



**Barton Springs
Edwards Aquifer**
CONSERVATION DISTRICT



AQUIFER BULLETIN

August 2009

Critical Stage Drought Continues

The District's Board of Directors declared Critical Stage Drought for the District area on December 11, 2008, and both drought indices, Barton Springs and the Lovelady Well, remain below their respective Critical thresholds (Figure 1).

During Critical Stage Drought, permitted pumping volumes are reduced by 30% (Figure 2). Groundwater users should follow guidelines established in User Drought Contingency Plans to reduce water use. Contact your water utility for specific details. Generally, outdoor watering is restricted to hand held hoses and watering cans. Use of automatic irrigation systems is prohibited.



Figure 2: Drought stage flag at District Headquarters.

DROUGHT STATUS



The Ongoing Drought of 2008-2009

The Barton Springs segment of the Edwards Aquifer has been in a declared drought for more than a year now. The District's Board of Directors declared Alarm Stage Drought on June 23, 2008, when flow at Barton Springs dropped below the threshold of 38 cubic feet per second (cfs) (Figure 1). On December 11, 2008, the Board declared a Critical Stage Drought when flow at Barton Springs dropped below 20 cfs. This is only the second time in the District's 21-year history that a declaration of this severity has been issued. The dry conditions that have brought us to this level of drought actually started in September 2007 when monthly rainfall amounts dropped below average amounts.

Currently, springflow at Barton Springs is steadily approaching a rate that could trigger the District's Emergency Response Period (ERP). An ERP may be declared during a Critical Stage Drought when a 10-day running average rate of discharge from Barton Springs is equal to, or less than, 14 cfs. The ERP is the next, and last, drought declaration our current rules allow. Specific measures to be implemented to increase conservation will be determined by the Board. (Note that rule revisions are currently being considered by the Board that would add another drought stage called "Exceptional" at the 14 cfs threshold. An Exceptional Stage Drought could increase pumpage reductions to 40% of non-drought pumpage, and the ERP would be moved to a 10 cfs threshold. However, those rules may not be in place until September 2009. Rule changes are summarized on p. 6-7.)

The U.S. Drought Monitor shows Central Texas remaining under exceptional drought

see **DROUGHT** on page 3

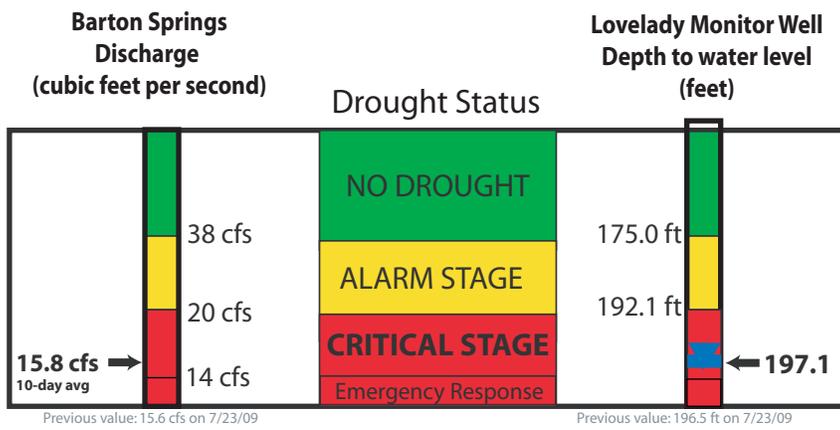


Figure 1: Status of drought triggers and their respective thresholds, August 11, 2009.

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BSEACD PERMITTING SUMMARY (FEBRUARY 2009 TO AUGUST 2009)

Permit Type	Number of Permits	Permitted Pumpage
Exempt Wells	1	N/A
NDU General Permit	6	1.4 Million Gallons/Year
Individual Production Permits	1	1.2 Million Gallons/Year*
Permit Amendments	0	0
Transport Permits	0	0

* This permitted pumpage is from the Middle Trinity aquifer and will not be effective until drought restrictions are lifted.

Exempt Wells - These are low capacity wells used solely for large lot residential or livestock needs. These wells are exempt from permitting but must be registered with the District and meet District Well Construction Standards.

Nonexempt Domestic Use (NDU) General Permit - This authorization is for wells that will be used solely for the domestic needs of residences located on small lots where there is no other alternative water source available. This pumpage is subject to drought restrictions, but may be authorized during drought since it is the sole source of domestic supply.

Individual Production Permits - All other new nonexempt wells must have one of these permits to be authorized for pumpage. All new Individual Production Permits are designated as "Conditional" Permits, which means that they are interruptible and subject to 100% curtailment during extreme drought.

Permit Amendments - These amendments are required to increase authorized pumpage for existing permittees (permit holders). All new permit amendments are designated as "Conditional" Permits, which means they are subject to 100% curtailment during extreme drought.

Transport Permits - These permits are required to authorize the transport of groundwater out of the District. A Transport Permit may only authorize the transport of water permitted under an approved production permit.

- GUY RIALS, REGULATORY COMPLIANCE TEAM

DISTRICT CALENDAR

The Board of Directors usually meets on the 2nd and 4th Thursdays of the month (beginning at 6 p.m) at the District's office at 1124 Regal Row, Austin, TX 78748. However, the meeting schedule and location are subject to change. The agenda for posted meetings can be found on the District website at www.bseacd.org. Please contact the District office at 512-282-8441 with any questions.

Aug. 24	Public Hearing to review FY10 Budget
Aug. 27	Public Hearing to review Rule Revisions
Sept. 7	Office closed for Labor Day
Sept. 10 & 24	Board meetings
Oct. 8 & 22	Board meetings
Nov. 11	Office closed for Veterans Day
Nov. 12	Board meeting
Nov. 26-27	Office closed for Thanksgiving Holiday
Dec. 10	Board meeting
Dec. 23-25	Office closed for Christmas Holiday



conditions. The severity of this drought does not come as a surprise—we have about a 32-inch deficit of rainfall over the past 24 months! Only during the drought of record in the 1950s did we receive less rainfall over a two-year period. In addition, the summers of 2008 and 2009 are some of the hottest on record, increasing the demand for groundwater in this ever-growing region.

The prolonged drought is related to La Niña conditions, an upwelling of cold water in the Pacific Ocean, which changes global wind and moisture circulation patterns. These conditions began in September 2007 and continued through much of the past two years, bringing drier conditions and less frequent rainfall to Texas. As the precipitation diminished, so did flow in the creeks which provides much of the recharge to the aquifer. Onion Creek, the largest contributor of recharge to the aquifer, essentially stopped flowing by January 2008. Decreased recharge has resulted in lower water levels, or storage, and decreasing springflow at Barton Springs (Figure 3).

At the top of the chart the solid blue bars indicate deviation from monthly rainfall. The black line shows deviation from average monthly temperatures. The middle portion of the graph shows streamflow from the Blanco River and Onion Creek. The chart illustrates the lack of rainfall that results in diminished streamflow and ultimately cessation of streamflow (e.g. Onion Creek). Lack of rainfall and streamflow result in less recharge and storage, lower water levels, and ultimately decreasing springflow at Barton Springs.

Regional and other impacts.

The BSEACD is not alone in its Critical Stage Drought declaration. The Edwards Aquifer Authority in San Antonio and the Hays-Trinity Groundwater Conservation District have also issued drought declarations. Indeed, the drought is reaching historic levels and geographic proportions. Currently, every county in Texas is reporting at least one impact from the drought. However, Hays and Travis counties report the most impacts in the state. In addition, a major spring issuing from the Trinity Aquifer near Wimberley, called Jacob’s Well, ceased flowing in June 2008, reportedly for only the second time in modern history.

Most rivers and streams are below normal according to the US Geological Survey, with stream gauges reaching their all-time low or are below their 10th percentile. Lake Travis is currently at 50% capacity—its yearly inflows are likely to be the lowest ever recorded since it was built in the early 1940s.

State-wide, the drought impacts are also grim. “Major losses in the agricultural sector have reached \$1.4 billion in Texas for 2008, according to Texas Agrilife. Of that amount, \$1.1 billion is from lost crops, while \$290 million is from livestock losses” (Drought Impact Reporter, <http://droughtreporter.unl.edu>).

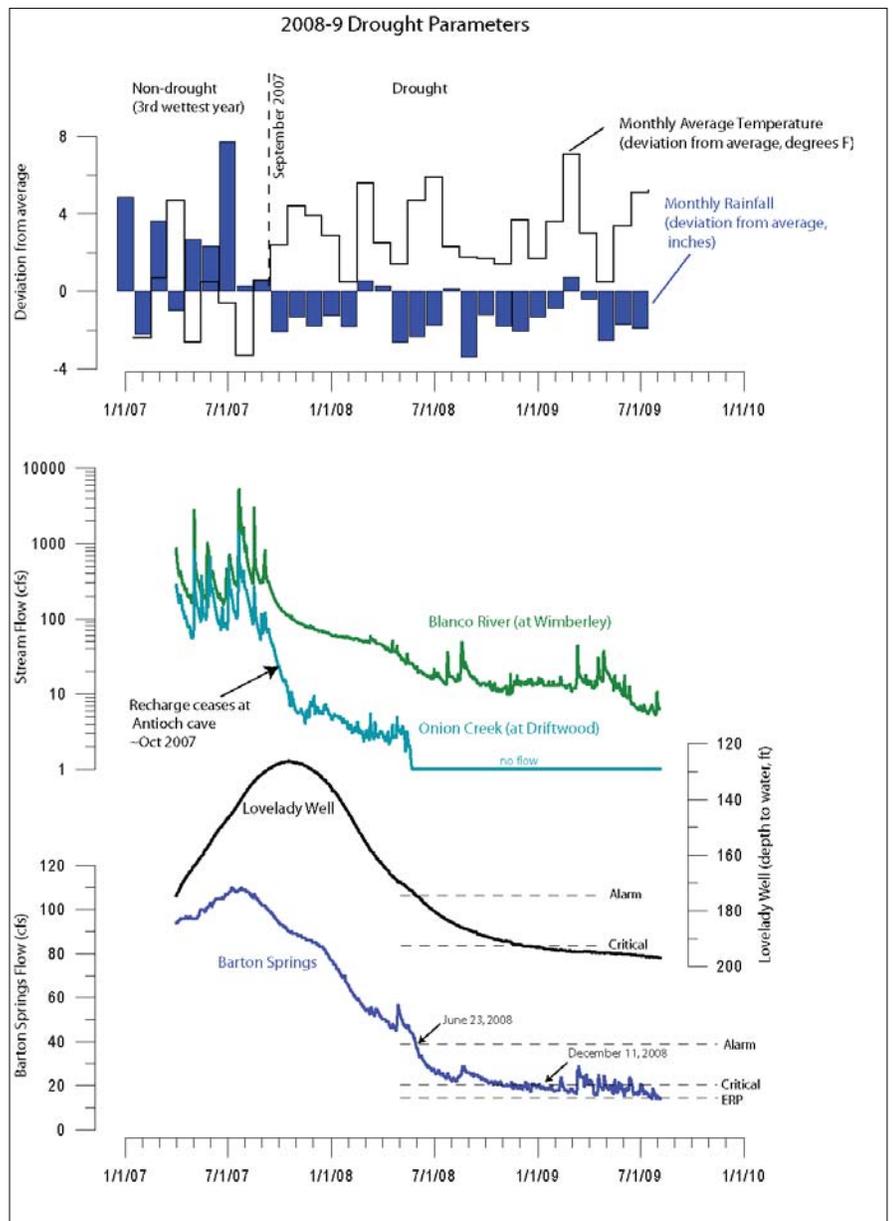


Figure 3. Chart illustrating various hydrologic data and drought.

Drought Outlook for 2009

The hot and dry conditions will likely last into the fall 2009. However, the good news is that the forecast is for a return to El Niño conditions during winter 2009, which could bring about a wetter-than-average winter. A good article discussing rainfall, El Niño, global warming, and droughts was written by Dr. David Hillis of UT-Austin and can be found at the following link: <http://doublehelixranch.com/FlyGapRainTrends.html>.

In order for the aquifer to come out of drought, both Lovelady and Barton Springs need to be above their respective drought trigger levels. For substantial recharge to occur within the Barton Springs segment of the Edwards Aquifer, enough rain needs to fall in the contributing zone to produce flow in Onion Creek (and other creeks that flow across the recharge zone) for a period of months. Either a prolonged rainy period of above average rainfall or a major storm with perhaps greater than 10 inches of rainfall is needed to relieve the aquifer drought.

- BRIAN HUNT AND BRIAN SMITH,
SENIOR HYDROGEOLOGISTS

FROM THE GM'S DESK ...

It's been awhile since our last newsletter and my newsletter column to you. This has been a busy time for our District on numerous fronts, but I would like to focus on two matters of more than passing interest to many in our stakeholder community. Each of these has some old and some new dimensions to them.

Outcome of 2009 Legislative Session

First, as I reported in the previous column, we as a political subdivision of the State and a legislative session requires us to try to accomplish some needed, positive things on behalf of the groundwater users and the groundwater resources in and around our District. We also are compelled to try to protect what has already been accomplished from those who would unravel earlier gains. In the legislative session that just concluded, there was one bill passed and signed into law that we and other Groundwater Conservation Districts strongly supported, which corrected a recent appellate court error that would have made it difficult for any GCD to enforce its groundwater regulations against municipal permittees. But overall, this particular legislative session was characterized by the inability of anyone to advance their agendas, owing to a disturbing amount of partisanship that brought most bills to their knees. I don't intend to go into the reasons for all that here – it has been cussed and discussed enough elsewhere. The good news is that some of those bills that were caught up in the gridlock would have been bad for local groundwater management. The bad news is that some others that would have been good for groundwater management, including our two local bills that dealt with protecting the quality of aquifer recharge from the Edwards Contributing Zone and with enabling additional groundwater protection in southwestern Travis County, were similarly victimized.

In the sort of political environment that prevailed here, it just became too easy for certain interests to spread disinformation and to use special personal access to the legislative process, from legislative committee members to the Governor's Office, to prevent bills from coming up for votes on the floor or being signed into law. It was particularly disappointing to me that one or two individuals with the type of access that few of us have in effect took the decision of whether to have local GCD protection, which we sought for an area that desperately needed it, out of the hands of the local voters who would have been most affected, without any discussion with us. It's a peculiar variety of democracy when that happens.

Before I leave this topic, I want you to know that our local legislators and their staffs, especially Senator Kirk Watson and Representative Valinda Bolton, and also Travis County Commissioner Karen Huber and her staff, did all they could to try to push these bills through to floor votes. We could not have asked for more from them, and we thank them for their initiative and efforts; it was just not meant to be this session. But progress was made and lessons were learned. As needed, we will try again next session, and with their and your help, perhaps we will have a different outcome then.

Groundwater Planning Process: Desired Future Conditions

The second matter deals with the joint groundwater planning process that we are currently involved with, especially the establishment of Desired Future Conditions (DFCs) for the aquifers that we regulate. This process has also been described in earlier editions of this newsletter. But over the past year or so, as this joint

local/regional planning has proceeded in 16 Groundwater Management Areas across the state, there have been lots of aspersions cast and many ghosts envisaged as to this process's outcome. There are those who don't trust others to do what is right for groundwater management; this includes some people in very high places in state government and some others who influence those folks. First, they evidently fear even letting the first round of this iterative planning process be completed, so they are noisily second-guessing both the GCDs that have to live with its outcome and the legislators who established it a couple of sessions ago, even before the first set of decisions has been made. Second, some parties at interest essentially advocate taking a one-size-fits-all approach to groundwater ownership and management, especially when that one size is personally advantageous -- even if it doesn't make sense hydrogeologically.

I want to assure you that our District is committed to letting sound science and equitable public policy that benefits all users and uses of the District's groundwater, both now and in the future, determine what aquifer conditions we want to ensure are preserved, i.e., the DFCs. Yes, it is unavoidable to have to balance different societal imperatives in making those determinations. And it is almost a given that some stakeholders are not going to feel like their interests and uses are being adequately protected. But in my view that balancing act is best done by local representatives voted into their office specifically to do that job by the local population that is affected by those decisions, rather than by a small number of political appointees to state-wide or regional office, many of whom appear beholden to rather narrow agendas. If groundwater users and local constituents, including those of our District, don't agree with the basis on which groundwater management decisions are made, then the local ballot and the voting booth are the proper forum for change, rather than means unavailable to most citizens.

Our aquifers are karst aquifers, and water moves into and out of them rapidly; accordingly, groundwater conditions that are addressed by DFCs involve time scales that are relatively short. Therefore, DFCs must be couched quantitatively in terms of how bad it could be in a statistical sense. Our District believes that a recurrence of the Drought of Record is the appropriate frequency-duration statistical basis for balancing continued production of a (too) cheap, (currently) high-quality resource with the long-term protection of water levels in the aquifer. Such DFCs allow, to the extent practicable, 1) some water to be available to most wells even under the most infrequent of conditions, and 2) for the Edwards Aquifer, sufficient spring flows at all times for the continued existence of federally regulated endangered species. Our DFCs will be largely based on that premise, and we will utilize prevailing laws, good science, representative public policy, and inclusive participation to establish the actual criteria. We encourage all of you to be part of that process, so that a balanced policy decision is made. We can't promise that you will get your way, but we can promise that you will have your say.

- KIRK HOLLAND, GM



Town Hall Meetings Discuss Proposed Rule Changes

The District held town two hall meetings on June 2 and June 8 in Sunset Valley and Buda to review and get feedback on proposed rule changes that would better prepare the District to regulate and conserve groundwater resources during extreme drought. District Staff gave an overview of the proposed rule changes and discussed how they would affect permittees and groundwater users in the District.

The District is proposing rule changes in two main areas:

- 1. Drought stages for the Edwards Aquifer** – introduction of one new stage, the Exceptional Stage, which would be more severe than Critical Stage (currently the most severe drought stage). Specific management measures also are proposed for an Emergency Response Period if and when the Edwards Aquifer is imperiled; and
- 2. Management zones** – introduction of zones to allow more equitable regulation and precise management of the different aquifers in the District.

Approximately 50 people attended the informational meetings. Attendees represented a variety of perspectives: the public, groundwater users, well owners, and groundwater permit holders. A summary of the rule changes and resources on the District website are explained on p. 6.

Policy Advisory Committee Provides Feedback on Rule Changes

The Policy Advisory Committee (PAC) was formed to provide the Board with an independent appraisal of the proposed rule changes as the District addresses management of the groundwater resources under extreme, prolonged drought conditions.

PAC Members were nominated by District staff with an additional member appointed by each Director to represent the variety of interests and water uses in the District. The PAC is an essential part of thoroughly vetting the proposed rules. Their input and considerations help ensure equitable management of the groundwater resources in the Barton Springs segment of the Edwards Aquifer.

Policy Advisory Committee Members, Thank you for your time and input!

Cyndy Slovak-Barton
Dave Cowan
Doug Wierman
Hank Smith
Jennifer Walker
Jerry Hendrix
Joe Torralva
John Mikels
Kent Butler
Laura Raun

Small Permittee, Media
River Authorities
Other Groundwater Districts
E&C, Development
State Environmental Community
Municipal Public Relations
Large Permittee, Water Utilities
Hydrogeology and GW Science
Sustainability, Water and Land Use
Public Relations

Nancy McClintock
Rick Waddell
Robert Mace
Sarah Baker Faust
Stan Fees
Suzanne Pierce
Tom Weber

Municipal , Watershed Protection
Permittee, Industry
TWDB, State Government
Local Environmental Community
Large Permittee, Municipalities
GW Science, Use and Public Policy
County Government

Drought Dates



Rule Change Summary

Change is inevitable. At least that certainly seems to be the case with the District's Rules and Bylaws. The District is proposing changes to our rules to better prepare and equip the District to manage, protect, and equitably allocate groundwater resources during extreme drought.

The proposed rules address the growing need to develop more aquifer- and area-specific rules, and the District's need to refine our drought management approach in the face of what is shaping up to be one of the worst droughts on record. Implementing these concepts through rule making has involved the input of the many stakeholders throughout the District. District staff and directors have hosted town hall-style meetings with the general public, one-on-one meetings with District permittees, permittee workshops, and meetings of the Board-appointed Policy Advisory Committee to have open discussions and get feedback about the proposed rule changes.

The result was a draft set of rule changes that create aquifer- and area-specific regulations through the implementation of management zones and new extreme drought rules to enable the District to best manage the diminishing supplies of groundwater in extreme drought conditions.

Management Zone Rules

Since the inception of the District in 1987, the primary focus was on management of the Barton Springs segment of the Edwards aquifer (as reflected in our name). This focus was to be expected because the freshwater portion of the Edwards aquifer was the most easily accessible aquifer (shallowest) and produced good quality water in plentiful quantities. In 2004, the District completed a sustainable yield study that concluded that the Barton Springs segment of the Edwards Aquifer was permitted to its sustainable yield. In response, the Board set a cap on firm yield pumpage from the freshwater Edwards aquifer. This created new interest in developing other groundwater resources in the District; however, under the current rules, the regulatory limitations on new firm yield pumpage from the Edwards also apply to the other groundwater resources in the District, namely the freshwater members of the Trinity aquifer and the saline portions of the Edwards aquifer. In an effort to remove some of these obstacles and to improve management of the freshwater Edwards, the District proposes the establishment of Management Zones (Figures 4 and 5). Each of these zones may have rules and regulations that differ from those in other zones, to benefit overall groundwater resource management.

Stratigraphic Unit	Hydrostratigraphy (Aquifers)	Management Zones
Del Rio Clay	confining	n/a
Georgetown Formation	Edwards Aquifer	Western Fresh Edwards Eastern Fresh Edwards Saline Edwards
Person Formation		
Kainer Formation		
Glen Rose Limestone	Upper Trinity Aquifer	Trinity in Outcrop
Hensell Sand Mbr	Middle Trinity Aquifer	
Cow Creek Mbr		
Hammett Shale Mbr	confining	
Sligo Formation	Lower Trinity Aquifer	
Hosston Formation		

Stratigraphy and hydrostratigraphy modified from Barker and Ardis (1996). 7.24.2009

Figure 4: Correlation chart showing stratigraphic units, aquifers, and management zones.

Summary of Management Zone Rule Changes

- Establishes new management zones for: the Western Freshwater Edwards, the Eastern Freshwater Edwards, the Saline Edwards, the Trinity Outcrop, the Middle Trinity, and the Lower Trinity.
- Allows permitting of firm yield pumpage from the Middle and Lower Trinity and Saline Edwards management zones up to the Managed Available Groundwater estimate (permitting cap), to be issued by the Texas Water Development Board.
- Sets well spacing requirements for new wells in the Middle and Lower Trinity management zones.
- Applies existing drought triggers and drought requirements including pumpage curtailments to wells in the Middle and Lower Trinity management zones.
- Allows for drilling and limited pumpage in the Saline Edwards management zone from test and monitor wells within a 3-mile buffer zone.
- Allows for drilling and unrestricted pumpage in the Saline Edwards management zone at a reduced fee (\$0.08/1,000 gallons) outside of the 3-mile buffer zone, provided there is no measurable change in the freshwater/saline water interface.

Summary of Extreme Drought Rule Changes

- applied to permitted pumpage from the Freshwater Edwards management zones

- Creates a new Exceptional Drought Stage as the third and most severe drought stage to be triggered when Barton Springs reaches a 30-day average discharge rate of 14 cfs.
- Adds a requirement for 40% monthly pumpage reductions during the Exceptional Drought Stage.
- Moves the existing Emergency Response Period (ERP) deeper into drought to be triggered within the new Exceptional Drought Stage when Barton Springs reaches a 30-day average discharge rate of 10 cfs.
- Adds a requirement for cessation of pumpage during an ERP for non-public water supply permittees including non-agricultural irrigation and industrial permits.
- Creates a new Temporary Transfer Permit to allow the transfer of a portion of unused pumpage between historical permit holders during an Exceptional Drought Stage.

Summary of Additional Significant Rule Changes

-  Adds new section for General Permits by Rule. Wells and pumpage approved under the permits in this section generally allow for certain activities within certain management zones and allow for an expedited permitting process if rule criteria are met.
-  Creates a new Test Well General Permit to allow drilling and limited groundwater production from wells to be used for aquifer testing in the Middle and Lower Trinity and Saline Edwards management zones.
-  Creates a new Temporary Transfer General Permit (discussed above)
-  Creates a new Conservation General Permit to serve as an accumulative holding vehicle for all retired historical permitted pumpage from the freshwater Edwards management zones. Retired pumpage collected under this permit is committed and is considered part of the Managed Available Groundwater estimate (permitting cap) to be issued by the Texas Water Development Board.
-  Adds a new designation for Middle and Lower Trinity aquifer wells that serve as alternative supplies to currently permitted freshwater Edwards wells. Such wells would not be subject to drought pumpage curtailments but are limited to pumpage based on true demand needs.

Extreme Drought Rules

With the increasing severity of the prevailing drought, the District was compelled to consider future worst-case scenarios. In favor of a proactive planning approach, the District began a comprehensive stakeholder-driven vetting of appropriate responses, regulations, and contingency planning measures to best manage the groundwater resources of the District. Given the gravity of the prevailing drought and the possible risk to drinking water supplies and spring flows, a detailed look at alternatives and a deliberate plan of action to sustain supplies as long as possible was warranted.

Although management zones and new extreme drought rules were the primary focus, other significant rules are also being proposed in this round of rule making. Some of the more far-reaching of these are highlighted to the left.

We believe that these rule changes will allow the District to more effectively and equitably stretch out the dwindling supplies of groundwater in the aquifer, hopefully until we get a break in the drought. The highlighted rules discussed here are just a brief summary of the proposed changes. The Board will likely take action in the first or second meeting in September so we encourage all to review them in further detail.

A markup of the rules and a more detailed summary of all of the rule changes can be accessed at our website at www.bseacd.org/rules.html. Please let us know what you think.

- JOHN DUPNIK, SENIOR REGULATORY COMPLIANCE SPECIALIST

Resources on District Website

Rules Information: www.bseacd.org/rules.html

- Current Rules and Bylaws
- Rules and Bylaws with Incorporated Rule Changes
- Summary of Rule Changes
- Comments, Questions, and Concerns Summary
- Town Hall presentation

Relevant Maps: www.bseacd.org/maps2.html

- Google Earth Map with District Boundary
- Geologic Map of District and Surrounding Areas
- Hydrologic Zones Map

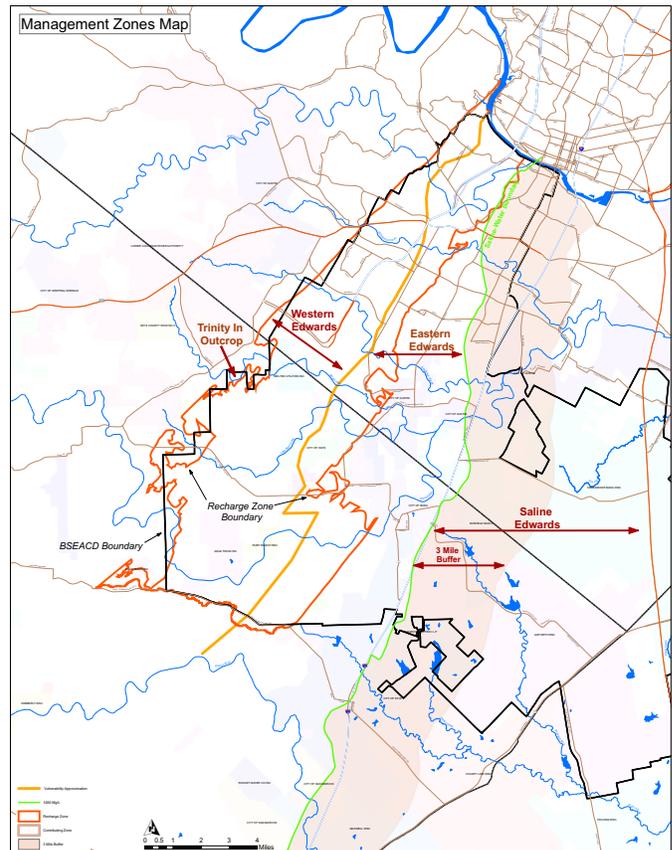


Figure 5: Map showing Geographic Management Zones

Onion Creek Recharge Enhancement

A 319h grant from the U.S. Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (TCEQ) has provided funding for studies and implementation of facilities for increasing recharge on Onion Creek and for improving the quality of water recharging the aquifer at these facilities. These grants are provided through the non-point source pollution section of the federal Clean Water Act.

Work at the Antioch Cave site near Buda (Figure 6) has involved the addition of a second valve on the Antioch BMP (Best Management Practice) or vault, and an improved intake structure to filter sediment and other debris that could otherwise enter the BMP and plug the cave. A Continuous Water Quality Monitoring Network (CWQMN) system has been added to the Antioch BMP to collect water-quality data and to control opening and closing the valve. During periods of storm flow when the levels of sediment and contaminants are high, the valve will be in the closed position. When the storm pulse has passed and the water quality has improved, the valve will be opened automatically.

The only thing lacking for the Antioch site is flow in Onion Creek (Figure 3) so we can start collecting data and help recharge the aquifer. Because of the ongoing drought, there has not been any flow at Antioch since October 2007. A second site has been selected on City of Austin Watershed Protection Lands for installation of a similar BMP, intake structure, and CWQMN system over a cave on Onion Creek. We are still waiting for final approval from the City before we can begin this phase of the project.

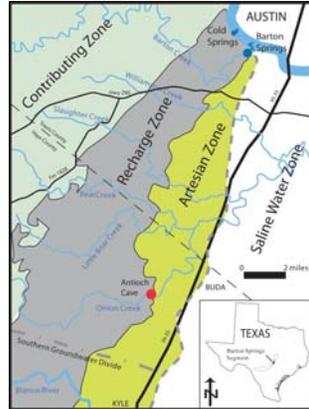


Figure 6: Map showing location of Antioch Cave.

Thank you, Jennee!

In April, we bid adieu to our wonderful, long-time environmental educator Jennifer Galland, who moved away from the Austin area to be closer to her family in Tennessee. Staff and stakeholders appreciated Jennee's knowledge, diligence, and enthusiasm that she brought to the District and the commitment to groundwater stewardship she displayed continuously (Figure 7).

Though petite in stature, Jennee leaves behind big shoes to fill. In large part she founded the Groundwater to the Gulf—Summer Institute for Educators, also known as G2G. In cooperation with area water-related agencies, G2G celebrated its fourth successful year and trained 53 teachers in local groundwater, riparian, and coastal topics. Jennee also collaborated with the Master Naturalists—Capitol Area Chapter to convert the landscaping at District Headquarters to drought-tolerant, native plants and installed a rainwater harvesting system to maintain the gardens. The landscaping and rainwater harvesting system continue to teach by example. She participated in countless training, school program, and outreach events with passion, creativity, and insight.

On behalf of the entire community that you cared so much about: Thanks, Jennee, for a job well done, and best of luck in your future endeavors!



Figure 7: Jennee supported by staff.

Habitat Conservation Plan

The District was awarded a follow-on grant in 2008 to complete the Habitat Conservation Plan (HCP) for managing groundwater resources of the District to protect the endangered species at Barton Springs to the greatest extent practicable. The current grant builds on work accomplished since 2004 and will complete the documentation required to obtain an Incidental Take Permit under the Endangered Species Act, including a HCP and a draft Environmental Impact Statement.

A Citizens Advisory Committee (CAC) and a Biological Advisory Team (BAT) have been formed to assist the District's project activities. The CAC is chaired by Dr. Kent Butler, of UT's Center for Sustainable Development, and the BAT is led by Texas Park & Wildlife Department's Dr. Wendy Gordon. The BAT is performing additional analysis based on the pioneering laboratory work conducted in the prior grant project, with Dr. Bryan Brooks of Baylor University's Ecological Sciences Center now serving as the lead investigator. That analysis is a critical element in the HCP completion and is expected to be available later this summer.

The preliminary HCP and EIS documentation are being edited for final submission. The District is also working to put into place an inter-local agreement with the City of Austin that will enable a number of adaptive and mitigation measures identified in the draft HCP to be implemented. The grant project was scheduled to be completed in mid-2010, but the delays created by the new biological data analysis and reporting will likely require an extension of the project to be requested by the District.

Welcome, Robin!

As sad as the District staff was to see Jennee leave, we also are excited to welcome Robin Havens Gary as our newest staff member and Staff Environmental Educator (Figure 8). She takes on the job of Team Leader, Education and Community Outreach and also is serving as the District's Public Information Officer.



Figure 8: Robin with the District flag.

Robin has a Master's degree in Geography from the University of Texas where her studies focused on human-environment interactions in karst landscapes. She has worked for the Environmental Sciences Institute at UT and, for the last five years, as a Geographer for the Texas Water Science Center of the U.S. Geological Survey in Austin.

Robin is a SCUBA diver, an avid locavore, an enthusiastic caver, and a budding gardener. Robin is also fluent in Spanish. Welcome, Robin!

Impacts to Wells During Drought

Besides the obvious impact to springflow, high levels of pumping during drought also result in negative impacts to wells. We have recently documented several relatively shallow wells in the Edwards Aquifer that have indeed “gone dry.” In addition, pump installers tell us that they are very busy lowering pumps within wells.

Groundwater pumping limitations on water suppliers and businesses effectively reduce the stress on the aquifer. End users serviced by water suppliers using groundwater are under watering restrictions because the amount of water the supply company can access is greatly reduced. Conserving water and reducing water use is essential to protect this shared resource—whether you’re a business, residential customer, or well owner.

Figure 9 is a conceptualized cross section of the aquifer highlighting some of the well and water level issues this drought has produced.

Scenario A :

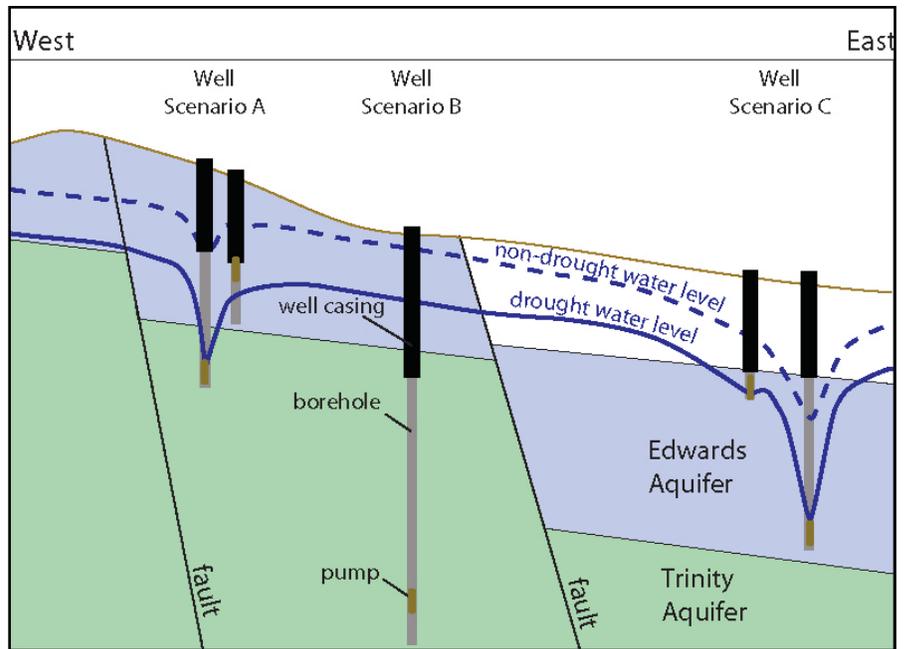
In some cases the solution to dry wells is to lower the pump in a well, or drill the well deeper.

Issue: Although one of the wells slightly penetrates into the Trinity Aquifer, most of the water is derived from the Edwards. This is in fact the case with many wells in the District that are west of FM 1626. Therefore, pumping from nearby wells further lowers the water table in a drought and can contribute to wells going dry.

Solution: Either reduce pumping in the region, or drill some wells much deeper into the Trinity Aquifer.

Scenario B :

Issue: This well is truly a Trinity well and pumping from this well has minimal impact on wells in the Edwards Aquifer. These wells typically are 800 feet, or more, in depth (west of FM 1626) and the Edwards Aquifer is completely cased off.



not to scale

Figure 9: Conceptual cross-section of the Edwards and Trinity aquifers, wells, and water levels.

Scenario C :

Issue: Many wells were drilled decades ago when there was less pumping and the drilling technology was such that many wells only penetrate the top of the aquifer. Drought and increasing pumping from wells can lower the water level such that these shallow wells effectively go dry.

Solution: In this situation the remedy is to drill a deeper well to encounter more of the aquifer.

The common theme to all these scenarios is that we are seeing wells go dry for a myriad of reasons that involve the drought, increased pumping, aquifer properties, and well configurations. Please report any well-yield or water-quality problems related to this drought to Brian Hunt, Senior Hydrogeologist (brianh@bseacd.org) or use the following form.

Report A Dry Well

To better understand aquifer dynamics and to equitably manage the groundwater resources within the District during severe drought conditions, we are compiling information on well issues.

Please, fill out the information on the back of this form to report drought related well-yield or water quality problems. Reply by email, mail, or phone to:

Brian Hunt, Senior Hydrogeologist
Barton Springs/Edwards Aquifer Conservation District
 1124 Regal Row
 Austin, Texas 78748
 (512) 282-8441
brainh@bseacd.org

Importance of Conservation During Extreme Drought

Water levels in the freshwater Edwards Aquifer have triggered Critical Stage Drought water restrictions. Groundwater pumping has been limited to 30% or more of permitted pumpage, so reduction of water use at the household level is extremely important.

Household water budgets during Critical Stage Drought are 3,000 gallons of water, per person per month. So, for a family of four, your monthly water bill should show your household used 12,000 gallons or less.

Target Monthly Water Budget:

Per person: less than 3,000 gallons
Family of 4: less than 12,000 gallons

In the summer, outdoor water use can account for 50-80% of home water use. To comply with pumping restrictions during Critical Stage Drought, limiting outdoor watering is the single most effective way to reduce water use. As the current drought becomes more severe, we need to save water for essential uses.

Reduce your outdoor water use...

Check your monthly water bill. How much water does your household use? Are you within the 3,000 gallons per person per month for Critical Stage Drought?

Turn off automatic irrigation systems. Use of irrigation systems is prohibited during Critical Stage Drought. Water only by hand on designated watering days and times. Designated watering times avoid the heat of the day, because evaporation loss can be 60% higher during the day.

Cover your pool. Pool covers help in the summer by reducing evaporation. A standard size pool can lose as much as 1,800 gallons a month to evaporation.

Choose native and adapted, drought-tolerant plants. When planning or adding to your landscape, choose native or adapted plants that are drought tolerant. Buffalo, Bermuda, and Zoysia turf grasses are highly drought tolerant and do well in full sun areas.

Report A Dry Well

The District is compiling information on drought-related well problems to better understand the dynamics of the aquifer during severe drought conditions. Please mail the following form or email the following info to brianh@bseacd.org.

Name: _____

Address: _____

City, Zip: _____

Phone: _____ Email: _____

Well Problem: _____

Date problem started: _____

BARTON SPRINGS/EDWARDS AQUIFER CONSERVATION DISTRICT
1124 REGAL ROW AUSTIN, TEXAS 78653 (512) 282-8441

Drought Stages and Triggers

Barton Springs Discharge (cubic ft per sec)

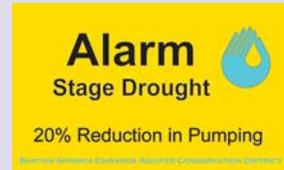
Lovelady Mon. Well Depth to water (ft)



Use Water Wisely

38 cfs

175 ft

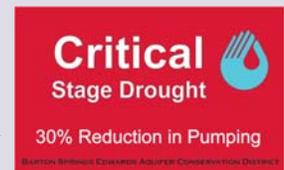


Restrict Outdoor Watering

Target Monthly Water Budget:
Per person: less than 4,000 gallons
Family of 4: less than 16,000 gallons

20 cfs

192.1 ft



Stop Outdoor Irrigation

Target Monthly Water Budget:
Per person: less than 3,000 gallons
Family of 4: less than 12,000 gallons

14 cfs

TBD



Minimize ALL Water Use

Water Suppliers shift to alternate water sources.

Target Monthly Water Budget:
Per person: less than 2,000 gallons
Family of 4: less than 8,000 gallons

10 cfs

TBD



Stop non-essential Water Use

No outdoor watering.
Restrict and reduce indoor water use

