



**Barton Springs
Edwards Aquifer**
CONSERVATION DISTRICT



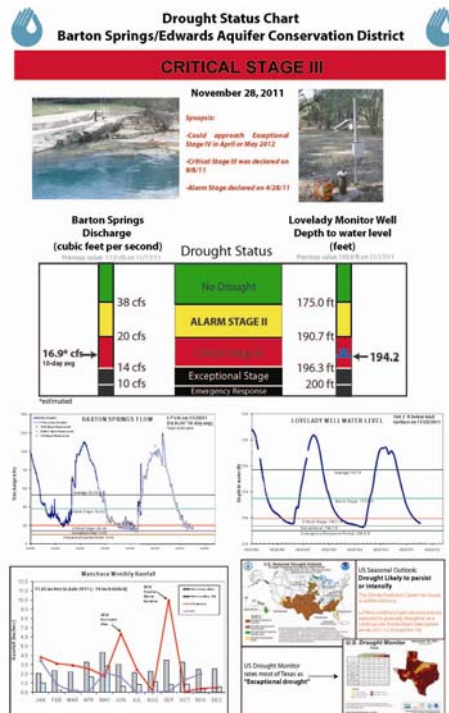
AQUIFER BULLETIN

December 2011

Status and Outlook of the 2011 Drought

Stage III Critical Drought was declared September 8, 2011 by the Board of Directors. Both drought indices, Barton Springs and the Lovelady Well, are currently beneath their respective Critical thresholds (Figure 1). This is the third time in the District's 21-year history that a declaration of this severity has been issued, and follows about 4 months after the Board declared Stage II Alarm Drought on April 28, 2011.

Currently, the U.S. Drought Monitor shows about 77% of Texas under exceptional to extreme drought conditions (Figure 2). The Office of the Texas State Climatologist (OTSC) has a good state-wide summary of the 2011 drought at <http://atmo.tamu.edu/osc/>. The severity of this drought does not come as a surprise—October 2010 to September 2011 was the driest 12-month period since they began keeping records in Austin in the 1860s. Austin received only 11.2 inches of rainfall for that period, which is only 33% of its average annual total. In addition, the summer of 2011 turned out to be the hottest on record, increasing the strain on water resources for the region. To put this past year into perspective, recent studies using tree-ring data state that the 2011 drought is the worst one-year drought in the past 222 years (since 1789;



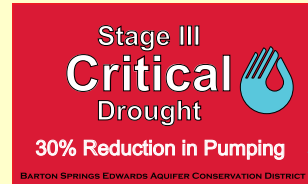
see *AQUIFER STATUS* on pages 4 & 5

IN THIS ISSUE:

- Aquifer Status... 1, 4-5
- Conditional Permit Reclassification... 1 & 7
- 2011 Permitting Update... 2
- BSEACD Calendar... 2
- From the GM's Desk... 3
- Options to Increase Springflows... 6

- Rule Revisions Update... 7
- Redistricting Director Precincts... 8
- Groundwater Stewardship Awards... 9
- 2011 Scholarship Contests... 10
- Drought Stages & Triggers... 10

DROUGHT STATUS



Stage III Critical Drought triggers:

Average Barton Springs flow below 20 cubic ft/sec.
Lovelady Monitor Well water level below 190.7 ft.

Reclassification of Conditional Permits if Stage IV Exceptional Drought Declared

District rules specify that all Class A Conditional Production Permits will be reclassified as Class B permits if and when the District declares a Stage IV Exceptional Drought, which is triggered when the 10-day average discharge at Barton Springs falls to 14 cubic feet per second (cfs) or below.

The rules also require the District to provide advance notice of the possible reclassification when those average flows at Barton Springs fall to 17 cfs or below. Around mid-November, the average flows at Barton Springs fell below this triggering condition, and advance notifications were sent to all permittees with Class A permitted pumpage, to prepare them for the possible reclassification as well as the foreseeable need to curtail pumpage of groundwater completely and make arrangements for alternative water supplies.

It is important for the affected permittees to know that, should Stage IV Exceptional Drought be declared by the District, reclassification will automatically occur and that all of the

see *RECLASSIFICATION* on page 7

Find Us on Facebook!

Updates on scholarship contests, events, drought declarations, and aquifer updates are now available on the District Facebook page.



BOARD OF DIRECTORS

Mary Stone
Precinct 1 - President

Gary Franklin
Precinct 2 - Vice President

Dr. Robert D. Larsen
Precinct 3 - Director

Jack A. Goodman
Precinct 4 - Director

Craig Smith
Precinct 5 - Secretary

DISTRICT STAFF

Kirk Holland, P.G.
General Manager

Dana Christine Wilson
Senior Administration Manager

Tammy Raymond
Administrative Assistant - Personnel

Shannon DeLong
Administrative Assistant - Accounting

Robin Gary
Public Information and Education Coordinator
Newsletter Editor

Dr. Brian A. Smith, P.G.
Principal Hydrogeologist

Brian Hunt, P.G.
Senior Hydrogeologist

John Dupnik, P.G.
Senior Regulatory Compliance Specialist

Kendall Bell-Enders
Hydrogeologic Field Technician

BSEACD PERMITTING SUMMARY (July 2011 TO December 2011)

Permit Type	Number of Permits	Permitted Pumpage
Exempt Wells	2	N/A
NDU General Permits	3	881,000 gal/year
Individual Production Permits	0	0
Permit Amendments	2	92,300,000 gal/year*
Transport Permits	1	84,300,000 gal/year**

* Conditional Edwards and Historic Trinity permits

** Conditional Edwards permit

Exempt Wells - These are low capacity wells used solely for large tract 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 Permits - 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 reasonably 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 for Edwards wells are designated as "Conditional" Permits, which means that they are interruptible and subject to as much as 100% curtailment during extreme drought.

Permit Amendments - These amendments are required to increase authorized pumpage for existing permittees (permit holders). All new permit amendments for Edwards wells 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.

- JOHN DUPNIK, SENIOR REGULATORY COMPLIANCE SPECIALIST

DISTRICT CALENDAR

The Board of Directors usually meets on the 2nd and 4th Thursdays of the month (beginning at 6 pm) 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.

Dec. 15	Board meeting
Dec. 23, 26, 27	Office closed for Christmas Holiday
Jan. 2	Office closed for New Years Holiday
Jan. 12 & 26	Board meetings
Jan. 16	Office closed for Martin Luther King Day
Feb. 9 & 23	Board meetings
Feb. 20	Office closed for Presidents Day
Mar. 8 & 22	Board meetings

FROM THE GM'S DESK . . .

This edition's column will be of the quick-hitter, potpourri variety, rather than the type that addresses a particular issue or program in more depth.

Dealing with Drought

There is a sign just inside the door of my dentist's office that says, "There is nothing the dentist can do to overcome what the patient is unwilling to do." Groundwater management during drought is sort of like that. While the District's regulations are designed to stretch out our groundwater resources, since we don't really know when a particular drought is going to be over – next month, next year, next decade – it all comes down to individual responsibility and individual stewardship, to go the extra mile beyond "conservation" to pro-actively and temporarily (for the term of the drought, at least) reduce water use. Nearly all of our permittees and the large majority of individual end-users, whether customers of our public water supply permittees or individual exempt well owners, are being responsible and minimizing water use for the benefit of a shared resource. But a few insist on willfully using disproportionate, even wasteful amounts of groundwater that affects all the other users of the aquifer. The District, on its own and through its permittees, is making attempts to change such irresponsible personal behavior, but some people don't seem to care. I wonder if many of these same folks are decrying "government intervention" in their lives while proclaiming the sanctity and sufficiency of individual responsibility.

Alternative Water Supply Initiatives

A severe drought like the one we are presently in highlights the need for additional, alternative supplies of water, as a substitute for Edwards groundwater demand. Many of our permittees that are public water suppliers are able to meet the substantial curtailments in groundwater use required of their permits only by having earlier committed to alternative supplies as a substitute or supplement source of water. Mostly, these alternative supplies now comprise extended surface water sources. But the District also has several initiatives underway to provide both scientific information and institutional, especially regulatory, requirements for investigating and using other alternative water for various types of use. These include: increased use of the deeper Trinity Aquifer, in lieu of or in addition to the Edwards Aquifer; development of the saline zone of the Edwards in the easternmost part of the District, as a feed for desalination technologies and/or a location for time-shifted aquifer storage and recovery facilities; and use of treated effluent for certain non-potable uses, as a substitute for the higher-quality Edwards Aquifer water. The District is actively promoting these supplies where it makes sense for the type of use and where the environment and economic conditions allow such substitution. But these are longer-term solutions, not an instant panacea to drought-caused groundwater shortages.

BSEACD Re-districting

Re-districting at any governmental level tends to be messy, and we were no exception. But at the end of the day, as reported in more detail elsewhere in this newsletter, we recently adopted new boundaries for our director precincts, using the new census information, and submitted that plan to the federal Department of Justice (DOJ) for pre-clearance, all as required by law. We anticipate no problem in receiving pre-clearance from DOJ to use these new

boundaries in our next election, in November 2012. There is an understandable tendency, on the part of Board members and the public alike, to view the redistricting results in terms of effects on current incumbents, but we need to keep in mind that this redistricting plan will be used to qualify and elect directors in at least five elections over the next decade, and the members of the Board might change considerably as a result of those elections. But I believe the new plan ultimately will promote the continuation of the very healthy and constructive existing situation where each and every director, regardless of the precinct in which elected, is concerned about all dimensions of the District's groundwater resources – as a primary water supply, as an enabler of the local economy, as an endangered species habitat, and as a recreational resource.

GMA Joint Planning, Round 1

In association with our fellow GCDs in GMA 9 and GMA 10, we have concluded the first round of joint planning and have adopted Desired Future Conditions (DFCs) for all the relevant aquifers in those GMAs. As described in previous editions of this newsletter, this is a statutorily defined process, under Texas Water Code Ch. 36.108, that is used to establish the amount of groundwater that may be produced from those aquifers while maintaining or achieving progress toward their DFCs. District representatives to the GMAs are now taking an active part in resolving several petitions for unreasonable DFCs that have been filed by various parties-at-interest in the GMAs (although the single petition in GMA 10 is not addressed to our aquifer systems.) This is exactly how the process is supposed to work, and a petition doesn't represent a "failure" of the DFC setting process, rather it comprises a way to assess the need for and to promulgate some fine-tuning of DFCs, using additional affected-stakeholder involvement. The last session of the Texas Legislature underscored the importance of this resolution process by passing new provisions that prescribe means to ensure additional public involvement in the overall DFC process in future rounds of DFC setting and revision. Once our GMAs have resolved the petitions, the next step, which is just now underway, will be to ensure that our District Management Plan and then our Rules support achievement of the GMA DFCs in our jurisdiction, and that the GMA's other GCDs' plans and rules do the same in their own jurisdictions. This is the balancing of more local and more regional groundwater management that is the goal of the Legislature.

Welcome, Kendall!

Finally, we are pleased to welcome Kendall Bell-Enders as our newest employee! Kendall starts working for the District as a Hydrogeological Field Technician on December 19. She has a bachelor's degree from Texas State University-San Marcos in Geography-Resource and Environmental Studies, and has worked in the Lake Tahoe, Nevada, area as a field technician and most recently at Edwards Aquifer Authority in San Antonio as an Environmental Field Representative. At the District, Kendall will be primarily supporting both the Regulatory Compliance and Aquifer Science teams. Welcome, Kendall!

- KIRK HOLLAND, GM



Aquifer Status (continued from page 1)

see Texas Climate News, <http://texasclimatenews.org/wp/?p=335>). However, we should not lose perspective about the nature of this drought—it is not yet comparable to the historic droughts. The dry conditions have been very intense, but its length is only a year in duration, so far. The historic droughts of the 1910s and 1950s were much longer in duration (up to 10 years).

The 2011 drought is related to La Niña (ENSO) conditions, an upwelling of cold water in the Pacific Ocean, which change global wind and moisture circulation patterns and often brings drier conditions to Texas. The dryness of 2011 is a continuation of dry conditions that actually began back in October 2010. Much of 2010 was a year in which tropical disturbances brought most of the rainfall into the region. For example, Hurricane Alex brought about 6 inches in June 2010 and Tropical Storm Hermine brought about 10 inches in September 2010. After Hermine, rainfall diminished and has been below-normal for 12 of the subsequent 13 months. The chance occurrence of those tropical systems in 2010 were the only rainfall events that separate the 2009 from the 2011 drought, otherwise we might currently be describing a much more prolonged and severe drought.

As the rainfall diminished at the end of 2010 and throughout 2011, so did flow in the creeks, which provide recharge to the Edwards Aquifer. Onion Creek, the largest contributor of recharge to the aquifer, stopped flowing significantly by October 2010. Decreased recharge has resulted in lower water levels, or storage, and decreasing springflow at Barton Springs. Figure 3 depicts hydrographs over the past 3 years that illustrates this concept. The

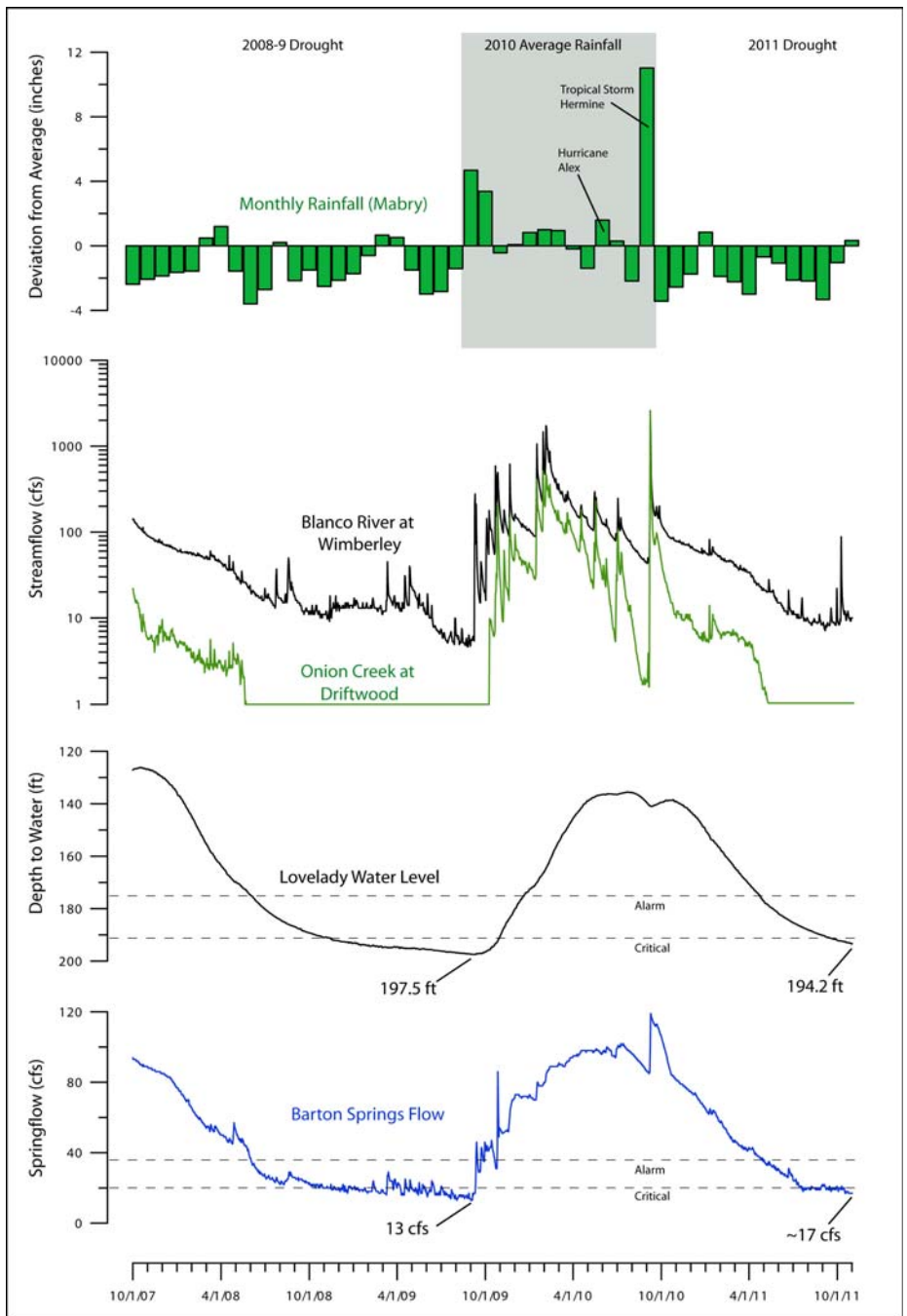


Figure 3. Hydrographs from the past 3 years comparing the 2008-9 drought and the current drought. The Lovelady Water Level and Barton Springs Flow are the drought indices for the District and have the first two stages shown.

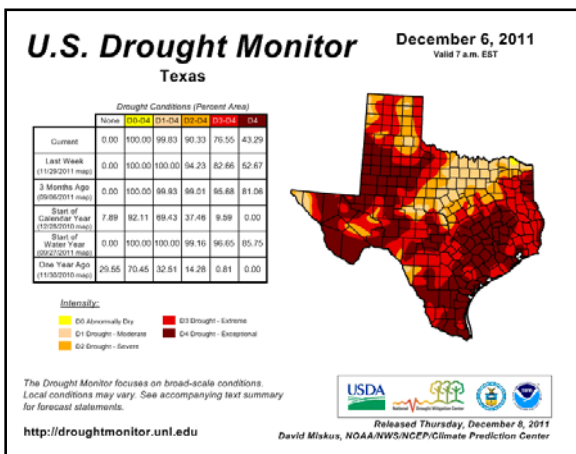


Figure 2. US Drought Monitor map showing the extent and severity of drought in Texas. About 77% of Texas is experiencing extreme to exceptional drought. All of central Texas is experiencing exceptional drought.

Aquifer Status (continued from page 4)

hydrographs illustrate the intensity and depth of the current drought, which while severe, has not yet reached the depths seen in 2008-9. However, we may soon be at those levels as we approach the Spring of 2012.

The current drought conditions have far-reaching impacts beyond the District and Barton Springs. San Marcos Springs, the second largest spring in Texas, is currently discharging about 95 cfs, about 81 cfs below its average flow. In addition, a major spring issuing from the Trinity Aquifer near Wimberley, called Jacob's Well, ceased flowing in July 2011. Most rivers and streams in central Texas are experiencing moderate drought to below normal conditions according to the US Geological Survey (<http://waterwatch.usgs.gov/new/index.php?id=dryw>). Locally, stations are experiencing moderate to extreme hydrologic drought conditions. Inflows from rivers and streams into the Highland Lakes was brought to a mere trickle in 2011 amounting to 10% of average inflows, with 2011 on pace to be one of the lowest recorded inflows of any year (LCRA, <http://www.lcra.org/water/drought/index.html>). Governor Rick Perry issued a disaster proclamation in December 2010 because of the extreme fire danger and it was recently renewed to include the effects of prolonged drought and extreme high temperatures.

Drought Outlook for 2012

Unfortunately, meteorological forecasts by the National Weather Service's Climate Prediction Center indicate that dry conditions due to La Niña will likely persist beyond January 2012. Similarly the National Oceanic and Atmospheric Administration (NOAA) indicates drought to persist through late February 2012 (Figure 4). Climate scientists are learning more about the role of other oceanic-atmospheric influences such as the Pacific Decadal Oscillation (PDO) and the Atlantic Multi-decadal Oscillation (AMO). As the titles suggest, those are longer-period influences on climate. Apparently

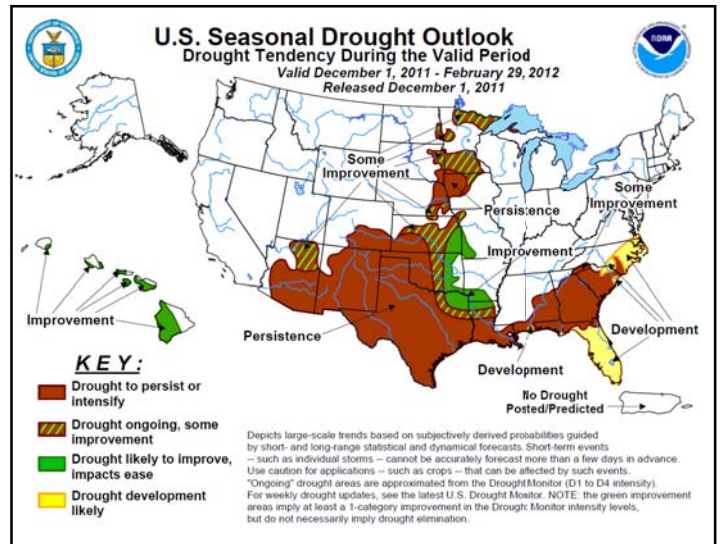


Figure 4. US Seasonal Drought Outlook from NOAA indicates the meteorological drought will persist at least into February 2012.

all three oceanic-atmospheric oscillations (ENSO, PDO, and AMO) indicate more dry and drought conditions for Texas (see OTSC) that were only last in place during the prolonged 1950s drought. For now, a second year of drought is likely, and whether it will evolve into the prolonged drought of the 1950s is unknown.

Assuming the dry conditions continue, we estimate the District could enter into Stage IV Exceptional Drought as soon as March or April 2012. If this occurs, this would be the first time the District has declared a drought stage more severe than Critical Stage. Exceptional Stage Drought will require a 40% reduction from normal use for historic Edwards permits in the District. This stage will also require conditional permits to completely curtail Edwards use and supplement with alternative sources.

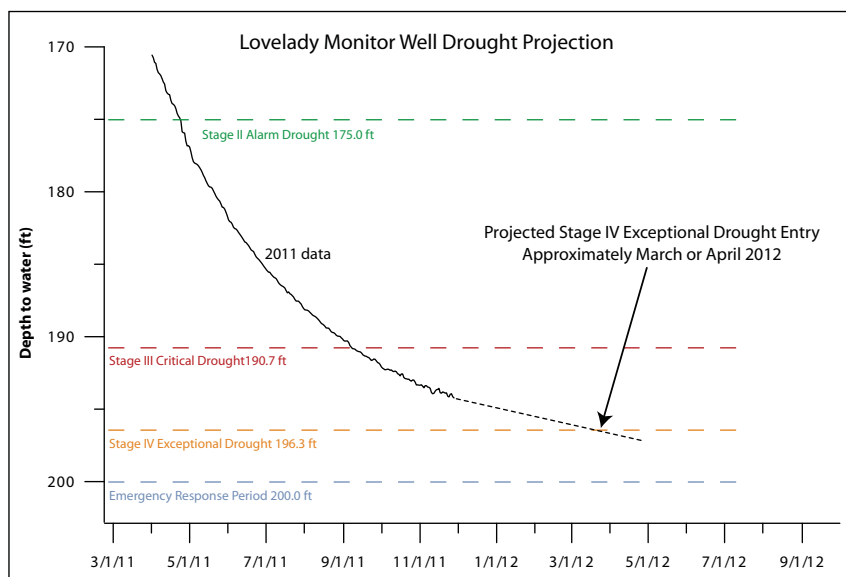


Figure 5. Hydrograph of the Lovelady drought index well and future projections of drought declarations. Assuming the dry conditions continue we could enter into Stage IV Exceptional Drought as soon as March or April 2012.

In order for the Board to take the District out of drought, both Lovelady and Barton Springs need to be above their respective drought trigger levels. In order 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, across the recharge zone for a period of several months. At the time of writing this newsletter some recent rains fell at the end of November bringing the monthly total to 2.9 inches, which is normal. In the first seven days of December, the Onion Creek watershed has received about 3 inches, which is near normal for the entire month of December. This rain has helped alleviate some of the dryness, however, those rains are insufficient to alleviate the drought.

- BRIAN HUNT, SENIOR HYDROGEOLOGIST and
BRIAN SMITH, PRINCIPAL HYDROGEOLOGIST

Evaluation of Options to Increase Aquifer Levels and Spring Flows During Extreme Drought

While comprising arguably one of the most stringent drought management programs in the state, the District's current drought-time curtailment requirements may not achieve the Edwards Aquifer's Desired Future Condition (DFC). The adopted DFC is 6.5 cubic feet per second (cfs) of monthly flow at Barton Springs during a recurrence of the drought of record, a flow that is believed to be close to the minimum amount that assures the survival of the population of the endangered salamander species dependent on the spring discharges during such extreme drought conditions. (The lowest recorded springflow, during the 1950s when little water was being withdrawn by wells, is 9.6 cfs on one day and about 11 cfs on a monthly average basis.) The DFC spring flow corresponds to a monthly average "allowable" groundwater withdrawal rate from all wells of about 5.2 cfs; but under the District's most stringent pumping curtailment rules and current statutory authorities, the minimum authorized pumping achievable during an extreme drought is about 6.7 cfs (Figure 6). This 1.5 cfs "gap," between what is needed and what is now programmatically possible, needs to be reconciled in the next revision of the District Management Plan and its implementation of the rules, regulations, and policies.

To assist the District in addressing this gap, we have asked a broad, representative cross-section of interested citizens and affected parties to form a Stakeholders Advisory Committee (SAC) that will generate ideas and provide analysis, comment, and other input on various strategies the District might employ to close the gap. Some of the strategies may be based on increasing the availability of alternative water supplies; some may be reducing authorized

and/or actual pumpage beyond current levels, either temporarily or all the time; some may be based on innovative ways to reduce demand during extreme drought but not necessarily at other times; some may be engineered solutions that might decouple spring flows and regional water levels; and some may be more "institutional", such as requesting new authorities. It is possible that some, perhaps even most of these strategies may be able to be deployed under the auspices of our current District Management Plan; other, more ambitious strategies, if selected for implementation by the District Board, may need to be delayed until after the existing Management Plan is revised to provide needed authorization.

Current plans are for the SAC to participate in a Work Session of the Board in late January 2012, and in possible follow-up meetings on certain topics in early February. Then the District staff would recommend a 'first stage' of gap-reducing rulemaking in late February. At the same time, the Management Plan would be undergoing its own revision and be submitted to TWDB for approval, perhaps in late April. The TWDB is in the process of revising its own regulations related to GCD administration and groundwater management, and our revised Management Plan will also be required to be responsive to the new TWDB regulations and guidance. Once the Management Plan is revised and approved, the staff would recommend, if necessary, a 'second stage' of gap-reducing rulemaking, perhaps in early summer 2012.

More information on the SAC, including its composition and the schedule of its activities, will be posted on the District website as it becomes available.

- KIRK HOLLAND, GM AND JOHN DUPNIK,
SENIOR REGULATORY COMPLIANCE SPECIALIST

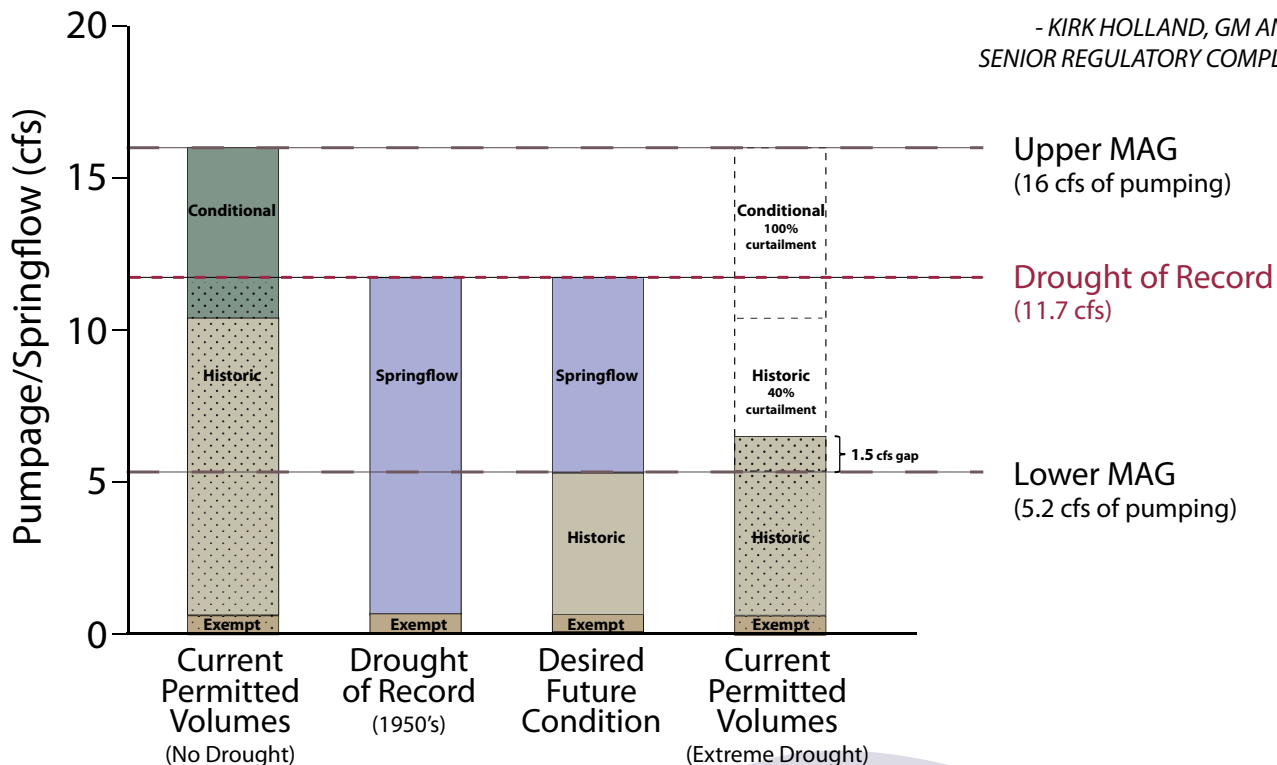


Figure 6. Synopsis of current permitted volumes during non-drought and drought conditions, springflow and pumping observed during the drought of record, and springflow and pumping levels allowable under the Desired Future Condition.




Rules Update: Revisions Approved on September 17, 2011

Back in 2009, the District was experiencing an extraordinary drought (much like the current one) that convinced our Board that extraordinary measures would be needed if the aquifer was to enter into an Emergency Response Period (ERP) – a period that would be triggered when conditions became worse than those experienced in the drought of record in the 1950s. The Board adopted Rules that would require industrial and non-agricultural irrigation permittees to completely curtail pumpage if an ERP were to be triggered. In other words, the Board was preparing to have to make tough choices about how the last of available groundwater supplies during a historic drought would be allocated. By the Board's actions, priority was given to drinking water.

Non-public water supply permittees affected by such extreme measures expressed concern that it was unfair to impose a disproportionate level of curtailment on the industrial and irrigation permittees, that the PWS permittees had the same if not more wherewithal to curtail groundwater use, and that other options should have been considered. The ERP curtailments were slightly relaxed from 100% to 90% curtailment in a subsequent round of rule changes in March 2011, but the concerns of the affected permittees were not alleviated. In the spirit of cooperation, the Board directed both the permittees and the District to enter into negotiated rule making to attempt to find an acceptable middle ground. On September 17, 2011, rules were adopted that were the product of the negotiations.

The resulting rules were considered a win/win by the District and the affected permittees. The permittees are encouraged to develop alternative supplies and implement measures to improve efficiency

Core Elements of the Negotiated Rules

-  Prior to March 17, 2013, pumpage curtailments for nonagricultural irrigation and industrial permittees will be relaxed from 90% to 40% during an ERP.
-  After March 17, 2013, pumpage curtailments for nonagricultural irrigation and industrial permittees will increase to 85% during an ERP, except as provided below.
-  After March, 17, 2013, pumpage curtailments for these permittees may remain at 40% provided that the permittee can demonstrate that an alternative water supply or equipment to achieve demand reductions of at least 10% of the permitted volume is in place.

by reducing demand and are rewarded with relaxed curtailment requirements. The hope and expectation are that the alternative supplies and demand reductions prompted by these rules will enable permittees to achieve voluntarily even greater pumping reductions than specified in the Rules, rather than through the use of enforcement mechanisms.

- JOHN DUPNIK, SENIOR REGULATORY COMPLIANCE SPECIALIST

Reclassification (continued from page 1)

reclassified Class B permitted pumpage will be immediately subject to 100% curtailment for the duration of an Exceptional Drought Stage. The reclassification is permanent and from that point forward, affected permittees must comply with the "post-Exceptional" curtailments of their User Drought Contingency Plans (UDCPs).

A summary of the mandatory Conditional Permit drought curtailments is provided in the following Table:

Drought Stages	Class A Curtailments (before reclassification)	Class B Curtailments (after reclassification)
Stage II Alarm	20%	50%
Stage III Critical	30%	75%
Stage IV Exceptional	N/A	100%
Emergency Response Period	N/A	100%

Current projections of aquifer levels suggest that the aquifer may fall below the Stage IV Exceptional Drought threshold between February and April, 2012 (Figure 6). The District will continue to monitor aquifer levels and refine projections as we get closer to a Stage IV Exceptional Drought condition. Permittees are encouraged to review their drought plans and contact the District if there are any questions. The District intends to work with our permittees during this extraordinary drought to make the transition as smooth as possible.

- JOHN DUPNIK, SENIOR REGULATORY COMPLIANCE SPECIALIST

Redistricting Process and New Director Precinct Boundaries

After the 2010 Census data were analyzed, Barton Springs / Edwards Aquifer Conservation District's previous boundaries of the Board of Directors precincts did not produce sufficiently equal population and had to be redrawn in order to comply with the "one-person, one-vote" principle established by the U.S. Constitution and with other applicable Texas law.

The District's enabling legislation also requires that two (and only two) Director precincts be entirely within the City of Austin. Because of changes in demographics reflected in the 2010 Census, this provision created options that differed in the re-drawn boundary between the more urban Precincts 4 and 5. Nine draft plans to redraw the urban precincts were researched and developed by the District's redistricting consultant, Bickerstaff Heath Delgado Acosta LLP, and the Board then approved three of them as Illustrative Plans for public comment (Figure 7). Plan 1 maintained the east/west orientation and included areas annexed by the City of Austin. Plan 2 divided the City of Austin areas into northern (urban) and southern (suburban) precincts. Plan 3 combined aspects of Plans 1 and 2 to maintain mostly the east/west orientation while grouping together some urban and some suburban areas.



Figure 8. Public Hearing at District Headquarters.

The Board of Directors of the Barton Springs/Edwards Aquifer Conservation District discussed the three Illustrative Plans in two open meetings, held a Public Hearing, and invited public comment (both written and in person) on the new boundaries for its director precincts and solicited proposals for alternate plans. No alternate plans were submitted. After consideration of all public input, the Board of Directors voted on and adopted Plan 3 as the new precinct boundaries at the November 17, 2011, Board Meeting.

The adopted Director Precinct boundaries have been submitted to the Department of Justice for pre-clearance as compliant with federal voting laws. Once cleared, the new precinct boundaries will be used in the next Director elections, now scheduled for November 2012.

- KIRK HOLLAND, GM AND
ROBIN GARY, PUBLIC INFORMATION
AND EDUCATION COORDINATOR

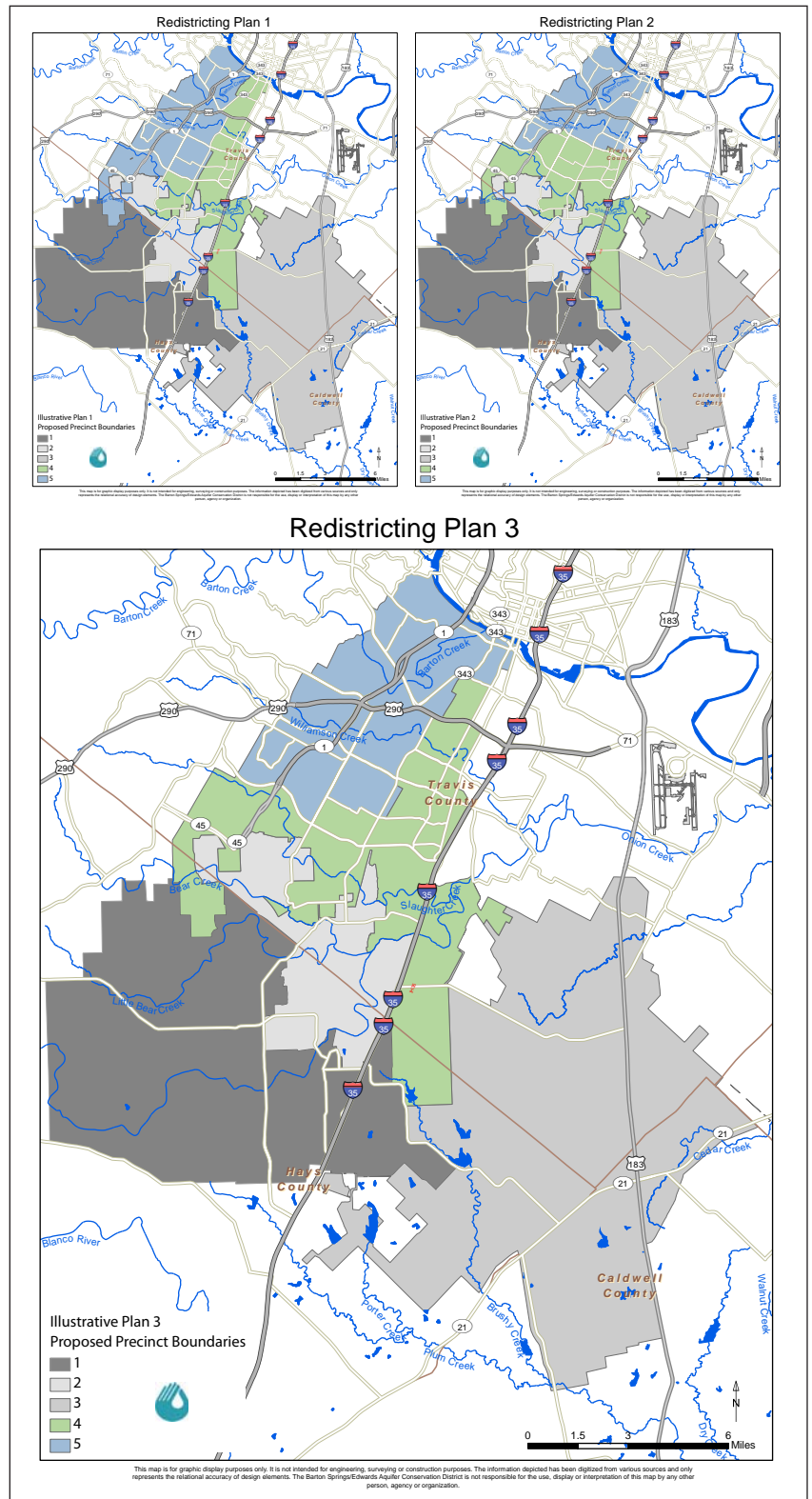


Figure 7. Illustrative Plans 1, 2, and 3. Illustrative Plan 3 was adopted by the Board of Directors as the new precinct boundaries at the November 17, 2011 Board Meeting.

2011 Groundwater Stewardship Award Winners

At its Oct. 13, 2011, meeting, the Board of Directors of the Barton Springs/Edwards Aquifer Conservation District selected the 2011 Groundwater Stewardship Award winners and approved the District Staff's selection of the Permittee of the Year. This year's nominees were all exceptionally strong and deserving, and it was difficult to identify a single winner within each category. The Board and staff are proud to honor these exemplary efforts to conserve and protect the groundwater resources of the area:

Permittee of the Year

Arroyo Doble Water Company

Nean Grubert, Arroyo Doble Water Supply owner and operator, has been proactive in working in cooperation with the District on outreach efforts to inform end-users of aquifer conditions, rule changes, and conservation suggestions, exemplifying the notion that "we are all in this together. Arroyo Doble has proven to be a model permittee in many ways and the Staff of the BSEACD wishes to recognize and commend their efforts by awarding them with "Permittee of the Year" (Figure 9).

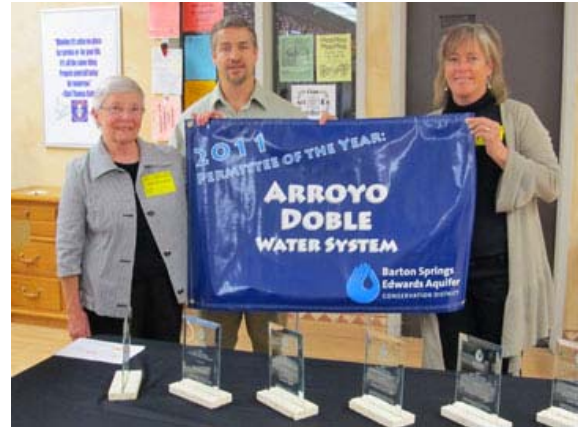


Figure 9. The 2011 Permittee of the Year Award

Water Conservation – Business/Permittee

Onion Creek Club

Onion Creek Club staff and management have found the balance between maintaining an attractive, playable golf course and environmental stewardship. They have maximized water efficiency by installing a state-of-the-art irrigation system that adapts to conditions on the (and of the) ground and have minimized total irrigated acreage by setting aside land for native bird habitat (certified with Sanctuary Status by the Audubon International Society).

Water Quality Protection

City of Austin Water Quality Protection Lands Program

The City of Austin Water Quality Protection Lands (WQPL) Program protects approximately 21.7% (over 26,500 acres) of the Recharge Zone of the Barton Springs segment of the Edwards Aquifer. The WQPL Program manages lands to enhance native habitat and quality of water recharging the aquifer, works with surrounding landowners to increase awareness and protection of the lands, and engages volunteers to involve the public and extend City of Austin resources.

Innovation

Pat Reynolds

Pat Reynolds manufactured a well sounder (aka eline) to monitor water levels in his well and those of his neighbors. Those data help the District hydrogeologists better understand aquifer conditions. This innovation directly benefits well owners in the District by offering a low-cost solution to water level monitoring. District staff plan to build several of these units to loan to neighborhood groups.

Education

Clean Water Fund

Through its Central Texas Water Conservation Project, the Clean Water Fund has visited over 41,000 households, engaged neighborhood and community groups, and distributed over 50,000 educational pieces on the benefits and methods of water conservation. By promoting a 'culture of water conservation,' the Clean Water Fund has played a major role in protecting Central Texas water resources—groundwater supplies in the District, in particular. Their door-to-door canvassing project in the District substantially increased drought awareness and provided conservation practices to a set of groundwater users that otherwise might not get such information.

Education

Matt Turner and Heather Tuček

As volunteers for the Texas Cave Management Association (TCMA) and the UT Grotto, Matt Turner and Heather Tuček have made outstanding contributions towards aquifer education through their cave immersion education. Matt Turner, current volunteer manager for TCMA's Whirlpool Cave Preserve, guides cave trips and coordinates exploration, education, and research access to the cave. Heather Tuček also assists in dye traces and karst preserve patrols. Their efforts help build public support to protect water quality and the rare species in the Edwards Aquifer.

Research

Hydrogeologic Atlas of the Hill Country Trinity Aquifer, Douglas Wierman, lead editor

This hydrogeologic atlas synthesizes the work of three groundwater conservation districts, numerous volunteers, agencies, and foundations. The atlas serves as an excellent reference for geoscientists, citizens, and governmental agencies to make informed decisions about the Trinity Aquifer in Central Texas. The Hydrogeologic Atlas of the Hill Country Trinity Aquifer and Doug Wierman's efforts greatly increase awareness and knowledge of groundwater resources in Central Texas.

Research

Michael Passarello

Mike Passarello's Master's thesis extends and synthesizes decades of research on the hydrogeology of the Barton Springs segment to produce a multi-model evaluation of aquifer response to changing recharge. Mike combined field observations, spatial data, recharge interpretations by other scientists, working knowledge from the BSEACD staff, and groundwater availability models to test scientific hypotheses and integrate information so that outputs can be used to inform policy and management of the aquifer.

- ROBIN GARY, PUBLIC INFORMATION AND EDUCATION COORDINATOR

2011 District Scholarships

Each year, the Barton Springs/Edwards Aquifer Conservation District, in collaboration with our permittees, offers scholarships for 2 different age groups. The District would like to thank our permittees, Goforth Special Utility District, Texas Lehigh, and St. Andrews Episcopal School for donating their FY2011 Conservation Credits to the scholarship fund. The scholarship program would not be a success without these generous donations.

\$2,500 College Scholarship Essay Contest Kent S. Butler Memorial Groundwater Stewardship Scholarship

Deadline for submissions: 5:00 p.m. on Monday, March 26, 2012.

The District's college scholarship has recently been increased and dedicated by the District Board as a memorial scholarship honoring one of Austin's most influential environmental planners, Kent Butler. He was instrumental in creating the Barton Springs/Edwards Aquifer Conservation District and in helping develop and refine strategies for the sustainable management of water resources in our area. For more information on Dr. Butler's lasting legacy to Austin visit the Kent Butler Online Memorial at: <http://soa.utexas.edu/soapress/kent-butler/>

The Barton Springs/Edwards Aquifer Conservation District is now soliciting applications and essays for the 2012 Kent S. Butler Groundwater Stewardship Scholarship Essay Contest through Monday, March 26, 2012.

The essay contest is open to high school juniors, seniors, and immediate graduates. Students must reside in one of the six school districts overlapping the District boundary. These six independent school districts are: Austin, Eanes, Dripping Springs, Hays Consolidated, Del Valle, and Lockhart.

Possible essay topics:

- non-point source pollution
- pollution prevention
- water conservation
- hydrogeology
- other groundwater issues

One essay will be selected as the winning entry by an independent evaluation panel, and the author will receive a \$2,500 scholarship to the college, community college, or training institution of his/her choice.

While essays must focus on groundwater-related issues, applicants do not have to be planning a career path in a water-related field.

More info: <http://www.bseacd.org/events/scholarships/#College>

2-day & 5-day Aquatic Science Adventure Camp Scholarship Contest

Deadline for submissions: 5:00p.m. on Monday, March 26, 2012.

The District is now soliciting applications and essays for its 2012 Camp Scholarship program for the Edwards Aquifer Research and Data Center's Aquatic Science Adventure Camp through Monday, March 26, 2012.

This year's program will provide:

- \$530 scholarships to the week-long Aquatic Science Adventure Camp (Note: Parent will be responsible for providing \$150 camp deposit fee, which will be needed to hold the child's spot.)
- \$130 scholarships to the 2-Day Aquatic Science Adventure Camp (Note: All \$130 will be paid for by BSEACD.)



Camp scholarship contest is open to children ages 9 through 15 who reside in one of the six school districts within the District's boundaries. Interested students must submit an application and a 1-page essay/artwork entitled "Why I want to attend the Aquatic Science Adventure Camp!" Scholarship winners will be chosen in a random drawing; only completed applications with essays will be eligible.

More info: <http://www.bseacd.org/events/scholarships/#Camp>

Drought Stages and Triggers

Barton Springs Discharge (cubic ft per sec)

Lovelyday 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

190.7 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

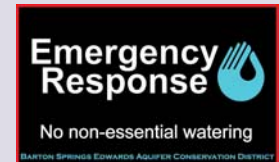
196.3 ft



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

200 ft



Stop Non-essential Water Use
No outdoor watering.
Restrict and reduce indoor water use