



EDWARDS AQUIFER AUTHORITY  
**GENERAL MANAGER'S  
REPORT**

AUGUST 2002

**inside**

# THE FLOOD OF 2002

BY GEARY SCHINDEL, CHIEF TECHNICAL OFFICER AND STEVE JOHNSON, SENIOR HYDROGEOLOGIST

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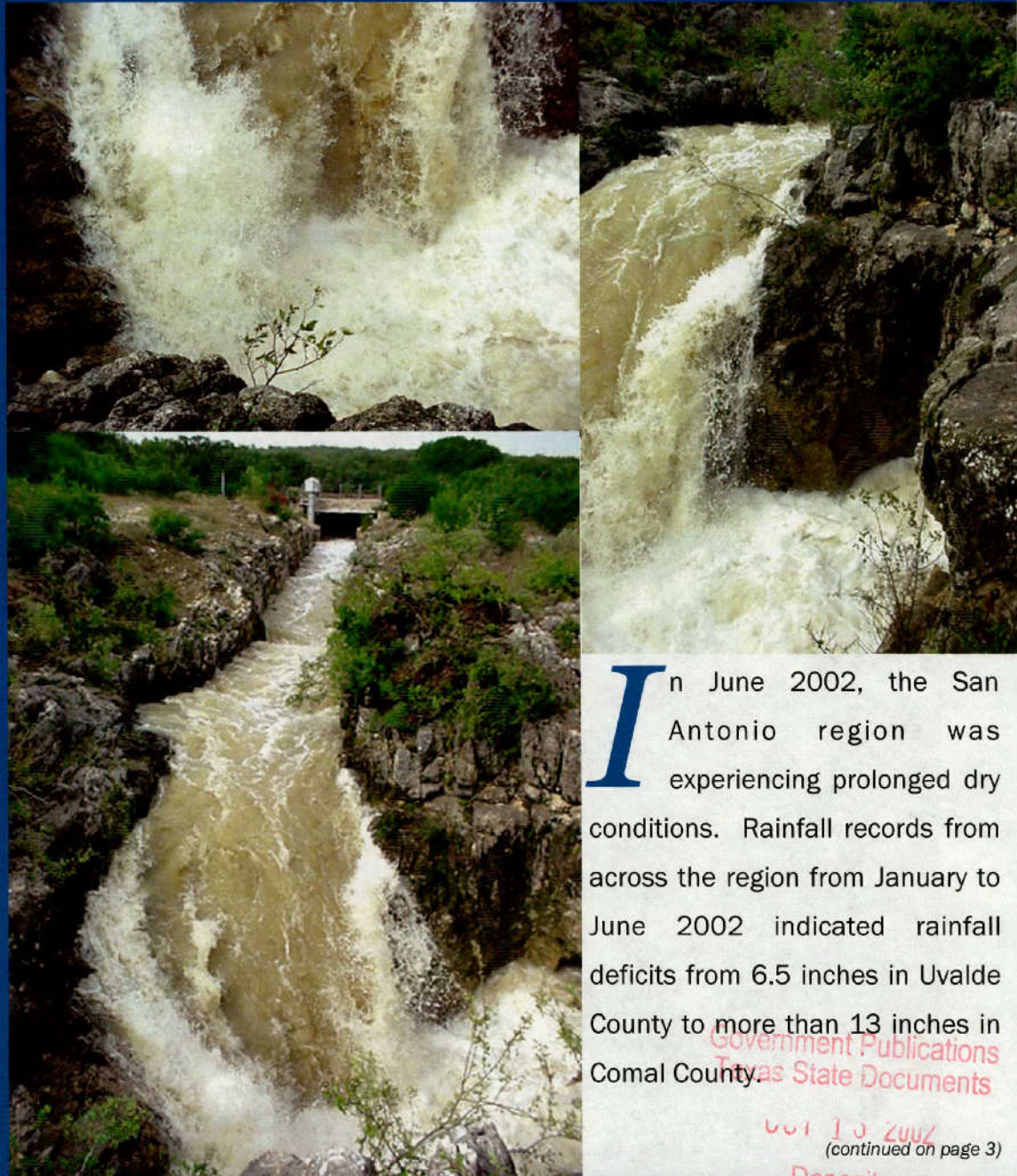
Calendar of Events

Editor: Margaret Garcia  
Graphic Design: Lisa Llamas

The General Manager's Report  
is published monthly.

**Our Mission:**

The Authority is committed to manage and protect the Edwards Aquifer system and work with others to ensure the entire region of a sustainable, adequate, high quality and cost effective supply of water, now, and in the future.



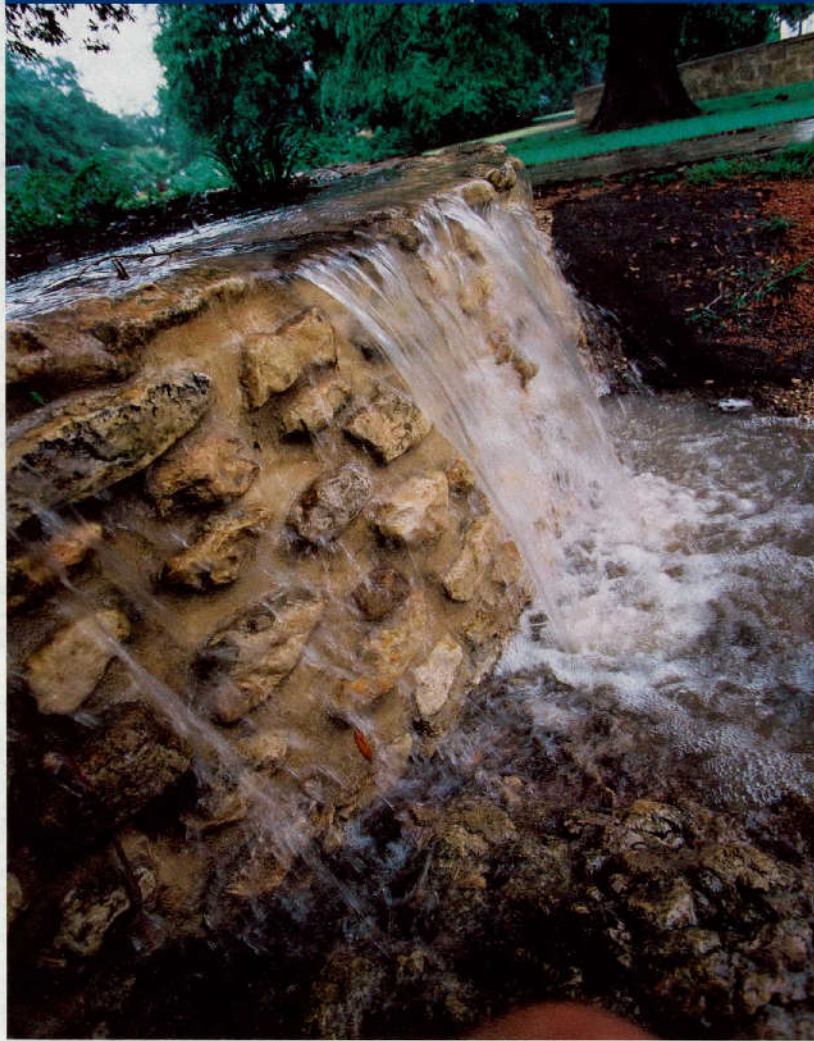
**I**n June 2002, the San Antonio region was experiencing prolonged dry conditions. Rainfall records from across the region from January to June 2002 indicated rainfall deficits from 6.5 inches in Uvalde County to more than 13 inches in Comal County.

Government Publications  
Texas State Documents  
JUN 10 2002  
(continued on page 3)





# THE FLOOD OF 2002



Photographers: Jesse Mireles and Tommy Hultgren



## THE FLOOD OF 2002 (CONTINUED)

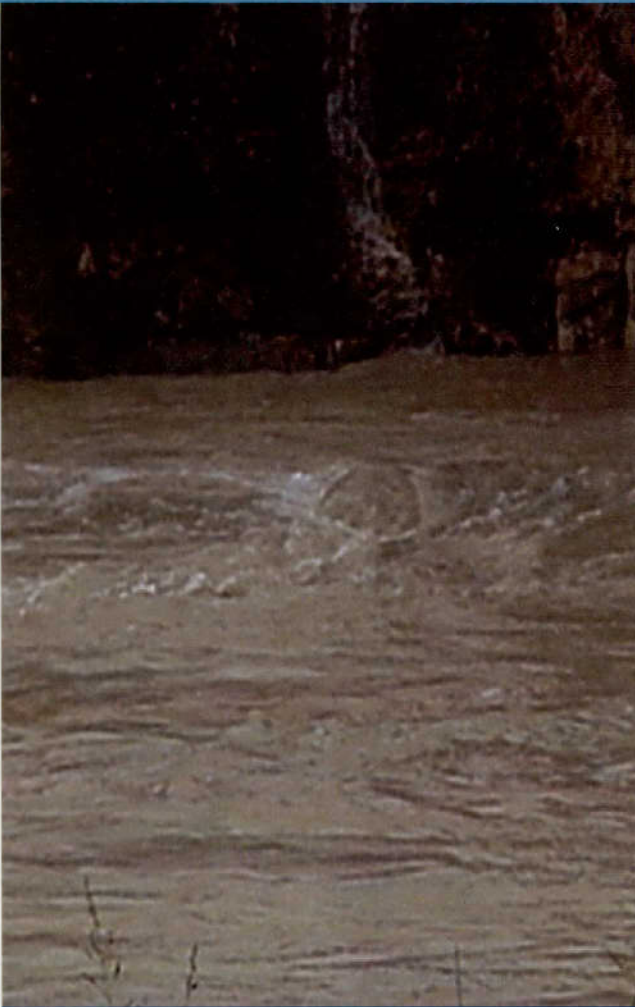
Along with dry conditions, the Bexar County Index Well (J-17) declined from a high of 684.8 feet above mean sea level (msl) on January 1 to 650.0 feet msl on June 26. The National Weather Service predicted conditions would be hotter and dryer than normal for the entire state of Texas for the remainder of the summer. When the groundwater level at J-17 reached 650 msl, municipalities across the region initiated drought response plans and a special meeting of the Authority's board of directors was called to address the situation. On the evening of June 26, moderate widespread rainfall occurred across the region and the aquifer level at J-17 rose one foot. Sporadic rainfall continued throughout the region and aquifer levels continued to climb.

On June 30, a low-pressure system moved out of the Gulf of Mexico and stalled stationary over the region pulling moisture northward. Rainfall totals recorded from the Authority's rain gauge network over the June 30 to July 7 period ranged from 4.26 inches in Edwards County to 23.07 inches in Kendall County. Unfortunately, lightening strikes at some of our equipment, particularly in Bandera County, caused a loss of data, and so the total rainfall numbers may be low for some areas. In addition, localized rainfall accumulations may have been much greater than recorded at the rain gauge network. The Medina, San Antonio, and Guadalupe rivers responded with record or near-record flows. The emergency spillway at Medina Lake was activated for only the second time since the dam was built between 1911 to 1913. The Canyon Lake emergency spillway was activated for the first time in its history. Wide spread damage to property, power lines and roads occurred in low-lying areas across the region, and nine people lost their lives in storm-related incidents.

Water levels in the Edwards Aquifer also responded quickly to the heavy rains. Water levels in the aquifer rose very rapidly and included the second greatest single day increase at J-17 of 6.3 feet between July 1 and July 2. Daily increases of 6.1 feet and 5.5 feet were also recorded. From June 26, when J-17 reached the lowest level of the year at 650.0 feet msl, to July 7, when J-17 was at 683.4, the aquifer has risen 33.4 feet in 11 days, normal during the summer and fall.







## ***THE FLOOD OF 2002 (CONTINUED)***

On July 22, the aquifer reached its highest level in response to the early July rains of 690.5 feet msl - more than 30 feet above historical averages for the month although still below its all-time record of 703.3 feet msl set in June 1992. Aquifer levels in the Uvalde and Hondo area also increased dramatically over the last 30 days and are significantly above historical averages.

Springflow at Comal and San Marcos springs have increased significantly from visual observations; however, readings from these gauges not reliable since the flooding. Scour in the San Marcos River will require recalibration of the rating curve for the gauge. Back flooding from the Guadalupe River is also impacting the Comal Springs gauge and caused the flow/stage height relationship at the gauge to be inaccurate.

Aquifer levels have begun to level off and will decline as demand increases over the next few weeks. Aquifer levels are expected to remain high for the remainder of the year unless rainfall is significantly below normal during the summer and fall.

### **2002 Aquifer Management Fees**

by Brock Curry, Administrative Program Manager

In July, the Authority collected \$546,101 in aquifer management fees from non-agricultural users. As of July 31, 44 accounts representing \$70,762 are considered delinquent.

To date, the Authority has issued invoices totaling \$224,666 to agricultural users based on their reported 2001 use. As of July 31, the Authority received payments in the amount of \$2,630 bringing the total for the year to \$226,890 or 113% of the amount budgeted for 2002.

### **2003 Proposed Budget**

by Brock Curry, Administrative Program Manager

The General Manager will present his proposed budget for 2003 to the Finance/Administrative Committee and Board in early September kicking off the Authority's budget adoption process. The Authority will hold three public meetings on the proposed budget in mid-October with final adoption scheduled for November.

Staff will distribute annual use contracts to all non-agricultural users in September. These contracts help encourage conservation by enabling non-agricultural users to reduce their authorized use for 2003.



## July 2002 Board Meeting

by Margaret Garcia, Public Affair Program Manager

At their regular monthly meeting held Tuesday, July 09, 2002 in New Braunfels, the Edwards Aquifer Authority Board of Directors interviewed two candidates for the Bexar County Director - District 3 position recently vacated by Mr. Weir Labatt after his appointment to the Texas Water Development Board. After a brief interview with each candidate, Col. Gil Coronado, USAF (Ret.) was selected by the board to serve the constituents of District 3 until the next general election in November 2002. Col. Coronado is a native of San Antonio and retired from the military in 1989. Col. Coronado was also appointed by President Bill Clinton as Director of the United States Selective Service. Col. Coronado served as Director of the United States Selective Service from 1992 through 2001.

In other action, the board approved two Proposals for Decision (PFD) brought to them by the State Office of Administrative Hearings (SOAH). These two PFD's recommended the board not grant applications for Mr. John Delgado and Mr. Steve Gerdes. These protested permit matters were referred to SOAH in 2001. These actions by the board represent the first time the board has exercised the judicial authority granted to it by the Texas Legislature. The applicants may appeal the board's decision to a state district court.

The board also approved Proposed Rules for EDWARDS AQUIFER AUTHORITY RULES ch. 715 (Comprehensive Water Management Plan Implementation Rules). These rules would require permittees to implement water conservation throughout the region. The board also approved Proposed Rules for EDWARDS AQUIFER AUTHORITY RULES ch. 711 subch. J (Aquifer, Recharge Storage and Recovery). These rules address adding more water into the aquifer and how that water can be recaptured for later use. These rules will be assessed for their possible economic and environmental impacts, and submitted for public comment.



The board also received a technical briefing from Dr. William Woodley, Woodley Weather Consultants, on the effectiveness of the Authority's Precipitation Enhancement Program for 1999 through 2001.

The analysis of the programs included the evaluation of radar data, rainfall data and satellite imagery. Dr. Woodley estimates the total rainfall benefit to the Edwards Aquifer region for this period is approximately 179,000 acre-feet.

In addition, directors approved initial regular permits for seven applicants who had previously filed protests on their proposed permits. After further review of the applicants' files, all parties agreed the applicants provided additional documentation to substantiate their claims for more Edwards groundwater than originally proposed by staff. The board approved permits representing approximately 4,169 acre-feet of Edwards groundwater. The board also approved a Memorandum of Understanding with the San Antonio Water System to conduct additional groundwater modeling analysis for the Demand Management and Critical Period Management Rules.



## Edwards Aquifer Optimization Program Update

by John Hoyt, Aquifer Science Program Manager

The basic description and purpose of the Edwards Aquifer Optimization Program (EAOP) is repeated in the following paragraph to provide background information for new readers and to provide a reference for the regular reader. Subsequent paragraphs provide information relevant to the specific report month.

The Edwards Aquifer Authority (the Authority) has undertaken the Edwards Aquifer Optimization Program (EAOP), a comprehensive program for the study and management of the Edwards Aquifer. The EAOP includes a series of seventeen interrelated, mission-directed biologic and hydrogeologic research studies known as the Optimization Technical Studies (OTS). The OTS are designed to evaluate potential technical options for increasing the amount of water stored in the Edwards Aquifer and identify various methods for optimizing the amount of water available for withdrawal. Data and information obtained from the OTS will provide aquifer managers with the tools necessary to make scientifically-sound decisions to benefit aquifer users and preserve the environment supported by the aquifer, including the Comal and San Marcos Springs and downstream aquatic habitats.



In July 2002, the board of directors did not consider any OTS items; however, the Research and Technology (R&T) Committee considered three OTS-related items.

1. Professional surveying of elevations at approximately 400 wells being used as Edwards Aquifer computer model calibration wells and synoptic water level project wells.
2. Further evaluation of the concept of springflow augmentation at Comal and San Marcos Springs.
3. Development of an updated method for calculating recharge in seven drainage basins or drainage areas that cross the Edwards Aquifer Recharge Zone.

The board will consider the committee-recommended contractor selections and may authorize Authority staff to negotiate contracts and return to the board for contract approval.

Other OTS-related studies currently underway or completed include:

- Texas wild-rice reproduction.
- Comprehensive and Critical Period Monitoring Program to Evaluate the Effects of Variable Flow on Biological Resources in the Comal and San Marcos Springs Ecosystems.
- Cagle's Map Turtle instream flow and habitat requirements (completed).
- Edwards Aquifer computer model development.
- Improved aquifer parameter estimation for computer model in-put data sets (completed)
- Edwards Aquifer freshwater/saline water interface studies.
- Hydrologic budget analysis of Medina Lake and Diversion Lake for the North Medina County Flow Path Study.

*(continued on next page)*



IN MEMORIAM

# Katheryn Gale Elguea

1958 - 2002



It is with great sadness that we report the passing of our dear friend Kathy Elguea. Kathy was an employee of the Edwards Aquifer Authority for almost 15 years. Kathy was more than just an employee, she was also our very dear friend. Kathy passed away at her home in Boerne on Sunday, August 11, 2002, surrounded by her family. Funeral services were held on Tuesday, August 13, 2002, in San Angelo, Texas.

Kathy was born Katheryn Gale Elguea on December 23, 1958, in San Angelo, Texas to Mr. & Mrs. Vernon Smith. Kathy is survived by her husband Eubaldo, daughter Ava Jenice and son Austin Lee all of Boerne, father Vernon Smith of San Angelo and sister, Gaylon Jenice Smith of Arlington, Texas. Her mother, Mrs. Vernon Smith, preceded her in death.

The family requests donations be made in Kathy's memory to the Cancer Therapy and Research Center (CTRC), P.O. Box 1657, San Antonio, TX., 78296.

Kathy will be greatly missed by us all.





# Katheryn Gale Elguea

1958-2002







**Katheryn Gale Elguea**  
1958-2002



IN MEMORIAM

# Katheryn Gale Elguea

1958—2002





## Edwards Aquifer Optimization Program Update (continued)

- Analysis of structural controls on the Edwards and Trinity Aquifers interface in the Camp Bullis Quadrangle and surrounding area.
- Development of updated methods for calculating recharge to the Edwards Aquifer in the Blanco and Nueces River basins (completed).
- Statistical Analysis of Hydrologic Data (completed).
- Edwards Aquifer fracture/conduit study.
- Evaluation of water quality and water quantity benefits of woody species best management practices on selected watersheds in the Edwards Aquifer region.

If you have questions regarding the studies listed above, please call John Hoyt, Aquifer Science Program Manager, at (210) 222-2204.

## Final Report on the Effectiveness of the 1999-2001 Precipitation Enhancement Program Indicates a benefit of 179,000 acre-feet

by Rick Illgner, Planning & Conservation Program Manager

In June 2001, the Authority contracted Dr. William Woodley, President of Woodley Weather Associates, to conduct an evaluation of the efficiency of the Authority's PEP for 1999 through 2001. One of the most difficult aspects of the analysis is developing a method to eliminate selection bias to allow the comparison of seeded and non-seeded storm cells that have similar physical properties.



Dr. Woodley developed a technique that utilizes the statistical capability of the special radar computer software (Thunderstorm Indicating Tracking and Nowcasting - TITAN) to carefully select similar systems. Dr. Woodley presented a draft report to the Authority in January 2002 in which he presented data for the 1999 and 2000 PEP based on radar estimated rainfall.

Results from the 1999 and 2000 analysis indicated there were a total of 197 seeding missions and the average amount of enhanced rainfall for each seeding event was 592 acre-feet. Therefore, the 1999 and 2000 PEP produced approximately 87,000 acre-feet of additional precipitation in the area, (assuming 75% of the additional rain reached the ground).



In 2001, the Authority's automated rain gauge network was operational and was used to compare measured versus radar estimated rainfall. The analysis produced a very interesting result. Comparing gauged rainfall to radar estimated rainfall showed a .922 correlation factor, indicating the two data sets correlate very well. However, the gauged rainfall to radar estimated rainfall for the 2001 season showed a ratio of 1.56, indicating the gauged rainfall was 56% greater than estimated by the radar. Using the correction factor of 1.56, the 1999 and 2000 PEP averaged an additional 923 acre-feet ( $592 \times 1.56$ ) of enhanced rainfall per seeding event for a total of 136,000 acre-feet. Dr. Woodley estimates the total rainfall benefit for 1999 through 2001 PEP to be approximately 179,000 acre-feet.



## Groundwater Withdrawal Transfers

by Steven Walthour, Permitting & Enforcement Program Manager

Authority staff continues to receive and process notices of water right transfers from Initial Regular Permit (IRP) holders, and applicants, authorized with interim authorization status. Authority staff processed 20 transfers from July 1, 2002 to August 1, 2002 representing 2594.001 acre-feet in groundwater withdrawal rights. Included in this month's transfer report are 9 change of ownership or miscellaneous transfers. Since the inception of the transfer program, Authority staff has processed 606 transfers representing 11,2537.169 acre-feet of Edwards Aquifer groundwater withdrawal rights. Staff anticipates the activity regarding the transfer of groundwater withdrawal rights to increase as municipal and industrial pumpers continue to acquire enough groundwater withdrawal rights to meet their needs.

## Well Construction Program

by Steven Walthour, Permitting & Enforcement Program Manager

In July, Authority staff issued fifty-nine well construction permits. This total includes thirteen Edwards Aquifer domestic well permits, one Edwards Aquifer livestock well permit, two Edwards Aquifer domestic/livestock well permits, one "install large capacity pump" permit, and one Edwards Aquifer well plugging permit. In addition, forty-one permits were issued to drill through the Edwards Aquifer.

Authority staff is currently conducting public comment meetings for Proposed EDWARDS AQUIFER AUTHORITY RULES ch. 713. These rules will determine the construction, operation, maintenance, and abandonment on water wells within the Authority's jurisdictional boundary.

For more information regarding the Authority's well construction program contact Jeff Robinson, Regulatory Programs Coordinator, at 210-222-2204.

## New Faces at the Authority

by Raquel Garza, Human Resources Coordinator

In July, the Authority welcomed three new employees. Joining the Authority are Robert Creel, Julia Alderete, and Stephen Kovach.



Robert Creel—Field Representative. Robert holds an associates degree in electronics from the Community College of the Air Force. Robert previously worked for Sprint PCS as a Technical Support Representative, where he installed software and maintained inventory. Previous to this position, he was in the Air Force for 20 years as a radio maintenance technician.



Julia Alderete —Records Clerk. Julia is currently working towards a bachelors degree in business administration. She will be attending Palo Alto College and then transferring to Texas A&M Kingsville at Palo Alto to complete her degree. Julia worked for USAA as a Corporate Records Specialist for 17 years, where she was in charge of maintaining the claims records.



Stephen Kovach—GIS Analyst. Stephen holds a bachelor of science degree in GIS/ Geography from Southwest Texas State University. Stephen worked for CH2MHILL for two years as a GIS Developer. Previous to this, he worked for Texas Department of Health in Austin, as a GIS Analyst and First American Flood Date as a Geographic Researcher.



## Notice of Public Hearing Locations

by Margaret Garcia, Public Affairs Program Manager

The Edwards Aquifer Authority published a Notice for Public Hearings on Proposed Rules related to well construction, groundwater conservation and aquifer storage and recovery. These hearings are scheduled for the following dates, times and location. If you have questions, or need additional information, please call Ms. Brenda Davis, Docket Clerk, at (210) 222-2204 or 1-800-292-1047.

<p><b>August 14, 2002</b>                  Edwards Aquifer Authority                  1615 N. St. Mary's Street                  San Antonio, Texas 78215                  6 PM to 10 PM</p>	<p><b>August 21, 2002</b>                  San Marcos Activity Center                  501 E. Hopkins                  San Marcos, Texas 78666                  6 PM to 10 PM</p>
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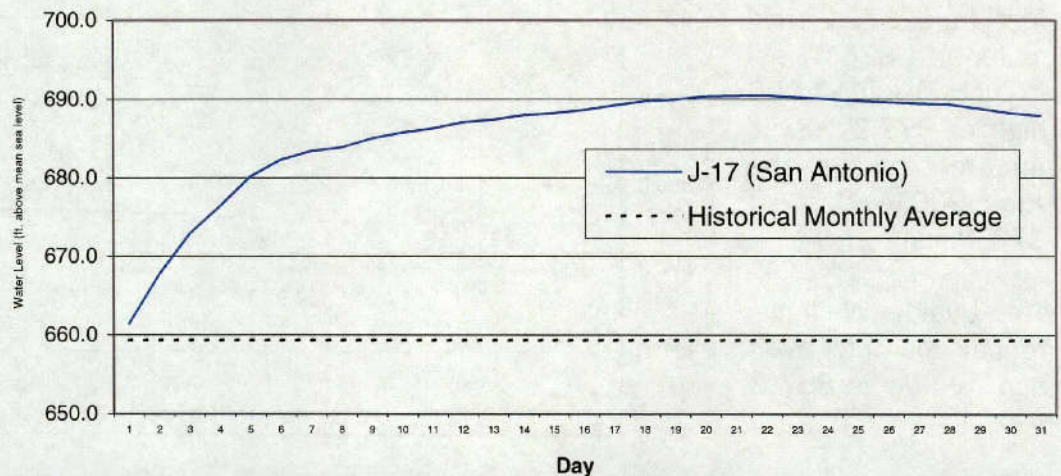
# Monthly Water Level & Springflow Report

## J-17 (San Antonio) Index Well—July 2002

The J-17 index well level average rose 28.8 feet from 656.6' above mean sea level (msl) in June to 685.4' msl in July. The July 2002 high of 690.5' is 22.7 feet above the July 2001 high of 667.8' msl.

The J-17 historical monthly average for July is 659.3' msl.

J-17 (San Antonio) Index Well - July 2002



## J-17 (San Antonio) Index Well—Combined Record for Two Wells: 1932-2002

	July 2002	July 2001	Historical Record	
Maximum	690.5	667.8	June 14, 1992	703.3
Minimum	661.5	656.3	August 17, 1956	612.5
Average	685.4	662.5	July (1932-2001)	659.3

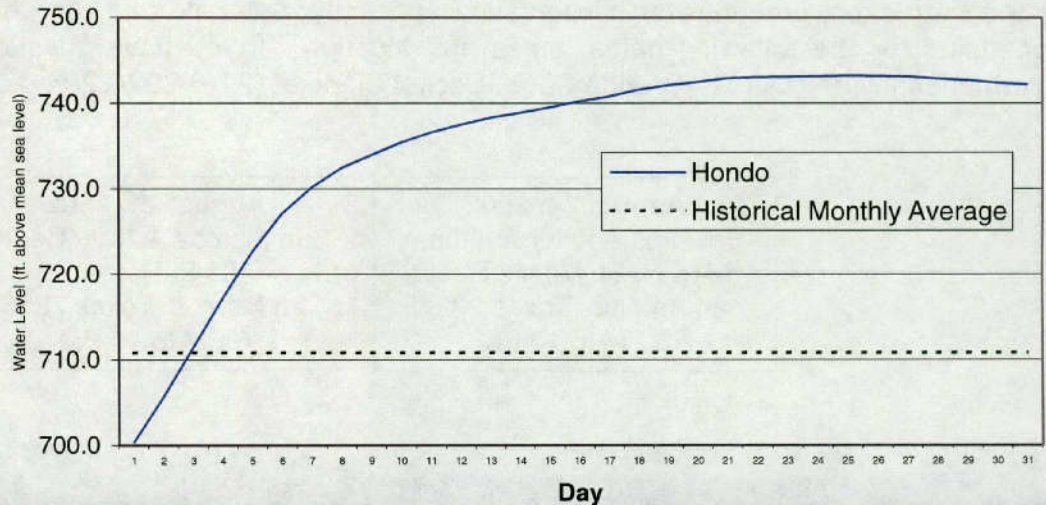


## Hondo Index Well—July 2002

The Hondo index well level average rose 40.0 feet from 695.1' msl in June to 735.1' msl in July. The July 2002 high of 743.2' msl is 30.2 feet above the July 2001 high of 713.0' msl.

The Hondo Well historical monthly average for July is 710.8' msl.

Hondo Index Well -  
July 2002



### Hondo Index Well—Historical Record: 1986-2002

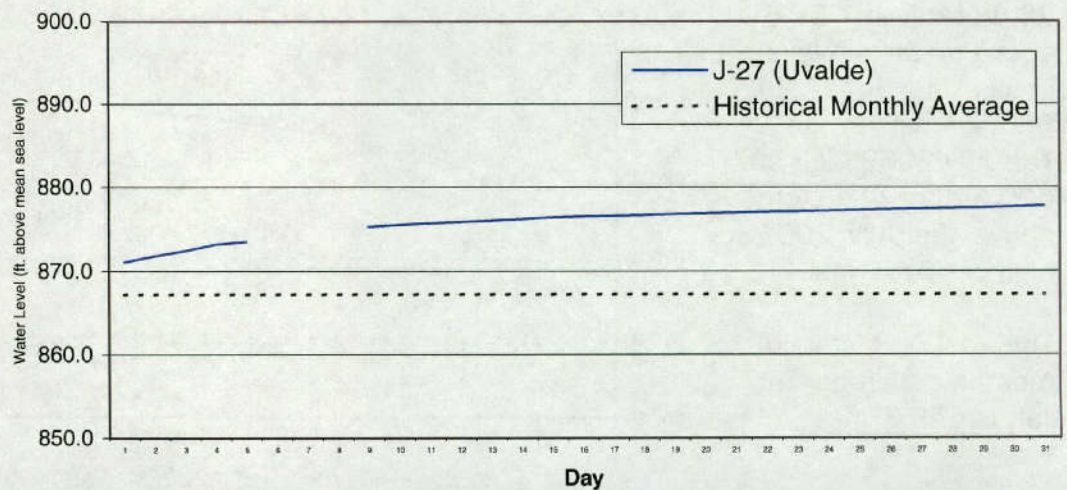
	July 2002	July 2001	Historical Record	
Maximum	743.2	713.0	June 14, 1992	779.0
Minimum	700.4	706.3	June 29, 1990	651.0
Average	735.1	710.1	July (1986-2001)	710.8

## J-27 (Uvalde) Index Well—July 2002

The J-27 index well level average rose 3.8 feet from 872.2' msl in June to 876.0' msl in July. The July 2002 high of 877.8' msl is 4.4 feet above the July 2001 high of 873.4' msl.

The Uvalde Well historical monthly average for July is 867.2' msl.

J-27 (Uvalde) Index Well -  
July 2002



### J-27 (Uvalde) Index Well Historical Record: 1940-2002

	July 2002	July 2001	Historical Record	
Maximum	877.8	873.4	June 15, 1987	889.0
Minimum	871.1	872.7	April 13, 1957	811.0
Average	876.0	873.2	July (1940-2001)	867.2

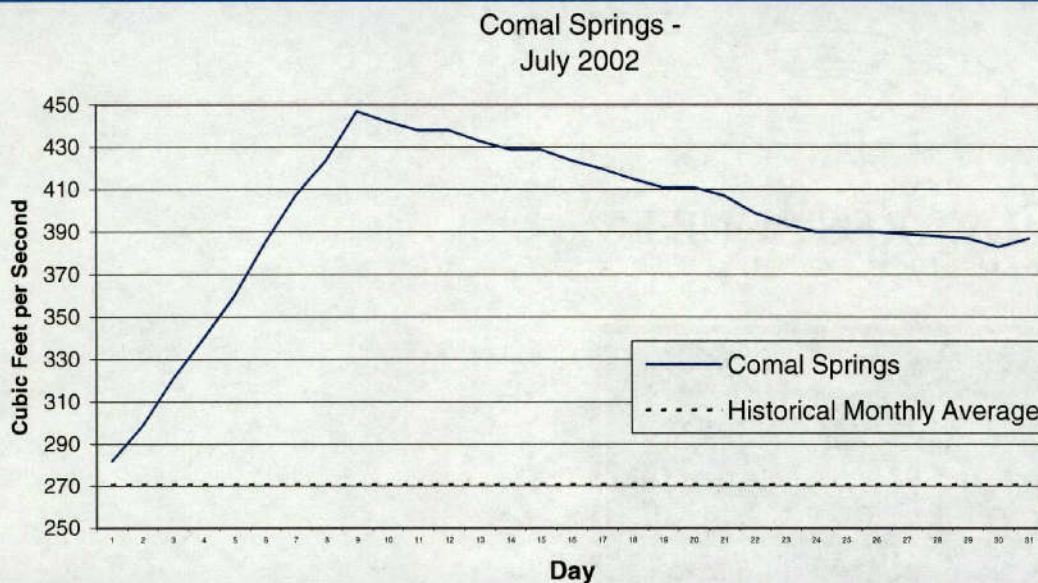
\*Because of heavy rains, recording equipment in this well did not operate between July 6<sup>th</sup> and July 8<sup>th</sup>.



## Comal Springs—July 2002

The Comal springflow reached a maximum flow of 447 cubic feet per second (cfs) on July 9<sup>th</sup>. The minimum flow occurred on July 1<sup>st</sup> at 282 cfs.

The July 2002 average is 395 cfs, which is 124.5 cfs above the historical monthly average of 270.5 cfs. Springflow values for July 1<sup>st</sup> through July 20<sup>th</sup> were estimated due to a large amount of stormwater inflow at the gauging station.



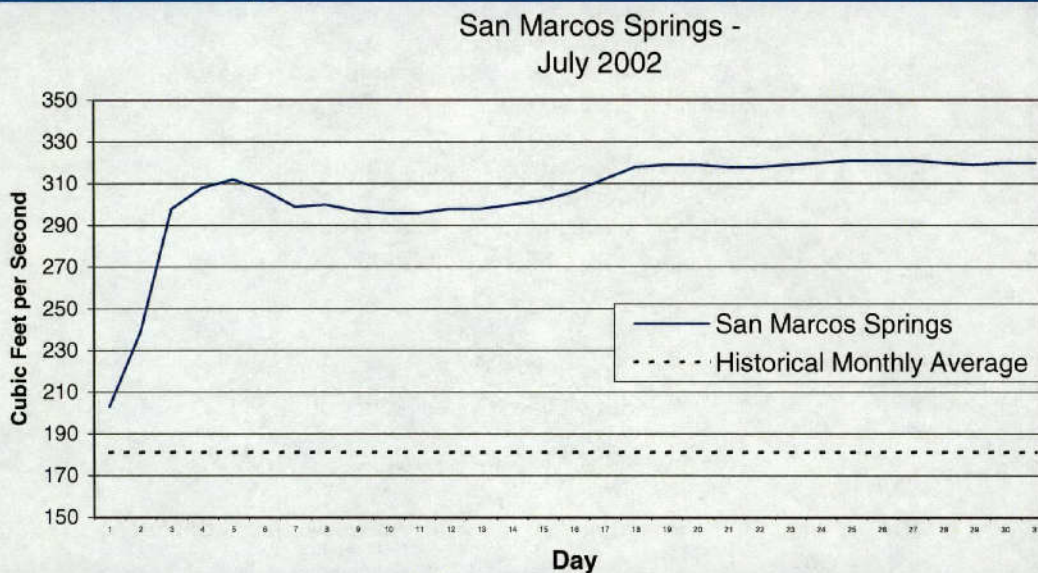
### Comal Springs Historical Record: 1927-2002

	July 2002	July 2001	Historical Record	
Maximum	447	325	October 14, 1973	534.0
Minimum	282	271	August 8, 1956	0.0
Average	395	299	July (1927-2001)	270.5

## San Marcos Springs—July 2002

The San Marcos springflow reached a maximum flow of 321 cfs on July 25<sup>th</sup>. The minimum flow occurred on July 1<sup>st</sup> at 203 cfs.

The July 2002 average is 305 cfs, which is 123.8 cfs above the historical monthly average of 181.2 cfs.



### San Marcos Springs Historical Record: 1956-2002

	July 2002	July 2001	Historical Record	
Maximum	321	201	March 12, 1992	451.0
Minimum	203	175	August 15, 1956	46.0
Average	305	189	July (1956-2001)	181.2





## EDWARDS AQUIFER AUTHORITY

Questions regarding meeting times and dates, please contact the Authority at 210.222.2204 or visit our website at [www.edwardsaquifer.org](http://www.edwardsaquifer.org)

### CALENDAR OF EVENTS FOR AUGUST & SEPTEMBER

AUGUST

- Wed. 8/21                    6PM Public Hearing, San Marcos Activity Center, San Marcos, Texas
- Tues. 8/27                    10 AM Habitat Conservation Work Group  
                                  11 AM Aquifer Management Planning Committee  
                                  2 PM Permits Committee
- Wed. 8/28                    10 AM Finance/Administrative Committee  
                                  2 PM R&T Committee  
                                  4 PM Ad Hoc Committee on Land Acquisition

SEPTEMBER

- Mon. 9/2                    Authority Offices Closed, Labor Day Holiday
- Tues. 9/3                    12 PM Executive Committee Meeting
- Tues. 9/10                    3 PM Board Meeting, Edwards Aquifer Authority Conference Center, San Antonio, Texas
- Tues. 9/24                    10 AM Habitat Conservation Work Group  
                                  11 AM Aquifer Management Planning Committee  
                                  2 PM Permits Committee
- Wed. 9/25                    10 AM Finance/Administrative Committee  
                                  2 PM R&T Committee  
                                  4 PM Ad Hoc Committee on Land Acquisition