

Bureau of Reclamation
Financial Assistance Support Section
Attn: Applied Science NOFO
P.O. Box 25007, MS 84-27133
Denver, CO 80225

April 8, 2021

To Whom It May Concern:

As General Manager of the Presidio County Underground Water Conservation District, I am writing to confirm our participation in the project described in the grant application of the Big Bend Conservation Alliance under the Applied Science NOFO to establish a common data management platform and data-sharing tool for the groundwater conservation districts of Groundwater Management Area 4.

We have worked hand-in-hand with the Big Bend Conservation Alliance in preparing the grant application and have passed a corresponding resolution to affirm our ability to meet our financial commitment to match the funds provided by the Bureau of Reclamation in the event that this grant is awarded.

With all of the challenges we face as a remote, sparsely populated region with very limited financial resources, we are thrilled by this opportunity to help ensure that the people and wildlife of Presidio County and greater Far West Texas continue to thrive well into the future.

We very much look forward to working with our counterparts in Groundwater Management Area 4 and with the Bureau of Reclamation in making sure that this project is a resounding success.

With best regards,

Carolyn Macartney
General Manager, PCUWCD

BREWSTER COUNTY
GROUNDWATER CONSERVATION DISTRICT

Bureau of Reclamation
Financial Assistance Support Section
Attn: Applied Science NOFO
P.O. Box 25007, MS 84-27133
Denver, CO 80225

April 11, 2021

To Whom It May Concern:

As General Manager of the Brewster County Groundwater Conservation District, I am writing to confirm our participation in the project described in the grant application of the Big Bend Conservation Alliance under the Applied Science NOFO to establish a common data management platform and data-sharing tool for the groundwater conservation districts of Groundwater Management Area 4.

We have worked hand-in-hand with the Big Bend Conservation Alliance in preparing the grant application and have passed a corresponding resolution to affirm our ability to meet our financial commitment to match the funds provided by the Bureau of Reclamation in the event that this grant is awarded.

With all of the challenges we face as a remote, sparsely populated region with very limited financial resources, we are so thrilled by this opportunity to help ensure that the people and wildlife of Brewster County and greater Far West Texas continue to thrive well into the future.

We very much look forward to working with our counterparts in Groundwater Management Area 4 and with the Bureau of Reclamation in making sure that this project is a resounding success.

With best regards,

Summer Webb

PO Box 465 • Alpine, TX 79831 • bcgwcd@gmail.com • www.westtexasgroundwater.com

Bureau of Reclamation
Financial Assistance Support Section
Attn: Applied Science NOFO
P.O. Box 25007, MS 84-27133
Denver, CO 80225

April 11, 2021

To Whom It May Concern:

As General Manager of the Culberson County Groundwater Conservation District, I am writing to confirm our participation in the project described in the grant application of the Big Bend Conservation Alliance under the Applied Science NOFO to establish a common data management platform and data-sharing tool for the groundwater conservation districts of Groundwater Management Area 4.

We have worked hand-in-hand with the Big Bend Conservation Alliance in preparing the grant application and have passed a corresponding resolution to affirm our ability to meet our financial commitment to match the funds provided by the Bureau of Reclamation in the event that this grant is awarded.

With all of the challenges we face as a remote, sparsely populated region with very limited financial resources, we are so thrilled by this opportunity to help ensure that the people and wildlife of Culberson County and greater Far West Texas continue to thrive well into the future.

We very much look forward to working with our counterparts in Groundwater Management Area 4 and with the Bureau of Reclamation in making sure that this project is a resounding success.

With best regards,

Summer Webb

Summer Webb

CULBERSON COUNTY GROUNDWATER CONSERVATION DISTRICT

PO Box 1295 • Van Horn, TX 79855 • Phone 432.283.1548 • srwebb@culbersongroundwater.org • www.ccgwcd.org

# Appendix D: Resolutions

BIG BEND CONSERVATION ALLIANCE

# Corporate Resolution by the Board of Directors of Big Bend Conservation Alliance

We, the undersigned representatives of the Big Bend Conservation Alliance, consent and agree that the following corporate resolution was made on the sixth day of April 2021, in a vote that took place via email, with a quorum responding to the vote.

The Big Bend Conservation Alliance (BBCA) board voted to confirm that Big Bend Conservation Alliance will:

- Participate in the WaterSMART-Applied Science Grants for Fiscal Year 2021 from the Bureau of Reclamation (Funding Opportunity No. R21AS00289) as the Applicant with groundwater district conservation Partners in the Far West Texas region.
- Commit to $15,000 of matching funds for the data sharing module portion of the grant submitted. This funding has already been raised through a grant from the Jacob and Terese Hershey Foundation and is allocated for this application if the grant is awarded.
- Work with Reclamation to meet established deadlines for entering in a grant or cooperative agreement and meet reporting deadlines.

DocuSigned by
Adeline Fox
Adeline Fox
President

4/6/2021
Date

DocuSigned by
Austin Dupree
Austin Dupree
Secretary

4/6/2021
Date

## RESOLUTION

Whereas, the Presidio County Underground Water Conservation District (PCUWCD), as constituted by legislative action and confirmed by the citizens of Presidio County through an election on August 31, 1999, is the established authority for the management, protection, and conservation of groundwater resources within Presidio County, and

Whereas, the Board of Directors of the PCUWCD currently has on hand the financial resources to meet its financial commitment to match the funds provided by the Bureau of Reclamation in the event that this grant is awarded, and

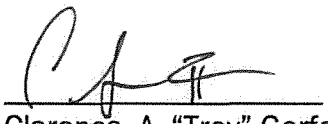
Whereas, the Board of Directors of the PCUWCD has consulted with its counterparts within Texas Groundwater Management Area 4 and is satisfied with the outcome of these consultations, and

Whereas, the Board of Directors of the PCUWCD has reviewed and supports the grant application as submitted, and

Whereas, the Board of Directors of the PCUWCD acknowledges and affirms that groundwater districts are the preferred means under Texas law to ensure local control of our groundwater resources

Be it hereby resolved that the Presidio County Underground Water Conservation District Board of Directors officially designates General Manager Carolyn Macartney as its official representative to participate in the common data management platform and data-sharing tool proposal to be submitted by the Big Bend Conservation Alliance on its behalf under the WaterSMART Applied Science Grants program of the Bureau of Reclamation and to work with the Bureau of Reclamation to meet the established deadlines for entering into a grant or cooperative agreement.

PASSED AND APPROVED on this the 8th day of April 2021



Clarence. A. "Trey" Gerfers, III
Board Chairman
Presidio County Underground Water Conservation District

BREWSTER COUNTY
GROUNDWATER CONSERVATION DISTRICT

WHEREAS, the Brewster County Groundwater Conservation District ("District") was created by an act of the Texas Legislature;

WHEREAS, the District has "all of the rights, powers, privileges, authority, functions, and duties," provided by Chapters 36 and 49, Texas Water Code. Act § 8816.101;

WHEREAS, the District was created "to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater;

WHEREAS, the Board of Directors of the District have consulted with its counterparts within Texas Groundwater Management Area 4 and is satisfied with the outcome of these consultations, and

WHEREAS, the Board of Directors of the District has reviewed and supports the grant application as submitted, and

WHEREAS, the Board of Directors of the District acknowledges and affirms that groundwater districts are the preferred means under Texas law to ensure local control of our groundwater resources

NOW, THEREFORE, BE IT RESOLVED AND ORDERED BY THE BOARD OF DIRECTORS OF THE BREWSTER COUNTY GROUNDWATER CONSERVATION DISTRICT THAT:

The Board of Directors officially designates Summer Webb as its official representative to participate in the grant proposal to be submitted by the Big Bend Conservation Alliance on its behalf under the WaterSMART Applied Science Grants program of the Bureau of Reclamation and to work with the Bureau of Reclamation to meet the established deadlines for entering into a grant or cooperative agreement.

PASSED AND APPROVED BY THE BOARD OF DIRECTORS OF THE BREWSTER COUNTY GROUNDWATER CONSERVATION DISTRICT THIS 18TH DAY OF MARCH, 2021.

Joan Johnson

Joan Johnson
President, Board of Directors

**Signature:** Joan Johnson
Joan Johnson (Apr 14, 2021 15:08 CDT)

**Email:** jjohnson.bcgwcd@gmail.com

RESOLUTION AND ORDER NO. 2021-04-14

WHEREAS, the Culberson County Groundwater Conservation District ("District") was created in 1997 by an organic act of the Texas Legislature, Acts 1997, 75th Leg., R.S., ch. 1075, 1997 Tex. Gen. Laws 4151, which was amended in 2009, and is codified in Texas Special District Local Laws Code, Chapter 8816 ("Act");

WHEREAS, the District has "all of the rights, powers, privileges, authority, functions, and duties," provided by Chapters 36 and 49, Texas Water Code. Act § 8816.101;

WHEREAS, the District was created "to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater . . ." in part of Culberson County. Tex. Water Code Ann. § 36.0015; Act §§ 8816.002, 8816.101;

WHEREAS, the Board of Directors of the District have consulted with its counterparts within Texas Groundwater Management Area 4 and is satisfied with the outcome of these consultations, and

WHEREAS, the Board of Directors of the District has reviewed and supports the grant application as submitted, and

WHEREAS, the Board of Directors of the District acknowledges and affirms that groundwater districts are the preferred means under Texas law to ensure local control of our groundwater resources

NOW, THEREFORE, BE IT RESOLVED AND ORDERED BY THE BOARD OF DIRECTORS OF THE CULBERSON COUNTY GROUNDWATER CONSERVATION DISTRICT THAT:

Board of Directors officially designates Summer Webb as its official representative to participate in the grant proposal to be submitted by the Big Bend Conservation Alliance on its behalf under the WaterSMART Applied Science Grants program of the Bureau of Reclamation and to work with the Bureau of Reclamation to meet the established deadlines for entering into a grant or cooperative agreement.

PASSED AND APPROVED BY THE BOARD OF DIRECTORS OF THE CULBERSON COUNTY GROUNDWATER CONSERVATION DISTRICT THIS 26TH DAY OF MARCH, 2021.

Vance Cottrell
President, Board of Directors

CULBERSON COUNTY GROUNDWATER CONSERVATION DISTRICT

PO Box 1295 ◦ Van Horn, TX 79855 ◦ Phone 432.283.1548 ◦ srwebb@culbersongroundwater.org ◦ www.ccgwcd.org