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# EDWARDS AQUIFER AUTHORITY GENERAL MANAGER'S REPORT

April 2004

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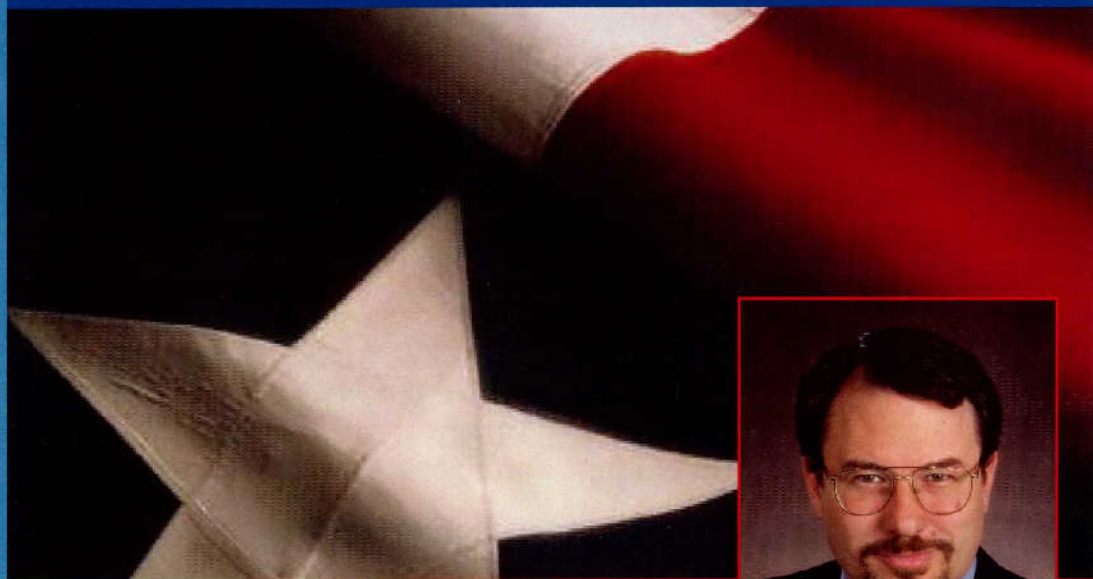
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Editor: Margaret Garcia

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.*



## Message from General Manager Gregory M. Ellis

### Authority General Manager Resigns

Announcing my resignation as General Manager was very difficult; I am going to really miss the Board, staff, and wonderful people of this region. But, I believe the time is right, and I think it's very important for the Authority to have a new General Manager on board well before the next legislative session begins. I have great faith the agency will continue to do a great job of achieving regional consensus on the issues we still face.

I am very proud of all the agency has accomplished during my tenure. Since I joined the Authority in 1997, we have achieved many milestones including final actions on over 900 groundwater withdrawal permit applications, implementing a region-wide Demand Management/Critical Period program, and approving tighter restrictions for petroleum storage tanks located on the Edwards Aquifer Recharge Zone. I have also enjoyed my service on the South Central Texas Regional Water Planning Group. This group has worked hard to plan for the future of this region, and I plan to continue my service there.

(Continued on next page)

## Authority General Manager Resigns

by Greg Ellis, General Manager

Over the next few months as the board searches for my replacement, I plan to continue working toward the goal of reaching final decisions on all Initial Regular Permit applications by the end of this year, and I am also hoping to see the board approve the Habitat Conservation Plan we have worked so hard to develop.

I have truly enjoyed my experience with the Authority both personally and professionally, and I appreciate the kind words and appreciation everyone has shown me over the years. I leave with the knowledge that this organization has a strong and dedicated professional staff capable of accomplishing any goal set for them.

Sincerely,  
Greg Ellis

## Authority Participates in the Medina County and Uvalde County Agriculture Fairs

by Margaret Garcia  
Program Manager – Public Affairs

For the second year in a row, the Authority was invited to be a presenter at the Medina County and Uvalde County Agriculture Fairs (Ag Fairs). The Ag fairs, conducted each year, are geared toward fourth grade school children and are sponsored by the county chapters of the Texas Agri-Women. Approximately 1,000 fourth graders attended the fairs and were given a demonstration of the Authority's Groundwater Simulator Model, and participated in discussions of how the Edwards Aquifer is important to agriculture in the region. Ms. Robin Tremallo, P.G., Environmental Coordinator, led the discussion and demonstrated the model. Upon completion of the session, each student received water conservation awareness materials. Teachers attending the sessions also received an Edwards Aquifer map for their classrooms.

For more information contact Margaret Garcia, Program Manager – Public Affairs.



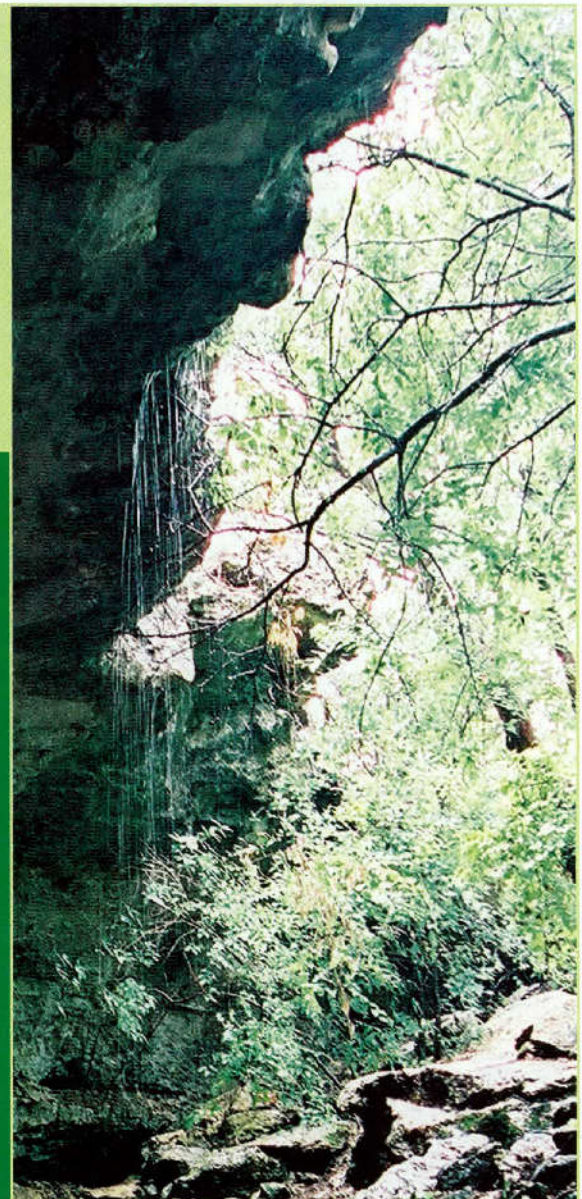
# Edwards Aquifer Optimization Program Update

by John Hoyt, Program Manager  
Aquifer Science

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 March, the Authority directors approved one OTS-related item, an amendment to a contract between the Authority and LBG-Guyton Associates (the Contractor) for the preparation of recharge models. Under the amendment, the Contractor will prepare recharge models for the upstream portions of the Nueces and Blanco river basins and incorporate those models into a model



(continued on next page)

## Edwards Aquifer Optimization Program Update *(continued)*

by John Hoyt, Program Manager – Aquifer Science

that is being prepared for seven other basins that contribute recharge to the San Antonio segment of the Balcones fault zone Edwards Aquifer. The proposed amendment will also have the Contractor refine existing recharge models for the area of the Edwards Aquifer Recharge Zone for the Nueces and Blanco river basins and incorporate the refined models into the model for the other seven basins. The completed recharge model is scheduled to be delivered to the Authority in March 2005.

In addition to the OTS-related item discussed above, the following OTS-related studies are currently underway or have been completed:



### Biologic Studies

- 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**)

### Flowpath/Modeling Studies

- Edwards Aquifer computer model development - MODFLOW
- Estimation of hydraulic parameters for the Edwards Aquifer management model – MODFLOW (**completed**)
- Development of management modules for the Edwards Aquifer MODFLOW model
- Karst aquifer modeling research (AWWARF study)
- Edwards Aquifer freshwater/saline water interface studies
- North Medina County Flow Path Study – Hydrologic budget analysis of Medina Lake and Diversion Lake
- North Medina County Flow Path Study – Helicopter electromagnetic survey in the vicinity of Seco Sinkhole (**completed**)
- North Bexar County Flow Path Study – Analysis of structural controls on the Edwards and Trinity Aquifers interface in the Camp Bullis Quadrangle and surrounding area (**completed**)
- North Bexar County Flow Path Study – Analysis of structural controls on the Edwards and Trinity Aquifers interface in the Helotes Quadrangle.
- North Bexar County Flow Path Study – Helicopter electromagnetic survey in the vicinity of Camp Bullis
- Tracer testing of aquifer flowpaths at Comal and San Marcos springs.
- Leona Formation geophysical survey (**completed**)
- Development of updated methods for calculating recharge to the Edwards Aquifer (pilot

(continued on next page)

- models for the Blanco and Nueces river basins, recharge area, **completed**)
- Statistical Analysis of Hydrologic Data (**completed**)
- Edwards Aquifer fracture/conduit study (**completed**)

#### Recharge Enhancement Studies

- Range management – paired watershed study at Honey Creek and Government Canyon State Natural areas
- Range management – augmenting aquifer recharge through brush management
- Evaluation of augmentation methodologies in support of in-situ refugia at Comal and San Marcos springs

If you have questions regarding the EAOP or studies listed above, please call John Hoyt, P.G., Program Manager – Aquifer Science.



## Aquifer Management Fees

by Brock Curry, Program Manager – Administrative

On January 13, staff issued 294 non-agricultural aquifer management fee invoices based on authorized use for 2004. These invoices were based on an aquifer management fee rate of \$29.00 per acre-foot. The Authority received 220 in-full payments totaling \$1,056,840 by the March 11, 2004, deadline. To date, 54 pumpers have elected to pay the fees monthly. As of March 31, the Authority has collected \$3,053,782 or 32%, of the amount budgeted.

Non-agricultural fees delinquent after March 11 accrue an interest penalty and are subject to enforcement proceedings. Twenty-one pumpers, whose fees total \$30,514, are now considered delinquent and will be forwarded to the board for enforcement.

Aquifer management fees for 2003 agricultural use were due January 31. As set forth in the Edwards Aquifer Authority Act, the aquifer management fee rate for agricultural users is \$2.00 per acre-foot. As of March 31, the Authority has received reports from 647 agricultural users totaling 82,352 acre-feet of groundwater used in 2003. To date, the Authority has collected \$162,706 in aquifer management fee revenue, or 81% of the amount budgeted.

## Real-time Precipitation Gauging System

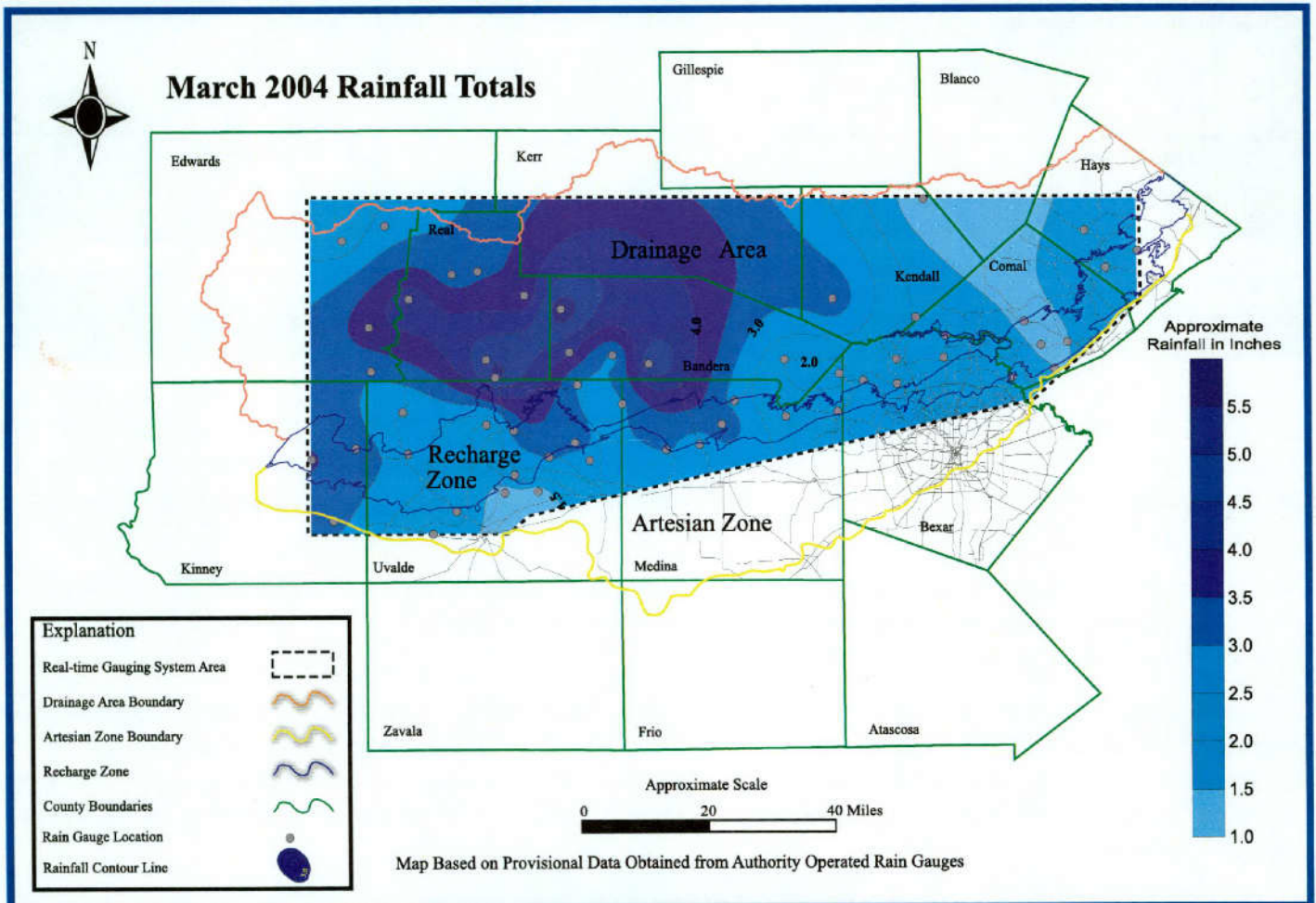
by Earl Parker, Program Manager – Investigations and Monitoring

The Authority operates 65 “real-time” precipitation gauges that transmit data to the Authority office every 6 minutes. The rain gauges are generally located over the Edwards Aquifer Recharge Zone and Drainage Area. Acquired data are used in aquifer recharge calculations, precipitation enhancement program evaluations, and a variety of research projects.

The attached map of the March 2004 rainfall totals, as recorded by the real-time gauging system, indicates a wide distribution of precipitation was recorded over the gauging system area. The average rainfall measured this month was 2.6 inches, with the highest measurement of 5.41 inches recorded in western Bandera County. Rainfall totals exceeding 3 inches were recorded over wide areas of Kerr, Bandera, and Real counties in the northwestern portion of the gauging area. Rainfall totals exceeding 1 inch were recorded over most all other portions of the gauging area, generally heavier in the western half of the region. Rainfall totals of less than 1 inch were recorded only in small parts of east-central Uvalde County.

If you have questions regarding the attached map or the Authority’s real-time precipitation gauging system, please call Earl Parker, Program Manager - Investigations and Monitoring.

## November 2003 Rainfall Totals



Valdina Farm Sinkhole - Photo by Kurt Merking.



## Inside the Edwards Aquifer with Geary M. Schindel, P.G., Chief Technical Officer

### Groundwater Conservation Districts and Their Role in Protecting Water Quality in Wells



Groundwater conservation districts are the preferred method for managing groundwater in Texas. These districts have a number of regulatory powers within their jurisdictional boundaries and can choose to regulate water withdrawals as well as create well spacing, metering, and well construction standards. These regulatory powers allow the groundwater conservation district to tailor rules specifically to conditions that occur within a specific district. In Texas, water well construction is also regulated by the Texas Department of Licensing and Regulation (TDLR). Currently, TDLR requires a minimum of 10 feet of casing to be placed in new domestic water wells and also requires that groundwater of undesirable quality be cased off.

Well casing helps to eliminate the possible collapse of the well bore and more importantly, with proper sealing of the annular space, prevents surface water runoff from entering the well. Casing is also used to isolate different zones of water quality in an aquifer. In many areas, 10 feet of casing is not sufficient to minimize the potential for surface contamination from entering a well. Many groundwater conservation districts have placed more restrictive standards on well construction than required by the TDLR, including increasing the amount of required casing and increasing the size of the annular space from three to four inches. For those areas without a groundwater conservation district, the minimum state regulations apply.

Some groundwater professionals believe that a layer of soil or bedrock above an aquifer protects it from contamination. However, many bedrock aquifers, and specifically the karstified Edwards and Trinity-Glen Rose aquifers, are noted for the widespread occurrence of fractures, conduits, and caves. These features allow for the rapid transport of surface contamination into wells and aquifers. This rapid travel time does not allow for the filtration or natural die-off of bacteria and pathogens. Increasing the amount of casing can help prevent the infiltration of contaminated surface water into a well. In addition, wells should be tested for bacteria every 6 to 12 months, if a well becomes cloudy

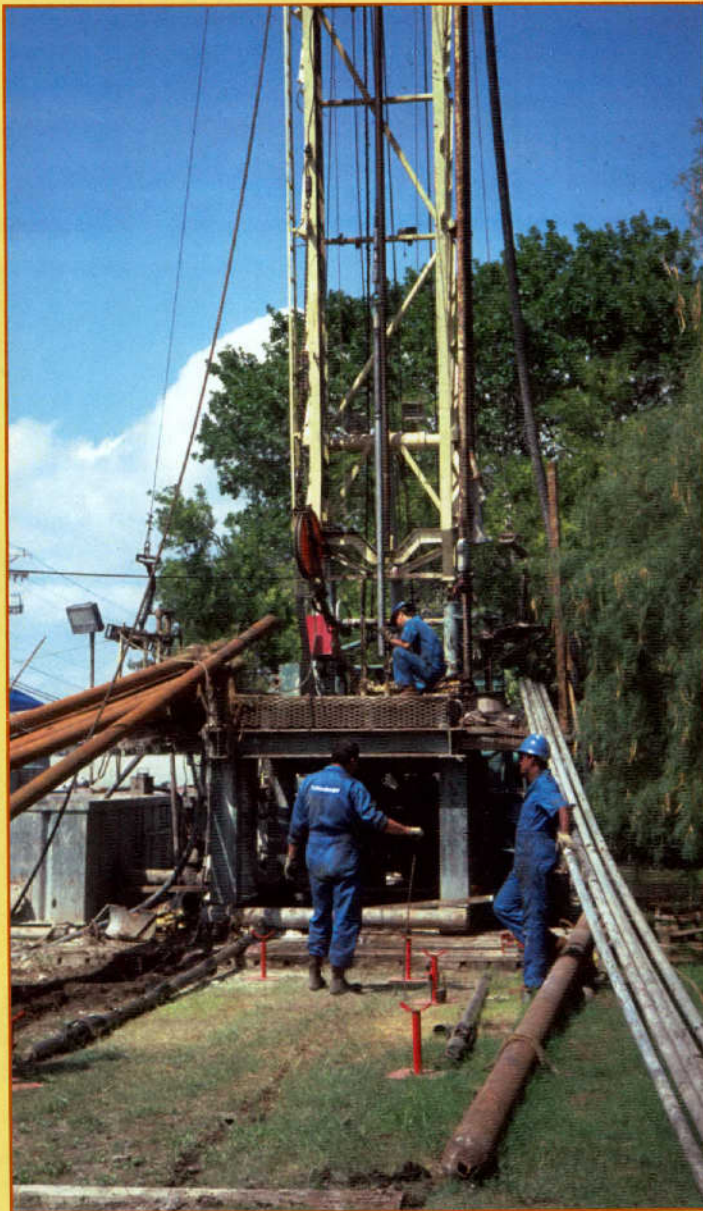
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## Inside the Edwards Aquifer *(continued)*

by Geary M. Schindel, P.G., Chief Technical Officer

after a heavy rain, has an undesirable odor or taste, or if the well head is ever covered by flood waters.

To the average home owner, water wells can be complicated structures. When drilling a new well, few individuals enlist the services of a hydrogeologist in developing specifications for domestic well construction and rather rely on the recommendations of a water well contractor. Many water well contractors are honest and accomplished professionals and few professions require such a wide range of skills as well drilling; however, occasionally, a contractor from another area may not be familiar with local conditions and doesn't incorporate sufficient casing in their bid. Competitive pressure among drillers can result in the minimum well construction standards



becoming the maximum as price is usually the deciding factor for many homeowners in selecting a water well contractor. Since well casing materials and installation can account for a significant part of the cost of a water well, home owners must be careful when comparing costs among drillers to make sure that they are comparing similar drilling methods and materials. In addition, it is a good idea to question the contractor on their experience drilling wells in the area, amount of casing recommended for a well, and potential situations which may require changes in the scope of work.

Groundwater conservation districts can help ensure the protection of water quality in domestic and livestock wells by creating district specific drilling regulations. These regulations should place minimum requirement on the amount of casing and annular space. Within the Edwards Aquifer Authority's jurisdictional area, well construction regulations require that well casings extend to the top of groundwater in water table wells and into the Edwards Limestone for artesian wells. The annular space must be grouted from the bottom to the top with a cement or bentonite mix. Additional well casing, coupled with frequent testing for bacterial water quality, will assure the well owner of a safe long-term source of drinking water.

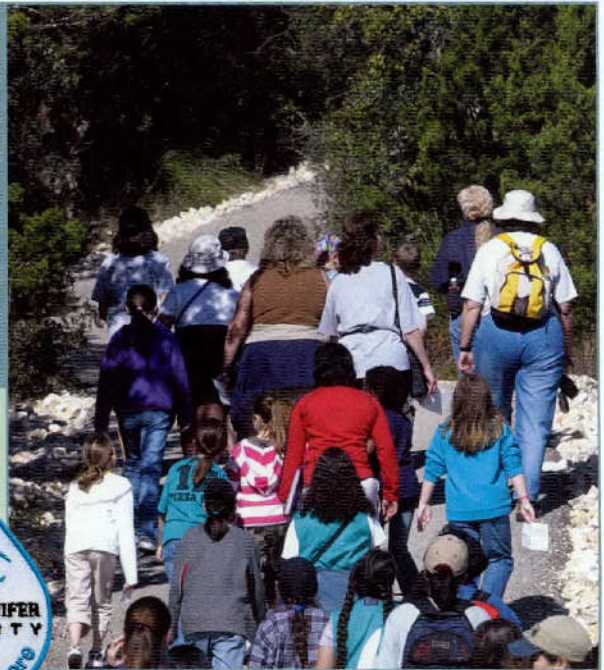


# Scouting with the Authority

by Margaret Garcia  
Program Manager – Public Affairs

On Saturday, March 6, the Edwards Aquifer Authority was proud to kick off a new educational program for area Junior Girl Scouts. The course, entitled "Explore the Edwards Aquifer," held at Eisenhower Park, was offered in cooperation with the Girl Scouts of San Antonio Area (GSSAA). Approximately 35 Junior Girl Scouts representing four troops from across Bexar County participated in the inaugural program. Robin Tremallo, Environmental Coordinator, and Becky Alvarez, Education Coordinator, led the scouts on a two-mile hike through the park. The scouts observed each of the three zones of the Edwards Aquifer, Edwards limestone, a sinkhole, and a cave; as well as a spectacular view of the Texas Hill Country and the San Antonio skyline. Upon completion of the course, each Girl Scout received the Edwards Aquifer Awareness Patch and water conservation materials including a shower-head flow meter and leak detection tablets for home toilets.

The course will be offered in cooperation with GSSAA each semester. For more information contact Margaret Garcia, Program Manager – Public Affairs



## Groundwater Management Plan

by Rick Illgner, Program Manager – Groundwater Management Strategies

In March, the Authority was notified by the Texas Water Development Board (TWDB) that the revised Groundwater Management Plan (GMP) was certified as administratively complete. A copy of the revised GMP is located on the Authority's web page [www.edwardsaquifer.org](http://www.edwardsaquifer.org) under "The Plans" and "Groundwater Management Plan." In 1997, the 75th Texas Legislature enacted Senate Bill No.1. Among the provisions in the bill is a requirement that groundwater districts develop and submit GMPs to the TWDB for review and certification. The Edwards Aquifer Authority (the Authority) complied with the TWDB requirement and the Authority's first GMP was certified by the TWDB on September 17, 1998. Additional TWDB rules require that the GMPs be revised or readopted every five years. While the sections that discuss population, supply and demand, description of the Authority region and the agency are similar to the 1998 GMP, the general concept for the 2003 GMP is new. The Authority's 1998 GMP served as a precursor to the Authority's Strategic Plan; it contained goals and objectives for both the management and operation of the Authority and the management of water resources. Recent clarification from TWDB staff indicates they are primarily interested in water resource management goals and objectives, and the Authority has now developed a Strategic Plan. Therefore, the revised 2003 GMP does not contain goals and objectives for the management and operation of the Authority. The GMP must address, to the extent practicable, seven goals established by the Legislature for the TWDB:

### TWDB Goals

1. Providing the most efficient use of groundwater
2. Controlling and preventing waste of groundwater
3. Addressing conjunctive surface water management issues
4. Addressing natural resource issues which impact the use and availability of groundwater, and which are impacted by the use of groundwater
5. Addressing drought conditions
6. Addressing conservation
7. Addressing subsidence (not applicable to the Authority)

## Conservation

by Rick Illgner, Program Manager – Groundwater Management Strategies

In December 2003, Authority directors approved Groundwater Conservation and Reuse rules (ch. 715, subch. C) to implement the Groundwater Conservation Plan (GCP). The purpose of the Authority's GCP is to encourage, promote, and document year-round conservation measures in the region. The development and implementation of regional and individual GCPs will assist the Authority and its applicants with successful management of groundwater consumption. The approved rules slightly modify the GCP approved in 2000; the Authority Board of Directors approved the amendments to the initial GCP at the February 2004 Board meeting. Under the adopted rules, authorized users with an Initial Regular Permit or an application for an Initial Regular Permit are required to submit individual groundwater conservation plans and irrigation assessment forms to the Authority. Only irrigators that do not meet a minimum of 60% on farm irrigation efficiency will be required to submit a groundwater conservation plan. All GCPs submitted to the Authority must implement specific Best Management Practices (BMPs) beginning this year. Authority staff completed two municipal workshops in San Marcos, TX on March 8 and at the Authority Conference Center in San Antonio on March 10. Forms necessary for filing individual conservation plans can be obtained online from the Authority's website or by contacting Mr. Javier Hernandez, Conservation Coordinator at the Authority's office.

## March 2004 Board Meeting

by Margaret Garcia, Program Manager – Public Affairs

### **Authority Directors Appoint District 4 Director; Approve Contract for Precipitation Enhancement**

At a special meeting held Tuesday, March 9, 2004, the Edwards Aquifer Authority Board of Directors interviewed three candidates for the Director – District 4 position in Bexar County. This position was vacated by Mr. Mike Beldon in December 2003. After a brief interview of each candidate, the board selected Ms. Bonnie Conner, who is a former member of the San Antonio City Council, where she served from 1999 – 2003. Mr. Douglas R. Miller, Chairman – Board of Directors, administered the oath of office to Ms. Conner, who will serve the constituents of District 4 until the next general election in November 2004.

At their regular meeting held later that day, the Edwards Aquifer Authority board also approved a contract to conduct a precipitation enhancement program in 2004, and voted to grant 17 groundwater withdrawal permits and deny permits to four applicants.

Authority directors voted to approve a new contract with the Southwest Texas Rain Enhancement Association for the operation of the Authority's 2004 Precipitation Enhancement Program in Uvalde County at a cost of \$37,951, or \$0.04 per acre (948,783 acres). In addition, the Authority is currently in the last year of a three-year contract with the South Texas Weather Modification Association, managed by the Evergreen Underground Water Conservation District, to perform cloud-seeding for the Authority in Bandera, Bexar, and Medina counties at a cost of \$86,825 per year, or \$0.04 per acre (2,170,627 acres). With this contract renewal, the Authority could spend as much as \$124,776 for precipitation enhancement for 2004.

In other action, Authority directors adopted an omnibus final order granting five groundwater withdrawal permits representing approximately 4,040 acre-feet of Edwards Aquifer groundwater withdrawal rights. The board approved agreed final orders and permits for twelve applicants who had previously filed protests on their proposed permits. After further review of the applicants' files, all parties to these contested permit proposals agreed on proposed permit amounts when the applicants provided additional documentation to substantiate their claims for more Edwards groundwater than originally proposed by staff. These agreed final orders represent approximately 3,868 acre-feet of Edwards groundwater. The board also denied permits to two applicants.

In other action, Authority directors referred three permit applications to the State Office of Administrative Hearings (SOAH). These applications will be tried before a SOAH Administrative Law Judge, who will recommend final action to the board on each.

### **2004 Precipitation Enhancement Program**

by Rick Illgner, Program Manager – Groundwater Management Strategies

In March, Authority directors approved a \$37,951 contract between the Authority and the Southwest Texas Rain Enhancement Association (SWTREA) to continue precipitation enhancement activities in 2004. The Authority first contracted with the Southwest Texas Rain Enhancement Association (SWTREA) in 2002 to conduct a precipitation enhancement program (PEP) with flights over Uvalde County.

In addition, the Authority also has a three-year contract with the South Texas Weather Modification Association (STWMA) approved in 2002 to provide similar services at a cost of \$86,825 per year with flights over Bandera, Bexar & Medina counties (2,170,627 acres) and is moving forward to implement the third and final year of the contract agreement.

For information regarding the Authority's Precipitation Enhancement Program, contact Bob Burns, Programs Coordinator.

## Well Construction Program

by Rick Illgner, Program Manager – Groundwater Management Strategies

In March, Authority staff issued 23 well construction and plugging permits. The total includes 5 exempt Edwards Aquifer domestic well permits, 1 exempt Edwards Aquifer domestic/livestock well permit, 1 non-exempt irrigation permit, 2 plugging permits, and 14 “drill through” the Edwards Aquifer permits.

For more information on the Authority’s Well Construction Program, contact Jeff Robinson, Regulatory Programs Coordinator.



## Groundwater Withdrawal Transfers

by Rick Illgner, Program Manager – Groundwater Management Strategies

In March, Authority staff processed 35 partial sales and lease transfers representing 5,482.882 acre-feet in Edwards Aquifer groundwater withdrawal rights. Since the inception of the transfer program, Authority staff has processed 1,013 partial sales and lease transfers representing 187,159.1125 acre-feet of groundwater withdrawal rights. Of the 1,013 partial sale and lease transfers completed, only 733 are currently active representing 134,620.5965 acre-feet. Active transfers include 121 sub-leased transfers representing 27,053.332 acre-feet. In addition, Authority staff processed 6 changes of ownership or miscellaneous transfers representing 2,215.1 acre-feet of Edwards Aquifer groundwater.

Transfer Description	Number of Transfers	Acre-Feet
March (3/1/04 - 3/31/04) Transfers (Partial Sales, Leases, Sub-leases, and Re-sales)	35	5,482.882
March (3/1/04 - 3/31/04) 100% Change of Ownership (Sale of Place of Use) or Miscellaneous Transfers	6	2,215.1
Total Number of Transfers (Partial Sales, Leases, and Sub-leases, and Re-sales) Completed as of 3/31/04	1,013	187,159.1125
Total Number of <b>Active</b> Transfers (Partial Sales, Leases, Sub-leases, and Re-sales) as of 3/31/04	733	134,620.5965
Total Number of <b>Active Sub-leased</b> Transfers as of 3/31/04	121	27,053.332
Total Number of <b>Active Re-sale</b> Transfers as of 3/31/04	100	3,450.392

Transfer forms are located at the Authority’s main office located at 1615 N. St. Mary’s Street. For more information, contact Naomi Esquivel, Program Associate.

## Initial Regular Permits

by Steven D. Walthour, Program Development

In March, the Authority's board of directors granted twelve applications for Initial Regular Permits representing 3867.719 acre-feet of Edwards's groundwater withdrawal rights per annum and tabled three AFO's under consideration until the next month's meeting. In addition, the Authority's board of directors granted five Omnibus Final Orders (OFO's) for Initial Regular Permits representing 4601.572 acre-feet of Edwards' groundwater withdrawal rights per annum. Authority directors also approved a final order denying applications for two initial regular permits.

In other business, Authority's directors considered an interim order for six requests for contested case hearings, referred three requests to the State Office of Administrative Hearings and tabled two requests for 30-days and one request for 60-days to allow the parties an opportunity to conclude settlement negotiations.

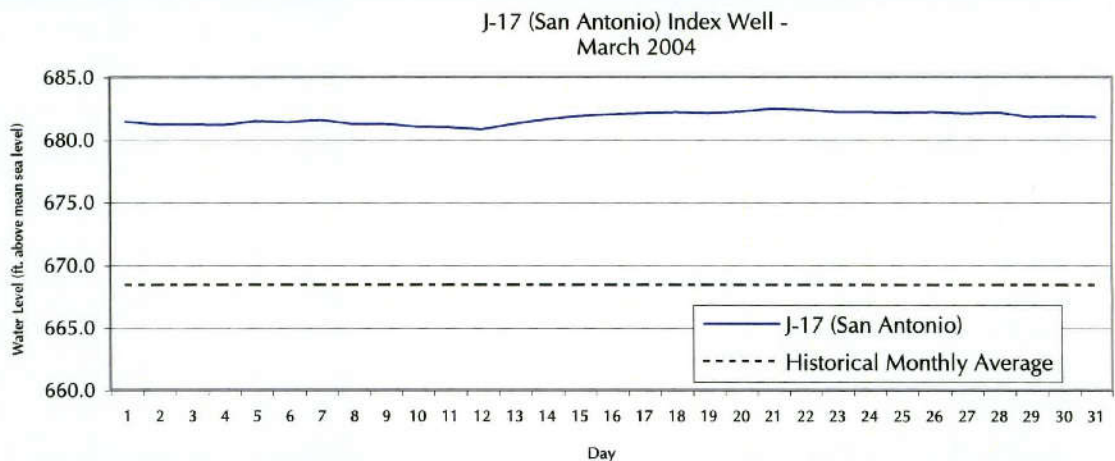
To date, the Authority has issued final decisions on 931 Initial Regular Permit applications representing approximately 85% of all applications filed with the Authority. The Authority has issued 740 permits and denied 191 permit applications representing a total of 519,722 acre-feet of Edwards Aquifer permitted groundwater withdrawal rights. Approximately 165 permit applications remain, representing approximately 51,504 acre-feet of Edwards' groundwater withdrawal rights.

For more information regarding initial regular permits, contact Bob Burns, Program Coordinator.

# MONTHLY WATER LEVEL & SPRINGFLOW REPORT

## J-17 (San Antonio) Index Well – March 2004

The J-17 index well level average in March 2004 was 681.7' above mean sea level (msl) – up 0.8 feet from last month's average of 680.9' msl. The March 2004 high was 682.4' (Mar 21) and the low was 680.8' (Mar 12), a range of 1.6 feet. The March 2004 average is 13.3 feet above the J-17 historical monthly average for March of 668.4' msl.



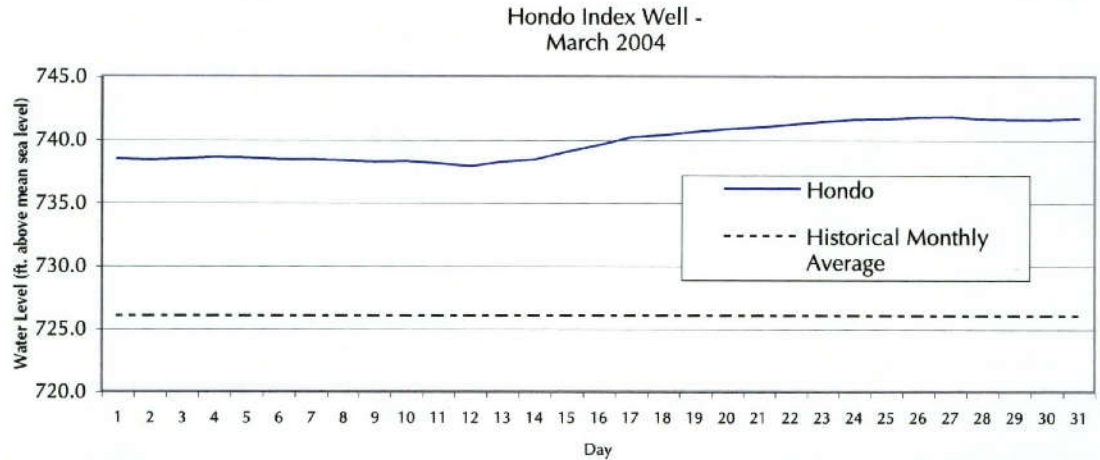
### J-17 (San Antonio) Index Well – Combined Historic Record for Two Wells: 1932-2003

	March 2004	March 2003	Historical Record	
<b>Maximum</b>	682.4	693.5	June 14, 1992	703.3
<b>Minimum</b>	680.8	691.5	August 17, 1956	612.5
<b>Average</b>	681.7	692.7	March (1932-2003)	668.4

Aquifer levels can be viewed on the Authority's web site at [www.edwardsaquifer.org](http://www.edwardsaquifer.org)

## Hondo Index Well – March 2004

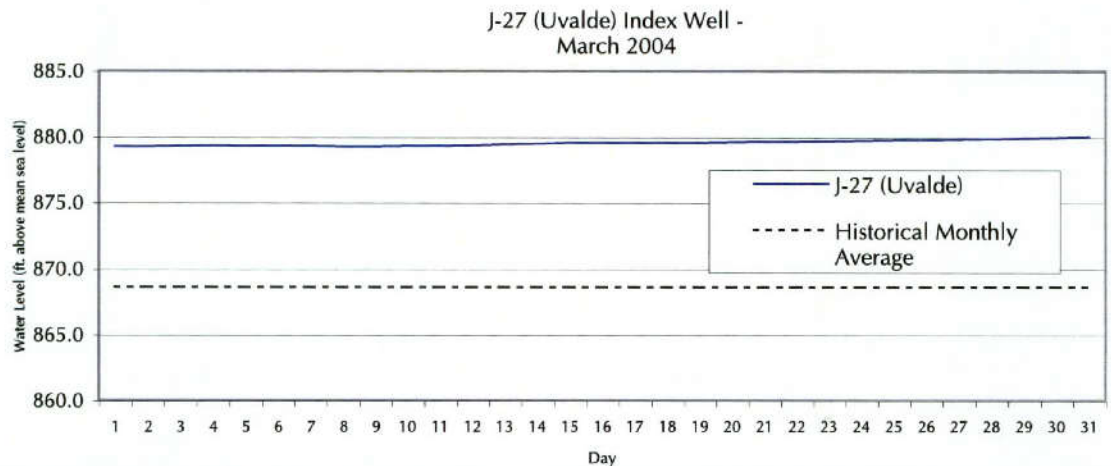
The Hondo index well level average in March 2004 was 739.8' above mean sea level (msl) – up 1.6 feet from last month's average of 738.2' msl. The March 2004 high was 741.8' (Mar 26) and the low was 737.9' (Mar 12), a range of 3.9 feet. The March 2004 average is 13.8 feet above the Hondo Well historical monthly average for March of 726.0' msl.



Hondo Index Well – Historic Record: 1986-2003				
	Mach 2004	March 2003	Historical Record	
<b>Maximum</b>	741.8	755.4	June 14, 1992	779.0
<b>Minimum</b>	737.9	753.0	June 29, 1990	651.0
<b>Average</b>	739.8	754.5	March (1986-2003)	726.0

## J-27 (Uvalde) Index Well – March 2004

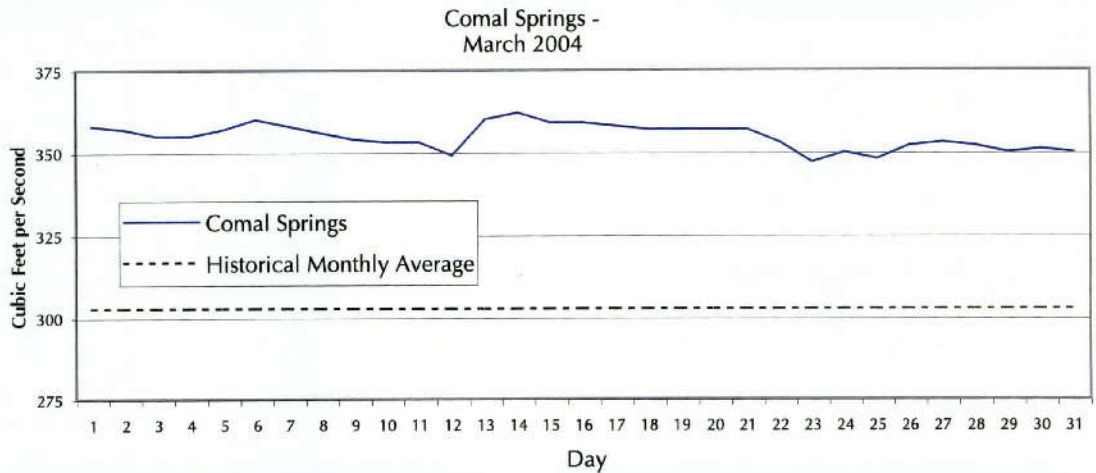
The J-27 index well level average in March 2004 was 879.5' above mean sea level (msl) – down .2 feet from last month's average of 879.7' msl. The March 2004 high was 880.0' (Mar 31) and the low was 879.2' (Mar 9), a range of 0.8 feet. The March 2004 average is 10.9 feet above the J-27 historical monthly average for March of 868.6' msl.



J-27 (Uvalde) Index Well – Historic Record: 1940-2003				
	March 2004	March 2003	Historical Record	
<b>Maximum</b>	880.0	882.5	June 15, 1987	889.0
<b>Minimum</b>	879.2	882.0	April 13, 1957	811.0
<b>Average</b>	879.5	882.3	March (1940-2003)	868.6

## Comal Springs – March 2004

Comal springflow averaged 355 cubic feet per second (cfs) in March 2004 – down 2 cfs from last month's average of 357 cfs. Comal springflow ranged from a maximum of 362 cfs (Mar 14) to a minimum of 347 cfs (Mar 23), a range of 15 cfs. The March 2004 average was 52.3 cfs above the historical monthly average of 302.7 cfs.

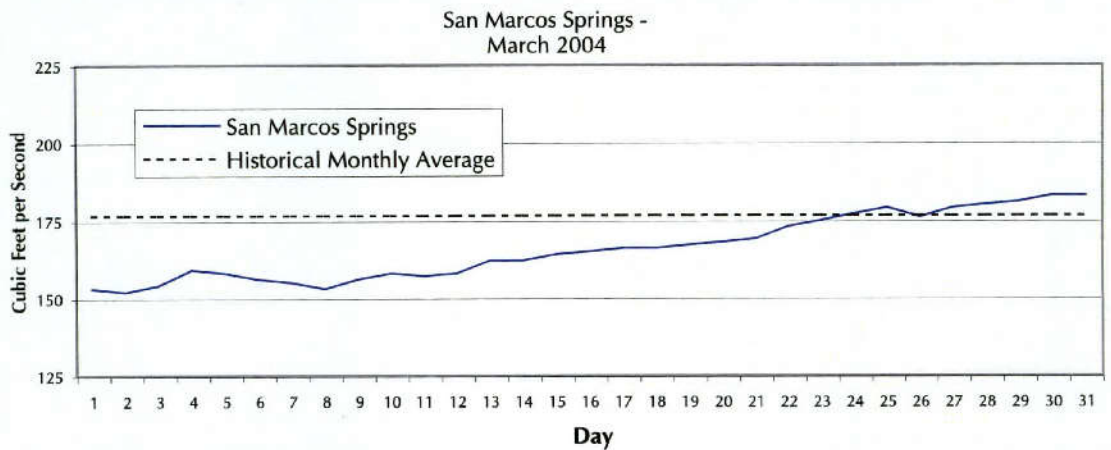


### Comal Springs Historic Record: 1927-2003

	March 2004	March 2003	Historical Record	
<b>Maximum</b>	362	442	October 14, 1973	534.0
<b>Minimum</b>	347	418	August 8, 1956	0.0
<b>Average</b>	355	427	November (1927-2002)	302.7

## San Marcos Springs – March 2004

San Marcos springflow averaged 166 cfs in March 2004 – up 4 cfs from last month's average of 162 cfs. San Marcos springflow ranged from a maximum of 183 cfs (Mar 30) to a minimum of 152 cfs (Mar 2), a range of 31 cfs. The March 2004 average was 10.5 cfs below the historical monthly average of 176.5 cfs.



### San Marcos Springs Historic Record: 1956-2003

	March 2004	March 2003	Historical Record	
<b>Maximum</b>	183	310	March 12, 1992	451.0
<b>Minimum</b>	152	288	August 15, 1956	46.0
<b>Average</b>	166	298	November (1956-2002)	176.5



**EDWARDS AQUIFER  
AUTHORITY**

1615 N. St. Mary's Street  
San Antonio, Texas 78215

210.222.2204 or 1.800.292.1047  
[www.edwardsaquifer.org](http://www.edwardsaquifer.org)

**BE AQUIFER AWARE**

**CALENDAR OF EVENTS FOR APRIL & MAY**

**APRIL**

Tues. 4/13	3 PM	Board Meeting, Edwards Aquifer Authority Conference Center, 1615 N. St. Mary's Street, San Antonio, Texas
Fri. 4/23		Battle of Flowers Day, EAA Offices Closed
Tues. 4/27	11 AM 1 PM 2 PM	Aquifer Management Planning Committee Permits and Enforcement Committee Legislative Committee
Wed. 4/28	11AM 1 PM 1:30 PM	Finance/Administrative Committee Ad Hoc Committee on Board Conduct R&T Committee

**MAY**

Mon. 5/3	12 PM	Executive Committee
Tues. 5/11	3 PM	Board Meeting, Edwards Aquifer Authority Conference Center, 1615 N. St. Mary's Street, San Antonio, Texas
Tues. 5/25	11 AM 1 PM 2 PM	Aquifer Management Planning Committee Permits and Enforcement Committee Legislative Committee
Wed. 5/26	11AM 1:30 PM	Finance/Administrative Committee R&T Committee
Fri. 5/31		Memorial Day Holiday, EAA Offices Closed

**Authority meeting times & dates are subject to change.**

Visit our website at [www.edwardsaquifer.org](http://www.edwardsaquifer.org) for up-to-the minute information on meeting times and dates.