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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.

EDWARDS AQUIFER AUTHORITY GENERAL MANAGER'S REPORT



Authority Directors Appoint Water Quality Task Force

At their regular monthly meeting held Tuesday, November 18, 2003, the Edwards Aquifer Authority Board of Directors approved appointing a 29-member water quality task force made up of stakeholders throughout the region. The goal of the task force is to provide recommendations to the board on the Authority's appropriate role in water quality protection regulation.

Chairman Beldon selected former Texas Senator and Texas Comptroller John Sharp to chair the committee. The rest of the membership is made up of people representing environmental groups, developer interests, water purveyors, technical groups, interested citizens, and agency personnel. We fervently hope this group will be able to determine how the EAA can be most effective in working with the Texas Environmental Quality Commission, the City of San Antonio, and other city and county governments to protect the Edwards Aquifer.

On the next page is a complete list of the committee membership.

(Continued on next page)

Water Quality Advisory Task Force Members

(Board-approved November 18, 2003)

Group	Name	Agency/Organization/Firm
Chairman	John Sharp	N/A
Citizens	Steve Long	N/A
	Nettie Patricia Hinton	N/A
Q.,	Jerry Green	N/A
1	Paul Edwards	N/A
En Strand R	Weir Labatt	N/A
1	Donze Lopez	N/A
	Edward Badouh	N/A
	Bob Heyen	N/A
and the second second	Bonnie Conner	N/A
Technical	Dr. Enos C. Inniss	University of Texas at San Antonio
	Weldon Hammond	University of Texas at San Antonio
Environmental	Jerry Morrisey	Sierra Club
	Eiginio Rodriguez	Smart Growth Coalition
	Gary Amaon	Texas Nature Conservancy
Same and	Darby Riley	Environmental Activist
Development	Gene Dawson, Jr.	Pape-Dawson
	Russ Johnson	Bracewell & Patterson
	Steve Hanan	Hanan Development Co.
Governmental	Commissioner Jay Millikin	Comal County
	Waiting on agency for appointment	Medina County
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	Commissioner Rodney Reagan	Uvalde County
1. I. I. I.	Waiting on agency for appointment	Hays County
	Rebecca Q. Cedillo	Bexar County
	Mayor Gary Middleton (Alternate - Jerry James)	City of Victoria
Purveyors	Leonard Young (Alternate – Scott Halty)	San Antonio Water System
	Mike Albach	Bexar Metropolitan Water District
Section 1	Paula Difonzo	New Braunfels Utilities
Contraction of the	Carol Barrett	City of San Marcos
Non-voting Resources	Mary Ambrose	Texas Commission on Environmental Quality
1910 1 10	Bill West	Guadalupe-Blanco River Authority
	Samuel Sanchez, R.S.	Metropolitan Health District
5	George Ozuna	United States Geological Survey
1.1.1.1.2	Dr. Larry D. McKinney	Texas Parks & Wildlife Department
Kur	Greg Rothe	San Antonio River Authority
	Steve Pratt (Alternate - Clay Chesney)	United States Environmental Protection Agency
	Phillip Wright	Natural Resource Conservation Service

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, missiondirected 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 November, the board did not consider any OTS-related items. On December 3, 2003, the Research and Technology (R&T) Committee considered four OTS-related items. The December 3, 2003 R&T Committee meeting served as the committee meeting that would normally be held in late November. The R&T Committee recommended that the board approve the following items:



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EDWARDS AQUIFER AUTHORITY

Edwards Aquifer Optimization Program Update (continued)

- by John Hoyt, Program Manager Aquifer Science
 - 1. A one year renewal of a contract between the Authority and BIO-WEST, Inc. for comprehensive and critical period monitoring to evaluate the effects of variable flow on biological resources in the Comal and San Marcos springs aquatic ecosystems. The renewal for 2004 will be the second and final one-year renewal that is allowed by the contract. Under the contract, BIO-WEST performs quarterly biologic monitoring in support of the development of the Authority's Habitat Conservation Plan. The contract work scope also outlines procedures for conducting additional monitoring events if critically low or critically high flows occur in the aquatic ecosystems.
 - 2. Continued participation, through 2004, in a cooperative agreement between the Authority and the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) for the evaluation of woody species best management practices in relation to water quality and quantity studies on water-sheds in the Government Canyon and Honey



Creek State Natural Areas. The original agreement is for eight years, ending in 2006, and requires annual board approval to continue funding for the preceding year. The primary focus of the study is to evaluate woody species best management practices relative to enhancing water quality and increasing aquifer recharge in rangeland watersheds.

- 3. A contract between the Authority and HydroGeoLogic, Inc. for the construction of a management module for the Edwards Aquifer MODFLOW model. The MODFLOW model is currently under construction by the U.S. Geological Survey and is scheduled to be completed in June 2004. The purpose of the management module project is to design, write, and test a new module that will enable MODFLOW to simulate a variety of water resource management scenarios, achieving optimal computational efficiency and minimizing the need for manipulating large MODFLOW input data sets.
- 4. The selection of Todd Engineers as a consultant to conduct an analysis of recharge and recirculation. Recharge and recirculation is a concept of optimizing a water resource using an infrastructure that could include recharge dams, storage reservoirs, pipelines, and other water storage and conveyance structures. If the board approves the selection, the General Manager will return to the committee and board with a contract to include a work scope, schedule, and budget.

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In addition the following OTS-related studies are currently underway or have been completed:

- 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.
- Karst aquifer modeling research (AWWARF study).
- 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.
- Electromagnetic survey in the vicinity of Seco Sinkhole (completed).
- Analysis of structural controls on the Edwards and Trinity aquifers interface in the Camp Bullis Quadrangle and surrounding area.
- Analysis of structural controls on the Edwards and Trinity Aquifers interface in the Helotes Quadrangle.
- Tracer testing of aquifer flowpaths at Comal and San Marcos springs.
- Leona Formation geophysical survey.
- Development of updated methods for calculating recharge to the Edwards Aquifer (Blanco and Nueces River basins completed).
- Statistical Analysis of Hydrologic Data (completed).
- Evaluation of augmentation methodologies in support of in-situ refugia at Comal and San Marcos springs.
- Edwards Aquifer fracture/conduit study.
- Range management paired watershed study at Honey Creek and Government Canyon State Natural areas.
- Range management augmenting aquifer recharge through brush management.

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



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 November 2003 rainfall totals, as recorded by the real-time gauging system, indicates that the highest rainfall totals were in western portion of the gauging system area. Just over 1.6 inches of rainfall was recorded in north central Uvalde County and central Real County. Less than one-half inch of rainfall was recorded over the most of the gauging system area with northern portions of Medina and Bexar Counties and central Hays County not recording any rainfall in November.

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

November 2003 Rainfall Totals





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

San Marcos Tracer Testing Initiative



Tracer testing is a powerful tool used in karst hydrology to determine groundwater flow paths, velocities, and potential vulnerability of groundwater to surface activities. In July 2003, Authority directors approved a contract with George Veni and Associates to work with the Authority on a regional tracer testing initiative. Activities over the next couple years will focus on the San Marcos, Comal and Hueco springs, the interaction between the Trinity and Edwards aquifers, as well as areas in northern Bexar, Medina, and Uvalde counties.

What constitutes a tracer test?

A tracer test is the successful injection and recovery of a known compound into water. The successful recovery of a tracing agent such as dye is usually dependent upon the effort expended in preparation before a test actually begins. Preparation for a tracer test includes the review of existing information on previous tracer tests; identification of wells and springs in the study area; extensive field work to identify suitable injection sites and monitoring locations; preparation of base maps and work plans; the notification and approval from various local water purveyors and state regulatory agencies; selection of the appropriate dyes and tracing quantities including sample media (water or charcoal), sampling frequency, analytical methods, and collection of background samples; etc.

The appropriate selection of dyes for water tracing is also critical. Tracer dyes have to be soluble in water, cheap, easily detected at low concentrations, and most importantly – safe for public health and the environment. The dyes used by the Authority have been approved by the U.S. Food and Drug Administration for use in food, drugs, and cosmetics and are not harmful to the environment. One of the dye compounds used by the Authority is also used in medical tests to look for scratches on the human eye. The Authority uses fluorescent dyes which also have the advantage of being detectable at extremely low concentrations – approximately 12 parts per trillion or 12 seconds in more than 100 years – far below the visual range of detection.

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Inside the Edwards Aquifer (continued) by Geary M. Schindel, P.G., Chief Technical Officer

The testing for the presence of dye occurs in water samples which can be collected by hand, or by using an automatic water sampler (autosampler). The autosampler is placed at a location such as a spring or well and samples are collected at specified times over many days. This allows us to monitor many locations with less manpower and helps to refine the time of first arrival of dye. Granular activated charcoal can also be placed in small mesh bags in water and used to absorb or "trap" the dye. The dye can then be extracted from the charcoal in the laboratory for analysis. While charcoal is cheaper than collecting and analyzing a number of water samples, it is generally used to determine the absence or presence of dye and not to determine dye concentrations or detailed groundwater velocity studies.

Water samples and charcoal "elutant" are analyzed by the Authority using a Perkin Elmer LS-50B scanning spectrofluorophotometer. This research grade instrument gives a remarkable ability to separate out more than one dye from a water sample, thereby allowing us to perform multiple tracer tests at one time and making more efficient use of manpower in the collection of field samples.

The San Marcos Tracer Test

The Authority will be initiating a tracer test in the San Marcos area within the next few weeks. The San Marcos tracer tests are designed to complement and refine work performed by Dr. Albert Ogden at the Edwards Aquifer Research and Data Center in the early 1980s. Advances in monitoring and analytical equipment will allow us to more accurately identify the relationship between injection and recovery points, develop a refined "breakthrough curve" of the dye, and to calculate the percent of

dye recovered to assess dilution of dyes in the aquifer. This later information may give us insight into how particular contaminants may behave if accidentally released into the aquifer.

Tracer testing would not be possible without the great cooperation the Authority has enjoyed with many local landowners who have allowed us access to their property for dye injection and monitoring. In addition, the City of San Marcos and the Texas State University Public Works Programs and Aquarena Center at Texas State University have provided invaluable assistance in allowing us access to their wells, springs, and facilities and assisting us in the collection of samples.

Over the next couple months, I'll report on the progress of the Authority's tracer testing program at San Marcos as well as other tests being performed in the region.



2004 Adopted Budget

by Brock Curry Program Manager – Administrative

At the November 18 meeting, the board adopted the 2004 operating budget. The budget totals \$13.9 million. The General Fund budget is \$12.8 million. In considering the proposed budget, the board made changes to the budget that enabled them to hold the non-agricultural aquifer management fee rate to the 2003 level of \$29.00 per acre-foot. The agricultural rate remains at \$2.00 per acre-foot.



The highlights of the 2004 budget include:

- Continuation of optimization technical studies \$1,600,000
- Other studies \$150,000 (new for 2004)
- Professional services for rules development/assessment \$740,000
- General counsel services \$575,000
- Special counsel services \$500,000
- WaterWise educational program \$400,000
- Professional services for completion of Habitat Conservation Plan (HCP) \$298,000
- 11 new positions (partial-year funding) \$235,133 (new for 2004)
- Basic hydrologic data collection \$232,000
- San Marcos surface water project \$224,000
- Aquifer recharge storage and recovery \$200,000
- HCP-related in situ refugia demonstration project \$132,000 (new for 2004)
- Precipitation enhancement program \$129,000
- Contested case professional services \$110,000
- Professional services to compare the effects of limited withdrawals vs. augmentation \$100,000
- Implementation of new recharge zone protection program \$89,000
- Professional legislative services \$82,000
- Telephone/computer upgrade interactive reporting \$60,000

The board did not approve funding for land acquisition (\$500,000) or for a new centralized office facility (\$2,000,000), both of which were part of the proposed budget presented for public comment.

The entire 2004 budget will soon be available on the Authority's web page: www.edwardsaquifer.org or by contacting the Authority.

Aquifer Management Fees

by Brock Curry, Program Manager – Administrative

Staff issued 235 invoices for non-agricultural aquifer management fees in December 2002 for 2003 groundwater use. These invoices, totaling \$9,371,461, were due in full by March 1 unless the permittee elected to pay monthly. As of November 30, the Authority has collected a total of \$8,622,330 in non-agricultural aquifer management fees or 93% of the amount budgeted for 2003. Seven (7) users with fees totaling \$12,491 did not meet the March 1 payment deadline and are now considered delinquent. Staff will be working with the board to proceed with enforcement action against those users.

Also in December, the Authority issued the 2002 annual use report form for all aquifer users to report their groundwater use. For agricultural users, this report form also serves as an invoice for aquifer management fees – both of which were due by January 31. As of November 30, the Authority has collected \$198,137 from agricultural users based on 99,068 acre-feet of groundwater used in 2002. The amount of revenue collected represents 99% of the 2003 budgeted revenue for agricultural aquifer management fees. Staff will also begin enforcement action against those agricultural users that have not reported their 2002 use or paid the fees due on that use.

2003 Precipitation Enhancement Program

by Rick Illgner, Program Manager - Groundwater Management Strategies

The Authority's Precipitation Enhancement Program was kicked off May 1, 2003. For the second year, the Authority has contracted with the South Texas Weather Modification Association (STWMA) and the Southwest Texas Rain Enhancement Association. The STWMA is contracted to fly cloud seeding missions over Bexar, Bandera and Medina Counties; the Southwest Texas Rain Enhancement Association flies cloud seeding missions over Uvalde County. The precipitation enhancement program benefits the constituents of these counties and surrounding counties by increasing rainfall within the Edwards Aquifer Recharge region thereby reducing demand on the Aquifer. The cost for the 2003 program is \$124,776. To date, year the Authority has expended \$95,125 or 76% of the 2003 contracted amount.



In September, a total of (70) flares were burned over four counties within the Edwards Aquifer Authority study area, representing 3,040 grams of Silver Iodine. The following rainfall data was collected from remote rain collection stations located in each of the cloud seeded counties.

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

Bandera	Bexar	Medina	Uvalde			
2.56" – 3.49" (3.37") avg.	2.9" – 4.05" (3.71") avg.	0" – 4.19" (2.58") avg.	0 – 4.41" (2.55") avg.			

Monthly Rainfall Data for Seeded Counties In September

November 2003 Board Meeting by Margaret Garcia, Program Manager – Public Affairs

At their regular monthly meeting held Tuesday, November 18, 2003, the Edwards Aquifer Authority Board of Directors approved a \$13.9 million 2004 operating budget. This budget requires an aquifer management fee of \$29 per acre-foot for all non-agricultural users, which is the same fee assessed for 2003. The aquifer management fee for agricultural users was limited by the 77th Texas Legislature to no more than \$2 per acre-foot. The Authority raises all revenue through aquifer management fees, assessed against the amount of Edwards Aquifer groundwater authorized to be withdrawn each year. Non-agricultural users are charged a fee based on their authorized pumping and agricultural users are charged a fee based on the amount of groundwater actually used.

In other action, Authority directors appointed a 29-member water quality task force made up of stakeholders throughout the region. The goal of the task force is to provide recommendations to the board on the Authority's appropriate role in water quality protection regulations. The task force is expected to complete its work in mid-2004.

Directors also approved proceeding with a feasibility analysis for an *in situ* refugia pilot project in the Comal Springs ecosystem. A "refugia" is a place of protection for endangered species, and normally requires a manmade facility such as an aquarium or fish hatchery. However, an *in situ* refugia is one that occurs "on-site," in this case within the Comal Springs ecosystem. This Phase 1 study will focus on the feasibility of the concept, including permit and contractual requirements, determination of the likely success of a project, development of additional study phase(s) with estimated costs, and actual project design. One of the goals of *in situ* refugia is to provide optimum conditions for survival and propagation of the species during even a severe drought. The study concept was presented by Mr. Ed Oborny of BioWest Inc., who stated that *in situ* refugia would only be a temporary solution and should only be used as a last resort.

The board also approved an agreed final order for three initial regular permits for 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. This agreed final order represents approximately 214 acrefeet of Edwards groundwater.

In addition, Authority directors approved a Proposal for Decision (PFD) brought from the State Office of Administrative Hearings (SOAH). The SOAH administrative law judge recommended the board deny the application of Mr. Danny McFadin. SOAH found that Mr. Danny McFadin did not withdraw or beneficially use groundwater from the Edwards Aquifer for irrigation during the historical period from June 1, 1972, through May 31, 1993. This action by the board represents the judicial authority granted to it by the Texas Legislature. The applicant may appeal the board's decision to a state district court.

In other news, Mr. Michael D. Beldon, Chairman of the Edwards Aquifer Authority Board of Directors, and Director District 4, Bexar County announced he will resign his position on the Authority board effective December 31, 2003. Mr. Beldon was appointed to the board by the Texas Legislature in 1995 and has served as Chairman since that time.

Lastly, the Authority reports the death of Mr. Kenneth Fiedler. Mr. Fiedler, born April 14, 1919, passed away in New Braunfels, on Sunday November 9, 2003. He represented Comal County on the South Central Texas Water Advisory Committee (SCTWAC). SCTWAC was established by the Texas Legislature in the Authority's enabling legislation is made up of representatives from the region and those downstream counties from the aquifer to interact with the Authority when issues related to downstream water rights are discussed.

Well Construction Program

by Rick Illgner, Program Manager - Groundwater Management Strategies

In November, Authority staff issued 21 well construction permits. This total includes 5 Edwards Aquifer domestic well permits, 1 Edwards Aquifer industrial agriculture well, 1 Edwards Aquifer livestock well, 1 Edwards Aquifer municipal well, 1 Edwards Aquifer well plugging permit. In addition, 12 permits were issued to drill through the Edwards Aquifer.

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 November, Authority staff processed 13 partial sales and lease transfers representing 1,337.528 acre-feet in groundwater withdrawal rights. Since the inception of the transfer program, Authority staff processed 898 partial sales and lease transfers representing 175,524.138 acre-feet of groundwater withdrawal rights. Of the 898 partial sale and lease transfers completed, only 641 are currently active representing 119,577.276 acre-feet. Active transfers include 99 sub-leased transfers representing 20,506.432 acre-feet. Also, Authority staff processed 6 change of ownership or miscellaneous transfers representing 525.192 acre-feet.

Transfer Description	Number of Transfers	Acre-Feet
November (11/1/03 - 11/30/03) Transfers (Partial Sales, Leases, Sub-leases, and Re-sales)	13	1,337.528
November (11/1/03 - 11/30/03) 100% Change of Ownership (Sale of Place of Use) or Miscellaneous Transfers	6	525.192
Total Number of Transfers (Partial Sales, Leases, and Sub-leases, and Re-sales) Completed as of 11/30/03	898	174,524.138
Total Number of <u>Active</u> Transfers (Partial Sales, Leases, Sub-leases, and Re-sales) as of 11/30/03	641	119,577.276
Total Number of <u>Active Sub-leased</u> Transfers as of 11/30/03	99	20,506.432
Total Number of <u>Active Re-sale</u> Transfers as of 11/30/03	94	3,326.392

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 November, the board of directors granted three applications for an Initial Regular Permit representing 214.356 acre-feet of Edwards's groundwater withdrawal rights per annum. The board accepted a Proposal for Decision issued by the Administrative Law Judge at the State Office of Administrative Hearings to deny an Initial Regular Permit to Danny McFadin, a rancher in Uvalde County.

To date the Authority has issued final decisions on 897 Initial Regular Permit applications representing approximately 82% of all applications filed with the Authority. The Authority has issued 711 permits and denied 186 permit applications. The Authority has issued a total of 501,928 acre-feet of Edwards Aquifer permitted groundwater withdrawal rights per annum. Approximately 198 protested permit applications remain, representing approximately 61,952 acre-feet of Edwards groundwater withdrawal rights.

The Authority's board granted a request by the Authority staff to postpone until February 2004 consideration of twenty-eight requests for contested case hearings for referral to the State Office of Administrative hearings.

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

MONTHLY WATER LEVEL & SPRINGFLOW REPORT

Aquifer levels can be viewed on the Authority's web site at www.edwardsaquifer.org

J-17 (San Antonio) Index Well – November 2003

The J-17 index well level average dropped 1.5 feet from 683.4' above mean sea level (msl) in October to 681.9' msl in November. The November 2003 high of 682.5' is 15.4 feet below the November 2002 high of 697.9' msl.

The J-17 historical monthly average for November is 666.6' msl.



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

	November 2003	November 2002	Historical Record	
Maximum	682.5	697.9	June 14, 1992	703.3
Minimum	681.1	694.6	August 17, 1956	612.5
Average	681.9	696.3	November (1932-2002)	666.6

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Hondo Index Well – November 2003

The Hondo index well level average dropped 1.4 feet from 742.1' msl in October to 740.7' msl in November. The November 2003 high of 741.4' msl is 19.8 feet below the November 2002 high of 761.2' msl.

The Hondo Well historical monthly average for November is 722.7' msl.



Day

	Hor Historic	ndo Index We Record: 198	ll – 6-2002	
	November 2003	November 2002	Historical Record	1
Maximum	741.4	761.2	June 14, 1992	779.0
Minimum	739.5	757.8	June 29, 1990	651.0
Average	740.7	759.4	November (1986-2002)	722.7

J-27 (Uvalde) Index Well – November 2003

The J-27 index well level average rose 0.4 feet from 879.7' msl in October to 880.1' msl in November. The November 2003 high of 880.3' msl is 2.6 feet below the November 2002 high of 882.9' msl.

The Uvalde Well historical monthly average for November is 868.4' msl.

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J-27 (Uvalde) Index Well – Historic Record: 1940-2002						
	November 2003	November 2002	Historical Record			
aximum	880.3	882.9	June 15, 1987	889.0		
nimum	879.8	881.8	April 13, 1957	811.0		
erage	880.1	882.5	November (1940-2002)	868.4		

Comal Springs – November 2003

Comal springflow reached a maximum flow of 374 cubic feet per second (cfs) on November 17th. The minimum flow occurred on November 7th at 357 cfs.

The November 2003 average was 364 cfs, which was 75.4 cfs above the historical monthly average of 288.6 cfs.



Day

	Comal Sp	rings Historic 1927-2002	Record:	
	November 2003	November 2002	Historical Record	
Maximum	374	461	October 14, 1973	534.0
Minimum	357	429	August 8, 1956	0.0
Average	364	436	November (1927-2002)	288.6

San Marcos Springs – November 2003

San Marcos springflow reached a maximum flow of 182 cfs on November 11th. The minimum flow occurred on November 30th at 165 cfs.

The November 2003 average was 174 cfs, which was 8.5 cfs above the historical monthly average of 165.5 cfs.



San	Marcos	Springs	Historic	Record:
		1956-2	002	

	November 2003	November 2002	Historical Record	
Maximum	182	346	March 12, 1992	451.0
Minimum	165	266	August 15, 1956	46.0
Average	174	316	November (1956-2002)	165.5

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

210.222.2204 or 1.800.292.1047 www.edwardsaquifer.org

BE AQUIFER AWARE

CALENDAR	OF	EVENTS	FOR	DECEMBER	&	ANUARY
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DECEMBER	Tues. 12/16 Wed Fri. 12/24-12/26	3 PM	Board Meeting, Edwards Aquifer Authority Conference Center, 1615 N. St. Mary's Street, San Antonio, Texas No Commitee Meetings Are Scheduled Christmas Holidays, EAA Offices Closed
JANUARY	Thur Fri. 1/1-1/2 Mon. 1/5 Tues. 1/13 Thur. 1/19 Tues. 1/27 Wed. 1/28	12 PM 3 PM 10 AM 11 AM 1 PM 11AM 1:30 PM	New Year Holidays, EAA Offices Closed Executive Committee Board Meeting, Edwards Aquifer Authority Conference Center, Uvalde Civic Center, 300 E. Main, Uvalde, Texas Martin Luther King Jr. Day, EAA Offices Closed Habitat Conservation Plan Work Group Aquifer Management Planning Committee Permits Committee Finance/Administrative Committee R&T Committee

Authority meeting times & dates are subject to change. Visit our website at www.edwardsaquifer.org for up-to-the minute information on meeting times and dates.