2024 EFFECTIVENESS REPORT OF THE EDWARDS AQUIFER AUTHORITY

SUBMITTED FOR
SOUTH CENTRAL TEXAS
WATER ADVISORY
COMMITTEE

NOVEMBER 2024
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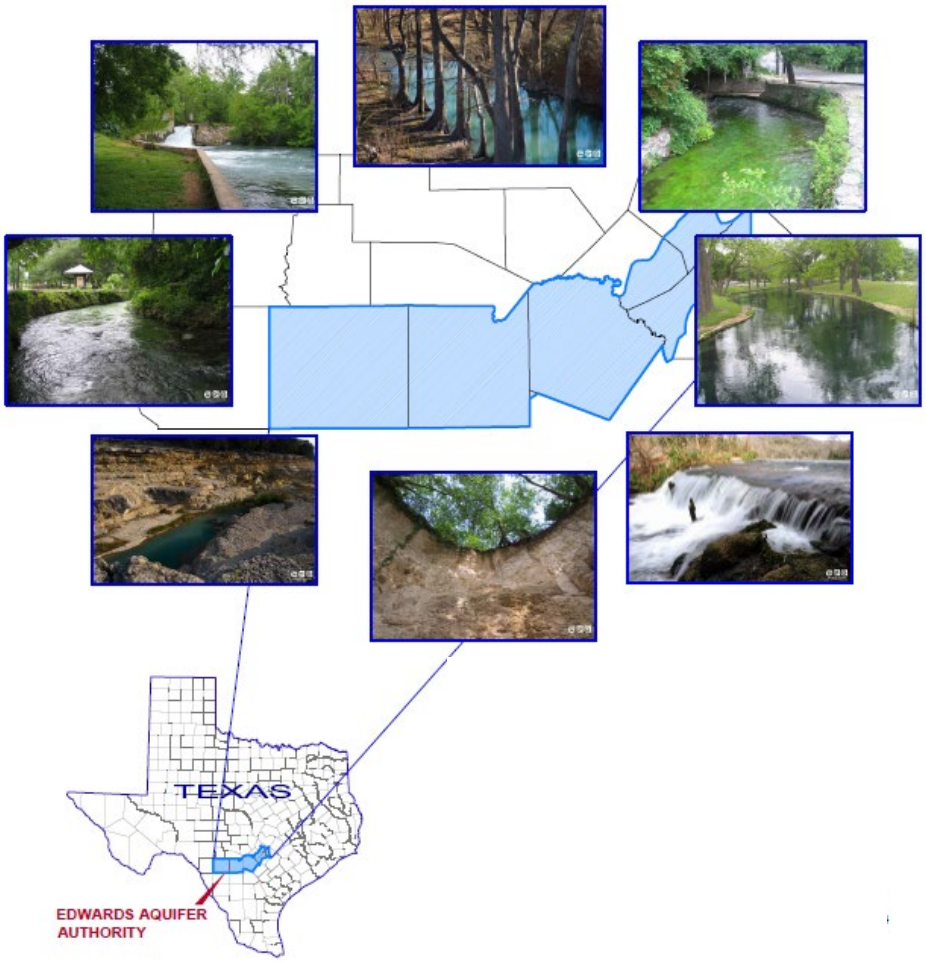

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

The Edwards Aquifer Authority (EAA) enabling legislation established the South Central Texas Water Advisory Committee (SCTWAC) to represent downstream interests in the Guadalupe, San Antonio, and Nueces River basins. The SCTWAC is charged with developing an Effectiveness Report every two years. The purpose of this report is to evaluate the actions of the EAA on downstream interests and submit the report to the Texas Commission on Environmental Quality (TCEQ). The report is required to assess the following:

- The effectiveness of the EAA over the past two years.
- The effect of the EAA management decisions on downstream interests.

Specific points that are required in this evaluation include:

- Whether the EAA has functioned as an effective organization;
- Whether the EAA has provided leadership in the protection of springflows and water quality;
- Whether the EAA has played a significant role in regional planning activities;
- Whether the EAA has provided for effective protection of water quality in the aquifer and in contributing streams;
- Whether the EAA has complied with statutory mandates and deadlines provided in the EAA act;
- Whether the EAA has achieved its water conservation goals; and
- Whether the EAA has provided effective protection of aquatic and wildlife habitat, endangered and threatened species, in-stream uses, and bays and estuaries that depend on the aquifer.

In order to accomplish this task, the SCTWAC establishes effectiveness measures that are used to evaluate if the EAA has met its legislative mandates and how these actions have impacted downstream interests. These reports have traced the evolution of the EAA from the implementation of rules and issuance of permits to protect springflows in Comal and San Marcos springs to the adoption of the Edwards Aquifer Habitat Conservation Program (EAHCP) and the issuance of an Incidental Take Permit

(ITP). This evolution has also made the EAA a major player in regional water management strategies that impact downstream interests.

Legislative mandates and the complexity of the issues the EAA has focused on both short and long-term issues that protect the aquifer and springflows. The Effectiveness Measures that have been developed by the SCTWAC focus on the following areas:

- Regulatory
- Financial
- Planning, Research, and Partnership Development
- Water Quality
- Water Conservation and Reuse
- Education
- Continued implementation of the EAHCP and compliance with the ITP

The Effectiveness Measures established in the 2024 Report are reflected in Table ES.1 and reflect if the EAA has Completed, is In Progress, or Not Completed the Effectiveness Measure.

Table ES.1: Status of Meeting the Effectiveness Measures Established in the 2022 Report

Effectiveness Measures	In Progress/ Completed	Not Complete
Regulatory		
Begin educating legislators that the brackish zone of the Edwards Aquifer can be used for ASR development with no penalty for storing and withdrawing the stored water.	✓	
Consider developing rules that regulate the process of developing ASR projects in the saline portion of the Edwards Aquifer to assure consistency in approach and regulation.	✓	
Develop formal working agreements with other groundwater conservation districts.		✓
Continue efforts to renew recharge dam permits.	✓	

Effectiveness Measures	In Progress/ Completed	Not Complete
Continue the implementation of the abandoned well program.	✓	
Financing		
Continue researching the potential for protecting funds allocated to the implementation of the HCP/ITP.	✓	
Research alternatives to continue payments to agricultural permit holders.	✓	
Research options for reducing reserve requirements.	✓	
Continued support of Edwards Aquifer Conservancy.	✓	
Planning, Research, and Partnership Development		
Continue research into soil health and riparian restoration to enhance water quality and recharge.	✓	
Continue research on the interrelationship between the Trinity and Edwards Aquifers.	✓	
Develop partnerships for outside funding to enhance EAA resources.	✓	
Work with outside organizations to identify properties for conservation easement acquisition.	✓	
Work with the Edwards Aquifer Conservancy to develop a long-term financing option for conservation easements.	✓	

Effectiveness Measures	In Progress/ Completed	Not Complete
Water Quality		
Continue collecting water quality data from surface water and public and private water wells.	✓	
Identify priority areas for water quality protection in the contributing and recharge zones.	✓	
Consider expanding water quality analysis along the I-35 corridor.		✓
Provide staff support for the City of San Antonio for water quality fieldwork in conservation easements.	✓	
Implement an agricultural hazardous waste disposal program.		✓
Continue well registration and plugging program.	✓	
Water Conservation and Reuse		
Consider the development of a grant program to assist smaller utilities in reducing water loss.		✓
Consider partnering with small utilities to determine what level of reuse could be implemented.		✓
Identify areas that could benefit from ASR development.	✓	
Work with funding agencies to promote water conservation.	✓	

Effectiveness Measures	In Progress/ Completed	Not Complete
Make conservation annual reports available on their website.		✓
Education		
Develop metrics to measure success of Education and Outreach Center.	✓	
Continue a variety of public outreach and education.	✓	
Implementation of HCP and ITP		
Continue permit renewal efforts.	✓	
Continue public outreach and education programs.	✓	
Continue use of the adaptive management process.	✓	

The continued drought within the EAA jurisdiction has forced the imposition of Stage 4 water reductions for permit holders in the San Antonio pool and Stage 5 reductions for those in the Uvalde pool. There is a critical water shortage as growth continues in the I-35 corridor. This water shortage has forced utilities to search for alternative water sources, including the development of surface and groundwater resources outside the EAA jurisdiction, aquifer storage and recovery, desalination of brackish groundwater, and enhanced recharge of the Edwards Aquifer. The Effectiveness Measures established for the 2026 report reflect both the short-term and long-term policies that can impact water quality and springflows in Comal and San Marcos springs.

This table shows that the EAA has continued to address most of the concerns of the SCTWAC by successfully implementing actions detailed in the Effectiveness Measures. The Effectiveness Measures for the 2026 Report are summarized as follows:

Regulatory Effectiveness Measures for the 2026 Effectiveness Report.

- Continue to support ASR development in the Edwards Aquifer.
- Review the potential impact of using the brackish zone for desalination and blending. As part of this review, determine the impact on permitted withdrawals from the Edwards Aquifer.

- Consider greater coordination and formal notifications of any actions that other Groundwater Conservation Districts would take that would impact the Edwards Aquifer through ASR development and/or drilling through the aquifer for water development or disposal wells.
- Continue working with TCEQ to address any comments regarding the renewal of the recharge dam permit(s).
- Continue actively implementing the Abandoned Well Program and enforcement for permit violations.

Financial Effectiveness Measures for the 2026 Effectiveness Report

- Continue to solicit state, federal, and foundation grants to support the activities of the Edwards Aquifer Conservancy. While the goal of having the Conservancy self- sufficient within 5 years it will be difficult to find outside funding to support the agency for the long term.
- Consider providing support on an ongoing basis for the Edwards Aquifer Conservancy.
- Begin revising the funding parameters for the Forbearance and VISPO programs. It appears that drought conditions will be an ongoing issue and changes will be necessary for the programs to be viable during the term of the new ITP renewal period.
- Begin financial planning for permit fees to implement the ITP at renewal. It will be critical to give as much early notice to permit holders of any changes to fees to support the EAA and the ITP.
- Continue to solicit funding from public and private sources for the acquisition of conservation easements.

Planning, Research, and Partnership Development Effectiveness Measures for the 2026 Effectiveness Report

- Continue research on the use of soil health and riparian restoration as a water quality and recharge Best Management Practice.
- Use the vulnerability analysis as a tool to develop a strategic approach to research and data collection.
- Continue research into the interface between the Trinity and Edwards aquifers.
- Consider doing research to quantify the impact of conservation easements on water quality and recharge.
- Continue to work with funding partnerships for research, stewardship and acquisition of conservation easements.

Water Quality Effectiveness Measures for the 2026 Effectiveness Report

- Continue the ongoing collection of water quality data from existing sampling sites and publish the findings on the EAA website.
- As the vulnerability analysis continues, consider expanding water quality sampling sites to gain additional data to identify potential areas of concern.
- Continue providing staff support to the City of San Antonio for water quality field work in conservation easement controlled or managed by the City.
- Consider expanding water quality staff support for water quality field work in new or expanded conservation easements.
- Continue the well registration and plugging program to promote water quality protection.

Water Conservation and Reuse Effectiveness Measures for the 2026 Effectiveness Report

- EAA should consider partnering with utilities to identify reuse opportunities that would supplement and/or replace permitted water from the Edwards Aquifer. This could provide drought relief for these utilities.
- Consider implementing a agricultural reuse program that could supplement the forbearance and VISPO programs by providing reuse water in lieu of payments.
- Continue to work with interested utilities and districts to identify feasible ASR project sites and how much water could be stored for use.
- The EAA adopted a Groundwater Conservation Plan in 2014. The plan established Best Management Practices that all permit holders were supposed to implement and report annually. EAA should make all annual reports available on their website for easy access.

Education Measures for the 2026 Report

- Continue the newsletters, social media, podcasts, and YouTube presentations and programs. These programs have proven to be popular and promote the goals of the EAA and continue to provide a variety of public outreach and education.
- Consider expanding the outreach to document the various conservation measures taken by utilities and agricultural interests. This sharing of information can be valuable to utility customers to understand how these measures are working.

Continued Implementation of the EAHCP and ITP

- Continue the public outreach and education programs that provide updated information on the program and the importance of protecting springflows for endangered species and downstream interests.
- Identify ways to make funding more efficient for the new ITP renewal and implementation.
- Funding will be from Aquifer Management Fees for the next 30 years for implementation. The methodology for incremental increases to these fees over time should be communicated prior to the submission of the final permit application.
- Initiate the process of evaluating the impacts of climate change on the ITP and future measures to protect springflows.

INTRODUCTION

The Texas Legislature formed the Edwards Aquifer Authority (EAA) in 1993. The purpose of establishing the EAA was to settle a lawsuit against the State to ensure the protection of endangered species that only exist in Comal and San Marcos Springs. These are the largest natural springs in Texas. The legislation addressed competing interests for water from the Edwards Aquifer and recognized the importance of the Edwards Aquifer and its impact on:

- Springflows that are necessary for the endangered species to survive;
- Springflows from Comal and San Marcos Springs provide the base flow for several rivers, including the San Marcos River and Guadalupe River;

- Replenishment of both major and minor aquifers in the Region;
- The economic interests of both municipal and agricultural users of the Edwards Aquifer;
- The springs receive water from groundwater movement in the Nueces, San Antonio, and Guadalupe River Basins.

Concern for the impact of downstream interests in the legislation created the South Central Water Advisory Committee (SCTWAC) to represent downstream interests in the Guadalupe, San Antonio, and Nueces River Basins. The legislation requires the SCTWAC to develop and adopt a report and submit the report to the TCEQ every even-numbered year. The SCTWAC develops the Effectiveness Report and evaluates the actions of the EAA in relation to downstream interests.

In each report, the SCTWAC establishes effectiveness measures that are used to evaluate the EAA in meeting its legislative mandates and assess its actions and impacts on downstream interests. These Effectiveness Measures include making suggestions on policy matters that could impact springflows or potentially impact downstream interests. These measures have evolved to reflect the changing role of the EAA.

The EAA's changing role is reflected in these reports. Initially, the reports focused on the role of the EAA as a regulatory body that implemented a process for permitting and meeting legislative mandates to protect Comal and San Marcos Springs. The role of the EAA evolved and led to the development of the Edwards Aquifer Habitat Conservation Plan (EAHCP) and subsequently to the issuance of an Incidental Take Permit (ITP) issued by the U.S. Fish and Wildlife Service. The implementation of the EAHCP established the EAA as a major player in planning and water management strategies that impacted downstream interests.

I. SOUTH CENTRAL TEXAS WATER ADVISORY COMMITTEE

A. BACKGROUND

The SCTWAC was formed to identify actions taken by the EAA and the potential impact on downstream users. The SCTWAC recognizes the need for an effective EAA to implement water resource strategies that protect EAA permit holders, springflows, and downstream water interests. The SCTWAC report reflects the perspective of downstream interests within the three river basins and comments on specific actions and policies adopted by the EAA. The report has

also suggested policies that would be mutually beneficial for both the EAA and downstream interests. The SCTWAC fully supports the EAA and its mission of protecting the Edwards Aquifer, springflows, and those dependent on the aquifer. This support has manifested itself in recommendations and comments on issues and, in some instances, been critical of specific actions and/or policies of the EAA.

B. MEMBERSHIP AND RESPONSIBILITIES OF THE SOUTH CENTRAL TEXAS WATER ADVISORY COMMITTEE

The SCTWAC has 20 appointed members from seventeen counties within the Region (see Figure I.1), representing affected downstream interests. These members represent the affected counties and cities, except for Atascosa County, which may not have a representative on the SCTWAC when the County has a representative on the EAA Board of Directors. In addition, ten members represent interests in the Guadalupe River basin, five represent interests in the San Antonio River basin, and five represent interests in the Nueces River basin. Table II.1 lists the membership.

Figure I.1: SCTWAC Members Counties

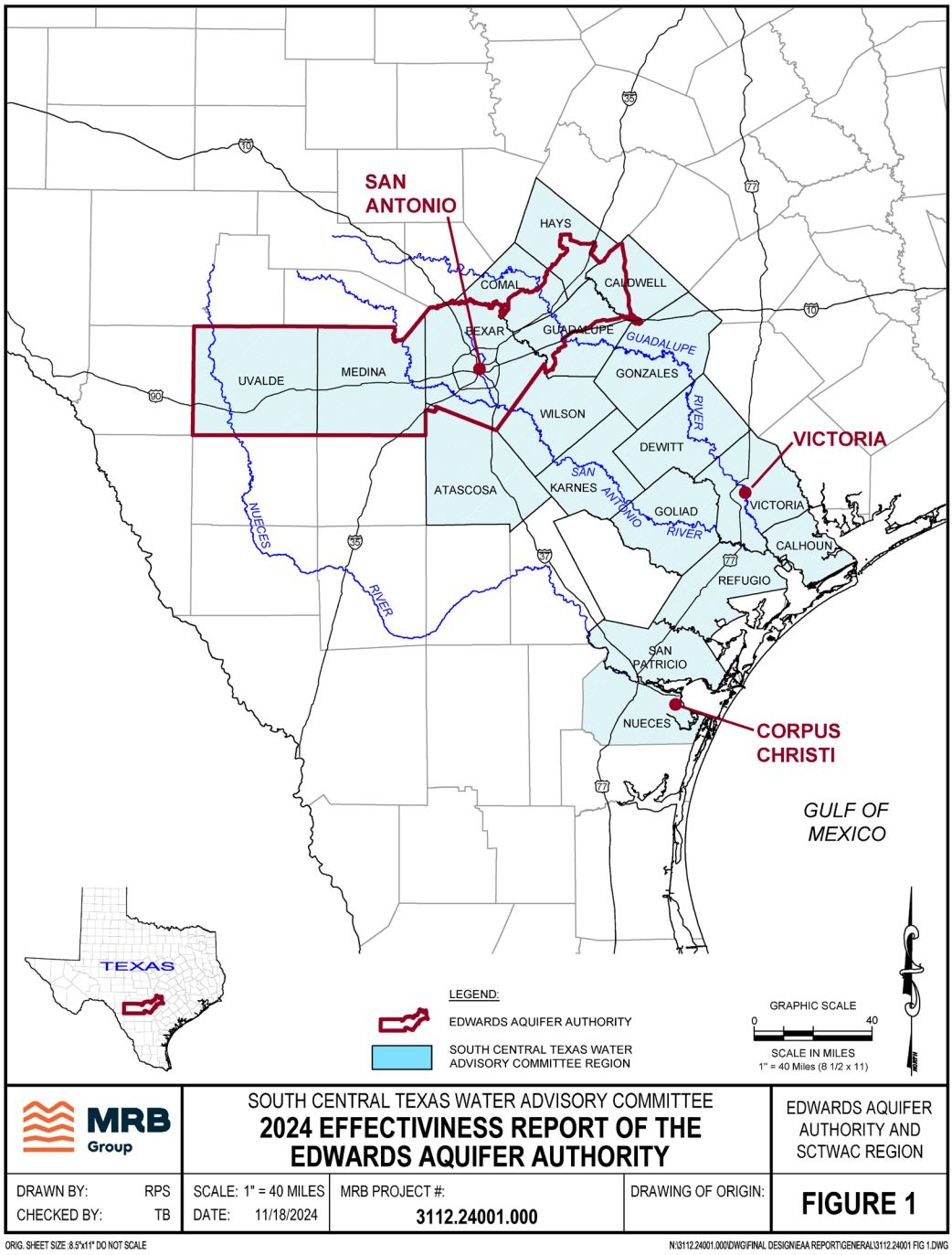


Table I.1: 2024 South Central Texas Water Advisory Committee Membership

Representing	Member
City of Victoria	Gary Middleton- Chairman/EAA Representative
Atascosa County	Robert L. Ulrich
Caldwell County	Tom Goynes
Calhoun County	Colton Hahn
Comal County	Carl Englerth
DeWitt County	Bill Braden
Goliad County	Ray Bednorz
Gonzales County	Craig Hines
Guadalupe County	Greg Seidenberger
Hays County	Honorable Ruben Bercerra
Karnes County	Punch Humphries
Medina County	Fred Yanta
Nueces County	Joe McComb
Refugio County	Larry Aduddell
San Patricio County	Brian Williams
Uvalde County	Vic Hildebran
Victoria County	Tim Andruss
Wilson County	Steve Snider
City of Corpus Christi	Steve Klepper
City of San Antonio	Gregory Hudspeth

The SCTWAC designates one of its members to serve as a non-voting member of the EAA Board of Directors. The SCTWAC reports to the TCEQ and the EAA Board of Directors. The SCTWAC may, by resolution, request that the EAA Board of Directors reconsider any EAA Board action that the SCTWAC members consider prejudicial to downstream interests. The EAA Board of Directors reviews the request, and if the result does not satisfy the SCTWAC, a request can be made for a review by the TCEQ, who then makes a recommendation to the EAA Board of Directors. If it is determined that the EAA action is contrary to that of the TCEQ recommendations, the EAA Board of Directors is required to reverse itself.

C. Statutory Requirements for the Edwards Aquifer Authority Effectiveness Report

The presiding officer of the SCTWAC is mandated to submit the EAA Effectiveness Report to the TCEQ and EAA Board of Directors each even-numbered year. The first report was issued in 1998, and reports have been filed every two years since that time.
The EAA enabling legislation requires that the report assess:

- The effectiveness of the EAA over the past two years.
- The effect of the EAA management decisions on downstream interests.

Specific points that are required in this evaluation include:

- Whether the EAA has functioned as an effective organization;
- Whether the EAA has provided leadership in the protection of springflows and water quality;
- Whether the EAA has played a significant role in regional planning activities;
- Whether the EAA has provided for effective protection of water quality in the aquifer and in contributing streams;
- Whether the EAA has complied with statutory mandates and deadlines provided in the EAA Act;
- Whether the EAA has achieved its water conservation goals and
- Whether the EAA has provided effective protection of aquatic and wildlife habitat, endangered and threatened species, in-stream uses, and bays and estuaries that depend on the aquifer.

The SCTWAC has developed Effectiveness Measures that review the effectiveness of the EAA. In each report, the previous effectiveness measures are evaluated based on the EAA actions and the SCTWAC determines if the Effectiveness Measures have been met, are in the process of being met or not met. Each report also establishes Effectiveness Measures for the next report so that the EAA is aware of issues that the SCTWAC has identified. These measures have evolved as the EAA has been subject to legislative action, judicial rulings, and the development and implementation of the Habitat Conservation Plan and issuance of the Incidental Take permit.
In general, the Effectiveness Measures are grouped into the following areas:

- Regulatory
- Research

- Financial
- Planning
- Administrative
- Education
- Implementation of the Edwards Aquifer Habitat Conservation Plan compliance with the Incidental Take Permit.

The SCTWAC has always maintained that the actions of the EAA to meet legislative mandates are not mutually exclusive from downstream interests and that the Effectiveness Measures reflect the issues and priorities of downstream interests.

1. Relationship of the Edwards Aquifer to the Boundaries of the Edwards Aquifer Authority

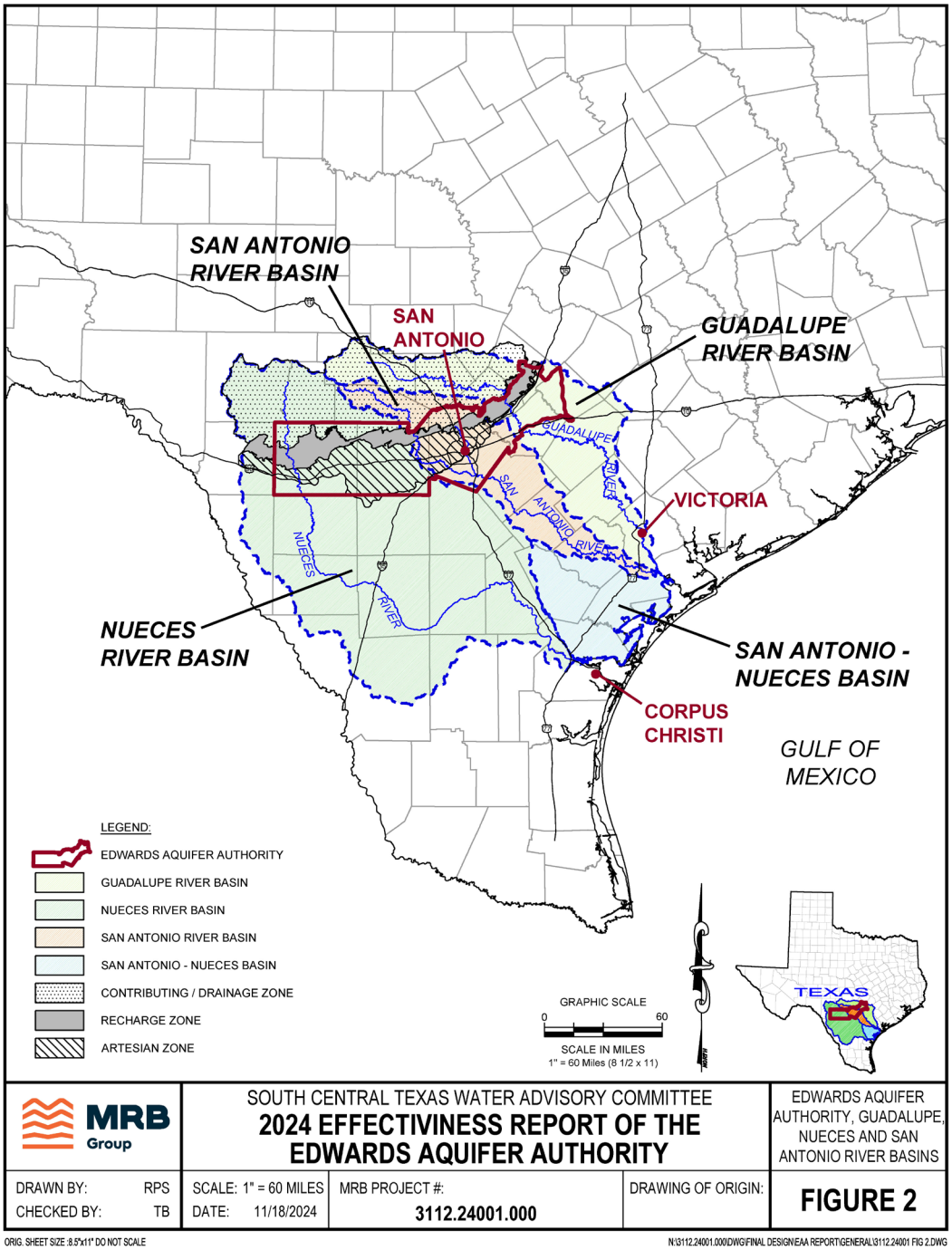
The Edwards Aquifer has traditionally been the primary water source for much of South Central Texas. The western edge of the aquifer begins in Kinney County and runs generally in the northeastern direction into Bell County, approximately 275 miles long. While the aquifer and its contributing zone cover multiple counties, the EAA jurisdiction is based on the county boundaries and areas that impact Comal and San Marcos Springs. Portions of the transition, recharge, and artesian zones of the aquifer lie outside of the EAA jurisdiction, but the EAA boundaries do encompass the major agricultural and municipal users. Water flow from west to east within the aquifer is constrained by the Knippa Gap. The Knippa Gap provides a bottleneck in water movement, effectively creating two pools of water, the Uvalde Pool and the San Antonio Pool. Water use within Uvalde and Medina Counties is primarily agricultural and municipal/industrial within Bexar, Comal, and Hays counties.

2. Relationship of the Edwards Aquifer to the Guadalupe, Nueces, and San Antonio River Basins

Downstream interests rely on surface water from each of these river basins. The Edwards Aquifer crosses the Guadalupe, Nueces, and San Antonio River Basins. The Edwards Formation consists of a contributing zone of approximately 4,400 square miles, a recharge zone of 1,500 square miles, and a confined zone of 2,100 square miles for approximately 8,100 square miles. Rainfall across the Region averages 22 inches in the west to 36 inches in the east. Significant recharge occurs in the western portion of the aquifer in the Balcones Fault Zone, where the Edwards limestone is still at the land surface and has not been faulted deep into the sub-surface. Comal

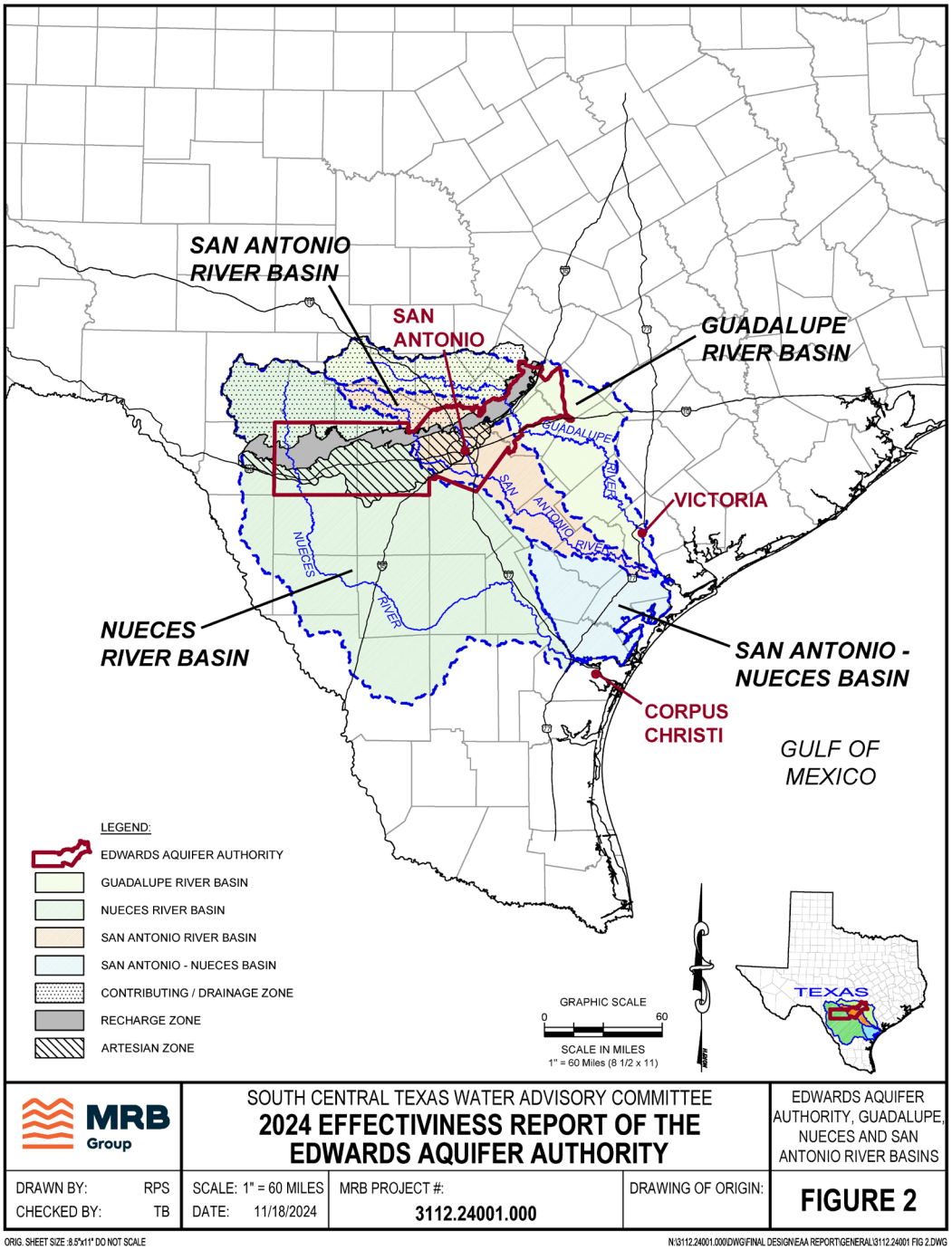
and San Marcos Springs, the largest natural springs in Texas, depend on aquifer water and provide significant surface water flows to both the Guadalupe and San Antonio River basins. Smaller springs in the western portion of the Edwards Aquifer are the source of much of the surface water for the upper Nueces River basin. It is estimated that the Edwards Aquifer holds 45 million acre-feet of water. (Note: 1 acre-foot of water is enough water to cover one acre, one foot deep, or 325,851 gallons). The recharge of the aquifer is not balanced between the three river basins. Approximately 51% of recharge occurs in the Nueces River Basin, 37% in the San Antonio River Basin, and 12% in the Guadalupe River Basin. Figure I.2 graphically shows the interrelationship of the EAA, the contributing, recharge, and artesian zones, and the associated river basins.

Figure I.2: Interrelationships of the EAA



Recharge from the San Antonio and Guadalupe River Basins provide the water that is discharged through Comal and San Marcos springs. These river basins contribute surface water supplies to downstream interests located outside the EAA boundaries. See Figure I.3 for the relationship of the EAA and downstream interests.

Figure I.3: Relationship of the EAA and Downstream Interests



3. Guadalupe River Basin

The Guadalupe River Basin is bounded on the north by the Colorado River Basin and on the south by the San Antonio and Nueces River Basins. The total drainage area of the basin is 6,700 square miles. The basin begins at the headwaters near Kerrville, Texas, flows south, and drains into San Antonio Bay. Comal and San Marcos Springs provide the bulk of the base flow for the river below Canyon Dam. The following cities are located or partially located south of Comal and San Marcos Springs.

- Cuero
- Gonzales
- Kyle
- Lockhart
- Luling
- New Braunfels
- Port Lavaca
- San Marcos
- Seguin
- Victoria

4. San Antonio River Basin

The San Antonio River Basin drains a land area of 4,180 square miles. The basin extends from Kerr and Medina Counties in the Texas Hill Country southeast toward the Gulf of Mexico. The central portion of the basin drains approximately half of Medina County to the far northwest, the majority of Bexar, Wilson, and Karnes Counties. The remainder of the basin is drained by a portion of Goliad County and parts of Bandera, Kendall, Comal, Guadalupe, DeWitt, Kerr, Atascosa, Victoria, and Refugio Counties. The San Antonio River flows into the Guadalupe River near its mouth at San Antonio Bay.

The basin's major watersheds are:

- Medina River
- Leon Creek

- Upper San Antonio River
- Salado Creek
- Cibolo Creek
- Lower San Antonio River

The following are major cities within the river basin:

- Alamo Heights
- Converse
- Floresville
- Goliad
- Karnes City
- Kenedy
- Kirby
- Leon Valley
- San Antonio
- Schertz
- Universal City

5. Nueces River Basin

The Nueces River Basin, associated coastal basins, bays, and estuaries comprise approximately 31,500 square miles of South Texas. The headwaters are in Edwards County and stretches from the Texas Hill Country to the Texas Coast near Corpus Christi. The Upper Nueces Basin provides recharge for groundwater, including the Edwards Aquifer. This groundwater is primarily used for agricultural and municipal purposes. Surface water is captured in Lake Corpus Christi and Choke Canyon reservoirs. These reservoirs are the primary water source for the City of Corpus Christi and the Coastal Bend region. It is important to note that the use of surface water is predominantly in the adjacent coastal basins of the Nueces River.

- Aransas Pass
- Beeville
- Carrizo Springs
- Corpus Christi

- Cotulla
- Devine
- Gregory
- Hondo
- Ingleside
- Kingsville
- Pearsall
- Pleasanton
- Port Aransas
- Portland
- Robstown
- Rockport
- Taft
- Uvalde

6. Population and Water Demand Projections for SCTWAC Counties

The Texas Water Development Board has adopted the following population and water demand projections for the Regional Planning Groups that are tasked with developing the Texas Water Plan. The greatest population growth is projected for Bexar, Nueces, Hays, Guadalupe, Comal, and Victoria Counties. With the exception of Nueces County, the projected growth is located within the Guadalupe and San Antonio River Basins.

Table I.2: 2026 Texas Water Plan—SCTWAC County Population Projections for 2030-2080

County	Basin	2030	2040	2050	2060	2070	2080
Uvalde	Nueces	24,967	24,478	23,759	22,944	22,080	21,167
Medina	Nueces	60,936	79,204	83,631	87,079	90,594	92,654
Bexar	San Antonio	2,555,076	2,951,404	3,222,978	3,470,641	3,699,975	3,945,495
Comal	Guadalupe	259,280	350,779	447,841	584,380	756,273	953,073
Guadalupe	Guadalupe/ Colorado	292,903	385,703	462,052	542,643	634,587	739,503
Hays	Guadalupe	431,531	638,523	876,457	1,146,428	1,406,124	1,692,131
Caldwell	Guadalupe	67,191	83,988	100,497	116,808	134,861	151,345
Gonzales	Guadalupe	19,716	19,697	19,399	19,064	18,710	18,355
Wilson	Guadalupe	55,858	61,941	67,968	73,304	79,413	86,407
Atascosa	Nueces	53,324	57,374	61,473	64,950	68,952	73,522
Karnes	Nueces	15,357	16,052	16,739	17,527	18,428	19,462
Dewitt	San Antonio	19,716	19,687	19,565	19,482	19,394	19,301

County	Basin	2030	2040	2050	2060	2070	2080
Goliad	Guadalupe	6,803	6,648	6,559	6,454	6,334	6,197
Victoria	Guadalupe	93,954	96,082	96,608	96,168	95,664	95,087
Calhoun	Guadalupe	19,449	18,619	17,599	16,571	15,483	14,332
Refugio	San Antonio/ Nueces	6,489	6,243	5,992	5,799	5,595	5,379
Nueces	Nueces/ RioGrande	364,690	371,130	371,485	369,261	367,050	364,851
San Patricio	San Antonio/ Nueces	71,973	74,569	75,816	75,578	75,344	75,114
Total		**4,419,213**	**5,262,121**	**5,976,418**	**6,735,081**	**7,514,861**	**8,373,375**

Source: Texas Water Development Board Population Projections 2024

Table I.3: 2026 Texas Water Plan—SCTWAC Water Demand Projections by County for 2030-2080 (Acre Feet)

County	Basin	2030	2040	2050	2060	2070	2080
Uvalde	Nueces	63,276	63,368	63,435	63,475	63,494	63,492
Medina	Nueces	68,856	71,174	71,959	72,637	73,273	73,731
Bexar	San Antonio	396,152	428,883	451,020	468,589	483,258	503,941
Comal	Guadalupe	58,372	76,280	96,597	124,502	157,042	193,961
Guadalupe	Guadalupe/ Colorado	56,349	69,418	80,346	91,858	104,977	119,161
Hays	Guadalupe	43,189	60,339	78,814	99,478	118,291	139,706
Caldwell	Guadalupe	10,019	11,820	13,646	15,439	17,439	18,967
Gonzales	Guadalupe	22,035	22,136	22,196	22,250	22,302	16,183
Wilson	Guadalupe	28,061	28,893	29,760	30,537	31,428	27,829
Atascosa	Nueces	51,026	51,869	52,764	53,584	54,445	50,215
Karnes	Nueces	7,417	7,574	7,742	7,932	8,153	6,485
Dewitt	San Antonio	8,151	8,140	8,125	8,118	8,108	6,412
Goliad	Guadalupe	9,836	9,814	9,803	9,791	9,777	9,761
Victoria	Guadalupe	74,612	76,401	78,019	79,511	81,048	82,624
Calhoun	Guadalupe	67,994	69,880	71,830	73,857	75,954	78,125
Refugio	San Antonio/ Nueces	2,311	2,272	2,240	2,216	2,193	2,175
Nueces	Nueces/ RioGrande	124,887	125,890	125,981	125,576	125,270	126,718
San Patricio	San Antonio/ Nueces	79,493	79,833	80,047	80,075	80,109	80,147
Total		**1,172,036**	**1,263,984**	**1,344,324**	**1,429,425**	**1,516,561**	**1,599,633**

Source: Texas Water Development Board Water Demand Projections 2024

Table I.4: 2026 Texas Water Plan—Water Demand Projections for Counties in EAA Jurisdiction (Acre Feet)

County	Basin	2030	2040	2050	2060	2070	2080
Uvalde	Nueces	63,276	63,368	63,435	63,475	63,494	63,492
Medina	Nueces	68,856	71,174	71,959	72,637	73,273	73,731
Bexar	San Antonio	396,152	428,883	451,020	468,589	483,258	503,941
Atascosa	Nueces	51,026	51,869	52,764	53,584	54,445	50,215
Wilson	Guadalupe	28,061	28,893	29,760	30,537	31,428	27,829
Comal	Guadalupe	58,372	76,280	96,597	124,502	157,042	193,961
Guadalupe	Guadalupe/ Colorado	56,349	69,418	80,346	91,858	104,977	119,161
Hays	Guadalupe	43,189	60,339	78,814	99,478	118,291	139,706
Caldwell	Guadalupe	10,019	11,820	13,646	15,439	17,439	18,967
Total		**775,300**	**862,044**	**938,341**	**1,020,099**	**1,103,647**	**1,191,003**

The water demand projections for the SCTWAC area show a dramatic increase in demand as the population increases. This demand, particularly in the I-35 corridor, vastly exceeds the permitted withdrawals from the Edwards Aquifer. The water utilities along the corridor have been expanding their water supply by importing surface and groundwater, developing ASR projects, and desalinating brackish groundwater. However, western counties located west of San Antonio do not have the resources to develop these projects and are dependent on their permitted allotments from the Edwards Aquifer.

II. STATUS OF MEETING THE EFFECTIVENESS MEASURES ESTABLISHED IN THE 2022 REPORT

The SCTWAC has adopted Effectiveness Measures to provide benchmarks to assess the success of the EAA in meeting legislative mandates protecting springflows and downstream interests. The Effectiveness Measures have evolved over the past 22 years to reflect the challenges the EAA has faced. These challenges have included legislative actions, developing an effective permitting system, developing critical period rules, litigation, and policy changes. The EAA's response has resulted in the development of effective water management strategies. Perhaps the greatest achievement has been successfully bringing diverse stakeholders together to develop the Edwards Aquifer Habitat Management Plan and issuing the Incidental Take Permit from the USFWS. The signatories to the ITP include the EAA, the cities of San Antonio, San

Marcos, New Braunfels, Texas Parks and Wildlife, and Texas State University. These entities have committed to protecting springflows that provide for the threatened and endangered species dependent on Comal and San Marcos springs. The continued springflows also have a direct impact on the availability of water for downstream interests.

The Effectiveness Measures for this report focused on anticipating the upcoming challenges that the EAA will face. The Effectiveness Measures focus on the following areas:

- Regulatory
- Financial
- Planning, Research, and Partnership Development
- Water Quality
- Water Conservation and Reuse
- Education
- Continued Implementation of the HCP and ITP compliance

A. Regulatory Issues

The EAA has historically focused on the issuance of groundwater withdrawal permits within the freshwater zone of the Edwards Aquifer. This regulatory approach was based on the legislative mandate of a withdrawal cap of 572,000 acre-feet/year. This cap was based on the presumption that only the freshwater zone, and not the brackish zone, would be used for water supply. Recent collaborative studies between the EAA, the City of New Braunfels, and the TWDB have shown that the brackish zone of the Edwards Aquifer can be used for ASR development. The problem is that the legislative cap on withdrawals is for the entire aquifer, not just the freshwater zone. Consequently, any water stored and withdrawn from the ASR would go against the permitted limits for New Braunfels, resulting in the City getting specific legislation approval for the ASR project in New Braunfels.

A related issue has been the dramatic population growth along the I-35 corridor, increasing the demand for groundwater and ASR development in the Trinity and Carrizo-Wilcox aquifers that are regulated by other groundwater districts. These districts overlap with the EAA. The issuance of permits for the development of the lower aquifers will require that the well be drilled through the Edwards Aquifer to reach the lower water tables. An EAA permit is required to drill through the

Edwards Aquifer. The EAA has an ongoing working relationship with these other districts through GMA 9. Still, there have not been any formal agreements to assure that the EAA permit has been issued prior to the issuance of withdrawal permits in the lower aquifers. In total, there are 11 groundwater districts that overlap with the EAA and are listed in Table II.1, as well as the regulated aquifers.

Table II.1: Groundwater Districts Within the EAA Jurisdiction

County	District(s)	Aquifers Regulated
Hays	Hays Trinity GCD	Trinity
	Barton Springs/Edwards Aquifer Conservation District	Edwards/Trinity
	Plum Creek Conservation District	Carrizo-Wilcox
Guadalupe	Guadalupe County GCD	Carrizo-Wilcox
Bexar	Trinity Glen Rose GCD	Trinity
Comal	Comal Trinity GCD	Trinity
Caldwell	Plum Creek Conservation District	Carrizo-Wilcox
	Gonzalez County UWCD	Carrizo-Wilcox
	Barton Springs/Edwards Aquifer Conservation District	Edwards/Trinity
Medina	Medina County GCD	Edwards/Trinity
Uvalde	Uvalde County UWCD	Edwards (BFZ) Edwards/Trinity (Plateau, Carrizo-Wilcox, Trinity)

GCD- Groundwater Conservation District

UWCD- Underground Water Conservation District

The following is a review of the Effectiveness Measures established for this report and what actions the EAA took to address them.

B. Regulatory Effectiveness Measures

Effectiveness Measure:

- Begin educating legislators that the brackish zone of the Edwards Aquifer can be used for ASR development with no penalty for storing and withdrawing the stored water.

The EAA has not been actively pursuing this effectiveness measure because it was determined that current rules would not hinder ASR development.

Effectiveness Measure:

- Consider developing rules that regulate the process of developing ASR projects in the saline portion of the Edwards Aquifer to assure consistency in approach and regulation. *After a review of existing rules, it was determined that there would not be any regulatory issues for the development of ASR projects within the saline portion of the Edwards Aquifer.*

Effectiveness Measure:

- Develop formal working agreements with other groundwater conservation districts to ensure that the permitting process for each District is consistent and transparent in protecting the Edwards Aquifer and springflows.

  The EAA still participates in in Groundwater Management Area 9 and with the Regional Planning Group. There continues to be an informal coordination with other groundwater districts in the Region.

Effectiveness Measure:

- Continue efforts to renew recharge dam permits.

  The EAA has completed the renewal of the recharge dam permits and are waiting on TCEQ comments on the renewal application.

Effectiveness Measure:

- Continue the implementation of the Abandoned Well Program.

  The EAA has continued its implementation and enforcement of the Abandoned Well Program.

C. Financing Effectiveness Measures

Effectiveness Measure:

- Continue researching the potential for protecting funds allocated to the implementation of the EAHCP and ITP using alternative means for reducing the current reserve requirements. This would be accomplished by using a private insurance strategy to cover the risk associated with the current reserve fund requirements. These strategies need to include protections the EAA would need in case of a default by the private insurer.

  After research and evaluation, the EAA abandoned the idea of using an insurance strategy to cover the risk associated with reserve fund requirements. Instead, they are moving toward a reserve based on the performance measures in the 30-year ITP.

Effectiveness Measure:

- Since the implementation of the conservation measures includes the payment to agricultural permit holders not to plant crops, consider discussions with USDA to have the agency provide assistance through guaranteed or direct insurance coverage that would mitigate the risk for a private insurer and potentially reduce the premium required from the EAA.

  Since the EAA has dismissed the concept of using an insurance program to capitalize the reserve fund, this measure is no longer necessary.

Effectiveness Measure:

- If the EAA were to implement the use of an insurance program to reduce reserves, it must be clear that this reduction would only affect future payments to the reserve funds not for EAA operations.

  This measure is no longer relevant since the insurance concept has not been pursued. The EAA is evaluating the potential of restructuring the forbearance agreements and has a flattening of payments.

Effectiveness Measure:

- The EAA should continue its support of the Edwards Aquifer Conservancy with the goal of having the Conservancy be self-sufficient and be able to support the implementation of the EAA Next Generation concepts.

  The EAA continues to solicit corporate donations to support the Conservancy's efforts. The goal continues to be to have the Conservancy self-sufficient within the next 5 years.

D. Planning, Research, and Partnership Development Effectiveness Measures

Effectiveness Measure:

- Continue research into methods of improving water quality and recharge through improvements to soil health and riparian restoration.

  Research has continued in this area but has been hampered by the ongoing drought within the EAA jurisdiction. Additional research has continued to evaluate how soil health and riparian restoration impacts water quality and recharge.

Effectiveness Measure:

- Continue research on the interrelationship between the Edwards and Trinity aquifers.

  Significant work has continued along Cibalo Creek and Medina Lake north of the recharge zone. Data sets continue to be built out, and a vulnerability analysis is being conducted. Additional work includes the identification of the bacterial interface between the aquifers.

Effectiveness Measure:

- Continue developing partnerships with outside funding sources to leverage EAA resources to meet both short-term and long-term objectives.

The EAA continues to work with public and private funding sources to accomplish its mission. Private funding has come from major corporations in San Antonio, the NCRS, and the Texas Water Development Board.

Effectiveness Measure:

- Continue to work with outside organizations to identify potential properties for conservation easement acquisition.

  The EAA has continued to work with conservation groups, particularly the Hill Country Conservancy and the NRCS RCPP program.

Effectiveness Measure:

- Continue to work with Edwards Aquifer Conservancy to develop a long-term financing option for continued conservation easement acquisition and maintenance. The goal for this effort is to have funding in place as the City of San Antonio's resources are exhausted.

  This effort has continued working with outside partners to provide a long-term source of funding for continued conservation easement acquisition.

E. Water Quality Effectiveness Measures

Effectiveness Measure:

- Continue collecting water quality data from sampling public and private wells as well as from surface water sources.

  The EAA has continued to collect water quality samples within the Region. In 2023, the EAA staff collected grab samples from 26 wells and four springs between January and September 2023.

Effectiveness Measure:

- Identify priority areas for water quality protection in the contributing and recharge zones that would impact water quality in the aquifer or in Comal and San Marcos Springs.

  The EAA has worked on identifying priority areas for water quality protection using a vulnerability assessment and identifying new sampling areas that provide good coverage within the contributing and recharge zones.

Effectiveness Measure:

- Consider expanding the water quality analysis to consider the increased urbanization of the I-35 corridor.

  Due to the lack of resources, the EAA has not expanded its water quality analysis along the I-35 corridor. Priority has been given to sampling programs within the contributing and recharge zones.

Effectiveness Measure:

- Continue providing staff support to the City of San Antonio for water quality field work in conservation easements.

  The EAA has continued to provide staff support to the City of San Antonio for fieldwork within the conservation easements.

Effectiveness Measure:

- Implement a hazardous waste disposal program to assist agricultural interests in disposing of this waste in a responsible manner.

  The EAA has not implemented an agricultural hazardous waste disposal program since the pre-Covid pandemic.

Effectiveness Measure:

- Continue well registration and plugging program.

  The EAA has been active in the well registration and plugging program. In 2023, there were 64 wells plugged, 42 of which were through the abandoned well program.

F. Water Conservation and Reuse Effectiveness Measures

Effectiveness Measure:

- The EAA should consider developing a grant program to assist smaller utilities' efforts to reduce water loss. The program should actively promote the program to smaller utilities and develop a realistic timeline for implementing the recommendations.

  The EAA has focused its conservation programs on agricultural savings. As part of this effort, the EAA has asked that half of the savings be allocated to the HCP. As part of the renewal of the ITP, the EAA is looking to expand this program.

Effectiveness Measure:

- The EAA should consider partnering with smaller utilities to determine what level of reuse could be accomplished under existing TCEQ wastewater permit parameters.

  The EAA has not worked with local utilities to determine the level of potential reuse.

Effectiveness Measure:

- As a conservation measure, consider identifying areas that could benefit from ASR development within the EAA jurisdiction.

  The EAA has been active in evaluating potential ASR development in Medina County and has an agreement with the Bexar-Atascosa Water District to evaluate the potential of an ASR project for Medina Lake.

Effectiveness Measure:

- Continue to work with funding agencies to leverage local resources to promote water conservation.

  The EAA has continued to have a close working relationship with the Texas Water Development Board to leverage local resources for conservation projects/programs.

Effectiveness Measure:

- The EAA adopted a Groundwater Conservation Plan in 2014. The plan established Best Management Practices that all permit holders were supposed to implement and report annually. EAA should make all of the annual reports available on their website so that they can be accessed.

  While no report details what Best Management Practices (BMPs) have been implemented, the EAA has focused on providing assistance for agricultural BMPs. The EAA publishes an annual report for Precipitation, Groundwater Discharge and Usage, and Groundwater Recharge on its website. These reports provide an annual account on the effectiveness of the EAA regulatory and conservation measures.

G. Education Effectiveness Measures

Effectiveness Measure:

- Develop metrics that can assess the success of the Education and Outreach Center.

  The EAA has developed metrics including attendance, customer satisfaction surveys, and direct feedback from visitors and users.

Effectiveness Measure:

- Continue the newsletters, social media, podcasts, and YouTube presentations and programs. These programs are helpful in promoting the goals of the EAA and continue to provide a variety of public outreach and education.

  The EAA has been very active on social media, providing information and educational materials. EAA has hosted meetings and conferences as well as the very popular native plant giveaway to promote the mission of the EAA.

H. Continued Implementation of the Edwards Aquifer Habitat Conservation Plan and Renewal of the Incidental Take Permit Effectiveness Measures

Effectiveness Measure:

- Continue to move forward with the preparations to obtain a renewal of the Incidental Take Permit.

  Work has continued on ITP permit renewal and a draft permit is expected in 2025.

Effectiveness Measure:

- Continue the public outreach and education programs that provide updated information on the program and Progress made to renew the Incidental Take Permit.

  The EAA has continued to provide public outreach and education programs that provide updated information on the program and Progress on the renewal of the ITP. The success of the current ITP is a testament to the public understanding of the process and successful implementation.

Effectiveness Measure:

- Continue to implement the EAHCP and use the adaptive management process to address issues as they arise.

  The implementation of the adaptive management process has not had to be used during

the past two years. The adaptive management process was used, and it was very successful in dealing with issues that arose during the EAHCP process.

Table II.2: Status of Meeting the 2024 Effectiveness Measures

Effectiveness Measures	In Progress/ Completed	Not Complete
Regulatory		
Begin educating legislators that the brackish zone of the Edwards Aquifer can be used for ASR development with no penalty for storing and withdrawing the stored water.	✓	
Consider developing rules that regulate the process of developing ASR projects in the saline portion of the Edwards Aquifer to assure consistency in approach and regulation.	✓	
Develop formal working agreements with other groundwater conservation districts.		✓
Continue efforts to renew recharge dam permits.	✓	
Continue the implementation of the abandoned well program.	✓	
Financing		
Continue researching the potential for protecting funds allocated to implementing the HCP/ITP.	✓	
Research alternatives to continue payments to agricultural permit holders	✓	
Research options for reducing reserve requirements	✓	
Continued support of Edwards Aquifer Conservancy	✓	

Effectiveness Measures	In Progress/ Completed	Not Complete
Planning, Research, and Partnership Development		
Continue research into soil health and riparian restoration to enhance water quality and recharge.	✓	
Continue research on the interrelationship between the Trinity and Edwards Aquifers.	✓	
Develop partnerships for outside funding to enhance EAA resources.	✓	
Work with outside organizations to identify properties for conservation easement acquisition.	✓	
Work with the Edwards Aquifer Conservancy to develop a long-term financing option for conservation easements.	✓	
Water Quality		
Continue collecting water quality data from surface water, as well as public and private water wells.	✓	
Identify priority areas for water quality protection in the contributing and recharge zones.	✓	
Consider expanding water quality analysis along the I-35 corridor.		✓
Provide staff support for the City of San Antonio for water quality fieldwork in conservation easements.	✓	
Implement an agricultural hazardous waste disposal program.		✓

Effectiveness Measures	In Progress/ Completed	Not Complete
Continue well registration and the plugging program.	✓	
Water Conserrvation and Reuse		
Consider development of a grant program to assist smaller utilities to reduce water loss		✓
Consider partnering with small utilities to determine the level of reuse that could be implemented.		✓
Identify areas that could benefit from ASR development.	✓	
Work with funding agencies to promote water conservation.	✓	
Make conservation annual reports available on their website.		✓
Education		
Develop metrics to measure the success of the Education and Outreach Center.	✓	
Continue a variety of public outreach and education efforts.	✓	
Implementation of HCP and ITP		
Continue permit renewal efforts.	✓	
Continue public outreach and education programs.	✓	

Effectiveness Measures	In Progress/ Completed	Not Complete
Continue use of the adaptive management process.	✓	

III. EFFECTIVENESS MEASURES FOR THE 2026 REPORT

The role of the EAA has evolved from establishing rules regulating groundwater withdrawals to becoming the coordinating agency working with major water utilities in the Region to implement a Habitat Conservation Plan (EAHCP). The implementation of the EAHCP resulted in the issuance of a 15-year Incidental Take Permit (ITP) from the U.S. Fish and Wildlife Service. The successful implementation of the permit conditions has allowed the EAA to develop and submit a new 30-year Incidental Take Permit application that will be submitted in 2026.

This evolution has also emphasized research efforts to enhance riparian restoration and enhancement of recharge of the Edwards Aquifer, as well as working with utilities on planning and research into Aquifer Storage and Recovery (ASR) projects. The success of the SAWS ASR project has shown that water can be stored in the ASR during periods when permitted water is available from the Edwards Aquifer and used during drought periods. This has led to ASR planning projects in New Braunfels and Medina County that show a potential for success.

Looking forward, the EAA-regulated utilities will face several challenges associated with population growth and increased water demands. Projected population growth and water demands for the SCTWAC region are significant, predominantly along the I-35 corridor between Austin and San Antonio. Total projected population growth is 19% between 2030-2040 and 89% between 2030-2080. Total water demand is projected to increase by 8% between 2030-2040 and 36% between 2030-2080. It is important to note that the water demand projections assume significant savings through continued water conservation.

Continued drought is affecting the water supply from the Edwards Aquifer. This is prompting greater use of the critical period rules, leaving local utilities short of water to meet demands. In 2024, the Region experienced a severe drought, prompting the implementation of drought management rules for areas covered by the J-17 and J-27 monitoring wells. The Region has

been in a Stage 4 reduction of 40% for several months for the J-17 well, and in Stage 5, a 44% reduction for the J-27 well. If the drought continues into November 2024, it is highly probable that the J-17 well will drop and trigger a Stage 5 reduction for Bexar, Comal, Guadalupe, Hays, and Medina counties.

The San Antonio Water System (SAWS) has aggressively addressed this shortage through its ASR project and the Vista Ridge pipeline and desalination within the Carrizo Wilcox aquifer in southern Bexar County. Other larger water utilities along the I-35 corridor between Austin and San Antonio have joined together to obtain additional water from groundwater supplies southeast of Austin in the Carrizo Wilcox and Trinity aquifers. Private providers are also beginning to contract for and/or develop additional groundwater resources within the Colorado and Guadalupe River basins. While the I-35 corridor water utilities have been actively procuring additional water supplies, communities in Medina and Uvalde counties do not have the resources or the water availability to procure additional water supplies. This has led water utilities to begin evaluating the use of ASR and reuse as potential water supply strategies. The ever-increasing demand for water makes desalination of brackish water an effective method of increasing water supply. This brackish water is primarily located below the Edwards Aquifer freshwater table in the lower Edwards, Trinity, and Carrizo Wilcox aquifers. Current EAA rules allow for using the saline portion of the Edwards Aquifer for ASR development but do not allow for the use of the brackish zone of the Edwards Aquifer for desalination. Based on technological advances and water demands, using the brackish zone as a water source will be a topic of discussion in the future.

The new effectiveness measures established in this report reflect the concerns of the SCTWAC and include new ones as well as continuation of previous measures that reflect ongoing actions of the EAA. The Effectiveness Measures are grouped into the following areas:

- Regulatory
- Financial
- Planning, Research, and Partnership Development
- Water Quality
- Water Conservation and Reuse
- Education
- Continued implementation of the EAHCP/ITP and Obtaining the new ITP

A. REGULATORY

The regulatory role of the EAA has been focused on developing and implementing the initial withdrawal permits, conservation efforts, and critical period rules. In recent years, there has been development of water supply strategies that were not considered as feasible in the past. These strategies include the interbasin transfers of groundwater, the development of ASR projects, the desalination of brackish groundwater, and water reuse for irrigation and industrial purposes. These strategies will directly impact the EAA and its permit holders. ASR projects are currently handled using current EAA rules, but there are potential conflicts while using the brackish zone of the Edwards Aquifer. These potential conflicts include the fact that a portion of the ASR yield is not available for recovery. This lack of full recovery will potentially cause a loss to the permit holder, which can potentially be offset by the additional stored water during drought periods. As groundwater desalination is being developed within the Region, current EAA rules do not allow for the use of the Edwards Aquifer brackish water for this purpose or for the use of deep well injection for desalination brine into the aquifer. The use of brackish water from different aquifers will require permitting from other groundwater conservation districts.

There is an increasing interrelationship between users of the different aquifers in the Region, as continued research shows an interrelationship between the Edwards and Trinity aquifers. EAA permit holders are actively developing other water resources that could potentially impact the Edwards Aquifer or springflows. The EAA has been actively involved with the Groundwater Management Area 9 (GMA9) and the TWDB Regional Water Planning Group. However, there are no formal agreements for notification of permit changes or requests to drill through the Edwards Aquifer for the development or disposal of brine into other aquifers.

The EAA has submitted the renewals for the recharge dam permits to the TCEQ and is awaiting comments from the agency. The EAA has actively been implementing the Abandoned Well Program successfully, as well as enforcing the enforcement actions for permit violations. In the past year, there were 66 wells plugged, with 42 through the Abandoned Well Program and enforcement of 100 violations, with only five outstanding as of this report. The EAA has also been using the Groundwater Trust as a placeholder for permit holders as a conservation measure. It allows the EAA full access to the water in the Trust, and the permit holder can avoid paying fees. Based on the previous actions since 2022 and building on new issues, the following are:

Regulatory Effectiveness Measures for the 2026 Effectiveness Report.

- Continue to support ASR development in the Edwards Aquifer.
- Review the potential impact of using the brackish zone for desalination and blending. As part of this review, determine the impact on permitted withdrawals from the Edwards Aquifer.
- Consider greater coordination and formal notifications of any actions that other Groundwater Conservation Districts would take that would impact the Edwards Aquifer through ASR development and/or drilling through the aquifer for water development or disposal wells.
- Continue working with TCEQ to address any comments regarding the renewal of the recharge dam permit(s).
- Continue actively implementing the Abandoned Well Program and enforcement for permit violations.

B. FINANCING

The EAA evaluated the potential for using a private insurance company to cover the risk associated with its reserve fund requirements. After evaluation, this strategy was abandoned, and focus was placed on possibly changing forbearance agreements and flattening payments for the other programs. There is active consideration for having more leasing rather than forbearance agreements and diversifying its water portfolio.

A board of EAA members governs the Edwards Aquifer Conservancy. It has been using a combination of EAA appropriations and grants to fund its operations, with the initial goal of being fully funded through outside sources within five years. The Conservancy has been active in the acquisition of conservation easements throughout the Region, including the Crane Bat Cave Easement, the Dischinger-Brehmer Ranch Project, the acquisition of the Edwards Aquifer Authority Field Research Park, and the Medina Tree Conservation Project. The Conservancy has also been active in fundraising for the Educational Outreach Center and work within the Field Research Park.

The EAA has various programs to fund payments to agricultural users, including the forbearance agreements and the VISPO program. Permit holders can register in the forbearance program and

receive compensation when the 10-year annual recharge average has fallen at or below 500,000 acre-feet. The last time this average fell below the target figure was from 1946-1959, the drought of record. The EAA has successfully reached a total enrollment of 50,000 acre feet in 2024. The VISPO program is a voluntary program triggered when the level of the J-17 monitoring well falls below 635-ft-msl on October 1, and forbearance occurs the year following the well reading. The program is triggered more frequently during short-term drought conditions. VISPO was triggered in 2014, 2022, and 2023, with 2015, 2023, and 2024 being the forbearance years. Permit holders can participate in the ASR and VISPO programs at the same time, but those with the same qualifications cannot be enrolled in both programs. Both programs' agreements will terminate in 2028. The year 2028 will mark the beginning of the new 30-year ITP. Based on the frequency of drought and the payments made, it is evident that the program parameters will need to be revised for the future.

The continued acquisition of conservation easements in the contributing and recharge zones is critical for protecting water quality and recharge and springflows. Since the City of San Antonio has terminated its acquisition of conservation easements and property, it has been left to the EAA and Edwards Aquifer Conservancy to continue to find financing for the acquisition of these easements. EAA and the Conservancy have successfully worked with the Hill Country Conservancy and the federal NRCS to acquire additional conservation easements.

Financial Effectiveness Measures for the 2026 Effectiveness Report

- Continue to solicit state, federal, and foundation grants to support the activities of the Edwards Aquifer Conservancy. While the goal is to have the Conservancy self-sufficient within 5 years, finding outside funding to support the agency for the long term will be difficult.
- Consider providing support on an ongoing basis for the Edwards Aquifer Conservancy.
- Begin revising the funding parameters for the Forbearance and VISPO programs. It appears that drought conditions will be an ongoing issue and changes will be necessary for the programs to be viable during the term of the new ITP renewal period.
- Begin financial planning for permit fees to implement the ITP at renewal. Giving as much early notice as possible will be critical to permit holders of any fee changes to support the EAA and the ITP.

- Continue to solicit funding from public and private sources to acquire conservation easements.

C. Planning, Research, and Partnership Development

The EAA has traditionally been active in planning and research since its creation and has been expanding its role as part of implementing the EAHCP and continued research mandated by the ITP. This effort has assisted in achieving planning objectives through research and partnership development. EAA has worked closely with other research partners to address topics that impact recharge and improve water quality. This has been longitudinal in nature to build data sets and evaluate the long-term impacts of the research.

The work on riparian restoration with the University of Texas at San Antonio has provided insights into soil health restoration. This restoration will provide greater water holding capacity along streams and improve water quality. Work continues and has been expanded at the Field Research Park but has been hampered by the continued drought in Central and South Texas.

Research has continued on the interface between the Edwards and Trinity aquifers both in the north recharge zone and at the Field Research Park. The work has included data collection at both Cibalo Creek and Medina Lake. As part of building the data sets, a vulnerability analysis is being developed in conjunction with the United States Geologic Survey (USGS). This vulnerability analysis has implemented a strategic approach to integrating science. One of the interesting findings from this research is developing a process to identify the bacterial interface between the two aquifers. This research promises to provide a method of determining the interface by transferring bacteria between the aquifers.

The EAA has also been involved with a cloud-seeding initiative with the Bexar Atascosa Water District (BAWD) to enhance the Edwards Aquifer's recharge. This effort is in the last year of the contract. The contract requires that the BAWD develop estimates of the impact of the cloud seeding program and prepare an annual report to the EAA. Previous efforts have yielded an estimated 3,000 acre-feet/year of additional recharge.

The EAA and Edwards Aquifer Conservancy have been actively developing partnerships with outside organizations to partner in research, provide funding, and assist with acquiring

conservation easements. These partnerships include providing assistance for data collection in existing conservation easements for the City of San Antonio, corporate donations for research, easement acquisition, and educational projects, the Texas Water Development Board, U.S. Fish and Wildlife Service, Medina County ASR study, and assisting permit holders. Conservation easement acquisition partners include the Hill Country Conservancy, which focuses on easements within the Guadalupe River Basin, the National Resource and Conservation Service (NRCS) for work at Camp Bullis, and other NRCS grant programs.

Planning, Research, and Partnership Development Effectiveness Measures for the 2026 Effectiveness Report

- Continue research on the use of soil health and riparian restoration as a water quality and recharge Best Management Practice.
- Use the vulnerability analysis as a tool to develop a strategic approach to research and data collection.
- Continue research into the interface between the Trinity and Edwards aquifers.
- Consider researching to quantify the impact of conservation easements on water quality and recharge.
- Continue to work with funding partnerships for research, stewardship, and acquisition of conservation easements.

D. WATER QUALITY

The EAA and its predecessor agency have been monitoring water quality within the Edwards Aquifer for over 30 years. In 2023, the EAA staff collected grab samples from five streams, 26 wells, and four springs. The results of this analysis showed that the Edwards Aquifer had high water quality, with most samples containing no detectable contaminants. Any samples with compounds of concern were below the maximum contaminant levels established by the EPA. Any concentration of heavy metals or bacterial detections were from natural sources.

The vulnerability analysis approach is expected to identify new sampling areas and provide additional coverage within the contributing and recharge zones. At present, there is no indication that additional sampling sites are needed along the I-35 corridor. The EAA staff have continued to support the City of San Antonio's water quality monitoring efforts within the 200,000 acres of

conservation easements owned or controlled by the City. A related water quality measure is the well registration and well-plugging program. In 2023, there were 66 wells plugged, and 42 identified through the abandoned well program. This program helps protect water quality by restricting potential contaminants from entering the aquifer from abandoned and unplugged water wells. The EAA has not implemented a hazardous waste disposal program for agricultural interests since 2019-2020.

Water Quality Effectiveness Measures for the 2026 Effectiveness Report

- Continue collecting water quality data from existing sampling sites and publish the findings on the EAA website.
- As the vulnerability analysis continues, consider expanding water quality sampling sites to gain additional data and identify potential areas of concern.
- Continue providing staff support to the City of San Antonio for water quality fieldwork in conservation easement controlled or managed by the City.
- Consider expanding water quality staff support for water quality fieldwork in new or expanded conservation easements.
- Continue the well registration and plugging program to promote water quality protection.

E. Water Conservation and Reuse

The SCTWAC has long supported and encouraged the EAA's water conservation efforts. These water conservation efforts have been a significant part of the Edwards Aquifer Habitat Conservation Program (EAHCP) strategy to protect springflows. The EAA initially worked with local utilities for leak detection and plumbing retrofits. These efforts were met with mixed results as smaller utilities often did not have the resources to fix the leaks or make other improvements. The plumbing retrofits were initially successful but were not necessary for new construction since it is state law that water-conserving fixtures be used.

The development of the EAHCP required significant water conservation savings. This was accomplished through the City of San Antonio's aquifer storage and recovery program, the implementation of forbearance agreements, and the Voluntary Irrigation Suspension Option (VISPO). The VISPO initiative is a voluntary agreement between agricultural water users and the EAA. The program requires that the irrigators reduce or stop using water during drought periods

to protect Comal and San Marcos springflows and the endangered species dependent on the springs. The VISPO program is triggered by well levels in the J-17 well in Bexar County, at or below 635 feet on October 1. The VISPO program compensates irrigation permit holders for enrolling in the program and pays an additional amount in years when irrigation is fully suspended. If VISPO is not implemented, the permit holder is in control and can use the water or lease it during non-suspension years. The VISPO program is completely filled and has been fully implemented for the past several years.

As noted in previous reports, the EAA has done a commendable job in meeting water conservation goals established in the EAHCP. The plan's goals have been met by focusing on major users, primarily the City of San Antonio and agricultural users.

The SCTWAC continues to have concerns about smaller municipal permittees that do not have the resources to perform leak detection within their systems. With the reductions forced by the drought, these utilities are directly impacted as they usually don't have alternative water supplies. As water demands continue to increase across the Region, water reuse is a viable resource that can be used to supplement potable water supplies and needs to be expanded. Part of this expansion would be to focus on smaller utilities and determine if water reuse could be used for municipal irrigation demands. Water reuse could also be used as part of subsidies for agricultural users by providing reuse water to replace EAA-permitted water.

Water Conservation and Reuse Effectiveness Measures for the 2026 Effectiveness Report

- EAA should consider partnering with utilities to identify reuse opportunities that would supplement and/or replace permitted water from the Edwards Aquifer. This could provide drought relief for these utilities.
- Consider implementing an agricultural reuse program that could supplement the forbearance and VISPO programs by providing reuse water in lieu of payments.
- Continue to work with interested utilities and districts to identify feasible ASR project sites and how much water could be stored for use.
- The EAA adopted a Groundwater Conservation Plan in 2014. The plan established Best Management Practices that all permit holders were supposed to implement and report annually. EAA should make all annual reports available on their website for easy access.

F. EDUCATION

The EAA has continued to do an exemplary job of providing educational opportunities to permittees and the public. This has been accomplished through multiple outlets, including podcasts, online magazines, press releases, interviews, and social media, and work has been accomplished at the Educational Research Center. The EAA has also sponsored a free plant giveaway that focused on native plants that are drought-resistant and can thrive in the Central/South Texas climate. The EAA and Edwards Aquifer Conservancy have developed metrics to measure the success of the Education and Outreach Center. These metrics include attendance, customer satisfaction surveys, and continued interest in the educational opportunities from stakeholders and interest groups.

Education Measures for the 2026 Report

- Continue the newsletters, social media, podcasts, and YouTube presentations and programs. These programs have proven to be popular, promote the goals of the EAA, and continue to provide a variety of public outreach and education.
- Consider expanding the outreach to document the various conservation measures utilities and agricultural interests took. This information sharing can be valuable to utility customers in understanding how these measures work.

G. CONTINUED IMPLEMENTATION OF THE EDWARDS AQUIFER HABITAT CONSERVATION AND INCIDENTAL TAKE PERMIT

The EAA, in cooperation with its partner cities of San Antonio, New Braunfels, San Marcos, and Texas State University, has done a commendable job in implementing the EAHCP and the ITP. The initial term of the ITP was for 15 years with an expiration date of 2028. The adaptive management process is one of the most successful tools used during the past 15 years. The adaptive management process provided a method of rapidly addressing issues that have arisen and resolving issues in a timely manner.

The permit renewal has progressed, with the major milestone of a draft permit application completion anticipated in 2025. This renewal requests that the permit term be increased to 30 years based on the existing permit's implementation success and the permit holders' financial

commitment. Close cooperation and support from both federal and state partners is anticipated to continue for the permit term. The continued drought and growth have stressed the ITP, but the participants' cooperation has been able to address those concerns.

Continued Implementation of the EAHCP and ITP

- Continue the public outreach and education programs that provide updated information on the program and the importance of protecting springflows for endangered species and downstream interests.
- Identify ways to make funding more efficient for the new ITP renewal and implementation.
- Funding will be from Aquifer Management Fees for the next 30 years for implementation. The methodology for incremental increases to these fees over time should be communicated prior to the submission of the final permit application.
- Initiate the process of evaluating the impacts of climate change on the ITP and future measures to protect springflows.