NOTICE OF MEETING of the
BARTON SPRINGS EDWARDS AQUIFER CONSERVATION DISTRICT
BOARD OF DIRECTORS

Thursday, February 13, 2025	5:00 PM	IN-PERSON

Notice is given that a **Regular Meeting** of the Board of Directors (Board) of the Barton Springs/Edwards Aquifer Conservation District will be held on **Thursday, February 13, 2025** commencing at **5:00 p.m.** at **the District office, located at 1124 Regal Row, Austin, Texas.**

This meeting will be audio recorded and the recording will be available on the District's website after the meeting.

Public Comments at the Board Meeting – Please complete a comment card prior to the start of the meeting. Each registered person will be recognized and identified by the Presiding Officer or staff moderating the communications when it is their turn to speak. **Public comment is limited to 3 minutes per person.**

AGENDA

Note: The Board of Directors of the Barton Springs/Edwards Aquifer Conservation District reserves the right to meet in Executive Session at any time during the course of this meeting to discuss any of the matters listed on this agenda, as authorized by the Texas Government Code Sections §551.071 (Consultation with Attorney), 551.072 (Deliberations about Real Property), 551.073 (Deliberations about Gifts and Donations), 551.074 (Personnel Matters), 551.076 (Deliberations about Security Devices), 551.087 (Economic Development), 418.183 (Homeland Security). No final action or decision will be made in Executive Session.

1. **Call to Order.**

2. **Citizen Communications (Public Comments of a General Nature).**

3. **Consent Agenda.** *(Note: These items may be considered and approved as one motion. Directors or citizens may request any consent item be removed from the consent agenda, for consideration and possible approval as a separate item of Regular Business on this agenda.)*

   a. Approval of Financial Reports under the Public Funds Investment Act, Directors' Compensation Claims, Specified Expenditures greater than $5,000.

   b. Approval of minutes of the Board's January 9, 2024, Regular Meeting.

4. General Manager's Report.

a. Review of key team activities/projects.
b. Update on NOAV and proposed Agreed Order with Aqua Texas, Bliss Spillar Lower Trinity
c. Teambuilding workshops: Feb. 19 and 3rd qtr.
d. Trinity Sustainable Yield.
e. Aquifer status update.
f. Upcoming events of possible interest.

5. Discussion and Possible Action.

a. Discussion and possible action authorizing GM to declare the next stage of drought.

b. Discussion and possible action related to the performance and compliance of District permittees with their User Drought Contingency Plan curtailments.

c. Discussion and possible action related to authorizing publication of draft amendments to the District Rules and setting a rulemaking hearing relating to amending the aquifer-test requirement tiers as reflected in the Guidelines for Hydrogeologic Reports and Aquifer Testing, and related District Rules: 3-1.4, 3-1.6, 3-1.9, 3-1.24, and 3-1.25.

d. Discussion and possible action on approval of the draft FY 24 HCP/ITP report prepared for U.S. Fish and Wildlife.

e. Discussion and possible action related to the 89th Texas Legislative Session.

6. Director Reports.

Directors may report on their involvement in activities and dialogue that are of likely interest to the Board, in one or more of the following topical areas:

- Meetings and conferences attended or that will be attended;
- Board committee updates;
- Conversations with public officials, permittees, stakeholders, and other constituents;
- Commendations; and
- Issues or problems of concern.

7. Adjournment.

Please note: This agenda and available related documentation, if any, have been posted on the District website, www.bseacd.org. If you have a special interest in a particular item on this agenda and would like any additional documentation that may be developed for Board consideration, please let staff know at least 24 hours in advance of the Board Meeting so that we can have those copies made for you. The Barton Springs/Edwards Aquifer Conservation District is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable accommodations and equal opportunity for effective communications will be provided upon request. Please contact the District office at 512-282-8441 at least 24 hours in advance if accommodation is needed.

Item 1

Call to Order

Item 2

Citizen Communications

Item 3

Consent Agenda

a. Approval of Financial Reports under the Public Funds Investment Act, Directors' Compensation Claims, Specified Expenditures greater than $5,000.

b. Approval of minutes of the Board's January 9, 2024, Regular Meeting.

Item 4

General Manager's Report

a) Review of key team activities/projects.
b) Update on NOAV and proposed Agreed Order with Aqua Texas, Bliss Spillar Lower Trinity
c) Teambuilding workshops: Feb. 19 and 3rd qtr.
d) Trinity Sustainable Yield.
e) Aquifer status update.
f) Upcoming events of possible interest.

Summary of Team Activities in February 2025

Aquifer Science

January Activities

- Sierra West – Wetrock aquifer test report review
- HCP draft doc sent to MAC members
- Multiport well visits
- Aquifer test requirements rules update
- AqSci data migration to new database
- Abandoned well risk assessment: Processed and prepped dataset, and in the process of cleaning the dataset for geospatial analysis.
- District drought analysis: Processed and prepped dataset, and in the process of cleaning the dataset for statistical analysis..

On Deck:

- Antioch fieldtrip
- HCP MAC meeting on 2/10
- Little Bear Recharge Enhancement QAPP review
- Barton Springs manual flow measurements
- TAS Phase IIa proposal review
- Abandoned well risk assessment: Parameter evaluation and selection with Aquifer Science Team. An in-depth review of well drilling log records. Creation of maps for the aquifer vulnerability and social vulnerability components of the geospatial model.
- District drought analysis: Preliminary model runs underway, with a goal to present preliminary results at the March board meeting. Creating a District history record.

Administration

- A new SOP has been developed for submitting expenses, reimbursements, and purchase orders.
- A revised and updated Purchasing Policy is being readied for committee review.

Regulatory Compliance

January Activities:

- Staff continued to process new applications, assist permittees with drought compliance, and assess DMF's and additional penalties to eligible overpumpers.
- Staff met with Texas Old Town to discuss overpumpage in January and are working together to resolve the situation; Staff trying to coordinate one with Aqua TX for Onion Creek Meadows, but no response has been received.
- Staff working with AS team to prepare for MAC meeting to be held on February 10th.
- Staff worked with AS team to finalize proposed changes of rules related to aquifer testing tiers.
- Staff continuing to work with LRE on completion of database development.

On Deck:

- Awaiting submission of Anthem production permit and Aqua TX- Sierra West 2 volume amendment.

Communications and Outreach

January Activities

- Launched and promoted Kent Butler Summer Camp Scholarship.
- Partnered with Creedmoor Maha WSC to assist with improved communications. Also joined their first Water Conservation Program meeting.
- Recruited over a dozen organizations to exhibit at Hot Science – Cool Talks event with UT.
- Attended Water for Texas Conference from January 27-29.
- Coordinated and hosted tour of Antioch Cave site with 24 attendees including staff, board members, permittees, and additional stakeholders.

On Deck:

- Attend Central Texas Water Conservation Symposium on February 13.
- Coordinate and promote Well Water Checkup for April 7.
- Promote and prepare for UT's Texas Science Festival and Texas Water Day on March 3.

Status Report Update
February 13, 2025 Board Meeting

Summary of Significant Activities – Prepared by Staff Leads

Upcoming Dates of Interest

- 2025 Central Texas Water Conservation Symposium – February 13, Austin, TX
- Texas Land Conservation Conference – February 26-28, Austin, TX
- Kent Butler Summer Camp Scholarship applications close – February 28, Virtual
- BSEACD presentation at UT Texas Science Festival – March 3, Virtual
- Texas Water Day – March 3, Austin, TX
- Hot Science Cool Talks: The Future of Texas Water – March 28, Austin, TX
- Well Water Checkup hosted by the District – April 7, Austin, TX

DROUGHT MANAGEMENT

Drought Status and Water-Level Monitoring (*Justin*)

The District declared Stage III Critical Drought on October 3. This was a result of the Lovelady monitor well's 10-day groundwater level reaching below the District's Stage III threshold of 462.7 feet mean sea level (ft-msl) on Oct. 1. As of February 6, the District remains in Stage III Critical Drought.

On average, January is the area's coldest month of the year, which rang true for 2025. Camp Mabry recorded an average temperature of 46.9°F throughout the month-- 5.3° below normal. Last month tied for the 23rd coldest January on record for the Austin area. This is a stark change from the region experiencing its warmest meteorological Fall on record at the end of 2024.

As of February 6, the 10-day average flow at Barton Springs is 15.6 cubic feet per second (cfs). This value is based on the most recent manual measurement taken by District staff on January 24, 2025. Since then, approximately 0.8 inches of rainfall has fallen across the District, likely increasing spring flow by a few cfs.

Due to recent maintenance inside the pool and other unknown factors that may be affecting the accuracy of the USGS real-time gauge, staff will conduct biweekly manual measurements to closely monitor any potential progression into a deeper drought stage. The next measurement is scheduled for February 12 to inform the Board meeting on February 13.

On February 6, the 10-day average water level at the Lovelady monitor well was recorded at 457.8 feet above mean sea level (ft-msl), placing it within the District's Stage III threshold and approximately 1.2 feet above the Stage IV Exceptional Drought threshold. Without rain we could see water levels at Lovelady dip into Stage IV as soon as March.

Middle Trinity water levels remained stable and flat-lined from mid-November 2024 until early February, when they resumed a steady decline.

Jacob's Well Spring (JWS) showed a brief increase in flow following the late January rainfall, temporarily reaching near 1.0 cfs before declining back to near zero. The Blanco River at Wimberley gauge peaked at 14 cfs, up from 7 cfs after the rainfall, and has since stabilized at 7 – 8 cfs a range that has remained consistent since mid-November.

DISTRICT PROJECTS

GMA Joint Planning

- ***GMA 10 Coordination (Tim, Bri)***
-

The next GMA 10 meeting is scheduled for March 17, 2025. All meetings are hosted by the Edwards Aquifer Authority in San Antonio.

Trinity Aquifer Sustainable Yield Study & Planning

- ***Policy Concepts and Advisory Workgroup Planning (Tim, Jeff)***

A TSY Committee meeting is scheduled for 1:00 p.m. on February 20th.

Technical Evaluations (Jeff)
Aquifer Science staff continue to collect data on the geology and hydrogeology related to the Trinity Aquifers. We are continuing to collect and evaluate water level data from our network of Trinity monitoring wells.

In January aquifer science staff worked closey with GM to review the Well Impact Analysis report produced by LRE to ensure that it met the Districts needs for advancing Trinity Sustainable Yield. Also, two abstracts were submitted for presentation at the Geological Society of America South Central section meeting in March 2025 in Conway, Arkansas: one on multiport data from the Trinity Aquifer and the other on multiport data from the newly installed Barton Springs well. Justin Camp and Jeff Watson are planning to attend the conference to present the findings of these investigations.

Habitat Conservation Plan (*Staff*)

- **FY 2024 HCP Report:** Staff have commenced preparations for meetings, presentations and the delivery of a final report to the Fish and Wildlife Service, scheduled for late February 2025.
- **Planning for Technical Tasks:** In Fall 2024 Aquifer Science staff will collaborate with COA and USGS staff on a water chemistry and isotope study of the Edwards Aquifer which involves collecting groundwater samples from the new Barton Springs Multiport Well. The study will improve our understanding of the localized Barton Springs flow system and guide potential strategies to protect the endangered salamanders.
- In August the new Garrison Park dedicated monitoring well was instrumented with a telemetered water quality monitoring system which will provide real-time measurements of pH, Dissolved Oxygen, and Conductivity. This system will provide a valuable dataset for understanding how key water quality parameters deeper in the Edwards Aquifer vary over time in response to changing aquifer conditions. While similar datasets exist at the spring outlets, this will be the first time this type of data has been collected deeper in the aquifer. These data will be an important addition to our HCP-related data collection efforts.

Database Management System – LRE Water (*Jacob, Tim*)

A second no-cost extension will need to be issued to finish a couple of tasks with remaining budget. A new work order will also be prepared to finish a couple of other tasks that turned out to be more involved that either the consultant or District staff anticipated. Details are currently under development. Progress continues to be made, nonetheless, and we expect the public-facing interactive map to be released by the end of March.

District Drought Temporal Analysis -- (Bri)

In this project, District drought triggers will be analyzed against several drought indicators to assess the spatial and temporal scale of drought conditions within District territory. Multiple statistical analyses will be conducted to gain greater insight into indicators actively contributing to drought conditions. Analysis will begin by evaluating the exploratory statistics of the dataset to determine which variables follow a normal distribution and which are skewed. Assuming a normal distribution for each variable, parametric statistics will be used to analyze the dataset. A correlation matrix will be created using Pearson's r to determine relationships between each variable. The null hypothesis will be tested using the coefficient of determination – a test that indicates significance of the results. Assuming no collinearity is detected, a multiple regression test will be conducted to identify the impact of each drought indicator on drought conditions. An ANOVA test and t-test will be used to indicate the significance of the entire statistical model and of each individual variable in the model.

Data collection and preparation for this project are complete. Preliminary model runs are currently underway, with a goal to present preliminary results at the March board meeting.

Abandoned Well Vulnerability Assessment -- (Bri)

As part of the Habitat Conservation Plan (HCP), the District has committed to establishing a reserve fund specifically designated for supporting an abandoned well program. Abandoned wells pose a significant risk of groundwater contamination. The primary objective of this project is to develop an index for assessing abandoned well vulnerability, identifying the most critical factors to consider in the District's efforts to protect our aquifer systems. This index will serve as a tool for prioritizing well plugging activities, including the identification of abandoned well owners most in need of financial assistance.

Initial indicators have been delineated based on relevance to the District and surrounding community. Data is being collected for each indicator, and indicator parameters still need to be discussed and determined. Following the completion of the index, a correlation matrix will be created using Pearson's r to determine relationships between each variable. The null hypothesis will be tested using the coefficient of determination – a test that indicates significance of the results. Assuming no collinearity is detected, an analytic hierarchy process (AHP) analysis and Fuzzy analysis will be conducted to determine each indicator's hierarchy and weight. A hazard map, vulnerability map, and importance map will be created in a spatial analysis that applies the created index. These maps will be overlain to create a total risk map that can be used to identify priority wells.

Data collection and preparation for this project are nearing completion. However, a critical gap exists in well integrity data due to insufficient information within the District database. This necessitates an in-depth review of well drilling log records. Concurrently, the development of maps for the aquifer vulnerability and social vulnerability components of the geospatial model is underway.

ILA Commitments (*Staff*)

The District has an ILA with COA to coordinate studies for the respective HCPs such as scientific feasibility studies and monitoring evaluations; to collaborate on the planning of future Kent Butler Summits; and to exchange technical information regularly on an annual basis. An annual technical meeting is held between the District and COA in December each year to discuss each organization's activities related to their respective HCPs. The next meeting will be held in December 2024.

Region K Planning Activities (*Tim, Bri*)

Staff was unable to attend the December 6, 2024 meeting. The next meeting is scheduled for February 12, 2025.

New Maps, Publications, or Reports

A list of recent publications, including our new 2023 Drought Synoptic Study report, can be found at: https://bseacd.org/scientific-reports/

RULEMAKING, PERMITTING, AND ENFORCEMENT
(*Tim*, *Erin*, Jacob, *District Counsel, Rules and Enforcement Committee)*

Rulemaking and Enforcement

Rules and Committee members met with staff on January 8 to discuss the potential rule changes staff is recommending at the February 13th regular meeting of the Board. Staff will be presenting at the meeting the potential rule changes for the full Board to discuss. .

Drought (*Erin*)

- Will continue working with permittees to ensure compliance per their Agreed Orders.
- Will continue monthly pumpage analysis to determine all permittee's compliance status of drought curtailments.
- Will continue to assist permittees in ensuring they successfully comply with their UDCPs and Stage III drought curtailments for January.

Enforcement and Compliance Matters (*Erin*)

Compliance/Enforcement			
Permittee or Entity Name	***Aquifer***	***Use Type***	***Notes***
Aqua Texas – Bear Creek Park	Edwards	PWS	Agreed Order Executed.
Aqua Texas – Bliss Spillar (Edwards)	Edwards	PWS	Agreed Order Executed.
Aqua Texas – Bliss Spillar (Lower Trinity)	Lower Trinity	PWS	Full penalty assessment paid so no Order was agreed too; will assess any overpumages per Enforcement Plan.
Creedmoor-MAHA	Edwards	PWS	Agreed Order Executed.
Monarch Utilities, Inc.	Edwards	PWS	Agreed Order Executed.
Tindol Restaurant Group, LLC	Middle Trinity	Commercial	Agreed Order Executed.
Aqua Texas – Sierra West	Middle Trinity	PWS	Agreed Order Executed.
Seiders, Roy	Middle Trinity	Irrigation	Agreed Order Executed.
Ruby Ranch Water Supply Corporation	Edwards	PWS	Agreed Order Executed; working to fulfill the final technical requirements.

Permitting Activity (*Erin, Jacob*)

Upcoming					
Precinct	***Application Type***	***Aquifer***	***Applicant Name***	***Use Type***	***Volume Request (GPY)***
1 - Cradit	Plugging (2)	Edwards	Liberty Civil Construction	Abandoned	0 - Plugging
2- Stansberry	Production (Conditional Class A)	Edwards	TBD – Consultant is Atlas Design	Commercial	TBD
2 – Stansberry	WDA/Production	Middle Trinity	Bryan Boyd is consultant	Commercial – Medical Clinic	TBD
2- Stansberry	Production (Conditional Class C)	Edwards	Grove Place	Commercial	TBD
In Review					
Precinct	***Application Type***	***Aquifer***	***Applicant Name***	***Use Type***	***Volume Request (GPY)***
5 – Puig-Williams	Combo Drill/Production	Edwards	Prominence Midtown, LP	Irrigation	TBD
1 – Cradit	Exempt/Replacement	Middle Trinity	Covey, Michael	Domestic	7 GPM
1 - Cradit	Plugging	Middle Trinity	Covey, Michael	Replaced	N/A
1 – Cradit	Combo Drill/Production	Middle Trinity	Far South Mining, LLC	Industrial	1,456,000
1 - Cradit	Exempt	Middle Trinity	Cavanaugh, Mandy	Domestic	7 GPM
1 - Cradit	LPP	Middle Trinity	Chagnon, Pax and Ashley	Domestic	250,000
Recently Approved and/or Admin Complete					
Precinct	***Application Type***	***Aquifer***	***Applicant Name***	***Use Type***	***Volume Request (GPY)***
3 – Lucas	Plugging	Edwards	Hughey, Cameron	Abandon	N/A
3 - Lucas	Plugging	Edwards	Austin Hot Lava, LLC	Abandon	N/A
1 – Cradit	Exempt	Edwards	Helm, Shane	Domestic	7 GPM
1 - Cradit	Plugging	Upper Trinity	Delmark, Christopher	Replaced	N/A
1 – Puig-Williams	Plugging	Edwards	Linford, Michael and Erika	Abandon	N/A
1 - Cradit	LPP	Edwards	Danz, Todd	Domestic	250,000

AQUIFER STUDIES

(*Jeff, Justin, and Tim*)

Permitting Hydrogeologic Studies:

AS staff continues to work with Regulatory Compliance on permitting issues as they arise, including provided geologic interpretation of geophysical logs prior to final well completion to ensure that new wells are completed accurately within the target water-bearing interval. Aquifer science staff is currently reviewing the hydrogeologic report submitted by Sierra West in support of adding a new Middle Trinity well to their permit.

Groundwater Studies: *Dye Tracing, Water Quality, Aquifer Characterizations*

- AS staff assisted staff from the USGS and CoA WPD in developing a proposal for sampling the new Barton Springs multiport well for different water quality parameters. The project will be jointly funded by the USGS and City of Austin, with an in-kind contribution of staff time from BSEACD AS staff for field work. Sampling will begin in the fall.
- Texas Water Development Board (TWDB) sampling – collecting water level, water quality and chemistry from select wells with funding provided by TWDB.
- Magellan Pipeline annual sampling (TPH & BTEX)
- Aquifer Test plans – evaluating submitted plans, designing monitor well networks, and data collection for analysis

Field Activities:

- Barton Springs multiport well water quality measurements
- Cooperating with USGS and City of Austin staff to confirm accurate real-time gauge reporting at Barton Springs and Lovelady. Conducting bi-weekly to monthly field measurements.
- Cooperating with USGS staff to confirm accurate real-time gauge reporting at Jacob's Well and the Blanco River at Wimberley.
- Calibrating telemetry monitoring equipment at the Needmore index well (Amos) and reviewing pumping and water-level data as drought worsens.
- Antioch- Continuing to maintain the system and to collect data on flow into the vault (when there is flow). A recent visit to Antioch Cave to assess operating components and electronics indicated the need to recondition most electrical systems.
- Well monitoring- Because of drought, staff are increasing the amount of time maintaining equipment in numerous monitor wells and downloading and interpreting data; and occasionally checking on wells that have been reported as "dry".

Trinity Aquifer Modeling Development:

Aquifer science staff are actively working to advance Phase II of development of the Trinity Aquifer Sustainability model. In December 2024 an RFQ was issued to find a consultant to work with aquifer science staff for completion of Phase II of TAS development. Proposals for this work are expected in mid-February. The proposals will be evaluated and a contract negotiated with the winning proposal, which will be presented to the board for approval in the March regular board meeting.

COMMUNICATIONS AND OUTREACH

(*Shay*)

Drought Communications

- December Drought Update
- Drought-related social media posts - *These were shared on Facebook, Instagram, Twitter, and LinkedIn.*
    - https://www.facebook.com/share/p/17V4PHkf5r/
    - https://www.facebook.com/share/p/1KcmWHeEnp/
    - https://www.facebook.com/share/p/19i6w5aY3N/
    - https://www.facebook.com/share/p/1A4Z2WiVM1/
    - https://www.facebook.com/share/p/18iymkM56c/
    - https://www.facebook.com/share/p/1EidSA82SP/

Articles in which the District was Mentioned

- Protecting Your Well and Pipes from Freezing Temperatures - BSEACD

Permittee Communications

Creedmoor Maha WSC

- Shay has offered to assist with communications materials for Creedmoor Maha WSC (CMWSC).
- She updated banners for their social media and website to more effectively communicate drought status to their audiences. She is also evaluating their current drought stage bill inserts for updates and improvements.
- CMWSC invited Shay to be a part of the Water Conservation Program as they continue to explore ways to reduce their water consumption. This program meets monthly and works closely with the communities of Mustang Ridge and Creedmoor and focuses on events, outreach, and strategies to work with incoming developers to reduce water consumption.

Antioch Site Tour

- Shay coordinated a tour of the monitor well and infrastructure at the Antioch Cave site to inform team members, permittees, and other water professionals about these effective and innovative projects of the District. Jeff and Justin led the tour and shared data, history, and technical knowledge.
- 24 people attended including a combined 11 board members and staff along with representatives from Hays Trinity Groundwater Conservation District, The Watershed Association, and the cities of Kyle and Buda.
- Photos can be viewed on the District's Drive here.

Outreach

Kent Butler Scholarship

- Scholarships opened on January 27, will close on February 28, and the five winners and runner up will be announced by Thursday March 6.
- Students will submit a completed application form, one-page essay, and artwork.

Hot Science – Cool Talks

- Shay is working closely with the event organizers. Over a dozen conservation-related organizations have been recruited to exhibit before the talk during the "Cool Activities" portion of the evening. The District will be one of the tabling groups.
- This event is set for 5:30pm on Friday, March 28 at Welch Hall on UT campus with Dr. Robert Mace as the presenter.

Well Water Checkup

- The District will host its annual Well Water Checkup on April 7 in partnership with the Texas Well Owner Network. Staff will identify ways to streamline the process and communicate the event in new ways to increase participation.

Digital Communications Data

Social Media Data				
Platform	**January Reach**	**% MOM Growth: Jan. vs. Dec.**	**January Followers**	**% MOM Growth: Jan. vs. Dec.**
Facebook	1,290	43%	2023	2%
Instagram	3,360	50%	1,436	1%
Twitter	349	-17%	809	0%
LinkedIn	1,776	49%	398	6%

Email	**# Sent**	**# Opened**	**Open Rate %**	**# Clicks**	**Click Rate %**
December Drought Update	2,341	1,075	46%	221	21%

ADMINISTRATION

(Tim, Hannah, and Tina Cooper/AAG)

The District's FY 24 audit report was successfully submitted to the TCEQ, Water Supply Division.

A redlined version of the District's purchasing policy is being finalized after a review by SledgeLaw. The updated-draft policy will reflect the use of Quickbooks and a more streamlined SOP for purchasing, incurring expenses, and reimbursements. This updated draft will soon be shared with the Rules and Compliance Committee before being presented to the full Board at a future regular meeting.

The Administration Team typically has repetitive monthly tasks e.g. monthly bank reconciliations, monthly adjusting journal entries, accounts payable, payroll, contract/grant/project tracking, office maintenance and repairs, budget monitoring, bi-weekly payroll journal updates, directors' compensation, pre-paids, DMFs, posting public meetings, preparing meeting backups, etc. These types of tasks are not listed in this report because they are repetitive. Administration status reports are generally more summarized than the other teams, as we list our extra-ordinary tasks outside of our routine tasks, while supporting all other teams.

Item 5

Board Discussion and Possible Action

a. Discussion and possible action authorizing GM to declare the next stage of drought.

Item 5

Board Discussion and Possible Action

b. Discussion and possible action related to the performance and compliance of District permittees with their User Drought Contingency Plan curtailments.

Item 5

Board Discussion and Possible Action

c. Discussion and possible action related to authorizing publication of draft amendments to the District Rules and setting a rulemaking hearing relating to amending the aquifer-test requirement tiers as reflected in the Guidelines for Hydrogeologic Reports and Aquifer Testing, and related District Rules: 3-1.4, 3-1.6, 3-1.9, 3-1.24, and 3-1.25.

3-1.25. VARIANCE REQUESTS: GENERAL.

A. Application. An applicant may by written petition to the Board request a variance from the requirements of District Rule 3-1, except Sections 3-1.23 and 3-1.24, relating to maximum withdrawals from the Freshwater Edwards Management Zones and Conditional Production Permit applications, requirements, or restrictions. A variance request under this Section shall be accompanied with any variance request fee set by the Board pursuant to District Rule 3-1.16. A petition for a variance request shall include the following information:

1. the specific rule citation for which the variance is sought,

2. the nature of the variance requested,

3. a detailed explanation as to why the variance should be granted, and

4. any additional information, materials, maps, or documents required by the General Manager or the General Manager's designated representative.

B. This Section is not applicable for variance requests relating to drought as addressed under District Rule 3-7.10.

C. Basis for Variance Approval. In evaluating a request, the Board shall act based on the following considerations:

1. There are special circumstances existing on the property on which the application is made related to size, shape, area, topography, hydrogeology, surrounding conditions, and location that do not apply generally to other properties in the vicinity;

2. A variance is necessary to permit the applicant the same rights in the use of property that are presently enjoyed by other properties in the vicinity, but which rights are denied to the property on which the application is made;

3. The granting of the variance on the specific property will not adversely affect any other provision of the District's Rules and Bylaws;

4. The variance, if granted, will be no material detriment to the public welfare or injury to the use, enjoyment, or value of property in the vicinity for such activities that are under the jurisdictional authority of the District;

5. Whether the operations proposed are reasonable under the circumstances and conditions prevailing in the vicinity considering the particular location and the character of the improvements located there;

6. Whether alternative options are available to the applicant such that if pursued a variance would not be required;

7. Whether the operations proposed are consistent with the health, safety, and welfare of the public when and if conducted in accordance with the authorization or permit conditions to be imposed;

8. Granting the variance would be in accordance with the intent of the District's Mission Statement, Rules and Bylaws, and certified Management Plan; and

9. The recommendations of the General Manager or the General Manager's designated representative.

D. District Action. A variance request shall be considered by the Board after public notice and hearing pursuant to the requirements of District Bylaw 4-9 and completion of a 2~~0~~8-day public response period pursuant to District Rule 3-1.4(B). The applicant requesting the variance shall receive written notification of the District's action.

E. Variance Conditions.

1. The Board may grant a variance for a term and with any conditions the Board deems appropriate, which shall be set out in the Order granting the variance request.

2. The Board may require an applicant granted a variance to file reports with the District containing such information as is relevant to monitoring the continuing appropriateness of the variance and compliance with the terms and conditions of the variance.

F. Rescission of Variance. By Order, the Board may rescind an Order granting a variance at any time due to changed circumstances, new information, or failure of the holder of the variance to abide by the terms and conditions of the variance or any Order of the Board.

3-1.4. APPLICATION FOR REGISTRATION, PRODUCTION PERMITS, SOURCE AND RECOVERY PERMITS, TRANSPORT PERMITS, WELL PLUGGING, WELL DEVELOPMENT, WELL DRILLING, OR WELL MODIFICATION AUTHORIZATION.

A. Administrative Completeness of Application.

1. Applications for well registrations, Production Permits, Conditional Production Permits, Transport Permits, well pluggings, well development, well drilling, amendments, or well modification authorizations shall be made in the name of the well owner or property owner on a form or forms provided by the District. The sworn, original application must be submitted and signed by the owner or an authorized agent of the owner who may be required to provide the District with a notarized authorization from the owner. This agent may be the well driller, lessee or renter of the property or well, power of attorney, or other appropriate agent. District staff will determine if an application is administratively complete.

2. Applicant's Signature:

a. If the Applicant is an individual (landowner), the application shall be signed by the Applicant or his/her duly appointed agent. The agent must present Power of Attorney as authority to represent the Applicant.

b. If the application is submitted by a partnership, the application must be signed by at least one of the general partners duly authorized to bind all of the partners. A copy of the Resolution or other authorization to make the application must be submitted along with the application.

c. If the application is submitted by a corporation, government agency, county, municipality, or any other political subdivision, the application shall be signed by a duly authorized official. A copy of the Resolution or other authorization to make the application must be submitted along with the application.

d. In the case of an estate or guardianship, the application shall be signed by the duly appointed guardian or representative of the estate.

e. If the Applicant is any other entity, the application shall be signed by the duly authorized representative of such entity. In any case, proof of authorization must accompany the application.

3. An administratively complete application shall consist of the submission to the District of an original, completed, signed, and notarized application, payment of all applicable application fees, inspection fees, and other District-imposed fees; submission of any required maps, documents,

ownership information, or supplementary information required by the General Manager or the General Manager's designated representative; the submission of a Hydrogeological Report if required by Rule 3-1.4(D); and any other documentation required by the District as part of the application. The District will not take action on an application which is not administratively complete or which has preceded in a manner not consistent with District Rules. Applicants submitting incomplete applications will be notified by the District in writing.

4. Applicants exempted under the District Rules from obtaining a Production Permit must submit a District-approved application form for well registration with the District and pay the applicable application and inspection fees. Such exempted wells are still subject to District Well Construction Standards.

5. Application and production permit requirements are the same for groundwater to be used inside the District's jurisdiction or to be transported outside of the District's jurisdiction. Applicants drilling a well or seeking a Production Permit for which the well will produce less than two million gallons per year from the Edwards Aquifer or 650,000 gallons from any of the Trinity Aquifers may submit one application which will have one permit review process.

6. Fees included with Application. The application must be accompanied by the application fee, and other fees as appropriate. The application fee must be submitted with the application in order to start the processing review period. Payment of all fees, including water production fees, remains the responsibility of the property owner.

7. All applications for **Well Drilling Authorization or Modification** for nonexempt wells must contain, in addition to any information determined necessary for the evaluation of the application by the General Manager or the General Manager's designated representative, the following specified information in sufficient detail to be acceptable to the District.

    a. Nature, Purpose, and Location. Provide a detailed statement describing:

        i. The nature and purpose of the various proposed uses including proposed uses by persons other than the well owner;

        ii. The proposed well location, location map, and the proposed receiving area from groundwater produced from the well; noting any proposed transfer; and

iii. The location and purpose of any water to be resold, leased, or transported.

b. Pumpage Volume. Provide a detailed statement describing:

i. The estimated pumping rate, and

ii. The anticipated pumpage volume.

c. Well Schematic. A proposed well design schematic with specifications to include: the total depth, borehole diameter, casing diameter and depth, annular seal interval(s), annular sealing method, calculated grout volumes, surface completion specifications, and any other pertinent well construction information.

d. Well Development Plan. A plan that describes the process for handling cuttings and fluids during well development.

e. ASR Wells. For ASR wells, provide the additional information:

i. Anticipated source and recovery volumes associated with this well

ii. A description of the proposed ASR concept and project operational design, including site configuration, instrumentation, flushing, operation management, recharge rates and methods, and equipment (e.g. well head/downhole piping, valves, etc).

f. Aquifer Test Plan and Hydrogeological Report. An aquifer test plan to include the required information as specified in the District's *Guidelines for Hydrogeological Reports and Aquifer Testing*. A Hydrogeological Report in accordance with Section D below, will be required for any new or modified wells that will be part of an existing permitted aggregate well system and will have an anticipated pumpage greater than two million gallons per year from the Edwards Aquifer or 650,000 gallons per year from any of the Trinity Aquifers from the referenced new or modified well.

g. Declarations. Provide the following written declaration statements:

i. A declaration that the applicant will comply with the District Rules and all groundwater use permits and plans promulgated pursuant to the District Rules.

ii. A declaration that the applicant will comply with well plugging and capping guidelines set forth in these Rules and will report well closures as required in Rule 3-5.

h. Notice Information. For wells for which notice must be provided under Section B below, the following information and notice must be mailed accordingly:

i. A tax plat location map showing locations of the proposed well, the existing well, or well field to be modified, mapped wells within a half-mile radius of the proposed well, the existing well, or well field, all properties within a half-mile radius of the proposed well or the existing well, and mapped CCNs or public water supply services areas within a half-mile radius of the proposed well, the existing well, or well field. This provision is subject to technical evaluation by District staff based on site-specific conditions.

ii. A mailing list of registered well owners within a half -mile radius of the proposed well, the existing well, or well field. The mailing list should include the property owner's name, mailing address, and physical well address.

iii. A mailing list of public water suppliers within a half-mile radius of the proposed well or the existing well. The mailing list should include the public water supplier's name, mailing address, and physical well address.

iv. Other facts and considerations deemed necessary by the General Manager for protection of the public health and welfare and conservation and management of natural resources in the District.

8. All applications for **Source and Recovery Permits** must contain, in addition to any information required pursuant 30 TAC § 331 or determined necessary for the evaluation of the application by the General Manager or the General Manager's designated representative, the following specified information in sufficient detail to be acceptable to the District.

a. Nature and Purpose: Provide a detailed statement describing the nature and purpose of the proposed ASR project including the proposed end uses of the waters stored and recovered.

b. Site Location: Provide detailed maps describing:

i. The extent and boundary of the ASR project area;

ii. The estimated Target Storage Volume radius;

iii. The location of all source water;

iv. The wellfield layout design including all proposed ASR recovery wells, source production wells, monitoring wells, and the regional hydraulic gradient flows;

v. The distribution system and connection piping for the ASR project, including the route for how source water will be distributed to the storage and recovery well location;

vi. Receiving point of the recovered water;

vii. The location of all other registered wells in the half mile radius of the recovery well.

c. If the applicant is seeking a Class D Production Permit as an authorized source water, please describe the following:

i. The estimated pumping rate at which Class D water will be withdrawn from each source production well;

ii. The requested annual Class D volume and a description of how the requested pumpage volume was determined. The applicant shall provide pumpage volume calculations based on the anticipated pumping capabilities, pumping times, pumping frequency, storage and recovery capabilities of all the ASR wells, and other pertinent data to substantiate approximate groundwater production. Authorized permit volumes shall be determined based upon factors such as source production well capacity, injection well intake capacity, anticipated injection rates and aquifer storage capacity. The requested pumpage volume should be reasonable and non-speculative.

d. Provide a detailed statement describing the receiving aquifer and location coordinates for all ASR wells for which stored water will be recovered. Provide information on water quality, geochemistry, and hydrogeology.

e. Provide a detailed statement describing the anticipated source (s) waters to be stored. Provide information on water quality, geochemistry, and water treatment for all source water.

f. ASR Site Configuration. Provide a detailed statement describing:

i. Anticipated source and recovery volumes associated with this well.

ii. A description of the proposed ASR concept and project operational design, including site configuration, instrumentation, flushing, operation management recharge rates and methods, and equipment (e.g. well head/downhole piping, valves, etc).

iii. Provide a well schematic with well construction specifications for all ASR wells. Please provide a discussion on how each well will be used for storage and recovery.

g. Project Operations and Demand Trends. Provide a detailed statement describing:

i. The target storage volume (TSV) for the ASR project. Describe whether the operation will implement and preserve a storage buffer within the receiving aquifer and the anticipated buffer volume.

ii. An estimate of total volume to be stored annually.

iii. Project Phases. Describe the project phases over the long-term, the planned schedule for those phases, the duration of those phases, the anticipated source waters for each phase, estimated volumes of those sources waters to be produced and the anticipated volumes to be stored and recovered for each phase. Provide a 10-year outlook for estimated annual recovery.

iv. Project Operations. Describe the storage and recovery periods/timeframes. Describe whether the system will be operated for seasonal storage, long-term storage, or both. Describe the recovery volume as an estimate of total volumes to be recovered on an annual basis.

h. Recoverability Analysis. Provide a recoverability analysis to determine a recoverable amount as defined in the District's Rule 2. A report shall be submitted and describe the applicant's methods for estimating the percentage of stored water that will be recovered. The report shall describe the following:

i. Whether storage in receiving formation can successfully be recovered for beneficial use, taking into account the injected water may be commingled to some degree with the native groundwater;

ii. Volume of source waters to be stored;

iii. Buffer zone water;

iv. Estimated recovery efficiency based on target water quality criterion;

v. Potentiometric data;

vi. Porosity, permeability, and transmissivity data;

vii. Migration and regional flow gradients;

viii. Natural discharge;

ix. Relevant groundwater modeling;

i. Hydrogeological Report. A Hydrogeological Report, in accordance with District Rule 3-1.4(D).

j. Accounting Plan. Provide a detailed reporting format and diagrams describing how all ASR waters and recharge pressures will be accounted for and reported. The accounting plan shall depict where the meters will be located on the system piping, and the type of meters that will be installed. The plan shall describe how the following will be metered, calculated and reported on a monthly basis:

i. The volume of source water produced (Class D);

ii. The volume of source water(s) stored (total for each source water); and

iii. The volume of recovered water from storage (total volume recovered);

iv. The total storage volume of all source waters remaining after recovery (total for each source water);

v. The volume of native groundwater withdrawn from the ASR well (if applicable);

vi. Monthly average recharge pressures for each ASR well.

k. ASR Monitoring. Provide a description of how the ASR project will be operated, monitored and evaluated. The plan should outline, at minimum, the monitoring parameters and activities, a monitoring and sampling schedule, data sources that will be used, and a list of responsible personnel.

l. UCP and UDCP. A User Conservation Plan (UCP), a User Drought Contingency Plan (UDCP), and the State proposed/approved Drought Contingency Plan (if required by TCEQ).

m. Related Permits and Authorizations. Provide a copy of all ASR application materials submitted to the TCEQ to obtain or modify an ASR Permit or ASR Test Permit. Provide any relevant materials or correspondence submitted to TCEQ Drinking Water division or Edward Aquifer Protection Program division relating to ASR operations. Provide notice of any pending, denied, or remanded authorization from a local, state, or federal agency relating to ASR.

n. Active Source Permits. Provide a copy of all permits relating to the source waters.

o. Reports. Provide a copy of all feasibility and testing reports relevant to the ASR project.

p. Transfers. If the stored and recovered groundwater is to be resold, leased, or otherwise transferred to others, provide the location to which the groundwater will be delivered, the purpose for which the groundwater will be used, and a copy of the legal documents establishing the right for the groundwater to be sold, leased, or otherwise transferred, including but not limited to any contract for sale, lease, or transfer of groundwater.

q. Declarations. Provide the following written declaration statements:

i. A declaration that the applicant will comply with the District Rules and all groundwater use permits and plans promulgated pursuant to the District Rules.

ii. A declaration that the applicant will comply with well plugging and capping guidelines set forth in these Rules and will report well closures as required in Rule 3-5 and Rule 5.

iii. A declaration that the applicant will take all necessary steps to ensure the water quality of the aquifer is protected due to the operations of an ASR project.

iv. A declaration that the applicant understands a landowner owning surface property over the TSV radius owns the water unless ownership has been severed.

v. A declaration that the applicant will comply will all applicable TCEQ rules pursuant 30 §TAC 331.

r. Notice Information. For wells for which notice must be provided under Section B below, the following information must be provided, and notice must be mailed accordingly:

i. A tax plat location map showing locations of the proposed well, the existing well, or well field to be modified, mapped wells within a half-mile radius of the proposed well, the existing well, or well field, all properties within a half-mile radius of the proposed well or the existing well, and mapped CCNs or public water supply service areas within a half-mile radius of the proposed well, the existing well, or well field. This provision is subject to technical evaluation by District staff based on site-specific conditions.

ii. A mailing list of registered well owners within a half-mile radius of the proposed well, the existing well, or well field. The mailing list should include the property owner's name, mailing address, and physical well address.

iii. A mailing list of public water suppliers within a half-mile radius of the proposed well or the existing well. The mailing list should include the public water supplier's name, mailing address, and physical well address.

iv. A mailing list of groundwater conservation districts or entity that have jurisdiction over other water sources, and for which those water sources will be used for storage and recovery within this District.

v. For wells with an anticipated total storage volumes of more than ~~200~~120,000,000 gallons, the applicant will be required to mail notice as dictated below:

a. Applications for ~~200~~120-300 million gallons per year shall provide notice via first class mail within a

one-mile radius from the proposed well, existing well, or well field.

b. Applications for 300-400 million gallons per year shall provide notice via first class mail within a one and one-half (1.5) mile radius from the proposed well, existing well, or well field.

c. Applications for more than 400 million gallons per year shall provide notice via first class mail within a two-mile radius from the proposed well, existing well, or well field.

s. Other facts and considerations deemed necessary by the General Manager for protection of the public health and welfare and conservation and management of natural resources in the District.

9. All applications for **Production Permits** for nonexempt wells must contain, in addition to any information determined necessary for the evaluation of the application by the General Manager or the General Manager's designated representative, the following specified information in sufficient detail to be acceptable to the District.

a. Permit Type. Provide a statement of the type of Production Permit that is being requested (e.g., Historical Trinity, Class C Conditional Edwards, etc.).

b. Nature, Purpose, and Location. Provide a detailed statement describing:

i. The nature and purpose of the various proposed uses including proposed uses by persons other than the well owner,

ii. The well location and the proposed receiving area from groundwater produced from the well; note any proposed transfer, and

iii. The location and purpose of any water to be resold, leased, or transported.

c. Pumpage Volume. Provide a detailed statement describing:

i. The estimated pumping rate at which water will be withdrawn from each well, and

ii. The requested permit pumpage volume; a description of how the requested pumpage volume was determined. The applicant shall provide pumpage volume calculations based on the type of use, anticipated pumping capabilities, pumping times, pumping frequency, and other pertinent data to substantiate approximate groundwater production. The requested pumpage volume should demonstrate reasonable non-speculative demand.

d. Demand Trends. Provide a detailed statement describing:

i. A projected annual volume breakdown by type of use (e.g. PWS, commercial, irrigation, industrial).

ii. A projected quarterly timeline detailing the anticipated pumpage volumes for the first three to five years of pumping.

iii. An explanation of future demands and long term system growth.

iv. For public water suppliers, provide an estimated or calculated per capita and/or household consumption.

e. Conservation Practice. Describe any conservation measures or practices that are anticipated or are currently in place.

f. Demonstration of Backup Supply. For Class B or Class C Edwards Production Permits subject to Rule 3-1.24(D)(E), provide a detailed statement describing:

i. An explanation that includes adequate documentation of the applicant's capability and commitment to use an Alternative Water Supply in the event of a drought declaration. Must provide specific information or contractual agreements that demonstrate the certain ability and binding commitment to switch from the to-be-permitted volume of groundwater to some Alternative Water Supply source(s) on a 100% basis.

ii. For Public Water Supply systems, the reasonable likelihood that all necessary physical infrastructure and supporting agreements, rates, and tariffs will be in place within the first year of the permit.

iii. A declaration statement stating the applicant's capability and commitment to use an Alternative Water Supply in the event of a drought declaration.

g. Hydrogeological Report. A Hydrogeological Report, in accordance with Section D below.

h. UCP and UDCP. A User Conservation Plan (UCP), a User Drought Contingency Plan (UDCP), and the State proposed/approved Drought Contingency Plan (if required by the TCEQ).

i. Related Permits and Authorizations. Provide notice of any application to the TCEQ to obtain or modify a Certificate of Convenience and Necessity (CCN) to provide water or wastewater service with water obtained pursuant to the requested Production Permit. Provide notice of any pending, denied, or remanded authorization from a local, state, or federal agency relating to water or wastewater.

j. Transfers. If the groundwater is to be resold, leased, or otherwise transferred to others, provide the location to which the groundwater will be delivered, the purpose for which the groundwater will be used, and a copy of the legal documents establishing the right for the groundwater to be sold, leased, or otherwise transferred, including but not limited to any contract for sale, lease, or transfer of groundwater.

k. Declarations. Provide the following written declaration statements:

    i. A declaration that the applicant will comply with the District Rules and all groundwater use permits and plans promulgated pursuant to the District Rules.

    ii. A declaration that the applicant will comply with well plugging and capping guidelines set forth in these Rules and will report well closures as required in Rule 3-5 and Rule 5.

l. Notice Information. For wells for which notice must be provided under Section B below, the following information must be provided and notice must be mailed accordingly:

    i. A tax plat location map showing locations of the proposed well, the existing well, or well field to be modified, mapped wells within a half-mile radius of the proposed well, the existing well, or well field, all properties within a half-mile radius of the proposed well or the existing well, and mapped CCNs or public water supply services areas within a half-mile radius of the proposed well, the existing well, or well

field. This provision is subject to technical evaluation by District staff based on site-specific conditions.

ii. A mailing list of registered well owners within a half-mile radius of the proposed well, the existing well, or well field. The mailing list should include the property owner's name, mailing address, and physical well address.

iii. A mailing list of public water suppliers within a half-mile radius of the proposed well or the existing well. The mailing list should include the public water supplier's name, mailing address, and physical well address.

iv. For wells with an anticipated annual pumpage volume more than ~~200~~40,000,000 gallons, the applicant ~~will be required to mail notice as dictated below~~shall provide notice via first class mail within a two-mile radius from the proposed well, existing well, or well field.~~:~~

~~a. Applications for 200-300 million gallons per year shall provide notice via first class mail within a one-mile radius from the proposed well, existing well, or well field.~~

~~b. Applications for 300-400 million gallons per year shall provide notice via first class mail within a one and one-half (1.5) mile radius from the proposed well, existing well, or well field.~~

~~c. Applications for more than 400 million gallons per year shall provide notice via first class mail within a two-mile radius from the proposed well, existing well, or well field.~~

m. Other facts and considerations deemed necessary by the General Manager for protection of the public health and welfare and conservation and management of natural resources in the District.

10. In addition to the above information, Production Permit applications or major amendment applications with proposed annual groundwater production for more than ~~200~~40,000,000 gallons will require an aquifer test work plan and a monitoring well network plan pursuant to Section D below related to Hydrogeological Reports and Aquifer Tests. The applicant may request a 90-day extension subject to approval by the General Manager if needed to satisfy the requirements of Subsection D.

11. Potential for Unreasonable Impacts. All applications required to conduct an aquifer test and submit a Hydrogeological Report pursuant to District Rule 3-1.4.D. will be evaluated by the General Manager to assess the potential to cause unreasonable impacts pursuant to District Rule 3-1.4.G. Applications for proposed production that are found to have potential for causing unreasonable impacts will receive written notification of the General Manager's preliminary finding prior to the expiration of the application review period. Upon receipt of written notification of the General Manager's preliminary finding, the applicant will be granted a 90-day extension to the application review period to provide the following additional application requirements unless the applicant requests that the application be directly referred to the Board as provided below.

    a. The applicant shall submit a written description of avoidance measures and actions that the applicant proposes to implement either before or after groundwater production commences in an effort to avoid the occurrence of unreasonable impacts.

    b. The applicant shall submit a compliance monitoring plan subject to District review and approval and consistent with minimum plan requirements pursuant to District Rule 3-1.11.B.

    c. The applicant shall submit other facts and considerations deemed necessary by the General Manager.

    d. In addition to the above requirements, the applicant may opt to submit a mitigation plan subject to District review and approval and consistent with minimum requirements pursuant to District Rule 3-1.11.C. The District-approved mitigation plan shall be incorporated into a binding agreement between the permittee and the District, which will be incorporated as special provisions of the permit.

    The above plans and information shall be submitted within 30 days of receipt of notification of the General Manager's preliminary finding of potential for unreasonable impacts and may be incorporated in whole or in part as special provisions of the permit. Alternatively, the applicant may request that the application be directly referred to the Board, pursuant to District Rule 3-1.4.G.6, for consideration without the completed information requirements under Subsection 11~~0~~ a-d above prompted by the General Manager's preliminary finding of unreasonable impacts provided that the application requirements of items 1-9 of this Section have been satisfied.

12. In addition to the above information required for Production Permit applications, an application for a Transport Permit must contain the following information:

a. Information describing the projected effect of the proposed transporting of water on aquifer conditions, including flow at Barton Springs, depletion, subsidence, or effects on existing permit holders or other groundwater users within the District.

b. Information describing the availability of water in the proposed receiving area during the period for which the water transport is requested.

c. A description of the indirect costs and economic and social impacts associated with the proposed transporting of water.

d. Any proposed plan of the applicant to mitigate adverse hydrogeologic, social, or economic impacts of the proposed transporting of water in the District.

e. A description of how the proposed transport is addressed in any approved regional water plan(s) and the certified District Management Plan.

f. A technical description of the facilities to be used for transportation of water and a time schedule for any construction thereof.

B. Notice.

1. Applicants must provide public notice for the following types of permit applications:

a. All new individual Production Permit applications for more than two million gallons to be produced from the Edwards Aquifer;

b. All new individual Production Permit applications for more than 650,000 gallons to be produced from any of the Trinity Aquifers;

c~~b~~. Well Drilling Authorizations or Modification applications for wells with anticipated annual pumpage of more than two million gallons from the Edwards Aquifer;

d. Well Drilling Authorizations or Modification applications for wells with anticipated annual pumpage of more than 650,000 gallons from any of the Trinity Aquifers;

e~~c~~. Notice of intent to transport any groundwater out of the District;

fd. All major permit amendments, as defined in Section 3-1.9 of these Rules;

and

ge. All new Source and Recovery Permit applications

2. Such notices shall be published in one or more newspapers of general circulation in the county in which the subject well is located as determined by the District, in a form approved by the District. Public notice shall include a 28-day public response period beginning the day after the day said notice is published in a newspaper of general circulation within the District. If the notice is published in more than one newspaper, the public comment period expires the later of the date specified in the notice or 28 days after the day said notice is published in the newspaper of general circulation within the District. Applicants shall publish notice not later than ten business days after receiving an administratively complete determination from the General Manager or the General Manager's designated representative.

3. All required permit applications must have notice provided by the applicant, in a form approved by the District, by certified first-class mail to all registered well owners with wells located within a radius described in Rule 3-1.4.A.(7)(h) and Rule 3- 1.4.A.(8)(b)(vii)(for Source and Recovery Permit applications). Notification of any property owner served by a retail water utility is not required of any applicant if notice is provided to the retail water utility. Applicants shall provide notice by certified first class mail not later than ten business days after receiving an administratively complete determination from the General Manager or the General Manager's designated representative.

4. Applicants may not publish notice or provide notice by mail until the General Manager or the General Manager's designated representative determines that the application for which notice is required is administratively complete.

5. Under no circumstances will a public hearing be held, or action taken on the application by the Board prior to the termination of the 28-day public response period.

6. All public notices for newspaper circulation, covered by this Section, must contain at least the following information:

a. The name and address of the applicant;

b. The date the application was filed;

c. The location and a description of the well that is the subject of the application; and

d. A brief summary of the information in the application.

7. All public notices for mailout, covered by this Section, must contain at least the following information:

a. The name and address of the applicant in 14 point type printed at the top of the notice in such a manner that clearly and conspicuously shows the notice is from the applicant;

b. The date the application was filed;

c. The location and a description of the well that is the subject of the application;

d. A map showing all properties within a half-mile radius of the proposed well and nearby roads and/or other distinguishing geographic features; and

c~~d~~. A brief summary of the information in the application.

8. Upon completion of the published and mailed public notice, the District shall be provided with proof of publication of public notice. The applicant shall submit to the District office within ten business days after the date of publication an original newspaper clipping which shows the date of publication and the name of the newspaper and copies of the certified mailing receipt(s) which shows the post marked date the notices were mailed and the names and addresses of the intended recipient(s).

C. Decision to Hold Public Hearing.

1. On any application for nonexempt well permits not authorized by a general permit, the General Manager may schedule a hearing if the General Manager determines that a hearing will be beneficial to the District's consideration of the application, if the applicant requests a hearing, or if the General Manager receives protests to the application and the protest includes a request for a public hearing from any person having a personal justiciable interest, including any party to whom notice is

provided in accordance with Paragraph B above and otherwise complies with District Rule 4-9.13(B). A hearing will not be held for Temporary Permits issued under Section 4(d) of H.B. 3405.

2. The District shall conduct a public hearing for:

   a. major amendment applications,

   b. Transport Permit applications,

   c. new Production Permit applications with proposed groundwater production of more than 2,000,000 gallons annually from the Edwards Aquifer or more than 650,000 gallons annually from any of the Trinity Aquifers, and

   d. All new Source and Recovery Permit applications.

3. The General Manager shall make a determination whether to schedule a hearing on an application within 60 days of the date the application is administratively complete.

4. The Board of Directors at a regular or special Board meeting may conduct a hearing on any application.

5. A hearing on an application will be held within 35 days of the date the determination to schedule a hearing is made.

6. Except for hearings referred to the State Office of Administrative Hearings (SOAH), the final hearing may occur at the same time and immediately following the preliminary hearing. For a hearing conducted by SOAH, the final hearing on the application concludes on the latest of the dates of SOAH's proposal for decision; any exceptions to the proposal for decision, and any replies to exceptions to the proposal for decision are presented to the Board of Directors.

7. Hearings shall be conducted in accordance with District Rule 4-9 related to notice and hearing process.

D. Hydrogeologic~~al~~ Report and Aquifer Tests.

1 . Applicants seeking to export groundwater out of the District, to obtain a major amendment or a minor amendment in accordance with 3-1.9(F)(G), to obtain a Source and Recovery Permit for ASR, or to permit a new nonexempt well with an annual pumpage volume of more than 2,000,000 gallons from the Edwards Aquifer or more than 650,000 gallons annually

from any of the Trinity Aquifers, shall conduct an aquifer test and hydrogeologic report in accordance with the requirements outlined below in 3-1.4(D)3(a) and ~~submit to the District a current Hydrogeological Report~~ address~~ing~~ the potential impacts associated with the proposed groundwater production or export.

2. The a~~A~~quifer t~~T~~est and h~~H~~ydrogeologic r~~R~~eport must be prepared by a Texas licensed professional geoscientist or engineer pursuant to the District's guidance document, *Guidelines for Hydrogeologic Reports and Aquifer Testing (Guidelines*).

3. Aquifer Tests. A written aquifer test work plan shall be submitted to the General Manager for review and approval prior to commencement of the test and shall include the required information for aquifer test work plans as specified in the *Guidelines*. Planning and implementation of the aquifer test work plan shall be closely coordinated with the District to ensure that the proposed ~~study~~ aquifer test design is consistent with District standards and expectations specified in the *Guidelines*.

   a. The aquifer test shall be conducted and the report completed pursuant to the *Guidelines* and the following tiered requirements:

Table: Tiered Structure for Aquifer Testing Requirements

Tier level	Anticipated Production Volume, or Anticipated Target Storage Volume	Aquifer Test and Report Requirements
Tier 1	>2,000,000 to 12,000,000 gallons per year for the Edwards Aquifer OR >650,000 to 2,000,000 gallons per year for any of the Trinity Aquifers	Abbreviated pump test and hydrogeologic report.
Tier 2	>12,000,000 to ~~2004~~0,000,000 gallons per year for the Edwards Aquifer OR >2,000,000 to 40,000,000	Aquifer test, aquifer test work plan to be submitted and approved by general manager prior to aquifer test, and hydrogeologic report. ~~Hydrogeologic report and~~ M~~m~~ay require installation of

	gallons per year for any of the Trinity Aquifers	~~new observation~~dedicated monitor well~~s~~ if existing wells are not available or adequate for monitoring. -For ASR projects, additional water quality monitoring may be required in lieu of installing observation wells.~~Hydrogeologic report and may require installation of new observation wells if existing wells are not available or adequate for monitoring. For ASR projects, additional water quality monitoring may be required in lieu of installing observation wells.~~
Tier 3	>~~200~~40,000,000 gallons per year for all aquifers	Aquifer test, aquifer test work plan and monitoring well network plan to be submitted and approved by general manager prior to aquifer test, ~~Will require~~and hydrogeologic report.- ~~an aquifer test work plan and monitoring well network plan. Will require~~ I~~i~~nstallation of one or more ~~new observation~~dedicated monitor well~~s~~ required.~~Will require an aquifer test work plan and monitoring well network plan. Will require installation of one or more new observation wells.~~

b. For wells with proposed annual pumpage or for ASR projects with a proposed TSV over ~~200~~40,000,000 gallons (Tier 3), the aquifer test work plan shall also include a monitoring well network plan. Pursuant to the *Guidelines*, a monitoring well network shall be established by installing one or more new ~~observation~~ dedicated monitoring wells and identifying a sufficient number of existing wells adjacent to the well or well field prior to commencement of the aquifer test in accordance with the District-approved

monitoring well network plan. The final aquifer test work plan and monitoring well network plan must be approved by the District.

c. The monitoring well network plan shall contain the following minimum requirements:

i. General Information:

a. Goal and purpose of project.
b. Description of local geologic and hydrogeologic conditions.
c. Location map showing network well locations (including proposed and existing wells) and rationale for well locations.

ii. Design and Construction:

a. Well design plans or schematics on construction of each new well.
b. Completion and construction data for each existing well that will be used in the monitoring well network (e.g. State well reports if available, geophysical data, downhole video, non-pumping and pumping water levels, well and casing depth and diameter, pump depth, or schematics for proposed modifications).
c. Monitoring well equipment specifications and installation.
d. Designated hydrogeologist/engineer and well drilling contractor.

iii. Schedule for completion of work.

iv. Assurances that the District can maintain access to the monitoring well network and equipment. For newly drilled dedicated monitoring wells required for Tier 3 permits, the District must be granted access to the well for monitoring purposes for the duration of active well production after the permit application is approved. In addition to providing aquifer testing data, dedicated monitor wells are intended for long-term monitoring of aquifer conditions in the vicinity of permitted production, and should not be utilized as pumping wells by the permittee.

v. Parties responsible for maintaining, repairing, and equipping the monitoring well network.

d. The established monitoring well network may potentially be converted to a compliance well network as part of a permit provision.

4. Hydrogeological Report. The report must include hydrogeologic information as specified in the *Guidelines* and shall provide findings and conclusions addressing the response of an aquifer to pumping over time and the potential for causing unreasonable impacts. Applicants may not rely solely on reports previously filed with or prepared by the District. If a Hydrogeological Report is required by this Section, the Hydrogeological Report is a required component of all administratively complete Production Permit and ASR applications.

5. Well Construction. All proposed pumping and ASR wells must be completed and equipped for the ultimate planned use or, at minimum, completed and equipped to isolate the target production zone for the ultimate planned use and production rate. Observation wells may be required per the *Guidelines*. The applicant is responsible for all cost associated with the design, engineering, well construction, and other related expenses.

6. Variance to Hydrogeologic Reports and Aquifer Test Requirements. The District may consider a variance from certain requirements. Technical information and a memorandum from a Texas licensed geoscientist or engineer supporting and documenting the rationale for the variance shall be submitted to the General Manger for consideration and approval. Factors that may be considered include:

a. Relatively low requested production volume;

b. Sufficient data exists for the well or vicinity (e.g. existing hydrogeologic reports or aquifer tests);

c. Low potential for unreasonable impacts; and

d. Other relevant factors.

7. District Review. The General Manager will review the applicant's submitted Hydrogeologic Report and will determine whether there is potential for unreasonable impacts (as defined by District Rule). Permit applications may be deemed incomplete due to Hydrogeologic Reports that do not meet the District's minimum standards or deviate significantly from the *Guidelines* without prior District approval. An applicant who

incurs cost related to conducting an aquifer test knowingly bears the risk that the permit request may be denied or modified.

E. Applications submitted during District-declared drought. Applications to drill any well requiring a Production Permit that are submitted during a District-declared drought will be referred to the Board for consideration and/or public hearing. Applicants should be aware that during times of District-declared drought, the Board may require additional information from the applicant, may place special conditions on the application and/or permit, may authorize the drilling but modify the Production Permit, or may delay or deny the application entirely if the Board determines that it does not meet all the requirements of District Rules 3-1.4 and 3-1.6.

F. Applications approved during District-declared drought. Although the District must take action on permit applications in accordance with Rule 3-1.4(C), for wells (a) within the Freshwater Edwards Management Zones, or (b) that are intended by the applicants to provide groundwater as a substitute to water being provided at the time of permit issuance by those water utilities that are able to provide water to the applicants, any permits having applications that are approved by the Board during a District-declared drought, including amendments of existing permits to increase permitted pumpage, shall contain a special provision delaying the effective date of the permit so long as the District remains in a District-declared drought.

G. Applications found to have potential for unreasonable impacts.

1. Policy. The District seeks to manage total groundwater production on a long-term basis while avoiding the occurrence of unreasonable impacts. The preferred approach to achieve this objective is through an evaluation of the potential for unreasonable impacts using the best available science to anticipate such impacts, monitoring and data collection to measure the actual impacts on the aquifer(s) over time once pumping commences, and prescribed response measures to be triggered by defined aquifer conditions and implemented to avoid unreasonable impacts. Mitigation, if agreed to by the applicant, shall be reserved and implemented only after all reasonable preemptive avoidance measures have been exhausted and shall serve as a contingency for the occurrence of unreasonable impacts that are unanticipated and unavoidable through reasonable measures.

2. Evaluation of potential for unreasonable impacts. All applications required to conduct an aquifer test and submit a Hydrogeological Report pursuant to District Rule 3-1.4.D. will be evaluated by the General Manager to assess the potential to cause unreasonable impacts. The evaluation of the potential for unreasonable impacts will apply the best available science and be performed on the basis of the Hydrogeologic Report, the aquifer test, and other factors relevant to the proposed production from the subject well/well field including but not limited to:

a. local geology and aquifer conditions including water quality;

b. construction and location of the subject well/well field;

c. target production zone, production capacity, and proposed production rate of the subject well/well field;

d. construction/completion of existing wells in the area of influence;

e. drawdown over time and distance attributed to pumping from the subject well/well field;

f. drawdown attributed to drought conditions and seasonal increases in pumping from existing wells;

g. drawdown attributed to pumping from existing wells and from future domestic and livestock wells;

h. proposed production relative to the Modeled Available Groundwater;

i. projected impacts on the relevant Desired Future Condition(s); and

j. projected impacts to regional surface water resources (springs and streams).

3. General Manager's Preliminary Finding. Pursuant to District Rule 3-1.4.A.10, the General Manager shall evaluate the application and issue to the applicant a preliminary finding, subject to Board consideration, of the potential for unreasonable impacts.

4. General Manager's Statement of Position. For applications found to have potential for unreasonable impacts that are not directly referred to the Board, the General Manager shall provide a statement of position with the findings and recommendations for consideration by the Board. The statement of position may include recommended special permit provisions incorporating elements of the measures and plans submitted pursuant District Rules 3-1.4.A.10 and 3-1.11, and other reasonable measures necessary to avoid or mitigate for unreasonable impacts. Such measures may include:

a. reduction of authorized permit volume and/or pumping rate;

b. phased permit volumes with conditional increases;

c. ongoing aquifer monitoring;

d. one or more index wells with defined compliance levels and prescribed responses;

e. temporary pumping curtailments;

f. permanent permit volume reductions;

g. mitigation measures if applicable; and

h. other reasonable measures necessary to avoid the occurrence of unreasonable impacts.

5. Board Action. Pursuant to District Rule 3-1.6.A. related to consideration of unreasonable impacts, the Board may consider applications found by the General Manager to have potential for unreasonable impacts and may take action to approve or deny the permit application in full, approve for a reduced amount, approve with special provisions or take any other appropriate action to avoid or mitigate unreasonable impacts.

6. Direct Referral Process. In lieu of completion of the additional information requirements prompted by the General Manager's preliminary findings pursuant to District Rule 3-1.4.A.10, the applicant may opt to request direct referral of the application to the Board for a hearing on whether the application complies with all statutory and regulatory requirements, including whether there is the potential for causing unreasonable impacts.

   a. The applicant may request direct referral by submitting a written request to the General Manager within ten days of receipt of the notification of the General Manager's preliminary finding of potential for unreasonable impacts. Within a reasonable time after receipt of the request, the General Manager shall declare the application administratively complete, provided that the application contains all required information pursuant to District Rule 3-1.4.A.1-9, and shall promptly provide written notification to the applicant in accordance with Rule 3-1.6.B.

   b. An application that is directly referred to the Board is subject to and the applicant must comply with District Rules 3-1.4 and 4-9 regarding notice; comment and hearing; and, if desired, request for contested case hearing, and request for a contested case to be conducted by SOAH.

c. Persons desiring to comment on or protest an application subject to a direct referral must likewise comply with the applicable District Rules 3-1.4 and 4-9.

d. The General Manager will include with such applications for the Board's consideration, the preliminary findings of potential for unreasonable impacts and supporting evidence, but shall not include recommendations for special permit provisions to avoid or mitigate for unreasonable impacts described under Rule 3-1.4.A.10.a-d.

e. If after hearing, the Board determines an application has the potential for causing unreasonable impacts, the Board may order a remand to reopen the record for further proceedings on recommendations to avoid or mitigate unreasonable impacts.

3-1.6. ACTION ON PERMITS.

A. Permits. Before approving, modifying, delaying, or denying a permit, the District shall consider whether:

1. The application conforms to the requirements of these Rules and is accompanied by the appropriate fees,

2. The proposed use of water is dedicated to beneficial use at all times including whether there are reasonable assurances of definite, nonspeculative plans and intent to use the water for specific beneficial uses during the Production Permit term,

3. The proposed use of water would not cause or contribute to waste, and the applicant has agreed to avoid waste and achieve water conservation. In assessing the acceptability of the proposed volume of water to be permitted, the District will apply industry and regional standards for permitted usage to assure the prospective use is commensurate with reasonable, nonspeculative demand,

4. The proposed use of water would not unreasonably affect existing groundwater and surface water resources by causing the potential for unreasonable impacts. In determining whether the proposed use of water is unreasonable under this Subsection, the District may consider the criteria of the term “unreasonable impacts” as defined in District Rule 2-1, Definitions of Terms, and any other information relevant to whether the proposed use is unreasonable,

5. The proposed use of water would not be otherwise contrary to the public welfare,

6. The proposed use of water is consistent with the approved District Management Plan or an approved regional water supply plan,

7. The applicant has agreed that reasonable diligence will be used to protect groundwater quality and that the applicant will follow well plugging guidelines at the time of well closure, and report closure to the District and all other applicable government agencies,

8. The water is used within the term of the Production Permit,

9. The approved User Drought Contingency Plan (UDCP) for the prospective well yields a maximum volume of authorized groundwater production from

the Western and Eastern Freshwater Edwards Management Zones that, when added to all other authorized amounts under District permits for these management zones, as restricted by UDCPs, and to other estimated withdrawals from specified (exempt) wells withdrawals in these management zones, does not exceed the Extreme Drought MAG that the District has determined, using considerations identified in 3-1.6(A)(12) below, is required to achieve the Extreme Drought DFC Withdrawal Limitation for the Edwards Aquifer, as specified in Section 3-1.23(A) of these Rules,

10. The approved User Drought Contingency Plan for the prospective well in any other management zone yields a maximum volume of authorized groundwater production that, when added to all other authorized amounts under District permits for that management zone, as restricted by their UDCPs, and to other estimated withdrawals from exempt wells in these management zones, does not exceed the amount required to achieve the applicable DFC for the aquifer, as specified in Section 3-1.23 of these Rules. In making this determination, the District shall consider the following: a. the applicable MAG amount, b. the TWDB estimate of total groundwater produced by exempt wells, c. the amount of groundwater under permits that have been previously authorized by the District, d. a reasonable estimate of the amount of groundwater actually produced under permits issued by the District, and e. yearly precipitation and production patterns.

11. For Class B and Class C Conditional Production Permits, the applicant has demonstrated to the Board's satisfaction the certain ability and binding commitment to switch from the to-be-permitted volume of groundwater to some Alternative Water Supply source(s) on a 100% basis,

12. In order to protect the public health and welfare and to conserve and manage the groundwater resources in the District during times of drought, the District may prioritize groundwater use, place special requirements on, modify, delay, or deny a Production Permit for a new well during a District declared drought, and

13. The District may impose more restrictive permit conditions on new permit applications and on applications for increased use by historic users if the limitations:

a. Apply to all subsequent new permit applications and increased use by historic users, regardless of type or location of use,

b. Bear a reasonable relationship to the District's approved Management Plan, and c. Are reasonably necessary to protect existing use.

B. Time for Action. After the application is administratively complete, the General Manager or the General Manager's designated representative will promptly provide written notification to the applicant. The District shall promptly consider and act on each administratively complete application (see Rule 3-1.4(C)). If a hearing is called to consider any of the foregoing applications, the District will conduct the hearing within 35 days after the General Manager determines that a hearing is necessary, and the District's Board will act to approve, modify, delay, or deny the application within 60 days after the date the final hearing on the application is concluded. The failure of the District to act within this time period shall not affect the District's jurisdiction over or the merits of an application. An administratively complete application requires submission of all information set forth within these Rules. If any applications for nonexempt wells are administratively incomplete 90 days after receipt of the application by the District, the District, by certified mail, return receipt requested, will notify the applicant of the missing documentation and the need to complete the application. Applications that remain administratively incomplete will expire 90 days following the above-mentioned notice to the applicant. Upon expiration of the application, the applicant may request reconsideration or an extension by the Board. Request must be made within ten days of receiving notice of an expired application.

C. Action by General Manager. The District's General Manager or the General Manager's designated representative may act for the District in approving any application for well registration; new in-District Edwards Production Permits for 2,000,000 gallons or less; new in-District Trinity Production Permits for 650,000 gallons or less; minor amendments to Edwards permits of 2,000,000 gallons or less; minor amendments to Trinity permits of 650,000 gallons or less; and well drilling, plugging, well modification, or other well development applications so long as the District does not receive any protests to the application nor any requests for a contested case hearing from any person having a personal justiciable interest, including any party to whom notice is provided in accordance with Rule 3-1.4(B), above. The General Manager shall schedule a public hearing for all major amendment applications, for all Transport Permit applications, for all new Edwards Production Permit applications with proposed groundwater production of more than 2,000,000 gallons annually or new Trinity Production permit applications of more than 650,000 gallons annually and refer the applications to the Board for action. The

General Manager will refer all new nonexempt well drilling applications, all Production Permit applications, and all major pumpage amendments received by the District during periods of District-declared Drought to the Board for action.

3-1.9. PERMIT AMENDMENTS.

A. Minor amendments include:

1. Transfers of ownership without any change in use;

2. Reductions in permitted volume or changing use of a well from nonexempt to exempt;

3. Reductions in permitted volume due to a use type change;

4. Substantial alteration of a well;

5. Increases in use of 10% or less of permitted pumpage for users permitted for more than 12,000,000 gallons annually;

6. Increases of up to 2,000,000 gallons annually for users permitted for 12,000,000 gallons or less from the Edwards Aquifer;

7. Increases of up to 650,000 gallons annually for users permitted for 2,000,000 gallons or less from any of the Trinity Aquifers;

8~~7~~. Increases of 20% or less in total storage volume or the recoverable amount of a Source and Recovery Permit.

9~~8~~. Converting two or more wells individually permitted by the same permittee into an aggregate system under one permit; and

10~~9~~. Converting to a multi-user well. All other amendments, including all amendments pertaining to Transport Permits, permit reclassifications, Source and Recovery permits, and use type changes that increase the permitted volume such that it is no longer a minor amendment pursuant Section A(5)(6) in this Rule are major amendments.

B. Major amendments shall be subject to all the requirements and procedures applicable to issuance of a Production Permit for a new well or, if applicable, a Transport Permit or Source and Recovery Permit

C. Amendments to change the use type of a Production Permit will require the recalculation of the permitted volume to be commensurate with the reasonable nonspeculative demand of the new use type.

D. The General Manager or the General Manager's designated representative may grant minor amendments without public notice and hearing. If two or more minor amendments are requested during any fiscal year for an increase in pumpage and

the combined increase in volume requested in the amendments exceeds the limits described in Rule 3-1.9(A), then the amendment which results in a pumpage increase in excess of the limits specified in Rule 3-1.9(A) will be considered a major amendment subject to Rule 3-1.9(B).

E. Minor amendment applications must include a detailed justification for the increase including but not limited to: analysis of average daily, weekly, and/or monthly water usage and pumpage records; a breakdown by types of use (domestic, commercial, irrigation, industrial, etc.); estimated or calculated per capita and/or household consumption; explanation of increased demands or system growth; anticipated pumpage needs; local water use trends; conservation practices in effect; a revised UCP and UDCP; information about current procedures to locate and repair leaks and the system's current percentage of line loss; and any other pertinent information required by the District.

F. Permittees with annual permitted pumpage volumes greater than 12,000,000 gallons requesting multiple minor amendment pumpage increases that total more than 20% of the permitted pumpage volume of the fiscal year three years prior to the most recent amendment may be required to submit a current Hydrogeological Report to the District office. (Example: Permittee A is permitted for 50,000,000 gallons in FY 1996. The permittee files three minor amendments between 1997 and 1999, one for 5,000,000 gallons, another for 3,000,000 gallons, and another for 4,000,000 gallons, a total of 12,000,000 gallons increase since 1996. The District may require a hydrogeological test as a condition of the most recent amendment application for 4,000,000 gallons.) A current Hydrogeological Report is one that has been completed within the three years preceding the date of the applications. The Hydrogeological Report shall be in accordance with Rule 3-1.4(D).

G. Permittees requesting a minor amendment may be required to submit a Hydrogeological Report at the General Manager's discretion based on aquifer condition, type of modification, status of adjacent wells, local water use trends, and other aquifer management considerations.

H. Application for a permit amendment shall be made upon forms supplied by the District and must be accompanied by an application processing fee established by the Board. No application processing fee will be required from permittees requesting a reduction in permitted volume or changing use of a well from nonexempt to exempt.

I. Permittees requesting an increase in pumpage volume must have a Board-approved UCP and a Board-approved UDCP on file at the District office. Permittees will be required to update their UCP and UDCP to reflect their new permitted pumpage amount and/or new ownership.

J. Applications for either minor or major amendments to increase annual permitted pumpage volumes submitted during any District-declared drought shall be referred to the Board for consideration and/or public hearing. A failure to achieve droughtmandated targeted monthly permitted pumpage reduction requirements does not in itself justify a pumpage increase.

K. Permit to Remain in Effect.

1. If a permittee, in connection with the renewal of a permit or otherwise, requests a change that requires an amendment to the permit under District Rules, the permit as it existed before the permit amendment process remains in effect until the later of: a. The conclusion of the permit amendment or renewal process, as applicable; or b. Final settlement or adjudication on the matter of whether the change to the permit requires a permit amendment.

2. If the permit amendment process results in the denial of an amendment, the permit as it existed before the permit amendment process shall be renewed without penalty, consistent with Rule 3-1.8. 3. The District may initiate an amendment to an operating permit, in connection with the renewal of a permit or otherwise, in accordance with the District Rules. If the District initiates an amendment to an operating permit, the permit as it existed before the permit amendment process shall remain in effect until the conclusion of the permit amendment or renewal process, as applicable.

3-1.24. CONDITIONAL PRODUCTION PERMITS.

A. Purpose. The purpose of this Section is to provide for the effective and sustainable management of the Barton Springs segment of the Edwards Aquifer by regulating the production of groundwater from new permitted wells or existing wells with increased permitted pumpage. The continuing usage and reliance upon such wells during Stage II Alarm, Stage III Critical, and Stage IV Exceptional Droughts may exceed the Extreme Drought MAG of the aquifer, and thereby may pose an interference between water wells and potentially cause the cessation of springflow.

B. Applicability and Limitation.

1. All applications for new Production Permits and Production Permit amendments for wells proposing to withdraw groundwater from the Eastern or Western Freshwater Edwards Management Zones and issued after September 9, 2004, shall be designated as Conditional Production Permits.

2. The total annual actual production of groundwater from the Freshwater Edwards Management Zones, aggregating estimated exempt use and all production under both Historical Production Permits and Conditional 100 Production Permits shall, to the maximum extent practicable, not exceed the applicable All-Conditions MAG, which is 16.0 cfs. Under the All Conditions MAG, total annual actual production under Historical Production Permits and Class A, B, and C Conditional Production Permits including estimated exempt well production, shall not exceed 14.0 cfs, reserving 2.0 cfs for Class D Conditional Production Permits.

C. Class A Conditional Permits. Class A Conditional Permits shall be designated in accordance with the following criteria and shall be subject to the following provisions.

1. Permits satisfying the following criteria shall be designated as Class A Conditional Production Permits:

a. The Permit was approved and issued prior to April 12, 2007.

b. An application for a pumpage amendment or a new Production Permit was in process by the District as of April 12, 2007.

c. A permit is issued for an existing nonexempt and previously unpermitted well:

i. that was drilled before April 12, 2007,

ii. that maintains the type of use that existed on or before April 12, 2007, and

iii. whose authorized groundwater production does not exceed 2,000,000 gallons annually from the Edwards Aquifer.

d. A permit is issued for an existing well that:

i. is no longer exempt in accordance with Rule 3-1.3,

ii. was drilled before September 9, 2004,

iii. is not in an area in which a water supplier has a valid CCN or, if located in an area where a water supplier has a valid CCN, the supplier is not readily able to supply water without extraordinary additional cost or time delay, and iv. is permitted for groundwater production that does not exceed 2,000,000 gallons annually from the Edwards Aquifer.

e. The pumpage is authorized by District Rule 3-1.20.B relating to Limited Production Permits.

2. Except for Limited Production Permits authorizing production under Rule 3-1.20.B from certain wells in the Freshwater Edwards Management Zones and permits satisfying the criteria of provision (c) and (d) of this Section, existing Class A Conditional Permits shall be irrevocably reclassified as Class B Conditional Permits upon the declaration of a Stage IV Exceptional Drought. Upon reclassification, these permits shall be subject to all of the requirements applicable to Class B Conditional Permits including production fees and drought curtailment requirements.

D. Class B Conditional Permits. Class B Conditional Permits shall be designated in accordance with the following criteria and shall be subject to the following provisions.

1. Permits satisfying the following criteria shall be designated as Class B Conditional Permits:

a. A permit or permit application was not in process or approved prior to April 12, 2007,

b. An amendment to authorized pumpage under a Historical or Class A Conditional Permit is issued for increased pumpage where the aggregate total of the authorized pumpage volume at the time the

amendment application was submitted and the amendment volume does not exceed 2,000,000 gallons annually from the Edwards Aquifer (the volume of any increase in authorized pumpage greater than 2,000,000 gallons annually shall not be classified as a Class C).

2. Class B Conditional Permits shall not be reclassified as Class A Conditional Permits.

E. Class C Conditional Permits. Class C Conditional Permits shall be designated in accordance with the following criteria and shall be subject to the following provisions.

1. The permit was approved and issued after March 24, 2011.

2. Monthly groundwater production shall be limited to the monthly baseline permitted volumes established in the approved UDCPs of each individual permit. For permits issued prior to October 11, 2012, this provision shall not be enforced until after October 11, 2013.

3. Class C Conditional Permits shall not be reclassified as Class A or B Conditional Permits.

F. Class D Conditional Permits. Class D Conditional Permits shall be designated in accordance with the following criteria and shall be subject to the following provisions.

1. 2.0 cfs of authorized production under a Class D Conditional Permit shall be reserved for groundwater production associated with Aquifer Storage and Recovery projects where stored water is recovered and used to supplement Freshwater Edwards supplies during District-declared drought or for supply management in times of need.

2. The total aggregate volume of pumpage authorized by Class D Conditional Permits shall not exceed 2.0 cfs (471,778,000 gallons/year).

3. Class D Conditional Permits shall not be reclassified as Class A, B or C Conditional Permits.

G. New Production Permit Applications. Applications for new Conditional Production Permits shall be processed pursuant to District Rule 3-1.4, including as applicable the demonstration required for Class B and C Permit applications to the satisfaction of the District Board.

H. Pumpage Amendment Applications. Applications for pumpage amendments to existing Conditional Production Permits shall comply with District Rule 3-1.9 and all other applicable District Rules and regulations.

1. An applicant with a Historical Production Permit in the Freshwater Edwards Management Zones who is applying for a pumpage amendment, upon receiving said amendment after consideration and if approved by the Board, shall be issued a Conditional Production Permit only for the authorized additional withdrawal amount of groundwater, which shall be separate from but associated with the Historical Production Permit for the duration of the Historical Permit, unless terminated by the permittee or the District pursuant to District Rules. (Example: Permittee X has a Historical Production Permit for 50 million gallons per year and files and receives a permit amendment of 70 million gallons per year. The District would issue permittee X a Conditional Production Permit for 70 million gallons per year, giving permittee X a combined total available authorized pumpage volume of 120 million gallons per year. The 50 million gallon Production Permit would retain its Historic Use Status.) Under no circumstance shall the pumpage amendment, as a Conditional Production Permit, be considered for Historic Use Status designation.

2. Applicants seeking a permit amendment to an existing Conditional Production Permit of the same class, upon receiving said amendment after consideration and if approved by the Board, shall have the original Conditional Production Permit amended to reflect the authorized increase in groundwater withdrawal.

I. Term of Conditional Production Permits.

1. All Class A Conditional Production Permits are effective for the fiscal year of issuance, and unless otherwise stated on the permit, shall not be issued for a term longer than one year, except as provided for in District Rule 3-1.7(C.) Renewal of all Class A Conditional Production Permits are governed by Rule 3-1.8, Permit Renewal.

2. All Class B and C Conditional Production Permits are effective for the fiscal year of issuance and, unless otherwise stated on the permit, are issued for a term of 30 years, provided an annual review confirms: a. all infrastructure, contracts, rates, and facilities for 100% substitution with an alternative water supply that were demonstrated to the Board as a condition

of initial permit approval have been effectively deployed within the first year and effectively remain in place for all subsequent years; and b. all other Rules of the District are met, including Rule 3-1.8, Permit Renewal. Failure to comply with both provisions (a) and (b) of this Subsection, in the sole judgment of the Board, shall result in the expiration of the Conditional Production Permit, or such other action as the Board may take.

3. All Class D Conditional Production Permits are effective for the fiscal year of issuance and, unless otherwise stated on the permit, shall not be issued for a term longer than one year, except as provided in District Rule 3-1.7(C.) J. Other Limitation on Volumes Authorized Under Certain Conditional Production Permits. Conditional Edwards Production Permits using Designated Alternative Water Supply Well(s) as the required alternative supply will be permitted up to a volume not to exceed the non-speculative water demand during the term of the Production Permit minus the volume of the Historical Edwards Production Permit, if any.

Table 1 shows current BSEACD aquifer testing tier volume cutoffs compared with HTGCD Permits. New proposed aquifer testing tier cutoffs are presented in red. BSEACD tier volume cutoffs are much higher than their comparable HTGCD cutoffs (i.e. permit applicants can request a much larger volume of Trinity groundwater in BSEACD before an aquifer test is required). Comparing current and proposed aquifer testing tiers in Table 1 to active BSEACD Trinity permits as shown in Table 2, current aquifer testing tiers would exempt almost all BSEACD permits from performing aquifer tests if they were submitted as new permit applications. Seven permits would fall into Tier 2, including Onion Creek Country Club permitted at 127 million gallons-per-year. Only Needmore Water LLC at 289 million gallons-per-year (and the second largest by volume of any BSEACD permit, including Edwards) would meet the threshold of Tier 3 requirements.

Given that almost all recent non-exempt permit applications received by the District have targeted the Trinity in the shared territory, it seems reasonable that BSEACD aquifer testing tier thresholds be more closely aligned with HTGCD, which is managing the same aquifer to the west. Also, the Trinity has approximately 10x lower Transmissivity than the Edwards in this area, resulting in substantially higher drawdown due to pumping (i.e. pumping causes more drawdown in the Trinity versus the Edwards). Thus, lowering the District's tier volume cutoffs is reasonable to ensure that adequate data is collected for UI evaluations of new Trinity Permits.

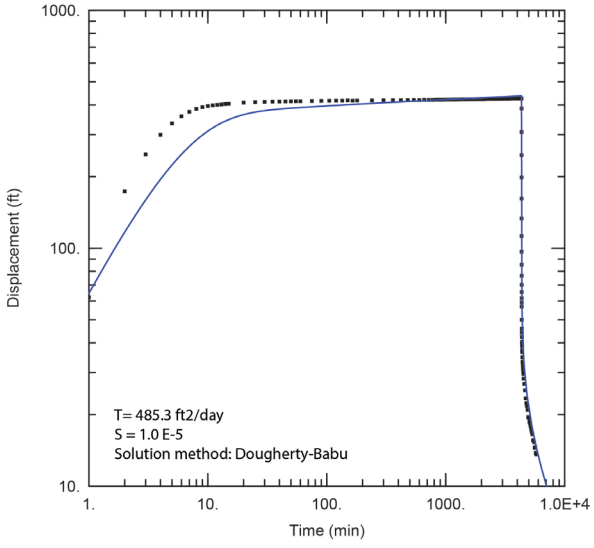
Table 1. Comparison between BSEACD and HTGCD aquifer testing requirements and volumetric tier cutoffs vs new proposed BSEACD Tier volume cutoffs.

BSEACD Tier	**Current Tier Volume Cutoff (million gals per year)**	**HTGCD Tier**	**Tier Volume Cutoff (million gals per year)**	**New Proposed BSEACD Tier Volume Cutoffs (million gals per year)**	**Testing requirement notes**
Tier 0	0-2	Tier 1	0-0.65	0-2 (Edwards) OR 0-0.65 (Trinity)	No pump test required
Tier 1	2-12	Tier 2	0.65-1.96	≥2-12 (Edwards) OR ≥0.65-2 (Trinity)	Single well pumping test
Tier 2	12-200	Tier 3	>1.96	≥12-40 (Edwards) OR ≥2-40 (Trinity)	Aquifer test with at least 1 Observation well
Tier 3	>200			>40 (Trinity and Edwards)	Aquifer test with monitor well network plan + new drilled obs well required (BSEACD only)

Table 2. Current BSEACD Trinity Permits

Authorized Vol (gal)	Permit Name	Permittee	Permit Type	Primary Use	Allocation Distribution
289,080,000.00	Needmore Water, LLC (Well D)	Needmore Water, Llc	Historic Middle Trinity (M)	Agricultural	Irrigation
127,410,000.00	Onion Creek Country Club (Trinity)	Onion Creek Country Club	Historic Middle Trinity (M)	Irrigation	Custom Distribution
35,000,000.00	Grey Rock Golf Club (COA)	Grey Rock Golf Club - City Of Austin	Historic Middle Trinity (M)	Irrigation	Irrigation
32,625,000.00	Aqua Texas, Inc (Bliss Spillar - Middle Trinity)	Aqua Texas, Inc.	Historic Middle Trinity (M)	Public Water Supply (PWS)	Domestic/PWS
30,000,000.00	Aqua Texas, Inc. (Sierra West)	Aqua Texas, Inc.	Historic Middle Trinity (M)	Public Water Supply (PWS)	Domestic/PWS
30,000,000.00	sierra wes	Adrienne Cocita	Historic Middle Trinity (M)	Public Water Supply (PWS)	Domestic/PWS
20,300,000.00	Ruby Ranch Water Supply Corporation (Trinity)	Ruby Ranch Water Supply Corporation	Historic Middle Trinity (M)	Public Water Supply (PWS)	Domestic/PWS
16,500,000.00	Oak Forest Water Supply Corporation (Trinity)	Oak Forest Water Supply Corporation	Historic Middle Trinity (M)	Public Water Supply (PWS)	Domestic/PWS
8,000,000.00	St. Andrews School	St. Andrews School	Historic Lower Trinity (L)	Irrigation	Custom Distribution
8,000,000.00	St. Andrews School	St. Andrews School	Historic Middle Trinity (M)	Irrigation	Custom Distribution
6,700,000.00	Wildflower Center	Lady Bird Johnson Wildflower Center	Historic Middle Trinity (M)	Irrigation	Custom Distribution
6,000,000.00	Aqua Texas, Inc (Bliss Spillar - Lower Trinity)	Aqua Texas, Inc.	Historic Lower Trinity (L)	Public Water Supply (PWS)	Domestic/PWS
6,000,000.00	Industrial Asphalt, LP (Hays Quarry)	Industrial Asphalt, Lp	Historic Middle Trinity (M)	Industrial	Industrial
4,200,000.00	Trinity Episcopal School	Trinity Episcopal School	Historic Middle Trinity (M)	Irrigation	Irrigation
2,000,000.00	Texas State University At San Marcos (FARC Well)	Texas State University At San Marcos	Historic Middle Trinity (M)	Irrigation	Custom Distribution
2,000,000.00	Log Cabin Plaza	Steve Savant	Historic Middle Trinity (M)	Commercial	Commercial
1,950,000.00	Tindol Restaurant Group, LLC (Hays City Store)	Tindol Restaurant Group, Llc	Historic Upper Trinity (U)	Commercial	Commercial
1,800,000.00	Matthew Schoenberg Living Trust	Matthew Schoenberg Living Trust	Historic Middle Trinity (M)	Irrigation	Custom Distribution
1,600,000.00	BGSIX Holdings LLC	Bgsix Holdings Llc	Historic Middle Trinity (M)	Irrigation	Irrigation
1,200,000.00	Tmp-58597Wg	Tmp-58597Wg	Historic Middle Trinity (M)	Commercial	Commercial
1,200,000.00	First Christian Church	First Christian Church	Historic Middle Trinity (M)	Irrigation	Irrigation
1,005,000.00	The Plant at Kyle	The Plant At Kyle	Historic Middle Trinity (M)	Commercial	Commercial
1,000,000.00	Wimberley Glassworks (Tim DeJong)	Wimberley Glassworks	Historic Middle Trinity (M)	Commercial	Commercial
1,000,000.00	St. Marks Episcopal Church (Sarahs Well)	St. Mark's Episcopal Church	Historic Middle Trinity (M)	Commercial	Commercial
1,000,000.00	Feldner, CND - Make Up Pond	Feldner Cnd, Llc	Historic Middle Trinity (M)	Irrigation	Irrigation
1,000,000.00	Jump Creek LLC (Hunter Chase Well)	Jumpcreek Llc	Historic Upper Trinity (U)	Commercial	Commercial
980,000.00	Cornerstone HTJ, LLC.	Cornerstone Htj, Llc.	Historic Middle Trinity (M)	Irrigation	Custom Distribution
788,400.00	Jarica Investments. LLC		Historic Middle Trinity (M)	Commercial	Commercial
750,000.00	St. Stephens Episcopal Church	St. Stephen's Episcopal Church	Historic Middle Trinity (M)	Commercial	Commercial
700,000.00	Spicewood LLC - Active Deployment Systems	Spicewood LLC - Active Deployment Systems	Historic Middle Trinity (M)	Commercial	Commercial
500,000.00	Aknel Enterprises	Aknel Enterprises	Historic Middle Trinity (M)	Commercial	Commercial
490,000.00	Hays City Holdings, LLC (Mad Rooster Liquor)	Hays City Holdings Llc	Historic Middle Trinity (M)	Commercial	Commercial
460,000.00	2410 Vance Lane, LLC	Vance Lane, Llc - 2410 Vance Lane, Llc	Historic Middle Trinity (M)	Irrigation	Irrigation
436,117.00	Roy Seiders (Irrigation)	Roy Seiders	Historic Middle Trinity (M)	Irrigation	Irrigation
240,000.00	Frontier (Verizon)	General Telephone Southwest (Frontier)	Historic Middle Trinity (M)	Commercial	Commercial
200,000.00	SWTX Pentecostal Church	Southwest Texas District Pentecostal Church	Historic Upper Trinity (U)	Commercial	Commercial
180,000.00	Rolling Oaks Club (Clubhouse and Pool)	Rolling Oaks Club, Inc.	Historic Upper Trinity (U)	Irrigation	Custom Distribution
100,000.00	Extra Space Storage	Extra Space Properties Two Llc	Historic Middle Trinity (M)	Commercial	Commercial
100,000.00	Hays County - Camino de Rancho	Hays County	Historic Middle Trinity (M)	Industrial	Irrigation
100,000.00	Las Lomas HOA (Pavillion Well)	Las Lomas Property Owners Association	Historic Middle Trinity (M)	Irrigation	Irrigation

Barton Springs
Edwards Aquifer
CONSERVATION DISTRICT



Guidelines for Hydrogeologic Reports and Aquifer Testing

Barton Springs/Edwards Aquifer
Conservation District
Hays, Caldwell, and Travis Counties, Texas

Board Adopted - Marc~~h~~y 1~~2~~3, 2025~~16~~

Guidelines for Hydrogeologic Reports and Aquifer Testing

Barton Springs/Edwards Aquifer Conservation District
Hays, Caldwell, and Travis Counties, Texas

Aquifer Science Staff
Board Adopted - ~~May~~ March 13~~12~~, 2025~~2016~~

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Acknowledgments
~~This document is modified from original guidelines written by former District Hydrogeologist Nico Hauwert, P.G., and later revised by Aquifer Science staff in January 2007.~~ This version of the guidelines ~~were~~was revised from the previous 2016 version, which was written by ~~by the District's Aquifer Science Team~~ Brian, A. Smith, Ph.D., P.G. and Brian B. Hunt, P.G.~~, with reviews also provided by the District's Technical Team. Additional reviews were provided by Joe Vickers, P.G., Douglas A. Wierman, P.G., Alex S. Broun, P.G., and Rene Barker, P.G.~~

Cover
Photograph of pumping well in Kingsville City from the Goliad Sands pumping 700 gpm. Photo shows the orifice weir for measuring the flow rate, photo from Joe Vickers. Chart is an example of analytical solution used to estimate aquifer parameters for a Middle Trinity irrigation well (Onion Creek Golf Course well; August 2015).

I. Introduction

In accordance with the Barton Springs/Edwards Aquifer Conservation District's (District) Rules and Bylaws (Rules), Permit applicants seeking to export groundwater out of the District, to obtain a major amendment or a minor amendment (Rule 3-1.9(F)(G), or to permit a new nonexempt well with an annual pumpage volume of more than 2,000,000 gallons from the Edwards Aquifer or more than 650,000 gallons for the Trinity Aquifers, shall conduct an aquifer test and submit to the District a current Hydrogeological Report (Report) addressing the potential impacts associated with the proposed groundwater production or export. The Report is a required component of all administratively complete applications for such requested authorizations. District Rules define the Hydrogeologic Report as follows:

> *"a report, prepared by a Texas licensed geoscientist or a Texas licensed engineer in accordance with the District's guidance document, Guidelines for Hydrogeologic Reports and Aquifer Testing (Guidelines), which identifies the availability of groundwater in a particular area and formation and assesses the response of an aquifer to pumping over time and the potential for unreasonable impacts."*

Hydrogeologic studies provide essential baseline information for water-resource management for both the District and the permittee. Aquifer tests are a key component of hydrogeologic studies, however as Butler (2009) states, "an assessment of the response of an aquifer to pumping over the long term should not solely depend on information from a pumping test of limited duration; one must use other information on the regional hydrogeology, and so forth, to make that determination." These guidelines are intended to assist professionals involved in planning and conducting the aquifer test and also address the key elements of the ~~Hydrogeologic Report (~~Report~~)~~ that include other information ~~on~~such as ~~the~~ regional hydrogeology or local hydrogeologic boundary conditions.

An aquifer test work plan shall be prepared prior to conducting an aquifer test. Results of the aquifer test will be included in the Hydrogeological Report. Both the aquifer test work plan and Report need to be prepared by a Texas licensed professional geoscientist or engineer. Planning and implementation of the aquifer test shall be closely coordinated with the District to ensure that the proposed report is consistent with District standards and expectations specified in these guidelines. Prior to the commencement of the aquifer test, the applicant (or applicant's designated representative) shall have a meeting to discuss the proposed aquifer test work plan that shall be prepared pursuant to the Guidelines for Aquifer Test Work Plans (Design and Operation) (**Appendix A**). A written aquifer test work plan shall be submitted to the General Manager for review and approval prior to commencement of the test and shall include the required information for aquifer test work plans as specified in these guidelines. Once approved by the District, the aquifer test shall be conducted and the Report completed pursuant to the approved work plan and these guidelines. The applicant is responsible for all costs associated with the aquifer test.

The Report shall provide findings and conclusions addressing the response of an aquifer to pumping over time and the potential for causing unreasonable impacts. Applicants may not rely solely on reports previously filed with or prepared by the District. Deviation from these guidelines may occur only with prior District approval (see variance section below).

The District's Aquifer Science Team will evaluate the application to determine whether there is potential for unreasonable impacts (as define by District Rule) and produce findings in accordance with the process specified in District Rule 3-1.4.G. The evaluation of the potential for unreasonable impacts will apply the best available science and be performed on the basis of the Report, the aquifer test, and other factors relevant to the proposed production from the subject well/well field including but not limited to:

a. local geology and aquifer conditions including water quality;
b. construction and location of the subject well/well field;
c. target production zone, production capacity, and proposed production rate of the subject well/well field;
d. construction/completion of existing wells in the area of influence;
e. drawdown over time and distance attributed to pumping from the subject well/well field;
f. drawdown attributed to drought conditions and seasonal increases in pumping from existing wells;
g. drawdown attributed to pumping from existing wells and from future domestic and livestock wells;
h. proposed production relative to the Modeled Available Groundwater;
i. projected impacts on the relevant Desired Future Condition(s); and
j. projected impacts to regional surface water resources (springs and streams).

Permit applications may be deemed incomplete due to Reports that do not meet the District's minimum standards or deviate significantly from these guidelines without prior District approval. An applicant who incurs costs related to conducting an aquifer test knowingly bears the risk that the permit request may be denied or modified.

II. Purpose and Scope of Hydrogeologic Reports and Aquifer Testing

Based on the scale of the requested permit volume, the District has established tiered requirements as they pertain to aquifer tests and associated Reports (Table 1). Generally, the Tier 3 aquifer tests will require more extensive monitoring and data collection than tests for Tiers 1 and 2. Tier 3 aquifer tests will require a monitoring well network plan and the installation of one or more dedicated monitor wells. For Tier 1 Aquifer tests, an abbreviated single well test (specific capacity) may suffice, however, monitoring of nearby wells may be required if existing wells are accessible and adequate for monitoring.

Table 1: Tiered Structure for Aquifer Testing and Hydrogeologic Report Requirements (3-1.4.D).

Tier	Aquifer Test and Report Requirements	Anticipated Production Volume
0	None	<~~2,000~~650,000 gallons per year for Trinity Aquifer OR <2,000,000 gallons per year for Edwards Aquifer
1	Abbreviated aquifer test and Report	650,000 to 2,000,000 gallons per year for the Trinity Aquifer OR ~~>~~2,000,000 to 12,000,000~~*~~ gallons per year for the Edwards Aquifer
2	Hydrogeologic Report, and aquifer test m~~m~~ay require installation of new monitor wells if existing wells are not available or adequate for monitoring.	2,000,000 to 40,000,000 gallons per year for the Trinity Aquifer OR 12,000,000 to 40,000,000 gallons per year for the Edwards Aquifer ~~>12,000,000* to 200,000,000 gallons per year~~
3	Hydrogeologic Report, and aquifer test ~~-w~~will require monitoring well network plan and installation of one or more dedicated~~new~~ monitor wells.	>40~~200~~,000,000 gallons per year for all aquifers

*~~*The 12 MG/Yr value is the same as the drought management tiers. The value triggering a Tier 2 may be higher or lower depending upon the setting and level or risk of unreasonable impacts, as determined by the Aquifer Science Team's professional judgement.~~ *No Tier 1 Aquifer Test exists for new Edwards Permits*

Tier 1 Abbreviated Aquifer Test and Report

The purpose of the Tier 1 tests and Reports is to establish baseline information of the well and aquifer (yield, parameters, water quality). The Tier 1 tests and Reports are intended for ~~those~~ Trinity Aquifer wells that pump a relatively small volume and have a low risk for unreasonable impacts. Tier 1 tests do not apply to the Edwards Aquifer. Key elements of the Tier 1 Abbreviated Aquifer Test and Report include:

1. **Estimated aquifer properties:** Transmissivity needs to be calculated from an aquifer test using the standards outlined in these guidelines. Often these will be single-well (specific capacity) tests, however monitoring of nearby wells may be required if existing wells are readily accessible and adequate for monitoring. Storativity should be calculated if sufficient monitor well response is measured.

2. **Estimated extent and magnitude of well interference:** The report should address the short- and long-term impacts from the anticipated pumping on existing surrounding water wells. This can be done with simple distance-drawdown graphs (e.g. Cooper-Jacob) that project the effects of up to 7 years of pumping.

3. **Water quality:** The report should document and establish water chemistry of the groundwater produced at the end of the test, which at a minimum includes field parameters (conductivity, temperature, pH) and possibly laboratory results (common ions and anions, nutrients).

Tier 2 and 3 Hydrogeologic Test and Report

Tier 2 and 3 tests and reports are intended for those well systems that have proposed pumping volumes greater than ~~1~~2,000,000 gallons per year (see Table 1). Accordingly, the purpose is to make an assessment of the short- and long-term potential for unreasonable impacts to the regional aquifer system and existing surrounding water wells from the proposed pumping. An aquifer test is a key part of that evaluation, but other relevant hydrogeologic data, as described above, may also be evaluated, if available.

> *Note: The difference between Tier 2 and 3 Aquifer Test and Hydrogeologic Report is ~~related to~~ the monitoring well network plan (**Appendix B**) and installation of dedicated monitor wells for the aquifer test. Tier 2 testing will require the installation of monitor wells only if existing wells in the study area are not available or adequate for monitoring. In contrast, Tier 3 testing requires a monitoring well network to be established by the installation of at least one or more new dedicated monitor well~~s~~ for a test and identifying a sufficient amount of existing wells adjacent to the well or well field. A second monitor well may be required to measure the effects in different aquifers or in different locations of a widespread wellfield. The Tier 3 testing requirements are intended to ensure the best possible test and data collected for these large permit requests, and that the aquifer can be monitored for impacts on a long-term basis if/when the requested well production is approved and underway. The new dedicated monitor wells shall serve as a component of*

the "monitoring well network plan" submitted with the aquifer test work plan as required by the rules (3-1.4.D). The monitoring well network plan must be approved by the District and the monitoring wells shall be installed and/or identified prior to the commencement of the aquifer test.

Key elements of the Tier 2 and 3 Hydrogeologic Test and Report include:

1. **Estimated aquifer properties:** Hydrogeologic parameters including *transmissivity* and *storativity* need to be calculated from an aquifer test using appropriate published analytical models. Additionally, the Report should also identify the presence of boundary conditions such as barriers to groundwater flow, recharge, and other factors inherent to the aquifer or hydrologic conditions that may influence pumping over time.

2. **Estimated extent and magnitude of interference:** The Report should address the short and long-term impacts from the pumping on existing surrounding water wells. The Report should contain a map of the maximum measured drawdown from the aquifer test for the surrounding monitored wells. In addition, projected future drawdown from analytical models shall be done for at least 7 years. Future drawdown models should also include pumping from other known pumping centers within a 5-mile radius of the test well, including existing permitted wells pumping at their full permitted volume. Results will be used to evaluate the potential for unreasonable impacts to existing surrounding water wells.

3. **Water quality:** The Report should document water chemistry and detectable trends during the aquifer testing. The Report should discuss the risk of water quality changes due to pumping. In cases where pumping or ASR injection wells are located near the Edwards Aquifer's saline zone boundary, or where significant inter-aquifer flow could induce waters of differing and distinguishable water quality, further evaluations may be required. Results will be used to evaluate the potential for unreasonable impacts to the quality of water in existing surrounding water wells or the aquifer.

4. **Estimated impacts to regional water resources:** Regional water resources include aquifers, springs, and surface streams. The Report should attempt to quantify the short- and long-term impacts from the pumping on these water resources and Desired Future Conditions (DFCs) for the relevant aquifer(s). Results will be used to evaluate the potential for unreasonable impact to DFCs, regional aquifer conditions, springflows, or base flows to surface streams.

Variances to Hydrogeologic Reports and Aquifer Test

The District may consider a variance from certain requirements. Technical information and a memorandum from a Texas licensed geoscientist or engineer supporting and documenting the

rationale for the variance shall be submitted to the General Manger for consideration. Factors that may be considered include:

1. Relatively low requested production volume;
2. Sufficient data exist for the well or vicinity (e.g. existing hydrogeologic reports or aquifer tests);
3. Low potential for unreasonable impacts; and
4. Other relevant factors.

Deviations from the guidelines and/or the work plan requirements (**Appendix A**) can occur with approval from District Aquifer Science staff, which should be noted and described in the submitted work plan.

III. Hydrogeologic Report Outline

Below is a suggested outline of topics, tables, and figures that should be included in the Hydrogeologic Report (Report). Tier 1-3 Reports need to address their respective topics described in the Section II above. (However, the Tier 1 Abbreviated Hydrogeologic Report is, by its nature, a more concise document and does not address all the elements outlined below.)

A. Summary, Results and Conclusions

i) Description of the type of permit request, aquifer (target production zone), use type, volume, and other relevant factors.

ii) Conclusions of the Report as they relate to the purpose described in Section II.

B. Description of the Pumping Well Site and Water System

i) Description and map of the project area, the location of the well site(s), and system configuration including the location and volume of water-storage facilities.

- Figure*: sketch (map) of the test site*
  - *Note*: *Describe and map potential interference from nearby pumping wells.*

ii) Description of the current and anticipated annual pumping demands, including typical pumping schedules, such as, frequency, duration, peak demand hours, and pumping rates of the pumped well(s).

C. Hydrogeology and Conceptual Model (Tiers 2 and 3 only, except where indicated)

The data sources for this section should be the best available information, properly cited from the literature, and integrated with the data collected from this study.

i) Provide a description of the hydrogeologic conceptual model of the aquifer and well site. Discuss or provide:

  - Relevant hydrogeologic aspects of the aquifer, such as aquifer conditions (e.g. confined, semi-confined, unconfined), hydrostratigraphy, faulting, and boundary conditions (recharge or barriers).
  - Map of wells (exempt and nonexempt), surface ponds or reservoirs, major karst features, springs, or any other source of recharge and discharge for the project well site and surrounding area of influence. Data sources should include all publically available databases coupled with field reconnaissance or survey investigations.
  - Regional hydrogeologic elements such as recharge, flow, and discharge should be addressed in the conceptual model. Concepts such as pumping equilibrium, changes in storage, and capture related to pumping should be discussed.

- *Figures: Regional and local scale geologic and potentiometric maps*
- *Figures: Study area geologic and hydrogeologic cross sections*
  - The role of karst and fracturing and faulting in the conceptual model should also be directly discussed in addition to the heterogeneity and anisotropy of the aquifer and well field.

ii) Detailed well hydrostratigraphy and completion/construction information need to be presented in the Report. This should include geophysical logs of the pumping wells (required), and monitor wells (required for all wells used in a Tier 3 monitoring well network plan).
- *Figures: Pumping and monitor well hydrostratigraphy and well completion diagrams.*
    - Well inventories, drilling and geophysical logs, pump depths, casing/annular seal specs, state well reports, and other relevant records should be included in the appendices of the report.
    - Electronic files (PDF and/or .WCL) of geophysical logs should be made available. Geophysical logs should include gamma ray, resistivity, and caliper.

iii) Potentiometric maps should be prepared showing the elevations of the potentiometric surface(s) of the aquifer(s) proposed for usage or that could be impacted.
    - Regional potentiometric maps can be based on existing or published data, while more local potentiometric maps should be based on water-level measurements taken prior to the aquifer test for the tested aquifer and, to the extent possible, all relevant aquifers that could be subject to capture.
- *Figure: Regional and local potentiometric maps*

D. Aquifer Test Work Plan and Results

i) Aquifer Test Work Plan. Summarize the aquifer test design and operation outlined in **Appendix A**, and approved by the District.
    - *Note: Complete time-discharge records of the pumped well and water-level records of the pumped and monitor wells should be put into an appendix (and provided in digital format).*

ii) Aquifer test results. Discuss pre-test trends and water levels during the pumping and recovery phases as they might relate to influences from recharge, barometric effects, and other pumping wells. Any problems or inconsistencies with pumping rates or measurements must be discussed and documented.
- *Figure: Map of the maximum measured drawdown during aquifer test. If more than one well is pumped, the sum of the maximum drawdown from each test must be presented. Maximum drawdown determinations may need to be adjusted for regional water-level trends.*
- *Figures: Annotated hydrographs (arithmetic or non-log) water-level elevations versus time for all the data from each well.*
- *Figures: Hydrographs of nearest stream flow, springflow, and rainfall station data covering a period of three months prior to the aquifer test through the recovery period.*

E. Analyses of Aquifer Test Data and Parameter Estimation

i) This section should describe the methods used and analytical model selected to estimate aquifer parameters.
    - All data manipulation (trend-correction) should be clearly described.

- *Table: Summary of input parameters used in the analytical solutions (pumping rate, aquifer thickness, distances, well construction details etc.)*
- *Figures: Annotated semi-log and log-log graphs of measured drawdown versus time in pumping and monitor wells. Include select theoretical curves (analytical models) used to calculate the parameters.*
    - *Methods should include straight-line (Cooper and Jacobs, 1946) and type curve models such as Theis (1935) or other analytical models. If numerous plots are generated, they can be put into an appendix.*

ii) Storativity should only be calculated from monitor well (not pumping well) data. Data from monitor wells farthest out generally result in the best estimates of storativity (Butler and Duffield, 2015; Butler, 2009).

iii) Deviations from these theoretical curves must be discussed and may include effects from: hydraulic boundaries (recharge and no flow), partial penetration, fluctuating pumping rate, delayed yield, leakage, atmospheric responses, regional water-level trends, and interference from other wells.

- *Table: Summary table of estimated aquifer parameters and methods. This should provide a range of results based on various selected methods. The preferred or averaged result and model should be indicated. A comparison to other published or nearby aquifer test values should be included.*

F. Potential Unreasonable Impacts Analysis (Tiers 2 and 3 only, except where indicated)

The effects of pumpage on wells and on the aquifer must be evaluated and discussed in this section as they relate to the potential for unreasonable impacts. Aquifer parameters selected for the evaluation should be representative of the potentially impacted area. Discuss the rationale of the parameters selected for the analyses.

Well interference (Tiers 1-3)

i) Discuss and map the estimated extent (area of influence) and magnitude of well interference on existing surrounding wells.

ii) Discuss and consider construction and location of the subject well/well field; target production zone, production capacity, and proposed production rate of the subject well/well field; construction/completion of existing wells in the area of influence; drawdown attributed to drought conditions and seasonal increases in pumping from existing wells; and drawdown attributed to pumping from existing wells and from future domestic and livestock well.

- *Figure: A plan view map of theoretical maximum drawdown for at least 7 years shall be shown on the final maps and cross sections. For Tier 2 and 3, theoretical maximum drawdown should include cumulative modeled drawdown of any permitted pumping centers within –a 5-mile radius of the test well.*
- *Figure: Chart showing the forecast of distance-drawdown from the pumping well for 1 week, 1 year, and 7 years. Cooper-Jacob plots are recommended.*

- *Figure: Hydrogeologic cross section (showing geologic formations and well completions, etc.) showing theoretical drawdown for at least 7 years.*

Impacts to regional water resources

i) Discuss the requested production volume in context with the Modeled Available Groundwater (MAG) and the DFC.
ii) Discuss potential short- and long-term impacts from the pumping on freshwater resources including springs and baseflow to surface streams.
iii) Discuss regional numerical or other analytical models and results relevant to the permit.

Changes in water quality

i) Document and discuss any water-quality changes that may have occurred due to pumping during the test.
    - Analytical results from the laboratory should be provided as appendices.
    - *Table: Summary of laboratory water-chemistry results. Should include comparison to EPA and TCEQ standards, in addition to other regional averages.*
    - *Figure: Plots showing water level, temperature, and conductivity during test.*

G. Supplemental Information

Due to the test-specific nature of these investigations, additional information can enhance the results and evaluation of the data. Below are some items that could be considered within the scope of work for the hydrogeologic studies and report:

- *Numerical modeling*
- *Dye tracing*
- *Surface geophysics*
- *Down-hole camera surveys*
- *Other reports or unpublished information or data.*

IV. Select References

Alley, William M., 2009, Update on Guidance for the Preparation, Approval, and Archiving of Aquifer-Test Results. Office of Groundwater Technical Memorandum 2009.01 <https://water.usgs.gov/admin/memo/GW/gw09.01.html>

Butler, J., 2009, Pumping Tests for Aquifer Evaluation—Time for a Change? Groundwater, Volume 47, Issue 5, September/October 2009, Pages: 615–617.

Butler, J. and G. Duffield, 2015, Aquifer Testing for Improved Hydrogeologic Site Characterization featuring AQTESOLV and the In-Situ Level TROLL, Course Notes, D. Kelleher (ed), Fort Collins, Colorado, October 27 and 28, 2015, 511 pages.

Cooper, H.H. and C.E. Jacob, 1946, A generalized graphical method for evaluating formation constants and summarizing well field history. Am. Geophys. Union Trans. Vol. 27, pp. 526-534.

Driscoll, F.R., 1986, Groundwater and Wells. Second Edition. Johnson Screens, St. Paul, Minnesota. Pp. 1089.

Hunt, B.B., B.A. Smith, J. Kromann, D. Wierman, and J. Mikels, 2010, Compilation of Pumping Tests in Travis and Hays Counties, Central Texas: Barton Springs Edwards Aquifer Conservation District Data Series report 2010-0701, 12 p. + appendices
<http://www.bseacd.org/uploads/BSEACD_DS_2010-0701.pdf>

Kruseman, G.P., and N.A. de Ridder, 1991, Analysis and Evaluation of Pump Test Data, Second Edition, ILRI, Netherlands. Pp. 377

Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage. Trans. Amer. Geophys. Union, Vol. 16, pp. 519-524.

Appendix A: Guidelines for Aquifer Test Work Plans (Design and Operation)

The aquifer test plan shall be submitted to the District prior to the test and should briefly address the key aspects outlined below. These guidelines will be used as a checklist during the pre-test meeting with the applicant or their consultant. The aquifer test work plan must be approved by the District Staff prior to commencement of the test.

Aquifer test design and operation should generally follow those discussed in Driscoll (1986) or other published resources.

1. **Initiation, Duration and Pumping Rate**
    a) Aquifer tests for most aquifers (especially the Edwards) should not be conducted during or immediately after significant rain or recharge events, because of the rapid change in water levels that often follows.
        - *Note: aquifer tests may occur during recharge events for deeply confined aquifers if the pre- and post-test data are sufficient to document trends.*
    b) Testing schedules should be coordinated with other area pumping wells to avoid interferences that could result in misleading or uncertain results.
    c) The test shall be designed to pump a minimum of three times the daily equivalent of the requested annual permitted volume (Table 2). Pumping tests should be a minimum of 48 hours duration for Tier 1 and 72-hours duration for Tier 2 and 3 permits. Longer duration pumping tests (four to five times the daily equivalent) are encouraged and could be required where the risk of impacts, or encountering aquifer boundaries, is high.
        - *Note: the duration of the test, rather than the pumping rate, increases the scale of the test (distance of measureable drawdown). The pumping rate has less of an effect on the scale of the test, but increases the ability to distinguish water-level fluctuation noise. In addition, unconfined aquifers generally result in slower response and need longer pumping durations for measured responses in monitor wells (Butler and Duffield, 2015). Longer test durations and larger pumping volumes should be considered if it is anticipated the permit would increase sometime in the future, such that the test would not need to be repeated.*

Table 2. Example duration calculation of a Tier 3 aquifer test

Annual Permit Request (gal)	Daily equivalent (gal)	Pumping target volume (gal)	Testing Rate ~~380~~ 190.3 gpm	Testing Rate ~~285~~ 142.8 gpm
100,000,000	274,000	3 x 274,000 = 822,000	72-h~~36 h~~our	96-hour

d) The aquifer test should be a constant-rate test. Well testing (step tests) should be performed prior to the aquifer test (allowing for recovery) in order to properly size the pump and estimate the optimal well yield for the test. Well testing should ideally be done prior to the final work plan.
   - *Note: Pumping rates should be measured frequently to verify that a constant discharge rate is being achieved. If a flow meter is used to measure flow, it should be calibrated prior to the test and verified using another calculation method, such as an orifice weir or by the time required to fill a storage vessel of known volume.*

e) Waste of the discharge should be avoided as much as possible, particularly during low water-level conditions in the aquifer and should be routed to storage tanks or to other water systems when possible. If the water must be discharged to surface drainages off-site, the pumped water should be routed so that it does not recharge into the tested aquifer in the vicinity of the pumping or monitor wells during the test. Discharge onto adjoining properties needs to be considered and avoided if possible, especially when it involves flooding and/or poor quality water. The applicant shall discuss the fate of discharged water in the work plan.

2. Aggregate Well Fields

a) If the study involves the assessment of two or more pumping wells, each well may be pumped separately to measure their combined effects. If the wells are sufficiently close, it may be possible to pump the wells simultaneously.

3. Well Completion (3-1.20)

a) All proposed pumping wells must be completed and equipped for the ultimate planned use or, at minimum, completed and equipped to isolate the target production zone for the ultimate planned use and production rate. Observation wells may be required. The applicant is responsible for all cost associated with the design, engineering, well construction, and other related expenses. The use of test wells must be approved by the District.

   - *Note: If the conversion of the test wells to final production involves significant modifications (well diameter, acidization, etc.) then a special condition of the permit, if granted, may be included to require a re-test of select wells after final completion to demonstrate the data can be reproduced. If the test of wells after final completion results in significant differences in aquifer parameters and measured response to surrounding wells, the full aquifer test may need to be repeated and the permit subject to staff-initiated amendments based on a new aquifer test.*

4. Number and Location of Monitor Wells

a) Monitor wells should be selected radially around the pumping well and include wells completed in the same aquifer.
   - *Provide a detailed map of pumping, monitor, and area wells.*
   - *Use analytical models (Cooper-Jacob) to help forecast distance and potential magnitude of drawdown to monitor wells using published aquifer parameters.*

b) For Tiers 2 and 3, some monitor wells may be selected that are in different aquifers to evaluate the potential for inter-aquifer communication.

c) Ultimately, it may be necessary for the Tier 2 testing, which have a significant risk of unreasonable impacts, to install one or more monitor wells in the absence of existing well-suited monitor wells.

d) For Tier 3, the aquifer test work plan shall also include a monitoring well network shall be established by installing one or more new monitor wells and identifying a sufficient number of existing wells adjacent to the well or well field prior to the commencement of the aquifer test in accordance with the District approved monitoring well network plan. The final monitoring well network plan and aquifer test work plan must be approved by the District (Appendix B).

5. Water-Level Data

a) Pre-aquifer test water-level measurements should be collected starting at least 1 week prior to pumping.

b) Post-test data collection in all wells should continue through the recovery phase, which should be about as long as the pumping phase.
   - *Note: recovery data often results in the best data for parameter estimation as head loss due to well construction is minimized (Butler and Duffield, 2015).*

c) Select monitor wells should be measured beyond the recovery period of the pumping phase to establish regional and local water-level trends and to observe any delayed response to pumping.
   - *Note: It is preferable that recovery lasts two to three times the duration of the pumping for complete recovery and also to measure trends.*

d) All water-level measurements should be within 0.1 feet precision. The use of automated data loggers and vented pressure transducers should be used whenever possible. The automated data should be verified with manual e-line measurements if the risk of hanging up the e-line is low.

e) Other means such as airlines or sonic meters, are generally discouraged from use but may be allowed as backup measurements.

f) All water-level data must be submitted in the report and made available in digital format (spreadsheet).

g) Care should be exercised to prevent (bacterial) contamination of monitor wells.

Note: The District may be able to provide continuous data from relevant existing monitor wells, and provide logistical support to identify, make introductions, and possibly assist with monitoring if time and resources allow.

6. Water Quality Data

a) Samples for major ions, nutrients, and other trace elements at the end of the test.
   - *Note: the list of parameters should be provided in the work plan.*

b) Field parameters (temperature, conductivity, pH) should be monitored throughout the test with tabular results provided in the appendices.

Appendix B: Monitoring Well Network Plan Outline

Tier 3 testing requires a monitoring well network to be established by the installation of at least one or more new monitor wells for a test and identifying a sufficient amount of existing wells adjacent to the well or well field. A second monitor well may be required to measure the effects in different aquifers or in different locations of a widespread wellfield. The Tier 3 requirement is meant to ensure the best possible test and data collected for these large permit requests. ~~The new~~ Dedicated monitor wells serve as a component of the "monitoring well network plan" submitted with the aquifer test work plan as required by the rules (3-1.4.D). Dedicated monitor well(s) drilled under the Tier 3 requirement have two intended functions: 1) to provide data during an aquifer test to satisfy the requirements of a Tier 3 production permit, and 2) to provide long-term monitoring of well field production after a Tier 3 permit has been issued. Dedicated monitor well(s) should not be pumping wells. The applicant is expected to facilitate access to dedicated monitoring well(s) for District staff as long as their associated Tier 3 production permit is active. The monitoring well network plan must be approved by the District and the monitoring wells shall be installed and/or identified prior to the commencement of the aquifer test.

A. Goal and purpose of project

Summarize and state the purpose and goal of the monitoring network. Include figures showing well network locations (including proposed and existing wells) and rationale for well locations.

B. Design and Construction

Provide information on the well design on each monitor well. Include figures and tables showing the construction and completion of each new well. Information should include: State well reports if available, geophysical data, downhole video, non-pumping and pumping water levels, well and casing depth and diameter, pump depth, or schematics for proposed modifications.

C. Monitoring well specifications and installation

Provide information on the monitor well including:

- Designated hydrogeologist/engineer and well drilling contractor.
- Schedule for completion of work.
- Assurances that the District can maintain access to the monitoring well network and equipment. ~~.~~
- Parties responsible for maintaining, repairing, and equipping the monitoring well network.

Item 5

Board Discussion and Possible Action

d. Discussion and possible action on approval of the draft FY 24 HCP/ITP report prepared for U.S. Fish and Wildlife.

Item 5

Board Discussion and Possible Action

e. Discussion and possible action related to the 89th Texas Legislative Session.

Item 6

Director Reports

Directors may report on their involvement in activities and dialogue that are of likely interest to the Board, in one or more of the following topical areas:

- Meetings and conferences attended or that will be attended
- Board committee updates
- Conversations with public officials, permittees, stakeholders, and other constituents
- Commendations
- Issues or problems of concern

Item 7

Adjournment

Barton Springs
Edwards Aquifer
CONSERVATION DISTRICT

Habitat Conservation Plan and Incidental Take Permit

Annual Report for Fiscal Year 2024

September 1, 2023 – August 31, 2024

Photo of Barton Springs salamanders by Ryan Hagerty, USFWS

Permit # TE 10607- 0

Endangered Species Act Section l0(a)(1)(B) Permit for the Incidental Take of the Barton Springs Salamander *(Eurycea sosorum)* and Austin Blind Salamander *(Eurycea waterlooensis)* for Managed Groundwater Withdrawals from the Barton Springs Segment of the Edwards Aquifer

Table of Contents

1.0 Introduction and Background

The Barton Springs/Edwards Aquifer Conservation District's ("District") Habitat Conservation Plan (HCP) and Incidental Take Permit (ITP) require the District to report annually on the status of the District's program implementation and achievement of conservation measures and objectives. This document is the Annual Report for Fiscal Year 2023, covering the period September 1, 2023 – August 31, 2024 (reporting period).

According to the Incidental Take Permit, the Annual Report shall cover:

1. Descriptions of Covered Activities undertaken;
2. Reported groundwater withdrawals from permitted wells;
3. Reference well levels;
4. Springflow at Barton Springs;
5. Total Aquifer discharge, measured for permitted wells, estimated for exempt wells, gaged/measured for Barton Springs, and estimated for Cold & Deep Eddy Springs;
6. Drought-stage management reductions;
7. Estimated actual take, if any, for the annual reporting period, and total cumulative take for the ITP term;
8. Minimization measures and actions taken during the prior year;
9. Mitigation actions taken during the year and updates on any ongoing mitigation actions;
10. An evaluation of the effectiveness of the avoidance, minimization, and conservation measures;
11. Adaptive management activities undertaken during the year or indicated as prudent by outcomes of the conservation program;
12. Expenditures by the District on implementation activities;
13. Any species-specific or aquifer research compiled or completed during the prior year;
14. Proposed activities for the next year;
15. Recommendations for improvement; and
16. Any other appropriate information documenting Permittee's compliance with the Permit.

This introduction section provides an overview of the District's application of the authority provided to manage the groundwater resources within the District and the fundamental management concepts and strategies that embody the District's regulatory and permitting program. Included as part of the introduction is a background and an overview of the following:

1.1 General Information about the District
1.2 Management of Groundwater Resources in the District
1.3 Implementation of Management Plan and Habitat Conservation Plan
1.4 Background on District's Incidental Take Permit (ITP)

Other major report sections that follow include a summary of the District's minimization measures and mitigation actions taken during the reporting year, a review of drought management activities, and aquifer status, and an outlook for planned activities.

Additionally, included as Appendix D of this annual report, is a summary of the meeting discussion and comments received from the HCP Management Advisory Committee (MAC). The District established an HCP MAC to advise and assist the Board in coordination of conservation activities affecting Covered Species at Barton Springs, and in monitoring and helping the Board improve implementation of the District HCP. The MAC provides an additional measure to ensure continued improvement of the HCP and compliance with the ITP, and ensures the Board is aware of stakeholder concerns regarding execution of and revisions to the HCP. The primary purpose of the MAC is to review and comment on the District's HCP annual reports, or on selected aspects of those reports, in its role to provide continuing improvement recommendations. At the Board's discretion, the MAC may also be requested to:

- Provide a forum for exchange of information relative to Covered Species,
- Provide ad hoc advice on Covered Species management activities,
- Advise the District on priorities for conservation actions, as warranted, and
- Provide input and recommendations, as warranted, on the development and implementation of actions through the adaptive management program.

The MAC was appointed by the District Board in early 2013 and includes independent, volunteer representatives with biological or natural-resource management responsibilities from designated interest groups. MAC composition focused on perspectives useful to the active management of the Aquifer and habitat of Covered Species at Barton Springs. The U.S. Fish and Wildlife Service (Service) was also requested to provide a non-voting representative to be liaison between the District, the Service, and the MAC. The MAC will convene in some manner appropriate to the purpose of each meeting and no less frequently than annually, and at such other times as they decide or as requested by the Board.

1.1 General Information about the District

1.1.1 Background

Since 1904, the legal framework applied to groundwater resources in Texas has been the common law "Rule of Capture." Although the Rule of Capture remains in effect today, groundwater conservation districts (GCDs), such as the District, have been established across the state and authorized to modify how the Rule of Capture shall be applied within their boundaries as part of a comprehensive, approved groundwater management plan.

In 1997, the Texas Legislature codified the commitment to GCDs in Chapter 36, Section 36.0015 of the Texas Water Code (TWC) by designating GCDs as the preferred method of groundwater

management. This section of Chapter 36 also establishes that GCDs will manage groundwater resources in order to protect property rights, balance the conservation and development of groundwater to meet the needs of this state, and use the best available science through rules developed, adopted, and promulgated in accordance with Chapter 36. As the overarching statute governing GCDs, Chapter 36 gives specific directives to GCDs and the statutory authority to carry out such directives. It provides the so-called "toolbox" that enables GCDs to promulgate appropriate rules needed to protect and manage groundwater resources within their boundaries given consideration to conditions and factors unique to each GCD.

In addition to Chapter 36 authority, the District has powers expressly granted by Chapter 8802 of the Special District Local Laws Code ("the District Enabling Legislation"). Applied together, these statutes provide the District with the authority to serve the statutory purpose to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater, and of groundwater reservoirs or their subdivisions, and to control subsidence caused by withdrawal of water from those groundwater reservoirs or their subdivisions.

1.1.2 Authority and Purpose

The District was created in 1987 by the 70th Texas Legislature, under Senate Bill 988. Its statutory authorities include Chapter 52 (later revised to TWC, Chapter 36), applicable to all GCDs in the state, and the District's enabling legislation, now codified as Chapter 8802, Special District Local Laws Code. The District's legislative mandate is to conserve, protect, and enhance the groundwater resources located within the District boundaries. The District has the power and authority to undertake various studies, assess fees on groundwater pumpage and transport, and to implement structural facilities and non-structural programs to achieve its statutory mandate. The District has rulemaking authority to implement its policies and procedures and to help ensure management of groundwater resources as directed by the Board. The District is not a taxing authority. Its only sources of income are groundwater production fees, the annual City of Austin water use fee, export fees, administrative fees, and occasional grants from various local, state, and federal programs for special projects.

1.1.3 Jurisdictional Area

Upon creation in 1987, the District's jurisdictional area encompassed approximately 255 square miles including parts of four counties: northwestern Caldwell, northeastern Hays, southeastern Travis Counties, and a small territory in western Bastrop County. In 2011, that small part of Bastrop County was de-annexed from the District and is now in Lost Pines GCD's sole jurisdiction. The jurisdictional area was generally defined to include all the area within the Barton Springs segment of the Edwards Aquifer with an extended area to the east to incorporate the service areas of the Creedmoor-Maha Water Supply Corporation, Goforth Special Utility District, and Monarch Utilities. In this area, designated as the "Exclusive Territory," the District has authority over all groundwater resources.

In 2015, the 84th Texas Legislature (House Bill 3405) expanded the District's jurisdictional area to include the portion of Hays County located within the boundaries of the Edwards Aquifer Authority (EAA) excluding the overlapping area in the Plum Creek Conservation District as show in Figure 1. The newly annexed area, designated as "Shared Territory," excludes the Edwards Aquifer and includes all other aquifers, including the underlying Trinity Aquifer. The District's jurisdictional area including the Shared Territory encompasses approximately 420 square miles and includes both urban and rural areas. The District shares boundaries with adjacent GCDs to the west, south, and east including the Hays Trinity GCD, Comal Trinity GCD, EAA, Plum Creek GCD, and Lost Pines GCD, respectively. The District participates in joint-regional planning with these and other GCDs in Groundwater Management Area (GMA) 10 which are configured generally to encompass the Trinity and Edwards Aquifers, respectively.

1.1.4 Aquifers and Uses

Water from the Barton Springs segment of the Edwards Aquifer serves as the primary water source for public water supply, industrial, and commercial purposes for some parts of the District, and is a source of high-quality base flow to the Colorado River via discharge through the Barton Springs complex. The Barton Springs complex provides habitat for the Barton Springs salamander (*Eurycea sosorum*) and Austin blind salamander (*Eurycea waterlooensis*) which are both federally listed Endangered Species under the Endangered Species Act requiring all activities that would or could adversely affect the species to represent optimal conservation efforts. The Trinity Aquifer underlying the Edwards, is an important primary water resource in some parts of the District and is increasingly being developed in both the Exclusive and Shared Territory. Some wells in the District also produce water from the Taylor and Austin Chalk formations as well as various alluvial deposits along river and stream banks.

The area has a long history of farming, ranching, and rural domestic use of groundwater, but over time the region has become more urban in areas of south Austin, Buda, Kyle, and San Marcos. Groundwater use in the area is now primarily for domestic and public water-supply purposes, with lesser amounts utilized for commercial, irrigation, and industrial use. See Figure 2 for a general breakdown of the types of wells in the District and percentage of permitted production for each classification category.

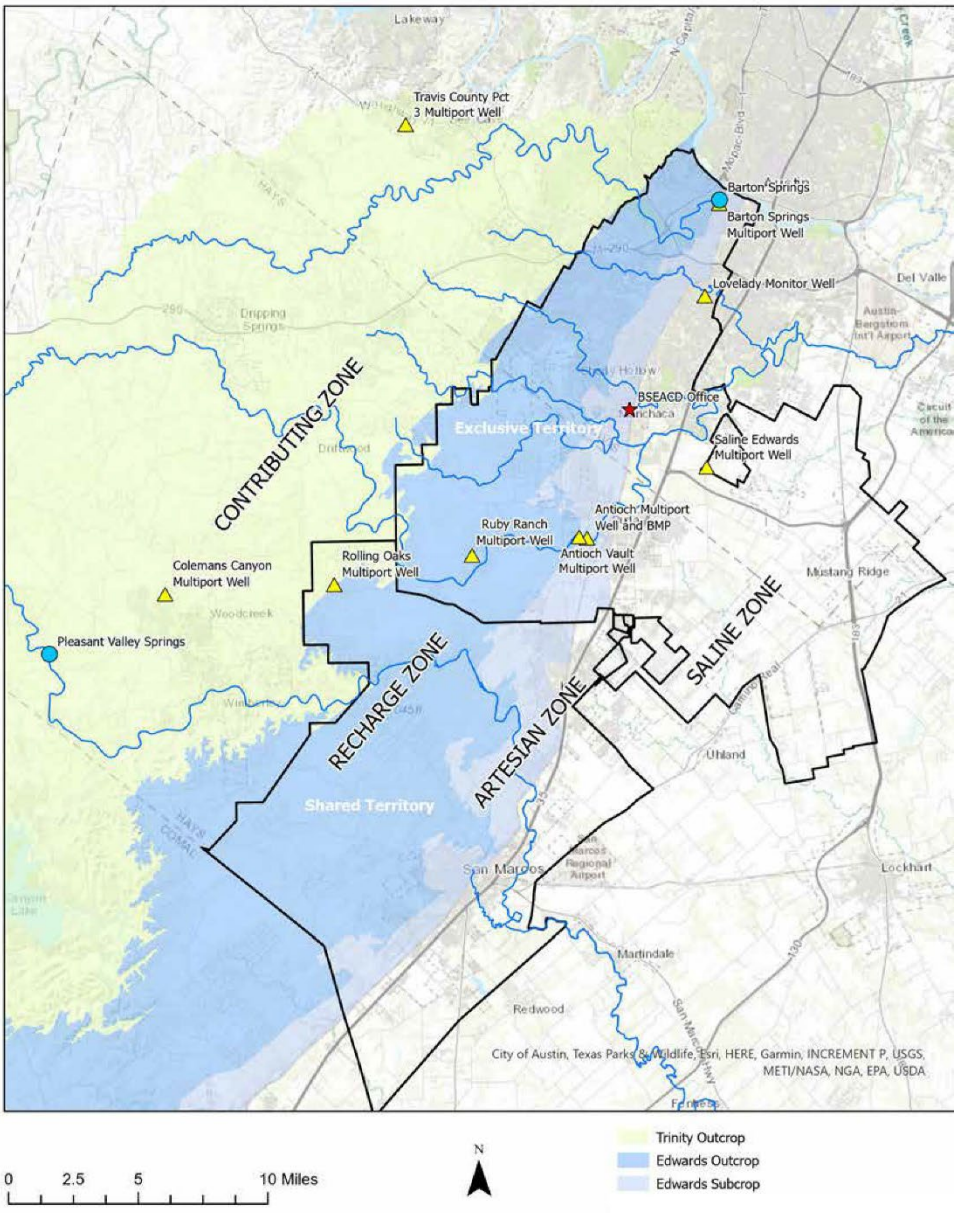


Figure 1. Barton Springs/Edwards Aquifer Conservation District boundaries, major aquifers, hydrogeologic zones, key springs, and select monitoring wells.

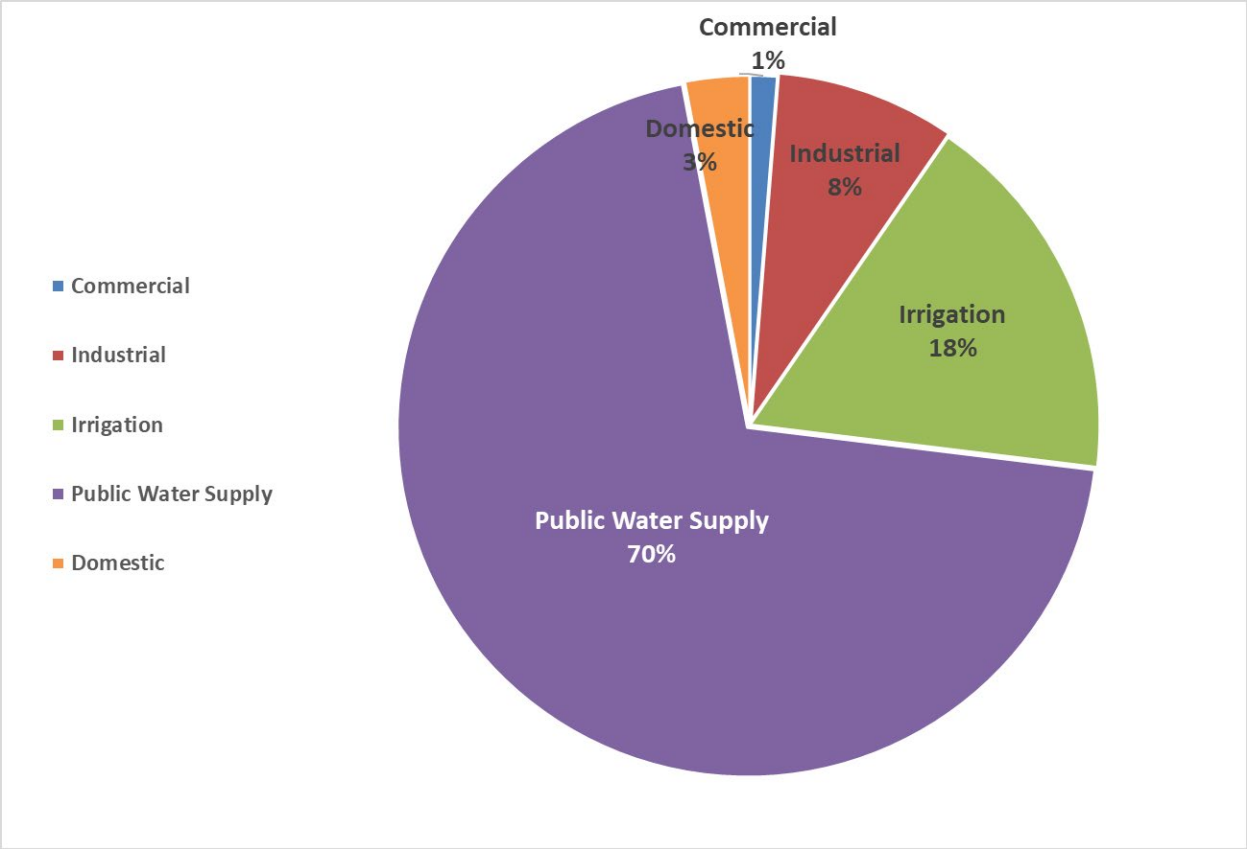


Figure 2. Types of groundwater use and share of total permitted volume for wells in the District.

1.2 Management of Groundwater Resources in the District

Since its creation in 1987, the District has honored the established precedent of developing policy and management strategies on the basis of statutory compliance, sound science, and stakeholder input. The District established a precedent for developing the governing policies and rules through an initial data-driven evaluation of the science to characterize the District's aquifers followed by a thorough vetting by affected stakeholders and the public. This process has served to inform the Board's direction and policy decisions resulting in the current regulatory program that has evolved to address challenges unique to the District. This evolution has been marked by key milestones, producing management strategies that are now integrated within the current regulatory approach. The evolution of the District's policies and strategies has produced a regulatory program that is fair, innovative, and customized to objectively address challenges and management objectives unique to the District. The District's management approach evolved from an initial focus on permitting for historical use from 1987 until the completion of the sustainable yield study in 2004. On the basis of that study, the District began preparation for management under an HCP to protect the endangered salamanders at Barton Springs.

After the passage of HB 3405 in 2015, the District's attention broadened to include management of the Trinity Aquifer and other non-Edwards aquifers in the Shared Territory, development of a permitting program with a refined interest in managing to avoid unreasonable impacts, and an updated definition of sustainable yield. The integration of these strategies collectively produced a program formed on the basis of demand-based permitting coupled with an evaluation of the potential for localized and regional unreasonable impacts. This permitting approach is bolstered by an active drought management program to abate groundwater depletion during District-declared drought. The current permitting and drought management programs are further described below.

*Permitting***.** The current permitting program in place and supported by the District's Management Plan (MP) applies a three-part evaluation to affirm beneficial use in accordance with demand-based permitting standards, and to evaluate the full range of potential impacts for each production permit request. The three-part permit evaluation involves an assessment of reasonable nonspeculative demand, local scale evaluations, and aquifer scale evaluations. The extent of the evaluation scales with the magnitude of the requested production volume, and the more comprehensive evaluations are reserved for more complex, larger-scale projects that show greater potential to cause unreasonable impacts. More information on the District's permitting program can be found on the District's website here: https://bseacd.org/regulatory/permit-process/

Drought Management. One of the principal responsibilities central to the District's mission is to manage groundwater production during drought conditions when the aquifers are most stressed. After creation of the District in 1987 and until 2004, the District put into place its initial permitting program and drought management program with a network of drought indicator wells and curtailments linked to percentiles of monthly flow at Barton Springs. With a burgeoning regional population and increasing demand on District aquifers coupled with the findings of the

sustainable yield study, the District recognized a need to improve the drought management program. Significant droughts in 2006, 2008–09, and 2011 provided further impetus for a series of amendments to implement more effective science-based drought trigger methodology and expand permit-based drought rules and enforcement protocol. The amendments produced milestones in the District's regulatory approach (e.g., conditional permitting, Extreme Drought Withdrawal Limits, the Ecological Flow Reserve, and Management Zones) that were the product of numerous scientific studies conducted by the District's hydrogeologists, vetted through technical consultants and advisors, reviewed and commented on by stakeholders and the public, and approved by the Board.

The current drought management program in place and supported by the District's MP is implemented through User Drought Contingency Plans (UDCPs) that are an integral component required of each production permit. Drought declarations involve continuous evaluation of aquifer conditions measured at the drought indicators for the Edwards Aquifer that also serve as surrogates indicative of regional drought conditions for all District aquifers. When designated aquifer conditions are met, permittees are required to implement prescribed measures of the UDCPs requiring mandatory curtailments of permitted groundwater production based on permit type (Table 1) and aquifer management zones.

The various types of wells are defined below:

Conditional Production Permit - an authorization issued by the District allowing the withdrawal of a specific amount of Edwards groundwater from a nonexempt well for a designated period of time, generally in the form of a specific number of gallons per District fiscal year, which is subject to complete cessation, temporary curtailment, or reduction of the amount of groundwater that may be withdrawn during District-declared drought stages. Conditional Production Permits are classified as Class A, Class B, Class C, or Class D.

Exempt Well - a well whose use and characteristics do not require a permit for the production of groundwater within the District.

Historical Production Permit - an authorization with Historic Use Status issued by the District for a designated period of time allowing the withdrawal of a specific amount of groundwater from a nonexempt well.

Limited Production Permit (LPP) - a permit issued for nonexempt groundwater use associated primarily with domestic or livestock uses authorized under District (a nonexempt well.)

Nonexempt Well - a well required to obtain a well drilling authorization for well drilling or modification and a permit for the production of groundwater from within the District.

Table 1. Fresh Edwards permit types issued by the District.

Permit Type	Use Type	Description
[IPP] NE- Class A Conditional Fresh Edwards	Various Uses: Commercial, Institutional, Industrial, Agricultural, Irrigation, Public Water Supply	This permit applies to the Eastern and Western Fresh Edwards Management zones and is for those registered nonexempt wells approved by the District prior to September 2004. These permits are subject to drought restrictions. These permits have a max curtailment of up to 50%.
[IPP] NE- Class B Conditional Fresh Edwards	Various Uses: Commercial, Institutional, Industrial, Agricultural, Irrigation, Public Water Supply	This permit type applies to the Eastern and Western Fresh Edwards Management zones and is for those registered nonexempt wells approved after April 2007. Wells that have been issued this permit are interruptible and are subject to drought restrictions of up to 100% curtailment during a Stage IV Exceptional Drought.
[IPP] NE- Class C Conditional Fresh Edwards	Various Uses: Commercial, Institutional, Industrial, Agricultural, Irrigation, Public Water Supply, Domestic	This permit type applies to the Eastern and Western Fresh Edwards Management zones and is for those registered nonexempt wells approved after March 2011. Wells that have been issued this permit are interruptible and are subject to drought restrictions of up to 100% curtailment during a Stage IV Exceptional Drought.
[IPP] NE- Class D Conditional Fresh Edwards	Aquifer Storage and Recovery (ASR)	This permit applies to groundwater productions associated with Aquifer Storage and Recovery projects where stored water is recovered and used to supplement or substitute Freshwater Edwards supplies during District Declared Drought.
[IPP] NE – Historical Fresh Edwards	Various Uses: Commercial, Institutional, Industrial, Agricultural, Irrigation, Public Water Supply, Domestic	This permit applies to the Eastern and Western Fresh Edwards Management zones and is for those registered nonexempt wells approved by the District prior to September 2004. **This permit type is no longer issued for new nonexempt wells.** These permits are subject to drought restrictions of up to 50% curtailment during a Stage IV Exceptional Drought

Curtailments are implemented on a monthly basis during District-declared drought and increase with drought severity with maximum curtailments reserved for an Emergency Response Period as shown in Table 2. Curtailments are derived on the basis of a pumping profile representing the average monthly distribution of the demand-based annual permit volume for each groundwater use type and are calculated as a percentage reduction off of the monthly baseline amount as shown in the example drought target chart in Figure 3. Authorized permit volumes based on reasonable non-speculative demand, monthly reporting of actual groundwater production by permittees, and active enforcement of monthly curtailments are integral to effective drought management to ensure the more immediate and consistent relief in actual pumping pressure needed to sustain spring flows and existing water supplies during District-declared drought until the drought conditions recede and the aquifers recover.

Table 2. Mandatory pumpage curtailments with each stage of drought.

Curtailments established for different well permit types, aquifers, and drought conditions. (Curtailment expressed as percentage of authorized monthly groundwater production in designated drought stage. For example, freshwater Edwards Aquifer historical permittees would be required to curtail their authorized monthly withdrawal by 30% during Stage III Critical Drought.)

Drought Curtailment Chart											
Aquifer Management Zone / Permit Type		Edwards Aquifer						Trinity Aquifer			
		Eastern/Western Freshwater					Saline	Lower	Middle	Upper	Outcrop
		Historical	Conditional				Hist.	Hist.	Hist.	Hist.	Hist.
			Class A	Class B	Class C	Class D					
Drought Stages	No Drought	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Water Conservation (Voluntary)	10%	10%	10%	10%	10%	0%	10%	10%	10%	10%
	Stage II Alarm	20%	20%	50%	100%	100%	0%	20%	20%	20%	20%
	Stage III Critical	30%	30%	75%	100%	100%	0%	30%	30%	30%	30%
	Stage IV Exceptional	40%	50%[1]	100%	100%	100%	0%	30%	30%	30%	30%
	Emergency Response Period	50%[3]	>50%[2]	100%	100%	100%	0%	30%	30%	30%	30%
Percentages indicate the curtailed volumes required during specific stages of drought.											

1 Only applicable to Limited Production Permits (LPPs) and existing unpermitted nonexempt wells after A to B reclassification triggered by Exceptional Stage declaration.

2 Curtailment > 50% subject to Board discretion.

3 Emergency Response Period (ERP) (50%) curtailments become effective October 11, 2015. ERP curtailments to be measured as rolling 90-day average after first three months of declared ER

Drought Target Chart

Historic Edwards Production Permit -			Permittee					
Water Use:	Public Water Supply							
Permitted Pumpage (GPY):	20,000,000						**UDCP Approved in Fiscal Year:**	FY 2020
			Fresh Edwards Management Zone					
			Pumpage Volume Targets During Drought Stages					
			No Drought Baseline	**Stage I Water Con. Period**	**Stage II Alarm**	**Stage III Critical**	**Stage IV Exceptional**	**Emergency* Response Period**
	Monthly Volume Allocation			(Voluntary)	(Mandatory)	(Mandatory)	(Mandatory)	(Mandatory)
Fiscal Year			No Reduction	10% Reduction	20% Reduction	30% Reduction	40% Reduction	50% Reduction*
September		10.00%	**2,000,000**	1,800,000	1,600,000	1,400,000	1,200,000	1,000,000
October		8.30%	**1,660,000**	1,494,000	1,328,000	1,162,000	996,000	830,000
November		7.00%	**1,400,000**	1,260,000	1,120,000	980,000	840,000	700,000
December		6.30%	**1,260,000**	1,134,000	1,008,000	882,000	756,000	630,000
January		6.30%	**1,260,000**	1,134,000	1,008,000	882,000	756,000	630,000
February		6.50%	**1,300,000**	1,170,000	1,040,000	910,000	780,000	650,000
March		6.60%	**1,320,000**	1,188,000	1,056,000	924,000	792,000	660,000
April		7.40%	**1,480,000**	1,332,000	1,184,000	1,036,000	888,000	740,000
May		8.00%	**1,600,000**	1,440,000	1,280,000	1,120,000	960,000	800,000
June		9.50%	**1,900,000**	1,710,000	1,520,000	1,330,000	1,140,000	950,000
July		12.10%	**2,420,000**	2,178,000	1,936,000	1,694,000	1,452,000	1,210,000
August		12.00%	**2,400,000**	2,160,000	1,920,000	1,680,000	1,440,000	1,200,000
Annual Totals:		100.00%	**20,000,000**	18,000,000	16,000,000	14,000,000	12,000,000	10,000,000

** ERP(50%) ERP curtailments to be measured as a rolling 90 day average after the first three months of declared ERP.*

Template Updated: 022819

District Representative | Date

Permittee Signature | Date

Figure 3. Example of a permittee drought target chart.

1.3 Implementation of Management Plan and Habitat Conservation Plan

The provisions of the District's MP and HCP will be implemented and used by the District as a guide for determining the direction or priority for all District activities. All operations of the District, all agreements entered into by the District, all District policies and programs, and any additional planning efforts in which the District may participate will be consistent with the provisions of the District's MP and HCP. The District will encourage cooperation and coordination with relevant entities to implement these plans.

The District adopted and implemented rules necessary to support its mission including rules related to permitting of wells, production and transport of groundwater, and drought management. Rules and policies established by the District are consistent with the provisions of these plans and are adopted on the basis of the best available science, public and stakeholder input, and recommendations of competent professionals. Further, the rules comply with TWC Chapter 36 and the District's enabling legislation. All rules are enforced in a manner that is fair and objective. A copy of the Rules can be found on the District's website here: https://bseacd.org/governingdocuments/.

In order to achieve the goals, management objectives, and performance standards adopted in these plans, the District continually works to develop, maintain, review, and update rules, policies, and procedures for the various programs and activities described within the MP and HCP. As a means to monitor performance, the District implements various goals, management objectives, and performance standards adopted in these plans. On an annual basis, the District develops annual reports for the MP and HCP that document progress made towards implementation and achievement of the goals and objectives.

All specific activities undertaken by the District in this FY 2024 reporting period, whether considered as direct or indirect management of the Aquifer are described in more detail in the latest "FY 2024 Management Plan Annual Report," which can be viewed and downloaded at: https://bseacd.org/governingdocuments/

1.4 Background on District's Incidental Take Permit (ITP)

The District is charged with the management of the Barton Springs segment of the Edwards Aquifer ("Aquifer"), which is the primary water supply for more than 60,000 people in the region and the source water for the Barton Springs complex. The District manages this resource by a production permit-based regulatory program for larger, non-exempt wells, and these regulatory program elements constitute the Covered Activities described in the HCP. The overarching strategic purpose of the District is to optimize sustainable uses of groundwater for these users and other community interests.

However, it is established that during drought conditions large amounts of groundwater withdrawals (pumping) will contribute to diminished flow through the Aquifer, smaller springflow rates at Barton Springs, and associated adverse effects to some Aquifer users. The 2004 Sustainable Yield of the Barton Springs Segment report can be viewed at https://bseacd.org/uploads/HR_SustYield_BSEACD_report_2004_web.pdf. The Aquifer and its associated spring outlets are the sole habitat of the federally-protected Barton Springs salamander (BSS) and Austin blind salamander (ABS). The federal Endangered Species Act prohibits the harassment or harm of the salamanders (termed "take") that may incidentally occur as a result of the effect of pumping on decreasing water levels and springflows unless exempted under a federal ITP.

The District's activities that create the need for an HCP and an ITP relate to the District's following programmatic functions for managing groundwater production:

- Adopt, implement, and enforce regulations and management programs that protect existing groundwater supplies, improve aquifer demand management, provide Aquifer and springflow protection during droughts, promote and improve aquifer recharge, and carry out other beneficial management strategies; and

- Avoid, or minimize, and mitigate negative impacts upon federally listed species dependent upon springflow from Barton Springs through adoption and implementation of regulations, management programs, scientific research programs, conservation education programs, and collaborative efforts with other governmental entities.

These activities directly and indirectly affect withdrawals (groundwater production) from the Aquifer. In turn, because of the hydrology of the groundwater system, such withdrawals lower the water levels in the Aquifer, which consequently reduces the discharge (springflow or flow) at Barton Springs. There is a well-established relationship, within the observed data range between the flow issuing from the outlets of Barton Springs and the chemistry of the water. As flow decreases, the dissolved oxygen (DO) concentration of the water, which is required by the Covered Species for survival, decreases, and the concentration of dissolved solids increases. This natural variation in water chemistry derives from the physical system of the Aquifer, and it occurs regardless of whether Aquifer water-levels and springflow decreases are due to drought, withdrawals by wells, or both.

During normal and high-flow conditions in the Aquifer, the combined flow of the natural outlets at Barton Springs are minimally affected by the total amount of water that is being withdrawn by wells in the Aquifer. Under these conditions, the District's program elements principally address the long-term sustainability of the Aquifer as a water supply. Under these high-flow conditions, the amount of water withdrawn from the Aquifer by pumping wells and the provisions of the District's regulatory program are believed to have essentially no effect on the chemistry of the springflow. This is because the physical and chemical characteristics of the springflow are mostly attributable to meteorologically-induced stormflows and seasonal factors, and from time to time, other external factors.

Accordingly, essentially no incidental take is attributable to the Covered Activities (lawfully conducted withdrawals from District permitted wells, see HCP Section 4.1, Proposed Covered Activities) when water levels in the Aquifer are above a certain elevation, which determines the flow at the Aquifer's major outlet, Barton Springs.

But during drought, and especially prolonged severe or Extreme Drought, the amount of water naturally discharging from the springs complex (the natural spring outlets taken together) is much smaller, similar in magnitude to the amount of water withdrawn from wells. During these drought conditions, the District's groundwater drought management program is key to preserving groundwater levels in the Aquifer and springflow. The joint and regional water planning conducted by the State, with which the District's MP is integrated, uses a recurrence of the drought of record (DOR) in the 1950s as the planning objective, and the DOR is also the framework for the District's drought management program. The District's integrated regulatory program is designed to protect the water supply of Aquifer users who are most vulnerable to supply interruption during periods of Extreme Drought and to conserve flows at Barton Springs for both ecological and recreational purposes.

During drought periods with low recharge rates, groundwater pumping contributes to diminished rates of springflow at Barton Springs. It is during these drought periods that groundwater levels and springflows decline sufficiently to create conditions in which District-managed activities may create incidental take and the programmatic need for the HCP and the ITP. Circumstances that give rise to such incidental take are discussed in detail in HCP Section 5.2.2, Spatial and Temporal Extent of Take, and HCP Section 5.2.3, Consideration of Take and Jeopardy.

The cumulative withdrawals of all operating wells in the Aquifer can have significant impact on springflow during drought conditions and can increase the likelihood of low-flow conditions. Since June 2008, despite increased demand for water supplies in the District, withdrawals generally have been reduced as a result of groundwater management policies and regulations of the District and of responses by its permittees to projected shortfalls during severe droughts. As demand for groundwater has increased, the District has gradually changed its drought management and regulatory program to improve the effectiveness of Aquifer and springflow protection, supported by studies and planning for the ongoing HCP development.

The HCP specifies the District's commitment to a set of conservation (avoidance, minimization, and mitigation) measures consistent with statutory authorities of the District and that are based on sound science and effective groundwater management practices. The District's HCP has been formulated and framed in collaboration with other conservation efforts affecting the Covered Species and their respective habitats; that is, the HCP of the City of Austin (COA) for operation and maintenance at Barton Springs Pool and surrounding area, including individual spring outlets (Barton Springs Pool HCP). Well owners and users, especially the District's permittees (the regulated groundwater community), and all citizens who consider Barton Springs an ecological, recreational, and aesthetic resource, are key additional stakeholders for this HCP.

2.0 Descriptions of the Covered Activities Undertaken

The District's ITP allows for continued managed pumping (the covered activity) of the Aquifer by District permittees, provided the proposed HCP measures minimize and mitigate incidental take and avoids jeopardy of salamanders. Ultimately, the HCP measures safeguard continued sustainable use of the Aquifer and survival of the endangered salamanders.

The ITP identifies two categories of Covered Activities: groundwater withdrawals from the Aquifer by nonexempt permittees, and actions necessary to manage potential habitat of the Covered Species in the ITP Area.

2.1 Managing Groundwater Withdrawals

Managing groundwater in its jurisdictional area is the primary purpose of a GCD and managing withdrawals of groundwater in accord with its authorities is a primary activity of a GCD. The District employs a set of groundwater-management activities that relate directly to active management of groundwater withdrawals from the Aquifer (and from all aquifers). These active aquifer-management activities are an essential part of the District's groundwater management scheme and generally recur every year, to include:

- Renewal of existing production permits
- Processing of new permit applications
- Installation and operation of wells to monitor groundwater levels and quality
- Participation in joint groundwater planning with other GCDs in relevant groundwater management areas, and monitoring desired future condition (DFC) efficacy and compliance
- Monitoring groundwater drought status and informing the District Board of Directors of changes in drought status and need for responsive action
- Using well site inspections and actual production reports to evaluate compliance with applicable rules and need for potential enforcement actions
- Evaluating permittees' long-term actual withdrawals compared to authorized amounts and recommending conservation credit awards
- Assessing the efficacy of existing rules to protect groundwater systems, to promote conservation measures, achieve and maintain applicable DFCs, and as warranted, recommending possible regulatory improvements for Board consideration. (In this reporting period, the Rules were not required to be amended.)

In addition to the recurring activities above, many other important activities conducted are considered as *indirect* management of the Aquifer. Those indirect activities include:

- program-supporting scientific investigations and monitoring, educational and outreach programs, internal and external communications and coordination, and legal support actions;
- initiatives that improve the efficiency and effectiveness of other programs; and
- activities required for governance and administration of a public agency.

Generally, such activities differ in specifics from year to year. Successful groundwater management of the Aquifer under the HCP requires operation and maintenance of a fully functioning GCD in compliance with all applicable statutes and rules in its entire jurisdictional area.

All specific activities undertaken by the District during this reporting period, whether considered as direct or indirect management of the Aquifer, are described in greater detail in Appendix C of this report. Appendix C is intended to reflect the detailed progress, activities and actions implemented by the District to achieve the HCP minimization measures. Appendix C is an excerpt from the FY 2022 Management Plan Annual Report referred to as, *"Appendix B - Assessment of Progress toward Management Plan Goals and Objectives."*

The FY 2022 Management Plan Annual Report comprises a supporting complement to this stand-alone "Habitat Conservation Plan Annual Report" and can be viewed in full and downloaded at: https://bseacd.org/governingdocuments/

2.2 Managing Potential Habitat of Covered Species

Covered Activities related to managing groundwater withdrawals described above are, by design, intended to protect potential habitat of the Covered Species throughout the Aquifer in an ongoing basis, but especially during critical drought periods when the endangered species are under additional stress. Covered Activities related more directly to management of potential habitat by the District involve decision-making and actions that support the general Biological Goals and the more explicit, quantitative Biological Objectives expressed in the District's HCP report Section 6.1. (https://bseacd.org/uploads/BSEACD_FinalHCPVol.1-Final-for-Submission-to-FWS-4.19.18.pdf). These measures are intended to ensure that reduction in springflow is minimized and corresponding DO concentrations in perennial spring outlets do not fall below specified minimum values under various springflow conditions. Drought indices of Barton Springs coupled with the Lovelady monitor well are the principal method of managing pumping during drought, and thereby preserving habitat.

Both Barton Springs springflow and DO are measured and reported in real-time by the U.S. Geological Survey (USGS). These data can be found online at:
https://waterdata.usgs.gov/tx/nwis/uv/?site_no=08155500&agency_cd=USGS&amp

Lovelady water levels are measured and reported in real-time by the USGS. These data can be found online at:
https://waterdata.usgs.gov/tx/nwis/uv/?site_no=301237097464801&PARAmeter_cd=72019

Table 3 provides a summary of DO concentration measured and reported by the USGS. The results are well above the minimum concentrations specified in the Biological Objectives. No unanticipated adverse effects of HCP-related activities on water chemistry were documented in the reporting year. Consequently, no extraordinary District actions, beyond those in the Covered Activities and HCP Conservation Measures, were required to actively manage the potential habitat and comply with the Biological Goals and Objectives.

Table 3. Range of Barton Springs springflow and dissolved oxygen for FY 2024 (USGS 08155500).

Month	Historic Mean DO (mg/L)	FY24 DO (mg/L)	Historic Mean Flow (cfs)	FY24 Flow (cfs)
Sep-23	5.4	4.2	58	17.8
Oct-23	5.6	4.2	57	22.4
Nov-23	5.7	4.6	59	24.5
Dec-23	5.8	4.6	60	21
Jan-24	6.0	5.4	61	37.6
Feb-24	6.0	6.7	64	63
Mar-24	5.8	6.1	65	48.3
Apr-24	5.9	5.7	67	39.2
May-24	5.5	5.3	68	35
Jun-24	5.5	5.2	70	45.9
Jul-24	5.4	5.2	66	37.7
Aug-24	5.4	4.9	60	28.8
Mean annual	**5.7**	**5.2**	**63**	**35**

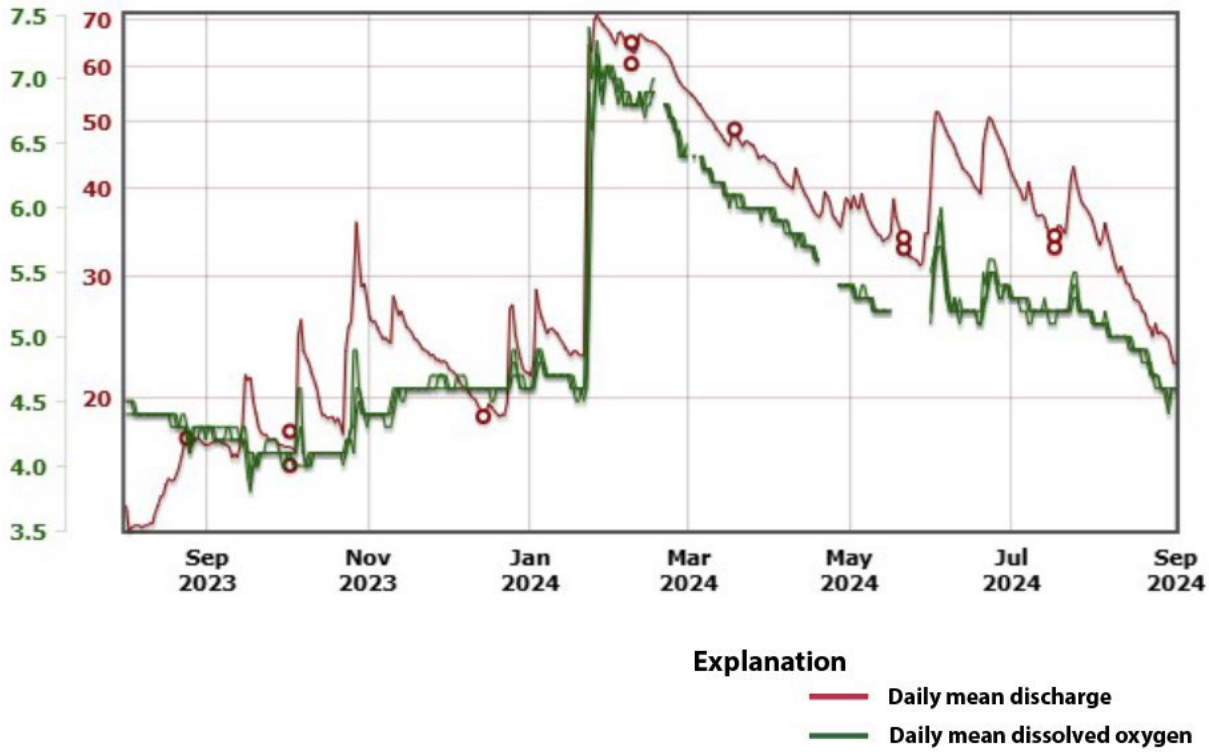


Figure 4. USGS hydrograph of mean daily springflow and DO values of Barton Springs in FY 2024.

In addition to considerations arising from the HCP Biological Goals and Objectives, there were two additional activities that specifically relate to management of potential habitat in the reporting period.

1. The District's Validation Monitoring Protocol is used annually to determine if new information suggests that the District's take estimate methodology should be re-evaluated. The results of this evaluation will be part of each HCP Annual Report, Section 16.0 Recommendations for Improvement. The current Validation Monitoring Protocol is included in this Annual Report in Appendix A.

2. In FY 2019, The District and the COA executed an Interlocal Agreement (ILA) to facilitate data and information sharing between the parties and collaboration on activities directly related to habitat characterization and protection. The ILA enables more efficient implementation of beneficial HCP Conservation Measures, especially Mitigation Measures. The ILA is included in this Annual Report in Appendix B.

3.0 Reported Groundwater Withdrawals from Permitted Wells

The actual volume of groundwater withdrawn from non-exempt wells, i.e., wells with permits issued by the District, is shown in Table 4, along with the authorized permitted production amounts.

Table 4. Actual and permitted nonexempt production by management zone.

Table 4a. Individual Production Permits:

FY 2024 Production from Individual Production Permits		
Production Zone	Actual Production	Permitted Production
Edwards	1,541,407,018 gpy	2,679,917,604 gpy
Trinity	241,368,460 gpy	621,294,517 gpy
Austin Chalk or Alluvial	2,400 gpy	2,500,000 gpy
Total (Gallons)	**1,782,777,878**	**3,303,712,121**
Total (Acre Feet)	5471	10,139

Table 4b. Limited Production Permits:

FY 2024 Production from Limited Production Permits		
Production Zone	Actual Production*	Permitted Production
Edwards	14,221,928 gpy	68,000,000 gpy
Trinity	7,006,391 gpy	33,500,000 gpy
Austin Chalk or Alluvial	0	0
Total (Gallons)	**21,215,127**	**101,500,000**
Total (Acre Feet)	65	311

In this reporting period, the volume of groundwater actually withdrawn from the Aquifer was considerably below the permitted volume. In aggregate, the amount of groundwater actually withdrawn from the Edwards Aquifer by permitted wells in the reporting period was 1,528,229,997 gallons compared to the overall permitted volume of 2,759,112,104 gallons.

A summary of the **permitted production volumes** for each Management Zone is provided below in Table 5.

Table 5. Permitted production by management zone.

FY 2024 Permitted Production by Management Zone			
Edwards MZs	**Gallons**	**cfs**	**acre-feet**
Historical (Individual)	2,309,082,596	9.79	7,086
Historical (LPP)	2,500,000	0.011	8
Total Historical	*2,311,582,596*	*9.80*	*7,094*
Conditional (Individual)	370,835,008	1.57	1,138
Conditional (LPP)	65,500,000	0.28	201
Total Conditional	*436,335,008*	*1.85*	*1,339*
Total Edwards Aquifer	**2,747,917,604**	**11.65**	**8,433**

Trinity MZs	**Gallons**	**cfs**	**acre-feet**
Historical (Individual)	620,506,117	2.63	1,904
Historical (LPP)	33,500,000	0.14	103
Total Trinity Aquifer	**654,006,117**	**2.77**	**2,007**

Other Aquifers MZs	**Gallons**	**cfs**	**acre-feet**
Historical (Individual)	2,500,000	0.01	8
Historical (LPP)	0	0	0
Total Other Aquifers	**2,500,000**	**0.01**	**8**

Total Permitted (All Aquifers)	**3,404,423,721**	**14.43 cfs**	**10,448 acre-feet**

A summary of the **estimated exempt use production volumes** for the Edwards is provided below in Table 6.

Table 6. Exempt production by management zone.

Edwards Aquifer - Estimated Exempt Wells Production	
Estimated Volume of Exempt Well Production (gpy)*	**106,141,595**
Estimated volume in cfs	***0.45***
Estimated number of exempt wells	1015

**2010 BSEACD Staff Report – Avg Exempt Well Use=104,573 gpy*

4.0 Reference Well Levels

The primary reference well that the District uses to gauge overall groundwater levels in the Aquifer, determine drought stages that trigger various elements of the District's drought management program, and estimate take of Covered Species, is the Lovelady well, near the intersection of Stassney Lane and South First Street in South Austin. The hydrograph of this well for the reporting period is shown below in Figure 5.

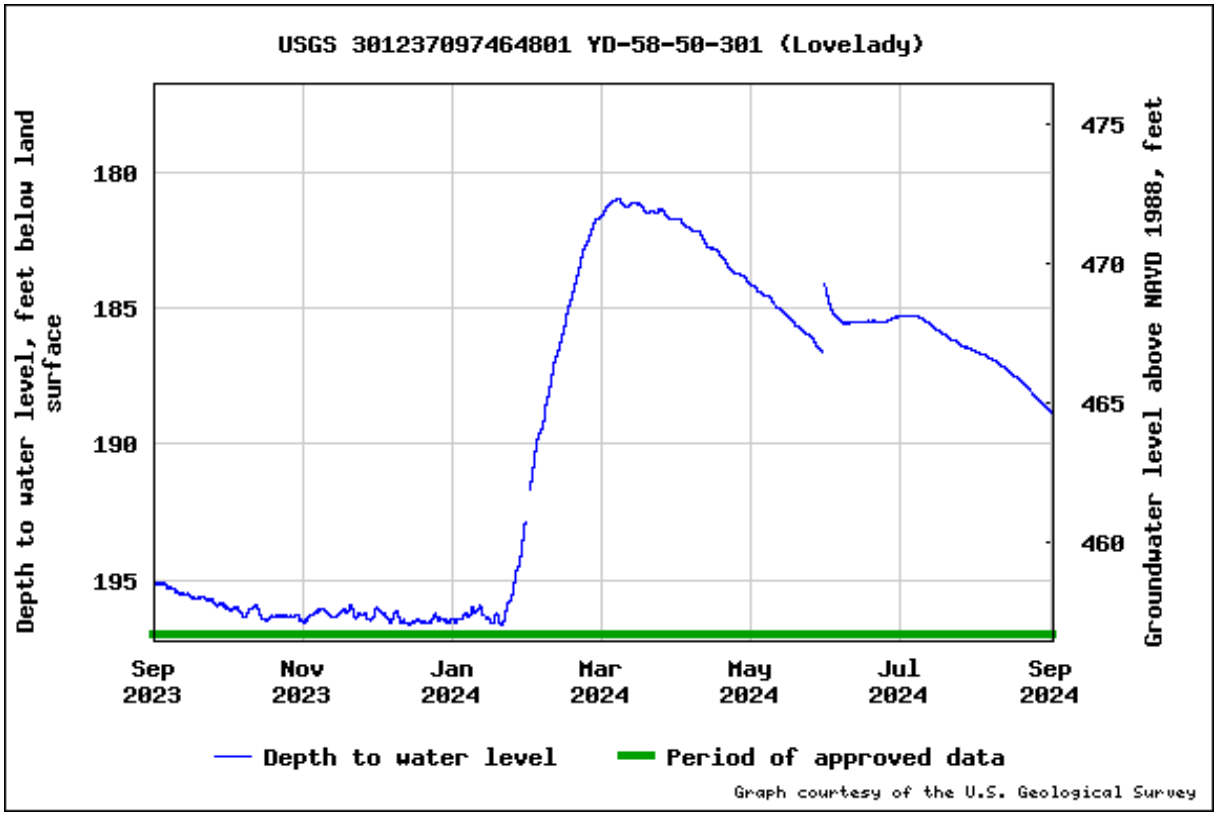


Figure 5. Hydrograph of the Lovelady water level shown as depth to water and elevation.

Data from Barton Springs and the Lovelady well informed the drought management determinations by the District's Board. Following the Drought Trigger Methodology, drought is declared when either Lovelady or Barton Springs reaches their respective thresholds. Non-drought conditions are declared when both Barton Springs and Lovelady well have recovered above the respective drought trigger thresholds. Section 7 describes the drought stage management for this reporting year.

5.0 Springflow at Barton Springs

The hydrograph of the combined springflow at Barton Springs, as indicated by the USGS gage, for the reporting period is shown in Figure 6. The USGS gauge 08155500 at Barton Springs provides real-time flow data at 15-minute intervals. To calibrate the Barton Springs rating curve, USGS staff use an Acoustic Doppler Velocimeter (ADV) for field measurements every 8 weeks. In August 2023, the USGS gauge began reporting springflow below 14 cubic feet per second (cfs) or the Stage 4 Exceptional Drought threshold. These unusually low flows pose a challenge, as there are few historical data points to effectively calibrate the gage. This combined with City of Austin staff activities managing water output at the pool to protect the endangered Barton Springs and Austin blind salamanders has resulted in inaccuracies in the gage's data on spring flow. In response, District staff, in collaboration with the City of Austin and USGS staff, initiated monthly field measurements of Barton Springs flow. This increased frequency aims to ensure a more regular verification of gauge accuracy. In addition to measurements with an ADV during periods of low flow, BSEACD staff employed a SonTek RS5 Acoustic Doppler Current Profiler (ADCP), to explore enhanced techniques for precisely gauging the flow of Barton Springs. Through further testing and measurements, BSEACD could acquire this instrumentation for future measurements.

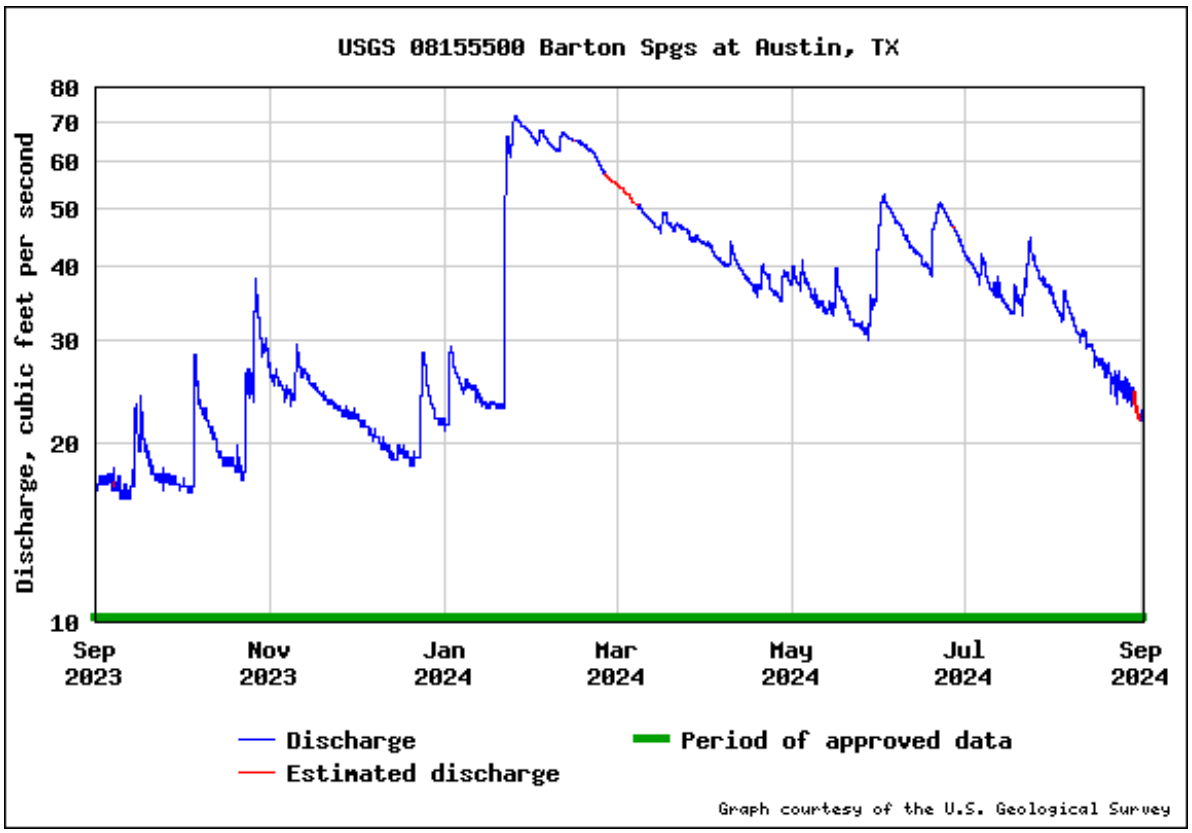


Figure 6. Hydrograph of daily mean Barton Springs flow.

Other statistics concerning spring flows during the reporting period are:

Maximum daily discharge: 71.2 cfs (1/26/2024)
Minimum daily discharge: 16.4 cfs (9/10/2023)
Mean daily discharge: 34.9 cfs

6.0 Total Aquifer Discharge

The determination of total Aquifer discharge in any reporting year requires consideration of measured (metered) discharges from permitted wells, the prevailing estimate of use by exempt wells, gaged measurements of combined discharge at Barton Springs, and an estimate of discharge at Cold and Deep Eddy Springs. There is a large degree of uncertainty about the amount of discharge that may flow to the south into the San Antonio segment of the Edwards Aquifer during high-flow conditions. The total actual discharge from the Aquifer by source during FY 2023 is estimated in Table 7.

Table 7. Estimated total discharge from the Barton Springs segment of the Edwards Aquifer.

Discharge Source	FY 2024 Actual Volume (gpy)	Equivalent Monthly Mean Flow Rate (cfs)	Percentage of Total Aquifer Discharge	Comment
Individual Production Permits	1,541,407,018	6.53	11.57%	Monthly meter measurements; see Section 3 above
Limited Production Permits by Rule	14,221,928	0.06	0.11%	See Section 3 above
Exempt Wells	106,141,595	0.45	0.80%	See Section 3 above
Discharge at Barton Springs	8,166,859,927	35.00	61.32%	Table 2. Mean daily discharge (USGS)
Discharge at Cold & Deep Eddy Springs	3,490,000,000	15.00	26.20%	Estimated Mean; cited in Hunt et al., 2019
Total Aquifer Discharge	**13,318,630,468**	**57.04**	--	--

7.0 Drought-stage Management Reductions

The District implements a drought management program that requires mandatory monthly pumpage curtailments during District-declared drought stages for all non-exempt permitted wells with individual production permits.

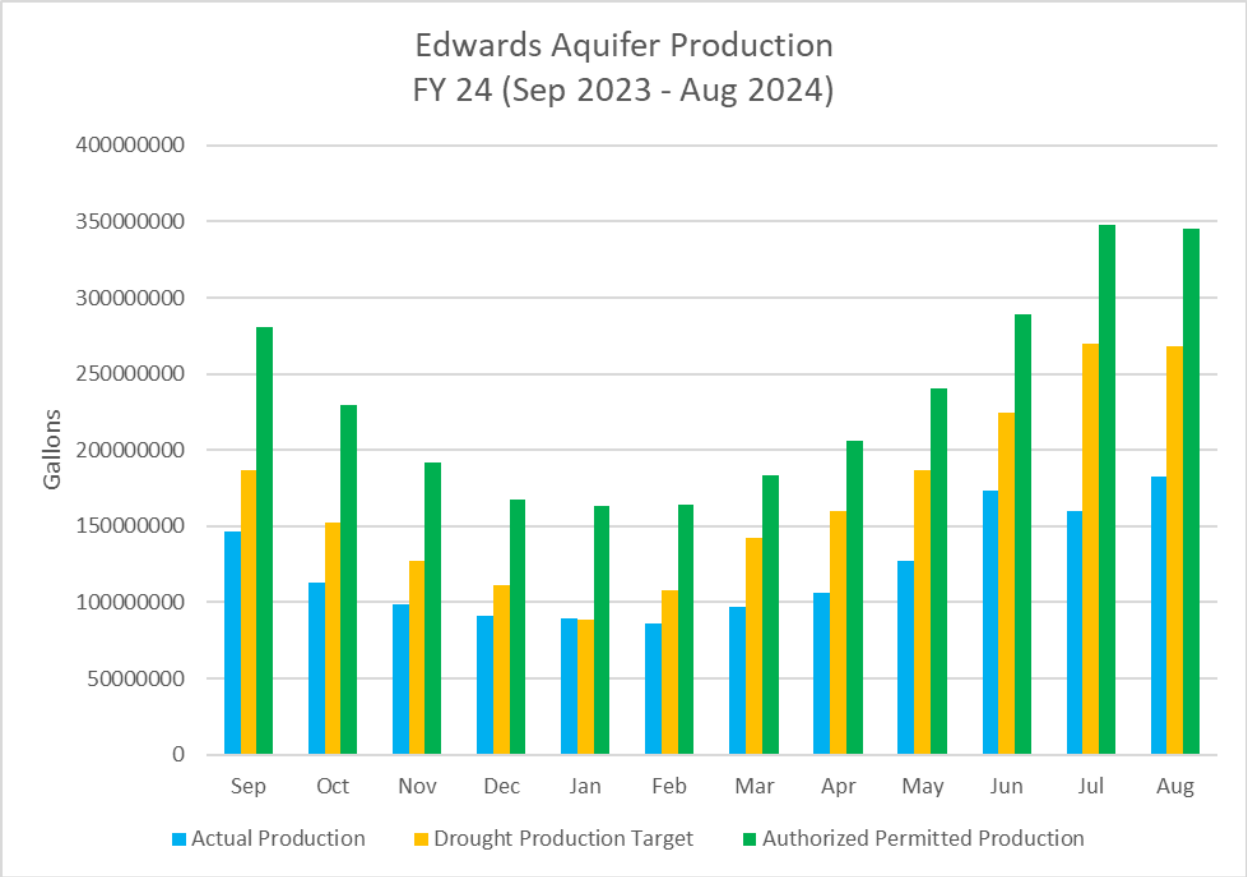


Figure 7. Hydrograph of monthly production limits and monthly actual use.

The District was in Alarm Drought status from September 2023 until Critical Drought status was declared on October 14, 2023. As of November, we remain in Critical Drought status. Figure 7 and Figure 8 reflect the overall trend that collective permittee actual production was on average lower than authorized permitted production allocations, by about 1,350,000,000 gallons, even during Critical drought.

It should be noted that other factors such as climatic conditions, seasonal trends, and alternative supply sources can contribute to lower actual use trends even in non-drought. However, as stated in the HCP, the District has demonstrated effective drought curtailments and compliance that correspond to longer and more severe drought conditions, such as in 2009 and 2011.

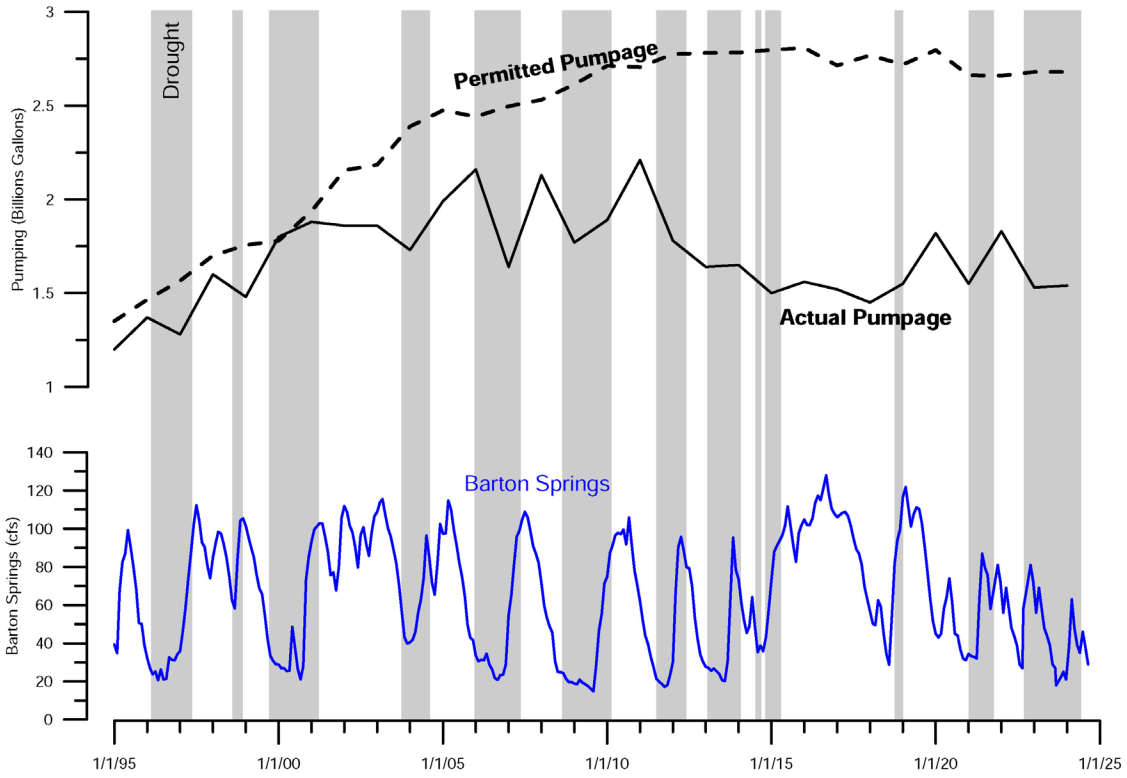


Figure 8. Hydrographs of Edwards Aquifer production and Barton Springs flow.

Figure 8 reflects production and spring flow since 1995. The data indicates there has been a trend over the past 20 years of lower total actual production than authorized production in the Edwards Aquifer. This overall trend is likely the result of the District's efforts in public awareness and drought conservation, promotion and support of Public Water Suppliers' diversification of source supplies, improved water use efficiencies, and key milestones in the District's science and regulatory framework. Some of those milestones include:

- 2004: Sustainable Yield Study and Conditional Production Permits
- 2005: Drought Trigger Methodology
- 2007: Extreme Drought Withdrawal Limitation (EDWL)
- 2009: Ecological Flow Reserve and Management Zones

8.0 Estimated Annual Take for Reporting Period (if any) and Total Cumulative Take for the ITP Term

The actual annual springflow-related take estimate to be included in the District's Annual Report to the Service involves a straight-forward procedure outlined in Appendix A that indicates the relative percentage of time during which springflow is below a given springflow threshold.

The hydrographs and data presented in Section 2 (Figures 4-6) show that springflow was below the 40 cfs threshold for take for 44 days (1.4 months), between the 30-20 cfs threshold for 269 days (8.97 months) and below 20 cfs for 51 days (1.7 months) during the reporting period. The data reveals that the take of BSS and ABS occurred during the 364-day (12.07 months) during the reporting period. Using the Validation Monitoring protocol proposed by the District and approved by the Service for evaluating take (Appendix A), the District calculates the following amounts of take for the reporting period presented in Table 8.

It is estimated that take of 15 BSS occurs under category A when Barton Springs flow is at or decreases below 40 cfs (Table 8; Circumstance A) did occur for 44 days for this reporting period.This is primarily due to Upper Barton Springs ceasing flow and induces negative behavioral effects. It is further estimated that additional take will occur for both species as a function of the number of months when springflow is between 20 and 30 cfs (Table 8; Circumstance B). Springflow between 20 and 30 cfs did occur for 269 days for this reporting period. Springflow below 20 cfs (Table 8; Circumstance C) did occur for 51 days during this reporting period.

Table 8. Summary of estimated take.

CIRCUMSTANCE	NO. DAYS	NO. MONTHS	BSS TAKE FACTOR	ABS TAKE FACTOR	BSS SUM TAKE	ABS SUM TAKE	COMMENT
A (<40 CFS)	100	3.33	15	0	**50**	**0**	Did Occur
B (30-20 CFS)	107	3.57	174	36.6	**621**	**131**	Did Occur
C (<20 CFS)	51	1.7	174	36.6	**295.8**	**62.22**	Did Occur
SUM	258	8.60			**967**	**193**	2024 total
					20200	**4260**	permitted take over 20-yrs
					1878	390	Previous year take
					16800	3585	Balance on permit
					16.8%	**15.8%**	% of total allowed

BSS: Barton Springs salamander; ABS: Austin blind salamander

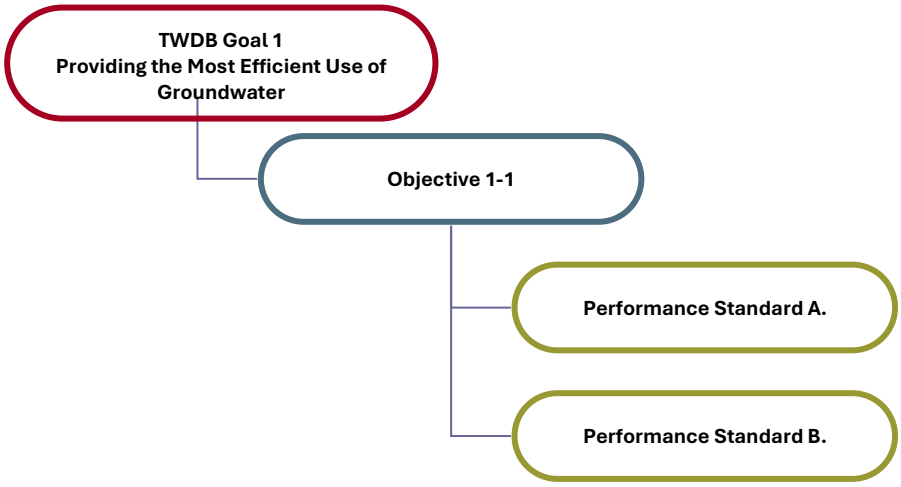
The estimated take number is derived by the number of months (8.60 months in this case) multiplied by each take factor for each species (Table 8; Circumstance A,B and C). Thus, during this reporting period take of BSS is estimated to have been 967 and take of ABS is estimated to have been 193, using the prescribed methodology. We assume that the negative effects were likely behavioral. These amounts of take are added to the previously reported cumulative take amounts, resulting in new cumulative take amounts of 3,400 for BSS and 675 for ABS. For comparison, the authorized total cumulative take estimates for BSS and ABS during the 20-year permit term are 20,200 and 4,260, respectively. This represents 16.8% for BSS and 15.8% for ABS of the authorized total.

There was no take from the DO Augmentation mitigation measure, as the associated activities and data collection have only commenced in late July 2024 at a newly drilled well in South Austin at Garrison Park. The well is open to the Edwards Aquifer, equipped with an InSitu Aqua Troll 600.

9.0 Minimization Measures and Action Taken During the Prior Year

Conservation measures to avoid, minimize, and mitigate take by the District are by necessity rooted in the statutory and regulatory requirements for all GCDs in Texas. The Texas Water Development Board (TWDB) has set nine over-arching goals for all GCDs, and in this District, these goals have also been designated as categories of Minimization Measures in its ITP issued by the Service.

Each GCD establishes a hierarchy of objectives and performance standards to achieve its goals that reflect local groundwater management priorities and to ensure its continuing operation as a sustainable organization. The hierarchy is depicted schematically below:



- **Goals** are set by the TWDB. These 9 goals are addressed in the District's Management Plan.
- **Objectives** are set by District Staff/Board. These objectives are the same objectives for the HCP.
- **Performance Standards** are set by District Staff/Board. These performance standards are the same reporting standards that have to be completed for the HCP. Many of these standards have always been reported on in previous Management Plan Annual Reports.

The GCDs' selected objectives and standards are documented in the GCDs' adopted MPs and approved by the TWDB every five years.

As a result of its HCP planning, in its current MP, the District prioritized its objectives and performance standards such that HCP Conservation Measures now coincide with the regular and ongoing groundwater and habitat management activities, i.e., the Covered Activities. Thus, by design and with the TWDB approval of the 2022 Management Plan, the District MP's objectives and performance standards are now aligned with and identical to the District HCP's conservation measures and their performance standards approved by the Service.

A comprehensive, detailed description of the progress, activities and actions taken by the District in the reporting year for each of the HCP Objectives and Conservation Measures is included in Appendix C of this HCP Annual Report.

The FY 2024 Management Plan Annual Report can also be viewed at here.

On December 12, 2024, the District's Board of Directors determined that satisfactory progress had been made in FY 2024 toward all goals and objectives of the MP using the relevant performance standards for each.

10.0 Mitigation Actions Taken During the Year, and Updates on Any Ongoing Mitigation Measures

In its HCP, the District identified five mitigation measures intended to offset unavoidable take and to otherwise minimize take further. These are characterized in Table 9 below, along with the progress made for each, as of the end of the reporting period.

Most of these mitigation measures require concurrence and/or involvement of other parties, especially the COA.

The District and the COA finalized and executed an ILA in FY 2019. This ILA, provided in Appendix B, will be instrumental in more robustly pursuing certain aspects of the mitigation measures in the upcoming years. Several of the activities characterized in Appendix C, describing progress toward the over-arching HCP goals, also relate to preparation for mitigation action

Table 9. Summary of progress on mitigation measures during FY 2024~~43~~.

HCP ID No.	HCP Section 6.2.2.2 Mitigation Measures	Progress or Status as of End of FY 2024~~43~~
M-1	The District commits to supporting the operations of an existing refugium with facilities capable of maintaining backup populations of the Covered Species to preserve the capacity to re-establish the species in the event of the loss of population due to a catastrophic event such as an unexpected cessation of spring flow or a hazardous materials spill that decimates the species habitat. Such supplemental support would be provided through a commitment of in-kind, contracted support, and/or cash contributions that would contribute to: a. Continuing the study of salamander physiology and/or behavior, and b. Conserving field and captive populations.	Under ILA Section VII.E, the City and District agreed that the District would periodically analyze the water chemistry of the source water for the refugium. A groundwater sample was collected from the well at the Nature Center in October 2023 for chemical analysis.
M-2	The District, in cooperation with the City, commits to participating in conducting feasibility studies and as warranted, pilot and implementation projects to evaluate the potential for beneficial subsurface DO augmentation of flow in the immediate vicinity of the spring outlets and improved surface DO augmentation in the outlets (only) during Extreme Drought conditions. In-kind, contracted support, and/or cash contributions, phased during the term of the permit, may be authorized for feasibility studies and, if a project is feasible, for the pilot study and implementation of the augmentation project.	ILA Section VII.A describes the provisions under which these studies will be conducted. No other progress was made in the reporting year.

M-3	The District commits to extending the currently committed time period to operate the Antioch Recharge Enhancement Facility to continue after the 319(h) grant commitments (September 2014 or later), thereby improving recharge water quality and reducing nonpoint-source pollution at the outlets from runoff events during that time.	The facility continues to be operated by the District. Some upgraded controllers were installed in FY 2021 to ensure more responsive operation during variable creek flow conditions.
M-4	The District commits to establishing a new reserve fund for plugging abandoned wells to eliminate high-risk abandoned wells as potential conduits for contaminants from the surface or adjacent formations into the aquifer, with priority given to problematic wells close to the Barton Springs outlets and/or associated with water chemistry concerns under severe drought conditions. This reserve fund, which like others under state law has restrictions on its funding and use, would be established within the first year after issuance of the ITP by closing the existing Drought Reserve Account, whose stipulated purpose has been legal defense for drought management, and then by utilizing its current balance to initially fund a new Aquifer Protection Reserve Account. The new account would exist solely to fund plugging of abandoned wells and would be replenished after the first year with any collected enforcement penalties, any drought management fees imposed on larger nonexempt permittees that do not meet their drought curtailments, and an annual budgeted supplement at the discretion of the Board.	District Rule 3-7.11. Special Reserve Accounts for Aquifer Protection, was amended in October 2023 to create two accounts, one of which is titled, Aquifer Protection Reserve Account – Well Plugging. This account exists solely to support the funding of plugging abandoned wells. A companion account was created and titled, Aquifer Protection Reserve Account – Drought Management. The purpose of this latter account is described in the rule. Both Reserve Accounts are funded by regulatory fees stemming from permittee noncompliance during drought and/or for overpumping an annual permitted volume.

M-5	For the term of the ITP, the District commits to provide leadership and technical assistance to other government entities, organizations, and individuals when prospective land-use and groundwater management activities in those entities' purview will, in the District's assessment, significantly affect the quantity or quality of groundwater in the Aquifer. The District will respond actively and appropriately to legislative initiatives or projects that affect Aquifer characteristics, provided such actions are consistent with established District rules, ongoing initiatives, or existing agreements.	The District has been actively engaged in activities that relate to this mitigation measure during the reporting period: • Advancing the District's Trinity Aquifer Sustainability Model (TAS) by initiating Phase 2. • District staff continue to serve as technical advisors, when appropriate, to development of the Texas Water Development Board's Southern Trinity Groundwater Availability Model. • The District, in partnership with the City of Austin and OneOk (formerly Magellan Partners), installed two new monitoring wells in city parks to advance understanding of aquifer characteristics including water quality near the Barton Springs complex. • The District worked with the City of Buda in crafting public comments, submitted to the TCEQ by both entities, objecting to a draft TLAP issued to Milestone Community Builders for the proposed Hays Commons development.

11.0 Evaluation of the Effectiveness of the Avoidance, Minimization, and Other Conservation Measures

The District was in Critical Drought status from September 2023 until December 14, 2023, when it was downgraded to Exceptional Drought status—the first such declaration in the District's 36-year history. Following rainfall, the drought status was elevated to Critical Drought on February 8, 2024, and then upgraded to Alarm Drought on March 1. Later, on October 3, the District reverted to Critical Drought status, where it remained for the rest of FY 2024. Sustained DO concentrations at the spring outlets have generally been similar to those expected on the basis of the spring flow volumes, which confirms the basis and expected effectiveness for the requisite pumpage reductions for the drought periods.

COA presents data in its 2024 HCP annual report showing that the salamander populations are sustaining, particularly in the Eliza pool and stream, despite the ongoing drought conditions during this reporting period (City of Austin, 2024 Annual Report to Fish and Wildlife Service, January 2024).

As noted in Section 9 above, the District's Board of Directors determined that satisfactory progress was made in FY 2024 toward all HCP MP goals and objectives, using the relevant performance standards for each.

12.0 Adaptive Management Activities Undertaken During the Year, or Indicated as Prudent by Outcomes of the Conservation Program

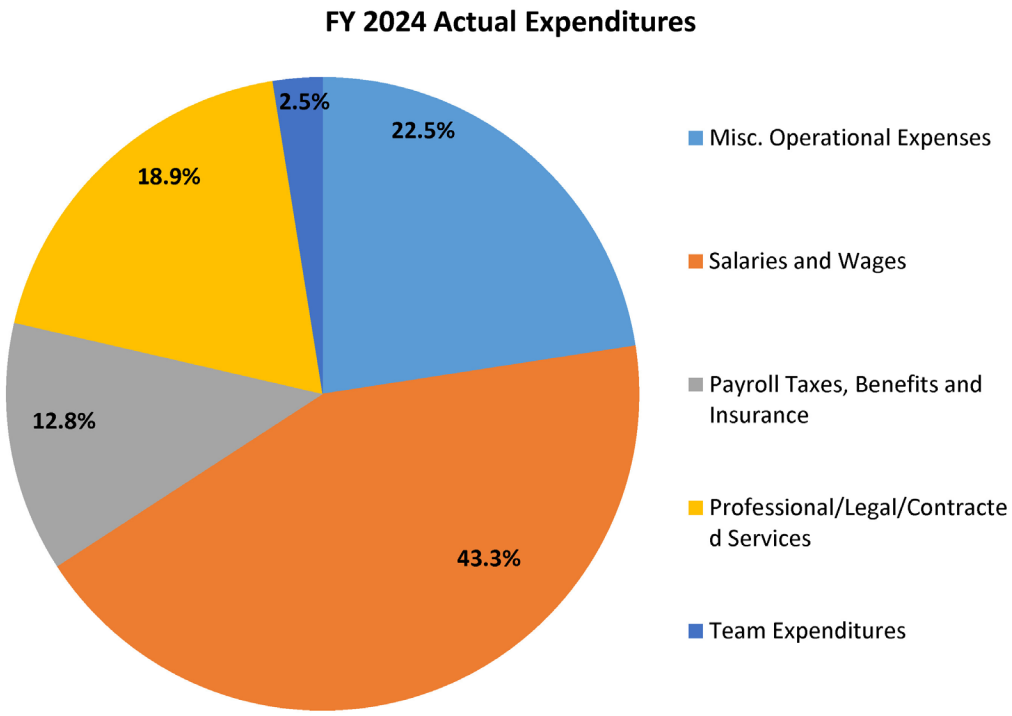
This reporting period was the sixth for the District's ITP. No adaptive management activities were identified as needed, and none were undertaken.

13.0 Expenditures by BSEACD on Implementation Activities

By approval of the MP Annual Report, the District's Board of Directors warrants that there were no FY 2024 expenses incurred that were not directly or indirectly related to the execution of this HCP.

Therefore, 100% of the District expenses shown on the accompanying pie chart were considered HCP expenses and satisfies the minimum commitment funding of no less than 60% of each year's annual budget.

The District's HCP implementation, which integrates the conservation measures and the District's groundwater management program, expended a total of $1,584,573 in FY 2024. The breakdown of these expenses is shown in Figure 9 below.



A.	Misc. Operational Expenses	$357,557	22.5%
B.	Salaries and Wages	$685,769	43.3%
C.	Payroll Taxes, Benefits and Insurance	$202,305	12.8%
D.	Professional/Legal/Contracted Services	$298,897	18.9%
E.	Team Expenditures	$40,045	2.5%
		$1,584,573	**100.00%**

Figure 9. FY 2024 actual expenditures.

14.0 Species-Specific or Aquifer Research Compiled or Completed During the Prior Year

The District did not conduct species-specific research in the reporting period. It continues to monitor the ongoing salamander-related studies and assessments by the COA, as documented in its own HCP Annual Report. At this time, no additional cooperatively-funded, species-specific research needs have been identified.

Most of the District's hydrogeologic research in the reporting period was focused on the Trinity Aquifer and in areas outside the ITP Area. However, because the Trinity is directly or indirectly hydrologically connected to the Barton Springs segment of the Edwards and improved knowledge of the Trinity Aquifer supports decision-making for managing the Edwards, such research is relevant to the HCP. Published papers and District documents from FY 2018 through FY 2024 are listed below:

- Watson, J. A. and J. Camp, 2024, September 2023 Potentiometric Study of the Middle Trinity Aquifer, Central Texas, BSEACD Report of Investigations 2024-0220, February 2024.

- Watson, J.A. and B.A. Smith, 2023, The BSEACD Trinity Aquifer Sustainability Model: A Tool for Evaluating Sustainable Yield of the Trinity Aquifer in Hays County, Texas, BSEACD Report of Investigations 2023-0717, July 2023, 100p.

- Watson, J. A., Smith, B.A., and J. Camp, 2022, Preliminary Results and Insights from the BSEACD In-house Trinity Model: BSEACD Technical Memo 2022-0520 draft report.

- Smith, B.A., Watson, J.A., and J. Camp, 2022, Preliminary Report on the Installation of Two Multilevel Monitor Wells Near Jacob's Well: BSEACD Technical Memo 2022-0831, 80 p.

- Watson, J.A., 2022, Review of Copper Hills Well No. 5 Tier 1 Hydrogeologic Report: BSEACD Memo to File, Jul 23, 2021, 3 p.

- Hunt, B.B. and Smith, B.A., 2021, Same Aquifer, but Different Source of Water: Contrasting the Middle Trinity Aquifer in Central Texas: GeoGulf Transactions, v. 71, p.133-139.

- Smith, B.A., Hunt, B.B., Posso, K., and others, 2021, Highway Construction in the Faulted, Karstic, Cretaceous Edwards Limestone of Southwest Austin, Texas: Association of Environmental and Engineering Geologists, Karst Hazards Forum, Austin, Texas, March 23 to April 1, 2021, abstract.

- Hunt, B.B. and Smith, B.A., 2020, Development of a Steady-State Numerical Model Tool, versions 1.0 and 2.0, Middle Trinity Aquifer, Central Texas: BSEACD Technical Memo 2020-0930.

- Camp, Justin P., Hunt, Brian B., Smith, Brian A., 2020, Evaluating the Potential Groundwater Availability Within A Lower Trinity Aquifer Well Field, Balcones Fault Zone, Hays County, Central

Texas: 2020 Abstracts with Programs, Geological Society of America, South-Central Meeting, March 9-10, 2020, Fort Worth, Texas.

- Cockrell, L.P., Gary, R.H., Hunt, B.B., and Smith, B.A., 2020, Data Compilation and Database Structure for the Geodatabase Accompanying the Hydrogeologic Atlas of Southwest Travis County, Central Texas: Barton Springs/Edwards Aquifer Conservation District (BSEACD) Data Series Report 2020-0721, July 2020, 15 p. + digital geodatabase.

- Smith, B.A., Hunt, B.B., Gary R.H., Wierman, D.A. and Watson, J.A., 2020, Springshed Delineation in a Karst Aquifer in Hays County, Central Texas: 16th Sinkhole Conference, NCKRI Symposium 8.

- Tian, L., Smith, B.A., Hunt, B.B., Doster, J.D., Gao, Y., 2020, Geochemical Evaluation of Hydrogeologic Interaction Between the Edwards and Trinity Aquifers Based on Multiport Well Assessment in Central Texas: 16th Sinkhole Conference, NCKRI Symposium 8.

- Cockrell, L.P., Hunt, B.B., Gary, R., Vay, J., Camp. J, and Kennedy, V., 2020, Hydrogeologic Atlas of Southwestern Travis County, Central Texas: Geological Society of America Abstracts with Programs, Vol. 52, No. 1.

- Gary, R.H., Hunt, B.B., and Cockrell, L.P., 2019, Estimating the Number of Trinity Aquifer Exempt Wells in a Recently Annexed Groundwater Conservation District Territory: Geological Society of America Abstracts with Programs, Vol. 51, No. 5.

- Zappitello, S.J., Johns, D.A., and Hunt, B.B., 2019, Summary of Groundwater Tracing in the Barton Springs Edwards Aquifer from 1996 to 2017: City of Austin, Watershed Protection, DR-19-04.

- Hunt, B.B., Smith, B.A., and Hauwert, N.M., 2019, Barton Springs segment of the Edwards (Balcones Fault Zone) Aquifer, central Texas, in Sharp, J.M., Jr., Green, R.T., and Schindel, G.M., eds., The Edwards Aquifer: The Past, Present, and Future of a Vital Water Resource: Geological Society of America Memoir 215, p. 75-100, https://pubs.geoscienceworld.org/books/book/2156/The-Edwards-Aquifer-The-Past-Present-and-Future-of

- Gary, M.O., Hunt, B.B., Smith, B.A., Watson, J.A., and Wierman, D.A., 2019, Evaluation for the Development of a Jacob's Well Groundwater Management Zone Hays County, Texas. Technical Report prepared for the Hays Trinity Groundwater Conservation District, Hays County, Texas. Meadows Center for Water and the Environment, Texas State University at San Marcos, TX. Report: 2019-05. July 2019. 58 p. https://bseacd.org/uploads/JW-Mgmt-Zone-Report_7.30.19.pdf

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- Hunt, Brian B., Brian A. Smith, Robin Gary, and Justin Camp, 2019, March 2018 Potentiometric Map of the Middle Trinity Aquifer, Central Texas. BSEACD Report of Investigations 2019-0109. 28 p. https://bseacd.org/uploads/BSEACD_RI_2019-0109_PotMap_FINAL.pdf

- Smith, B.A., B.B. Hunt, D.A. Wierman, and M.O. Gary, 2018, Groundwater Flow Systems of Multiple Karst Aquifers of Central Texas. In I.D. Sasowsky, M.J. Byle, and L. Land (Eds). Proceedings of the 15th Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst and the 3rd Appalachian Karst Symposium, National Cave and Karst Research Institute (NCKRI) Symposium 6, p 17-29. https://bseacd.org/uploads/Smith-et-al.-2018-GW-Flow-Systems-in-Multiple-Karst-Aquifers-Sinkhole-Conference.pdf

- Smith B.A., Hunt B.B., 2018, Recharge and Water-Quality Controls for a Karst Aquifer in Central Texas. In: White W., Herman J., Herman E., Rutigliano M. (eds) Karst Groundwater Contamination and Public Health. Advances in Karst Science. Springer. https://link.springer.com/chapter/10.1007/978-3-319-51070-5_35

- Cockrell, L., B.B. Hunt, R. Gary., B.A. Smith, 2018, Regional Geologic Geodatabase Project, Central Texas. Barton Springs Edwards Aquifer Conservation District. Data Series Report 2018-1211. December 2018. 14 p. https://bseacd.org/uploads/Cockrell-et-al.-2018_Geology_Geodatabase.pdf

- Wierman, D.A., B.B. Hunt, 2018, Groundwater Level Monitoring Results for HTGCD Transducer Wells and Wimberley Valley Public Water Supply Wells, Hays County, TX. Meadows Center for Water and the Environment, Texas State University at San Marcos, TX. https://bseacd.org/uploads/Wierman-and-Hunt-2018-TSU-Water-Levels_revised.pdf

- Hunt, B.B., B.A. Smith, and J. Camp, 2018, Is the BSEACD's Drought Trigger Methodology Representative of the Middle Trinity Aquifer?. BSEACD Technical Memo 2018-0829. August 2018. 12 p. https://bseacd.org/uploads/BSEACD_Tech-Note-2018-0829_DTM-MiddleTrinity.pdf

- Hunt, B.B., B.A. Smith, and J. Camp, 2018, Dye Trace at Raccoon Cave near Jacob's Well Spring, Hays County, Texas. BSEACD Technical Memo 2018-0831. August 2018. https://bseacd.org/uploads/BSEACD_techmemo_2018_0831_JWS_dyetrace.pdf

- Watson, J., A.S. Broun, B.B. Hunt, B.A. Smith, D.A. Johns, J. Camp, and D.A. Wierman, 2018, Summary of Findings: Upper Onion Creek Dye Trace, Hays County, Texas, Winter 2017. Interagency Memo. May 18, 2018. 19 p. http://bseacd.org/uploads/Upper-Onion-trace-memo_05182018.pdf

- Watson, J.A., A.S. Broun, B. B. Hunt and D.A. Wierman, 2018, Geologic Mapping of the Upper Glen Rose Unit 3 (Lower Cretaceous) in the Onion Creek Basin, Western Hays County, Texas: Implications for Recharge to the Trinity Aquifer. GCAGS Journal, v. 7 (2018), p. 107–120. https://bseacd.org/uploads/Watson.et_.al2018.GCAGS_.Journal.v7.07.p107-120.pdf

- Hunt, B.S. Smith, B.A., Gary, M.O., Watson, J., Broun, A., Wierman, D.A., and Fieseler, R., 2018, Technical Review and Comments: Conceptual Model Update for the Hill Country Potion of the Trinity Aquifer. Letter dated August 31, 2018. 22 p. (comments at end of the GAM report in link below) http://www.twdb.texas.gov/groundwater/models/gam/trnt_h/ConceptualModelReport.pdf?d=4146.700000001147

15.0 Proposed Activities for Next Year

Activities proposed to take place next year generally relate to a continuation of those organizational activities necessary for the District meet its ongoing obligations as a GCD and its current commitments, as well as its planned direct and indirect groundwater management initiatives. In prospect, some of these include:

- Data collection and scientific investigations using the new Barton Springs Multiport Well, which was completed in FY 24. These studies will help improve our understanding of spring flow dynamics and chemistry in the vicinity of the Barton Springs complex.
- Data collection and scientific investigation using telemetered water quality measurements, including dissolved oxygen, conductivity and turbidity along with continuous water level logging at the Garrison Park open-hole Edwards monitor well, drilled in early 2024.
- Continuation of Joint Planning Efforts in GMA 10, working with consultant to produce explanatory reports and new DFCs to be adopted;
- Continuation of numerical groundwater model development – Phase 2 of the TAS model - to support efforts for sustainable management of and establishment of DFCs for the Trinity Aquifer;
- Continuation of Trinity Sustainable Yield Study, including completion of a new well-impact analysis in the Trinity Aquifer(s) and exploration of developing a new groundwater management zone;
- Ongoing enhancement of the District's new database including completion of Phase 2;
    - Utilization of contractual support associated with various technical and professional services, including:

        - technical services to support prospective special projects including continued aquifer characterization, new monitor well installation, and HCP-related projects.
        - technical and consulting services to support prospective implementation of the HCP including initial annual reporting and mitigation measures; and
        - technical and consulting services relating to permitting and when necessary, rulemaking efforts.

Even if certain ones of these are not directly or indirectly related to the HCP, they will affect the financial resources that will be available to conduct special projects. However, none of these prospective activities will impede the implementation of work to comply with the HCP.

16.0 Recommendations for Improvement

The District has not identified any changes needed to improve implementation of the HCP or compliance with the ITP provisions at this time with the exception of working more closely with the City of Austin and the U.S. Geological Survey (USGS) to manually measure low flows more frequently below the Barton Springs pool. This enhanced discharge-monitoring effort was implemented throughout FY 24, is ongoing, and helping to recalibrate the USGS stage-discharge rating curve to more accurately reflect low flows.

The Validation Monitoring Program (specified in HCP Section 6.3.1 and included in this Annual Report in Appendix A) anticipates eventual improved take estimate protocol for future use, based on then-new information and/or analyses concerning gaged springflows, water chemistry, and salamander counts. These characteristics form the basis for the take estimate methodology. In the current reporting period, the District has not identified any new information or analysis that would indicate the need for modification of the basis of the take estimate methodology.

17.0 Other Appropriate Information Documenting Compliance with the Permit

None required.

Appendix A

Description of District's Validation Monitoring Protocol

Barton Springs
Edwards Aquifer
CONSERVATION DISTRICT

1124 Regal Row
Austin, TX 78748
Tel. (512) 282-8441
www.bseacd.org

July 16, 2019

Ms. Tanya Sommer
U.S. Fish and Wildlife Service
Austin Ecological Services Field Office
I 0711 Burnet Rd., Suite 200
Austin, Texas 78758

Subject: Proposed Validation Monitoring Protocol for HCP under Endangered/Threatened Wildlife Incidental Take Permit # TE10607C-0

Dear Ms. Sommer:

Per the District's HCP, Section 6.3.1, the Barton Springs/Edwards Aquifer Conservation District is submitting its proposed protocol of the Validation Monitoring Program for review and approval by the Service. This protocol provides a framework that the District will utilize for the following: to document the conformance of the District's groundwater management program with the expected outcomes in the ITP, to assess the amount of take that occurs during the ITP term, and to evaluate impacts of any new relevant information on the take estimate methodology. Such findings would be a precursor to proposing modifications of its groundwater management actions, as necessary.

Should you have any questions about this proposed protocol, please contact me by phone at 512-282-8448 or by email at areinmund@bseacd.org. We would appreciate your expeditious review, comments, and concurrence.

Sincerely,

Alicia Reinmund-Martinez
General Manager

cc: David A. Johns P.G.
Program Manager/Geologist
City of Austin

Proposed Protocol for the District's Validation Monitoring Program

The District's HCP Section 6.3.1 requires the formulation and approval of a "validation monitoring program" and subsequently its recurrent use to inform annual reporting under the HCP. The purpose of this program is "to measure future success of Aquifer-management activities, and to modify management actions on the basis of new information." Among other things, the program requires the District, in the first year of the ITP term, to "collaborate with the COA to formulate a methodology for monitoring and evaluating take associated with the District's Covered Activities." The program also involves an annual re-examination of "[information from] existing springflow gaging, water chemistry monitoring, and salamander censuses, supplemented by new data collection and analyses by the COA", which in aggregate serve as the basis for the take estimate methodology.

During the extended time required to develop the HCP and in particular the lengthy time between developing the preliminary draft HCP and finalizing the final HCP, the District and COA were able to collaborate on a workable approach to an initial and continuing take estimate methodology that related specifically to the District's Covered Activities and to the cryptic characteristics of these Covered Species. This methodology is synopsized in the "Take Logic Diagram" in the Final HCP (Figure 5-8) and reproduced in this document. The take estimate methodology uses the three elements identified above, viz., gaged springflow, monitored water chemistry, and salamander surveys and censuses, in defining take categories and their estimated amounts. This methodology was used for estimating the total amount of take that was permitted in the initial ITP.

The validation monitoring program requires a re-examination of the take logic methodology as significant new information on these three elements becomes available. Further, the approved Interlocal Agreement between the District and the City's Watershed Protection Department specifically authorizes and requires, among other things, the sharing of new information that will inform this recurrent re-examination process. But until revisions are identified as needed and ultimately approved, the annual reporting of take estimates will utilize the methodology and parameters described in the approved HCP.

Re-examination of Basis for Take Estimate Methodology

At least once per year, nominally beginning two months before the District HCP's annual report is submitted to the Service, the District will explicitly assess whether or not new information indicates that the take estimate methodology needs to be modified to account for factors that would change the Take Logic Diagram. This annual re-examination of the basis for the take estimates will involve considering the following questions related to the three elements used to develop the Take Logic:

1. Does new information indicate that the size and/or distribution of the populations of either Covered Species, whether in the near-field or far-field, is substantively statistically different than that characterized in the HCP and used in estimating take?
2. Does new information indicate that the dissolved-oxygen concentration thresholds for the onset of behavioral and/or physiological effects on the Covered Species are substantively statistically different than those used in the Take Logic Diagram?
3. Does new information indicate that the relationship between sustained dissolved-oxygen concentrations and springflow discharges are substantively statistically different than those used in the Take Logic Diagram?

4. Does new information indicate that there are substantive antagonistic or synergistic effects on the Covered Species that are not adequately included in estimating take, e.g., impacts of other springflow-related water chemistry components on the Covered Species by the District's Covered Activities or Conservation Measures?
5. Does new information indicate that there are new and/or different adverse effects on the Covered Species from non-springflow related activities associated with the District's Covered Activities or Conservation Measures?
6. Does new information indicate that the relationship between groundwater withdrawals and combined springflow during drought periods, e.g., changes in other parameters in the water balance, is significantly different than that used in estimating take during the term of the ITP?

This re-examination will be made by the District's Aquifer Science team and will utilize then-existing data and information provided to the District by the City of Austin under the ILA, public scientific data and reports from the US Geological Survey, other scientific reports and studies, as well as the District's own data collection and analysis activities. New information may arise during the course of each year of the ITP term from new hydrological or biological modeling results, new salamander survey or census data and estimates, or new groundwater sampling and analysis. Any affirmative responses to the questions enumerated above will be elaborated and documented as part of the District's annual reporting to USFWS, including possible recommendations for additional investigations in subsequent years to further assess changes in the take estimate logic and basis. It seems likely that there will be no significant changes to the take estimate basis during the early years of the ITP term. By the same token, it may require multiple years to confirm that some such changes have occurred on a sustained basis and/or additional research to demonstrate how such changes can be best accommodated in revising future take estimates.

Estimation of Take during Each Reporting Period

The actual annual springflow-related take estimate to be included in the District's Annual Report to the Service involves a rather straight-forward procedure:

1. The daily hydrograph from the USGS gage, converted to indicate the calibrated spring flows at Barton Springs, is produced for the 365 days that comprise the current reporting period by the District's Aquifer Science team. The hydrograph may be modified by the District on the basis of manual measurements to supplement the USGS data.
2. The District's Aquifer Science team will disaggregate the hydrograph and identify the cumulative number of days during that reporting period that are in each of the following: No Take, Take Category A, Take Category B, and Take Category C, as defined in the Take Logic Diagram (referring to rate of springflow).
3. The number of months, to two decimal places, that are in each of those four categories is calculated.
4. Category A, regardless of number of months, is assigned a take estimate of a) 15 for the Barton Springs salamander, and b) 0 for the Austin blind salamander.
5. The number of total months assigned to the Categories B and C is multiplied by a) the monthly Take Factor shown in the Take Logic Diagram for the Barton Springs salamander (174/month), and b) the monthly Take Factor for the Austin blind salamander (36.6/month).
6. The estimated springflow-related take of BSS for the reporting period is the sum of the results of Steps 4(a) plus 5(a).

7. The estimated springflow-related take of ABS for the reporting period is simply 5(b), since the take of ABS in Category A is zero (because ABS habitat is not recognized at Upper Barton Springs).

As necessary, the District's Aquifer Science team will also estimate whether and what take of one or both endangered species was generated by occasional, non-springflow-related District activities (like well construction *per se*),and add the springflow and non-springflow take for annual reporting.

The calculated results of this procedure inform and are input into the HCP Annual Report, Section 7 and will be summarized as follows:

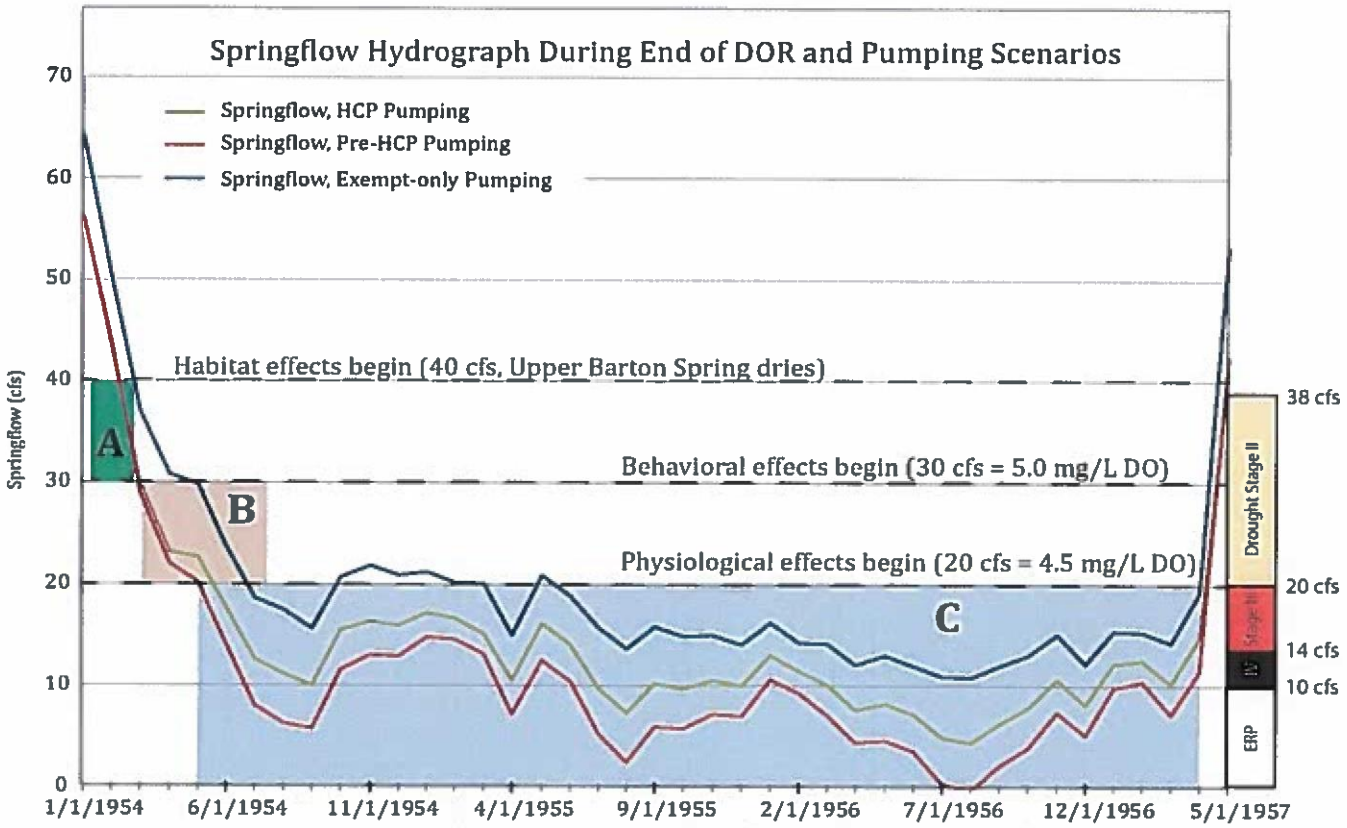
Take Type	Take Category	Inclusive Dates	No. of Months*	BSS Take Factor	Estimated BSS Take	ABS Take Factor	Estimated ABS Take
Springflow-Related	A #1	TBD-TBD	2.25	-	15	0	0
	A #2	TBD-TBD	0.60		15	0	0
	B	TBD-TBD; TBD-TBD	6.45	174	1122	36.6	236
	C	TBD-TBD	2.45	174	426	36.6	90
Occasional, Other	-	MM/DD/YYYY	N/A	N/A	1	N/A	0
Totals			**11.75**		**1579**		**326**

** The values shown for "number of months" are fictitious and are provided for illustrative purposes only. The actual values will be based on the disaggregation of the actual Barton Springs hydrograph for each reporting period by the District's Aquifer Science team.*

During this reporting period, which was nominally in some degree of drought for almost the entire time, the take of Barton Springs salamander would have been estimated to be 1579 and take of Austin blind salamander estimated to have been 326, using the prescribed methodology. These amounts of take would be added to the previously reported cumulative take amounts, resulting in new cumulative take amounts of ____ for BSS and ____ for ABS. (For comparison, the authorized total cumulative take estimates for BSS and ABS during the 20-year permit term are 20,200 and 4,260, respectively.)

Monthly "Take Factor" Logic Diagram

We conservatively estimate total incidents of take from a 37-month period at the end of the Drought of Record. During the springflow recession we qualitatively estimate take relating to various habitat, behavioral, and physiological effects and thresholds. From this discrete drought a monthly take factor was developed to estimate potential monthly take each time springflows is less than 30 cfs (~5.0 mg/L DO), the take initiation threshold.



Species	Stipulated Population	Take Circumstance			Total Take (A+B+C)	Months below 30 cfs	Take Factor (monthly below 30 cfs)
		A	B	C			
		Upper BS	Behavioral Effects	Physiological Effects			
BSS	4988	15	4988	29% x 4998 = 1447	6450	2 + 35 = 37	6450/37 = 174
ABS	1050	0	1050	29% x 1050 = 305	1355	2 + 35 = 37	1355/37 = 36.6

A: Entire stipulated population at Upper Barton Spring experiences mostly sub-lethal take because pumping hastens drying of habitat.

B: Springflow ≤30 cfs (≤ 5.0 mg/L DO): Up to 100% of the stipulated population potentially experiences take because decreased DO from pumping causes adverse behavioral effects that are mostly sub-lethal during these two months.

C: Springflow ≤20 cfs (≤ 4.5mg/L DO): Up to 29% of stipulated population potentially experiences take because decreased DO from pumping contributes to the adverse physiological effects ranging from sub-lethal to lethal as the depth and duration of drought increases. 29% derived from ratio of average permitted pumping to average total discharge over the 35months (4.8 cfs/16.7 cfs = 29%). Note: average DO at Main Springs for the period is 3.7 mg/L.

Take Factor will be used to estimate potential take of the BSS and ABS each month springflow is ≤ 30 cfs, the take initiation threshold.

Appendix B

Interlocal Agreement Between the District and City of Austin

Available upon request of the District

Appendix C

Assessment of Progress on HCP Minimization Measures (Appendix B of Management Plan Annual Report FY 2023)

FY 2024

Appendix B

Assessment of Progress Toward Management Plan Goals and Objectives

Board-approved on December 12, 2024

GOAL 1
PROVIDING THE MOST EFFICIENT USE OF GROUNDWATER

31 TAC 356.52(A)(1)(A)/TWC §36.1071(A)(1)

Objective 1-1. Provide and maintain on an ongoing basis a sound statutory, regulatory, financial, and policy framework for continued District operations and programmatic needs.

Performance Standards

A. Develop, implement, and revise, as necessary, the District Management Plan (MP) in accordance with state law and requirements. Each year the Board will evaluate progress towards satisfying the District goals. A summary of the Board evaluation and any updates or revisions to the MP will be provided in the Annual Report.

In FY 2024, the District amended MP by Board Resolution in August 2023. The amended plan was approved by the Texas Water Development Board (TWDB) on August 15, 2024. Updates reflected a new GAM run/report by the TWDB.

In order to achieve the goals, management objectives, and performance standards adopted in the MP, on December 14, 2023, the District's Board of Directors (Board) evaluated progress made, and approved the District's FY 2023 Annual Report and Appendix B (Assessment of Progress toward Management Plan Goals and Objectives). Appendix A (the annual financial audit) was also presented at the December 14, 2023 Board Meeting.

B. Review and modify District Rules as warranted to provide and maintain a sound statutory basis for continued District operations, and to ensure consistency with both District authority and programmatic needs. A summary of any rule amendments adopted in the previous fiscal year will be included in the Annual Report.

During FY 2024, there were three consecutive public hearings held during which time the Board of Directors acted to amend, add, and/or repeal District Rules: October 12, November 9, and December 14, 2023.

Objective 1-2. Monitor aggregated use of various types of water wells in the District, as feasible and appropriate, to assess overall groundwater use and trends on a continuing basis.

Performance Standard

Monitor annual withdrawals from all nonexempt wells through required monthly or annual meter reports to ensure that groundwater is used as efficiently as possible for beneficial use. A summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each Management Zone (MZ) and permit type will be provided in the Annual Report.

A summary of the actual versus permitted production volumes for each MZ is also provided below.

FY 2024 Production from Individual Permittees		
Production Zone	Actual Production	Permitted Individual Production
Edwards	1,541,407,018	2,679,917,604
Trinity	241,368,460	621,294,517
Austin Chalk or Alluvial	2,400	2,500,000
Total (Gallons)	**1,782,777,878**	**3,303,712,121**
	(5471.09 ac ft)	(10,138.60 ac ft)

FY 2024 Production from Limited Production Permits		
Production Zone	Actual Production*	Permitted Limited Production
Edwards	14,221,928	68,000,000
Trinity	7,006,391	33,500,000
Austin Chalk or Alluvial	0	0
Total (Gallons)	**21,215,127**	**101,500,000**
	(65.11 ac ft)	(311.49 ac ft)
Actual production is a volume estimate calculation described in the findings and conclusions of the BSEACD Staff Report 2010. Average Annual exempt well production is approximately 104,573 gpy		

Objective 1-3. Evaluate quantitatively at least every five years the amount of groundwater withdrawn by exempt wells in the District to ensure an accurate accounting of total withdrawals in a water budget that includes both regulated and non-regulated withdrawals, so that appropriate groundwater management actions are taken.

Performance Standards

Provide an estimate of groundwater withdrawn by exempt wells in the District using Texas Department of Licensing and Regulation (TDLR) and TWDB databases, and District well records; and update the estimate every five years with the District's MP updates.

This is a joint effort between the Aquifer Science, Communications and Outreach, and Regulatory Compliance groups.

In the interim years between MP updates, the most current estimates of exempt well withdrawals will be included in a summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each MZ and permit type that will be provided in the annual report.

A summary table of the estimated exempt well production volumes for the Edwards and Trinity MZs is provided below.

Edwards Aquifer –

Estimated Exempt Wells Production

Average Annual Volume per Exempt Well (gpy)	104,573
Total Est Volume of Exempt Well Production (gpy) *	**106,141,595**
Est # of wells	1015
cfs	0.45
% of Permitted Edwards Production	3.86%
% of Actual Edwards Production	6.00%
Permitted Edwards Production(gpy)	*2,747,917,604*

**2010 BSEACD Staff Report – Avg Exempt Well Use=104,573 gpy*

Trinity Aquifer –

Estimated Exempt Wells Production

Average Annual Volume per Exempt Well (gpy)	104,573
Total Est Volume of Exempt Well Production (gpy) *	**121,304,680**
Est # of wells	1160
cfs	0.51
% of Permitted Trinity Production	18.52%
% of Actual Trinity Production	32.81%
Permitted Trinity Production (gpy)	*654,794,517*

**2010 BSEACD Staff Report – Avg Exempt Well Use=104,573 gpy*

Objective 1-4. Develop and maintain programs that inform and educate citizens of all ages about groundwater and springflow-related matters, which affect both water supplies and salamander ecology.

Performance Standards

Publicize District drought trigger status (Barton Springs ten-day average discharge and Lovelady Monitor Well water level) in monthly eNews bulletins and continuously on the District website.

Provide summaries of associated outreach and education programs, events, workshops, and meetings in the monthly team activity reports in the publicly available Board backup.

Groundwater to the Gulf

This annual, three-day, field-based educational program led by the Colorado River Alliance took place on June 11-13, 2024. It provides educators with water conservation-focused activities and curricula to use in the classroom and for public outreach. It's a great opportunity for science teachers to obtain

continuing education credits and for environmental educators to get hands-on activities and resources to use in outreach. Dozens of local water-related organizations assist with making this event a reality including Lower Colorado River Authority, City of Austin, Texas Parks and Wildlife, and more. The District led a session focused on springflow at Barton Springs. Staff discussed what the District is, what we do, and how our drought stages are determined. Participants then used oranges to measure springflow at Barking Springs. District staff also assisted with other educational segments and took photos that were used broadly amongst partners. Over 40 participants joined this years' Groundwater to the Gulf. This event was shared across the District's social media.

Barton Springs University

The District participated in Save Our Springs' Barton Springs University on September 19, 2023. Shay Hlavaty and Jacob Newton led a hands-on activity educating participants about conductivity of water and the Edwards and Trinity aquifers. They also provided an overview of the District, our work, and the current drought stage. Jeff Watson presented on the hydrogeology of the Edwards Aquifer. It's estimated that 300 students attended Barton Springs University with dozens learning directly from District staff. This event was shared across District social media, in the monthly newsletter, and in a board report.

Beneath the Surface: Exploring Central Texas Aquifers and Sustainable Management Practices

Director Williams asked the District to present at one of Liberal Arts and Science Academy's (LASA) Lunchtime Lectures. Tim Loftus provided an overview of the groundwater conservation district's and what our District does. Justin Camp provided information on what a career in hydrogeology entails, what conservation districts do, the deep interconnection between local surface and groundwater sources, drought triggers, and water conservation. You can view the presentation slides here. There were approximately 125 students in attendance.

Barton Springs Multiport and Garrison Parks Monitor Well Communications

The installation of the Barton Springs Multiport Monitor Well and the Garrison Park Monitor Well provided great opportunities to provide audiences information about groundwater and springflow, how we study and monitor these, and their impacts on water supplies and salamander ecology. Staff promoted communications about the drilling of the Zilker and Garrison parks monitoring wells before, during, and after the installation. Staff communicated directly with organizations such as Save Our Springs, Save Barton Creek Association, and the Zilker HOA months in advance to ensure relevant organizations and community members were aware of the upcoming project. This press release was shared with the media, on the District's website, and across social media outlets on January 11, 2024 and resulted in t following articles:

- Barton Springs/Edwards Aquifer Conservation District installing two monitoring wells at Garrison and Zilker parks – Austin Monitor, 1/12/24
- New Austin monitoring wells to study aquifers, effects on endangered salamanders - Community Impact, 1/18/24
- New Wells in Austin to Monitor Oxygen Levels for Endangered Species - Austin Chronicle, 1/26/24
- Drilling underway on new monitoring well at Zilker Park – Fox 7, 2/2/24
- Barton Springs Multiport Well: Importance, progress, and next steps – BSEACD, 3/29/24
- Data Collection at the Barton Springs Multiport Monitoring Well - BSEACD, 8/5/24

Format Podcast

Justin Camp and Shay Hlavaty were interviewed for an episode of The Format Podcast, which has conversations with experts on a variety of topics to educate curious listeners. They discussed the formation of the geology of the Texas Hill Country, how the District regulates groundwater, the District's drought trigger methodology, and the importance of continuous conservation of water. The episode is available on all major podcast platforms and was promoted across all District social media platforms. A video of the conversation can be viewed here.

Relevant Articles on the Website

- Middle Trinity Aquifer Synoptic, 9/27/23
- Lovelady Monitor Well – Past and Present, 11/28/23

Objective 1-5. Ensure responsible and effective management of District finances such that the District has the near-term and long-term financial means to support its mission.

Performance Standards

Receive a clean financial audit each year. A copy of the auditor's report will be included in the Annual Report (as Appendix A).

The Board expects to receive and approve the FY 2024 Annual Financial Audit report provided by the District's financial auditor at its Board Meeting on December 12, 2024. It will be included in the Annual Report as Appendix A.

Timely develop and approve fiscal-year budgets and amendments.

A FY 23 budget amendment was approved on September 14, 2023. During FY 2024, there were two FY 25 budget versions brought before the Board of Directors. The preliminary budget was presented in a properly-noticed public hearing held on June 11, 2024 where it was approved. The Board approved a final FY 25 Budget 1 on August 8, 2024.

Objective 1-6. Provide efficient administrative support and infrastructure, such that District operations are executed reliably and accurately, meet staff and local stakeholder needs, and conform to District policies and with federal and state requirements.

Performance Standards

Maintain, retain, and control all District records in accordance with the Texas State Library and Archives Commission-approved District Records Retention Schedule to allow for safekeeping and efficient retrieval of any and all records, and annually audit records for effective management of use, maintenance, retention, preservation and disposal of the records' life cycle as required by the Local Government Code. A summary of records requests received under the Texas Public Information Act (PIA), any training provided to staff or directors, or any claims of violation of the PIA will be provided in the Annual Report under the General Management Team Highlights.

The Administration Team is responsible for proper maintenance, management, retention, and disposition of all District records; inventory of District property (asset management); and capital

depreciation. Administration preserved and protected all public documents in accordance with state and federal laws, the adopted District Records Retention Schedule, and with the Texas State Library regulations; and maintained the District's reference material library.

District records were maintained effectively, and there were no violations of the Public Information Act (PIA).

Two Texas PIA requests were handled with the support of specialized counsel provided by Bickerstaff Heath Delgado Acosta LLP and to the satisfaction of the requesting entity.

Develop, post, and distribute District Board agendas, meeting materials, and backup documentation in a timely and required manner; post select documents on the District website, and maintain official records, files, and minutes of Board meetings appropriately.

The Administration Team developed, posted, and distributed all materials and backup documentation for all 10 District Regular Meetings and one Special Called Meeting held in FY 2024. There were also seven Public Hearings. All meeting minutes were approved by the Board at a subsequent meeting. Administrative staff maintained the officials records of each meeting on the District's website and in the District's digital library.

Objective 1-7. Manage and coordinate electoral process for Board members.

Performance Standard

Ensure the elections process is conducted and documented in accordance with applicable requirements and timelines. Election documents will be maintained on file, and a summary of elections-related dates and activities will be provided in the Annual Report for years when elections occur.

The District holds elections no more often than every two years during even-numbered years, but during an odd-numbered fiscal year .

Three candidates filed for the November 5, 2024 (FY 25) election but were unopposed at the end of the filing deadline. The elections, therefore, were cancelled. Two candidates were running for reelection (precincts 3 and 4) and one candidate will be new (Precinct 1) since the incumbent chose not to run for reelection after one term.

GOAL 2
CONTROLLING AND PREVENTING WASTE OF GROUNDWATER

31 TAC 356.52(A)(1)(B)/TWC §36.1071(A)(2))

Objective 2-1. Require all newly drilled exempt and nonexempt wells, and all plugged wells to be registered and to comply with applicable District Rules, including Well Construction Standards.

Performance Standard

A summary of the number and type of applications processed and approved for authorizations, permits, and permit amendments including approved use types and commensurate permit volumes for production permits and amendments will also be provided in the Annual Report.

To ensure that all firm-yield production permits are evaluated with consideration given to the District's demand-based and nonspeculative permitting standards, staff completed comprehensive administrative and technical reviews of permit application requests. A summary of the number and type of applications processed and approved for authorizations, permits, and permit amendments, including approved use types and commensurate permit volumes for production permits and amendments, is provided below.

A summary of the processed permitting applications in FY 2024 is provided in the table below.

Processed Permit Applications	FY22	FY23	FY24
Minor Amendment	5	1	0
Major Amendments	0	0	0
New Exempt Well	11	8	4
Limited Production Permit (Nonexempt Domestic Wells)	10	19	7
Individual Production Permit	4	1	3
Individual Well Drilling Authorizations or Well Modification	0	0	4
Test Well or Aquifer Test	0	0	2
Well Plugging	9	5	3
Replacement Well	0	1	0
TOTAL	39	35	23

A summary of the individual production permits processed in FY 2024 is provided in the table below.

Annual Volume (gpy)	Production Permits Processed	Permit Type	Use Type	Aquifer
788,400	Jarica Investments, LLC	Historic Trinity	Commercial	Middle Trinity
1,645,000	Oak Haven Preserve	Historic Trinity	Commercial	Middle Trinity
73,000	PQ Holdings, LLC	Class A Conditional Edwards	Commercial	Edwards

Objective 2-2. Ensure permitted wells and well systems are operated as intended by requiring reporting of periodic meter readings, making periodic inspections of wells, and reviewing pumpage compliance at regular intervals that are meaningful with respect to the existing aquifer conditions.

Performance Standards

Inspect all new wells for compliance with the Rules, and Well Construction Standards, and provide a summary of the number and type of inspections or investigations in the Annual Report.

During FY 2024, staff conducted a number of inspections relating to the processing of permit applications. Staff completed a total ofthree inspections related to special investigations, twelve site permittee inspections and well permit applications. Staff collected 25 water quality samples during routine permit inspections or from new well construction inspections. There were three formal enforcement actions initiated in FY 2024. All three of these actions were for non-compliance of meeting monthly drought target volumes.

Inspections/ Investigations/ Visits	FY 2022	FY 2023	FY 2024
Exempt Well Inspections	0	2	3
Limited Production Permit Inspections	3	4	7
Individual Production Permit Inspections	2	0	1
Test Well Inspections	0	0	0
Plugging Inspections	1	1	1
Special Investigation Inspections	1	1	3
Other Permittee Meetings/Visits *	6	20	14
Multiple meetings were held with some permittees.			
TOTAL	**13**	**28**	**25**

Provide a summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each MZ and permit type in the Annual Report.

A summary of the actual versus permitted production volumes for each MZ is provided above in the Objective 1-2 Performance Standard update.

Objective 2-3. Provide leadership and technical assistance to government entities, organizations, and individuals affected by groundwater-utilizing land use activities, including support of or opposition to legislative initiatives or projects that are inconsistent with this objective.

Performance Standards

A. In even-numbered fiscal years, provide a summary of interim legislative activity and related District efforts in the Annual Report. In odd-numbered fiscal years, provide a legislative debrief to the Board on bills of interest to the District, and provide a summary in the Annual Report.

During FY 2024, the Texas State Legislature did meet.

B. Provide a summary of District activity related to other land use activities affecting groundwater in the Annual Report.

Development Activities Over Recharge and Contributing Zones:

No new development activities moved forward during the fiscal year.

The District continues to monitor as many proposed/new developments as possible and Texas Pollutant Discharge Elimination System (TPDES) permits in the contributing and recharge zones of the Barton Springs segment of the Edwards Aquifer. Furthermore, the District continues to track legislation regarding wastewater discharges in the Edwards Aquifer Contributing Zone.

Objective 2-4. Ensure all firm-yield production permits are evaluated with consideration given to the demand-based permitting standards including verification of beneficial use that is commensurate with reasonable non-speculative demand.

Performance Standard

A summary of the number and type of applications processed and approved for authorizations, permits, and permit amendments including approved use types and commensurate permit volumes for production permits and amendments will be provided in the Annual Report.

To ensure that all firm-yield production permits are evaluated with consideration given to the District's demand-based and nonspeculative permitting standards, staff completed comprehensive administrative and technical reviews of permit application requests. A summary of the number and type of applications processed and approved for authorizations, permits, and permit amendments including approved use types and commensurate permit volumes for production permits and amendments is provided below.

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Individual Production Permit	4	1	3
Individual Well Drilling Authorizations or Well Modification	0	0	4
Test Well or Aquifer Test	0	0	2
Well Plugging	9	5	3
Replacement Well	0	1	0
TOTAL	39	35	23

A summary of the individual production permits processed in FY 2024 is provided in the table below.

Annual Volume (gpy)	Production Permits Processed	Permit Type	Use Type	Aquifer
788,400	Jarica Investments, LLC	Historic Trinity	Commercial	Middle Trinity
1,645,000	Oak Haven Preserve	Historic Trinity	Commercial	Middle Trinity
73,000	PQ Holdings, LLC	Class A Conditional Edwards	Commercial	Edwards

GOAL 3
ADDRESSING CONJUNCTIVE SURFACE WATER MANAGEMENT ISSUES

31 TAC 356.52(A)(1)(D)/TWC §36.1071(A)(4)

Objective 3-1. Assess the physical and institutional availability of existing regional surface water and alternative groundwater supplies, and the feasibility of those sources as viable supplemental or substitute supplies for District groundwater users.

Performance Standard

A summary of District activity related to this objective will be provided in the Annual Report.

Identify available alternative water resources and supplies that may facilitate source substitution and reduce demand on the Edwards Aquifer while increasing regional water supplies; and evaluate feasibility by considering available/proposed infrastructure, financial factors, logistical/engineering factors, and potential secondary impacts (development density/intensity or recharge water quality).

Staff worked cooperatively with the Ruby Ranch Water Supply Corporation (RRWSC) and their consultants to monitor water quality, water levels and water chemistry sampling and meter accounting of injection and extraction phases of their aquifer storage and recovery (ASR) operation (the 4th in Texas). The District also worked cooperatively with the TCEQ Underground Injection Control (UIC) Permits Section to assist in permit provisions. RRWSC is currently authorized to inject 15,000,000 and recover 12,300,000 gallons over a one-year period. In FY 2020, RRWSC was given a Conditional D permit for Edwards groundwater to inject into the Trinity Aquifer. In FY 2021, RRWSC began their first Conditional D permitted ASR recovery in September 2020 and from June-August 2021, with a total of 3,117,700 gallons recovered from Trinity formations. Water-quality data collected by RRWSC was shared with the District and evaluated by Aquifer Science staff.

Lessons learned from the RRWSC ASR project were applied to the District's second, and larger ASR permit, which was issued to The City of Buda in FY 2024. Staff will continue to collect and evaluate hydrogeologic data to better understand how the Trinity Aquifer responds to permitted ASR operations over longer timeframes, and thus increase our understanding of the feasibility of ASR projects as a strategy to reduce demand on the Edwards Aquifer and increase regional supplies.

Ruby Ranch ASR Status Report

Objective 3-2. Encourage and assist District permittees to diversify their water supplies by assessing the feasibility of alternative water supplies and fostering arrangements with currently available alternative water suppliers.

Performance Standard

A summary of District activity related to this objective will be provided in the Annual Report.

Identify available alternative water resources and supplies that may facilitate source substitution and reduce demand on the Edwards Aquifer, while increasing regional water supplies; and evaluate feasibility

by considering available/proposed infrastructure, financial factors, logistical/engineering factors, and potential secondary impacts (development density/intensity or recharge water quality).

From FY 2021-2023 Staff worked with the City of Buda to facilitate development and testing of a Middle Trinity ASR test well. Aquifer science staff cooperated with staff and consultants with the City of Buda to collect comprehensive data during multiple ASR injection and recovery cycles. Data was evaluated to quantify aquifer impacts and ensure the feasibility of the project. In FY 2024, after completion of the multi-year pilot project, the City of Buda applied for and was granted an ASR permit by the District and the Buda ASR system is now operational. Staff will continue to collect and evaluate hydrogeologic data to better understand how the Trinity Aquifer responds to permitted ASR injection and withdrawal operations over longer timeframes, and thus increase our understanding of the feasibility of ASR projects as an alternate water supply strategy for District permittees.

In FY 2024 Aquifer Science team continued to collect and evaluate water level and water chemistry data collected from the Lower Trinity Aquifer, to assess the viability of the Lower Trinity Aquifer as an alternative supply for District Permittees. Currently the District maintains two Lower Trinity monitoring wells. One of these monitoring wells is the Bliss Spillar Lower Trinity production well, the District's second Lower Trinity non-exempt permit which was issued in FY 2023. Data collected from this well will provide valuable insight on how the Lower Trinity responds to production over time.

Objective 3-3. Demonstrate the importance of the relationship between surface water and groundwater, and the need for implementing prudent conjunctive use through educational programs with permittees and public outreach programs.

Performance Standards

Provide summaries of associated outreach and education programs, events, workshops, and meetings in the monthly team activity reports in the publicly-available Board backup.

Groundwater Symposium

The Groundwater Symposium took place on April 2, 2024 at Texas State University. This event was led by the District in collaboration with staff in the Geography and Environmental Studies Department and the Office of Sustainability at TXST. The purpose of this event was to bring university students and the general public together to learn about local aquifers and water conservation and meet professionals who manage groundwater resources regionally. Demands on the Edwards and Trinity aquifers continue to increase in the face of a growing population and drier climate. It's important for community members and future conservation professionals to understand how groundwater is managed, the challenges this resource faces, and how groundwater regulatory bodies are preparing for a changing climate. The Groundwater Symposium sold out of the 250 free tickets that were available. Approximately 175 participants attended the event. The Groundwater Symposium was shared broadly across the District's social media platforms and website and was promoted by participating partners. Speakers included:

- Dylan Baddour - Texas Correspondent at InsideClimate News
- Dr. Mario Garza & Maria Rocha - Elders from the Miakan-Garza Band of the Coahuiltecan People
- Dr. Robert Mace - Executive Director of The Meadows Center for Water and the Environment
- Vanessa Puig-Williams - Director, Texas Water Program at Environmental Defense Fund

- Dr. Tim Loftus - General Manager at the Barton Springs/Edwards Aquifer Conservation District
- Charlie Flatten - General Manager at the Hays Trinity Groundwater Conservation District
- Roland Ruiz - General Manager at the Edwards Aquifer Authority

GeoTrek Podcast

Shay Hlavaty spoke on this podcast focused on hurricanes and natural disasters during the Texas Groundwater Summit. She discussed challenges she faces with communicating the hydrological drought when the area was out of meteorological drought at the time. She also emphasized that the District was still in Stage II Alarm Drought at the time, nearing Stage III Critical Drought, and that conservation of groundwater resources is always essential. This podcast was promoted on the District's social media outlets and can be accessed here.

Nature Night

Staff were invited by City of Austin Water Wildland Conservation to assist with one of Lady Bird Johnson Wildflower Center's Nature Nights. This took place on June 6, 2024, from 5-9pm and was open to the public with an emphasis on education for kids. Since the event took place on National Caves and Karst Day, it focused on caves and fossils and allowed participants to enter two caves on the Wildflower Center's property. Shay Hlavaty was stationed in one of the caves where she educated attendees about the District, groundwater, water conservation, how the caves serve as recharge sites for the Edwards Aquifer and that the water ends up at Barton Springs. Approximately 200 people attended this Nature Night. This event was shared across District's social media channels and in the newsletter. Additional information about it can be viewed here.

Objective 3-4. Actively participate in the regional water planning process to provide input into policies, planning elements, and activities that affect the aquifers managed by the District.

Performance Standard

Regularly attend regional water planning group meetings, and annually report on meetings attended.

In FY 2024, staff attended meetings of the Lower Colorado Regional Water Planning Group (Region K) and reported on any key updates at the Board Meetings. The GM and the alternate served as the Groundwater Management Area (GMA) 10 representatives through August 31, 2024 and continue to serve as liaisons. Region K Meetings attended are:

October 42, 2023
February 13, 2024
April 17, 2024
July 10, 2024

GOAL 4
ADDRESSING NATURAL RESOURCE ISSUES WHICH IMPACT THE USE AND AVAILABILITY OF GROUNDWATER, AND WHICH ARE IMPACTED BY THE USE OF GROUNDWATER

31 TAC 356.52 (A)(1)(E)/TWC §36.1071(A)(5)

Objective 4-1. Assess ambient conditions in District aquifers on a recurring basis by (1) sampling and collecting groundwater data from selected wells and springs monthly, (2) conducting scientific investigations as indicated by new data and models to better determine groundwater availability for the District aquifers, and (3) conducting studies as warranted to help increase understanding of the aquifers and, to the extent feasible, detect possible threats to water quality and evaluate their consequences.

Performance Standards

Review water-level and water-quality data that are maintained by the District and/or TWDB, or other agencies, on a regular basis.

Staff visits approximately 50 monitor wells quarterly, in addition to numerous other wells throughout the year, including eight multiport monitor wells. Data is collected and organized into individual spreadsheets and databases. Staff also regularly samples wells and springs for detailed geochemical analyses as a cooperator for the TWDB (8 sites in FY 2024). All data has been compiled in the TWDB database that is publicly available.

Improve existing analytical or numerical models or work with other organizations on analytical or numerical models that can be applied to the aquifers in the District.

Staff provided key technical support in the development of a conceptual model for the aquifers of the Blanco River watershed. That report (https://bseacd.org/uploads/Martin-et-al.-2019-BRAAT.pdf) was published at the end of FY 2019.

In FY 2024 staff attended technical advisory stakeholder meetings for the TWDB Southern Trinity Groundwater Availability Model, currently under construction and scheduled for completion in the middle of calendar year 2025. Staff continue to work with the TWDB to share data for model inputs and provide technical review of the model when solicited.

Aquifer Science staff began development of the Trinity Aquifer Sustainability Model (TAS) in FY 2020. The TAS (formerly referred to as the "In-house Model") domain covers parts of Travis, Hays, Blanco, and Comal counties. A steady-state version of the model was completed in late 2020. In FY 2021-2022, staff worked to transition the model from steady-state to transient state. Transient models are substantially more complex than steady-state and allow for simulation of the aquifer system under changing conditions such as prolonged drought and/or increases in localized or regional pumping. In FY 2023, the first phase of TAS modeling was completed, and a comprehensive report was published on the District website detailing model parameters and summarizing preliminary modeling results. This report can be found at the following link:

Trinity Aquifer Sustainability Model

In FY 2024, staff kicked of the second phase of TAS modeling, called “TAS Phase II”. In TAS Phase II the model will be further improved and refined to provide a tool which can help provide technical answers for key policy questions emerging related to management of the Trinity Aquifers. Once completed, the TAS will provide a valuable tool which will allow policy makers and stakeholders to evaluate the potential impacts of management decisions on the Trinity Aquifer. In addition, development of the TAS has been a valuable training exercise for Aquifer Science staff, who are now better equipped to evaluate and interact with other groundwater models which are currently under development (the new TWDB Southern Trinity Groundwater Availability Model).

No significant changes in water-quality data were observed during FY 2024. Aquifer conditions began with a status of Critical Drought in September 2023 due to a previously very dry spring and summer. Below-average rainfall continued in November, and by early December 2023, the water level at the Lovelady monitor well had dropped below its “Exceptional Drought” threshold. Consequently, on December 14, 2023, the District Board declared Stage IV “Exceptional Drought”—the first such declaration in the District’s 36-year history. A wetter-than-average winter caused water levels to rise, prompting the District to raise the drought status to "Critical Drought" on February 8, 2024. After further recharge, the status was elevated again to "Alarm Drought." However, by August, water levels and spring flow began to decline. The Lovelady well dropped below its Critical Drought threshold, leading the District to re-declare a "Critical Drought" on October 3, which remains in effect as of November 2024.

Objective 4-2. Evaluate site-specific hydrogeologic data from applicable production permits to assess potential impact of withdrawals to groundwater quantity and quality, public health and welfare, contribution to waste, and unreasonable well interference.

Performance Standard

This involves evaluations of certain production permit applications for the potential to cause unreasonable impacts as defined by District rule. To evaluate the potential for unreasonable impacts, staff will (1) perform a technical evaluation of the application, aquifer test, and hydrogeological report; (2) use best available science and analytical tools to estimate amount of drawdown from pumping and influence on other water resources; and (3) recommend proposed permit conditions to the Board for avoiding unreasonable impacts if warranted.

The Staff continues to collect and evaluate data in the southwestern portion of the District where the Trinity Aquifer is under the influence of significant non-exempt and exempt pumping. Continued monitoring of these and other locations will be critical for evaluating the Trinity Aquifer’s response to pumping and drought within the District, and to what extent large pumping centers have the potential to cause unreasonable impacts. Staff continue to work with permit applicants and their consultants to plan and execute aquifer tests that meet the District’s high standards for test design and data quality, and ensure that submitted hydrogeologic reports provide adequate data to perform evaluations for unreasonable impacts.

In FY 2024, a well impact analysis project was begun to evaluate all known exempt wells within the District for their susceptibility to unreasonable impacts. Once completed, the datasets and analyses produced by the well impact analysis will be valuable tools for evaluating future Trinity permits for the potential for unreasonable impacts. The well impact analysis project was subcontracted to LRE Water and final deliverables are expected by the end of calendar year 2025.

As indicated above, development of numerical models is underway to assist in the evaluations of potential unreasonable impacts from pumping from the large capacity wellfields and from other pumping and drought scenarios.

Objective 4-3. Implement separate MZs and, as warranted, different management strategies to address more effectively the groundwater management needs for the various aquifers in the District.

Performance Standards

Increase the understanding of District aquifers by assessing aquifer conditions, logging wells, and collecting water quality data. A summary of the number of water quality samples performed will be provided in the Annual Report.

To increase the understanding of District aquifers and water level conditions, staff collected groundwater data from selected wells and performs field assessments such as logging wells and collecting water quality samples.

- The Aquifer Science Team collected 14 samples from sample sites including wells and springs from the Edwards and Trinity Aquifers for major ions and isotopes.
- The Regulatory Compliance Team collected 11 water quality samples during routine permit inspections or from new well construction inspections.

A summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each MZ and permit type is provided in the Annual Report.

To ensure that all firm-yield production permits are evaluated with consideration given to the District's demand-based and non-speculative permitting standards, staff completed comprehensive administrative and technical reviews of permit application requests. A summary of the number and type of applications processed and approved for authorizations, permits, and permit amendments including approved use types and commensurate permit volumes for production permits and amendments is provided below.

A summary of the processed permitting applications in FY 2024 is provided in the table below.

Processed Permit Applications	FY22	FY23	FY24
Minor Amendment	5	1	0
Major Amendments	0	0	0
New Exempt Well	11	8	4
Limited Production Permit (Nonexempt Domestic Wells)	10	19	7
Individual Production Permit	4	1	3
Individual Well Drilling Authorizations or Well Modification	0	0	4
Test Well or Aquifer Test	0	0	2
Well Plugging	9	5	3
Replacement Well	0	1	0
TOTAL	39	35	23

A summary of the individual production permits processed in FY 2024 is provided in the table below.

Annual Volume (gpy)	Production Permits Processed	Permit Type	Use Type	Aquifer
788,400	Jarica Investments, LLC	Historic Trinity	Commercial	Middle Trinity
1,645,000	Oak Haven Preserve	Historic Trinity	Commercial	Middle Trinity
73,000	PQ Holdings, LLC	Class A Conditional Edwards	Commercial	Edwards

Objective 4-4. Actively participate in the joint planning processes for the relevant aquifers in the District to establish and refine desired future conditions (DFCs) that protect the aquifers and the Covered Species of the District Habitat Conservation Plan (HCP).

Performance Standard

Attend at least 75% of the GMA (groundwater management area) meetings, and annually report on meetings attended, GMA decisions on DFCs, and other relevant GMA business.

Staff attended 100% of the GMA 10 meetings that were held in FY 2024: October 16, 2023, January 22 2024; April 15, 2024. The GMA discussions included the following topics:

- GMA 10 members finalized an Interlocal Agreement that designated the Plum Creek Conservation District as the Administrative Coordinator to engage in a contract with Collier Consulting.
- Working through the DFC planning schedule with the consultant.

Objective 4-5. Implement the measures of the Habitat Conservation Plan (HCP) and Incidental Take Permit (ITP) from the United States Fish and Wildlife Service (USFWS) for the Covered Species and covered activity to support the biological goals and objectives of the HCP.

Performance Standard

Prior to ITP permit issuance, a progress report summarizing activities related to the USFWS review of the ITP application will be provided in the Annual Report. Upon ITP issuance, the HCP annual report documenting the District's activities and compliance with ITP permit requirements will be incorporated into the Annual Report by reference.

The USFWS approved the District's HCP in July 2018, and published the Record of Decision and the final Environmental Impact Statement (EIS). On September 20, 2018, the USFWS issued a 20-year ITP. On April 11, 2019, the Board approved an Interlocal Agreement (ILA) between the District and the City of Austin (CoA) to collaborate and coordinate on routine and planned activities relative to each entity's respective HCP.

The District and the CoA meet annually to discuss their efforts, independent and joint, related to the HCP. The first annual meeting to discuss their respective HCP-related activities was held on December 10, 2019.

The second annual meeting was held via Zoom during the pandemic on December 16, 2020. The third meeting was held on December 6, 2021 and a fourth meeting was held on December 12, 2022. The fifth meeting was conducted on December 12, 2023.

On February 7, 2023, a meeting was held with the District HCP Management Advisory Committee (MAC) to discuss the District's HCP-related activities for FY 2023. On February 26, 2024, the fifth HCP/ITP Annual Report was submitted to the USFWS.

GOAL 5
ADDRESSING DROUGHT CONDITIONS

31 TAC 356.52 (A)(1)(F)/TWC §36.1071(A)(6)

Objective 5-1. Adopt and keep updated a science-based drought trigger methodology, and frequently monitor drought stages on the basis of actual aquifer conditions, and declare drought conditions as determined by analyzing data from the District's defined drought triggers and from existing and such other new drought-declaration factors, especially the prevailing dissolved oxygen (DO) concentration trends at the spring outlets, as warranted.

Performance Standards

During periods of District-declared drought, prepare a drought chart at least monthly to report the stage of drought and the conditions that indicate that stage of drought. During periods of non-drought, prepare the drought charts at least once every three months.

Staff monitored the District's two drought trigger sites: flow measured at/near the Barton Springs Pool and water levels measured at the Lovelady monitor well; plus numerous other indicators of drought conditions relating to the Edwards Aquifer. The District contracts with the United States Geological Survey (USGS) for the Lovelady Well to maintain equipment, collect, and host as real-time data on their website. The CoA contracts with the USGS to maintain the data for Barton Springs.

Barton Springs flow monitoring during persistent drought conditions in FY 2024 presented measurement challenges. Multiple drought stage declarations (3) within an eleven-month period (December 2023 – October 2024) required several manual measurements to verify flow conditions. Pool maintenance activities, coupled with USGS gauge maintenance, introduced significant uncertainty in the USGS real-time gauge readings. To validate discharge measurements as spring flow approached newer drought thresholds, staff conducted manual flow measurements in collaboration with CoA and USGS. This supplemental data collection ensured optimal measurement accuracy for making drought decisions.

Staff frequently verified water-level values measured by the equipment at the Lovelady monitor well (which has recorded data since 1949) and verified discharge measurements made at Barton Springs. During periods of District-declared drought, and preceding potential drought, staff provided updated reports of aquifer conditions at each Board meeting. Data from Trinity monitor wells were also collected and evaluated at these times.

In 2018, staff evaluated the current drought trigger methodology as it relates to the Middle Trinity Aquifer. Results were published in a memo and found that the District's established Edwards Aquifer triggers are indeed representative of drought conditions, regardless of the aquifer. In FY 2024, staff continued to monitor Trinity Aquifer water-level drops in response to the ongoing drought and evaluate whether the established Edwards drought triggers are still representative of Trinity Aquifer conditions. To date, the established triggers appear to be adequate. Staff will continue to evaluate Trinity Aquifer water levels as drought conditions persist. If Trinity Aquifer behavior deviates significantly from the Edwards, a reevaluation of established drought triggers may be warranted.

A summary of the drought indicator conditions and any declared drought stages and duration will be provided in the Annual Report.

Objective 5-2. Implement a drought management program that step-wise curtails freshwater Edwards Aquifer use to at least 50% by volume of 2014 authorized aggregate monthly use during Extreme Drought, and that designs/uses other programs that provide an incentive for additional curtailments where possible. For all other aquifers, implement a drought management program that requires mandatory monthly pumpage curtailments during District-declared drought stages.

Performance Standard

During District-declared drought, enforce compliance with drought management rules to achieve overall monthly pumpage curtailments within 10% of the aggregate curtailment goal of the prevailing drought stage. A monthly drought compliance report for all individual permittees will be provided to the Board during District-declared drought, and a summary will be included in the Annual Report.

The District implements a drought management program that requires mandatory monthly pumpage curtailments during District-declared drought stages. The District began FY 2024 in Stage III Critical drought. The District declared Stage IIV Exceptional Drought on December 14, 2023 and remained in this stage until February 8, 2024 when the District declared Stage II Critical Drought once again. The District declared Stage II Alarm Drought on March 1, 2024 and the District remained in this stage until the end of FY 2024. The District has implemented all drought-related rules and curtailments in accordance with the District's enforcement plan and drought management protocols. Drought enforcement measures were assessed for Stage III Critical Drought from the beginning of FY 2023 through December 2023 with Stage IIV Exceptional enforcement measures being assessed for January and February of 2024, Stage III Critical measures again assessed in March of 2024 and Stage II Alarm measures assessed for the remainder of FY 2023. Monthly drought compliance reports for all individual permittees were provided to the Board each month of FY 2024 during District-declared drought, and those reports can be found on the drought management website pages.

Objective 5-3. Inform and educate permittees and other well owners about the significance of declared drought stages and the severity of drought and encourage practices and behaviors that reduce water use by a stage-appropriate amount.

Performance Standards

During District-declared drought, publicize declared drought stages and associated demand reduction targets in monthly eNews bulletins and continuously on the District website.

A summary of drought and water conservation related newsletter articles, press releases, and drought updates sent to Press, Permittees, Well Owners and eNews subscribers will be provided in the Annual Report.

Newsletter and Drought Update Emails

Throughout the fiscal year, newsletters were sent on a bi-monthly basis to the District's more than 2300 newsletter subscribers. Newsletters include drought information, aquifer research, and information on upcoming events. For additional exposure, newsletters were shared on the website as a slide on the home page and posted across all social media outlets.

Every month the District is in drought, we write a Drought Update article to keep audiences informed. Drought Updates include information on monthly rainfall, Barton Springs flow, Lovelady monitor well groundwater levels, Upper and Middle Trinity, and Highland Lakes along with water conservation tips. Drought Updates are included in the bi-monthly newsletter, and on the off months, the Drought Update is sent out as a standalone email. All of the Drought Updates were shared on the website in the District News portion of the homepage. Drought Updates were posted across all District social media channels.

FY 2024 Newsletters and Drought Updates can be viewed below:

- 10/2023 - September and October Newsletter
- 11/2023 - October Drought Update
- 12/2023 - November and December Newsletter
- 01/2024 - December Drought Update
- 02/2024 - January and February Newsletter
- 03/2024 - February Drought Update
- 04/2024 - March and April Newsletter
- 05/2024 - April Drought Update
- 06/2024 - May and June Newsletter
- 07/2024 - June Drought Update
- 08/2024 - July and August Newsletter

Relevant Articles on District Website

In the District News portion of the website, articles were shared providing insight on the ongoing drought, the status of the aquifers, and ways to actively conserve water. Some of these articles are "Messages from the General Manager", which are shared quarterly and include drought insight from Tim Loftus. These articles were shared across the District's social media platforms and newsletters/Drought Updates.

- Message from the General Manager – September 2023
- 5 Water-saving Tips for the Holidays, 11/28/23
- Message from the General Manger – January 2024
- Preparing for Winter Weather, 1/26/24
- Message from the General Manager, May 2024
- Travis County is Out of Drought. Why isn't the District?, 6/20/24

Drought Press Releases, Articles, and Emails

Amongst the historic dry and hot conditions of 2023 and declaration of Stage IV Exceptional Drought, the District received extensive press coverage in FY 2024. Staff shared press releases with 25+ media contacts state-wide and fostered close working relationships specifically with staff at KXAN, FOX7, and InsideClimate News. Below you can view the drought-focused emails sent to permittees and newsletter subscribers, press releases shared with media contacts and on the District website, and the resulting news articles and segments that were published online and/or in print.

- Press Release: District Foresees Unprecedented Transition to Stage IV Exceptional Drought – BSEACD, 7/21/23
- Before and after photos show dire conditions at popular swimming hole Jacob's Well – KSAT, 8/2/23
- How much of the Colorado should we leave up to Elon Musk's discretion? - Austin Chronicle, 8/11/23
- Barton Springs, Jacob's Well swimming hole faces danger from Texas drought – Austin-American Statesman, 8/14/23

- Dry springs in Central Texas warn of water shortage ahead - Inside Climate News and picked up by Texas Standard, Texas Tribune, 8/16/23
- Barton Springs-Edwards Aquifer update – Fox 7, 8/24/23
- Kyle officials request water from San Marcos – KVUE, 8/30/23
- Press Release: District Declares Stage IV Drought – BSEACD, 12/15/23
- District Email: District Declares Stage IV Drought – BSEACD, 12/15/23
- For first time ever, 'exceptional drought' declared by Barton Springs/Edwards Aquifer Conservation District - KXAN, 12/15/23
- Barton springs-Edwards Aquifer Conservation district declares Stage 4 exceptional drought – Fox7, 12/15/23
- Barton Springs Edward Aquifer Conservation District declares Stage 4 Exceptional Drought – Community Impact, 12/15/23
- 'Exceptional drought' declared for first time by Austin-area aquifer district – KVUE, 12/15/23

2024

- Conservation district declares historic Stage IV Drought - Hays Free Press, 1/3/24
- Texas Weather: Will forecasted rain put a dent in drought? – Fox 7, 1/22/24
- Another hot dry summer may push water supplies in parts of Texas to the brink – Inside Climate News/Texas Tribune, 1/22/4
- Rain fails to boost Lake Travis but will likely help aquifer levels – KXAN, 1/22/4
- Will this week's rainfall make an impact on severe drought? - KEYE, 1/22/24
- District Email: District Moves Up to Stage III Drought – BSEACD, 2/13/24
- Bout with Drought - Austin Chronicle, 2/16/24
- Barton Springs/Edwards Aquifer Conservation District enters Stage 2 drought restrictions – KVUE, 3/1/24
- Conservation district has good news on drought level – Austin Monitor, 3/5/24
- District Email: Drought Update - District Moves Up to Stage II Drought – BSEACD, 3/28/24
- It's gonna be a long hot summer again - Austin Chronicle,5/24/24
- Is Austin going to run out of water? - Austin Monthly, May 2024

Website

With the website's redesign in FY 2024, existing drought pages have been updated and revamped to make information more accessible for viewers. Drought information can be found in the following locations:

- District homepage- This page displays the drought trigger chart with up-to-date data for both Lovelady monitor well groundwater levels and Barton Springs flow. By clicking on the drought chart, viewers are directed to the Drought Status page where USGS gauges for each determinant can be seen.
- Navigation bar- The tab on the far right displays the current drought stage, making it apparent to viewers we're still in drought.
- Homepage slide- While in drought, one of the slides on the homepage states the District's current drought status and links to either a press release or relevant drought resources.
- Page updates- Content and layouts were updated on the Drought Information and Resources and Drought Status pages on the website to make it easier for viewers to navigate, locate, and share important information.

Objective 5-4. Assist and, where feasible, incentivize individual freshwater Edwards Aquifer historic-production permittees in developing drought planning strategies to comply with drought rules, including (1) pumping curtailments by drought stage to at least 50% of the 2014 authorized use during Extreme Drought, (2) "right-sizing" authorized use over the long term to reconcile actual water demands and permitted levels, and (3) as necessary and with appropriate conditions, source substitution with alternative supplies.

Performance Standards

Require an updated User Conservation Plan and User Drought Contingency Plan (UCP/UDCP) from Permittees within one year of each five-year MP Adoption.

In FY 2024, the Regulatory Compliance Team began working to update 150 permit records in order to incorporate updated drought planning documents into their records. According to the District MP, all permittees must update their UDCP and UCP plans at least every five years. Therefore, since all UDCPs were updated in FY 2019, staff is working to finalize these updates that began in FY2024.

Provide a summary of any activity related to permit right sizing or source substitution with alternative supplies that may reduce demand on the freshwater Edwards Aquifer in the Annual Report.

After notice and an opportunity for a hearing, the Board may renew a permit with a reduced amount of the authorized production if the authorized withdrawal volume is no longer commensurate with reasonable non- speculative demand, or actual production from a well is substantially less than the authorized permit amount for multiple years without any rationale that reasonably relates to efforts to utilize alternative water supplies, conserve, or improve water use efficiency. Staff typically conducts an overpumpage analysis every few years, and conducted the analysis in FY 2019, therefore staff did not conduct an overpumpage analysis in FY 2024.

The District has been actively encouraging alternative source projects to reduce the dependency on the aquifers during drought. Staff has collaborated with water suppliers on ASR projects in providing regulatory and technical guidance. . The Ruby Ranch ASR project was approved and has been in operation since the summer of FY 2021 and the City of Buda ASR project was approved in the summer of FY 2024.

Objective 5-5. Implement a Conservation Permit that is held by the District and accumulates and preserves withdrawals from the freshwater Edwards Aquifer that were previously authorized with historic-use status and that is retired or otherwise additionally curtailed during severe drought, for use as ecological flow at Barton Springs during Extreme Drought and thereby increase springflow for a given set of hydrologic conditions.

Performance Standard

A summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each Management Zone and permit type including the volume reserved in the freshwater Edwards Conservation Permit for ecological flows will be provided in the Annual Report.

A summary of the actual versus permitted production volumes for each MZ is provided in Objective 1-2. The amount of Historic Use groundwater (i.e., permitted fresh Edwards volume) that has been retired (i.e., held under the District's Conservation Permit) and placed into the Ecological Flow Reserve since 2009 is 82,305,124 gallons or 0.35 cfs. Ecological Flow Reserve is a protected volume and not subject to further permitting. Additionally, 1,200,000 gallons per year of Historical Trinity Aquifer permitted water has been retired; no Fresh Edwards/Conditional A permitted water has been retired.

GOAL 6
ADDRESSING CONSERVATION AND RAINWATER HARVESTING WHERE APPROPRIATE AND COST-EFFECTIVE

31TAC 356.52 (a)(1)(G)/TWC §36.1071(a)(7)

Objective 6-1. Develop and maintain programs that inform, educate, and support District permittees in their efforts to educate their end-user customers about water conservation and its benefits, and about drought-period temporary demand reduction measures.

Performance Standards

A summary of efforts to assist permittees in developing drought and conservation messaging strategies will be provided in the Annual Report.

Publicize declared drought stages and associated demand reduction targets monthly in eNews bulletins and continuously on the District website.

Outreach Event for Permittees: Managing Groundwater in a Changing Climate

The District hosted an event for permittees on May 16, 2024, at Buda City Hall. The purpose of this event was to provide in-depth information for permittees and government officials about the ongoing drought, District drought status and triggers, state of the aquifers, and available resources. It was also an opportunity for permittees to directly engage with District staff and ask questions in-person. The slide deck for the presentation can be viewed here. The event had 20 attendees—two of which were city council members. The event page and additional details can be viewed here. Below is a list of the speakers at the event along with video recordings of each of their presentations.

- Chapter 1: Introduction & Climate Outlook | Dr. Tim Loftus & Dr. John Neilsen-Gammon, Texas State Climatologist
- Chapter 2: Ongoing Drought Update for the Edwards and Trinity Aquifers | Jeff Watson
- Chapter 3: Water Allocations and Restrictions: Why we have them | Jacob Newton
- Chapter 4: Communications Toolkit | Shay Hlavaty
- Chapter 5: Solutions and Resources During "Drying" Times" | Marisa Bruno, Water Program Manager at Hill Country Alliance

Staff created a communications toolkit for permittees to use to inform their customers/end-users about the District, our relationship with their water supplier, where their water comes from, and the impact water conservation can have. This toolkit includes a series of templates that permittees can share as an email, social media post, newsletter insert, and/or mailed letter. The purpose of it is to increase end-users understanding of their groundwater resources and increased water conservation amongst the ongoing drought.

Permittee Communications

District staff actively worked with permittees throughout the fiscal year to keep them informed about the drought status and assist them with educating their end-users. Below are specific ways we contacted and/or worked with permittees over FY 2024.

Creedmoor Maha WSC

- District staff collaborated with Matthew Pickle at CMWSC to coordinate an outreach event to inform customers about the effects of Stage IV. The event was to take place on September 12, 2023. The organizations worked together to create informational content, plan the event, and design bill inserts to recruit attendees. Since the District did not cross the Stage IV threshold, CMWSC decided to hold off on the event for the time being.
- Staff revisited the possibility of hosting a Stage IV outreach event on February 22, but it was cancelled because of the large amounts of rain the District received in late January, resulting in a move to Stage III Drought.

City of Austin/ Austin Water

- District staff reached out to Kevin Kluge, Water Conservation Manager with the City of Austin, on 8/7/23 before the city declared Stage 2 drought.
- Staff offered to host a joint event about water conservation and drought conditions, but no response has been received.

City of Buda

- District staff attended the City of Buda's Quarterly Townhall Meeting on 9/21/23 at 6pm to share the status of the aquifer, drought conditions, and ongoing District aquifer science work with attendees.

Slaughter Creek Acres WSC

- Mike Dorsey, Board President at SCAWSC, asked District staff for additional information on the reasoning for permit reclassification.
- This document was sent to him so he could share it at their next board meeting.

Aqua Texas

- Staff met with permittee to discuss informational communications campaign with end-users. The communication materials discussed would explain what the District is, reasoning for curtailments, and ways for customers to reduce water consumption. After several efforts to reach out, Aqua Texas did not follow up to complete the project.

Articles

These articles are located in the District News portion of the website. They each provide insight into how permittees and their

- Preparing for Winter Weather
- Well Water Checkup
- Well Water Testing: Why it Matters

Objective 6-2. Encourage use of conservation-oriented rate structures by water utility permittees to discourage egregious water demand by individual end-users during declared drought.

Performance Standard

On an annual basis, the District will provide an informational resource or reference document to all public water supply permittees to serve as resources related to conservation best management strategies and conservation-oriented rate structures.

Webpage

A page was developed and added to the District website. It explains what a conservation-based rate structure is, why they're valuable, and includes several relevant resources for permittees. It can be viewed here or under the "Aquifer Science and Conservation" tab on the website.

Objective 6-3. Develop and maintain programs that educate and inform District groundwater users and constituents of all ages about water conservation practices and the use of alternate water sources such as rainwater harvesting, gray water, and condensate reuse.

Performance Standard

Summarize water conservation related newsletter articles, press releases, and events in the Annual Report. Summary will describe the preparation and dissemination of materials shared with District groundwater users and area residents that inform them about water conservation and alternate water sources.

Outreach

The District prioritizes discussing drought stages and water conservation in every outreach event it participates in. All the FY 2024 outreach events have been described previously in this Annual Report. Below is a list of these events along with the goal and objective under which they are mentioned

- Groundwater to the Gulf, 1-4
- Barton Springs University, 1-4
- Beneath the Surface: Exploring Central Texas Aquifers and Sustainable Management Practices, 1-4
- Format Podcast, 1-4
- Groundwater Symposium, 3-3
- Geo Trek Podcast, 3-3
- Nature Night, 3-3

Webpage

A water conservation page was updated on the District's website and includes several tips and resources for viewers. This can be located under the "Drought" tab on the website.

Newsletters and Drought Updates

- Every newsletter includes a Drought Update, and each Drought Update includes a call for conservation amongst all community members in and outside of the District.
- Starting in the May 2023 Drought Update, drought tips were included each month to provide actions people could take to conserve water. These tips are also posted across social media outlets.
- See Objective 5-3 for a list of links to Drought Update and newsletter emails.

GOAL 7
ADDRESSING RECHARGE ENHANCEMENT WHERE APPROPRIATE AND COST-EFFECTIVE

31TAC 356.52 (A)(1)(G)/TWC §36.1071(A)(7)

Objective 7-1. Improve recharge to the freshwater Edwards Aquifer by conducting studies and, as feasible and allowed by law, physically altering (cleaning, enlarging, protecting, diverting surface water) discrete recharge features that will lead to an increase in recharge and water in storage beyond what otherwise would exist naturally.

Performance Standard

Maintaining the functionality of the Antioch system will be the principal method for enhancing recharge to the freshwater Edwards Aquifer. Additional activities may be excavating sinkholes and caves within the District. A summary of all recharge improvement activities will be provided in the Annual Report.

Antioch Cave is a recharge feature on District property that is capable of contributing a significant amount of water to the Edwards Aquifer when Onion Creek is flowing. A vault constructed over the cave entrance, and automated valves allow for clean creek water to enter the cave, and contaminated stormwater to be kept out. This system was maintained by staff in FY 2024 so that the amount of clean creek water entering the cave was maximized. A regular reporting item has been added to the GM Report special topics list to provide a monthly oral update on these and other Aquifer Science activities, and satisfies this reporting requirement.

The operational equipment and hardware at Antioch Cave to improve the operation and performance of the BMP are fully functional and in good working order. In-situ equipment is collecting water-quality readings every 15 minutes and reporting to an organized database via telemetry.

Objective 7-2. Conduct technical investigations and, as feasible, assist water-supply providers in implementing engineered enhancements to regional supply strategies, including desalination, ASR, effluent reclamation and re-use, and recharge enhancement of surface water (including floodwater) to increase the options for water-supply substitution and reduce dependence on the Aquifer.

Performance Standard

Assess progress toward enhancing regional water supplies.

In FY 2024, the District worked with other entities in the area, such as the City of Buda and RRWSC, to evaluate the potential for the Trinity Aquifers as reservoirs for ASR facilities. See above section: Objective 3-2 for a summary of staff's work with Buda WSC on their ASR pilot testing program.

GOAL 8 – ADDRESSING THE DESIRED FUTURE CONDITIONS OF THE GROUNDWATER RESOURCES

31TAC (A)(1)(H)/TWC §36.1071(A)(8)

Objective 8-1. Freshwater Edwards Aquifer All-Conditions DFC: Adopt rules that restrict, to the greatest extent practicable, the total amount of groundwater authorized to be withdrawn annually from the Aquifer to an amount that will not substantially accelerate the onset of drought conditions in the Aquifer; this is established as a running seven-year average springflow at Barton Springs of no less than 49.7 cfs during average recharge conditions.

Performance Standards

A. A summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each MZ and permit type will be provided in the Annual Report.

A summary of the actual versus permitted production volumes for each MZ is provided in Objective 1-2.

B. Upon ITP issuance, the HCP annual report documenting the District's activities and compliance with ITP permit requirements will be incorporated into the Annual Report by reference.

The USFWS issued the District's ITP in September 2018. The District submitted its fifth annual report to USFWS on February 26, 2024.

C. Upon ITP issuance, compile a summary of aquifer data including: 1) the frequency and duration of District-declared drought, 2) levels of the Aquifer as measured by springflow and indicator wells (including temporal and spatial variations), and 3) total annual and daily discharge from Barton Springs will be provided in the Annual Report.

FY 2024 began with the District in Critical Stage III drought and remained that way until December 14, 2023 when the Board declared Exceptional Stage IV drought, effective January 1, 2024. The move to Stage IV was historic and resulted in the irrevocable conversion of 16 Class A permits to Class B. Stage IV lasted just one month as the drought situation improved and allowed a return to Critical Stage III the following month of February. The District moved to Alarm Stage II drought on March 1, 2024and ended the fiscal year in that same stage of drought on August 31, 2024.

Discharge at Barton Springs was 17.1 cfs on September 1, 2023 and 21.9 cfs on August 31, 2024; an increase in flow of 4.8 cfs. The depth to water level (feet below land surface) at the Lovelady monitoring well began the fiscal year at 195.06 feet and ended the fiscal year at 188.77, an increase (i.e., improvement) of 6.29 feet.

Objective 8-2. Freshwater Edwards Aquifer Extreme Drought DFC: Adopt rules that restrict, to the greatest extent practicable and as legally possible, the total amount of groundwater withdrawn monthly from the aquifer during Extreme Drought conditions in order to minimize take and avoid jeopardy of the Covered Species as a result of the Covered Activities, as established by the best science available. This is established as a limitation on actual withdrawals from the aquifer to a total of no more than 5.2 cfs on an

average annual (curtailed) basis during Extreme Drought, which will produce a minimum springflow of not less than 6.5 cfs during a recurrence of the drought of record (DOR).

Performance Standards

A. A summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each MZ and permit type will be provided in the Annual Report.

A summary of the actual versus permitted production volumes for each MZ is provided above in Objective 1-2.

B. Upon ITP issuance, the HCP annual report documenting the District's activities and compliance with ITP permit requirements, will be incorporated into the Annual Report by reference.

The USFWS issued the District's ITP in September 2018. The District submitted its fifth annual report to USFWS on February 26, 2024.

C. Upon ITP issuance, compile a summary of aquifer data including: 1) the frequency and duration of District-declared drought, 2) levels of the Aquifer as measured by springflow and indicator wells (including temporal and spatial variations), and 3) total annual and daily discharge from Barton Springs will be provided in the Annual Report.

Please see Objective 8-1 above.

Objective 8-3. Implement appropriate rules and measures to ensure compliance with District-adopted DFCs for each relevant aquifer or aquifer subdivision in the District.

Performance Standard

Develop and implement a cost-effective method for evaluating and demonstrating compliance with the DFCs of the relevant aquifers in the District, in collaboration with other GCDs in the GMAs. Prior to method implementation, provide a summary of activities related to method development in the Annual Report. Once developed, provide a summary of data for each District-adopted DFC for each relevant aquifer indicating aquifer conditions relative to the DFC, and provide in the Annual Report.

For the Trinity Aquifer in GMA 10, to determine compliance with the Trinity Aquifer DFC, the data must show that the average regional well drawdown does not exceed 25 feet during average recharge conditions including exempt and nonexempt use. GMA 10 is without a means to monitor "average regional drawdown across the planning area. The District made progress in FY 2023 with an in-house numerical model that will help to inform drawdown (within the District) under a variety of conditions.

Phase 2 of the modeling effort got underway in FY 24 the work is ongoing with the aim of developing a more useful (to the District) DFC for the Middle Trinity Aquifer. Any change from the status quo will, of course, require agreement among the participating GCDs in GMA 10 and approval by the Texas Water Development Board.

As reported last year, the average daily springflow at Barton Springs over the time period of September 1, 2014 to August 31, 2021 was 77 cfs. For the fiscal year 2022 just ended and the seven years beginning September 1, 2015, the average daily springflow declined 2 cfs to 75 cfs. Precipitation during the seven years ending August 31, 2021 was greater in Hays and Travis counties than during the seven years ending August 31, 2022. Which of the two seven-year periods best reflects average recharge conditions is uncertain without considerably more data analysis.

Adding to the uncertainty, both 2022 and 2023 were years of below average precipitation. Thus, the rolling seven-year average ending August 31, 2023 likely declined again. It is worth asking, however, if the most recent seven-year average can be considered to be an "average recharge period." Additional data analysis may reveal that a seven-year period that reflects average recharge (i.e., a period without one or more years of below average precipitation) is rare to nonexistent given the location considered.

The DFC expression is:

> "Springflow at Barton Springs during average recharge conditions shall be no less than 49.7 cfs averaged over an 84-month (7-year) period; and during extreme drought conditions including those as severe as a recurrence of the 1950's drought of record, springflow at Barton Springs shall be no less than 6.5 cfs average on a monthly basis."

For the Saline Edwards, Northern Subdivision, the DFC expression is no more than 75 feet of regional average potentiometric surface drawdown due to pumping when compared to pre-development conditions. Currently, there are no approved permits in the Saline Edwards.

For a summary of aquifer conditions, see Objective 8-1 above.

Performance Standards and Objectives

General Management (9 objectives)	Administration (3 objectives)	Education & Outreach (6 objectives)	Aquifer Science (8 objectives)	Regulatory Compliance (7 objectives)

GOAL 1 - Providing the Most Efficient Use of Groundwater – 31 TAC 356.52(a)(1)(A)/TWC §36.1071(a)(1)

	Management Plan Objectives	Performance Standards
1-1	Provide and maintain on an ongoing basis a sound statutory, regulatory, financial, and policy framework for continued District operations and programmatic needs.	A. Develop, implement, and revise as necessary, the District Management Plan in accordance with state law and requirements. Each year, the Board will evaluate progress towards satisfying the District goals. A summary of the Board evaluation and any updates or revisions to the management plan will be provided in the annual report. B. Review and modify District Rules as warranted to provide and maintain a sound statutory basis for continued District operations and to ensure consistency with both District authority and programmatic needs. A summary of any rule amendments adopted in the previous fiscal year will be included in the annual report.
1-2	Monitor aggregated use of various types of water wells in the District, as feasible and appropriate, to assess overall groundwater use and trends on a continuing basis.	Monitor annual withdrawals from all nonexempt wells through required monthly or annual meter reports to ensure that groundwater is used as efficiently as possible for beneficial use. A summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each Management Zone and permit type will be provided in the annual report.
1-3	Evaluate quantitatively at least every five years the amount of groundwater withdrawn by exempt wells in the District to ensure an accurate accounting of total withdrawals in a water budget that includes both regulated and non-regulated withdrawals, so that appropriate groundwater management actions are taken.	A. Provide an estimate of groundwater withdrawn by exempt wells in the District using TDLR and TWDB databases and District well records, and update the estimate every five years with the District's management plan updates. B. In the interim years between management plan updates, the most current estimates of exempt well withdrawals will be included in a summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each Management Zone and permit type that will be provided in the annual report.
1-4	Develop and maintain programs that inform and educate citizens of all ages about groundwater and springflow-related matters, which affect both water supplies and salamander ecology.	A. Publicize District drought trigger status (Barton Springs 10-day average discharge and Lovelady Monitor Well water level) in monthly eNews bulletins and continuously on the District website. B. Provide summaries of associated outreach and education programs, events, workshops, and meetings in the monthly team activity reports in the publicly-available Board backup. C. A summary of outreach activities and estimated reach will be provided in the annual report.
1-5	Ensure responsible and effective management of District finances such that the District has the near-term and long-term financial means to support its mission.	A. Receive a clean financial audit each year. A copy of the auditor's report will be included in the annual report. B. Timely develop and approve fiscal-year budgets and amendments. The dates for public hearings and Board approval of the budget and any amendments will be provided in the annual report.

1-6	Provide efficient administrative support and infrastructure, such that District operations are executed reliably and accurately, meet staff and local stakeholder needs, and conform to District policies and with federal and state requirements.	A. Maintain, retain, and control all District records in accordance with the Texas State Library and Archives Commission-approved District Records Retention Schedule to allow for safekeeping and efficient retrieval of any and all records, and annually audit records for effective management of use, maintenance, retention, preservation and disposal of the records' life cycle as required by the Local Government Code. A summary of records requests received under the PIA, any training provided to staff or directors, or any claims of violation of the Public Information Act will be provided in the annual report. B. Develop, post, and distribute District Board agendas, meeting materials, and backup documentation in a timely and required manner; post select documents on the District website, and maintain official records, files, and minutes of Board meetings appropriately. A summary of training provided to staff or directors or any claims of violation of the Open Meetings Act will be provided in the annual report.
1-7	Manage and coordinate electoral process for Board members.	Ensure elections process is conducted and documented in accordance with applicable requirements and timelines. Elections documents will be maintained on file and a summary of elections-related dates and activities will be provided in the annual report for years when elections occur.

GOAL 2 - Controlling and Preventing Waste of Groundwater – 31 TAC 356.52(a)(1)(B)/TWC §36.1071(a)(2))

	Management Plan Objectives	Performance Standards
2-1	Require all newly drilled exempt and nonexempt wells, and all plugged wells to be registered and to comply with applicable District Rules, including Well Construction Standards.	A summary of the number and type of applications processed and approved for authorizations, permits, and permit amendments including approved use types and commensurate permit volumes for production permits and amendments will be provided in the annual report.
2-2	Ensure permitted wells and well systems are operated as intended by requiring reporting of periodic meter readings, making periodic inspections of wells, and reviewing pumpage compliance at regular intervals that are meaningful with respect to the existing aquifer conditions.	A. Inspect all new wells for compliance with the Rules, and Well Construction Standards, and provide a summary of the number and type of inspections or investigations in the annual report. B. Provide a summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each Management Zone and permit type in the annual report.
2-3	Provide leadership and technical assistance to government entities, organizations, and individuals affected by groundwater-utilizing land use activities, including support of or opposition to legislative initiatives or projects that are inconsistent with this objective.	A. In even-numbered fiscal years, provide a summary of interim legislative activity and related District efforts in the annual report. In odd-numbered fiscal years, provide a legislative debrief to the Board on bills of interest to the District and provide a summary in the annual report. B. Provide a summary of District activity related to other land use activities affecting groundwater in the annual report.
2-4	Ensure all firm-yield production permits are evaluated with consideration given to the demand-based permitting standards including verification of beneficial use that is commensurate with reasonable non-speculative demand.	A summary of the number and type of applications processed and approved for authorizations, permits, and permit amendments including approved use types and commensurate permit volumes for production permits and amendments will be provided in the annual report.

GOAL 3 - Addressing Conjunctive Surface Water Management Issues – 31 TAC 356.52(a)(1)(D)/TWC §36.1071(a)(4)

	Management Plan Objectives	Performance Standards
3-1	Assess the physical and institutional availability of existing regional surface water and alternative groundwater supplies and the feasibility of those sources as viable supplemental or substitute supplies for District groundwater users.	Identify available alternative water resources and supplies that may facilitate source substitution and reduce demand on the Edwards Aquifer, while increasing regional water supplies, and evaluate feasibility by considering: 1. available/proposed infrastructure, 2. financial factors, 3. logistical/engineering factors, and 4. potential secondary impacts (development density/intensity or recharge water quality). A summary of District activity related to this objective will be provided in the annual report.
3-2	Encourage and assist District permittees to diversify their water supplies by assessing the feasibility of alternative water supplies and fostering arrangements with currently available alternative water suppliers.	Identify available alternative water resources and supplies that may facilitate source substitution and reduce demand on the Edwards Aquifer, while increasing regional water supplies, and evaluate feasibility by considering: 1. available/proposed infrastructure, 2. financial factors, 3. logistical/engineering factors, and 4. potential secondary impacts (development density/intensity or recharge water quality). A summary of District activity related to this objective will be provided in the annual report.
3-3	Demonstrate the importance of the relationship between surface water and groundwater, and the need for implementing prudent conjunctive use through educational programs with permittees and public outreach programs.	A. Provide summaries of associated outreach and education programs, events, workshops, and meetings in the monthly team activity reports in the publicly-available Board backup. B. Summarize outreach activities and estimate reach in the annual report.
3-4	Actively participate in the regional water planning process to provide input into policies, planning elements, and activities that affect the aquifers managed by the District.	Regularly attend regional water planning group meetings and annually report on meetings attended.

GOAL 4 - Addressing Natural Resource Issues which Impact the Use and Availability of Groundwater, and which are Impacted by the Use of Groundwater – 31 TAC 356.52 (a)(1)(E)/TWC §36.1071(a)(5)

	Management Plan Objectives	Performance Standards
4-1	Assess ambient conditions in District aquifers on a recurring basis by: 1. sampling and collecting groundwater data from selected wells and springs monthly; 2. conducting scientific investigations as indicated by new data and models to better determine groundwater availability for the District aquifers; and 3. conducting studies as warranted to help increase understanding of the aquifers and, to the extent feasible, detect possible threats to water quality and evaluate their consequences.	A. Review water-level and water-quality data that are maintained by the District and/or TWDB, or other agencies, on a regular basis. B. Improve existing analytical or numerical models or work with other organizations on analytical or numerical models that can be applied to the aquifers in the District. C. A review of the data mentioned above will be assessed for significant changes and reported in the annual report.
4-2	Evaluate site-specific hydrogeologic data from applicable production permits to assess potential impact of withdrawals to groundwater quantity and quality, public health and welfare, contribution to waste, and unreasonable well interference.	This involves evaluations of certain production permit applications for the potential to cause unreasonable impacts as defined by District rule. To evaluate the potential for unreasonable impacts, staff will: A. Perform a technical evaluation of the application, aquifer test, and hydrogeological report; B. Use best available science and analytical tools to estimate amount of drawdown from pumping and influence on other water resources; and C. Recommend proposed permit conditions to the Board for avoiding unreasonable impacts if warranted. A list of permit applications that are determined to have potential for unreasonable impacts will be provided in the annual report.
4-3	Implement separate management zones and, as warranted, different management strategies to address more effectively the groundwater management needs for the various aquifers in the District.	A. Increase the understanding of District aquifers by assessing aquifer conditions, logging wells, and collecting water quality data. A summary of the number of water quality samples performed will be provided in the annual report. B. A summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each Management Zone and permit type will be provided in the annual report.
4-4	Actively participate in the joint planning processes for the relevant aquifers in the District to establish and refine Desired Future Conditions (DFCs) that protect the aquifers and the Covered Species of the District HCP.	Attend at least 75% of the GMA meetings and annually report on meetings attended, GMA decisions on DFCs, and other relevant GMA business.

4-5	Implement the measures of the District Habitat Conservation Plan (HCP) and Incidental Take Permit (ITP) from the U.S. Fish & Wildlife Service (USFWS) for the covered species and covered activity to support the biological goals and objectives of the HCP.	Prior to ITP permit issuance, a progress report summarizing activities related to the USFWS review of the ITP application will be provided in the annual report. Upon ITP issuance, the HCP annual report documenting the District's activities and compliance with ITP permit requirements will be incorporated into the annual report by reference.

GOAL 5 - Addressing Drought Conditions – 31 TAC 356.52 (a)(1)(F)/TWC §36.1071(a)(6)

	Management Plan Objectives	Performance Standards
5-1	Adopt and keep updated a science-based drought trigger methodology, and frequently monitor drought stages on the basis of actual aquifer conditions, and declare drought conditions as determined by analyzing data from the District's defined drought triggers and from existing and such other new drought-declaration factors, especially the prevailing DO concentration trends at the spring outlets, as warranted.	A. During periods of District-declared drought, prepare a drought chart at least monthly to report the stage of drought and the conditions that indicate that stage of drought. During periods of non-drought, prepare the drought charts at least once every three months. B. A summary of the drought indicator conditions and any declared drought stages and duration will be provided in the annual report.
5-2	Implement a drought management program that step-wise curtails freshwater Edwards Aquifer use to at least 50% by volume of 2014 authorized aggregate monthly use during Extreme Drought, and that designs/uses other programs that provide an incentive for additional curtailments where possible. For all other aquifers, implement a drought management program that requires mandatory monthly pumpage curtailments during District-declared drought stages.	During District-declared drought, enforce compliance with drought management rules to achieve overall monthly pumpage curtailments within 10% of the aggregate curtailment goal of the prevailing drought stage. A monthly drought compliance report for all individual permittees will be provided to the Board during District-declared drought, and a summary will be included in the annual report.
5-3	Inform and educate permittees and other well owners about the significance of declared drought stages and the severity of drought, and encourage practices and behaviors that reduce water use by a stage-appropriate amount.	A. During District-declared drought, publicize declared drought stages and associated demand reduction targets in monthly eNews bulletins and continuously on the District website. B. A summary of drought and water conservation related newsletter articles, press releases, and drought updates sent to Press, Permittees, Well Owners and eNews subscribers will be provided in the annual report.

5-4	Assist and, where feasible, incentivize individual freshwater Edwards Aquifer historic-production permittees in developing drought planning strategies to comply with drought rules, including: 1. pumping curtailments by drought stage to at least 50% of the 2014 authorized use during Extreme Drought, 2. "right-sizing" authorized use over the long term to reconcile actual water demands and permitted levels, and 3. as necessary and with appropriate conditions, the source substitution with alternative supplies.	A. Require an updated UCP/UDCP from Permittees within one year of each five-year Management Plan Adoption. B. Provide a summary of any activity related to permit right sizing or source substitution with alternative supplies that may reduce demand on the freshwater Edwards Aquifer in the annual report.
5-5	Implement a Conservation Permit that is held by the District and accumulates and preserves withdrawals from the freshwater Edwards Aquifer that were previously authorized with historic-use status and that is retired or otherwise additionally curtailed during severe drought, for use as ecological flow at Barton Springs during Extreme Drought and thereby increase springflow for a given set of hydrologic conditions.	A summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each Management Zone and permit type including the volume reserved in the freshwater Edwards Conservation Permit for ecological flows will be provided in the annual report.

GOAL 6 - Addressing Conservation and Rainwater Harvesting where Appropriate and Cost-Effective – 31TAC 356.52 (a)(1)(G)/TWC §36.1071(a)(7)

	Management Plan Objectives	Performance Standards
6-1	Develop and maintain programs that inform, educate, and support District permittees in their efforts to educate their end-user customers about water conservation and its benefits, and about drought-period temporary demand reduction measures.	A. A summary of efforts to assist permittees in developing drought and conservation messaging strategies will be provided in annual report. B. Publicize declared drought stages and associated demand reduction targets monthly in eNews bulletins and continuously on the District website.
6-2	Encourage use of conservation-oriented rate structures by water utility permittees to discourage egregious water demand by individual end-users during declared drought.	On an annual basis, the District will provide an informational resource or reference document to all Public Water Supply permittees to serve as resources related to conservation best management strategies and conservation-oriented rate structures.
6-3	Develop and maintain programs that educate and inform District groundwater users and constituents of all ages about water conservation practices and the use of alternate water sources such as rainwater harvesting, gray water, and condensate reuse.	Summarize water conservation related newsletter articles, press releases, and events in the annual report. Summary will describe the preparation and dissemination of materials shared with District groundwater users and area residents that inform them about water conservation and alternate water sources.

GOAL 7 - Addressing Recharge Enhancement where Appropriate and Cost-Effective – 31TAC 356.52 (a)(1)(G)/TWC §36.1071(a)(7)

	Management Plan Objectives	Performance Standards
7-1	Improve recharge to the freshwater Edwards Aquifer by conducting studies and, as feasible and allowed by law, physically altering (cleaning, enlarging, protecting, diverting surface water to) discrete recharge features that will lead to an increase in recharge and water in storage beyond what otherwise would exist naturally.	Maintaining the functionality of the Antioch system will be the principal method for enhancing recharge to the freshwater Edwards Aquifer. Additional activities may be excavating sinkholes and caves within the District. A summary of all recharge improvement activities will be provided in the annual report.
7-2	Conduct technical investigations and, as feasible, assist water-supply providers in implementing engineered enhancements to regional supply strategies, including desalination, aquifer storage and recovery, effluent reclamation and re-use, and recharge enhancement of surface water (including floodwater) to increase the options for water-supply substitution and reduce dependence on the Aquifer.	Assess progress toward enhancing regional water supplies in the annual report.

GOAL 8 - Addressing the Desired Future Conditions of the Groundwater Resources – 31TAC (a)(1)(H)/TWC §36.1071(a)(8)

	Management Plan Objectives	Performance Standards
8-1	**Freshwater Edwards Aquifer All-Conditions DFC**: Adopt rules that restrict, to the greatest extent practicable, the total amount of groundwater authorized to be withdrawn annually from the Aquifer to an amount that will not substantially accelerate the onset of drought conditions in the Aquifer; this is established as a running seven-year average springflow at Barton Springs of no less than 49.7 cfs during average recharge conditions.	A. A summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each Management Zone and permit type will be provided in the annual report. B. Upon ITP issuance, the HCP annual report documenting the District's activities and compliance with ITP permit requirements will be incorporated into the annual report by reference. C. Upon ITP issuance, compile a summary of aquifer data including: 1) the frequency and duration of District-declared drought, 2) levels of the Aquifer as measured by springflow and indicator wells (including temporal and spatial variations), and 3) total annual and daily discharge from Barton Springs will be provided in the annual report.
8-2	**Freshwater Edwards Aquifer Extreme Drought DFC:** Adopt rules that restrict, to the greatest extent practicable and as legally possible, the total amount of groundwater withdrawn monthly from the Aquifer during Extreme Drought conditions in order to minimize take and avoid jeopardy of the Covered Species as a result of the Covered Activities, as established by the best science available. This is established as a limitation on actual withdrawals from the Aquifer to a total of no more than 5.2 cfs on an average annual (curtailed) basis during Extreme Drought, which will produce a minimum springflow of not less than 6.5 cfs during a recurrence of the drought of record (DOR).	A. A summary of the volume of aggregate groundwater withdrawals permitted and actually produced from permitted wells for each Management Zone and permit type will be provided in the annual report. B. Upon ITP issuance, the HCP annual report documenting the District's activities and compliance with ITP permit requirements will be incorporated into the annual report by reference. C. Upon ITP issuance, compile a summary of aquifer data including: 1) the frequency and duration of District-declared drought, 2) levels of the Aquifer as measured by springflow and indicator wells (including temporal and spatial variations), and 3) total annual and daily discharge from Barton Springs will be provided in the annual report.

8-3	Implement appropriate rules and measures to ensure compliance with District-adopted DFCs for each relevant aquifer or aquifer subdivision in the District.	Develop and implement a cost-effective method for evaluating and demonstrating compliance with the DFCs of the relevant aquifers in the District, in collaboration with other GCDs in the GMAs. Prior to method implementation, provide a summary of activities related to method development in the annual report. Once developed, provide a summary of data for each District-adopted DFC for each relevant aquifer indicating aquifer conditions relative to the DFC and provide in the annual report.