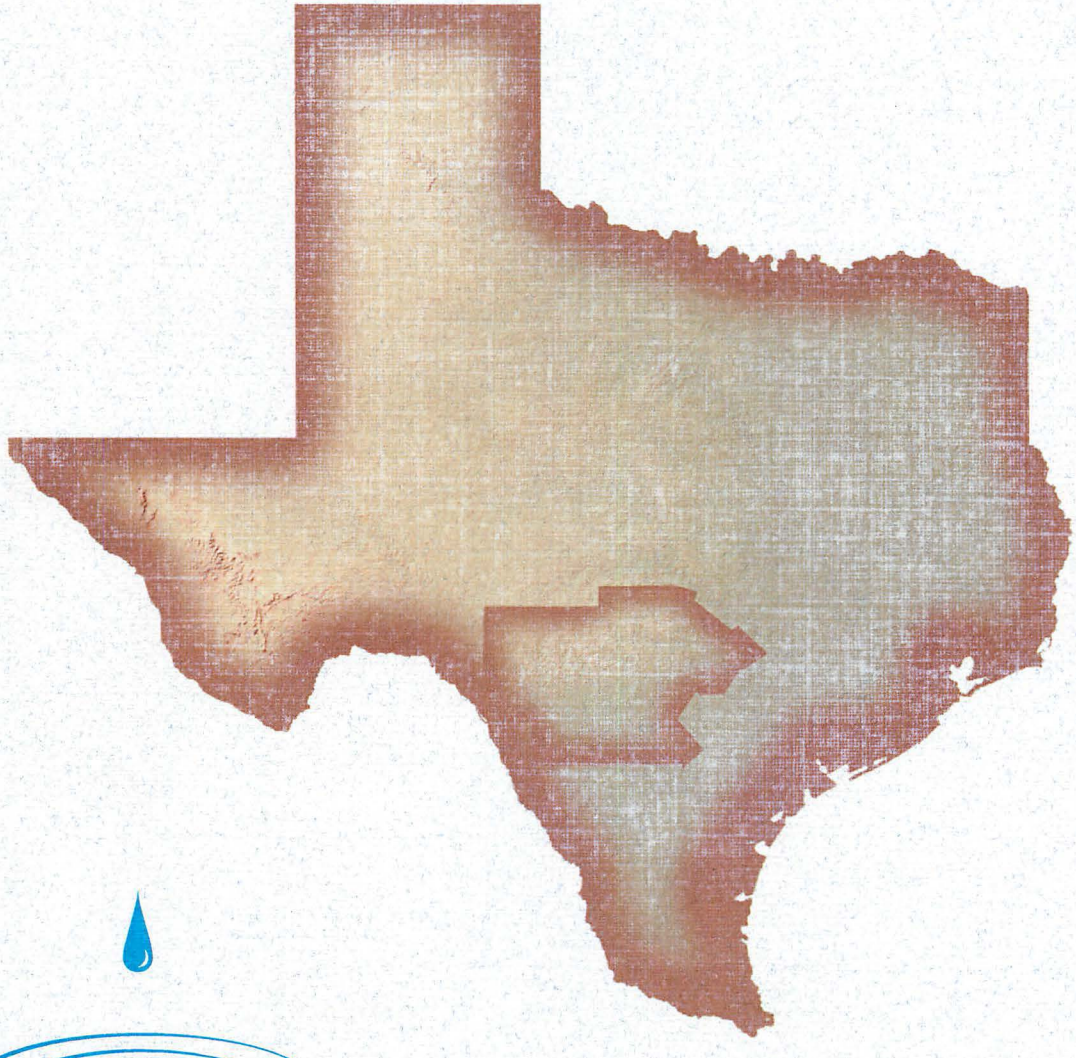
EDWARDS AQUIFER AUTHORITY

HYDROGEOLOGIC DATA REPORT FOR 2002



EDWARDS AQUIFER
AUTHORITY

REPORT 03-02

EDWARDS AQUIFER AUTHORITY HYDROGEOLOGIC DATA REPORT FOR 2002

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1.0 INTRODUCTION

The Balcones Fault Zone Edwards Aquifer in south central Texas is one of the most permeable and productive aquifers in the United States. The San Antonio segment of the aquifer, which is the subject of this report, extends from the groundwater divide near Brackettville in Kinney County, east to the city of San Antonio in Bexar County, then northeast to the groundwater divide near Kyle in Hays County—a distance of approximately 180 miles **(Figure 1.1)**. The aquifer is the primary source of water for approximately 1.7 million people in the region and provides most of the water for agriculture and industry. In addition, the aquifer discharges through a series of large springs that provide aquatic habitat for a number of threatened and endangered species. Springflow also provides a significant portion of water for downstream interests in the Guadalupe River basin.

The Edwards Aquifer Authority (the Authority) was created by the Texas Legislature in 1993 to replace the Edwards Underground Water District (EUWD) as a special regional management district in charge of the San Antonio segment of the Edwards Aquifer. The Authority's jurisdictional area encompasses all or parts of eight counties including Uvalde, Medina, Atascosa, Bexar, Comal, Guadalupe, Hays, and Caldwell counties **(Figure 1.1)**. The Authority is governed by a 17-member board of directors, with voting members elected to represent 15 districts across the Authority's region and two non-voting members appointed by other entities. Directors represent agricultural, industrial, domestic, municipal, spring, and downstream user groups. The Legislature also created a South Central Texas Water Advisory Committee (SCTWAC) to interact with the Authority when issues related to downstream water rights are being addressed.

The Legislature mandated the Authority take all necessary measures to effectively manage the resource to ensure domestic and municipal water supplies, to promote the operation of existing agriculture and industry, to protect terrestrial and aquatic habitat, and to sustain the economic development of the region. To accomplish these goals, the Authority is vested with all of the "powers, rights, and privileges necessary to manage, conserve, preserve, and protect the Edwards Aquifer, and to increase the recharge of, and prevent the waste or pollution of water in, the aquifer."

This report presents the results of the Authority's Edwards Aquifer data collection program for calendar year 2002. The Authority and cooperating agencies collected a wide variety of data regarding the Edwards Aquifer including water levels, water quality samples, precipitation measurements, and stream and spring discharges. In addition, the report contains historical annual data for the period of record (1934-2002). Chapters 2 through 7 describe each type of data that were collected, and Chapter 8 contains a summary of the year. Chapters 9 and 10 contain definitions and references, respectively.

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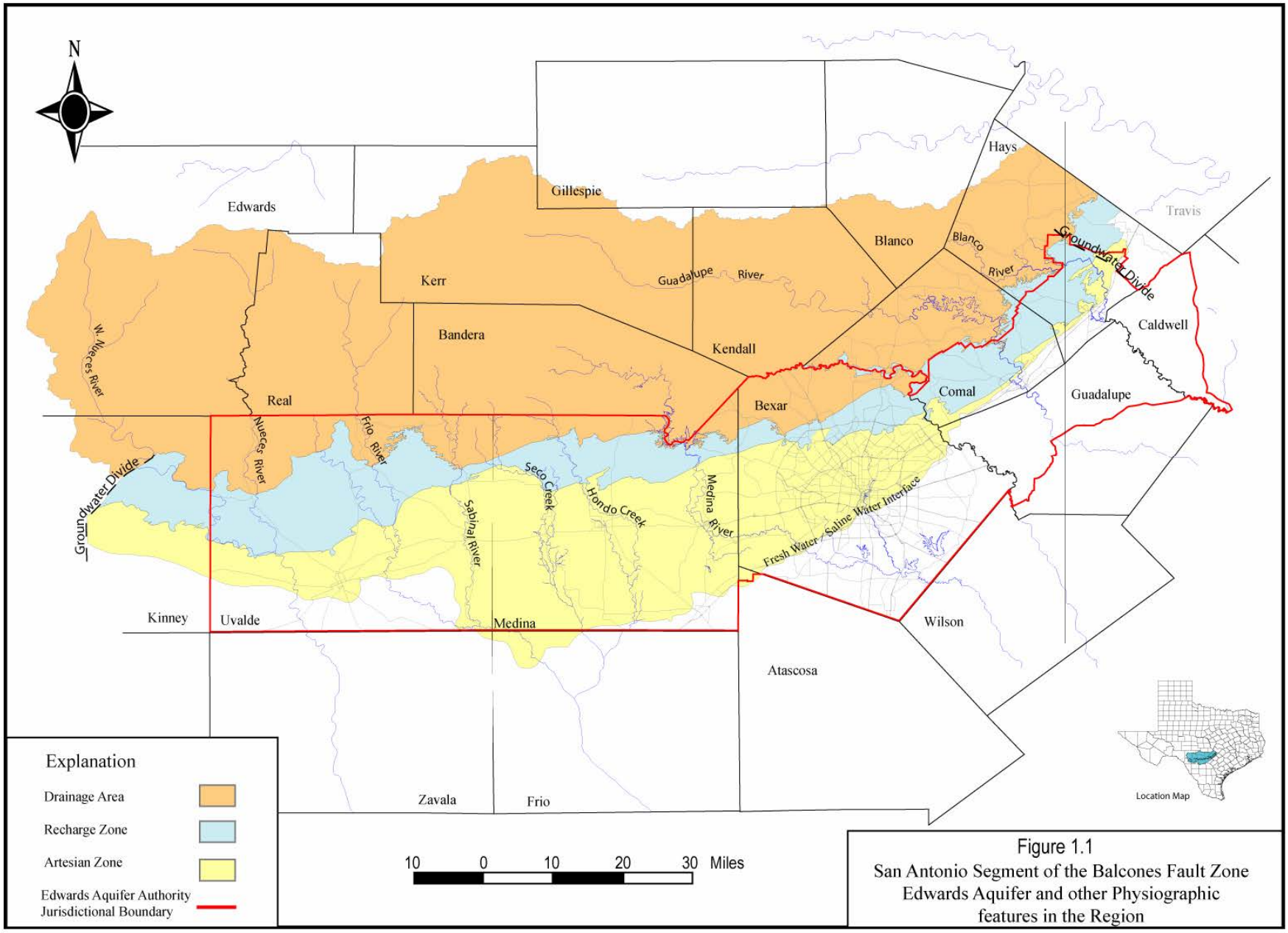


Figure 1.1
San Antonio Segment of the Balcones Fault Zone
Edwards Aquifer and other Physiographic features in the Region

2.0 HYDROGEOLOGY OF THE EDWARDS AQUIFER

The Balcones Fault Zone Edwards Aquifer in south central Texas is one of the largest and most important karst aquifer systems in the United States. Generally, the water quality in the aquifer is among the best in the United States. The aquifer extends through parts of Kinney, Uvalde, Medina, Frio, Atascosa, Bexar, Comal, Guadalupe, and Hays counties and covers an area approximately 180 miles long and 5 to 40 miles wide. The aquifer is the primary water source for much of this area including the City of San Antonio. Historically, the cities of Uvalde, San Antonio, New Braunfels, and San Marcos were founded around large springs that flow from the aquifer. As the region grew, wells were drilled into the aquifer to supplement the water supplied by the springs. In addition, the Edwards Aquifer is the principal source of water for agriculture and industry in the region.

The Edwards Aquifer is contained within the Cretaceous age Edwards Group limestone (Edwards Limestone) and associated units. The aquifer is generally capped by the Del Rio Clay and overlays the Glen Rose Formation (upper unit of the Trinity Aquifer). The Edwards Limestone and associated units range from 450 to over 600 feet thick in the region. A series of faults in the Balcones Fault Zone has exposed the Edwards Limestone at the surface along the southern boundary of the Texas Hill Country. Down faulting has dropped the Edwards Limestone to great depths below the surface along the aquifer's southern boundary. In some areas, fresh water can be found in the Edwards Limestone as much as 4,000 feet below the surface.

Water circulates through the Edwards Aquifer as part of the hydrologic cycle from recharge areas to discharge points (springs and wells). There are approximately 1,200 square miles of Edwards Limestone exposed at the ground surface, which comprises the recharge zone of the aquifer. Streams flow south from the drainage area (the Texas Hill Country) and lose all or most of their baseflow as they cross the recharge zone. In addition, a portion of the rainfall that falls directly on the recharge zone also enters the aquifer. Groundwater moves through the aquifer and ultimately discharges from a number of locations such as Leona Springs in Uvalde County; San Pedro and San Antonio springs in Bexar County; Hueco and Comal springs in Comal County; and San Marcos Springs in Hays County. In addition, domestic, municipal, agricultural, and industrial wells throughout the region discharge water from the aquifer. The residence time of water in the aquifer ranges from a few hours or days to many years depending upon depth of circulation, location, and other aquifer parameters.

The Edwards Aquifer is a karst aquifer that is characterized by the presence of sinkholes, sinking streams, caves, springs, and a well-integrated subsurface drainage system. It is one of the most productive groundwater systems in the United States, characterized by extremely productive water wells and high spring discharges. The aquifer exhibits extremely high (cavernous) porosity and permeability which is characteristic of many karst aquifers. In contrast, aquifers that occur in sand and gravel or in bedrock, such as sandstone, have a much lower permeability. The Edwards Aquifer transmits very large volumes of water, enabling groundwater levels to respond quickly to rainfall (recharge) events.

Historically, water quality in the Edwards Aquifer has been protected by its great depth below population centers and undeveloped land in the recharge zone and drainage area. However; there are many potential threats to the quality of water in the aquifer from various sources including the transport and use of hazardous materials and other chemicals on the recharge zone, abandoned water wells, and urban non-point runoff. The high porosity and permeability of the Edwards Aquifer allows inflow of contaminants from the ground surface with little or no filtration.

3.0 GROUNDWATER LEVELS

The Authority currently maintains a groundwater level monitoring network from eastern Kinney County to central Hays County. **Figures 3.1 and 3.1a** indicate the locations of the Authority's observation well network within the Edwards Aquifer region. The water level observation network includes both the water table (unconfined) and the artesian (confined) zones of the Edwards Aquifer, and water levels are monitored through manual measurements, and continuous recorders. All water level measurements are recorded in feet above mean sea level (msl). Many of the wells have at least partial historical records dating back to the 1930s. Water levels were measured manually until the United States Geological Survey (USGS) introduced continuous water level recorders in some of the observation wells in the 1930s. More recently, electronic data loggers are replacing the old drum recorders.

In 2002, the Authority's Water Level Data Collection Program consisted of 39 continuous recorder-equipped observation wells and periodic manual (tapedown) measurements from 17 observation wells. The digital recorders measure water levels at 15-minute intervals with either a float device or a pressure transducer. The data are recorded by the equipment at the site and then downloaded during a periodic site inspection or by modem. To augment the water level observation network, Authority staff measures water levels at 17 observation wells on a monthly basis and approximately 200 additional wells under a synoptic water level monitoring program three times each year. These periodic measurements are made manually with steel tape and electric line measuring devices. Water level data collected by the Authority are forwarded to interested federal, state, and regional agencies.

The Authority and its predecessor, the EUWD, have also collected water level data from the Trinity Aquifer in northern Bexar County since 1991 and the Leona Aquifer in southern Uvalde County since 1966. Water level monitoring of the Edwards Aquifer and associated hydrogeologic units add to the base of scientific knowledge and helps in the management of this regional water resource.

Historical water level trends, precipitation measurements, and discharges from springs and wells are used as a basis for projections of future aquifer level and spring discharge trends. Rising water levels generally indicate that the amount of water recharging the aquifer is greater than the amount being discharged through springs and wells. During droughts or when there is a high demand for water, water levels and springflows generally decline, which reflects greater groundwater discharge than groundwater recharge. **Table 3.1** lists the annual records of high and low water levels measured in five selected Edwards Aquifer observation wells.

Water levels are typically highest in the spring and then decline during the summer before rebounding in the fall and winter. However, in 2002, water levels declined between January and late June. Near the end of June, water levels began to rise in response to heavy rainfalls in late June and early July. The maximum decrease in water levels at the Bexar County index well (AY-68-37-203, or J-17) in 2002 was 34.8 feet (684.8 feet above msl on January 1st to 650.0 feet above msl on June 27th). Water levels then increased 47.9 feet during the period between June 27th and November 10th (from 650.0 feet above msl on June 27th to 697.9 feet above msl on November 10th). Similar increases in water levels were seen in most of the index wells over the same period as a result of widespread rainfall in the second half of 2002. **(Appendix A)**.

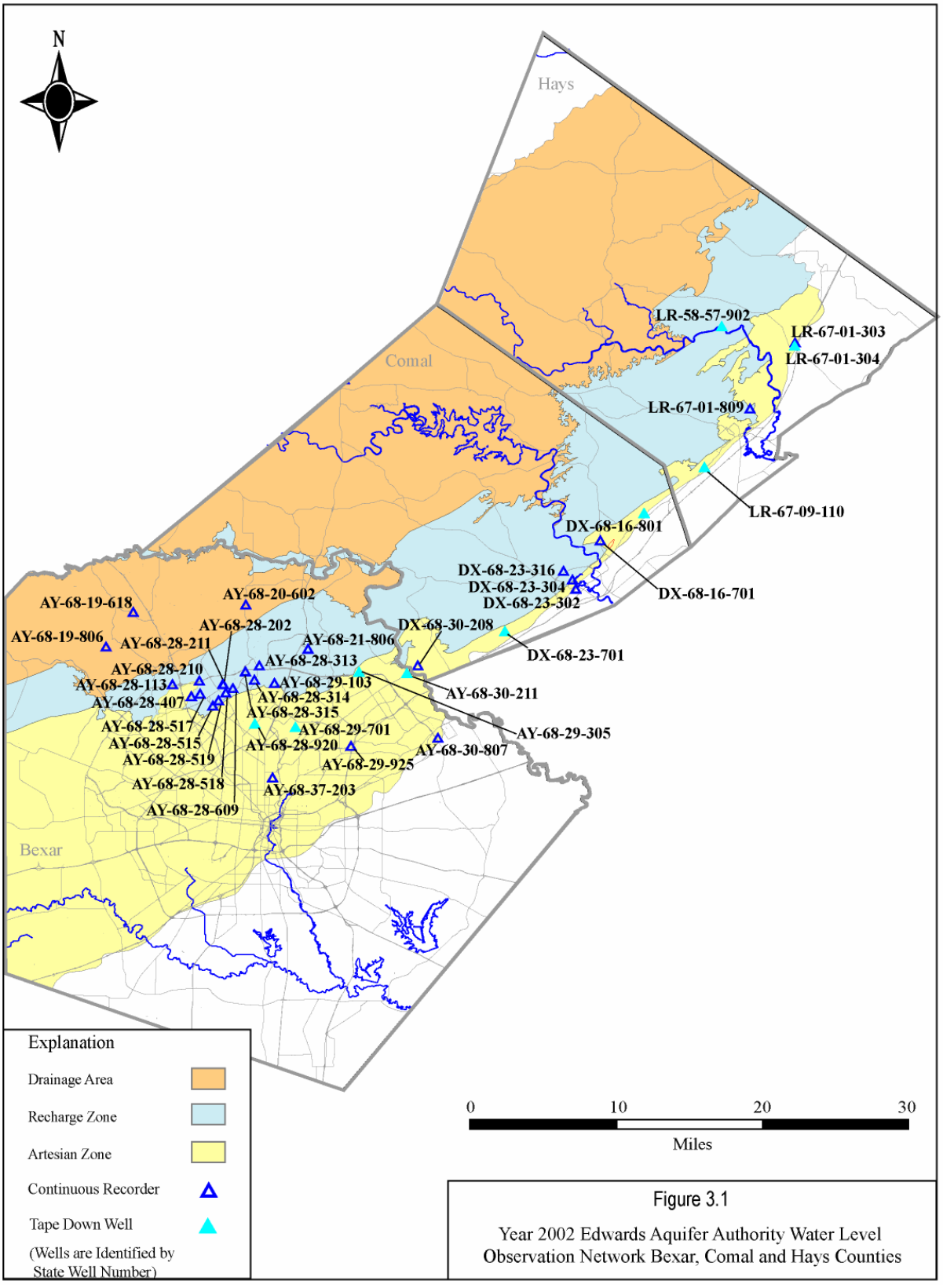


Figure 3.1

Year 2002 Edwards Aquifer Authority Water Level Observation Network Bexar, Comal and Hays Counties

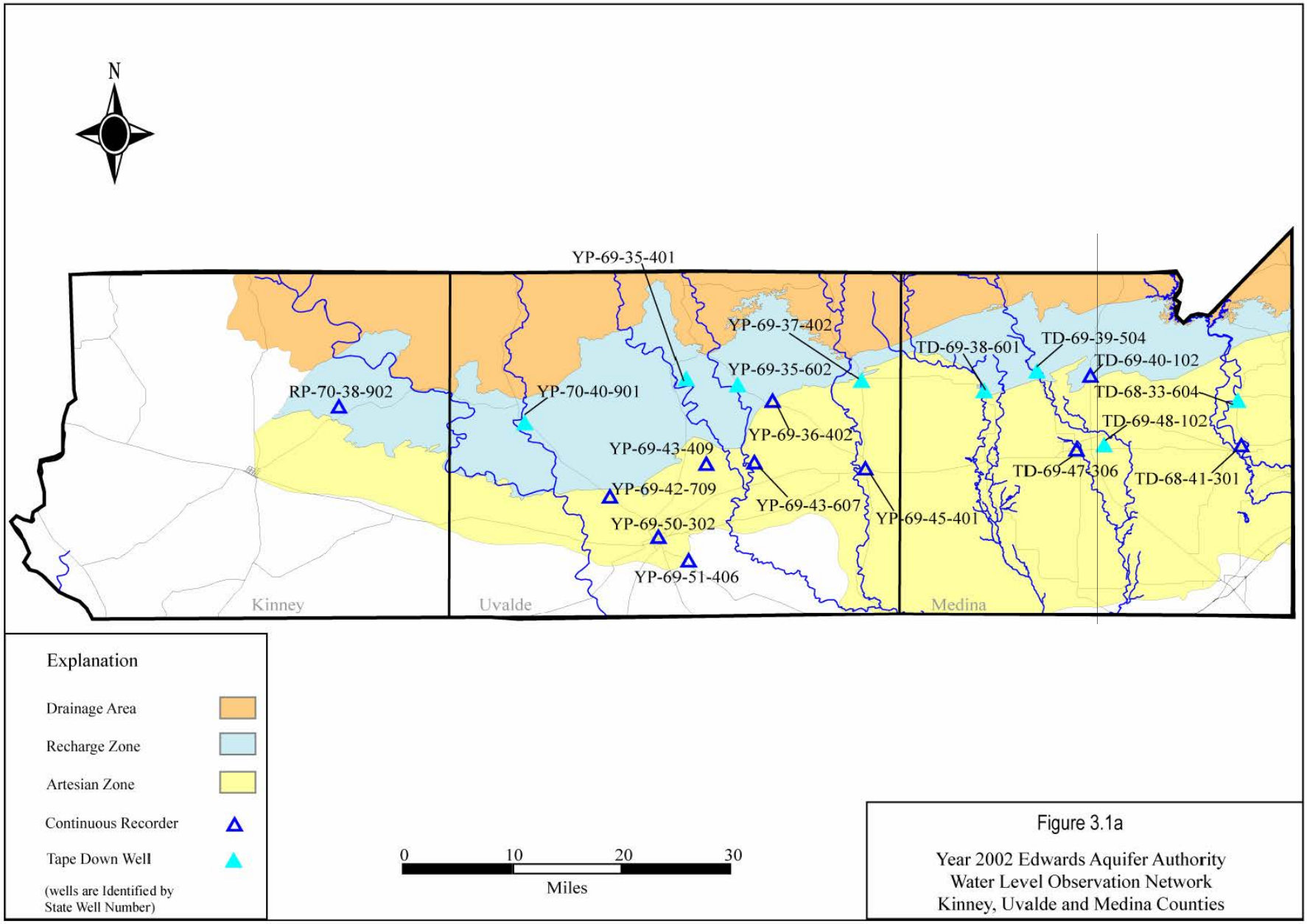


Figure 3.1a

Year 2002 Edwards Aquifer Authority
Water Level Observation Network
Kinney, Uvalde and Medina Counties

Table 3.1 Highest and lowest recorded water levels for selected observation wells in the San Antonio Segment of the Edwards Aquifer, 1934-2002 (measured in feet above Mean Sea Level).

	City of Uvalde Uvalde County YP-69-50-302[a] (J-27)		Castroville Medina County TD-68-41-301[b]		San Antonio Bexar County AY-68-37-203[c] (J-17)		New Braunfels Comal County DX-68-23-302[d]		Kyle Well Hays County LR-67-01-304[e]	
Year	High	Low	High	Low	High	Low	High	Low	High	Low
1934	----	----	----	----	675.2	666.8	----	----	----	----
1935	----	----	----	----	681.3	666.8	----	----	----	----
1936	876.6	876.5	----	----	683.0	676.6	----	----	----	----
1937	878.1	877.1	----	----	682.1	674.9	----	----	583.4	581.6
1938	875.8	874.0	----	----	681.4	673.6	----	----	590.6	581.5
1939	873.4	869.6	----	----	674.1	665.7	----	----	580.6	569.6
1940	872.3	868.5	----	----	671.4	661.0	----	----	572.2	568.7
1941	875.7	867.7	----	----	682.5	668.3	----	----	587.7	578.6
1942	875.8	871.9	----	----	685.4	669.7	----	----	580.8	573.7
1943	874.5	868.0	----	----	679.6	668.5	----	----	578.2	574.6
1944	869.3	866.8	----	----	677.6	667.1	----	----	580.5	579.3
1945	870.1	865.2	----	----	681.9	668.8	----	----	----	----
1946	867.1	862.9	----	----	681.2	663.6	----	----	----	----
1947	870.7	867.1	----	----	680.7	665.8	----	----	577.3	577.0
1948	868.4	860.5	----	----	667.7	653.7	624.4	624.3	560.5	559.4
1949	871.2	859.1	----	----	671.6	655.6	626.7	624.1	562.3	561.8
1950	871.2	861.8	687.0	674.9	665.4	653.8	625.2	624.0	575.8	575.2
1951	861.8	846.8	675.2	659.9	656.0	640.6	624.2	622.5	575.3	569.4
1952	846.8	834.9	663.8	649.9	650.5	633.4	623.0	621.5	573.0	569.1
1953	835.2	817.8	665.1	647.7	651.5	630.5	623.6	621.1	584.5	573.2
1954	836.7	823.1	660.3	642.4	646.3	628.9	623.1	620.5	581.8	562.8
1955	834.3	824.1	649.1	635.6	638.5	624.2	621.9	619.8	575.7	558.4
1956	834.2	814.2	641.6	622.3	632.2	612.5	621.0	613.3	569.8	542.2
1957	840.9	811.0	666.1	633.0	653.8	624.4	624.7	620.1	584.9	568.3
1958	866.1	840.8	704.4	665.7	679.6	653.3	626.6	624.6	593.6	580.8
1959	876.1	866.2	703.8	689.0	677.7	661.5	627.1	625.1	591.4	580.5
1960	876.9	873.1	706.3	686.0	679.4	657.9	627.1	624.9	589.4	584.3
1961	878.5	875.6	710.3	693.4	681.2	663.9	627.3	625.7	591.6	573.2
1962	878.3	867.7	703.6	676.3	675.5	646.9	626.3	623.2	584.1	565.0
1963	869.7	860.9	689.1	659.2	665.8	635.0	625.0	621.7	581.6	560.0
1964	860.9	849.0	676.3	654.8	657.1	632.8	624.1	621.6	578.2	562.8
1965	865.8	860.3	689.6	666.8	675.0	645.6	626.6	623.5	590.1	573.4
1966	867.2	860.2	686.1	665.0	668.8	642.7	625.9	623.1	589.0	566.6
1967	867.4	856.4	679.4	645.2	659.7	624.9	624.6	620.0	582.8	556.6
1968	873.3	864.8	702.0	679.2	678.3	655.9	627.2	624.6	593.8	574.4
1969	875.0	866.5	694.8	670.5	676.1	642.8	626.3	623.4	588.7	567.7
1970	876.1	871.3	700.7	678.8	677.1	650.4	627.2	624.3	593.2	575.0
1971	877.7	864.0	701.3	646.4	674.6	627.9	626.2	621.0	577.1	551.3
1972	877.8	874.6	704.6	676.7	679.0	651.2	626.7	624.1	579.7	576.3
1973	881.6	874.5	731.2	690.1	696.5	665.9	629.8	626.1	589.9	572.3
1974	881.4	876.0	723.8	696.0	689.2	660.9	629.1	625.8	593.6	558.5
1975	882.1	879.4	721.0	708.2	686.9	672.0	629.3	626.5	589.8	571.4
1976	884.9	876.0	732.4	694.9	693.1	663.8	629.4	625.8	584.6	571.2
1977	886.2	881.3	737.8	715.3	696.0	675.6	630.2	627.6	587.4	562.1
1978	882.6	875.6	722.4	681.7	684.1	650.1	628.1	624.5	572.0	540.4
1979	882.0	876.1	728.2	710.3	690.5	676.4	629.0	627.3	584.9	572.0
1980	879.1	868.0	716.1	666.8	680.3	640.8	627.5	623.0	572.0	551.8
1981	881.8	867.9	723.2	698.8	686.0	668.6	628.0	625.5	586.2	565.5
1982	881.8	876.4	717.1	682.8	680.5	645.3	627.3	623.6	584.7	544.7
1983	877.1	871.3	698.2	667.7	670.0	642.1	625.6	623.0	588.7	560.4
1984	873.3	856.9	684.5	642.0	657.0	623.3	624.4	619.6	582.5	544.3
1985	876.9	862.2	699.0	670.7	674.5	644.1	626.8	623.3	591.4	561.8
1986	877.8	872.2	704.6	674.2	685.6	649.8	627.7	624.1	595.0	576.3
1987	889.1	877.9	743.5	711.1	699.2	676.9	630.4	627.2	595.9	583.5
1988	887.0	878.0	725.3	679.9	684.9	647.7	627.9	623.9	593.2	585.9
1989	879.0	866.6	695.3	650.5	663.9	626.4	624.9	620.5	571.7	571.5

(Table 3.1 continued)

	City of Uvalde Uvalde County YP-69-50-302[a] (J-27)		Castroville Medina County TD-68-41-301[b]		San Antonio Bexar County AY-68-37-203[c] (J-17)		New Braunfels Comal County DX-68-23-302[d]		Kyle Well Hays County LR-67-01-304[e]	
Year	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**
1990	872.9	861.6	679.5	640.8	658.1	622.7	624.3	620.3	577.6	561.2
1991	873.8	865.4	703.8	666.1	680.3	640.5	627.0	623.3	593.8	575.1
1992	885.2	872.9	743.6	704.3	703.3	680.7	630.9	627.0	595.4	586.2
1993	884.9	877.3	730.2	706.6	692.8	672.0	629.4	626.9	593.7	575.9
1994	----	----	718.6	684.1	679.2	652.1	627.2	624.7	575.0	545.3
1995	877.2	871.1	703.0	681.8	676.5	651.1	626.8	624.5	575.4	552.4
1996	874.2	859.0	693.0	650.2	664.9	627.5	625.3	621.2	573.2	551.3
1997	882.3	868.2	700.5	672.7	677.9	648.7	626.4	623.6	575.8	559.0
1998	880.6	868.7	717.1	669.1	688.9	640.0	629.6	622.9	575.6	552.4
1999	880.7	876.8	716.4	682.9	686.4	656.9	628.7	624.9	588.6	537.9
2000	878.3	868.0	700.4	662.5	676.7	635.5	626.8	622.2	549.2	544.6
2001	877.2	872.7	713.4	685.9	682.8	652.8	628.3	624.5	563.9	544.6
2002	883.2	876.3	732.7	685.8	697.9	650.0	630.2	624.6	589.3	554.4
Average	High	Low	High	Low	High	Low	High	Low	High	Low
	872.6	863.7	701.6	672.4	675.6	651.7	626.6	623.4	582.3	565.7
Record	High	Low	High	Low	High	Low	High	Low	High	Low
Level	889.1	811.0	743.6	622.3	703.3	612.5	630.9	613.3	595.9	540.4
Month	June	April	June	Aug.	June	Aug.	June	Aug.	Sept.	July
Year	1987	1957	1992	1956	1992	1956	1992	1956	1987	1978

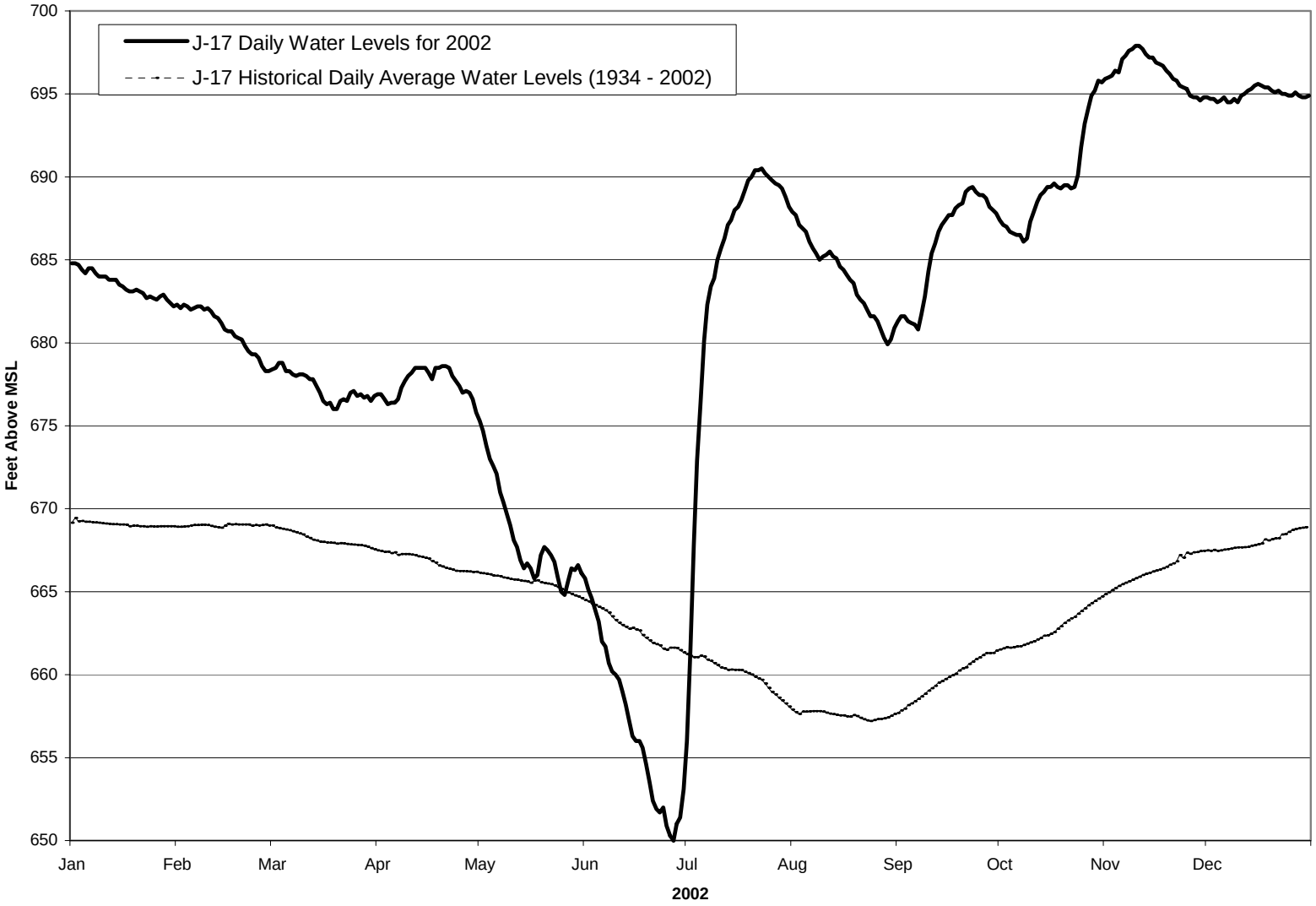
Data source: Edwards Aquifer Authority, 2002.
[a] Continuous monitoring equipment established on October 24, 1940.
[b] Continuous monitoring equipment established on May 25, 1950.
[c] Continuous monitoring equipment established on January 1, 1963.
[d] Continuous monitoring equipment established on November 4, 1948.
[e] Values based on monthly tape down measurements (No continuous monitoring equipment installed in this well).

Above average water levels and springflows in the Edwards Aquifer in January 2002 declined slowly from January to May and declined rapidly between mid-May and late June. Based on water level records from the Authority's index wells, water levels at J-17 dropped below the long term average for June on June 6. Springflows at Comal and San Marcos springs continued to decrease during the same time period, based on United States Geological Survey (USGS) discharge measurements. Significant rainfall in late June boosted water levels and springflows through the remainder of 2002. The lower water levels through May and most of June were the result of below average precipitation during the spring and early summer and increased water demands for crop irrigation, landscape watering and other water uses. Water levels declined steeply during the late spring and early summer of 2002, reaching 650.0 feet msl at J-17, on June 27, 2002. Near record heavy rainfall in the region between the end of June and early July resulted in increased water levels and prevented the implementation of Stage I water use restrictions pursuant to Authority rules. Recharge from rainfall during the first week of July was reflected at the Bexar County index well (J-17) by a 6.3 foot rise in the water level in a 24-hour period (July 2 to July 3). The water level at J-17 rose a total of 40 feet (from 650.0 feet msl to 690.0 feet msl) between June 26 and July 20, 2002. The water level at J-17 reached a high for the year of 697.9 feet msl on November 10, 2002, representing the third highest annual maximum for the period of record for this well. **Figure 3.2** compares the J-17 average daily water level for the period of record with water levels for the year 2002. The lowest water level at J-17 was 650.0 feet msl, on June 27, 2002. In 2002, springflows at Comal and San Marcos springs reached lows of 247 cubic feet per second (cfs) and 158 cfs, respectively, when water levels at J-17 and other wells reached their minimums.

Springflows rapidly increased after the rainfall events of late June and early July 2002. **Tables A-1** through **A-6** in **Appendix A** show 2002 water levels for selected observation wells.

Appendix B contains the 2002 hydrographs, with precipitation measurements, for the index wells in Bexar, Medina, and Uvalde counties. **Appendix B** also contains the 2002 hydrographs, with precipitation measurements, for Comal and San Marcos springs in Comal and Hays counties, respectively. The hydrographs indicate the periods of relatively lower and relatively higher water levels and show that water levels in the Edwards Aquifer respond rapidly to rainfall events.

Figure 3.2 Comparison of the monthly average water level for the period of record 1934-2002 and the daily high water level at the Bexar County index well, J-17 (AY-68-37-203)



4.0 PRECIPITATION

4.1 Precipitation in the Edwards Aquifer Region

The San Antonio region is situated between the semi-arid Chihuahuan Desert area to the west and a wetter more humid Coastal Plain to the east. Consequently, the average annual precipitation ranges from approximately 20 inches in the western part of the region to approximately 32 inches in the eastern part of the region. The average annual precipitation for San Antonio is approximately 30 inches, although annual precipitation has ranged from 13 to 52 inches since 1934 (United States Department of Commerce, 2002). Aquifer water levels and springflow respond quickly to precipitation, decreasing during periods of low precipitation, and increasing during periods of high precipitation.

Precipitation data are used to calculate recharge to the Edwards Aquifer, to monitor any precipitation trends that may affect recharge to the aquifer, to evaluate the effectiveness of the Authority's Precipitation Enhancement Program (see Section 4.2), and to investigate groundwater flowpaths by correlating rainfall and water-level responses in wells. Precipitation data are gathered from the Authority's real-time network rain gauge stations, the National Oceanic and Atmospheric Administration (NOAA) weather stations, and the USGS rain gauge stations located throughout the region. **Figure 4.1** shows the locations of precipitation gauging stations used by the Authority to monitor precipitation in 2002.

The amount of rainfall received in San Antonio in 2002 was approximately 52 percent above average. Average precipitation in San Antonio for the period between 1934 and 2002 is 30.44 inches. In 2002, the total precipitation measured at the San Antonio International Airport was 46.27 inches, 15.83 inches above average. **Figure 4.2** is a graph of precipitation data for San Antonio from 1934 to 2002.

Rainfall for the month of July at San Antonio International Airport represents over 55 percent of the annual average rainfall for 2002. As such, the June 30-July 7, 2002, flood represented a significant rainfall event with widespread flooding, and associated property damage across much of the region. The National Weather Service estimates as much as 45-inches of rain fell in portions of the Texas Hill Country northwest of San Antonio (http://www.nws.noaa.gov). Another indicator of the magnitude of this flood event can be noted at Canyon Lake in Comal County. The lake flowed over the emergency spillway for the first time since construction of the lake in 1968. Medina Lake, located in Medina and Bandera counties west and northwest of San Antonio rose to within 18 inches of the top of the dam. Water flow over the emergency spillway at Medina Lake rose to more than 10 feet at the peak of the flood event (http://www.srh.noaa.gov/FTPROOT/EWX/html/wxevent/2002/top10.html). During the storm event 12 lives were lost, and over 48,000 homes were damaged (http://www.floodsafety.com/documentaries/j2002/index.htm). The rainfall was also significant in terms of recharge, with aquifer levels rising sharply in response to the rainfall. For example, the Bexar County index well (J-17) level increased a total of 32.2 feet during the month of July.

Table 4.1 lists annual precipitation for selected rain gauges in the region. **Table 4.2** shows monthly measurements for 2002 at selected rain gauge stations across the region. **Table 4.3** lists monthly totals for rainfall at each of the real-time network rain gauge stations. In

2002, the Authority's real-time network included 60 rain gauge sites indicated on **Figure 4.1**. Most, but not all of the rain gauge stations are on the recharge zone and drainage area.

Regional rainfall in 2002 was well above average for the year, however the majority of the rain fell during the latter half of the year. Below to near normal rainfall occurred in the first half of the year, followed by near historical high rainfall in late June and July, and large rains in September, and October. Rainfall was approximately 30 to 50 percent above average for the year across most of the region.

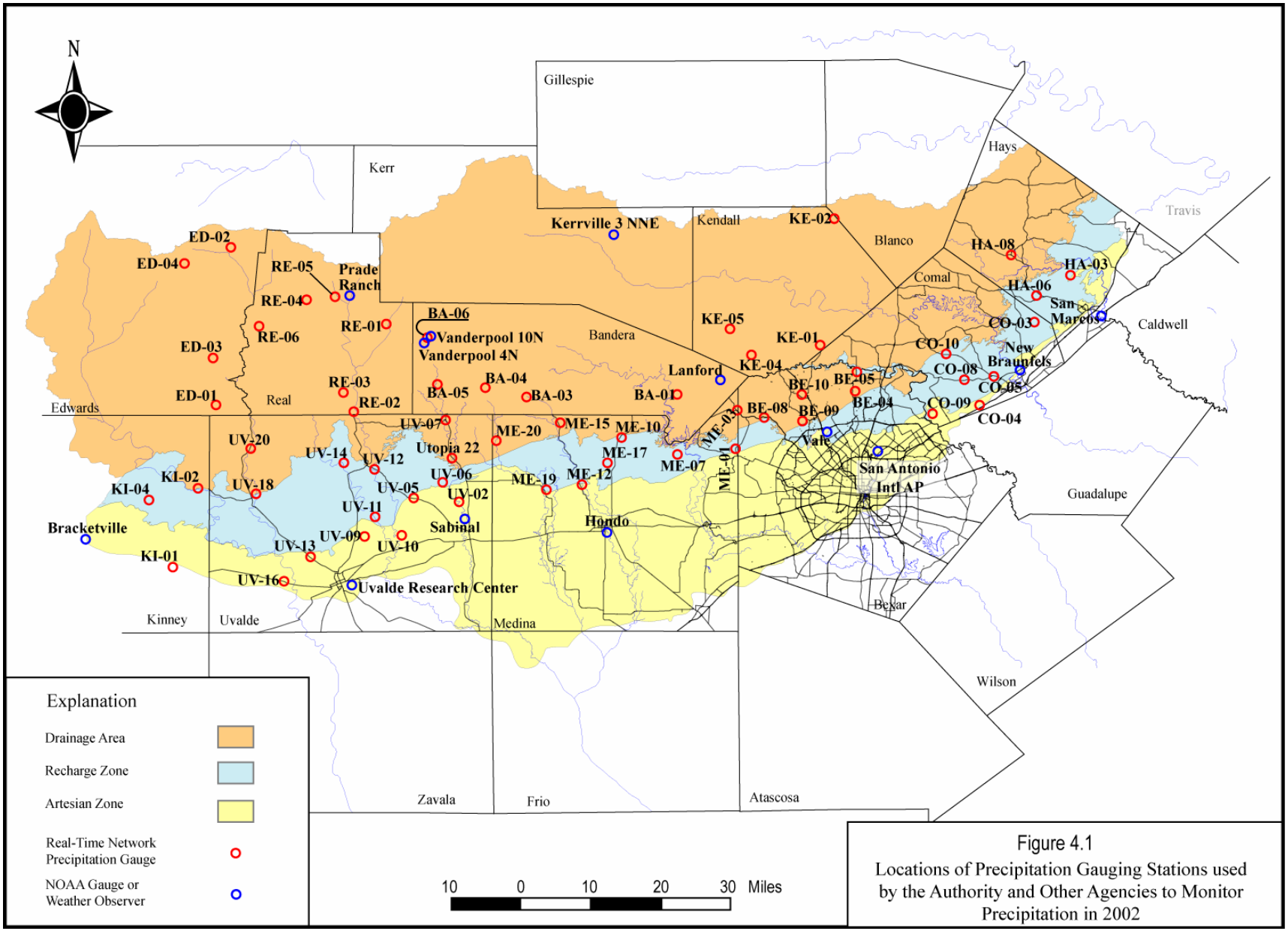


Figure 4.1
Locations of Precipitation Gauging Stations used by the Authority and Other Agencies to Monitor Precipitation in 2002

Figure 4.2 Annual precipitation and average precipitation for San Antonio, 1934-2002.

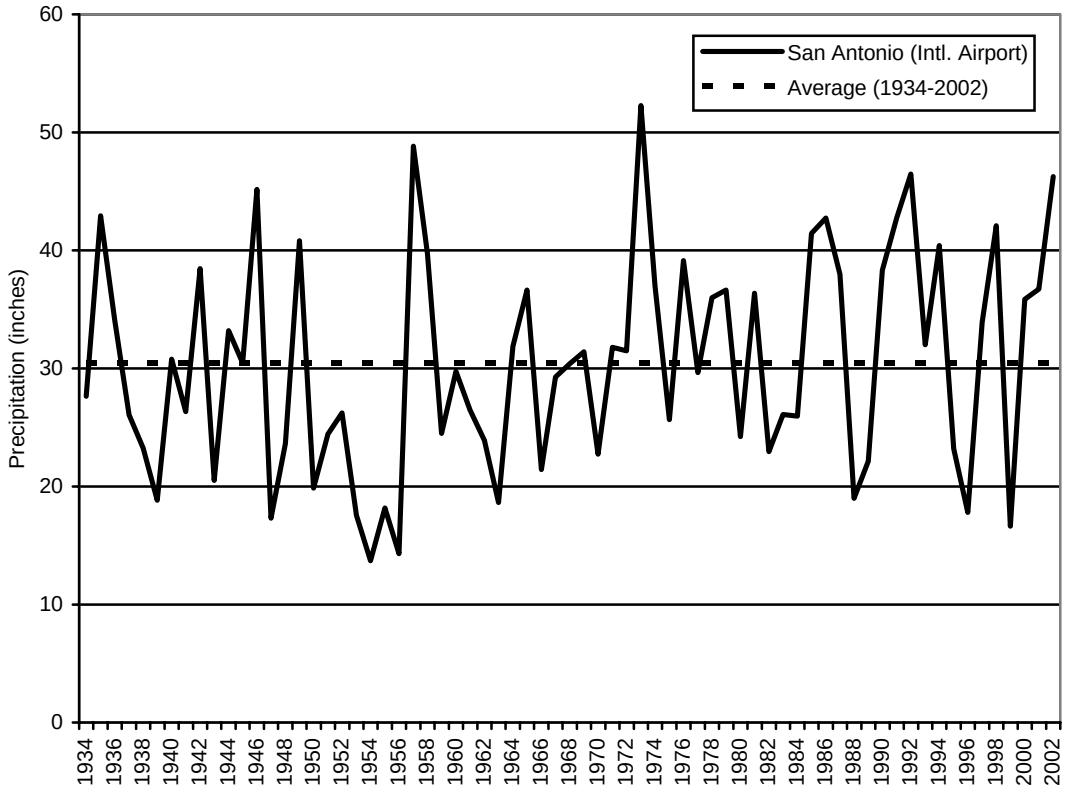


Table 4.1 Annual precipitation for selected rain gauges in the Edwards Aquifer region, 1934-2002 (measured in inches).

Year	Brackettville	Uvalde	Sabinal	Hondo	San Antonio	Boerne	New Braunfels	San Marcos
1934	---	16.70	18.07	23.97	27.65	26.78	30.80	35.67
1935	---	41.17	48.21	58.73	42.93	52.93	41.67	41.09
1936	22.34	24.53	26.53	35.27	34.11	47.59	30.41	33.48
1937	16.85	17.88	9.57a	22.93	26.07	32.81	29.19	26.03a
1938	19.97	13.12	15.39	27.56	23.26	24.14	28.32	28.17
1939	18.38	25.30	13.98b	23.14	18.83	26.20	13.35	18.59
1940	22.43	27.66	27.51	28.13	30.79	32.29	38.11	43.57
1941	21.52	31.79	33.74a	44.07	26.34	41.60	42.99	48.41
1942	21.01	19.01	11.37a	34.83	38.46	31.12	42.08	44.65
1943	23.39b	20.63	17.21	31.43	20.51	26.33	29.93	25.45
1944	24.76	32.76	27.62a	32.46	33.19	42.98	43.14	47.42
1945	15.69	22.37	26.60	29.57	30.46	33.50	39.38	31.74b
1946	19.10	26.41	14.16a	29.65	45.17	45.62	61.60	52.24
1947	22.92b	22.67	---	18.98	17.32	21.89	27.52	27.53
1948	20.02a	18.31	---	28.82	23.64	23.77	19.88b	21.27a
1949	31.32	34.41	---	39.90	40.81	41.15	43.21	36.22
1950	17.70	18.27	15.28a	24.91	19.86	24.94	21.13	21.10
1951	14.71	16.07	15.63	24.05a	24.44	18.76	24.84	30.88
1952	12.26	18.24	23.16	25.56	26.24	37.54	33.87	39.91
1953	10.12	18.34	21.44	20.61	17.56	21.42	30.06	33.39
1954	19.38	15.60	14.72	11.92	13.70	10.29	10.12	13.42
1955	26.55	18.36	20.87	21.21	18.18	19.27	23.12	26.44
1956	7.58	9.29	11.29	15.54	14.31	12.05	18.41	18.37
1957	34.21	39.30	40.03	35.09	48.83	52.55	51.88	46.51
1958	45.37	39.03	41.18	41.60	39.69	40.94	36.40	39.08
1959	27.51	31.51	27.02	30.68	24.50	35.64	40.45	43.47
1960	19.12	23.98	26.24	32.37	29.76	32.55	34.28	45.48
1961	17.91	26.26	27.24	27.36	26.47	25.45	15.70a	30.02
1962	10.87	14.12	13.58	17.85	23.90	25.26	27.40	28.47
1963	15.07	16.70	18.99	18.90	18.65	20.66	23.41	19.90
1964	20.75	22.30	23.78	28.29	31.88	27.36	30.65	30.27
1965	21.48	26.21	29.41	30.80	36.65	42.41	45.16	45.00
1966	21.63	20.87	21.54	29.46	21.44	29.05	25.98	27.12
1967	21.95	20.10	23.89	30.33	29.26	26.75	31.74	26.41
1968	17.26	25.20	29.88b	31.91	30.40	35.14	35.97	37.13
1969	28.53	33.38	33.05	32.30	31.42	38.07	33.01	36.59
1970	16.50	13.59	22.13	30.96	22.74	27.79	35.23	32.30
1971	29.46	31.01	31.00	32.96	31.80	45.24	29.43	31.10
1972	21.21	15.49	21.10	25.43	31.49	35.09	42.02	31.90
1973	30.61	30.85	35.14b	47.82	52.28	50.93	51.66	47.91
1974	18.25	30.94	20.93b	36.41b	37.00	41.80	42.85	37.28a
1975	26.62	24.92	23.65	25.84a	25.67	33.49	35.82	48.64
1976	34.40	46.04	40.82	45.21	39.13	45.24	49.06	47.46
1977	15.06	19.90	17.06	19.40	29.64	32.43	24.83	29.69
1978	19.04	18.48	21.28	24.64	35.99	35.17	36.35b	33.08
1979	16.34	32.35	31.44	28.83	36.64	39.97	36.72	38.74
1980	18.33	23.05	22.67	21.27	24.23	39.02	33.69	29.56
1981	28.73	26.24	30.19	27.40	36.37	41.05	43.23	49.62
1982	19.10	23.35	18.44	21.99	22.96	27.64	21.04	22.47b
1983	19.35	24.45a	23.33	20.92b	26.11	34.60	34.13	36.95
1984	16.24	15.33b	20.67	21.19a	25.95	26.97	20.90	8.26a
1985	18.93	5.76a	23.67	21.94	41.43	37.77	37.26	33.54
1986	27.44	29.86b	29.62b	36.01b	42.73	43.52	47.14	42.20
1987	39.45	36.39	38.36	40.09	37.96	39.86	37.33a	37.94
1988	12.08	15.20	13.52	9.81b	19.01	19.49	16.27b	21.50
1989	16.98	18.65	17.26	16.10	22.14	25.14	20.99	25.46
1990	38.24b	24.73	30.06	27.01	38.31	42.51	24.58a	35.14b
1991	23.11	21.77	31.12	34.55	42.76	48.22	56.55	51.07
1992	22.22	27.85a	37.73	45.34	46.49	64.17	38.84b	40.33b
1993	15.18	9.32c	13.20	16.60	32.00	24.02	19.54b	24.01b
1994	22.85a	39.61	29.32	22.38b	40.42	40.98	35.76a	40.85

(**Table 4.1** continued)

Year	Brackettville	Uvalde	Sabinal	Hondo	San Antonio	Boerne	New Braunfels	San Marcos
1995	25.87	19.47	27.55	24.55	23.20	30.29	23.29	32.57
1996	20.32b	16.20	14.20	15.50	17.80	24.57	19.00	28.20
1997	---	27.77	35.74	37.54	33.94	---	41.65	43.56
1998	24.15	27.40b	20.66b	30.44a	42.10	45.74	52.98	58.51
1999	19.88	19.08	2.55b	16.94	16.63	18.67	21.07	19.38
2000	18.11b	23.84	22.87	32.49	35.86	46.30a	36.34b	40.56
2001	18.40	26.02	25.87	30.59	36.72	53.91	37.91	42.41
2002	---	36.79	35.75	44.70	46.27	63.2	43.60	46.16
Years of Record	100	99	84	98	118	98	103	99
Annual Average	21.57	23.89	24.20	28.59	30.44	34.58	33.37	34.61

Data source: US Department of Commerce (2003), NOAA (1934-2002).
a indicates partial record not included in long-term average; missing one month.
b indicates partial record not included in long-term average; missing more than one month.
--- indicates no data available.

Table 4.2 Monthly precipitation data from selected Edwards Aquifer Authority and National Oceanic and Atmospheric Administration precipitation-gauging stations, 2002 (measured in inches).

Gauge	County	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Total
San Antonio Intl. Airport	Bexar	0.37	0.42	1.19	3.82	2.26	1.48	16.92	0.54	7.02	7.64	2.08	2.53	46.27
Vale	Bexar	0.50	0.45	1.20	2.55	3.10	0.00	21.50	0.45	6.00	7.85	2.85	3.10	49.55
Vanderpool 10N	Bandera	.36	0.33	0.98	2.13	3.04	1.30	15.86	1.46	6.65	6.98	0.79	1.86	41.74
Vanderpool 4N	Bandera	0.44	0.50	1.21	1.85	5.00	2.49	16.85	2.94	6.13	6.43	.080	0.80	46.39
Landford	Bandera	0.50	0.45	1.85	2.05	3.35	1.70	21.80	1.40	5.20	6.45	1.00	3.75	49.50
New Braunfels	Comal	1.20	0.10	0.80	2.35	1.15	6.35	10.35	0.20	5.00	7.40	2.40	6.30	43.60
San Marcos	Hays	0.64	0.62	1.01	1.67	2.23	6.07	9.46	0.94	4.09	10.23	4.65	4.55	46.16
Kerrville 3 NNE	Kerr	0.38	0.44	1.10	1.54	2.68	5.16	19.07	0.67	3.61	7.46	0.75	2.62	45.48
Hondo	Medina	0.32	0.27	2.47	3.60	2.17	3.11	10.87	0.64	9.56	9.12	1.22	1.35	44.70
Brackettville	Kinney	0.00	0.00	1.35	1.46	0.58	2.15	4.80	0.00	1.53	---	---	---	---
Prade Ranch	Real	0.00	0.97	1.08	2.98	3.56	1.39	6.26	0.32	2.35	7.95	0.90	---	---
Sabinal	Uvalde	0.19	0.13	1.22	2.73	0.88	0.32	15.3	1.04	4.4	8.21	0.89	0.44	35.75
Uvalde	Uvalde	0.19	0.13	1.22	2.73	0.88	0.32	15.3	1.04	5.44	8.21	0.89	0.44	36.79
Utopia 22	Uvalde	0.15	0.20	1.55	2.15	3.10	1.50	12.30	0.10	5.10	0.25	090	0.50	27.80

Gauge	County	Average	Total	Deviation from Average
San Antonio Intl. Airport	Bexar	30.44	46.27	+15.83
New Braunfels	Comal	33.37	43.60	+10.23
San Marcos	Hays	34.61	46.16	+11.55
Hondo	Medina	28.59	44.70	+16.11
Uvalde	Uvalde	23.89	35.75	+11.86

Data source: Edwards Aquifer Authority and US Department of Commerce (NOAA), 2002.
a Partial record not included in long-term average; missing one month.
b Partial record not included in long-term average; missing more than one month.
--- indicates missing or incomplete data for the month.

Table 4.3 2002 Monthly Precipitation Totals for the Real-time Network Rain Gauges

	BA01	BA03	BA04	BA05	BA06	BE04	BE05	BE08	BE09	BE10	BL01	CO03	CO04	CO05	CO08	CO09	CO10	CO12	ED01	ED02
January	0.0	0.3	.02	0.2	0.0	0.8	0.5	0.7	0.4	0.5	0.5	0.8	0.6	0.5	0.3	0.1	0.5	0.4	0.0*	0.4
February	0.4	0.2	0.0	0.0	0.0	0.4	0.4	0.3	0.4	0.2	0.3	0.6	0.4	0.6	0.4	0.4	0.5	0.7	0.0*	0.0
March	2.0	2.0	1.2	1.5	1.0	0.0	0.0	0.1	0.0	0.0	0.8	1.0	0.0	0.1	0.0	0.0	0.0	0.9	0.0*	0.7
April	2.0	2.1	2.0	1.7	2.4	2.1	0.2	2.2	2.3	0.1	0.9	0.3	0.0	0.4	0.2	0.6	0.0	0.1	0.0*	1.7
May	1.3	5.3	3.3	3.1	4.4	1.5	1.5	2.7	3.2	1.8	1.8	2.2	0.7	1.7	1.3	0.5	1.4	0.0	0.0*	0.5
June	4.7	1.4	0.0	2.3	4.2	3.0	3.7	2.9	4.0	3.6	1.6	7.5	4.1	6.7	5.2	1.4	3.1	3.2	0.6	1.5
July	7.5	12.8	8.2	7.2	5.9	6.4	6.3	18.1	16.5	12.8	0.7	8.9	4.9	7.2	7.0	7.2	8.3	1.2	7.3	1.6
August	2.3	0.1	1.2	0.8	2.5	1.1	1.1	0.9	0.6	1.7	0.8	0.9	0.7	1.7	1.5	2.4	0.9	0.3	0.5	1.1
September	6.5	13.0	6.2	6.5	5.3	3.7	3.1	6.3	6.3	3.2	0.1	6.0	3.8	4.6	4.5	4.9	4.8	0.6	1.9	2.4
October	3.5	6.6	3.8	6.2	5.1	5.8	6.5	4.9	6.1	4.2	0.1	7.5	5.2	5.6	5.8	4.5	5.0	0.3	6.7	4.5
November	0.2	0.2	0.0	0.1	0.1	0.4	0.4	0.1	0.2	0.4	0.1	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.1	0.0
December	2.1	0.9	1.3	1.6	1.2	2.8	2.8	3.5	3.0	2.8	1.3	3.8	3.2	3.1	2.0	2.4	2.3	1.3	0.8	0.8
Totals	32.4	44.9	27.3	31.2	32.0	28.0	26.6	42.7	43.0	31.3	9.02*	39.3	23.7	32.1	28.5	24.4	26.8	9.0*	17.9*	15.4

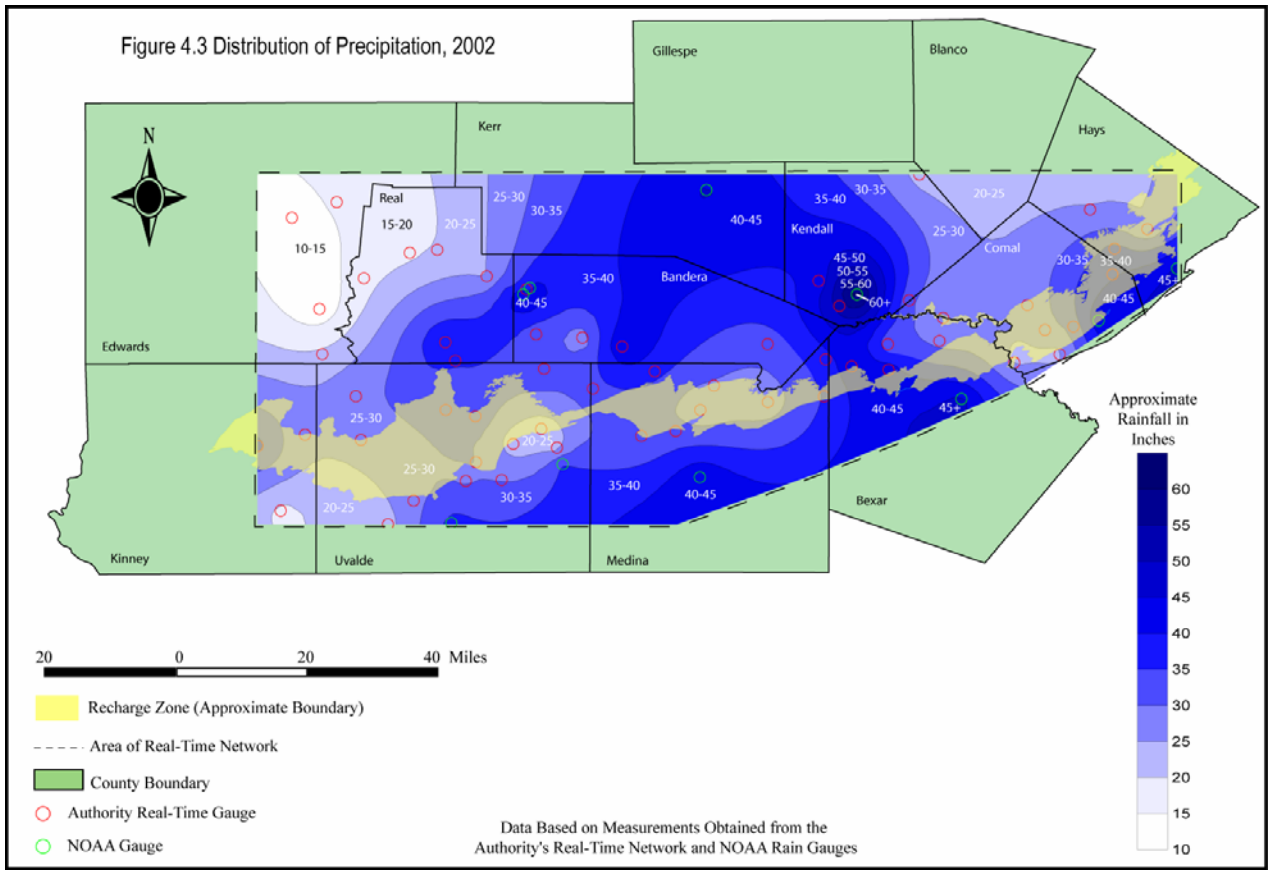
	ED04	HA02	HA03	HA06	HA08	KE01	KE02	KE04	KE05	KI01	KI02	KI04	ME01	ME03	ME07	ME10	ME12	ME15	ME17	ME19
January	0.0*	0.1	0.8	0.4	0.7	0.5	0.0	3.6	1.3	0.0	0.0	0.0	0.2	0.2	0.2	0.6	0.4	10.8	0.4	0.4
February	0.0*	0.0	0.5	0.6	0.2	0.4	0.5	0.7	0.5	0.0	0.0	0.0	0.3	0.3	0.2	0.0	0.0	0.1	0.0	0.0
March	0.0*	0.1	0.0	1.1	0.0	0.0	0.0	6.6	1.3	0.6	0.5	0.6	1.7	1.6	1.8	1.7	0.3	13.1	0.6	0.8
April	0.0*	0.1	0.0	0.9	0.0	0.2	0.0	2.5	1.3	2.0	1.3	2.7	1.8	1.7	1.4	2.1	1.2	2.7	2.6	2.6
May	0.2	0.8	0.0	2.5	0.2	1.7	2.7	0.8	3.7	0.8	2.9	1.7	2.1	2.5	1.3	1.9	2.2	0.4	1.9	3.0
June	1.3	0.1	2.7	8.1	6.2	4.2	8.8	1.2	5.4	2.8	2.3	7.8	1.9	2.0	1.4	3.9	0.0	2.5	0.0	0.0
July	4.2	0.0	7.4	7.9	5.3	11.0	9.5	0.6	14.1	3.7	6.0	8.8	11.5	12.5	6.7	6.6	2.1	1.2	7.7	8.1
August	0.0	0.4	0.5	1.0	1.1	1.7	0.4	0.4	1.3	0.0	0.3	0.3	0.5	0.2	0.9	0.5	0.9	0.2	1.3	2.4
September	1.6	0.0	3.9	4.7	4.1	3.8	1.2	0.9	6.1	2.3	2.5	4.0	8.8	6.6	7.8	6.8	4.5	0.2	6.3	5.9
October	4.4	0.8	5.2	6.8	6.4	4.8	0.0	0.2	4.0	6.5	7.3	10.8	3.9	3.4	3.3	3.4	3.8	0.1	4.0	5.6
November	0.0	0.0	0.1	0.2	0.5	0.6	0.0	0.1	0.2	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.1	0.0	0.1	0.1
December	0.4	0.0	4.1	2.7	0.7	2.4	0.0	2.9	2.4	0.1	2.9	0.0	2.5	6.9	2.2	2.0	1.4	0.0	1.8	1.3
Totals	11.9*	2.4*	25.2	36.6	25.4	31.1	23.1	20.6	41.4	18.7	25.9	36.7	35.3	38.3	27.4	29.5	16.8	31.2	26.7	30.0

	ME20	RE01	RE02	RE03	RE04	RE05	RE06	UV02	UV05	UV06	UV07	UV09	UV10	UV11	UV12	UV13	UV14	UV16	UV18	UV20
January	0.2	0.0	0.3	0.2	0.5	0.2	0.1	0.1	0.0	0.2	0.1	9.6	0.2	9.6	0.0	0.0	8.4	0.0	0.0*	8.4
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0*	0.0
March	0.7	0.7	0.8	1.0	1.1	0.9	0.5	1.7	0.0	0.0	1.1	0.6	1.4	0.9	1.3	0.9	1.7	0.6	0.0*	0.4
April	1.9	1.6	1.3	1.6	1.2	1.1	1.1	2.8	0.0	0.0	1.6	2.0	2.8	3.1	2.1	2.7	1.3	0.5	0.0*	0.8
May	1.7	3.2	2.0	1.4	2.5	2.9	1.1	1.1	0.5	2.4	2.8	0.3	0.6	0.2	0.6	0.2	1.0	0.2	0.0	0.1
June	0.6	2.5	2.7	4.2	1.4	2.4	0.1	0.1	0.3	0.6	0.9	1.0	7.5	1.4	3.0	0.9	1.8	1.4	0.9	2.6
July	16.6	7.2	17.9	19.2	2.3	3.7	5.0	6.9	11.3	9.2	18.1	7.0	6.8	6.4	19.3	12.2	9.4	13.2	13.8	8.3
August	1.0	0.7	0.7	0.3	0.0	0.0	0.4	0.2	0.1	0.0	0.1	0.9	0.4	0.8	0.7	0.5	0.2	0.1	0.0	0.0
September	6.1	3.4	3.8	3.4	1.7	1.9	1.9	4.8	4.2	4.4	4.2	4.2	5.5	3.8	3.2	3.9	3.0	3.2	3.4	2.1
October	3.6	4.8	5.3	7.6	7.1	6.3	7.3	5.1	5.1	5.3	4.1	3.3	4.5	3.5	3.1	6.8	4.3	3.8	5.5	5.9
November	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
December	1.2	0.6	0.6	1.3	1.1	1.3	0.5	0.4	0.7	0.5	1.0	0.2	0.0	0.6	0.6	0.2	0.4	0.2	0.0	0.3
Totals	33.4	24.8	35.3	40.7	18.9	20.6	18.1	23.2	22.3	22.5	33.9	29.2	29.8	30.2	33.8	28.3	31.5	23.3	23.5	28.9

*Indicates incomplete data set due to equipment problems

Rain gauge locations are shown on **Figure 4.1**.

Figure 4.3 shows the distribution of precipitation in the Edwards Aquifer region for 2002 based on measurements from the Authority's real-time network and NOAA stations. Total rainfall ranged from less than 15-inches in eastern Edwards County to more than 60-inches in southern Kendall County. Relatively high rainfall (approximately 35 – 40+ inches) occurred over most of the drainage area and accounted for the higher than average recharge to the aquifer in the second half of 2002 (see Section 5).



4.2 Precipitation Enhancement Program (PEP)

Previous research performed by weather scientists indicates that precipitation enhancement can increase rainfall by as much as 21 percent from clouds that have been seeded, which may significantly increase recharge to the aquifer. In addition to increasing direct recharge, the increased rainfall also decreases demand for lawn watering and crop irrigation.

The Authority's board of directors voted in the fall of 1997 to pursue a permit from the Texas Commission on Environmental Quality (TCEQ) (formerly the Texas Natural Resources Conservation Commission or TNRCC) to conduct a precipitation enhancement program (PEP). The Authority's PEP contractor, Weather Modification, Inc., (WMI) received A four-year permit (January 1999 to December 2002) from the TCEQ, in October 1998. The Authority's original PEP project area consisted of 6.37 million acres across south Texas, covering all or parts of 12 counties including Real (east of US Highway 83), Kerr, Kendall, Blanco, Bandera, Uvalde, Medina, Bexar, Comal, Hays, Guadalupe, and Caldwell. The goals of the PEP are:

- To enhance rainfall in a targeted area by using state-of-the-art cloud seeding technology and procedures to seed suitable convective clouds;
- To increase the average annual quantity of water that may be withdrawn from the aquifer;
- To reduce demands from the aquifer by the increase in precipitation; and
- To reduce the periods of low water levels and resulting threatened springflows.

From 1999 through 2001, the Authority utilized WMI to perform a complete weather modification service. WMI was contracted to:

- Secure a base of operations;
- Retain staff
- Provide appropriately equipped aircraft;
- Provide monitoring equipment;
- Acquire seeding agents; and
- Provide all reports to the Authority and the appropriate State agency.

In June 2001, the Authority, the Texas Water Development Board (TWDB), and the TCEQ initiated a study to evaluate the effectiveness of the Authority's PEP for 1999 through 2001. Woodley Weather Consultants conducted the study and concluded in the final report completed in June 2002 that the Authority's PEP had produced an additional 179,000 acre-feet of rainfall due to seeding (approximately 60,000 acre-feet per year). A finding in the report was that typical radar-predicted rainfall in South Central Texas is generally under reported. The under reporting is a function of equations used by the National Weather Service that do not take into account the tropical nature of much of the rainfall in the San Antonio area. This factor was revealed by the correlation of radar-predicted rainfall to actual rainfall recorded by the Authority's real- time network. A recommendation of the report was to allow more seeding through the use of additional aircraft or downsizing the target area to concentrate seeding.

In 2002, substantive changes were applied to the Authority's PEP. First, the Authority opted to reduce the target area to four counties, Bandera, Bexar, Medina and Uvalde. Second,

the Authority contracted with existing locally operated PEP's, the South Texas Weather Modification Association (STWMA) and the Southwest Texas Rain Enhancement Association (SWTREA). Uvalde County was seeded by SWTREA, while Bandera, Bexar and Medina counties were seeded by STWMA. This change resulted in significant savings of expenses and administrative duties to the Authority. Equally significant to weather modification across the State was moving the program from the TCEQ to the Texas Department of Agriculture.

During the first six months of the 2002, San Antonio received only 9.54 inches of rain, 56% of normal. Not only did the lack of rainfall mean a deficit of nearly 7.5 inches, the weather conditions yielded few "seedable" clouds. The last six months of the year provided 36.73 inches of rain (20 inches over the average). Flooding and moist soil conditions in the last six months of the year limited cloud seeding opportunities because seeding operations are suspended when the additional rainfall could cause flooding. Because of these weather conditions, few cloud seeding opportunities were available in 2002. During the 2002 season, cloud seeding activities were conducted on five separate days in Bandera, Bexar, and Medina counties and on eleven separate days in Uvalde County. In 2002, an estimated total of 17,659 grams (38.9 pounds) of silver iodide cloud seeding agent was dispersed in the four counties where cloud seeding is funded by the Authority.

5.0 GROUNDWATER RECHARGE

Recharge to the Edwards Aquifer originates as precipitation on the drainage area and recharge zone. The area consists of nine drainage basins that extend across the recharge zone as indicated in **Figure 5.1**. These basins are also listed below in **Table 5.1**.

Table 5.1 Drainage basins that cross the Edwards Aquifer Recharge Zone.

Nueces/West Nueces River basin
Frio/Dry Frio River basin
Sabinal River basin
Area between Sabinal River and Medina River basins
Medina River basin
Area between Medina River and Cibolo/Dry Comal Creek basins
Cibolo Creek and Dry Comal Creek basin
Guadalupe River basin
Blanco River basin

Most of the recharge is from surface water that infiltrates into the recharge zone, although some recharge also flows into the Edwards Aquifer from adjacent aquifers such as the Trinity aquifer. Estimates of the contribution from adjacent hydraulically connected aquifers range from 5,000 to 60,000 acre feet per year. However, only surface water data from precipitation and streamflows are utilized to calculate total recharge.

The USGS has calculated groundwater recharge to the Edwards Aquifer since 1934. **Table 5.2** lists estimated annual recharge by river basin from 1934 through 2002, based on USGS calculations. The USGS estimates that annual recharge for the period of record (1934 to 2002) ranged from 43,700 acre-feet at the height of the drought of record in 1956, to 2,486,000 acre-feet in 1992. In 2002, estimated recharge was 1,665,200 acre-feet. Mean annual recharge from 1934 to 2002 was 698,930 acre-feet, and since 1993, the mean annual recharge is approximately 794,070 acre-feet. The median annual recharge for 1934 through 2002 is 557,800 acre-feet, and the median annual recharge for the last 10 years is 576,300 acre-feet. **Figure 5.2** is a graph of annual recharge and the ten-year floating mean recharge estimate for the San Antonio segment of the Balcones Fault Zone Edwards Aquifer from 1934 to 2002.

Table 5.2 does not include the Guadalupe River basin because the current method of estimating recharge is based on the interpretation that the basin does not recharge the aquifer. The Authority is currently reviewing the recharge calculation methodology for possible revision.

Recharge directly increases groundwater levels in the aquifer. Water levels rise during periods of higher-than-normal recharge and generally decline during periods of below-normal recharge. In 2002, above-normal rainfall volumes between mid-summer and late fall significantly recharged the Edwards Aquifer compared to the 2001 recharge estimate of 1,069,400 acre-feet. Recharge of 1,665,200 acre-feet for 2002 is the fourth highest on record. Higher recharge values were only calculated for 1958, 1987, and 1992.

The Authority operates four recharge dams located in the Edwards Aquifer Recharge Zone as indicated in **Figure 5.1**. Recharge is calculated using data from various stage recorders at each site. **Table 5.3** shows the annual historical recharge for each site since construction. A total recharge volume of 26,544 acre-feet occurred at the dams in 2002. This represents the highest recharge volume associated with the dams for the period of operation for the structures.

The historical mean annual recharge attributed to the recharge dams is based on a period of record that reflects the date of construction through 2002. The historical mean annual recharge contributed by the combined structures is 4,467 acre-feet. Calendar year 2002 represents the highest annual recharge volume contributed by the four recharge structures. The Seco Creek Structure contributed the highest volume of recharge in 2002 with an estimated quantity of nearly 19,000 acre-feet.

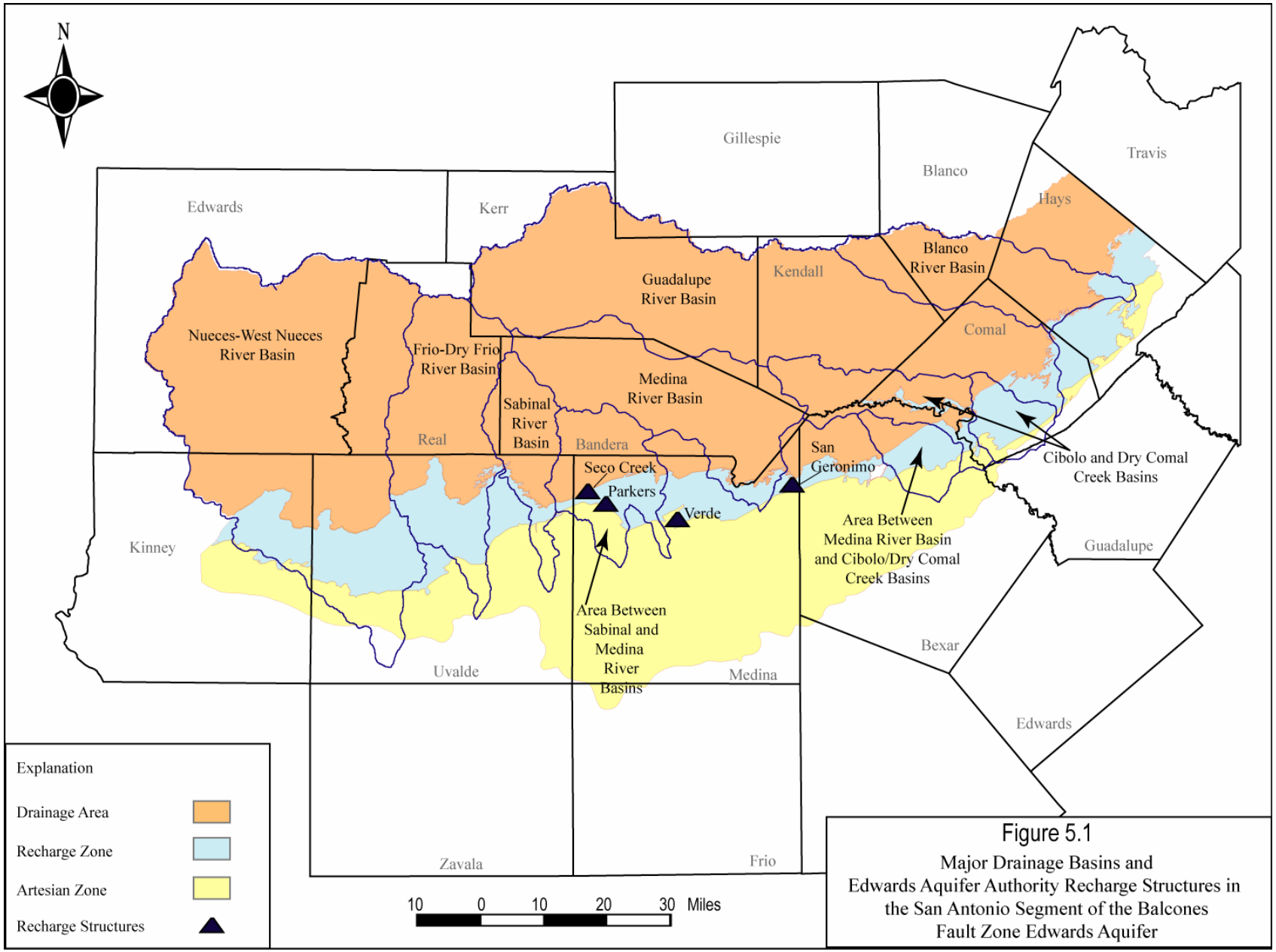


Figure 5.1

Major Drainage Basins and Edwards Aquifer Authority Recharge Structures in the San Antonio Segment of the Balcones Fault Zone Edwards Aquifer

Table 5.2 Estimated annual groundwater recharge to the Edwards Aquifer by drainage basin, 1934-2002 (measured in thousands of acre-feet).

Year	Nueces River/ West Nueces River basin	Frio River/ Dry Frio River basin	Sabinal River basin	Area between Sabinal River and Medina River basin	Medina River basin	Area between Medina River and Cibolo Creek/ Dry Comal Creek basin	Cibolo Creek/Dry Comal Creek basin	Blanco River basin	Total*
1934	8.6	27.9	7.5	19.9	46.5	21	28.4	19.8	179.6
1935	411.3	192.3	56.6	166.2	71.1	138.2	182.7	39.8	1,258.2
1936	176.5	157.4	43.5	142.9	91.6	108.9	146.1	42.7	909.6
1937	28.8	75.7	21.5	61.3	80.5	47.8	63.9	21.2	400.7
1938	63.5	69.3	20.9	54.1	65.5	46.2	76.8	36.4	432.7
1939	227	49.5	17.0	33.1	42.4	9.3	9.6	11.1	399.0
1940	50.4	60.3	23.8	56.6	38.8	29.3	30.8	18.8	308.8
1941	89.9	151.8	50.6	139.0	54.1	116.3	191.2	57.8	850.7
1942	103.5	95.1	34.0	84.4	51.7	66.9	93.6	28.6	557.8
1943	36.5	42.3	11.1	33.8	41.5	29.5	58.3	20.1	273.1
1944	64.1	76.0	24.8	74.3	50.5	72.5	152.5	46.2	560.9
1945	47.3	71.1	30.8	78.6	54.8	79.6	129.9	35.7	527.8
1946	80.9	54.2	16.5	52.0	51.4	105.1	155.3	40.7	556.1
1947	72.4	77.7	16.7	45.2	44.0	55.5	79.5	31.6	422.6
1948	41.1	25.6	26.0	20.2	14.8	17.5	19.9	13.2	178.3
1949	166.0	86.1	31.5	70.3	33.0	41.8	55.9	23.5	508.1
1950	41.5	35.5	13.3	27.0	23.6	17.3	24.6	17.4	200.2
1951	18.3	28.4	7.3	26.4	21.1	15.3	12.5	10.6	139.9
1952	27.9	15.7	3.2	30.2	25.4	50.1	102.3	20.7	275.5
1953	21.4	15.1	3.2	4.4	36.2	20.1	42.3	24.9	167.6
1954	61.3	31.6	7.1	11.9	25.3	4.2	10.0	10.7	162.1
1955	128.0	22.1	0.6	7.7	16.5	4.3	3.3	9.5	192.0
1956	15.6	4.2	1.6	3.6	6.3	2.0	2.2	8.2	43.7
1957	108.6	133.6	65.4	129.5	55.6	175.6	397.9	76.4	1,142.6
1958	266.7	300.0	223.8	294.9	95.5	190.9	268.7	70.7	1,711.2
1959	109.6	158.9	61.6	96.7	94.7	57.4	77.9	33.6	690.4
1960	88.7	128.1	64.9	127.0	104.0	89.7	160.0	62.4	824.8
1961	85.2	151.3	57.4	105.4	88.3	69.3	110.8	49.4	717.1
1962	47.4	46.6	4.3	23.5	57.3	16.7	24.7	18.9	239.4
1963	39.7	27.0	5.0	10.3	41.9	9.3	21.3	16.2	170.7
1964	126.1	57.1	16.3	61.3	43.3	35.8	51.1	22.2	413.2
1965	97.9	83.0	23.2	104.0	54.6	78.8	115.3	66.7	623.5
1966	169.2	134.0	37.7	78.2	50.5	44.5	66.5	34.6	615.2
1967	82.2	137.9	30.4	64.8	44.7	30.2	57.3	19.0	466.5
1968	130.8	176.0	66.4	198.7	59.9	83.1	120.5	49.3	884.7
1969	119.7	113.8	30.7	84.2	55.4	60.2	99.9	46.6	610.5
1970	112.6	141.9	35.4	81.6	68.0	68.8	113.8	39.5	661.6
1971	263.4	212.4	39.2	155.6	68.7	81.4	82.4	22.2	925.3
1972	108.4	144.6	49.0	154.6	87.9	74.3	104.2	33.4	756.4
1973	190.6	256.9	123.9	286.4	97.6	237.2	211.7	82.2	1,486.5

(**Table 5.2** continued)

Year	Nueces River/ West Nueces River basin	Frio River/ Dry Frio River basin	Sabinal River basin	Area between Sabinal River and Medina River basin	Medina River basin	Area between Medina River and Cibolo Creek/ Dry Comal Creek basin	Cibolo Creek/Dry Comal Creek basin	Blanco River basin	Total*
1974	91.1	135.7	36.1	115.3	96.2	68.1	76.9	39.1	658.5
1975	71.8	143.6	47.9	195.9	93.4	138.8	195.7	85.9	973.0
1976	150.7	238.6	68.2	182.0	94.5	47.9	54.3	57.9	894.1
1977	102.9	193.0	62.7	159.5	77.7	97.9	191.6	66.7	952.0
1978	69.8	73.1	30.9	103.7	76.7	49.6	72.4	26.3	502.5
1979	128.4	201.4	68.6	203.1	89.4	85.4	266.3	75.2	1,117.8
1980	58.6	85.6	42.6	25.3	88.3	18.8	55.4	31.8	406.4
1981	205.0	365.2	105.6	252.1	91.3	165.0	196.8	67.3	1,448.3
1982	19.4	123.4	21.0	90.9	76.8	22.6	44.8	23.5	422.4
1983	79.2	85.9	20.1	42.9	74.4	31.9	62.5	23.2	420.1
1984	32.4	40.4	8.8	18.1	43.9	11.3	16.9	25.9	197.7
1985	105.9	186.9	50.7	148.5	64.7	136.7	259.2	50.7	1,003.3
1986	188.4	192.8	42.2	173.6	74.7	170.2	267.4	44.5	1,153.8
1987	308.5	473.3	110.7	405.5	90.4	229.3	270.9	114.9	2,003.5
1988	59.2	117.9	17.0	24.9	69.9	12.6	28.5	25.5	355.5
1989	52.6	52.6	8.4	13.5	46.9	4.6	12.3	23.6	214.4
1990	479.3	255.0	54.6	131.2	54.0	35.9	71.8	41.3	1,123.1
1991	325.2	421.0	103.1	315.2	52.8	84.5	109.7	96.9	1,508.4
1992	234.1	586.9	201.1	566.1	91.4	290.6	286.6	226.9	2,486.0
1993	32.6	78.5	29.6	60.8	78.5	38.9	90.9	37.8	447.6
1994	124.6	151.5	29.5	45.1	61.1	34.1	55.6	36.6	538.1
1995	107.1	147.6	34.7	62.4	61.7	36.2	51.1	30.6	531.3
1996	130.0	92.0	11.4	9.4	42.3	10.6	14.7	13.9	324.3
1997	176.9	209.1	57.0	208.4	63.3	193.4	144.2	82.3	1,134.6
1998	141.5	214.8	72.5	201.4	80.3	86.2	240.9	104.7	1,142.3
1999	101.4	136.8	30.8	57.2	77.1	21.2	27.9	21.0	473.4
2000	238.4	123.0	33.1	55.2	53.4	28.6	48.6	34.1	614.5
2001	297.5	126.7	66.2	124.1	90.0	101.5	173.7	89.7	1,069.4
2002	83.6	207.3	70.6	345.2	93.7	175.5	539.3	150.0	1,665.2
Recharge for the period of record 1934-2002:									
Mean	120.7	135.2	42.6	110.7	62.4	71.5	111.3	44.6	698.9
Median	101.4	123.4	31.5	78.6	61.1	50.1	77.9	34.6	557.8
Recharge for the period of record 1993-2002 (last 10 years):									
Mean	143.4	148.7	43.5	116.9	70.1	72.6	138.7	60.1	794.1
Median	127.3	142.2	33.9	61.6	70.2	37.55	73.55	37.2	576.3

Data source: USGS, 2003.
*Total may not be equal to sum of basin values due to rounding.

Figure 5.2 Estimated annual recharge and ten-year floating mean recharge for the San Antonio segment of the Balcones Fault Zone Edwards Aquifer 1934-2002

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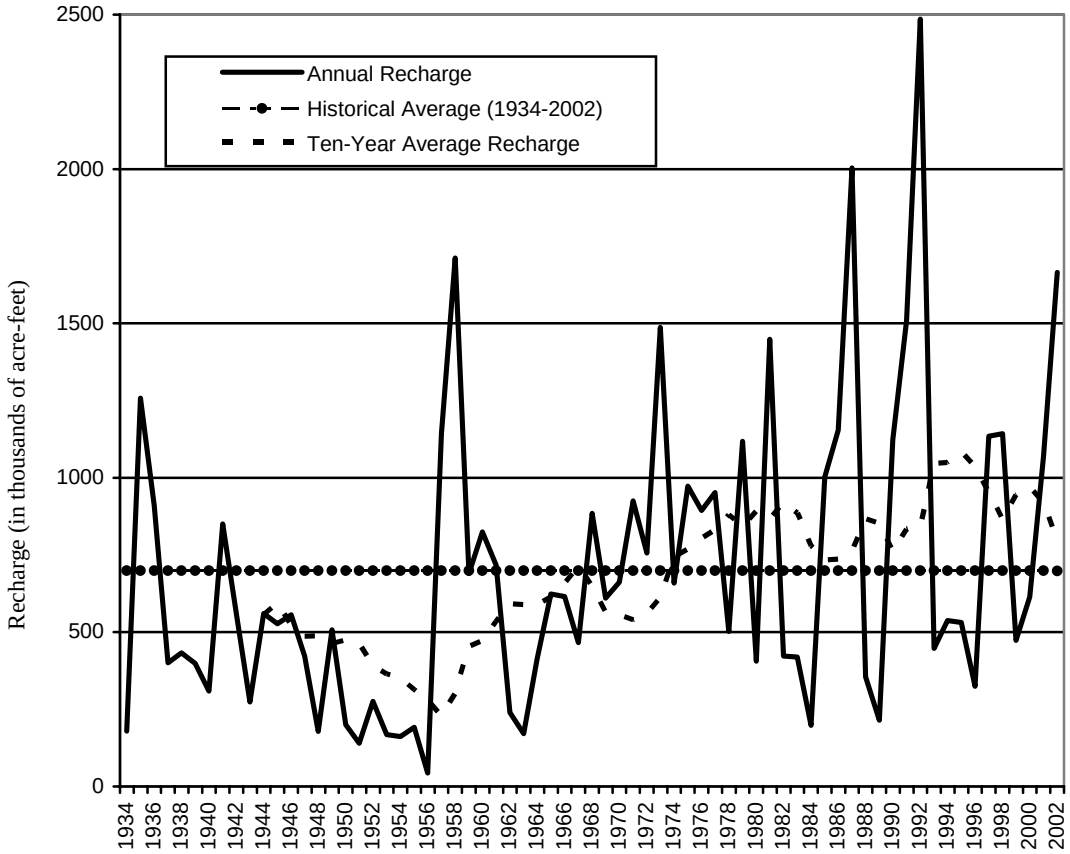


Table 5.3 Estimated annual Edwards Aquifer recharge from Edwards Aquifer Authority recharge projects (measured in acre-feet).

Year	Parker (April 1974)	Verde (April 1978)	San Geronimo (November 1979)	Seco (October 1982)	Annual Total
1974	160	---	---	---	160
1975	620	---	---	---	620
1976	2,018	---	---	---	2,018
1977	6	---	---	---	6
1978	98	150	---	---	248
1979	2,315	1,725	0	---	4,040
1980	0	371	903	---	1,274
1981	772	1,923	1,407	---	4,102
1982	3	112	91	0	206
1983	0	254	0	0	254
1984	251	246	0	143	640
1985	232	440	1,097	643	2,412
1986	217	889	963	1,580	3,649
1987	2,104	4,141	1,176	12,915	20,336
1988	0	0	0	0	0
1989	0	0	0	0	0
1990	49	176	41	479	745
1991	647	966	1,647	2,160	5,420
1992	723	2,775	2,874	14,631	21,003
1993	0	0	334	508	842
1994	159	0	0	5	164
1995	18	79	51	880	1,028
1996	0	0	0	0	0
1997	2,941a	2,154b	1,579b	7,515b	14,189b
1998	1,469a/b	1,160b	872b	3,796b	7,297b
1999	0b	0b	0b	50c	50b/c
2000	901b	1,371b	1,023b	4,606b	7,901b
2001	526b	657b/d	1,085b/d	2,154b/d	4,422b/d
2002	1,811	1,511	4,350	18,872	26,544
Total	16,229	19,589	15,143	70,937	103,026
Mean	622	844	812	3377	4467
Median	217	371	603	643	1028

Data source: USGS and Edwards Aquifer Authority, 2002.
a = Written communication from USGS - San Antonio Subdistrict Office.
b = Determined by a linear regression analysis using rainfall data and historical recharge data.
c = Linear regression analysis indicates zero recharge; however, one recharge event was observed that was estimated to have recharged 50 acre feet.
d = A portion of the 2001 recharge estimate was provided by HDR Engineering, Inc., August 2002.
--- = indicates years prior to construction of the recharge structure.

6.0 GROUNDWATER DISCHARGE AND USAGE

Groundwater discharges from the Edwards Aquifer as springflow or as water pumped from wells. Springflow is the primary basis of recreational economies in New Braunfels and San Marcos, and the springs provide habitat for threatened and endangered animal and plant species. **Figure 6.1** shows the locations of the major springs in the San Antonio segment of the aquifer. Wells provide water for many diverse uses in south central Texas, including irrigation, municipal water supplies, industrial applications, and domestic/livestock consumption. The amount of groundwater discharged as springflow has historically been greater than the amount discharged through wells for any of the above-mentioned uses.

Estimates of annual groundwater discharge from springflow and pumping for the Edwards Aquifer are available from 1934 to 2002 (**Table 6.1**). Annual groundwater discharge estimates range from a low of 388,800 acre-feet in 1955 to a high of 1,130,000 acre-feet in 1992. In 2002, the total groundwater discharge from the Edwards Aquifer from wells and springs was estimated at 977,100 acre-feet.

Springflow was calculated by measuring streamflow downstream of the springs and converting the streamflow measurements to spring discharge. Continuous recording equipment is located at Comal and San Marcos springs. Periodic measurements were performed at the Leona, San Pedro, San Antonio, and Hueco springs.

Springflow from 1934 to 2002 has varied from a low of 69,800 acre-feet in 1956 to a high of 802,800 acre-feet in 1992 (**Table 6.1**). **Table 6.2** lists the monthly estimated discharge in 2002 for the six primary Edwards Aquifer springs. Spring discharge from the Edwards Aquifer for 2002 was calculated at 609,900 acre-feet. Spring discharge accounted for approximately 62 percent of total discharge from the Edwards Aquifer in 2002 (**Tables 6.1 and 6.2**).

Figure 6.2 is a graph comparing Edwards Aquifer well discharge to springflow. The figure shows the variability in springflow and the general trend of increasing well discharge over the period of record. The lowest estimated annual aquifer pumping level was 101,900 acre-feet recorded in 1934. In 2002, total estimated well production was 367,200 acre-feet of water from the Edwards Aquifer, an increase of approximately 360 percent since 1934. Mean annual well production was estimated to be 304,300 acre-feet per year for the period of record from 1934 to 2002, while the estimated 10-year mean for pumping from 1993 through 2002 was 414,800 acre-feet (**Table 6.1**). Reported groundwater pumping accounted for 352,000 acre-feet of water discharged from the Edwards Aquifer in 2002. Unreported pumping (domestic, livestock and Kinney County pumping) is estimated to be 15,200 acre-feet, or approximately 4 percent of total pumpage.

Table 6.3 shows the 2002 discharge data by use for the counties in the region. The discharge estimates were compiled from pumpage data reported by municipal, industrial, and agricultural users to the Authority. The Authority estimated pumpage for domestic supply, stock, and miscellaneous use. **Table 6.4** shows annual Edwards Aquifer groundwater discharge by use from 1955 to 2002, and the estimated 10-year mean and median for pumping by use from 1993 through 2002 are also included in this table.

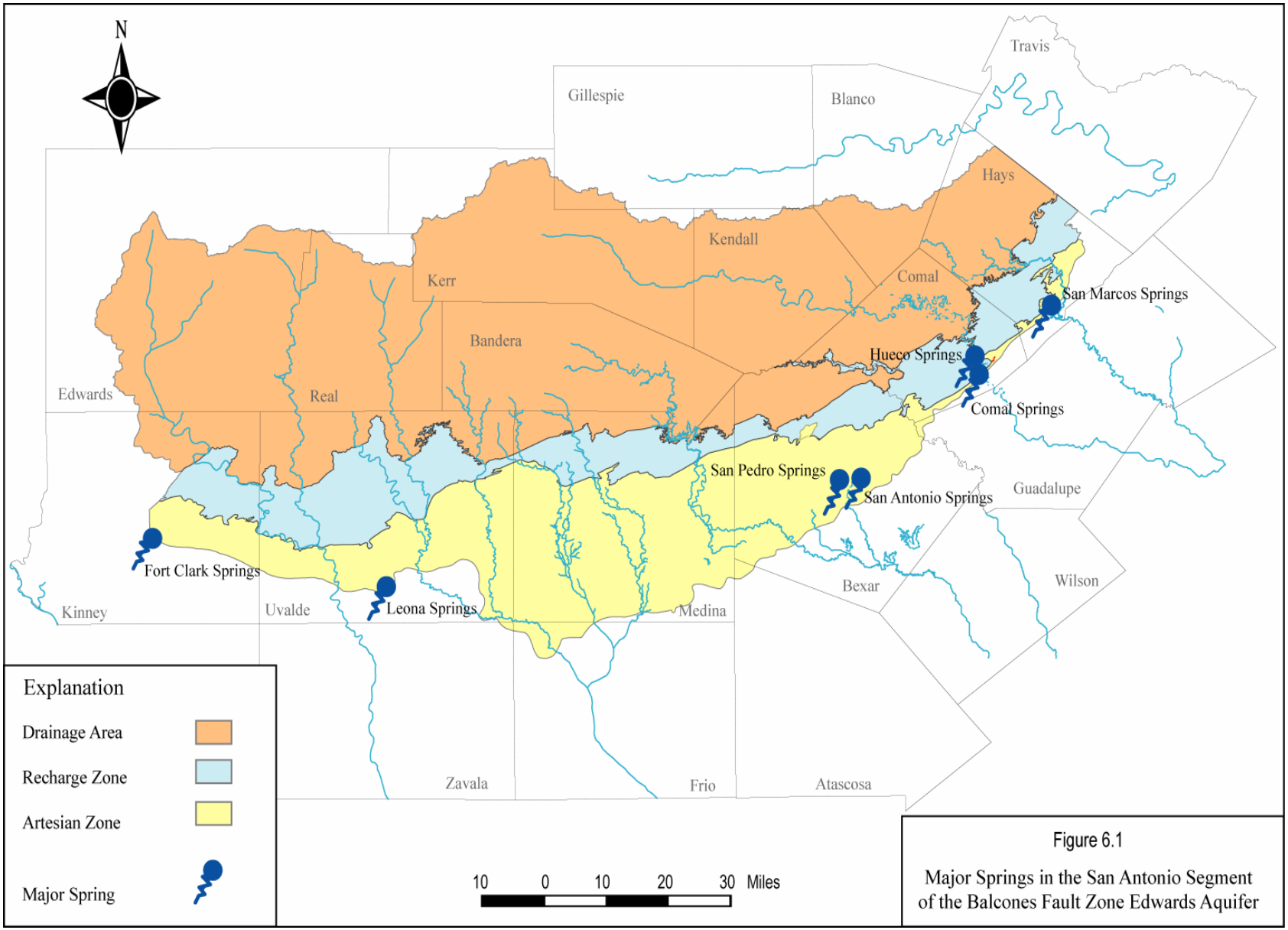


Figure 6.1

Major Springs in the San Antonio Segment of the Balcones Fault Zone Edwards Aquifer

Table 6.1 Annual estimated groundwater discharge data by county for the Edwards Aquifer, 1934-2002 (measured in thousands of acre-feet).

Year	Kinney Uvalde	Medina	Bexar	Comal	Hays	Total	Total Wells	Total Springs
1934	12.6	1.3	109.3	229.1	85.6	437.9	101.9	336.0
1935	12.2	1.5	171.8	237.2	96.9	519.6	103.7	415.9
1936	26.6	1.5	215.2	261.7	93.2	598.2	112.7	485.5
1937	28.3	1.5	201.8	252.5	87.1	571.2	120.2	451.0
1938	25.2	1.6	187.6	250.0	93.4	557.8	120.1	437.7
1939	18.2	1.6	122.5	219.4	71.1	432.8	118.9	313.9
1940	16.1	1.6	116.7	203.8	78.4	416.6	120.1	296.5
1941	17.9	1.6	197.4	250.0	134.3	601.2	136.8	464.4
1942	22.5	1.7	203.2	255.1	112.2	594.7	144.6	450.1
1943	19.2	1.7	172.0	249.2	97.2	539.3	149.1	390.2
1944	11.6	1.7	166.3	252.5	135.3	567.4	147.3	420.1
1945	12.4	1.7	199.8	263.1	137.8	614.8	153.3	461.5
1946	6.2	1.7	180.1	261.9	134.0	583.9	155.0	428.9
1947	13.8	2.0	193.3	256.8	127.6	593.5	167.0	426.5
1948	9.2	1.9	159.2	203.0	77.3	450.6	168.7	281.9
1949	13.2	2.0	165.3	209.5	89.8	479.8	179.4	300.4
1950	17.8	2.2	177.3	191.1	78.3	466.7	193.8	272.9
1951	16.9	2.2	186.9	150.5	69.1	425.6	209.7	215.9
1952	22.7	3.1	187.1	133.2	78.8	424.9	215.4	209.5
1953	27.5	4.0	193.7	141.7	101.4	468.3	229.8	238.5
1954	26.6	6.3	208.9	101.0	81.5	424.3	246.2	178.1
1955	28.3	11.1	215.2	70.1	64.1	388.8	261.0	127.8
1956	59.6	17.7	229.6	33.6	50.4	390.9	321.1	69.8
1957	29.0	11.9	189.4	113.2	113.0	456.5	237.3	219.2
1958	23.7	6.6	199.5	231.8	155.9	617.5	219.3	398.2
1959	43.0	8.3	217.5	231.7	118.5	619.0	234.5	384.5
1960	53.7	7.6	215.4	235.2	143.5	655.4	227.1	428.3
1961	56.5	6.4	230.3	249.5	140.8	683.5	228.2	455.3
1962	64.6	8.1	220.0	197.5	98.8	589.0	267.9	321.1
1963	51.4	9.7	217.3	155.7	81.9	516.0	276.4	239.6
1964	49.3	8.6	201.0	141.8	73.3	474.0	260.2	213.8
1965	46.8	10.0	201.1	194.7	126.3	578.9	256.1	322.8
1966	48.5	10.4	198.0	198.9	115.4	571.2	255.9	315.3
1967	81.1	15.2	239.7	139.1	82.3	557.4	341.3	216.1
1968	58.0	9.9	207.1	238.2	146.8	660.0	251.7	408.3
1969	88.5	13.6	216.3	218.2	122.1	658.7	307.5	351.2
1970	100.9	16.5	230.6	229.2	149.9	727.1	329.4	397.7
1971	117.0	32.4	262.8	168.2	99.1	679.5	406.8	272.7
1972	112.6	28.8	247.7	234.3	123.7	747.1	371.3	375.8
1973	96.5	14.9	273.0	289.3	164.3	838.0	310.4	527.6
1974	133.3	28.6	272.1	286.1	141.1	861.2	377.4	483.8
1975	112.0	22.6	259.0	296.0	178.6	868.2	327.8	540.4
1976	136.4	19.4	253.2	279.7	164.7	853.4	349.5	503.9
1977	156.5	19.9	317.5	295.0	172.0	960.9	380.6	580.3
1978	154.3	38.7	269.5	245.7	99.1	807.3	431.8	375.5
1979	130.1	32.9	294.5	300.0	157.0	914.5	391.5	523.0
1980	151.0	39.9	300.3	220.3	107.9	819.4	491.1	328.3
1981	104.2	26.1	280.7	241.8	141.6	794.4	387.1	407.3
1982	129.2	33.4	305.1	213.2	105.5	786.4	453.1	333.3
1983	107.7	29.7	277.6	186.6	118.5	720.1	418.5	301.6
1984	156.9	46.9	309.7	108.9	85.7	708.1	529.8	178.3
1985	156.9	59.2	295.5	200.0	144.9	856.5	522.5	334.0
1986	91.7	41.9	294.0	229.3	160.4	817.3	429.3	388.0
1987	94.9	15.9	326.6	286.2	198.4	922.0	364.1	557.9
1988	156.7	82.2	317.4	236.5	116.9	909.7	540.0	369.7

(Table 6.1 continued)

Year	Kinney Uvalde	Medina	Bexar	Comal	Hays	Total	Total Wells	Total Springs
1989	156.9	70.5	305.6	147.9	85.6	766.5	542.4	224.1
1990	118.1	69.7	276.8	171.3	94.1	730.0	489.4	240.6
1991	76.6	25.6	315.5	221.9	151.0	790.6	436.0	354.6
1992	76.5	9.3	370.5	412.4	261.3	1130.0	327.2	802.8
1993	107.5	17.8	371.0	349.5	151.0	996.7	407.3	589.4
1994	95.5	41.1	297.7	269.8	110.6	814.8	424.6	390.2
1995	90.8	35.2	*272.1	235.0	127.8	761.0	399.6	361.3
1996	117.6	66.3	*286.8	150.2	84.7	705.6	493.6	212.0
1997	77.0	31.4	260.2	243.3	149.2	761.1	377.1	383.9
1998	113.1a	51.3	312.4b	271.8c	168.8	917.6	453.5	464.1
1999	104.0	49.2	307.1b	295.5c	143.0	898.8	442.7	456.1
2000	89.1	45.1	283.6b	226.1c	108.4	752.3	414.8	337.5
2001	68.6	33.9	291.6b	327.7c	175.4	890.0	367.7	529.6
2002	74.4	39.5	314.1b	346.9c	202.2	977.1	367.2	609.9
For period of record 1934-2002:								
Mean	71.4	20.5	240.1	223.7	120.8	676.4	304.3	372.2
Median	68.6	13.6	230.3	231.8	116.9	660	310.4	375.8
For period of record 1993-2002 (last 10 years):								
Mean	93.8	41.1	299.7	271.6	142.1	847.5	414.8	433.4
Median	93.2	40.3	294.7	270.8	146.1	852.4	411.1	423.2

Data source: USGS and Edwards Aquifer Authority, 2002.
a Kinney County well discharge is estimated.
b Includes reports of Edwards Aquifer irrigators in Atascosa County.
c Includes reports of Edwards Aquifer industrial and municipal users in Guadalupe County.
Differences may occur due to rounding.
*In 1995, the USGS revised the method of calculating domestic/livestock pumping, which significantly decreased the estimate for subsequent years.

Table 6.2 Estimated spring discharge from the Edwards Aquifer, 2002 (measured in acre-feet).

Month	Leona Springs and Leona River Underflow	San Pedro Springs	San Antonio Springs	Comal Springs	Hueco Springs	San Marcos Springs	Total Monthly Discharge From Springs
January	1,195	869	3,930	24,050	5,656	19,120	54,820
February	1,054	668	2,610	21,410	4,746	15,860	46,348
March	977	611	1,850	22,810	4,701	15,700	46,649
April	1,005	604	1,850	21,280	3,805	12,810	41,354
May	871	301	133	19,930	3,068	11,960	36,263
June	674	70	0	16,660	1,999	10,190	29,593
July	995	1,090	6,470	23,800	3,460	18,180	53,995
August	1,042	944	4,830	23,420	6,151	19,060	55,447
September	1,059	986	5,870	22,920	6,219	17,400	54,454
October	1,106	1,140	8,090	24,420	6,160	16,650	57,566
November	1,109	1,370	11,740	26,290	5,911	19,370	65,790
December	1,120	1,350	11,210	27,790	6,489	19,620	67,579
Total	12,200	10,000	58,600	274,800	58,400	195,900	609,900

Data source: USGS, 2003.
Differences may occur due to rounding.

Figure 6.2 Groundwater pumping compared to springflow from the Edwards Aquifer, 1934-2002 (measured in thousands of acre-feet).

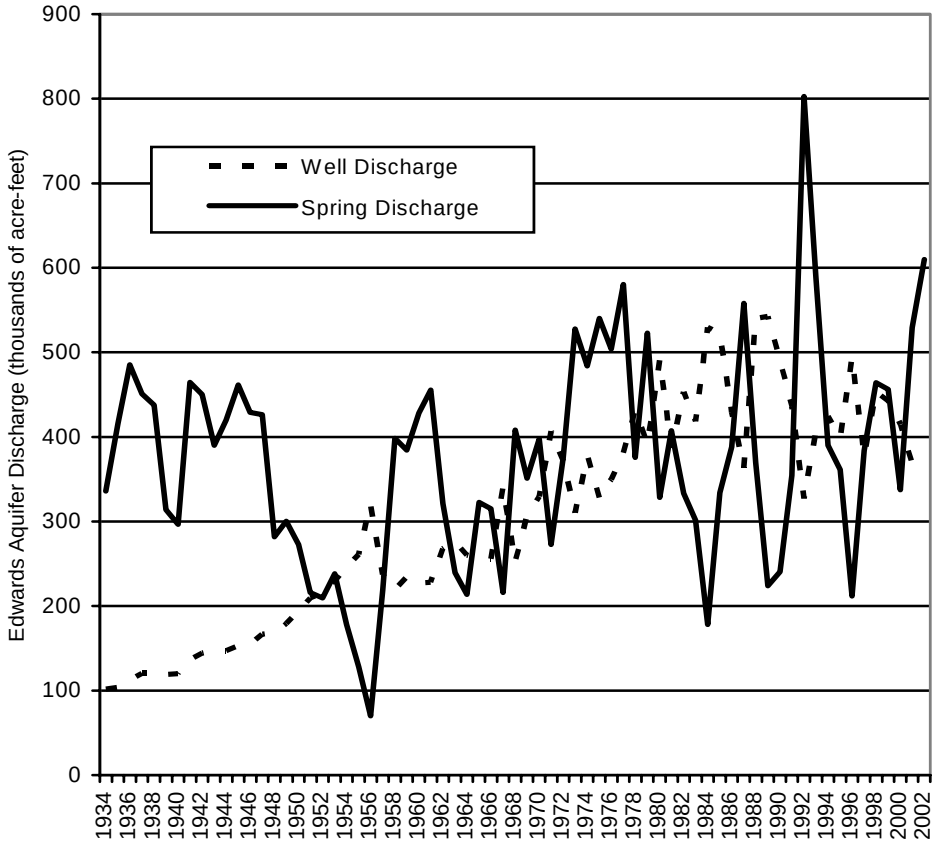


Table 6.3 Total groundwater discharge from the Edwards Aquifer, 2002 (measured in thousands of acre-feet).

County	Irrigation	Municipal /Military	Domestic /Stock	Industrial	Total Wells	Springs	Total Wells & Springs
Bexar	8.5a	208.9	9.0	19.1	245.5	68.6e	314.1
Comal	0.06b	4.8d	0.3	8.6d	13.7	333.2e	346.9
Hays	0.06b	3.5	0.8	1.9	6.3	195.9e	202.2
Medina	32.4b	5.5	0.9	0.7	39.5	0.0	39.5
Uvalde	53.0b	4.4	2.3	0.7	60.3	12.2e	72.5
Kinney	0.6	1.0	0.3	0.0	1.9	0.0	1.9
Total	94.6	228.1	13.6c	31.0	367.2	609.9	977.1

Differences may occur due to rounding.
Data source: Edwards Aquifer Authority, and USGS 2003.
a Includes Atascosa County.
b Estimated from reports by Edwards Aquifer irrigators.
c Estimated by Edwards Aquifer Authority.
d Includes Guadalupe County.
e Estimated by the USGS.

Table 6.4 Annual estimated Edwards Aquifer groundwater discharge by use, 1955-2002 (measured in thousands of acre-feet).

Year	Irrigation	Municipal	Domestic/ Stock	Industrial/ Commercial	Springs
1955	85.2	120.5	30.1	25.1	127.8
1956	127.2	138.3	28.9	22.4	69.8
1957	68.8	116.1	29.8	22.6	219.2
1958	47.2	113.7	33.4	25.1	398.2
1959	60.0	118.9	31.5	24.2	384.5
1960	54.9	121.1	29.1	23.3	428.3
1961	52.1	124.5	29.6	22.2	455.3
1962	72.7	143.7	28.8	22.8	321.1
1963	75.4	151.8	27.8	21.8	239.6
1964	72.6	140.2	26.3	21.7	213.8
1965	68.0	138.8	27.0	22.3	322.8
1966	68.2	141.8	23.3	22.6	315.3
1967	119.4	171.0	25.1	25.8	216.1
1968	59.3	146.9	25.5	20.0	408.3
1969	95.2	162.0	29.2	21.1	351.2
1970	110.1	167.5	29.3	22.5	397.7
1971	159.4	196.2	28.6	22.6	272.7
1972	128.8	190.5	30.8	21.1	375.8
1973	82.2	177.1	32.3	18.8	527.6
1974	140.4	174.6	33.5	15.1	483.3
1975	96.4	182.5	33.6	15.3	540.4
1976	118.2	182.1	34.6	14.7	503.9
1977	124.2	205.3	38.1	13.0	580.3
1978	165.8	214.2	40.3	11.5	375.5
1979	126.8	208.9	40.7	15.2	523.0
1980	177.9	256.2	43.3	13.7	328.3
1981	101.8	231.8	40.9	12.6	407.3
1982	130.0	268.6	39.5	15.0	333.3
1983	115.9	249.2	38.8	14.7	301.5
1984	191.2	287.2	36.2	15.2	178.3
1985	203.1	263.7	39.2	16.5	334.0
1986	104.2	266.3	42.0	16.8	388.0
1987	40.9	260.9	43.5	18.7	557.9
1988	193.1	286.2	41.9	18.8	369.7
1989	196.2	285.2	38.2	22.9	224.1
1990	172.9	254.9	37.9	23.7	240.6
1991	88.5	240.5	39.5	67.5	354.6
1992	27.1	236.5	34.8	29.0	802.8
1993	69.3	252.0	49.9	36.1	589.4
1994	104.5	247.0	33.9	39.3	390.2
1995	95.6	255.0	11.6*	37.3	361.3
1996	181.3	261.3	12.3*	38.8	212.0
1997	77.4	253.0	12.3*	34.4	383.9
1998	131.9	266.5	13.4*	41.7b	464.1
1999	113.6	273.3	13.4*	42.4	456.1
2000	106.3	261.3	13.4*	33.8	337.5
2001	79.0	245.9	13.4*	29.4	529.4
2002	94.6	228.1	13.6**	31.0	609.9
For period of record 1955-2002:					
Mean	107.8	205.8	30.6	24.2	379.3
Median	103.0	211.6	31.2	22.5	375.7
For period of record 1993-2002 (last 10 years):					
Mean	105.4	254.3	18.7	36.4	433.4
Median	100.1	254.0	13.4	36.7	423.2

Data source: USGS and Edwards Aquifer Authority, 2002.
Differences may occur due to rounding.

*In 1995 the USGS revised the method of calculating domestic/livestock pumpage, which significantly decreased the estimate for subsequent years.

**Revision based on number of new wells permitted in 2001 and 2002.

In 2002, the Authority and USGS estimated discharge from the Edwards Aquifer. Prior to 1997, the USGS determined the total amount of irrigated acreage from county tax rolls, which have remained relatively constant over recent years. County soil and water conservation districts provided estimates of irrigation "duties" for selected crop types. The USGS multiplied these duties by amounts of irrigated acreage by crop type as provided by the U.S. Department of Agriculture (USDA), thereby determining an estimate of irrigation uses from the Edwards Aquifer.

In 1997, the Authority initiated the Edwards Aquifer Well Metering Program, which requires meters for all municipal, industrial, and irrigation wells in the Edwards Aquifer. Since 1998, the Authority has utilized well pumpage data from the Well Metering Program to estimate well discharge. The availability of direct pumpage data has significantly improved the discharge estimating process.

In 2001, a well permitting system was introduced, requiring all new wells drilled in the Edwards Aquifer to have a construction permit. Permitting data were used to develop updated estimates for the domestic / livestock use category in **Tables 6.3** and **6.4**. Based on the addition of 144 wells in 2001, and 154 wells in 2002, the domestic / livestock use was increased by approximately 188 acre feet for 2002 compared to 2001.

7.0 WATER QUALITY

The Authority, in cooperation with the USGS and TWDB, has conducted a systematic program of water quality data collection since 1968. Through this cooperative effort, the Authority has maintained a network of groundwater and surface water monitoring sites, including major springs, for gathering water quality data across the Edwards Aquifer area. Analyses of these data have been used by the Authority to assess aquifer water quality.

In 2002, the Authority in cooperation with the USGS, TWDB, and San Antonio Water System (SAWS) collected water quality samples from 76 wells, five spring groups, and nine streams. The locations of these monitoring sites are shown on **Figures 7.1, 7.1a, 7.1b, and 7.1c**. These samples were analyzed in the field for selected water quality parameters and in the laboratory for inorganic and organic chemical constituents. The field analyses included temperature, pH, conductivity, and alkalinity. In general, all water samples were analyzed in the laboratory for common major ions, minor elements (metals), total dissolved solids (TDS), hardness, and nutrients. Water samples collected from 16 wells, the five spring groups, and nine stream locations were also analyzed for pesticides and herbicides. Water samples collected from 27 wells and the five spring groups were also analyzed for volatile organic compounds (VOCs). Semivolatile organic compounds were included in the analyses of water samples from 11 wells and the five spring groups.

A general listing of the parameters analyzed, their drinking water standards, and typical concentrations in the Edwards Aquifer are listed in **Table 7.1**. The water quality data collected in 2002 are included in **Appendix C**. Water quality data collected from wells in 2002 are compiled in **Appendix C**, tables C-1 through C-7. Water quality data collected from streams and springs in 2002 are compiled in **Appendix C**, tables C-8 through C-14. The Authority compares the water analyses to the following federal and state water quality standards to determine if any concentrations exceed health-based levels.

Primary Drinking Water Standards – These standards are enforceable and are often referred to as the maximum contaminant levels (MCL) or primary drinking water standards. The MCL for a contaminant is the maximum permissible level in water that is delivered to any user of a public water system. MCLs protect drinking water quality by limiting the levels of specific contaminants that can adversely affect public health and are known or anticipated to occur in public water systems. The primary standards are indicated on **Table 7.1**.

Secondary Drinking Water Standards – These standards are non-enforceable and are set for contaminants that may affect the aesthetic qualities of drinking water, such as odor or appearance. **Table 7.2** is a list of the current secondary standards. Concentrations of the secondary standards listed on **Table 7.2** are generally not exceeded in the freshwater portion of the Edwards Aquifer, although concentrations of total dissolved solids (TDS), fluoride, and iron occasionally exceed their secondary standards in samples from the saline water zone.

7.1 Water Quality Data from Edwards Aquifer Wells

Summary of Analytical Results – Groundwater samples were analyzed by contract laboratories (Severn Trent Services (STL), and Lower Colorado River Authority) for the following metals: aluminum, antimony, arsenic, barium, beryllium, boron, bromide, cadmium, calcium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, mercury,

molybdenum, nickel, potassium, selenium, silica, silver, sodium, strontium, thallium, vanadium, and zinc. Samples from several wells, primarily freshwater/saline water interface monitoring wells, contained detectable metal concentrations. One sample, collected from well LR-67-01-816 in Hays County, contained antimony at 0.0124 mg/L. This concentration exceeds the maximum contaminant level (MCL) of 0.006 mg/L for antimony. Silver concentrations of 1.0 mg/L were detected in the samples collected from wells AY-68-29-114 and AY-68-27-609. This concentration exceeds the MCL of 0.183 mg/L for silver. Thallium concentrations exceeding the MCL of 0.002 mg/L were detected in seven wells; five of the wells are saline zone monitoring wells. These wells will be monitored in the future for possible trends of antimony, silver, and thallium impacts.

Laboratory analyses indicated that 65 wells in Hays, Comal, Bexar, Medina, and Uvalde counties contained detectable nitrate concentrations. None of the nitrate concentrations, exceeded the nitrate MCL of 10 mg/L. In general, elevated nitrate concentrations were detected in wells in the Uvalde area (YP-69-50-501 at 7.48 mg/L and YP-69-51-114 at 5.18 mg/L) and in western Comal County (DX-68-30-221, at 5.69 mg/L). The Authority is studying historical nitrate concentrations to identify trends that may indicate contamination source(s).

Some well water samples contained organic compounds; however, no organic compounds were detected above a drinking water standard. Water samples collected from 16 wells were analyzed for pesticides and herbicides. Three herbicide analytes, ethoprop, silvex, and dicamba were detected in wells in Bexar County. Bexar County well AY-68-28-313 contained ethoprop at 0.077 µg/L, and well AY-68-28-518 contained silvex and dicamba at 0.061 and 0.09 µg/L respectively. Pesticides were detected in Bexar County well AY-68-28-313, at 0.01 µg/L for lindane, and 0.014 µg/L for diazinon. Water samples from 27 wells were also analyzed for volatile organic compounds (VOCs). Five samples contained detectable concentrations of tetrachloroethene (PCE). Well YP-69-51-114, located in the City of Uvalde contained 4.0 µg/L. The other four wells, located in Bexar County contained PCE at concentrations ranging from 0.4 to 0.8 µg/L. The MCL for PCE is 5 µg/L. The source of the tetrachloroethene in Uvalde was an industrial dry cleaning operation destroyed by fire in 1979, and tetrachloroethene has been detected in that well in the past. The TCEQ is addressing the Uvalde area contamination in the Edwards Aquifer with the responsible party. The Authority and TCEQ are investigating the source of the tetrachloroethene in Bexar County. Ten samples contained traces of acetone, which is attributed to contamination in the laboratory environment (lab contamination). Trace amounts of several other VOCs were reported by the laboratory that are also believed to be related to post sample collection contamination and not associated with the aquifer. Trace amounts of the following VOCs were reported:

- 1,1,3-trichloro-1,2,2-trifluoroethane
- 1,1-dichloroethene
- bromomethane
- carbon disulfide
- chloromethane
- dibromochloromethane
- methylene chloride
- toluene
- trichlorofluoromethane

The semivolatile organic compound (SVOC), bis (2-ethylhexyl) phthalate, was detected in two wells, however it appears to be due to laboratory or post collection sample contamination.

Phthalate compounds are common post sample collection contaminants generally associated with plastic well casing and other plastics frequently used in sample collection. Again, none of these organic compounds were detected above a drinking water standard. The Authority will continue its aquifer-wide well sampling program to monitor for any indication of water quality impacts.

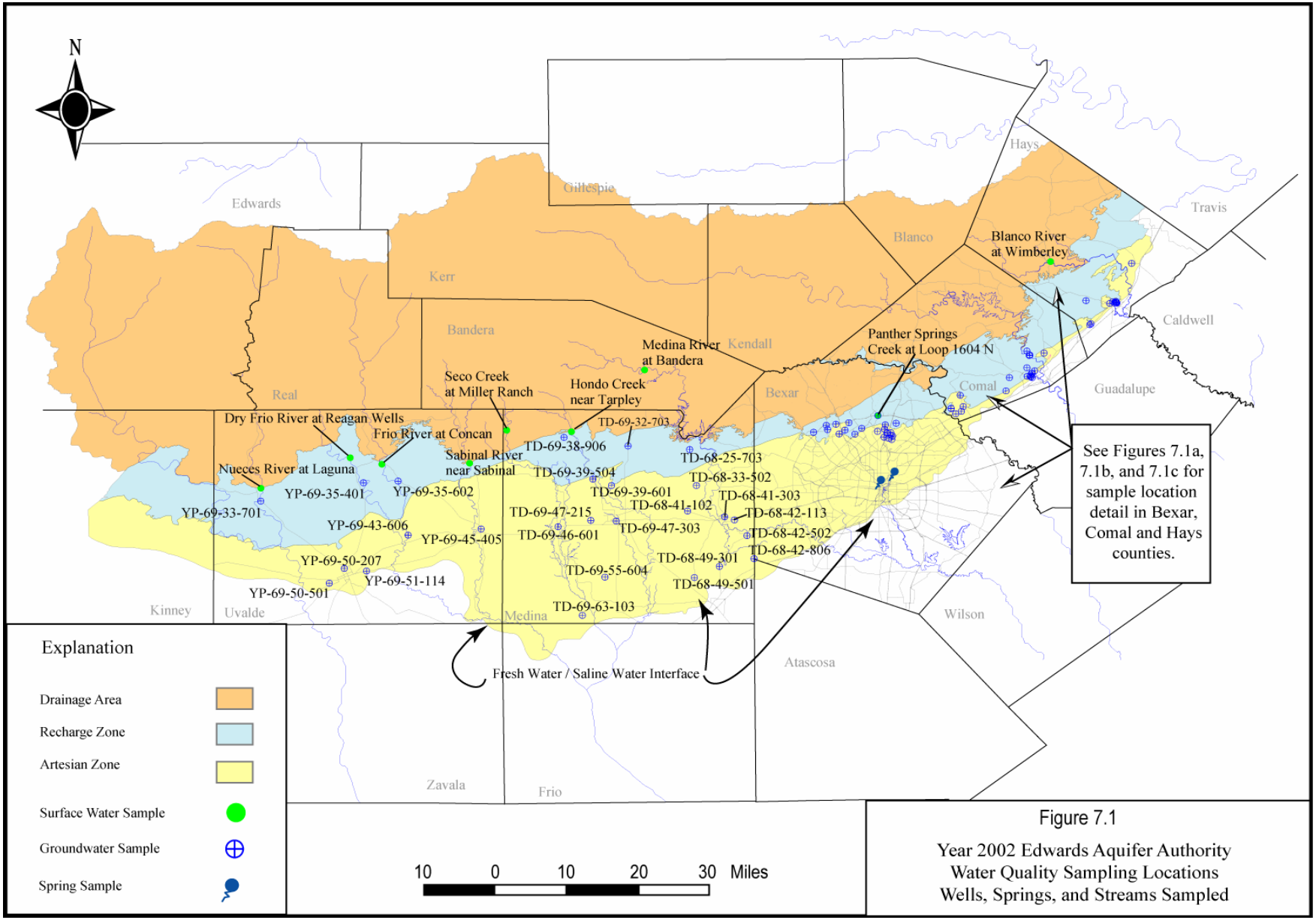


Figure 7.1

Year 2002 Edwards Aquifer Authority
Water Quality Sampling Locations
Wells, Springs, and Streams Sampled

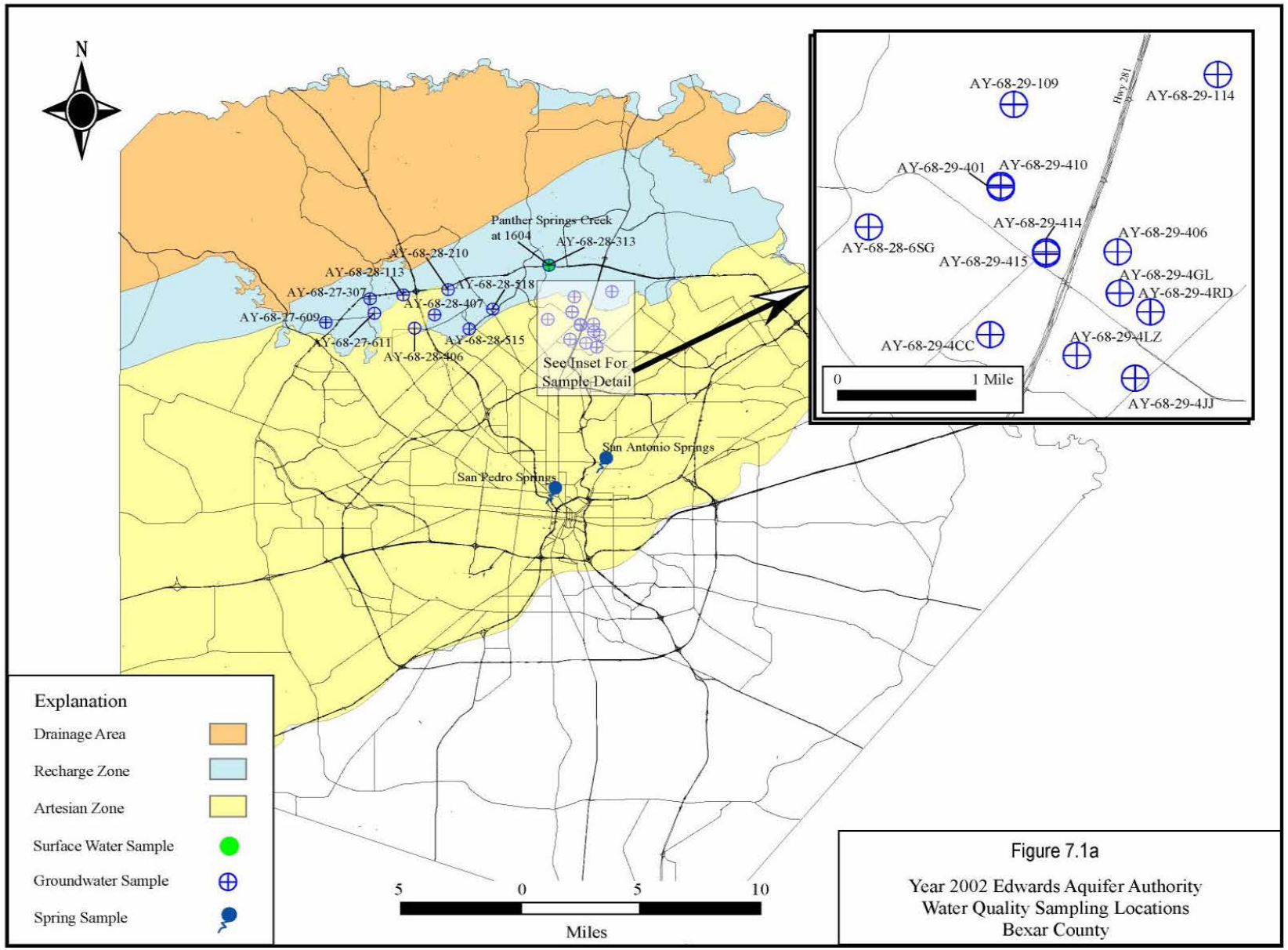
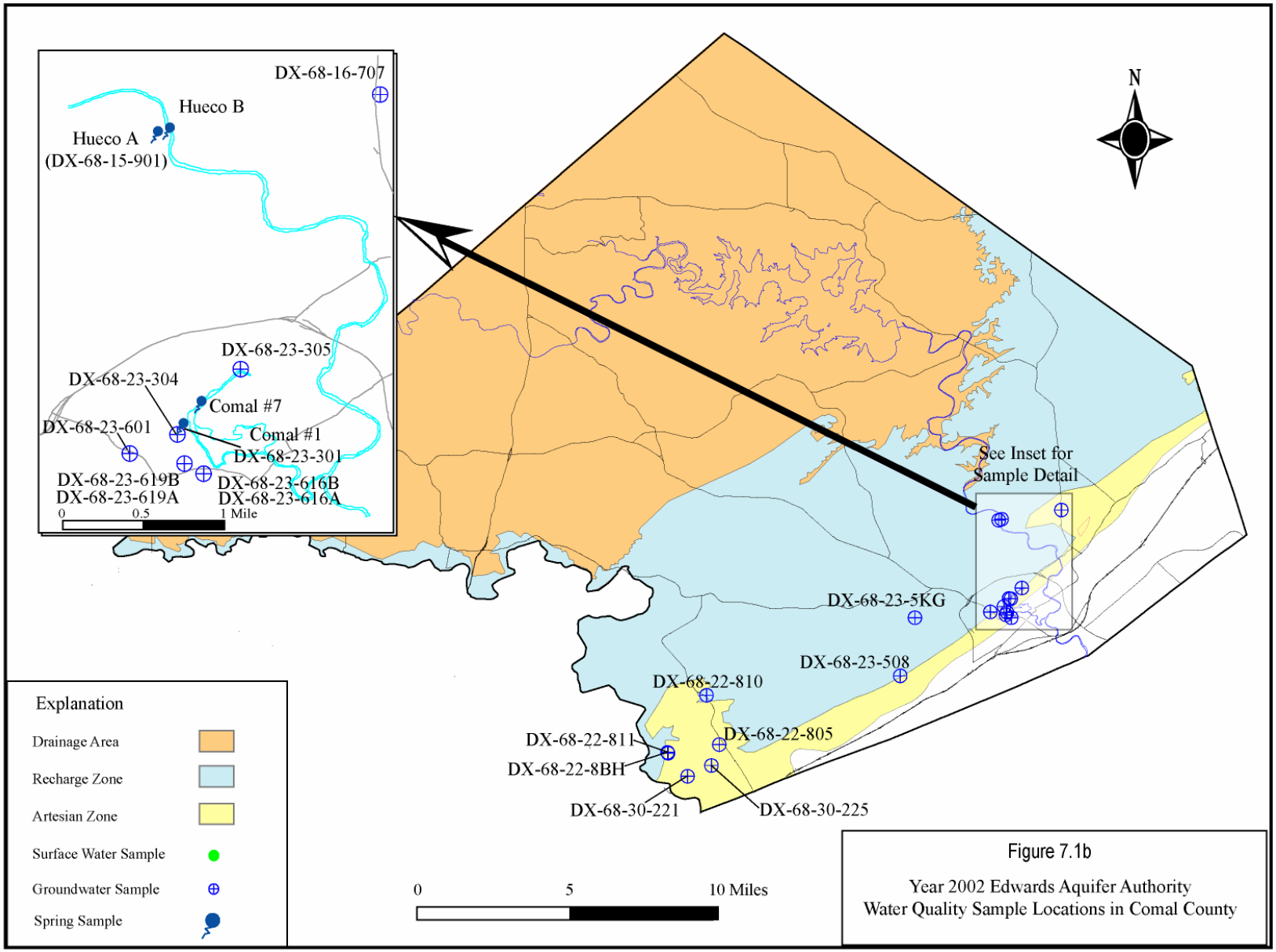


Figure 7.1a

Year 2002 Edwards Aquifer Authority
Water Quality Sampling Locations
Bexar County


DX-68-16-707
Hueco B
Hueco A
(DX-68-15-901)
DX-68-23-305
DX-68-23-304
Comal #7
DX-68-23-601
Comal #1
DX-68-23-301
DX-68-23-619B
DX-68-23-619A
DX-68-23-616B
DX-68-23-616A
0
0.5
1 Mile
N
See Inset for
Sample Detail
DX-68-23-5KG
DX-68-23-508
DX-68-22-810
DX-68-22-811
DX-68-22-805
DX-68-22-8BH
DX-68-30-221
DX-68-30-225
Explanation
Drainage Area
Recharge Zone
Artesian Zone
Surface Water Sample
Groundwater Sample
Spring Sample
0
5
10 Miles
Figure 7.1b
Year 2002 Edwards Aquifer Authority
Water Quality Sample Locations in Comal County

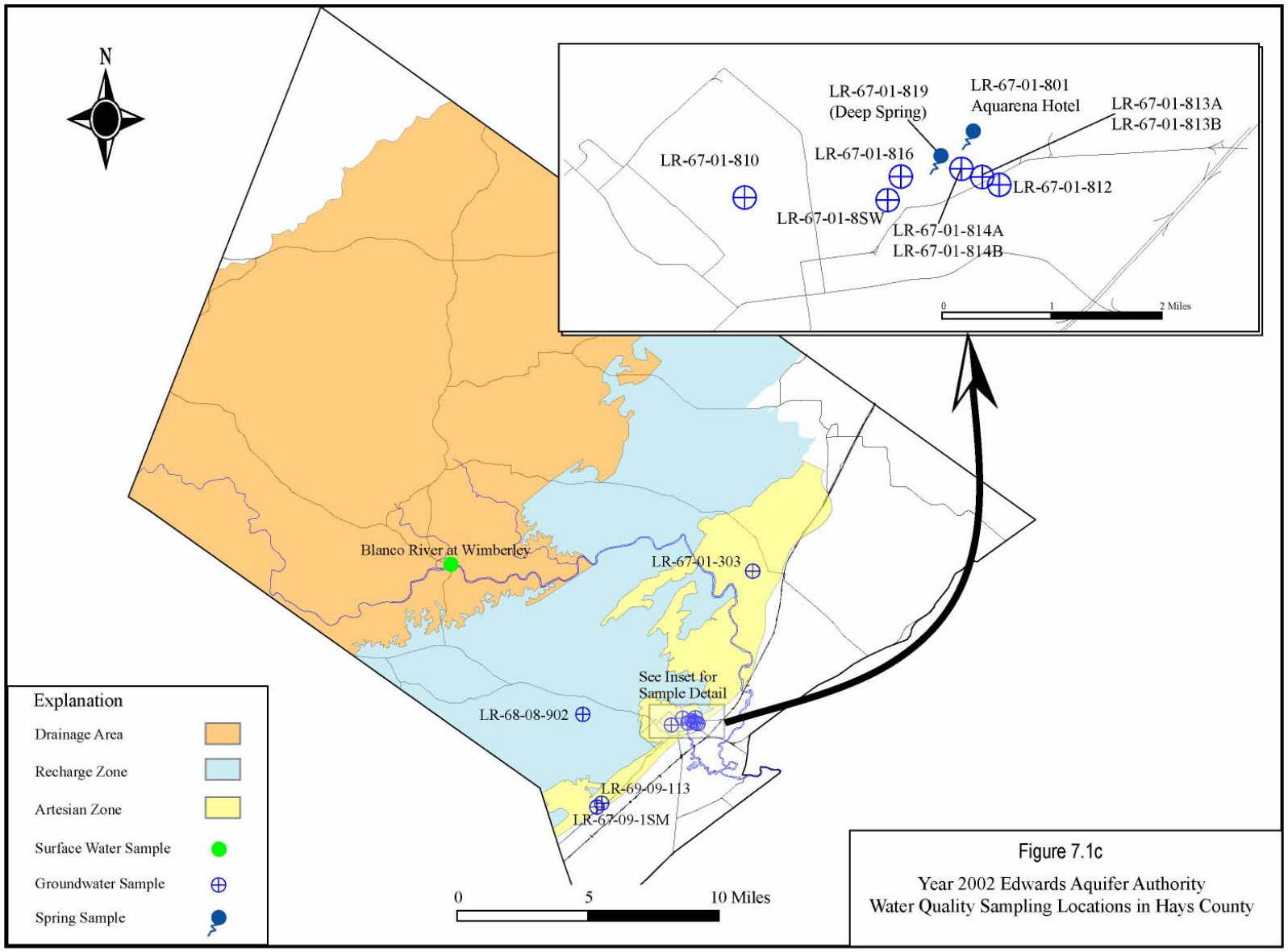


Figure 7.1c

Year 2002 Edwards Aquifer Authority
Water Quality Sampling Locations in Hays County

Table 7.1 Comparison of drinking water quality standards to range of concentrations from water quality results, 2002.

Parameter	Maximum Contaminant Levels or Secondary Standards	Range of Concentrations Detected in 2002	Typical Range of Concentrations for the Freshwater Edwards Aquifer
Laboratory Parameters:			
pH	6.5-8.5*	6.46-8.08	6.5-8.0
Alkalinity (mg/L)	NE	176-354	200-250
Conductivity(µS/cm)	NE	412-14,780	300-500
Hardness (mg/L)	NE	198-4200	250-300
Non-carbonate Hardness (mg/L)	NE	NA	20-50
Dissolved Solids (mg/L)	500*	100-10,600	250-450
Total Organic Carbon (mg/L)	NE	2.10-48	1-5
Major Ions:			
Calcium (Ca) (mg/L)	NE	25.0-1,140	80-120
Magnesium (Mg) (mg/L)	NE	1.25-573	10-20
Sodium (Na) (mg/L)	NE	1.06-2450	3-10
Potassium (K) (mg/L)	NE	0.317-105	1-2
Bicarbonate (HCO_3) (mg/L)	NE	NA	250-400
Carbonate (CO_3) (mg/L)	NE	NA	0
Sulfate (SO_4) (mg/L)	250*	2.58-2,470	10-30
Chloride (Cl) (mg/L)	250*	1.78-3,780	10-30
Fluoride (F) (mg/L)	4	0.025-3.34	0.1-0.5
Silica (SiO_2) (mg/L)	NE	3.52-22.3	10-20
Nutrients:			
Nitrate + nitrite as N (mg/L)	10	<0.02-7.48	ND-3.0
Total Phosphorus(mg/L)	NE	0.005-3.04	ND-0.1
Microbiological Parameters:	NE		
Total Coliform (cols/100ml)	10,000 (raw water for drinking-water supplies)	0	0-5,000
Fecal Coliform (cols/100ml)	2,000 (raw water for drinking-water supplies)	0	0-150
Fecal Streptococci (cols/100ml)	NE	0	0-100
Metals:			
Aluminum (Al) (mg/L)	0.05-0.2	<0.004-0.0211	ND-210
Antimony (Sb) (mg/L)	0.006	<0.001-0.00915	ND–1.18
Arsenic (As) (mg/L)	0.05	0.002-0.0054	ND-2
Barium (Ba) (mg/L)	2	<0.01-0.171	ND-100
Beryllium (Be) (mg/L)	0.004	<0.001-0.0033	ND
Cadmium (Cd) (mg/L)	0.005	<0.001-0.001	ND-1
Chromium (Cr) (mg/L)	0.1	<0.001-0.0124	ND-15
Copper (Cu) (mg/L)	1**	<0.001-0.024	ND-40
Iron (Fe) (mg/L)	0.3*	<0.01-0.887	ND-500
Lead (Pb) (mg/L)	0.015**	<0.001-0.00695	ND-10
Manganese (Mn) (mg/L)	0.05*	<0.001-0.0242	ND-50
Mercury (Hg) (mg/L)	0.002	<0.0002-0.00042	ND-1.5
Nickel (Ni) (mg/L)	0.1a	<0.001-0.0154	ND-4
Selenium (Se) (mg/L)	0.05	<0.004-0.0294	ND
Silver (Ag) (mg/L)	0.183a	<0.005	ND
Thallium (Tl) (mg/L)	0.002	<0.001-0.0239	ND-0.005
Zinc (Zn) (mg/L)	5*	<0.004-0.819	ND-2,000
Pesticides:			
Aldrin (µg/L)	0.005a	<0.05	ND
Atrazine (µg/L)	3	<2.0	ND
Alpha-Chlordane (µg/L)	2	<0.05	ND
4,4'-DDD (µg/L)	0.355a	<0.05	ND
4,4'-DDE (µg/L)	0.25a	<0.05	ND
4,4'-DDT (µg/L)	0.25a	<0.05	ND
Endrin (µg/L)	2	<0.05	ND
Halowax (µg/L)	NE	-	ND
Heptachlor (µg/L)	0.4	<0.05	ND
Heptachlor epoxide (µg/L)	0.2	<0.05	ND
Lindane (µg/L)	0.2	<0.01-0.01	ND
Mirex (µg/L)	NE	-	ND

(Table 7.1 continued)

Parameter	Maximum Contaminant Levels or Secondary Standards	Range of Concentrations Detected in 2002	Typical Range of Concentrations for the Freshwater Edwards Aquifer
Pesticides (cont'd)			
Diazinon (µg/L)	NE	<0.5	ND
Ethion (µg/L)	NE	<0.5	ND
Malathion (µg/L)	NE	<0.2	ND
Methyl Parathion (µg/L)	NE	<0.2	ND
Methyl Trithion (µg/L)	NE	NA	ND
Parathion (µg/L)	NE	NA	ND
Trithion (µg/L)	NE	NA	ND
PCB (µg/L)	0.5	<0.5	ND
Endosulfan (µg/L)	1.83a	<0.05	ND
Ethyl Trithion (µg/L)	NE	NA	ND
Perthane (µg/L)	NE	NA	ND
Toxaphene (µg/L)	3	<0.6	ND
Herbicides			
2, 4-D (µg/L)	70	<0.45	ND
2, 4, 5-T (µg/L)	0.365a	<0.099	ND
2, 4, 5-TP (Silvex) (µg/L)	50	<0.099	ND
Volatile organic compounds			
Acetone (µg/L)	3,650a	<20	ND
Acrolein (µg/L)	730a	<20	ND
Acrylonitrite (µg/L)	0.158a	<20	ND
Benzene (µg/L)	5	<1	ND
Bromoform (µg/L)	100a	<1	ND
2-Butanone (µg/L)	NE	<5	ND
Carbon disulfide (µg/L)	3,650a	<1	ND
Chlorobenzene (µg/L)	100	<1	ND
Chloroform (µg/L)	100a	<1	ND
Chloromethane (µg/L)	NE	<2	ND
1,2 Dichlorobenzene (µg/L)	600a	<1	ND
1,3 Dichlorobenzene (µg/L)	600a	<1	ND
1,2 Dichloroethane (µg/L)	5	<1	ND
2-Hexanone (µg/L)	NE	<5	ND
4-Methyl-2-pentanone (µg/L)	NE	<5	ND
1,1,1-Trichloroethane (µg/L)	200	<1	ND
1,1,2-Trichloroethane (µg/L)	5	<1	ND
1,2-Dichloroethane (µg/L)	5	<1	ND
1,2-Dichloropropane (µg/L)	5	<1	ND
1,1-Dichloroethylene (µg/L)	7	<1	ND
1,2,4-Trichlorobenzene (µg/L)	70	<1	ND
Carbon Tetrachloride (µg/L)	5	<1	ND
cis-1,2-Dichloroethylene (µg/L)	70	<0.5	ND
Ethylbenzene (µg/L)	700	<1	ND
Methylene Chloride (µg/L)	5	<1	ND
o-Dichlorobenzene (µg/L)	600	NA	ND
Naphthalene (µg/L)	1460a	<10	ND
2-Methylnaphthalene (µg/L)	NE	<10	ND
para-Dichlorobenzene (µg/L)	75	NA	ND
Styrene (µg/L)	100	<1	ND
1,1,2,2-Tetrachloroethane (µg/L)	4.26a	<1	ND
Tetrachloroethene (µg/L)	5	<1-4	ND

(Table 7.1 continued)

Parameter	Maximum Contaminant Levels or Secondary Standards	Range of Concentrations Detected in 2002	Typical Range of Concentrations for the Freshwater Edwards Aquifer
Volatile organic compounds: (cont'd):			
Toluene (µg/L)	1,000	<1	ND
trans-1,2-Dichloroethylene (µg/L)	100	<0.5	ND
Trichloroethene (µg/L)	5	<1	ND
Vinyl Chloride (µg/L)	2	<1	ND
Xylenes, total (µg/L)	10,000	<1	ND
Semivolatile organic compounds:			
Pentachlorophenol (µg/L)	1	<0.01-0.019s	ND

Data source: EPA maximum contaminant levels, 40 CFR, Part 141, 2002.
a Risk-based maximum contaminant level listed in 30 TAC Chapter 335, Subchapter S dated 4/28/2003.
NE indicates no established maximum contaminant level or secondary standard.
* Secondary drinking water standards (40 CFR, Part 143, 2002).
**Copper and lead are regulated by a Treatment Technique action level. The action level, which triggers public water systems into taking treatment steps if exceeded in more than 10% of tap samples, which is 1.3 mg/L for copper, and for lead is 0.015 mg/L.
ND = indicates not detectable
NA = not analyzed
s = stream sample

Table 7.2 Secondary drinking-water standards.

Parameter	Secondary Drinking Water Standard (mg/L)
Aluminum	0.05-0.2
Chloride	250
Color	15 color units
Copper	1.0
Corrosivity	Non-corrosive
Fluoride	2.0
Iron	0.3
Manganese	0.05
pH	6.5-8.5
Silver	0.10
Sulfate	250
Total Dissolved Solids (TDS)	500
Zinc	5

Data source: EPA, 40 CFR, Part 143, 2002.
The range of concentrations detected for these parameters in the Edwards Aquifer is included on **Table 7.1**. Color and corrosivity are not analyzed.

7.2 Freshwater/Saline Water Interface Studies

The freshwater/saline-water interface of the Edwards Aquifer is a regional boundary between the fresh and saline portion of the aquifer and is defined by a mapped iso-concentration line representing 1,000 mg/L of total dissolved solids (TDS). Groundwater is commonly classified according to TDS concentrations, as shown in **Table 7.3**.

Table 7.3 Classification of groundwater quality based on total dissolved solids.

Description	TDS Concentration (mg/L)
Fresh	Less than 1,000
Slightly saline	1,000 to 3,000
Moderately saline	3,000 to 10,000
Very saline	10,000 to 35,000
Brine	More than 35,000

Source: Winslow and Kister, 1956.

The interface varies both laterally and vertically in portions of the aquifer. Locally this line is referred to as the freshwater/saline-water interface, or "bad-water line," which defines the farthest downdip extent of potable water (Pavilicek and others, 1987). The approximate location of the freshwater/saline-water interface is shown in **Figures 1.1 and 7.1**. Water quality concerns related to the position and stability of the freshwater/saline-water interface have been expressed by some researchers. The limited water quality data collected during and since the drought of record in the 1950s is inconclusive as to whether encroachment of saline water is likely during a recurrence of extreme drought conditions. However, encroachment of saline water has not been identified as a problem in the region.

South and southeast of the interface, water from the aquifer is slightly to moderately saline and contains moderate to large concentrations of dissolved chloride and sulfate. The interface varies both laterally and vertically, as determined in several wells near the boundary. Water from some wells north of the interface, and from all wells south of the interface contains dissolved hydrogen sulfide gas. In most wells along the interface, freshwater has been encountered in the upper portion and saline water in the lower portion of the Edwards Aquifer (Groschen, 1993; Reeves, 1971). Other wells along the interface have encountered the opposite vertical distribution, with saline-water zones overlying freshwater zones, particularly in the southern area of Medina County (J.R. Waugh, oral communication, 1997).

In 1985, the former Edwards Underground Water District (EUWD) in cooperation with the USGS, TWDB and SAWS initiated a research study of the freshwater/saline-water interface. A series of seven wells were drilled in the San Antonio area that transects the freshwater/saline-water interface to detect changes in water quality as the hydraulic head in the aquifer changes. This program was implemented in response to the concern that increased aquifer withdrawals might result in encroachment of saline-water into the aquifer's freshwater zone. As part of the Authority's ongoing water quality program, periodic samples are collected and analyzed. Other samples are collected when certain spring-discharge criteria are met.

The possibility of saline-water encroachment and subsequent deterioration of water quality in the aquifer led to the construction of additional water quality monitor well transects across the freshwater/saline-water interface. Two monitor wells were drilled and tested by the

Authority with the cooperation of local entities. These transects are located in the New Braunfels and San Marcos areas (Poteet and others, 1992). Water quality in these transect wells has been relatively uniform with no significant changes since the program began. Since 1997, SAWS, working with the USGS, TWDB, and the Authority, has continued to install transects of freshwater/saline-water interface monitoring wells. These transects include:

- Kyle Transect (installed in 1998)
- East Uvalde "Knippa Gap" Transect (installed in 1999)
- "Tri-County" (Bexar-Comal- Guadalupe) Transect (installed 2000)
- Hays – Fish Hatchery Transect (2001)
- Mission Road Transect (2002)

During the studies conducted to date (1986 to present), the data indicate that changes in the aquifer water levels have little effect on the water quality in wells that are directly adjacent to the freshwater/saline-water interface. The Authority, USGS, and SAWS will continue to monitor water quality in the freshwater/saline water interface monitoring wells.

7.3 Surface Water Quality Data from Streams and Springs in the Edwards Aquifer Area

Surface water quality data are collected within the catchment area at USGS gauging stations located upstream of the Edwards Aquifer Recharge Zone. The surface water data collection sites are located within eight major stream basins that flow across and contribute significant groundwater recharge to the Edwards Aquifer within the recharge zone in the San Antonio region. The basins monitored, from west to east, are the Nueces River, Dry Frio River, Frio River, Sabinal River, Seco Creek, Hondo Creek, Medina River, and Blanco River. Surface water samples were collected from each of the listed rivers and creeks, along with a surface water sample at Panther Springs Creek in Bexar County. Data from these sites can be used as a base level to evaluate the quality of water recharging the aquifer and the sensitivity of water quality to land use changes in various areas of the Edwards Aquifer region.

Water quality data are collected from five major spring groups discharging from the aquifer because they provide composite samples of the vast underground drainage network that makes up the aquifer. Multiple spring orifices were sampled at Comal, Hueco, and San Marcos springs, while single spring orifices were sampled at San Antonio and San Pedro springs.

Summary of Analytical Results – Water samples from the nine stream locations and five spring groups were analyzed for the following metals: antimony, arsenic, barium, beryllium, boron, bromide, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, mercury, nickel, potassium, selenium, silver, sodium, strontium, thallium, and zinc. Detectable metal concentrations in surface water are not uncommon at trace amounts. Analytical results indicate antimony at three surface water and five spring water sample sites at concentrations slightly above the associated MCL of 0.006 mg/L. The results ranged from 0.0063 to 0.00915 mg/L. The analytical laboratory reports indicated that these antimony results were detected below the laboratory reporting limit. As such, the results may not be representative of actual concentrations. The Authority will continue to monitor these sites in the future for the presence of antimony.

Laboratory analyses indicated trace amounts of nitrate in most surface water and spring water samples. Surface water samples had nitrate concentrations ranging from less than the reporting limit to 3 mg/L. All spring water samples indicated the presence of nitrate, with concentrations between 0.95 mg/L and 2 mg/L. None of the nitrate concentrations detected exceed the MCL of 10 mg/L for drinking water.

Some stream and spring samples contained organic compounds; however no organic compounds were detected above their drinking water standard. One herbicide, ethoprop, at 0.076 µg/L and one pesticide, diazinon, at 0.022 µg/L was detected in the sample from Panther Springs Creek (Bexar County) in July 2002. Another herbicide, atrazine, was detected at 0.10 µg/L in Seco Creek in May 2002. The pesticide compound delta BHC was detected in trace amounts in water samples from San Pedro, Hueco B, and San Marcos springs. The delta BHC is believed to be a laboratory contaminant, and not representative of the presence of this compound in the aquifer. No other pesticides or herbicides were detected in any other samples.

Water samples from San Pedro, San Antonio, Comal, Hueco and San Marcos springs were analyzed for VOCs and SVOCs in 2002. Carbon disulfide was detected at Comal, San Marcos, San Antonio, and Hueco springs at concentrations ranging from 0.6 µg/L to 25 µg/L. The TCEQ regulatory limit for this compound in water is 3,650 µg/L. Carbon disulfide is a

common ingredient in many compounds ranging from paints, explosives, and food preservation, to production as a by product of anaerobic decay. Due to its volatile nature, its presence in water samples is quite rare. As such, the detection of this analyte is highly suspect for possible laboratory or other post collection sample contamination. Trace amounts of other VOCs were reported by the laboratory that are also believed to be related to post sample collection contamination and not associated with the aquifer. The trace VOCs are believed to be "false positives" due to the following:

The analytes associated data qualifiers (present in trip blanks "B flagged", or the reported quantity is below the laboratory reporting limit, but above the method detection limit "J flagged"). Note that all the trace VOCs were either "J" or "B" flagged.

Trace amounts of the following VOCs were reported:

- acetone
- benzene
- bromomethane
- chloromethane

The SVOC bis(2-ethylhexyl)-phthalate was detected in Hueco Springs A and B. However, this compound is a common post sample collection contaminant and does not appear to represent any trend at Hueco Springs. The Authority will continue monitoring for the presence of contaminants at these sites for trends indicating possible water quality degradation in the streams and springs sampled.

8.0 SUMMARY

This report presents the results of the Authority's Edwards Aquifer Data Collection Program for calendar year 2002. During 2002, the Authority in cooperation with the USGS, TWDB, and SAWS, collected a wide variety of data regarding the Edwards Aquifer including:

- Groundwater level data
- Precipitation measurement data
- Groundwater recharge data
- Groundwater discharge and usage data
- Water quality data from groundwater, surface water, and springs

Groundwater level data

Throughout most of the year water levels exceeded average levels in the Authority's index wells in Uvalde, Hondo, and San Antonio. Below average precipitation in the late spring and early summer resulted in water levels falling to the level where water use restrictions would be required. Above average precipitation in late June and July was sufficient to recharge the aquifer and reduce demand, which moderated the typical seasonal decline of water levels for that time of year. Consequently, the Authority did not institute water use restrictions during the summer of 2002.

Precipitation measurement data

Precipitation in the Edwards Aquifer region was above normal in 2002, especially in mid-summer and fall, when as much as 16-inches of rain fell at San Antonio International Airport in a one week period (June 30-July 6). Rainfall was 30 to 50 percent above normal in Uvalde, Hondo, San Antonio, New Braunfels, and San Marcos. Total rainfall ranged from less than 15-inches in eastern Edwards County to more than 60-inches in southern Kendall County. Measurements from the Authority's real-time network and NOAA indicated the areas that received the highest rainfall were in southeast Real and southeast Kerr counties, southwestern Kendall County, Bandera, Bexar, and Medina counties. Other areas of increased rainfall occurred in eastern Uvalde and Comal counties, and the southern portions of Hays County. Generally, rainfall amounts were lower in southern Uvalde County and Edwards County. Weather conditions during 2002 limited the number of days cloud seeding operations could be performed under the Authority's Precipitation Enhancement Program.

Groundwater recharge data

Total recharge to the Edwards Aquifer was 1,665,200 acre-feet in 2002, approximately 230 percent above average for the period of record (1934-2002). The lowest annual recharge to the aquifer was 43,700 acre-feet in 1956, and the highest annual recharge to the aquifer was 2,486,000 acre-feet in 1992. Compared with the period of record, recharge in 2002 was above average in all basins except the Nueces River/West Nueces River basin, which was below average. For the period of record, 2002 was the fourth highest recharge year. Only 1958, 1987, and 1992 experienced higher recharge volumes. Recharge from rainfall during the first week of July was reflected at the Bexar County index well (J-17) by a 6.3 foot rise in the water level in a 24-hour period (July 1 to July 2). The water level at J-17 rose a total of 40 feet (from 650.0 feet msl to 690.0 feet msl) between June 26 and July 20, 2002. The water level at J-17 reached a high for the year of 697.9 feet msl on November 10, 2002, representing the third highest annual maximum for the period of record for this well.

Groundwater discharge and usage data

In 2002 discharge from the Edwards Aquifer through wells and springs totaled 997,100 acre-feet, which exceeded the average for the period of record (1934-2002). The lowest total annual discharge through wells and springs was 388,800 acre-feet in 1955, and the highest annual discharge was 1,130,000 acre-feet in 1992.

Discharge from wells in 2002 was estimated to be 367,200 acre-feet, approximately 11 percent below the ten-year average (1993-2002) of 414,800 acre-feet. The lowest annual discharge from wells for the period of record (1934-2002) was 101,900 acre-feet in 1934 and the highest was 542,400 acre-feet in 1989. The above-normal rainfall in 2002 reduced pumping demand for both irrigators and municipal water systems in the second half of the year.

Discharge from springs in 2002 was estimated to be 609,900 acre-feet, approximately 41 percent above the ten year average (1993-2002) of 433,400 acre-feet. The lowest annual discharge from springs for the period of record (1934-2002) was 69,800 acre-feet in 1956 and the highest was 802,800 acre feet in 1992. For the period of record, 2002 experienced the second highest annual discharge from springs, exceeded only by the 1992 discharge value. The above average precipitation, recharge, and aquifer water levels in 2002 resulted in the above average springflow.

Water quality data from groundwater, surface water, and springs

In 2002, the Authority and cooperating entities collected water quality samples from 76 wells, nine streams, and five spring groups. In 2002, wells were generally sampled once, streams were generally sampled twice, and spring groups were generally sampled three times. Not all parameter groups were analyzed during each sampling event. Water samples from each sampling event were analyzed for major ions, metals, TDS, hardness, and nutrients. Water samples collected from 16 wells, the nine stream locations, and the five spring groups were also analyzed for pesticides and herbicides. Water samples from 27 wells and the five spring groups were also analyzed for volatile organic compounds (VOCs). Water samples from 11 wells and the five spring groups were also analyzed for semivolatile organic compounds (SVOCs).

Concentrations of major ions are relatively uniform throughout the freshwater parts of the Edwards Aquifer. The freshwater portion of the aquifer consistently yields very hard, calcium bicarbonate water with low TDS and few detectable metals. The saline water portion of the aquifer (saline zone) contains water with more than 1,000 mg/L of TDS, which is largely made up of major anions and cations. In addition, samples from the saline zone occasionally contain detectable levels of metals such as arsenic, strontium, copper, and lead at concentrations less than their MCLs. Like groundwater from the freshwater portion of the aquifer, water from streams and springs also contain low concentrations of TDS and few detectable metals.

For the samples collected in 2002, thallium was detected slightly above the MCL of 0.002 mg/L in water samples from seven wells, five of which are located in the saline zone. Two other metals, antimony and silver, were detected in three wells in the freshwater portion of the aquifer at concentrations slightly above their respective MCLs. The MCL for antimony is 0.006 mg/L and the MCL for silver is 0.183 mg/L. Antimony was also detected at concentrations slightly above the MCL in three surface water and five spring water samples. Currently, no trends for these metals are indicated by the sample results; however, continued monitoring at these wells will indicate if any trends are developing.

For samples collected in 2002, nitrate concentrations ranged from below the laboratory reporting limit to 7.48 mg/L in samples from wells, streams, and springs in the Edwards Aquifer region. Well water samples showed the greatest variation ranging from below the laboratory reporting limit to 7.48 mg/L. Surface water samples ranged from below the reporting limit to 3 mg/L. Spring water samples showed the least variation with nitrate concentrations ranging from 1.21 mg/L to 2.2 mg/L. None of the samples collected exceeded the MCL of 10 mg/L for nitrate

In 2002, a total of 87 water samples from the well, stream, and spring sites were analyzed for organic compounds. The organic compounds analyzed include pesticides, herbicides, VOCs, and SVOCs. Trace amounts of organic compounds were detected in 35 of the 87 samples; however, no organic compounds were detected above a drinking water standard (MCL). The following four paragraphs describe the organic compounds that were detected in the samples collected in 2002.

The herbicides ethoprop, silvex, and dicamba were detected in three well samples at 0.077 µg/L, 0.061 µg/L, and 0.09 µg/L, respectively. The herbicides ethoprop and atrazine were each detected in one stream sample at 0.076 µg/L and 0.10 µg/L, respectively. No herbicides were detected in spring water samples. The pesticide compounds lindane and diazinon were detected in one well sample at 0.01 µg/L and 0.014 µg/L respectively. The pesticide compound diazinon was detected in one stream sample. Traces of the pesticide delta BHC were detected in five spring water samples, one each from sites at the San Pedro, Hueco, and San Marcos spring groups. Delta BHC is believed to be a laboratory contaminant, and not representative of the presence of this compound in the aquifer.

Five well samples contained detectable concentrations of tetrachloroethene (PCE). Well YP-69-51-114, located in the City of Uvalde, contained PCE at 4.0 µg/L. The other four wells, located in Bexar County, contained PCE at concentrations ranging from 0.4 to 0.8 µg/L (concentrations less than the laboratory reporting limit). The MCL for PCE is 5.0 µg/L. Ten well sample sites contained traces of acetone, which is attributed to contamination in the laboratory environment (lab contamination). Trace amounts of several other VOCs, believed to be related to post-sample collection contamination and not associated with the aquifer, were reported by the laboratory in samples from 11 wells. Trace amounts of the following VOCs were reported in the 11 well water samples:

- 1,1,3-trichloro-1,2,2-trifluoroethane
- 1,1-dichloroethene
- bromomethane
- carbon disulfide
- chloromethane
- dibromochloromethane
- methylene chloride
- toluene
- trichlorofluoromethane

In 2002, a total of 19 water samples from the San Pedro, San Antonio, Comal, Hueco and San Marcos spring groups were analyzed for VOCs. Carbon disulfide was detected in a total of eight water samples collected from the Comal, San Marcos, San Antonio, and Hueco spring groups. The carbon disulfide concentrations ranged from 0.6 µg/L to 25 µg/L; the regulatory limit for this compound in water is 3,650 µg/L. The detection of this analyte is

highly suspect as a possible laboratory or other post collection sample contamination. Trace amounts of other VOCs, believed to be related to post-sample collection contamination and not associated with the aquifer, were reported in five samples from three spring groups (Comal, Hueco, and San Marcos springs). Trace amounts of the following VOCs were reported in the five spring water samples:

- acetone
- benzene
- bromomethane
- chloromethane

Trace amounts of the SVOC bis (2-ethylhexyl) phthalate were detected in water samples from two wells and two spring locations. The detection of this SVOC is also believed to be related to post collection sample contamination and not due to aquifer contamination.

Water quality in the aquifer is generally excellent. Edwards Aquifer water is generally of such high quality that it normally requires only chlorination to meet public drinking water standards. However, the detection of VOCs and nitrate in the aquifer is a concern and the Authority will continue to monitor for these compounds to determine possible sources and trends. The Authority's aquifer-wide water quality sampling program will continue to monitor wells, streams, and springs for indications of water quality impacts. Authority staff and cooperating agencies will continue to analyze any anomalous data and investigate possible sources of contamination.

9.0 DEFINITIONS

Technical terms and abbreviations used in this report are defined as follows:

Acre-foot (ac-ft) — The quantity of water required to cover one acre to a depth of one foot, equivalent to 43,560 ft^3 (cubic feet), about 325,851 gal (gallons), or 1,233 m^3(cubic meters).

Aquifer — A body of rock that contains sufficient saturated permeable material to conduct groundwater and to yield economically significant quantities of groundwater to wells and springs.

Artesian well — A well tapping confined groundwater. Water in the well rises above the level of the confined water-bearing strata under artesian pressure but does not necessarily reach the land surface.

Artesian Zone — An area where the water level from a confined aquifer stands above the top of the strata in which the aquifer is located.

Bacteria — Microscopic unicellular organisms, typically spherical, rod-like, or spiral and threadlike in shape, often clumped in colonies. Some bacteria are pathogenic (causing disease), while others perform an essential role in nature in the recycling of materials (measured in colonies/100 ml).

Conductivity — A measure of the ease with which an electrical current can be caused to flow through an aqueous solution under the influence of an applied electric field. Expressed as the algebraic reciprocal of electrical resistance (measured in microSiemens per centimeter (µS/cm) at ambient temperature). Generally, in water, the greater the total dissolved solids content, the greater the value of conductivity. See also Specific conductance.

Confined aquifer — An artesian aquifer or an aquifer bound above and below by impermeable strata, or by strata with lower permeability than the aquifer itself.

Discharge — The volume of water that passes a given point within a given period of time.

Drainage Area — The area or watershed where runoff from precipitation flows downgradient to the recharge zone of the Edwards Aquifer. Also known as the "Texas Hill Country."

Drainage basin — An area bounded by a divide and occupied by a drainage system. It consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Edwards Underground Water District (EUWD) — The regional governmental entity that preceded the Edwards Aquifer Authority.

Edwards Aquifer Authority (EAA or Authority) — The regional governmental entity established by the Texas Legislature in 1993 to "manage, preserve, and protect the Edwards Aquifer."

Freshwater/saline-water interface — The interface or area that separates total dissolved solids (TDS) values less than 1,000 mg/L (freshwater) from TDS values greater than 1,000 mg/L (saline-water). Commonly referred to as the "bad water line."

Gauging station — A particular site that systematically collects hydrologic data such as streamflow, springflow or precipitation.

Mean — The arithmetic average of a population of numbers. Described mathematically as: $\mathbf{Mean = X_1 + X_2 + X_3 + \cdots + X_n / n}$

Median — The numerical value at the "center" or "middle" of a data set, where one-half of the sample population is less than, and one-half is greater than the median value.

Groundwater divide — A ridge or mound in the water table or potentiometric surface from which the groundwater moves away in both directions.

Micrograms per liter (µg/L) — A unit for expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. 1,000 micrograms per liter are equal to 1 milligram per liter.

Milligrams per liter (mg/L) — A unit for expressing the concentration of chemical constituents in solution as mass (milligrams) of solute per unit volume (liter) of water. 1,000 milligrams per liter are equal to 1 gram per liter.

Potentiometric surface — An imaginary surface representing the total head of groundwater and defined by the level to which water will rise in a well. Under confined conditions, the water level will rise above the producing aquifer.

Real Time Data — Instantaneous or near-instantaneous information used to monitor a current condition such as precipitation, stream flow, spring discharge, etc.

Recharge — The process involved in absorption and addition of water to the zone of saturation.

Recharge Zone — The area in which water infiltrates into the ground and eventually reaches the zone of saturation in one or more aquifers.

Semivolatile organic compounds (SVOC)	Class of naturally occurring and synthetic organic compounds such as polynuclear aromatic hydrocarbons and chlorinated hydrocarbons and pesticides; typically analyzed with gas chromatograph/mass spectrometers.
Specific conductance	A measure of the ability of an aqueous solution to conduct an electrical current. Specific conductance is the given value of conductivity adjusted to a standard temperature of 25°C. Expressed in microsiemens per centimeter (µS/cm). See also Conductivity.
Ten-year floating average	The calculated mean of the current year plus the previous nine years in a graph.
Total Dissolved Solids (TDS)	The concentration of dissolved minerals in water, usually expressed in units of milligrams per liter (mg/L).
Transect wells	A group of Edwards Aquifer monitoring wells positioned in a linear transect to monitor for changes in water quality along the freshwater/saline-water interface.
Unconfined aquifer	An aquifer, or a portion of an aquifer, with a water table and containing groundwater that is not under pressure beneath relatively impermeable rocks.
Underflow	The movement of water flowing beneath the land surface within the bed or alluvial plain of a surface stream.
Volatile organic compounds VOC)	Class of naturally occurring and synthetic organic compounds with boiling points below 200˚C, typically analyzed with gas chromatograph/mass spectrometers; includes solvents such as trichloroethene, tetrachloroethene, and carbon tetrachloride.
Water table	The interface between the zone of saturation and the zone of aeration, where the surface pressure of unconfined groundwater is equal to the atmospheric pressure. The water table is also known as the piezometric surface.
Water level observation well	A water well used to measure the water level or potentiometric surface of water-bearing strata such as the Edwards Aquifer, Leona Gravel Aquifer, and Lower Glen Rose (Trinity) Aquifer.
Zone of aeration	The subsurface zone where the voids and pore spaces may contain water under less pressure than that of the atmosphere.
Zone of saturation	The subsurface zone in which all voids and pore spaces are filled with water under pressure greater than that of the atmosphere.

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APPENDIX A – Year 2002 Water Level Data for Selected Wells

Table A-1 City of Uvalde Index Well-J27 (YP-69-50-302) daily high water levels (in feet above msl), 2002.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	877.2	877.6	876.4	876.7	876.9	873.7	871.1	877.9	878.7	879.7	881.8	882.8
2	877.2	877.6	876.4	876.7	876.7	873.6	871.8	877.9	878.7	879.8	881.9	882.9
3	877.2	877.5	876.3	876.7	876.5	873.4	872.4	878.0	878.7	879.8	882.0	882.9
4	877.3	877.5	876.3	876.7	876.4	873.3	873.2	878.0	878.7	879.7	882.1	883.0
5	877.3	877.5	876.3	876.7	876.3	873.1	873.5	878.1	878.7	879.7	882.2	882.9
6	877.4	877.5	876.3	876.7	876.1	873.0	N/D	878.1	878.7	879.7	882.1	882.9
7	877.4	877.4	876.3	876.8	876.0	873.0	N/D	878.3	878.8	879.7	882.2	883.0
8	877.4	877.4	876.3	876.8	875.9	872.9	N/D	878.3	878.9	879.8	882.2	883.0
9	877.4	877.4	876.3	876.8	875.7	872.8	875.3	878.4	879.2	879.9	882.2	883.0
10	877.5	877.3	876.3	876.8	875.6	872.7	875.5	878.4	879.2	880.0	882.3	883.0
11	877.5	877.3	876.4	876.9	875.5	872.6	875.7	878.6	879.3	880.1	882.3	883.1
12	877.5	877.3	876.4	876.9	875.3	872.4	875.9	878.6	879.3	880.1	882.4	883.1
13	877.5	877.2	876.3	876.9	875.2	872.4	876.1	878.6	879.3	880.1	882.4	883.0
14	877.5	877.1	876.3	877.0	875.0	872.2	876.3	878.6	879.3	880.2	882.5	883.0
15	877.5	877.1	876.3	877.0	874.9	872.2	876.4	878.6	879.3	880.2	882.5	883.1
16	877.6	877.0	876.3	877.1	874.8	872.1	876.5	878.7	879.3	880.3	882.5	883.1
17	877.6	876.9	876.3	877.1	874.8	872.0	876.6	878.8	879.4	880.3	882.6	883.2
18	877.6	876.9	876.3	877.1	874.8	871.9	876.7	878.8	879.5	880.3	882.6	883.2
19	877.6	876.9	876.4	877.2	874.8	871.8	876.8	878.8	879.5	880.4	882.6	883.1
20	877.6	876.8	876.4	877.2	874.9	871.6	876.9	878.8	879.5	880.4	882.7	883.1
21	877.6	876.8	876.5	877.2	874.8	871.5	877.0	878.8	879.4	880.4	882.7	883.2
22	877.7	876.7	876.5	877.2	874.8	871.5	877.1	878.9	879.5	880.5	882.7	883.1
23	877.7	876.7	876.6	877.2	874.7	871.4	877.2	878.8	879.4	880.8	882.7	883.2
24	877.7	876.6	876.6	877.2	874.6	871.3	877.2	878.6	879.5	881.2	882.8	883.1
25	877.6	876.5	876.6	877.2	874.5	871.1	877.3	878.6	879.7	881.4	882.8	883.1
26	877.6	876.4	876.6	877.2	874.3	871.1	877.4	878.6	879.7	881.5	882.8	883.1
27	877.6	876.3	876.6	877.2	874.2	871.0	877.4	878.6	879.7	881.6	882.8	883.1
28	877.7	876.4	876.7	877.2	874.2	871.0	877.5	878.6	879.7	881.7	882.8	883.1
29	877.7		876.7	877.1	874.1	871.1	877.6	878.7	879.7	881.7	882.8	883.2
30	877.6		876.7	877.0	874.0	871.1	877.7	878.7	879.7	881.8	882.9	883.2
31	877.7		876.7		873.8		877.8	878.7		881.8		883.2

Table A-2 City of Hondo Index Well (TD-69-47-306) daily high water levels (in feet above msl), 2002.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	735.3	732.0	725.1	725.5	722.2	705.1	700.4	741.7	734.9	743.5	757.8	758.4
2	735.2	732.0	724.9	725.7	720.3	704.5	705.7	741.2	735.0	743.3	758.0	758.4
3	735.1	732.0	725.3	725.4	718.2	703.8	711.5	740.9	734.8	743.3	758.2	758.3
4	735.2	731.9	725.4	725.4	715.8	702.3	717.3	740.5	734.7	743.0	758.4	758.2
5	735.3	732.1	725.9	725.5	715.1	701.3	722.7	740.2	734.9	742.8	759.9	758.0
6	735.0	732.3	725.9	725.8	714.3	700.6	727.1	739.6	734.5	742.5	760.1	757.8
7	734.9	731.6	725.7	726.4	712.3	699.1	730.2	739.2	735.3	742.2	760.4	757.8
8	734.9	731.0	725.6	726.7	711.1	698.7	732.4	738.5	736.6	742.7	760.8	758.0
9	734.9	730.6	725.6	726.9	709.7	699.5	734.0	739.0	737.8	743.6	761.1	757.9
10	734.6	729.7	725.1	727.4	708.2	699.3	735.4	739.2	741.5	744.5	761.2	758.2
11	734.4	729.6	725.5	727.9	707.0	697.9	736.6	738.9	742.6	745.2	761.1	758.3
12	734.0	729.3	725.2	728.0	706.6	696.2	737.5	738.8	743.5	745.6	760.8	758.6
13	734.0	728.6	724.7	727.9	706.8	694.5	738.3	738.6	744.1	746.0	760.7	758.6
14	734.0	728.1	724.2	728.1	705.0	693.3	738.9	738.7	744.5	746.6	760.9	758.6
15	733.8	727.9	723.1	728.1	703.8	693.6	739.5	738.3	744.8	746.9	759.9	758.9
16	733.7	726.9	722.3	728.0	703.6	694.1	740.3	737.7	745.1	747.2	759.6	759.0
17	733.7	726.7	722.5	728.0	707.5	694.8	740.8	737.5	745.5	747.3	759.6	759.1
18	733.6	727.0	722.2	728.0	709.1	692.4	741.6	737.3	745.8	747.5	759.5	759.0
19	733.5	726.6	721.9	728.0	709.9	690.5	742.1	737.2	745.9	747.6	759.3	758.4
20	733.4	726.2	722.7	728.1	709.8	689.7	742.5	736.8	745.8	747.8	759.3	758.2
21	733.4	725.4	723.8	728.1	709.6	689.8	742.9	736.7	745.9	747.8	759.1	758.3
22	733.2	725.3	724.2	727.8	709.1	689.6	743.1	736.1	745.9	747.9	758.9	758.3
23	733.1	725.0	725.0	727.6	707.3	689.0	743.1	735.7	745.9	748.9	758.7	758.4
24	733.0	724.6	725.4	727.2	706.4	689.0	743.2	735.8	745.8	751.0	758.5	758.2
25	732.6	724.6	725.4	727.0	705.3	688.1	743.2	735.6	745.6	753.5	758.2	758.0
26	732.8	724.0	724.6	726.8	707.2	687.8	743.2	735.3	745.3	755.1	758.2	758.0
27	732.8	724.6	724.5	726.8	707.9	688.9	743.2	734.9	744.8	756.2	758.2	758.0
28	732.8	724.4	724.4	726.2	708.2	690.6	742.9	734.5	744.5	756.8	758.2	757.9
29	732.7		724.4	725.5	708.1	692.7	742.7	734.0	744.1	757.2	758.5	758.1
30	732.7		725.0	724.3	707.4	696.2	742.4	734.5	744.1	757.5	758.5	758.4
31	732.6		725.4		705.8		742.2	734.7		757.6		757.8

"N/D" indicates no data available.

Table A-3 City of Castroville Well (TD-68-41-301) daily high water levels (in feet above msl), 2002.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	712.3	709.9	704.4	703.3	701.2	685.9	685.8	718.3	711.4	718.9	730.0	729.9
2	712.1	709.8	704.5	703.4	699.9	685.5	688.2	718.2	711.5	718.8	730.5	729.6
3	712.4	709.8	704.2	703.2	698.2	685.1	690.1	717.7	711.5	718.6	730.6	729.9
4	712.6	709.7	704.3	703.2	696.6	684.0	693.7	717.3	711.5	718.5	730.8	729.9
5	712.9	710.0	704.5	703.3	695.4	683.6	700.1	716.4	711.5	718.2	730.9	729.5
6	712.5	710.0	704.6	703.6	694.5	683.6	N/D	716.4	711.4	718.1	730.9	729.5
7	712.4	709.8	704.4	705.0	693.1	683.6	N/D	716.1	714.3	719.5	731.3	729.5
8	712.2	709.4	704.5	704.9	692.2	683.6	N/D	715.3	718.6	719.2	731.7	729.6
9	712.3	709.4	704.3	704.6	691.2	683.6	N/D	715.4	715.5	723.9	732.2	729.7
10	712.2	708.9	703.9	705.1	690.2	683.6	N/D	715.4	716.3	719.7	732.4	729.8
11	N/D	708.5	704.1	705.4	689.1	680.3	703.2	715.3	717.3	720.2	732.3	730.0
12	711.9	708.6	704.0	705.5	688.5	679.3	703.9	715.3	718.0	720.6	732.1	730.3
13	711.7	707.6	703.3	705.7	687.6	677.0	705.2	715.0	719.1	721.3	731.9	730.3
14	711.5	707.3	702.8	705.7	686.9	675.3	706.3	714.7	719.5	721.6	731.8	730.5
15	711.5	707.3	702.8	705.7	686.9	675.3	706.3	714.7	719.5	721.6	731.8	730.5
16	711.4	706.8	701.7	705.5	686.6	675.1	706.7	714.6	719.8	721.7	731.4	730.5
17	711.4	706.3	701.5	705.5	687.6	675.3	707.4	714.0	720.2	721.8	731.4	730.6
18	711.3	706.3	701.6	705.5	688.5	674.2	707.9	714.1	720.5	721.9	731.3	730.6
19	711.3	706.2	704.4	705.5	688.4	672.9	708.4	713.8	720.9	722.1	731.1	730.3
20	711.2	705.6	701.6	705.6	689.6	672.0	708.9	713.6	720.6	722.1	731.1	730.0
21	711.1	705.1	702.0	705.6	689.6	671.0	709.3	713.2	720.8	722.9	731.1	730.1
22	711.0	704.7	702.5	705.3	689.1	671.0	709.3	712.8	720.6	724.2	731.1	730.0
23	710.9	704.7	703.0	705.1	687.9	671.0	709.5	712.5	720.4	724.9	730.5	732.7
24	710.9	704.5	703.4	704.8	687.2	671.0	709.4	712.2	720.5	726.8	730.4	730.0
25	710.5	704.1	703.4	704.5	686.5	670.3	709.3	711.8	720.3	726.5	730.3	729.7
26	710.6	703.7	703.1	704.4	686.9	669.9	709.2	711.8	720.0	727.8	730.8	729.8
27	710.6	703.8	703.0	704.4	687.4	670.4	708.9	711.4	719.7	728.8	729.8	729.7
28	710.6	704.0	703.0	703.9	687.3	671.0	708.9	710.9	719.4	729.3	729.9	729.7
29	710.5		702.9	703.3	687.8	672.3	708.6	711.0	719.2	729.8	730.1	729.8
30	710.5		703.4	702.5	687.4	674.7	718.2	711.1	719.1	729.9	730.1	729.8
31	710.4		703.2		686.6		718.3	711.2		730.1		729.5

Table A-4 Bexar County Index Well J-17 (AY-68-37-203) daily high water levels (in feet above msl), 2002.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	684.8	682.1	678.5	676.9	674.7	665.1	661.5	687.7	681.6	687.1	696.0	694.7
2	684.7	682.3	678.8	676.6	673.8	664.6	667.8	687.1	681.6	687.0	696.1	694.7
3	684.4	682.2	678.8	676.3	673.0	663.9	672.9	686.9	681.3	686.7	696.4	694.5
4	684.2	682.0	678.3	676.4	672.6	663.2	676.4	686.7	681.2	686.6	696.3	694.6
5	684.5	682.1	678.3	676.4	672.1	662.0	680.1	686.1	681.1	686.5	697.1	694.8
6	684.5	682.2	678.1	676.6	671.0	661.7	682.3	685.7	680.8	686.5	697.3	694.5
7	684.2	682.2	678.0	677.3	670.4	660.7	683.4	685.4	681.7	686.1	697.6	694.5
8	684.0	682.0	678.1	677.7	669.7	660.2	683.9	685.0	682.8	686.3	697.7	694.7
9	684.0	682.1	678.1	678.0	669.0	660.0	685.0	685.2	684.3	687.3	697.9	694.5
10	684.0	681.9	678.0	678.2	668.1	659.7	685.7	685.3	685.4	687.9	697.9	694.9
11	683.8	681.6	677.8	678.5	667.7	659.0	686.3	685.5	686.0	688.5	697.7	695.0
12	683.8	681.5	677.8	678.5	666.9	658.2	687.1	685.2	686.7	688.9	697.4	695.2
13	683.8	681.2	677.4	678.5	666.4	657.2	687.4	685.1	687.1	689.1	697.2	695.3
14	683.5	680.8	677.0	678.5	666.7	656.3	688.0	684.6	687.4	689.4	697.2	695.5
15	683.4	680.7	676.5	678.2	666.4	656.0	688.2	684.4	687.7	689.4	696.9	695.6
16	683.2	680.7	676.3	677.8	665.8	656.0	688.6	684.1	687.7	689.6	696.8	695.5
17	683.1	680.4	676.4	678.5	666.0	655.6	689.2	683.8	688.1	689.4	696.7	695.4
18	683.1	680.3	676.0	678.5	667.2	654.6	689.8	683.6	688.3	689.3	696.4	695.4
19	683.2	680.2	676.0	678.6	667.7	653.5	690.0	682.9	688.4	689.5	696.2	695.2
20	683.1	679.8	676.5	678.6	667.5	652.4	690.4	682.6	689.1	689.5	695.9	695.1
21	683.0	679.5	676.6	678.5	667.2	651.9	690.4	682.4	689.3	689.3	695.8	695.2
22	682.7	679.3	676.5	678.0	666.8	651.7	690.5	682.0	689.4	689.4	695.5	695.0
23	682.8	679.3	677.0	677.7	665.9	652.0	690.2	681.6	689.1	690.1	695.4	695.0
24	682.7	679.1	677.1	677.4	665.0	650.9	690.0	681.6	688.9	691.8	695.3	694.9
25	682.6	678.6	676.8	677.0	664.8	650.3	689.8	681.3	688.9	693.2	694.9	694.9
26	682.8	678.3	676.9	677.1	665.6	650.0	689.6	680.8	688.7	694.1	694.8	695.1
27	682.9	678.3	676.7	677.0	666.4	651.0	689.5	680.3	688.2	694.9	694.8	694.9
28	682.6	678.4	676.8	676.6	666.3	651.4	689.3	679.9	688.0	695.2	694.6	694.8
29	682.4		676.5	675.8	666.6	653.1	688.8	680.2	687.8	695.8	694.8	694.8
30	682.2		676.8	675.3	666.1	656.0	688.2	680.9	687.4	695.7	694.8	694.9
31	682.3		676.9		665.8		687.9	681.3		695.9		694.6

"N/D" indicates no data available.

Table A-5 Landa Park Well (DX-68-23-302) daily high water levels (in feet above msl), 2002.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	628.3	628.0	627.6	627.3	627.1	626.1	625.1	628.7	628.2	628.6	629.4	629.8
2	628.3	628.0	627.6	627.2	627.1	626.1	626.1	628.7	628.1	628.6	629.8	629.8
3	628.2	628.0	627.6	627.2	627.0	626.1	626.8	628.6	628.1	628.6	629.9	629.8
4	628.2	628.0	627.6	627.2	627.0	626.0	626.8	628.6	628.1	628.5	629.9	629.8
5	628.2	628.0	627.6	627.3	627.0	626.0	627.1	628.6	628.1	628.5	630.0	629.8
6	628.2	628.0	627.6	627.3	626.9	625.9	627.4	628.6	628.1	628.5	629.9	629.8
7	628.2	628.0	627.5	627.3	626.9	625.8	627.7	628.6	628.2	628.5	630.0	629.8
8	628.2	628.0	627.5	627.3	626.8	625.7	627.8	628.5	628.2	628.5	630.0	629.8
9	628.2	627.9	627.5	627.3	626.7	625.7	627.8	628.5	628.3	628.7	630.0	630.0
10	N/D	627.9	627.5	627.3	626.7	625.6	627.9	628.5	628.3	628.6	630.0	629.9
11	N/D	627.9	627.5	627.3	626.6	625.6	628.0	628.5	628.3	628.6	630.0	629.9
12	628.2	627.9	627.5	627.3	626.6	625.5	628.1	628.5	628.4	628.6	630.0	629.9
13	628.2	627.9	627.4	627.3	626.5	625.5	628.2	628.5	628.4	628.6	630.0	629.9
14	628.2	627.9	627.4	627.3	626.5	625.4	628.2	628.5	628.4	628.7	630.0	629.9
15	628.2	627.9	627.4	627.3	626.5	625.5	628.3	628.5	628.5	628.7	630.0	629.9
16	628.1	627.9	627.4	627.3	626.4	625.5	628.4	628.5	628.5	628.7	630.0	629.9
17	628.1	627.9	627.4	627.3	626.3	625.4	628.4	628.5	628.5	628.7	630.0	629.9
18	628.1	627.9	627.4	627.3	626.4	625.3	628.5	628.4	628.5	628.7	630.0	629.9
19	628.1	627.8	627.4	627.3	626.3	625.2	628.5	628.4	628.6	628.7	630.0	629.9
20	628.1	627.8	627.3	627.3	626.3	625.1	628.6	628.4	628.6	628.7	630.0	629.9
21	628.1	627.8	627.3	627.3	626.3	625.0	628.6	628.3	628.6	628.7	629.9	629.8
22	628.1	627.7	N/D	627.3	626.3	625.0	628.6	628.3	628.6	629.1	629.9	629.9
23	628.1	627.7	N/D	627.3	626.2	624.9	628.7	628.3	628.6	629.0	629.8	630.2
24	628.1	627.7	N/D	627.3	626.2	624.9	628.7	628.2	628.6	629.5	629.9	630.1
25	628.0	627.7	N/D	627.3	626.2	624.8	628.7	628.2	628.6	629.3	629.8	629.9
26	628.1	627.6	N/D	627.2	626.1	624.7	628.7	628.2	628.6	629.2	629.9	629.9
27	628.1	627.6	N/D	627.2	626.2	624.6	628.7	628.2	628.6	629.3	629.8	629.9
28	628.1	627.6	N/D	627.2	626.2	624.6	628.7	628.1	628.6	629.3	629.8	629.9
29	628.0		N/D	627.2	626.2	624.6	628.7	628.1	628.6	629.3	629.8	629.9
30	628.0		N/D	627.2	626.2	624.8	628.7	628.1	628.6	629.4	629.8	629.9
31	628.0		N/D		626.2		628.7	628.2		629.4		629.9

Table A-6 Knispel Well (LR 67-01-809) daily high water levels (in feet above msl), 2002.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.5	580.1	581.0	582.6
2	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.5	580.0	581.1	582.6
3	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.5	580.0	581.1	582.6
4	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.1	580.0	582.2	582.6
5	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.1	579.9	582.7	582.5
6	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.0	579.8	582.8	582.4
7	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.0	579.8	583.0	582.4
8	578.7	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.0	579.8	583.1	582.4
9	578.7	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.0	579.8	583.1	582.5
10	578.8	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.0	579.8	583.1	582.5
11	578.9	N/D	N/D	N/D	N/D	576.41	N/D	N/D	580.9	579.8	583.1	582.5
12	579.0	N/D	N/D	N/D	N/D	N/D	N/D	N/D	580.9	579.8	583.1	582.5
13	579.0	N/D	N/D	N/D	N/D	N/D	N/D	N/D	580.8	579.8	583.1	582.5
14	579.0	N/D	N/D	N/D	N/D	N/D	N/D	N/D	580.8	579.8	583.1	582.5
15	579.1	N/D	N/D	N/D	N/D	N/D	N/D	N/D	580.7	579.8	583.1	582.5
16	579.1	N/D	N/D	N/D	N/D	N/D	N/D	N/D	580.7	579.7	583.1	582.5
17	579.1	N/D	N/D	N/D	N/D	N/D	582.38	N/D	580.6	579.7	583.1	582.6
18	579.2	N/D	N/D	N/D	N/D	N/D	N/D	N/D	580.6	579.7	583.1	582.5
19	579.2	N/D	N/D	N/D	N/D	N/D	N/D	582.0	580.6	579.7	583.0	582.5
20	579.2	N/D	N/D	N/D	N/D	N/D	N/D	581.9	580.5	579.7	583.0	582.4
21	579.2	N/D	N/D	N/D	N/D	N/D	N/D	581.9	580.5	579.7	583.0	582.4
22	579.3	N/D	N/D	N/D	N/D	N/D	N/D	581.8	580.5	579.7	582.9	582.4
23	579.3	N/D	N/D	N/D	N/D	N/D	N/D	581.8	580.5	579.8	582.9	582.6
24	579.3	N/D	N/D	N/D	N/D	N/D	N/D	581.8	580.5	580.4	582.9	582.7
25	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.8	580.5	580.6	582.9	582.7
26	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.8	580.5	580.8	582.8	582.7
27	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.6	580.4	580.9	582.8	582.7
28	N/D	N/D	N/D	N/D	N/D	N/D	N/D	581.6	580.3	581.0	582.7	582.7
29	N/D		N/D	N/D	N/D	N/D	N/D	581.6	580.2	581.0	582.7	582.8
30	N/D		N/D	N/D	N/D	N/D	N/D	581.5	580.1	581.0	582.7	582.8
31	N/D		N/D		N/D		N/D	581.5		581.0		582.7

"N/D" indicates no data available.

APPENDIX B – Year 2002 Hydrographs for Index Wells and Springs

Figure B-1. Bexar County Index Well (AY-68-37-203; J-17)
Hydrograph of Groundwater Elevation vs. Precipitation at San Antonio International Airport

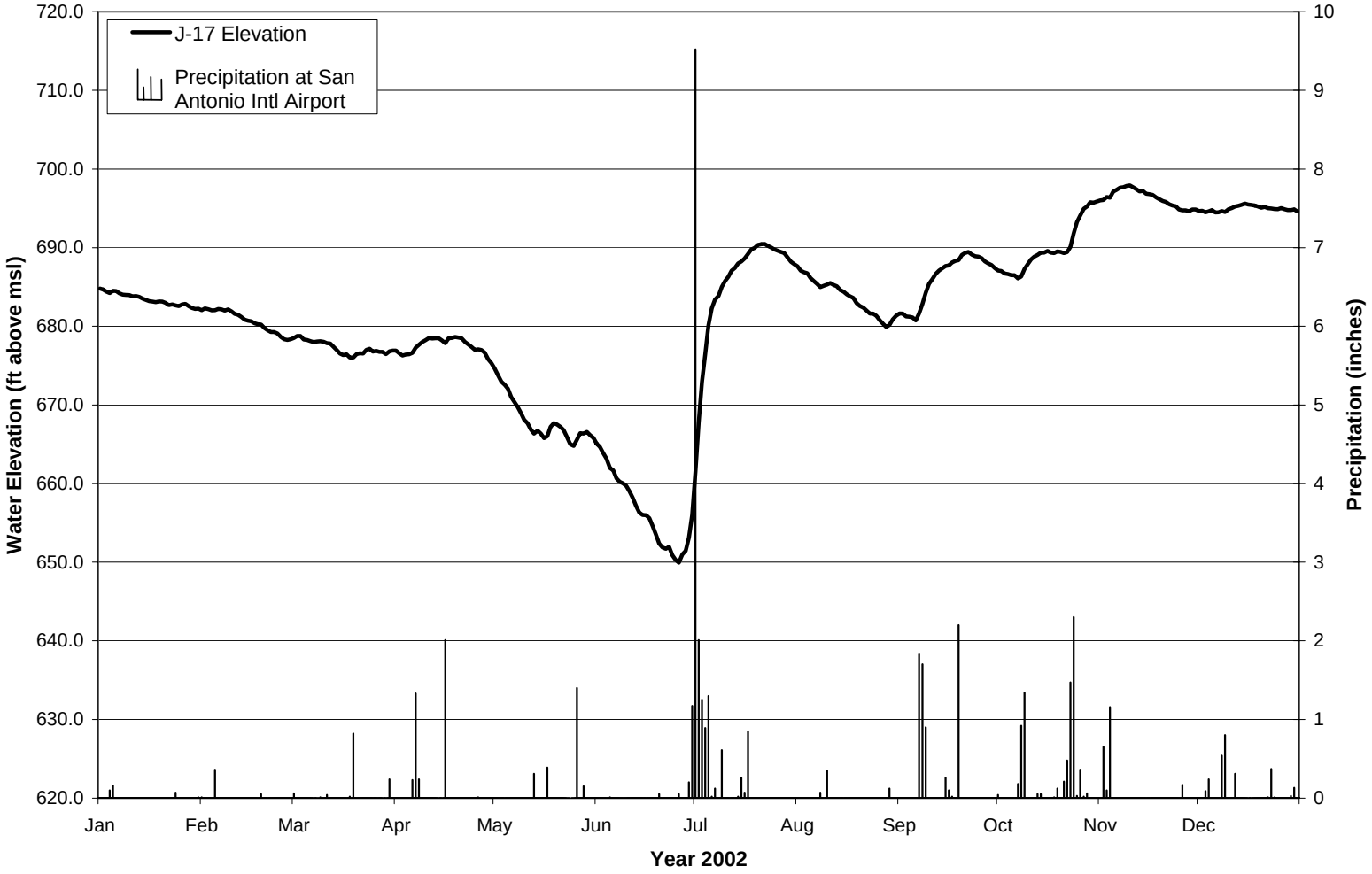


Figure B-2. City of Hondo Index Well (TD-69-47-306)
Hydrograph of Groundwater Elevation vs. Precipitation at Hondo

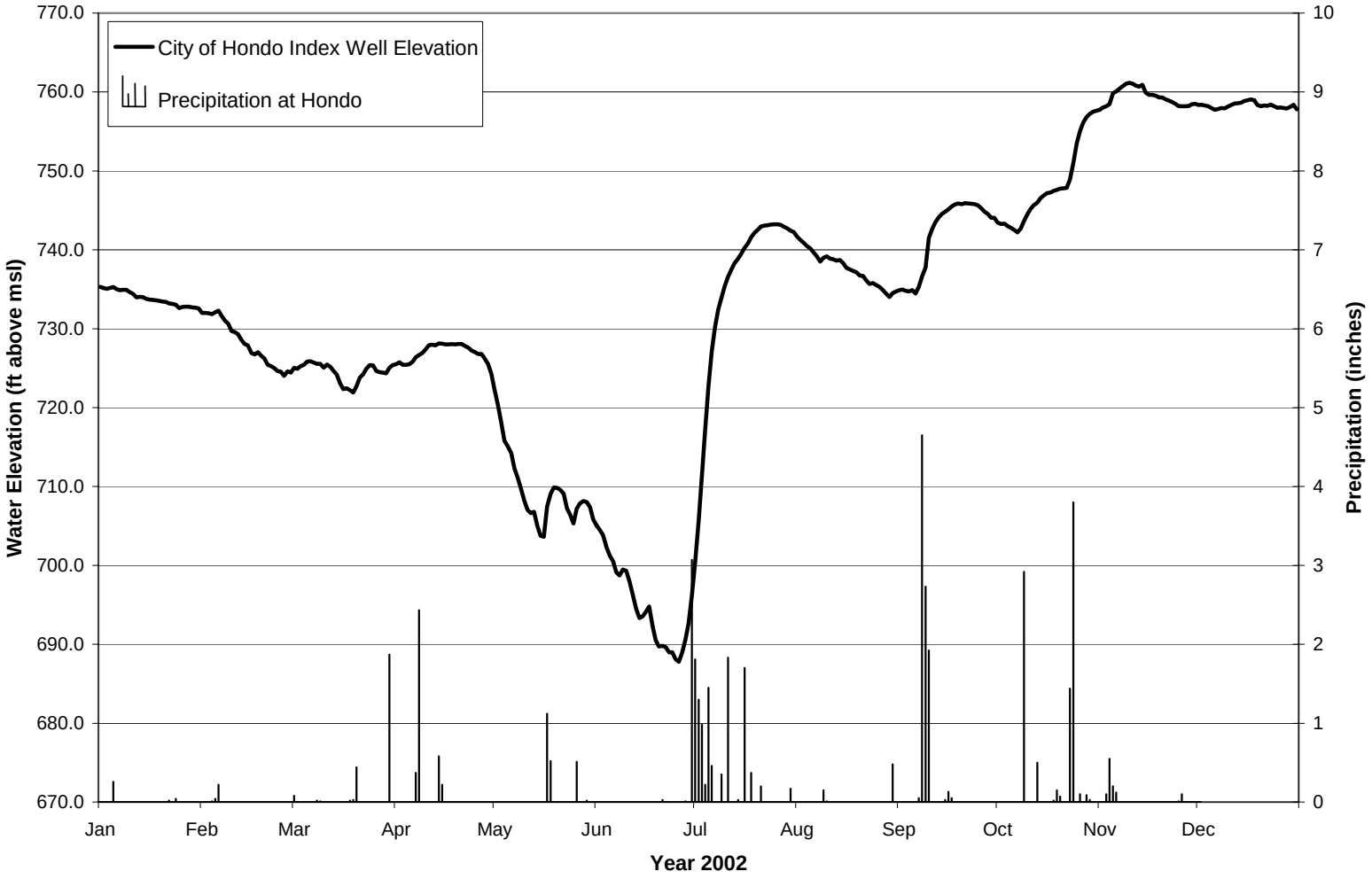


Figure B-3. City of Uvalde Index Well (YP-69-50-302; J-27)
Hydrograph of Groundwater Elevation vs. Precipitation at Uvalde

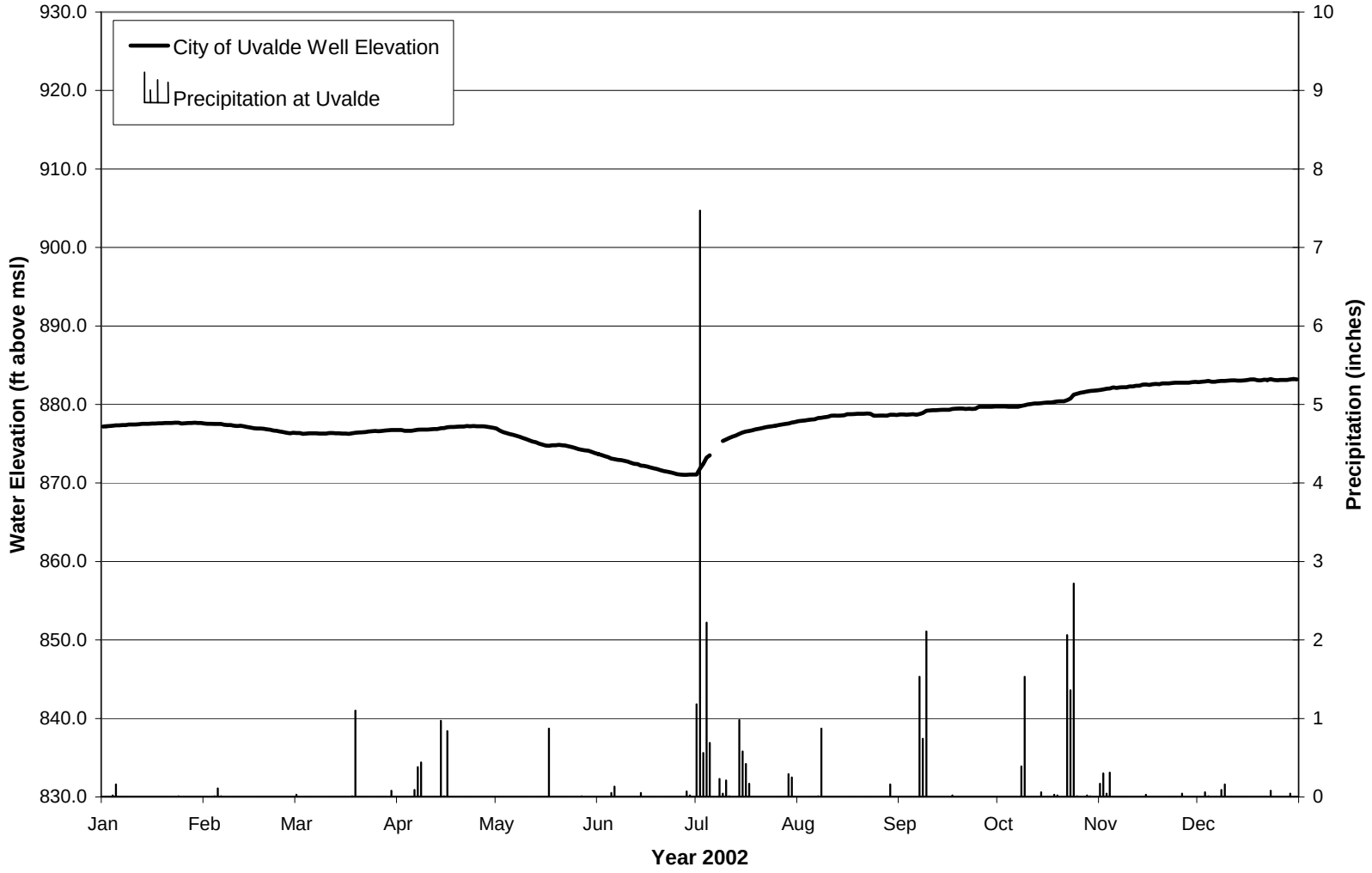


Figure B-4. Comal Springflow
Hydrograph of Springflow vs. Precipitation at San Antonio International Airport

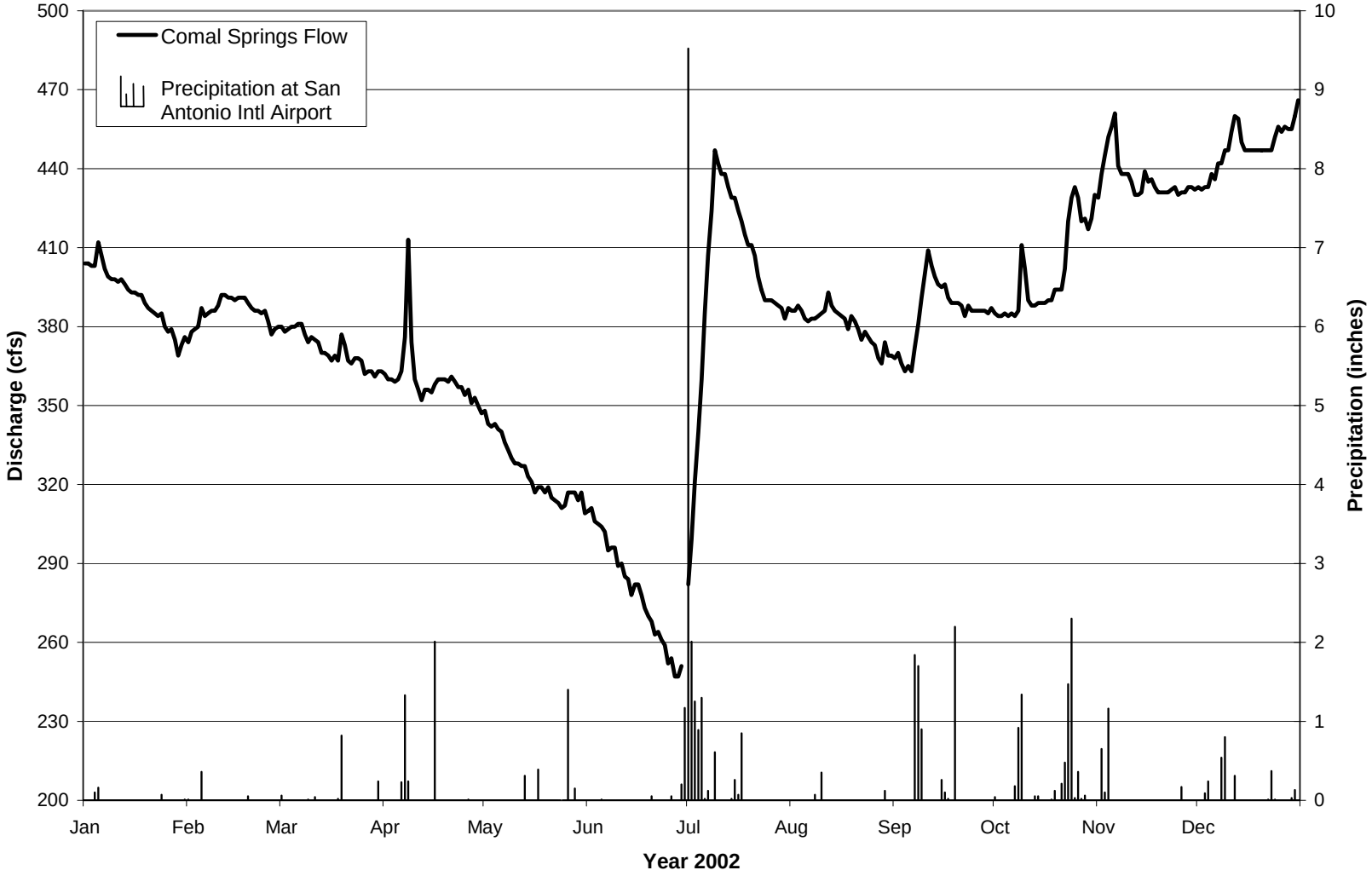
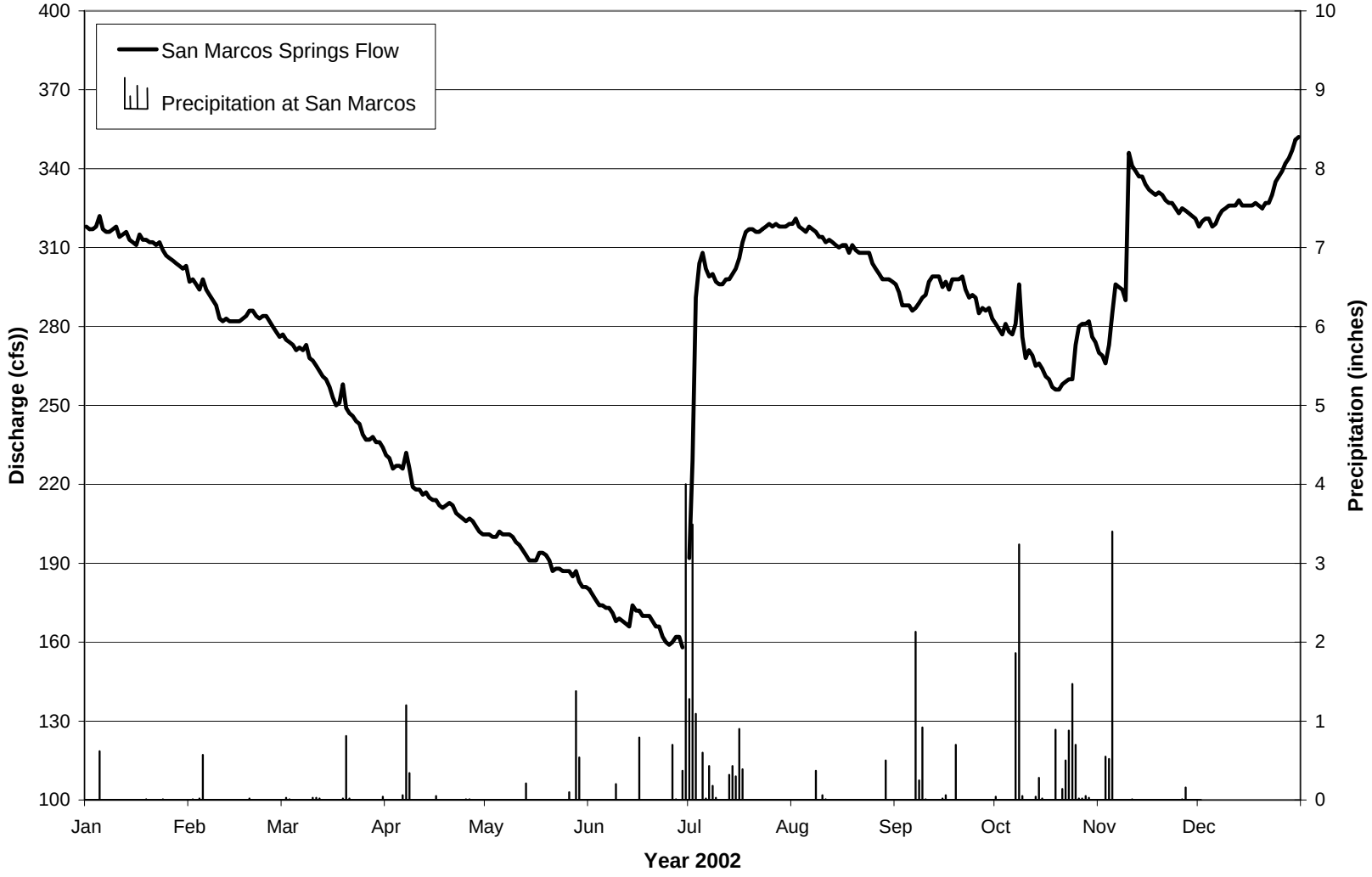


Figure B-5. San Marcos Springflow
Hydrograph of Springflow vs. Precipitation at San Marcos



APPENDIX C – Year 2002 Water Quality Data

Table C-1 Field Measurements collected while sampling water from wells completed in the Edwards Aquifer, 2002

County	State Well Number	Date Sampled	Time Sampled	Well Depth (ft)	Pump or Flow Period (min)	Flow Rate (gpm)	Water Temp (ºC)	Field Conductivity (µS/cm)	Field Alkalinity (mg/L)	Total Alkalinity (mg/L)	Field pH (std units)	Hardness, as CaCO3 (mg/L)
Bexar	AY-68-27-307	4/10/2002	14:00	270	75	4.5	23.3	580	212	268	6.79	317
	AY-68-27-609	4/19/2002	14:25	261	45	NR	24.4	589	204	280	6.92	318
	AY-68-27-611	4/24/2002	13:45	260	65	3.5	24.3	572	192	266	6.80	304
	AY-68-28-113	12/6/2002	12:10	320	60	4	22.7	517	228	239	6.92	266
	AY-68-28-210	12/5/2002	13:00	281	65	4	22.6	614	264	293	6.99	278
	AY-68-28-313	7/4/2002	9:40	300	35	13	23.1	591	234	255	6.95	244
	AY-68-28-313	7/6/2002	10:10	300	25	13	23.2	523	228	221	6.90	234
	AY-68-28-313	7/7/2002	13:15	300	40	13	23.5	375	200	207	7.01	206
	AY-68-28-313	7/12/2002	14:50	300	50	13	23	573	250	260	6.99	243
	AY-68-28-406	11/8/2002	13:15	304	50	4	23.2	571	242	251	7.17	269
	AY-68-28-407	12/3/2002	12:40	310	65	4	23.7	533	234	252	7.00	296
	AY-68-28-515	12/6/2002	15:45	306	55	4	23.2	630	262	265	6.94	311
	AY-68-28-518	5/1/2002	12:40	261	65	3.5	24.3	651	194	282	6.79	327
	AY-68-29-109	6/25/2002	15:00	460	240	NR	23.5	656	286	290	6.90	354
	AY-68-29-114	4/15/2002	15:55	270	55	3.5	23.2	746	280	376	6.65	614
	AY-68-29-401	6/25/2002	13:30	517	150	NR	24.2	570	260	272	7.06	293
	AY-68-29-406	5/29/2002	13:25	410	35	NR	22.9	717	172	298	6.82	313
	AY-68-29-410	6/25/2002	13:55	376	175	NR	23.6	578	262	275	6.98	292
	AY-68-29-414	4/19/2002	11:05	710	POA	NR	22.9	630	224	286	6.91	339
	AY-68-29-414	6/25/2002	11:30	710	POA	NR	23.9	644	278	289	6.92	293
	AY-68-29-415	6/25/2002	10:40	1078	70	NR	24.3	597	252	278	6.96	274
	AY-68-29-4CC	5/29/2002	11:55	NR	35	NR	22.2	677	192	312	6.73	381
	AY-68-29-4RD	5/29/2002	10:30	NR	60	NR	22.8	612	194	288	6.78	312
	AY-68-29-4JJ	6/10/2002	13:40	NR	60	NR	23.5	578	266	262	7.03	279
	AY-68-29-4GL	6/10/2002	15:20	NR	105	NR	22.8	612	278	281	6.96	296
	AY-68-28-6SG	6/10/2002	11:00	NR	300	NR	21.2	672	272	289	6.75	296
	AY-68-29-4LZ	5/29/2002	16:20	NR	35	NR	22.6	569	200	262	6.92	276
Comal	DX-68-16-707	7/9/2002	9:05	400	20	NR	22.4	569	276	262	7.00	*289
	DX-68-22-802	7/22/2002	13:50	378	25	NR	22.5	577	266	260	7.13	*275
	DX-68-22-810	7/22/2002	11:30	405	20	NR	23.2	525	252	251	7.22	*264
	DX-68-22-811	9/16/2002	9:10	NR	50	NR	22.1	525	220	254	7.17	282

*Sample collected by the Authority and analyzed by TWDB
NR – Not recorded
POA – Pump in continuous operation prior to sampling
S – Freshwater/Saline Water Transect Monitoring Well

Table C-1 Field Measurements collected while sampling water from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Time Sampled	Well Depth (ft)	Pump or Flow Period (min)	Flow Rate (gpm)	Water Temp (ºC)	Field Conductivity (µS/cm)	Field Alkalinity (mg/L)	Total Alkalinity (mg/L)	Field pH (std units)	Hardness, as CaCO3 (mg/L)
Comal	DX-68-23-304	6/4/2002	14:00	965	195	NR	24	547	222	228	7.13	*267
	DX-68-23-305	7/9/2002	10:10	102	POA	NR	24.4	550	228	226	7.12	*261
	DX-68-23-508	7/9/2002	14:45	225	20	NR	23.5	563	234	239	7.09	*272
	DX-68-23-601	7/9/2002	10:50	790	POA	NR	24.2	545	230	228	7.16	*262
S	DX-68-23-616A	8/27/2002	14:45	937	215	NR	25	2840	268	259	7.17	828
S	DX-68-23-616B	8/27/2002	14:30	937	205	NR	25	1690	222	224	7.28	481
S	DX-68-23-619A	7/30/2002	12:00	959	75	NR	24.7	548	202	201	7.39	*229
S	DX-68-23-619B	8/27/2002	13:40	959	165	NR	25	559	272	221	7.30	254
	DX-68-30-221	7/11/2002	9:45	330	30	NR	22.7	699	290	284	6.79	*329
	DX-68-30-225	7/22/2002	14:50	455	18	NR	22.6	542	250	248	7.21	*257
	DX-68-23-5KG	1/24/2002	16:50	420	50	NR	23.4	590	217	217	6.94	308
Hays	LR-67-01-303	12/10/2002	11:10	595	NA	NR	24.2	627	248	250	7.18	275
	LR-67-01-810	12/17/2002	14:10	NR	NA	NR	22.3	595	246	267	7.02	282
S	LR-67-01-812	9/11/2002	17:05	543	55	15.5	24.8	14860	370	336	6.51	4703
S	LR-67-01-813A	9/11/2002	15:00	564	60	15.5	24.8	14840	388	363	6.48	4500
S	LR-67-01-813B	9/11/2002	15:15	699	75	15.5	25.9	14800	362	367	6.45	4381
S	LR-67-01-814A	9/11/2002	9:30	556	65	15.5	25.2	14850	368	365	6.48	5204
S	LR-67-01-814B	9/11/2002	11:15	726	79	15.5	26	14810	366	364	6.51	4443
	LR-67-01-816	12/17/2002	10:30	NR	NA	NR	22.3	609	266	266	6.91	278
	LR-68-08-902	12/10/2002	14:30	335	NA	NR	20.4	564	236	255	7.01	269
	LR-69-09-113	8/29/2002	9:55	280	44	17	23.53	617.6	250	260	7.08	297
	LR-67-01-8SW	12/17/2002	13:20	NR	NA	NR	21.3	616	232	268	6.75	274
	LR-67-09-1SM	12/17/2002	11:30	NR	NA	NR	22.4	694	272	283	6.73	306
Medina	TD-68-25-703	7/10/2002	16:35	425	45	NR	22.2	449	188	182	7.24	*218
	TD-68-33-502	7/18/2002	11:25	1475	25	NR	23.3	488	192	190	7.31	*237
	TD-68-41-102	6/27/2002	12:05	1431	30	NR	24.8	493	220	199	7.26	*217
	TD-68-41-303	6/13/2002	13:45	717	POA	NR	23.9	502	210	204	7.11	*227
	TD-68-42-113	6/13/2002	14:55	636	POA	NR	24	499	204	198	7.00	*225
	TD-68-42-506	6/13/2002	12:00	1445	POA	NR	25.6	494	208	200	7.07	*228
	TD-68-42-806	6/19/2002	15:20	2044	220	NR	32	480	196	194	7.21	*209
	TD-68-49-201	6/19/2002	12:05	2716	35	NR	27.7	511	200	198	7.25	*218
	TD-68-49-301	6/13/2002	15:50	2550	POA	NR	32.9	478	196	191	7.14	*212

*Sample collected by the Authority and analyzed by TWDB
NR – Not recorded
POA – Pump in continuous operation prior to sampling
S – Freshwater/Saline Water Transect Monitoring Well

Table C-1 Field Measurements collected while sampling water from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Time Sampled	Well Depth (ft)	Pump or Flow Period (min)	Flow Rate (gpm)	Water Temp (ºC)	Field Conductivity (µS/cm)	Field Alkalinity (mg/L)	Total Alkalinity (mg/L)	Field pH (std units)	Hardness, as CaCO3 (mg/L)
Medina	TD-69-32-703	2/20/2002	13:25	290	45	3.5	25.5	388	186	231	7.34	*199
	TD-69-38-906	7/18/2002	13:45	940	30	NR	24.5	520	232	227	7.09	*250
	TD-69-39-504	7/29/2002	13:30	653	70	3.5	24.7	449	208	195	7.14	*202
	TD-69-39-601	6/27/2002	14:45	360	40	NR	23.3	476	224	217	7.19	*218
	TD-69-46-601	7/10/2002	10:05	1289	20	NR	23.7	475	206	203	7.26	*232
	TD-69-47-215	7/10/2002	14:40	1600	30	NR	29.6	467	204	200	7.37	*226
	TD-69-47-303	7/10/2002	13:45	1803	20	NR	24.4	476	204	201	7.29	*228
	TD-69-55-604	7/18/2002	10:15	2350	25	NR	23.9	524	204	203	7.31	*242
	TD-69-63-103	7/24/2002	13:20	3406	135	NR	44.7	561	178	179	7.19	*236
Uvalde	YP-69-33-701	6/26/2002	16:00	NA	40	NR	22.4	425	188	185	7.41	*191
	YP-69-35-401	7/25/2002	12:00	NR	35	NR	23.3	456	202	200	7.19	*223
	YP-69-35-602	7/25/2002	14:55	237	65	3.5	23.6	438	194	190	7.32	*203
	YP-69-43-606	7/10/2002	11:15	698	25	NR	23.2	489	198	195	7.18	*224
	YP-69-45-405	6/21/2002	14:15	1211	75	NR	23	478	210	208	7.25	*216
	YP-69-50-207	6/21/2002	10:20	525	200	NR	23.3	545	222	212	7.09	*228
	YP-69-50-501	6/21/2002	11:50	600	POA	NR	22.9	1120	236	233	6.91	*388
	YP-69-51-114	6/26/2002	13:40	565	165	NR	28.8	870	268	257	6.94	*339

*Sample collected by the Authority and analyzed by TWDB
NR – Not recorded
POA – Pump in continuous operation prior to sampling
S – Freshwater/Saline Water Transect Monitoring Well

Table C-2 Analytical data for major ions in water samples from wells completed in the Edwards Aquifer, 2002

County	State Well Number	Date Sampled	Calcium dissolved (mg/L)	Magnesium dissolved (mg/L)	Sodium dissolved (mg/L)	Potassium dissolved (mg/L)	Chloride dissolved (mg/L)	Sulfate dissolved (mg/L)	Fluoride dissolved (mg/L)	Silica dissolved (mg/L)	Total Dissolved Solids (mg/L)
Bexar	AY-68-27-307	4/10/2002	113J	8.4J	5.9J	1.1B	10.7	16.2	0.14B	5.2	311
	AY-68-27-609	4/19/2002	111J	9.9J	7.9J	0.81B	14.2J	12.5	0.28B J	5.0	330
	AY-68-27-611	4/24/2002	108	8.42B	9.67	0.928B	15.2	11.6	0.148	6.54B	310
	AY-68-28-113	12/6/2002	91.8	9.04	6.95	0.671B	12.0	15.3	0.104	5.24	295
	AY-68-28-210	12/5/2002	105	3.84	9.77	0.438B	18.1	9.71	0.117	5.91	342
	AY-68-28-313	7/4/2002	92.5	3.22	21.6	1.55	20.1	13.9	0.116	5.72	360
	AY-68-28-313	7/6/2002	89.1	2.92	19.1	1.30	17.8	11.7	0.082B	5.68	140
	AY-68-28-313	7/8/2002	78.4	2.46	15.1	1.16	14.0	10.3	0.107	5.01	280
	AY-68-28-313	7/12/2002	92.9	2.76	13.2	1.00	13.6	13.1	0.127	5.06	330
	AY-68-28-406	11/8/2002	92.4	9.24	10.7	1.23	16.3	16.6	0.148	5.42	290
	AY-68-28-407	12/3/2002	88.1	18.4	6.99B	<10	11.7	15.5	0.168	6.04	300
	AY-68-28-515	12/6/2002	108	9.95	10.3	0.533B	19.1	33.8	0.139	5.44	366
	AY-68-28-518	5/1/2002	121	6.02	10.1	NA	314	366	<0.1	5.93	360
	AY-68-29-109	6/25/2002	124	10.9	11.6	0.782B	29.9	10.0	0.097B	6.06	360
	AY-68-29-114	4/15/2002	148J	10.3J	11.9J	1.1B	15.8	10.8	0.24B J	6.7	446
	AY-68-29-401	6/25/2002	91.0	15.9	7.88	0.539B	15.8	10.2	0.148	5.91	330
	AY-68-29-406	5/29/2002	112	7.98	21.8	0.471B	32.3	20.2	0.189	6.54	410
	AY-68-29-410	6/25/2002	97.3	11.9	8.34	0.624B	19.1	7.63	0.115	5.95	320

*Sample collected by the Authority and analyzed by TWDB
B = Estimated result. Result is less than reporting limit (RL)
J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
S = Freshwater/Saline water transect monitoring well
NA = Not analyzed

Table C-2 Analytical data for major ions in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Calcium dissolved (mg/L)	Magnesium dissolved (mg/L)	Sodium dissolved (mg/L)	Potassium dissolved (mg/L)	Chloride dissolved (mg/L)	Sulfate dissolved (mg/L)	Fluoride dissolved (mg/L)	Silica dissolved (mg/L)	Total Dissolved Solids (mg/L)
Bexar	AY-68-29-414	4/19/2002	116J	12.1J	10.8J	1.30B	18.1J	15.4	0.28B J	5.80	367
	AY-68-29-414	6/25/2002	99.4	10.9	10.7	1.22	21.6	16.6	0.123	5.84	360
	AY-68-29-415	6/25/2002	90.3	11.9	8.41	0.692B	16.8	18.0	0.150	5.71	340
	AY-68-29-4CC	5/29/2002	147	3.41	9.19	1.53	16.3	20.4	0.117	7.87	380
	AY-68-29-4RD	5/29/2002	108	10.4	7.68	0.317B	14.6	11.8	0.138	6.40	330
	AY-68-29-4JJ	6/10/2002	95.6	9.88	8.41	1.08	14.8	16.8	0.143	5.89	330
	AY-68-29-4GL	6/10/2002	103	9.41	10.2	0.923B	18.2	18.3	0.141	6.27	350
	AY-68-28-6SG	6/10/2002	109	5.70	15.8	1.57	29.1	25.6	0.099B	6.59	380
	AY-68-29-4LZ	5/29/2002	93.4	10.3	8.58	0.654B	14.6	13.0	0.139	5.84	310
Comal	DX-68-16-707	7/9/2002	*87.8	*16.9	*7.08	*1.04	*12.7	*14.8	*0.15	*13.0	*318
	DX-68-22-802	7/22/2002	*91.1	*11.5	*7.89	*0.59	*16.0	*9.95	*0.09	*12.8	*313
	DX-68-22-810	7/22/2002	*86.1	*11.9	*4.49	*0.60	*7.91	*7.90	*0.10	*12.7	*288
	DX-68-22-811	9/16/2002	98.0	8.98	6.47	1.61	9.79	8.37	0.090B	4.77	320
	DX-68-23-304	6/4/2002	*78.4	*17.3	*11.0	*1.41	*19.0	*25.9	*0.210	*14.8	*300
	DX-68-23-305	7/9/2002	*76.1	*17.3	*10.9	*1.36	*19.0	*27.0	*0.20	*13.8	*310
	DX-68-23-508	7/9/2002	*81.8	*16.4	*10.1	*1.36	*16.7	*26.2	*0.18	*14.0	*318
	DX-68-23-601	7/9/2002	*77.7	*16.4	*10.0	*1.32	*17.2	*24.2	*0.18	*13.5	*306

*Sample collected by the Authority and analyzed by TWDB
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J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
S = Freshwater/Saline water transect monitoring well
NA = Not analyzed

Table C-2 Analytical data for major ions in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Calcium dissolved (mg/L)	Magnesium dissolved (mg/L)	Sodium dissolved (mg/L)	Potassium dissolved (mg/L)	Chloride dissolved (mg/L)	Sulfate dissolved (mg/L)	Fluoride dissolved (mg/L)	Silica dissolved (mg/L)	Total Dissolved Solids (mg/L)
Comal; S	DX-68-23-616A	8/27/2002	175	95.0	305	20.6	540	448	3.10	6.21	1910
S	DX-68-23-616B	8/27/2002	94.5	59.5	134	10.1	195	192	3.34	6.20	1000
S	DX-68-23-619A	7/30/2002	*45.9	*27.7	*13.6	*1.48	*22.7	*44.2	*2.24	*15.0	*297
S	DX-68-23-619B	8/27/2002	60.2	25.3	10.4	1.14	17.4	43.5	1.54	5.73	310
	DX-68-30-221	7/11/2002	*118	*8.26	*14.0	*1.77	*23.5	*22.4	*0.12	*17.7	*401
	DX-68-30-225	7/22/2002	*85.8	*10.5	*6.51	*0.77	*11.7	*11.3	*0.11	*13.4	*297
	DX-68-23-5KG	1/24/2002	95.3	17.1J	6.00	0.46B	9.70	28.1	0.18B	5.00	248
Hays	LR-67-01-303	12/10/2002	54.6	33.6	6.76	1.13	10.1	70.5	2.72	5.28	370
	LR-67-01-810	12/17/2002	87.2	15.7	8.93	1.08	16.5	22.2	0.196	5.28	310
S	LR-67-01-812	9/11/2002	1030	518	2230	98.0	3780	2470	3.24	8.32	10600
S	LR-67-01-813A	9/11/2002	983	497	2130	104	3750	2460	3.12	7.85	10200
S	LR-67-01-813B	9/11/2002	957	484	2080	89.5	3700	2440	3.00	7.54	10600
S	LR-67-01-814A	9/11/2002	1140	573	2450	105	3420	2260	3.16	9.03	10300
S	LR-67-01-814B	9/11/2002	970	491	2100	98.4	3760	1740	3.26	7.73	10200
	LR-67-01-816	12/17/2002	85.8	15.4	10.5	1.37	19.6	26.5	0.238	5.17	320
	LR-68-08-902	12/10/2002	91.3	9.85	8.18	0.744B	24.0	7.59	0.082B	5.20	310

*Sample collected by the Authority and analyzed by TWDB
B = Estimated result. Result is less than reporting limit (RL)
J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
S = Freshwater/Saline water transect monitoring well
NA = Not analyzed

Table C-2 Analytical data for major ions in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Calcium dissolved (mg/L)	Magnesium dissolved (mg/L)	Sodium dissolved (mg/L)	Potassium dissolved (mg/L)	Chloride dissolved (mg/L)	Sulfate dissolved (mg/L)	Fluoride dissolved (mg/L)	Silica dissolved (mg/L)	Total Dissolved Solids (mg/L)
Hays	LR-69-09-113	8/29/2002	89.9	17.6	17.4	1.51	28.8	37.9	0.246	5.36	380
	LR-67-01-8SW	12/17/2002	84.4	15.3	11.0	1.14	21.5	27.7	0.212	5.10	350
	LR-67-09-1SM	12/17/2002	97.9	15.0	16.4	1.86	26.7	41.2	0.334	5.85	400
Medina	TD-68-25-703	7/10/2002	*73.1	*8.51	*6.03	*0.88	*9.85	*32.7	*0.07	*11.4	*254
	TD-68-33-502	7/18/2002	*68.0	*16.4	*6.91	*1.12	*11.5	*43.8	*0.17	*13.4	*279
	TD-68-41-102	6/27/2002	*62.0	*15.0	*9.44	*1.01	*21.4	*16.7	*0.15	*13.7	NA
	TD-68-41-303	6/13/2002	*65.5	*15.4	*10.7	*1.13	*22.7	*16.4	*0.17	*14.2	*278
	TD-68-42-113	6/13/2002	*65.1	*15.1	*10.6	*1.11	*23.2	*16.7	*0.16	*14.0	*275
	TD-68-42-506	6/13/2002	*64.6	*16.1	*9.78	*1.06	*24.5	*14.0	*0.19	*13.9	*275
	TD-68-42-806	6/19/2002	*57.7	*15.7	*9.21	*0.97	*22.0	*18.1	*1.48	*14.3	NA
	TD-68-49-201	6/19/2002	*61.8	*15.4	*11.0	*1.06	*27.0	*18.6	*0.23	*13.4	*279
	TD-68-49-301	6/13/2002	*53.2	*19.3	*8.84	*1.00	*18.8	*23.1	*0.60	*15.1	*268
	TD-69-32-703	2/20/2002	*78.0	*1.00	*5.00	*0.20	*4.00	*6.00	*0.10	*13.0	*227
	TD-69-38-906	7/18/2002	*77.8	*13.5	*8.76	*1.04	*11.9	*11.3	*0.16	*14.4	*290
	TD-69-39-504	7/29/2002	*68.3	*7.69	*5.7	*1.24	*9.00	*15.3	*0.11	*14.7	*247
	TD-69-39-601	6/27/2002	*71.2	*9.81	*6.42	*0.78	*11.4	*10.5	*0.10	*13.3	NA
	TD-69-46-601	7/10/2002	*68.3	*14.9	*7.55	*1.03	*13.8	*17.9	*0.15	*13.9	*266
	TD-69-47-215	7/10/2002	*64.8	*15.6	*7.84	*1.42	*14.5	*17.5	*0.15	*12.8	*260

*Sample collected by the Authority and analyzed by TWDB
B = Estimated result. Result is less than reporting limit (RL)
J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
S = Freshwater/Saline water transect monitoring well
NA = Not analyzed

Table C-2 Analytical data for major ions in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Calcium dissolved (mg/L)	Magnesium dissolved (mg/L)	Sodium dissolved (mg/L)	Potassium dissolved (mg/L)	Chloride dissolved (mg/L)	Sulfate dissolved (mg/L)	Fluoride dissolved (mg/L)	Silica dissolved (mg/L)	Total Dissolved Solids (mg/L)
Medina	TD-69-47-303	7/10/2002	*64.2	*16.5	*7.96	*1.04	*15.3	*17.3	*0.17	*13.5	*263
	TD-69-55-604	7/18/2002	*72.4	*14.9	*11.6	*0.88	*27.9	*16.0	*0.14	*13.8	*291
	TD-69-63-103	7/24/2002	*57.3	*22.7	*9.04	*0.91	*13.7	*84.0	*0.98	*22.3	*344
Uvalde	YP-69-33-701	6/26/2002	*54.5	*13.4	*7.6	*0.79	*13.1	*13.0	*0.10	*12.7	NA
	YP-69-35-401	7/25/2002	*67.6	*13.2	*5.71	*0.76	*8.99	*10.9	*0.07	*12.3	*248
	YP-69-35-602	7/25/2002	*52.8	*17.3	*5.38	*0.65	*10.6	*11.8	*0.11	*14.0	*233
	YP-69-43-606	7/10/2002	*71.5	*11.1	*11.2	*1.27	*17.4	*16.1	*0.09	*13.7	*275
	YP-69-45-405	6/21/2002	*64.4	*13.5	*7.45	*0.99	*12.4	*18.6	*0.17	*14.2	NA
	YP-69-50-207	6/21/2002	*75.3	*9.69	*14.5	*0.94	*31.1	*16.9	*0.09	*14.1	NA
	YP-69-50-501	6/21/2002	*130	*15.5	*58.8	*1.24	*158	*73.3	*0.16	*17.8	NA
	YP-69-51-114	6/26/2002	*113	*13.8	*34.5	*1.26	*83.7	*47.0	*0.46	*18.2	NA

*Sample collected by the Authority and analyzed by TWDB
B = Estimated result. Result is less than reporting limit (RL)
J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
S = Freshwater/Saline water transect monitoring well
NA = Not analyzed

Table C-3 Analytical data for metals in water samples from wells completed in the Edwards Aquifer, 2002

County	State Well Number	Date Sampled	Aluminum dissolved (mg/L)	Antimony dissolved (mg/L)	Arsenic dissolved (mg/L)	Barium dissolved (mg/L)	Beryllium dissolved (mg/L)	Boron dissolved (mg/L)	Bromide dissolved (mg/L)	Cadmium dissolved (mg/L)
Bexar	AY-68-27-307	4/10/2002	NA	0.0031B J	0.0042B	0.038B	<0.005	NA	NA	<0.002
	AY-68-27-609	4/19/2002	NA	<0.01	0.0052B	0.036B	<0.005	NA	NA	<0.002
	AY-68-27-611	4/24/2002	NA	0.0021B	0.003B	0.0455	<0.01	NA	NA	0.0003B
	AY-68-28-113	12/6/2002	NA	0.002B	<0.01	0.031	0.0011B	NA	NA	<0.01
	AY-68-28-210	12/5/2002	NA	0.0037B	0.0063B	0.0531	0.0013B	NA	NA	<0.01
	AY-68-28-313	7/4/2002	NA	0.0014B	0.002B	0.0532	<0.01	NA	NA	<0.01
	AY-68-28-313	7/6/2002	NA	<0.01	0.004B	0.0477	<0.01	NA	NA	0.0005B
	AY-68-28-313	7/8/2002	NA	0.0015B	0.004B	0.0404	<0.01	NA	NA	0.0003B
	AY-68-28-313	7/12/2002	NA	<0.01	<0.01	0.0491	<0.01	NA	NA	0.0002B
	AY-68-28-406	11/8/2002	NA	0.00305B	<0.01	0.0318	0.0012B	NA	NA	<0.01
	AY-68-28-407	12/3/2002	NA	0.0036B	<0.01	0.0328	0.0033B	NA	NA	<0.01
	AY-68-28-515	12/6/2002	NA	0.0027B	<0.01	0.0408	0.0012B	NA	NA	<0.01
	AY-68-28-518	5/1/2002	NA	NA	0.003B	0.0461	<0.01	NA	NA	<0.01
	AY-68-29-109	6/25/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-114	4/15/2002	NA	0.0048B J	0.0073B	0.044B	<0.005	NA	NA	<0.002
	AY-68-29-401	6/25/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-406	5/29/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-410	6/25/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-414	4/19/2002	NA	0.0034B J	0.0065B	0.041B	<0.005	NA	NA	<0.002
	AY-68-29-414	6/25/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-415	6/25/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-4CC	5/29/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-4RD	5/29/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-4JJ	6/10/2002	NA	0.0013B	0.003B	0.0386	<0.01	NA	NA	0.0008B
	AY-68-29-4GL	6/10/2002	NA	0.0009B	0.003B	0.0418	<0.01	NA	NA	<0.01
	AY-68-28-6SG	6/10/2002	NA	<0.01	0.006B	0.0403	<0.01	NA	NA	<0.01
	AY-68-29-4LZ	5/29/2002	NA	NA	NA	NA	NA	NA	NA	NA

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D = Result was obtained from the analysis
S = Freshwater/Saline water transect monitoring well
NA = Not analyzed

Table C-3 Analytical data for metals in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Aluminum dissolved (mg/L)	Antimony dissolved (mg/L)	Arsenic dissolved (mg/L)	Barium dissolved (mg/L)	Beryllium dissolved (mg/L)	Boron dissolved (mg/L)	Bromide dissolved (mg/L)	Cadmium dissolved (mg/L)
Comal	DX-68-16-707	7/9/2002	*<0.004	*<0.001	*<0.002	*0.034	*<0.001	*0.152	*0.0938	*<0.001
	DX-68-22-802	7/22/2002	*<0.004	*<0.001	*<0.002	*0.033	*<0.001	*0.069	*0.0446	*<0.001
	DX-68-22-810	7/22/2002	*<0.004	*<0.001	*<0.002	*0.029	*<0.001	*0.085	*0.0555	*<0.001
	DX-68-22-811	9/16/2002	NA	<0.01	<0.01	0.036	<0.01	NA	NA	<0.01
	DX-68-23-304	6/4/2002	NA	<0.01	<0.01	0.0537	<0.01	NA	NA	<0.01
	DX-68-23-304	6/4/2002	*<0.004	*0.001	*<0.002	*0.054	*<0.001	*0.131	*0.093	*<0.001
	DX-68-23-305	7/9/2002	*<0.004	*<0.001	*<0.002	*0.056	*<0.001	*0.183	*0.118	*<0.001
	DX-68-23-508	7/9/2002	*<0.004	*<0.001	*<0.002	*0.043	*<0.001	*0.155	*0.117	*<0.001
	DX-68-23-601	7/9/2002	*<0.004	*<0.001	*<0.002	*0.048	*<0.001	*0.135	*0.0936	*<0.001
S	DX-68-23-616A	8/27/2002	NA	0.00115B	<0.01	0.0239	<0.01	NA	NA	0.001B
S	DX-68-23-616B	8/27/2002	NA	<0.01	<0.01	0.0348	<0.01	NA	NA	0.0008B
S	DX-68-23-619A	7/30/2002	*<0.004	*<0.001	*<0.002	*0.055	*<0.001	*0.168	*0.0775	*<0.001
S	DX-68-23-619B	8/27/2002	NA	<0.01	<0.01	0.121	<0.01	NA	NA	0.0006B
	DX-68-30-221	7/11/2002	*<0.004	*<0.001	*<0.002	*0.05	*<0.001	*0.198	*0.141	*<0.001
	DX-68-30-225	7/22/2002	*<0.004	*<0.001	*<0.002	*0.031	*<0.001	*0.085	*0.0626	*<0.001
	DX-68-23-5KG	1/24/2002	NA	<0.01	<0.01	0.035B	<0.005	NA	NA	<0.002
Hays	LR-67-01-303	12/10/2002	NA	0.00325B	0.0042B	0.0872	0.0016B	NA	NA	<0.01
	LR-67-01-810	12/17/2002	NA	0.00245B	0.0104	0.0374	0.0012B	NA	NA	<0.01
S	LR-67-01-812	9/11/2002	NA	<0.01	<0.01	<0.01	<0.01	NA	NA	<0.01
S	LR-67-01-813A	9/11/2002	NA	0.0009B	<0.01	<0.01	<0.01	NA	NA	<0.01
S	LR-67-01-813B	9/11/2002	NA	<0.01	<0.01	<0.01	<0.01	NA	NA	<0.01
S	LR-67-01-814A	9/11/2002	NA	0.00305B	<0.01	<0.01	<0.01	NA	NA	<0.01
S	LR-67-01-814B	9/11/2002	NA	0.0016B	<0.01	<0.01	<0.01	NA	NA	<0.01
	LR-67-01-816	12/17/2002	NA	0.0124	0.0077B	0.0371	0.001B	NA	NA	<0.01
	LR-68-08-902	12/10/2002	NA	0.00305B	0.0077B	0.0302	0.0013B	NA	NA	<0.01
	LR-69-09-113	8/29/2002	NA	0.00395B	0.054	0.0302	<0.01	NA	NA	<0.01
	LR-67-01-8SW	12/17/2002	NA	0.00415B	0.0045B	0.0346	0.0002B	NA	NA	<0.01
	LR-67-09-1SM	12/17/2002	NA	0.0048B	0.0083B	0.0419	<0.01	NA	NA	<0.01

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D = Result was obtained from the analysis
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NA = Not analyzed

Table C-3 Analytical data for metals in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Aluminum dissolved Sampled	Antimony dissolved (mg/L)	Arsenic dissolved (mg/L)	Barium dissolved (mg/L)	Beryllium dissolved (mg/L)	Boron dissolved (mg/L)	Bromide dissolved (mg/L)	Cadmium dissolved (mg/L)
Medina	TD-68-25-703	7/10/2002	*<0.004	*<0.001	*<0.002	*0.03	*<0.001	*0.121	*0.0738	*<0.001
	TD-68-33-502	7/18/2002	*<0.004	*<0.001	*<0.002	*0.03	*<0.001	*0.100	*0.0645	*<0.001
	TD-68-41-102	6/27/2002	*<0.004	*<0.001	*<0.002	*0.045	*<0.001	*0.117	*0.0902	*<0.001
	TD-68-41-303	6/13/2002	*<0.004	*<0.001	*<0.002	*0.048	*<0.001	*0.166	*0.109	*<0.001
	TD-68-42-113	6/13/2002	*<0.004	*<0.001	*<0.002	*0.054	*<0.001	*0.135	*0.0915	*<0.001
	TD-68-42-506	6/13/2002	*<0.004	*<0.001	*<0.002	*0.07	*<0.001	*0.148	*0.127	*<0.001
	TD-68-42-806	6/19/2002	*<0.004	*<0.001	*<0.002	*0.087	*<0.001	*0.100	*0.101	*<0.001
	TD-68-49-201	6/19/2002	*<0.004	*<0.001	*<0.002	*0.107	*<0.001	*0.15	*0.108	*<0.001
	TD-68-49-301	6/13/2002	*<0.004	*<0.001	*<0.002	*0.171	*<0.001	*0.117	*0.0884	*<0.001
	TD-69-32-703	2/20/2002	*0.021	*<0.001	*<0.002	*0.025	*<0.001	*0.071	*0.0292	*<0.001
	TD-69-38-906	7/18/2002	*<0.004	*<0.001	*<0.002	*0.043	*<0.001	*0.119	*0.0536	*<0.001
	TD-69-39-504	7/29/2002	*<0.004	*<0.001	*<0.002	*0.03	*<0.001	*0.145	*0.05	*<0.001
	TD-69-39-601	6/27/2002	*<0.004	*<0.001	*<0.002	*0.029	*<0.001	*0.096	*0.0805	*<0.001
	TD-69-46-601	7/10/2002	*<0.004	*<0.001	*<0.002	*0.037	*<0.001	*0.157	*0.0603	*<0.001
	TD-69-47-215	7/10/2002	*<0.004	*<0.001	*<0.002	*0.052	*<0.001	*0.165	*0.113	*<0.001
	TD-69-47-303	7/10/2002	*<0.004	*<0.001	*<0.002	*0.044	*<0.001	*0.163	*0.0753	*<0.001
	TD-69-55-604	7/18/2002	*<0.004	*<0.001	*<0.002	*0.054	*<0.001	*0.125	*0.088	*<0.001
	TD-69-63-103	7/24/2002	*<0.004	*<0.001	*<0.002	*0.112	*<0.001	*0.157	*0.0584	*<0.001
Uvalde	YP-69-33-701	6/26/2002	*<0.004	*<0.001	*<0.002	*0.038	*<0.001	*0.121	*0.0626	*<0.001
	YP-69-35-401	7/25/2002	*<0.004	*<0.001	*<0.002	*0.042	*<0.001	*0.121	*0.0478	*<0.001
	YP-69-35-602	7/25/2002	*<0.004	*<0.001	*<0.002	*0.033	*<0.001	*0.119	*0.0555	*<0.001
	YP-69-43-606	7/10/2002	*<0.004	*<0.001	*<0.002	*0.049	*<0.001	*0.179	*0.119	*<0.001
	YP-69-45-405	6/21/2002	*<0.004	*<0.001	*<0.002	*0.033	*<0.001	*0.129	*0.0573	*<0.001
	YP-69-50-207	6/21/2002	*<0.004	*<0.001	*<0.002	*0.047	*<0.001	*0.140	*0.0985	*<0.001
	YP-69-50-501	6/21/2002	*<0.004	*<0.001	*<0.002	*0.087	*<0.001	*0.329	*0.491	*<0.001
	YP-69-51-114	6/26/2002	*<0.004	*<0.001	*<0.002	*0.096	*<0.001	*0.231	*0.392	*<0.001

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Table C-3 Analytical data for metals in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Chromium dissolved (mg/L)	Cobalt dissolved (mg/L)	Copper dissolved (mg/L)	Iron dissolved (mg/L)	Lead dissolved (mg/L)	Lithium dissolved (mg/L)	Manganese dissolved (mg/L)	Mercury dissolved (mg/L)
Bexar	AY-68-27-307	4/10/2002	<0.005	NA	<0.025	<0.1	<0.003	NA	<0.015	<0.0002
	AY-68-27-609	4/19/2002	<0.005	NA	<0.025	<0.1	0.0023B	NA	<0.015	<0.0002
	AY-68-27-611	4/24/2002	<0.01	NA	<0.01	0.0539	<0.01	NA	0.0003B	<0.0002
	AY-68-28-113	12/6/2002	<0.01	NA	0.0043B	<0.01	0.0048B	NA	<0.01	<0.0002
	AY-68-28-210	12/5/2002	<0.01	NA	<0.01	<0.01	<0.01	NA	<0.01	<0.0002
	AY-68-28-313	7/4/2002	0.0017B	NA	0.024	0.006B	<0.01	NA	0.0019B	<0.0002
	AY-68-28-313	7/6/2002	0.0007B	NA	0.004B	0.0033B	<0.01	NA	0.0034B	<0.0002
	AY-68-28-313	7/8/2002	0.0005B	NA	0.003B	0.0024B	<0.01	NA	0.0028B	0.0005
	AY-68-28-313	7/12/2002	<0.01	NA	0.004B	0.0048B	<0.01	NA	0.0036B	<0.0002
	AY-68-28-406	11/8/2002	<0.01	NA	<0.01	<0.01	<0.01	NA	<0.01	<0.0002
	AY-68-28-407	12/3/2002	<0.01	NA	<0.01	0.0078B	<0.01	NA	<0.01	<0.0002
	AY-68-28-515	12/6/2002	<0.01	NA	0.0062B	<0.01	<0.01	NA	<0.01	<0.0002
	AY-68-28-518	5/1/2002	0.0017B	NA	<0.01	<0.01	0.0035B	NA	0.002B	<0.0002
	AY-68-29-109	6/25/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-114	4/15/2002	<0.005	NA	<0.025	<0.1	0.0026B	NA	<0.015	<0.0002
	AY-68-29-401	6/25/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-406	5/29/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-410	6/25/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-414	4/19/2002	<0.005	NA	0.0055B	<0.1	0.0024B	NA	<0.015	<0.0002
	AY-68-29-414	6/25/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-415	6/25/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-4CC	5/29/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-4RD	5/29/2002	NA	NA	NA	NA	NA	NA	NA	NA
	AY-68-29-4JJ	6/10/2002	0.0008B	NA	0.005B	0.006B	<0.01	NA	0.0099B	<0.0002
	AY-68-29-4GL	6/10/2002	0.0005B	NA	0.004B	0.0326	0.0028B	NA	0.003B	<0.0002
	AY-68-28-6SG	6/10/2002	0.0004B	NA	<0.01	0.0036B	<0.01	NA	0.003B	<0.0002
	AY-68-29-4LZ	5/29/2002	NA	NA	NA	NA	NA	NA	NA	NA

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Comal	DX-68-16-707	7/9/2002	*0.002	*<0.001	*0.007	*<0.05	*0.001	*0.004	*<0.001	NA
	DX-68-22-802	7/22/2002	*0.001	*<0.001	*0.002	*<0.05	*0.003	*0.002	*<0.001	NA
	DX-68-22-810	7/22/2002	*0.001	*<0.001	*0.002	*<0.05	*0.006	*0.003	*<0.001	NA
	DX-68-22-811	9/16/2002	<0.01	NA	<0.01	0.0042B	0.0019B	NA	<0.01	<0.0002
	DX-68-23-304	6/4/2002	<0.01	NA	<0.01	0.0084B	<0.01	NA	<0.01	<0.0002
	DX-68-23-304	6/4/2002	*<0.001	*<0.001	*<0.001	*<0.05	*<0.001	*0.006	*0.002	NA
	DX-68-23-305	7/9/2002	*0.002	*<0.001	*0.001	*<0.05	*<0.001	*0.007	*<0.001	NA
	DX-68-23-508	7/9/2002	*0.002	*<0.001	*0.008	*<0.05	*0.003	*0.006	*<0.001	NA
	DX-68-23-601	7/9/2002	*0.002	*<0.001	*0.002	*<0.05	*0.005	*0.006	*<0.001	NA
S	DX-68-23-616A	8/27/2002	0.0008B	NA	<0.01	0.0343	<0.01	NA	0.0242	<0.0002
S	DX-68-23-616B	8/27/2002	0.0008B	NA	<0.01	0.0259	<0.01	NA	0.0128	<0.0002
S	DX-68-23-619A	7/30/2002	*<0.001	*<0.001	*<0.001	*0.215	*<0.001	*0.013	*0.006	NA
S	DX-68-23-619B	8/27/2002	0.0009B	NA	<0.01	0.0994	<0.01	NA	0.004B	<0.0002
	DX-68-30-221	7/11/2002	*<0.001	*<0.001	*0.003	*<0.05	*<0.001	*0.004	*<0.001	NA
	DX-68-30-225	7/22/2002	*0.001	*<0.001	*0.003	*<0.05	*0.001	*0.003	*<0.001	NA
	DX-68-23-5KG	1/24/2002	<0.005	NA	0.0024B	<0.1	<0.003	NA	<0.015	<0.0002
Hays	LR-67-01-303	12/10/2002	0.0029B	NA	<0.01	0.0067B	0.0014B	NA	<0.01	<0.0002
	LR-67-01-810	12/17/2002	0.0022B	NA	<0.01	<0.01	0.0024B	NA	<0.01	<0.0002
S	LR-67-01-812	9/11/2002	0.0124	NA	<0.01	0.0059B	<0.01	NA	<0.01	<0.0002
S	LR-67-01-813A	9/11/2002	0.0109	NA	<0.01	0.0023B	<0.01	NA	<0.01	<0.0002
S	LR-67-01-813B	9/11/2002	0.0107	NA	<0.01	0.0017B	<0.01	NA	<0.01	<0.0002
S	LR-67-01-814A	9/11/2002	0.0104	NA	<0.01	0.0107	<0.01	NA	<0.01	0.00042
S	LR-67-01-814B	9/11/2002	0.0104	NA	<0.01	0.0029B	<0.01	NA	<0.01	<0.0002
	LR-67-01-816	12/17/2002	0.002B	NA	0.0145	<0.01	0.0032B	NA	<0.01	<0.0002
	LR-68-08-902	12/10/2002	0.0023B	NA	<0.01	<0.01	0.0014B	NA	<0.01	0.00028
	LR-69-09-113	8/29/2002	<0.01	NA	0.002B	0.0792	<0.01	NA	0.0019B	<0.0002
	LR-67-01-8SW	12/17/2002	0.0019B	NA	<0.01	0.158	0.0023B	NA	0.0009B	0.00017B
	LR-67-09-1SM	12/17/2002	0.0021B	NA	0.0045B	<0.01	0.0041B	NA	<0.01	<0.0002

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County	State Well Number	Date Sampled	Chromium dissolved (mg/L)	Cobalt dissolved (mg/L)	Copper dissolved (mg/L)	Iron dissolved (mg/L)	Lead dissolved (mg/L)	Lithium dissolved (mg/L)	Manganese dissolved (mg/L)	Mercury dissolved (mg/L)
Medina	TD-68-25-703	7/10/2002	*<0.001	*<0.001	*0.002	*<0.05	*<0.001	*<0.002	*0.003	NA
	TD-68-33-502	7/18/2002	*<0.001	*<0.001	*0.003	*<0.05	*0.001	*0.004	*<0.001	NA
	TD-68-41-102	6/27/2002	*0.004	*<0.001	*0.003	*<0.05	*<0.001	*0.004	*<0.001	NA
	TD-68-41-303	6/13/2002	*0.004	*<0.001	*<0.001	*<0.05	*<0.001	*0.004	*0.002	NA
	TD-68-42-113	6/13/2002	*0.004	*<0.001	*0.001	*<0.05	*<0.001	*0.004	*<0.001	NA
	TD-68-42-506	6/13/2002	*<0.001	*<0.001	*0.002	*<0.05	*<0.001	*0.003	*<0.001	NA
	TD-68-42-806	6/19/2002	*0.004	*<0.001	*0.004	*<0.05	*0.002	*0.004	*<0.001	NA
	TD-68-49-201	6/19/2002	*0.003	*<0.001	*0.003	*<0.05	*<0.001	*0.004	*<0.001	NA
	TD-68-49-301	6/13/2002	*0.004	*<0.001	*0.002	*<0.05	*0.001	*0.004	*<0.001	NA
	TD-69-32-703	2/20/2002	*0.003	*<0.001	*<0.001	*<0.05	*<0.001	*<0.002	*<0.001	NA
	TD-69-38-906	7/18/2002	*0.001	*<0.001	*0.004	*<0.05	*0.005	*0.004	*<0.001	NA
	TD-69-39-504	7/29/2002	*<0.001	*<0.001	*0.002	*<0.051	*<0.001	*<0.002	*<0.001	NA
	TD-69-39-601	6/27/2002	*0.004	*<0.001	*<0.001	*<0.05	*0.001	*0.002	*<0.001	NA
	TD-69-46-601	7/10/2002	*0.002	*<0.001	*0.005	*<0.05	*<0.001	*0.003	*<0.001	NA
	TD-69-47-215	7/10/2002	*<0.001	*<0.001	*0.001	*<0.05	*0.007	*0.003	*0.014	NA
	TD-69-47-303	7/10/2002	*<0.001	*<0.001	*0.004	*<0.05	*0.004	*0.003	*<0.001	NA
	TD-69-55-604	7/18/2002	*<0.001	*<0.001	*0.003	*<0.05	*0.004	*0.003	*<0.001	NA
	TD-69-63-103	7/24/2002	*<0.001	*<0.001	*<0.001	*0.887	*<0.001	*0.007	*0.011	NA
Uvalde	YP-69-33-701	6/26/2002	*0.004	*<0.001	*<0.001	*<0.05	*<0.001	*0.003	*<0.001	NA
	YP-69-35-401	7/25/2002	*<0.001	*<0.001	*0.001	*<0.05	*<0.001	*<0.002	*<0.001	NA
	YP-69-35-602	7/25/2002	*<0.001	*<0.001	*<0.001	*<0.05	*<0.001	*0.003	*<0.001	NA
	YP-69-43-606	7/10/2002	*<0.001	*<0.001	*0.002	*<0.05	*<0.001	*0.002	*<0.001	NA
	YP-69-45-405	6/21/2002	*0.004	*<0.001	*0.001	*<0.05	*<0.001	*0.003	*<0.001	NA
	YP-69-50-207	6/21/2002	*0.004	*<0.001	*0.003	*<0.05	*0.005	*0.003	*<0.001	NA
	YP-69-50-501	6/21/2002	*0.005	*<0.001	*0.003	*<0.05	*0.001	*0.007	*<0.001	NA
	YP-69-51-114	6/26/2002	*0.005	*<0.001	*0.009	*<0.05	*<0.001	*0.009	*<0.001	NA

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J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
D = Result was obtained from the analysis
S = Freshwater/Saline water transect monitoring well
NA = Not analyzed

Table C-3 Analytical data for metals in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Molybdenum dissolved (mg/L)	Nickel dissolved (mg/L)	Selenium dissolved (mg/L)	Silver dissolved (mg/L)	Strontium dissolved (mg/L)	Thallium dissolved (mg/L)	Vanadium dissolved (mg/L)	Zinc dissolved (mg/L)
Bexar	AY-68-27-307	4/10/2002	NA	<0.04	0.014	<0.005	0.13	<0.01	NA	<0.02
	AY-68-27-609	4/19/2002	NA	<0.04	0.014	1D	0.23	<0.01	NA	<0.02
	AY-68-27-611	4/24/2002	NA	0.0038B	0.0183	0.001B	0.258	0.0027B	NA	0.0074B
	AY-68-28-113	12/6/2002	NA	<0.01	0.0266	<0.01	0.161	<0.01	NA	<0.01
	AY-68-28-210	12/5/2002	NA	<0.01	<0.01	<0.01	0.137	<0.01	NA	0.0028B
	AY-68-28-313	7/4/2002	NA	0.0122	<1	<0.01	0.174	<0.01	NA	0.0052B
	AY-68-28-313	7/6/2002	NA	0.0106	<1	<0.01	0.173	<0.01	NA	0.0193
	AY-68-28-313	7/8/2002	NA	0.0096B	<0.01	<0.01	0.151	<0.01	NA	0.0048B
	AY-68-28-313	7/12/2002	NA	0.01B	<1	<0.01	0.133	<0.01	NA	0.0077B
	AY-68-28-406	11/8/2002	NA	<0.01	<0.01	0.0012B	0.298	<0.01	NA	<0.01
	AY-68-28-407	12/3/2002	NA	<0.01	<0.01	<0.01	0.314	<0.01	NA	0.0033B
	AY-68-28-515	12/6/2002	NA	<0.01	0.0294	<0.01	0.249	<0.01	NA	<0.01
	AY-68-28-518	5/1/2002	NA	0.0063B	0.0151	<0.01	0.23	<0.01	NA	0.0141
	AY-68-29-109	6/25/2002	NA	NA	NA	NA	0.211	NA	NA	NA
	AY-68-29-114	4/15/2002	NA	<0.04	0.021	1D	0.13	<0.01	NA	<0.02
	AY-68-29-401	6/25/2002	NA	NA	NA	NA	0.313	NA	NA	NA
	AY-68-29-406	5/29/2002	NA	NA	NA	NA	0.25	NA	NA	NA
	AY-68-29-410	6/25/2002	NA	NA	NA	NA	0.153	NA	NA	NA
	AY-68-29-414	4/19/2002	NA	<0.04	0.016	<0.005	0.22	<0.01	NA	0.0039B
	AY-68-29-414	6/25/2002	NA	NA	NA	NA	0.203	NA	NA	NA
	AY-68-29-415	6/25/2002	NA	NA	NA	NA	0.253	NA	NA	NA
	AY-68-29-4CC	5/29/2002	NA	NA	NA	NA	0.213	NA	NA	NA
	AY-68-29-4RD	5/29/2002	NA	NA	NA	NA	0.192	NA	NA	NA
	AY-68-29-4JJ	6/10/2002	NA	0.012	<0.01	<0.01	0.202	<0.01	NA	0.819
	AY-68-29-4GL	6/10/2002	NA	0.0018B	0.0222	<0.01	0.206	<0.01	NA	0.0879
	AY-68-28-6SG	6/10/2002	NA	0.0018B	0.023	<0.01	0.184	<0.01	NA	0.037
	AY-68-29-4LZ	5/29/2002	NA	NA	NA	NA	0.175	NA	NA	NA

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D = Result was obtained from the analysis
S = Freshwater/Saline water transect monitoring well
NA = Not analyzed

Table C-3 Analytical data for metals in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Molybdenum dissolved (mg/L)	Nickel dissolved (mg/L)	Selenium dissolved (mg/L)	Silver dissolved (mg/L)	Strontium dissolved (mg/L)	Thallium dissolved (mg/L)	Vanadium dissolved (mg/L)	Zinc dissolved (mg/L)
Comal	DX-68-16-707	7/9/2002	*<0.001	*0.002	*<0.004	NA	*0.491	*<0.001	*0.003	*0.011
	DX-68-22-802	7/22/2002	*<0.001	*0.002	*<0.004	NA	*0.151	*<0.001	*0.003	*0.006
	DX-68-22-810	7/22/2002	*<0.001	*0.002	*<0.004	NA	*0.116	*<0.001	*0.003	*0.529
	DX-68-22-811	9/16/2002	NA	0.0034B	<0.01	0.0015B	0.159	0.0062B	NA	0.035
	DX-68-23-304	6/4/2002	NA	0.0031B	0.0109	<0.01	0.66	<0.01	NA	0.0077B
	DX-68-23-304	6/4/2002	*<0.001	*0.002	*<0.004	NA	*0.683	*<0.001	*0.003	*0.004
	DX-68-23-305	7/9/2002	*<0.001	*0.002	*<0.004	NA	*0.717	*<0.001	*0.003	*0.018
	DX-68-23-508	7/9/2002	*<0.001	*0.003	*<0.004	NA	*0.525	*<0.001	*0.003	*0.023
	DX-68-23-601	7/9/2002	*<0.001	*0.002	*<0.004	NA	*0.597	*<0.001	*0.003	*0.004
S	DX-68-23-616A	8/27/2002	NA	0.0154	<0.01	<0.01	<0.05	<0.01	NA	<0.01
S	DX-68-23-616B	8/27/2002	NA	0.0145	<0.01	<0.01	<0.05	<0.01	NA	<0.01
S	DX-68-23-619A	7/30/2002	*0.001	*0.002	*<0.004	NA	*3.65	*<0.001	*<0.001	*<0.004
S	DX-68-23-619B	8/27/2002	NA	0.0152	<0.01	<0.01	<0.05	<0.01	NA	0.0094B
	DX-68-30-221	7/11/2002	*<0.001	*0.003	*<0.004	NA	*0.224	*<0.001	*0.002	*0.004
	DX-68-30-225	7/22/2002	*<0.001	*0.002	*<0.004	NA	*0.174	*<0.001	*0.003	*0.009
	DX-68-23-5KG	1/24/2002	NA	<0.04	<0.005	<0.005	0.98	<0.01	NA	0.014B
Hays	LR-67-01-303	12/10/2002	NA	<0.01	0.013	0.0052B	<0.05	<0.01	NA	0.0099B
	LR-67-01-810	12/17/2002	NA	<0.01	0.0282	<0.01	0.498	<0.01	NA	0.0041B
S	LR-67-01-812	9/11/2002	NA	0.0108	<0.01	<0.01	18.3	0.0239	NA	<0.01
S	LR-67-01-813A	9/11/2002	NA	0.0087B	<0.01	0.0009B	22.9	0.0133	NA	<0.01
S	LR-67-01-813B	9/11/2002	NA	0.014	<0.01	<0.01	21	0.0229	NA	<0.01
S	LR-67-01-814A	9/11/2002	NA	0.0127	<0.01	<0.01	19	0.0176	NA	<0.01
S	LR-67-01-814B	9/11/2002	NA	0.0116	<0.01	<0.01	20.9	0.0229	NA	<0.01
	LR-67-01-816	12/17/2002	NA	<0.01	0.0275	<0.01	0.526	<0.01	NA	0.0078B
	LR-68-08-902	12/10/2002	NA	<0.01	0.0177	<0.01	0.122	<0.01	NA	0.0141
	LR-69-09-113	8/29/2002	NA	<0.01	<0.01	0.001B	0.658	<0.01	NA	0.0089B
	LR-67-01-8SW	12/17/2002	NA	<0.01	0.0273	<0.01	0.503	<0.01	NA	0.0228
	LR-67-09-1SM	12/17/2002	NA	<0.01	0.0253	<0.01	0.621	<0.01	NA	0.0054B

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D = Result was obtained from the analysis
S = Freshwater/Saline water transect monitoring well
NA = Not analyzed

Table C-3 Analytical data for metals in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Molybdenum dissolved (mg/L)	Nickel dissolved (mg/L)	Selenium dissolved (mg/L)	Silver dissolved (mg/L)	Strontium dissolved (mg/L)	Thallium dissolved (mg/L)	Vanadium dissolved (mg/L)	Zinc dissolved (mg/L)
Medina	TD-68-25-703	7/10/2002	*<0.001	*0.001	*<0.004	NA	*0.241	*<0.001	*0.001	*0.025
	TD-68-33-502	7/18/2002	*<0.001	*0.001	*<0.004	NA	*0.555	*<0.001	*0.003	*0.004
	TD-68-41-102	6/27/2002	*<0.001	*0.002	*<0.004	NA	*0.643	*<0.001	*0.004	*0.007
	TD-68-41-303	6/13/2002	*<0.001	*0.002	*<0.004	NA	*0.575	*<0.001	*0.004	*0.004
	TD-68-42-113	6/13/2002	*<0.001	*0.002	*<0.004	NA	*0.668	*<0.001	*0.005	*0.004
	TD-68-42-506	6/13/2002	*<0.001	*0.002	*<0.004	NA	*1.24	*<0.001	*0.004	*<0.004
	TD-68-42-806	6/19/2002	*0.033	*0.004	*<0.004	NA	*2.27	*<0.001	*0.012	*0.007
	TD-68-49-201	6/19/2002	*<0.001	*0.002	*<0.004	NA	*2.29	*<0.001	*0.004	*0.004
	TD-68-49-301	6/13/2002	*0.009	*0.002	*<0.004	NA	*7.2	*<0.001	*0.009	*0.004
	TD-69-32-703	2/20/2002	*<0.001	*0.002	*<0.004	NA	*0.115	*<0.001	*0.005	*<0.004
	TD-69-38-906	7/18/2002	*<0.001	*0.002	*<0.004	NA	*0.265	*<0.001	*0.003	*0.005
	TD-69-39-504	7/29/2002	*<0.001	*0.003	*<0.004	NA	*0.245	*<0.001	*0.002	*<0.004
	TD-69-39-601	6/27/2002	*<0.001	*0.003	*<0.004	NA	*0.209	*<0.001	*0.003	*0.394
	TD-69-46-601	7/10/2002	*<0.001	*0.002	*<0.004	NA	*0.336	*<0.001	*0.003	*0.009
	TD-69-47-215	7/10/2002	*<0.001	*0.002	*<0.004	NA	*0.342	*<0.001	*<0.001	*0.026
	TD-69-47-303	7/10/2002	*<0.001	*0.001	*<0.004	NA	*0.371	*0.001	*0.002	*0.005
	TD-69-55-604	7/18/2002	*<0.001	*0.002	*<0.004	NA	*0.906	*<0.001	*0.004	*0.004
	TD-69-63-103	7/24/2002	*0.005	*0.001	*<0.004	NA	*25.7	*<0.001	*<0.001	*<0.004
Uvalde	YP-69-33-701	6/26/2002	*<0.001	*0.002	*<0.004	NA	*0.227	*<0.001	*0.004	*0.057
	YP-69-35-401	7/25/2002	*<0.001	*0.001	*<0.004	NA	*0.315	*<0.001	*0.003	*0.014
	YP-69-35-602	7/25/2002	*<0.001	*0.001	*<0.004	NA	*0.614	*<0.001	*0.003	*<0.004
	YP-69-43-606	7/10/2002	*<0.001	*0.001	*<0.004	NA	*0.379	*0.002	*0.003	*<0.004
	YP-69-45-405	6/21/2002	*<0.001	*0.002	*<0.004	NA	*0.321	*<0.001	*0.004	*0.005
	YP-69-50-207	6/21/2002	*<0.001	*0.003	*<0.004	NA	*0.242	*<0.001	*0.006	*0.006
	YP-69-50-501	6/21/2002	*0.001	*0.004	*<0.004	NA	*0.614	*<0.001	*0.007	*0.012
	YP-69-51-114	6/26/2002	*0.002	*0.004	*<0.004	NA	*3.39	*<0.001	*0.008	*0.039

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D = Result was obtained from the analysis
S = Freshwater/Saline water transect monitoring well
NA = Not analyzed

Table C-4 Analytical data for nutrients in water samples from wells completed in the Edwards Aquifer, 2002

County	State Well Number	Date Sampled	Nitrate as N (mg/L)	Nitrate-Nitrite as N (mg/L)	Nitrite as N (mg/L)	Phosphorus (mg/L)
Bexar	AY-68-27-307	4/10/2002	NA	2J	NA	0.059J H
	AY-68-27-609	4/19/2002	NA	2	NA	0.022B J
	AY-68-27-611	4/24/2002	2.04	NA	NA	0.0029B
	AY-68-28-113	12/6/2002	NA	<2	NA	<0.1
	AY-68-28-210	12/5/2002	NA	<2	NA	<0.1
	AY-68-28-313	7/4/2002	4.37	NA	NA	NA
	AY-68-28-313	7/6/2002	3.02	NA	NA	<0.1
	AY-68-28-313	7/8/2002	2.52	NA	0.0054B	0.005B
	AY-68-28-313	7/12/2002	3.71	NA	NA	<0.1
	AY-68-28-406	11/8/2002	NA	<2	NA	<0.1
	AY-68-28-407	12/3/2002	NA	1.73	NA	3.04
	AY-68-28-515	12/6/2002	NA	3	NA	<0.1
	AY-68-28-518	5/1/2002	NA	<1	NA	NA
	AY-68-29-109	6/25/2002	NA	2.08	NA	NA
	AY-68-29-114	4/15/2002	NA	0.99H	NA	0.023B J
	AY-68-29-401	6/25/2002	NA	1.44	NA	NA
	AY-68-29-406	5/29/2002	NA	2.95	NA	NA
	AY-68-29-410	6/25/2002	NA	1.55	NA	NA
	AY-68-29-414	4/19/2002	NA	2.4	NA	0.022B J
	AY-68-29-414	6/25/2002	NA	2.13	NA	NA
	AY-68-29-415	6/25/2002	NA	1.74	NA	NA
	AY-68-29-4CC	5/29/2002	NA	1.78	NA	NA
	AY-68-29-4RD	5/29/2002	NA	1.24	NA	NA
	AY-68-29-4JJ	6/10/2002	NA	0.9	NA	NA
	AY-68-29-4GL	6/10/2002	NA	1.32	NA	NA
	AY-68-28-6SG	6/10/2002	NA	1.92	NA	NA
	AY-68-29-4LZ	5/29/2002	NA	1.24	NA	NA
Comal	DX-68-16-707	7/9/2002	NA	*1.55	NA	NA
	DX-68-22-802	7/22/2002	NA	*1.75	NA	NA
	DX-68-22-810	7/22/2002	NA	*1.35	NA	NA
	DX-68-22-811	9/16/2002	NA	2	NA	0.0119B
	DX-68-23-304	6/4/2002	NA	1.6	NA	NA
	DX-68-23-304	6/4/2002	NA	*2.01	NA	NA
	DX-68-23-305	7/9/2002	NA	*1.81	NA	NA
	DX-68-23-508	7/9/2002	NA	*1.73	NA	NA
	DX-68-23-601	7/9/2002	NA	*1.84	NA	NA
S	DX-68-23-616A	8/27/2002	NA	0.71B	NA	<0.1
S	DX-68-23-616B	8/27/2002	NA	<1	NA	<0.1
S	DX-68-23-619A	7/30/2002	NA	*<0.02	NA	NA
S	DX-68-23-619B	8/27/2002	NA	<1	NA	<0.1

*Data provided by TWDB
B = Estimated result. Result is less than reporting limit (RL)
J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
H = Sample was analyzed after the holding time expired. Concentration is estimated.
S = Freshwater/Saline water transect monitoring well
NA = Not analyzed

Table C-4 Analytical data for nutrients in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Nitrate as N (mg/L)	Nitrate-Nitrite as N (mg/L)	Nitrite as N (mg/L)	Phosphorus (mg/L)
Comal	DX-68-30-221	7/11/2002	NA	*5.69	NA	NA
	DX-68-30-225	7/22/2002	NA	*1.9	NA	NA
	DX-68-23-5KG	1/24/2002	NA	<0.1	NA	NA
Hays	LR-67-01-303	12/10/2002	<1	NA	0.0018B	<0.1
	LR-67-01-810	12/17/2002	NA	<2	NA	0.0136B
S	LR-67-01-812	9/11/2002	NA	3	NA	0.138
S	LR-67-01-813A	9/11/2002	NA	4	NA	0.133
S	LR-67-01-813B	9/11/2002	NA	3	NA	0.13
S	LR-67-01-814A	9/11/2002	NA	3	NA	0.129
S	LR-67-01-814B	9/11/2002	NA	3	NA	0.129
	LR-67-01-816	12/17/2002	NA	<2	NA	0.0149B
	LR-68-08-902	12/10/2002	1.47	NA	0.0021B	0.0063B
	LR-69-09-113	8/29/2002	NA	1.77	NA	<0.1
	LR-67-01-8SW	12/17/2002	NA	<2	NA	0.0136B
	LR-67-09-1SM	12/17/2002	NA	4	NA	0.0152B
Medina	TD-68-33-502	7/18/2002	NA	*0.722	NA	NA
	TD-68-41-102	6/27/2002	NA	*1.99	NA	NA
	TD-68-41-303	6/13/2002	NA	*2.18	NA	NA
	TD-68-42-113	6/13/2002	NA	*2.34	NA	NA
	TD-68-42-506	6/13/2002	NA	*2.25	NA	NA
	TD-68-42-806	6/19/2002	NA	*1.22	NA	NA
	TD-68-49-201	6/19/2002	NA	*2.14	NA	NA
	TD-68-49-301	6/13/2002	NA	*1.49	NA	NA
	TD-69-32-703	2/20/2002	NA	*1.35	NA	NA
	TD-69-38-906	7/18/2002	NA	*3.46	NA	NA
	TD-69-39-504	7/29/2002	NA	*1.87	NA	NA
	TD-69-39-601	6/27/2002	NA	*1.42	NA	NA
	TD-69-46-601	7/10/2002	NA	*1.43	NA	NA
	TD-69-47-215	7/10/2002	NA	*1.2	NA	NA
	TD-69-47-303	7/10/2002	NA	*1.53	NA	NA
	TD-69-55-604	7/18/2002	NA	*2.42	NA	NA
	TD-69-63-103	7/24/2002	NA	*<0.02	NA	NA
Uvalde	YP-69-33-701	6/26/2002	NA	*0.908	NA	NA
	YP-69-35-602	7/25/2002	NA	*1.52	NA	NA
	YP-69-43-606	7/10/2002	NA	*3.45	NA	NA
	YP-69-45-405	6/21/2002	NA	*1.44	NA	NA
	YP-69-50-207	6/21/2002	NA	*3	NA	NA
	YP-69-50-501	6/21/2002	NA	*7.48	NA	NA
	YP-69-51-114	6/26/2002	NA	*5.18	NA	NA
	YP-69-35-401	7/25/2002	NA	*2.04	NA	NA

*Data provided by TWDB
B = Estimated result. Result is less than reporting limit (RL)
J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
H = Sample was analyzed after the holding time expired, concentration is estimated
S = Freshwater/Saline water transect monitoring well
NA = Not analyzed

Table C-5 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from wells completed in the Edwards Aquifer, 2002

County	State Well Number	Date Sampled	2,4,5-T	2,4,5-TP (Silvex)	2,4-D	2,4-DB	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC
Bexar	AY-68-27-307	4/10/2002	<0.1	<0.1	<0.45	<0.7	<0.05	<0.05	<0.05	<0.05	<0.05
	AY-68-27-609	4/19/2002	<0.099	<0.099	<0.45	<0.69	<0.05	<0.05	<0.05	<0.05	<0.05
	AY-68-27-611	4/24/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
	AY-68-28-113	12/06/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
	AY-68-28-210	12/05/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
	AY-68-28-313	7/04/2002	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA
	AY-68-28-313	7/06/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
	AY-68-28-313	7/08/2002	<0.5	<0.5	<0.5	NA	<0.2	<0.1	<0.1	<0.05	<0.05
	AY-68-28-313	7/12/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
	AY-68-28-406	11/08/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
	AY-68-28-407	12/03/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
	AY-68-28-515	12/06/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
	AY-68-28-518	5/01/2002	<0.5	0.061J	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
	AY-68-29-414	4/19/2002	<0.099	<0.099	<0.45	<0.69	<0.05	<0.05	<0.05	<0.05	<0.05
Comal	DX-68-22-802	7/22/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
	DX-68-23-304	6/04/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
	DX-68-30-225	7/22/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
	DX-68-23-5KG	1/24/2002	<0.1	<0.1	<0.45	<0.7	<0.051	<0.051	<0.051	<0.051	<0.051
Hays	LR-69-09-113	8/29/2002	<0.5	<0.5	<0.5	NA	<0.2	<0.1	<0.1	<0.05	<0.05

County	State Well Number	Date Sampled	alpha-Chlor-dane	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Atra-zine
Bexar	AY-68-27-307	4/10/2002	<0.05	<1	<1	<1	<1	<1	<1	<1	NA
	AY-68-27-609	4/19/2002	<0.05	<1	<1	<1	<1	<1	<1	<1	NA
	AY-68-27-611	4/24/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
	AY-68-28-113	12/06/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
	AY-68-28-210	12/05/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
	AY-68-28-313	7/04/2002	NA	NA	NA	NA	NA	NA	NA	NA	<2
	AY-68-28-313	7/06/2002	<0.05	NA	NA	NA	NA	NA	NA	NA	<2
	AY-68-28-313	7/08/2002	<0.05	NA	NA	NA	NA	NA	NA	NA	<2
	AY-68-28-313	7/12/2002	<0.05	NA	NA	NA	NA	NA	NA	NA	<2
	AY-68-28-406	11/08/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
	AY-68-28-407	12/03/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
	AY-68-28-515	12/06/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
	AY-68-28-518	5/01/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
	AY-68-29-414	4/19/2002	<0.05	<1	<1	<1	<1	<1	<1	<1	NA
Comal	DX-68-22-802	7/22/2002	<0.05	NA	NA	NA	NA	NA	NA	NA	<2
	DX-68-23-304	6/04/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
	DX-68-30-225	7/22/2002	<0.05	NA	NA	NA	NA	NA	NA	NA	<2
	DX-68-23-5KG	1/24/2002	<0.051	<1	<1	<1	<1	<1	<1	<1	NA
Hays	LR-69-09-113	8/29/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2

B = Estimated result. Result is less than reporting limit (RL)
J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
NA = Not analyzed

Table C-5 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Azinphos-methyl	Bentazon	Beta-BHC	Bolstar (Sulprofos)	Carbophenothion	Chlorpyrifos	Chlorpyrifos Methyl	Coumaphos	Dalapon
Bexar	AY-68-27-307	4/10/2002	<0.5	NA	<0.05	NA	NA	<0.5	NA	<0.5	<2
	AY-68-27-609	4/19/2002	<0.5	NA	<0.05	NA	NA	<0.5	NA	<0.5	<2
	AY-68-27-611	4/24/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
	AY-68-28-113	12/06/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
	AY-68-28-210	12/05/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
	AY-68-28-313	7/04/2002	<1	<2	NA	<1	<1	<1	<1	<1	<120
	AY-68-28-313	7/06/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
	AY-68-28-313	7/08/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	NA
	AY-68-28-313	7/12/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
	AY-68-28-406	11/08/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
	AY-68-28-407	12/03/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
	AY-68-28-515	12/06/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
	AY-68-28-518	5/01/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
	AY-68-29-414	4/19/2002	<0.5	NA	<0.05	NA	NA	<0.5	NA	<0.5	<2
Comal	DX-68-22-802	7/22/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
	DX-68-23-304	6/04/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
	DX-68-30-225	7/22/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
	DX-68-23-5KG	1/24/2002	<0.51	NA	<0.051	NA	NA	<0.51	NA	<0.51	<2
Hays	LR-69-09-113	8/29/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	NA

County	State Well Number	Date Sampled	delta BHC	Demeton	Diazinon	Dicamba	Dichlofenthion	Dichloroprop	Dichlorvos	Dieldrin	Dimethoate
Bexar	AY-68-27-307	4/10/2002	<0.05	<0.5	<0.5	<0.15	NA	<0.5	<0.5	<0.05	<0.5
	AY-68-27-609	4/19/2002	<0.05	<0.5	<0.5	<0.15	NA	<0.5	<0.5	<0.05	<0.5
	AY-68-27-611	4/24/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
	AY-68-28-113	12/06/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
	AY-68-28-210	12/05/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
	AY-68-28-313	7/04/2002	NA	<2.5	<1	<1.2	<1	<6	<2	NA	<2
	AY-68-28-313	7/06/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
	AY-68-28-313	7/08/2002	<0.05	<2.5	0.014J	NA	<1	NA	<2	<0.1	<2
	AY-68-28-313	7/12/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
	AY-68-28-406	11/08/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
	AY-68-28-407	12/03/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
	AY-68-28-515	12/06/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
	AY-68-28-518	5/01/2002	<0.05	<2.5	<1	0.09J	<1	<6	<2	<0.1	<2
	AY-68-29-414	4/19/2002	<0.05	<0.5	<0.5	<0.15	NA	<0.5	<0.5	<0.05	<0.5
Comal	DX-68-22-802	7/22/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
	DX-68-23-304	6/04/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
	DX-68-30-225	7/22/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
	DX-68-23-5KG	1/24/2002	<0.051	<0.51	<0.51	<0.15	NA	<0.5	<0.51	<0.051	<0.51
Hays	LR-69-09-113	8/29/2002	<0.05	<2.5	<1	NA	<1	NA	<2	<0.1	<2

B = Estimated result. Result is less than reporting limit (RL)
J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
NA = Not analyzed

Table C-5 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Di-noseb	Di-sulfo-ton	Endo-sulfan	Endo-sulfan I	Endo-sulfan II	Endo-sulfan-sulfate	Endrin	Endrin alde-hyde	Endrin ketone
Bexar	AY-68-27-307	4/10/2002	<0.5	<0.5	NA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	AY-68-27-609	4/19/2002	<0.5	<0.5	NA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	AY-68-27-611	4/24/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	AY-68-28-113	12/06/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	AY-68-28-210	12/05/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	AY-68-28-313	7/04/2002	<6	<2	NA	NA	NA	NA	NA	NA	NA
	AY-68-28-313	7/06/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	AY-68-28-313	7/08/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	AY-68-28-313	7/12/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	AY-68-28-406	11/08/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	AY-68-28-407	12/03/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	AY-68-28-515	12/06/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	AY-68-28-518	5/01/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	AY-68-29-414	4/19/2002	<0.5	<0.5	NA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Comal	DX-68-22-802	7/22/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	DX-68-23-304	6/04/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	DX-68-30-225	7/22/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1
	DX-68-23-5KG	1/24/2002	<0.5	<0.51	NA	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051
Hays	LR-69-09-113	8/29/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1	<0.1

County	State Well Number	Date Sampled	EPN	Ethion	Etho-prop	Ethyl-para-thion	Fam-phur	Fen-sulfo-thion	Fen-thion	gamma BHC (Lindane)	gamma-Chlor-dane
Bexar	AY-68-27-307	4/10/2002	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05
	AY-68-27-609	4/19/2002	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05
	AY-68-27-611	4/24/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
	AY-68-28-113	12/06/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
	AY-68-28-210	12/05/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
	AY-68-28-313	7/04/2002	<1	<0.5	0.077JB	<1	<2	<5	<1	NA	NA
	AY-68-28-313	7/06/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
	AY-68-28-313	7/08/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
	AY-68-28-313	7/12/2002	<1	<0.5	<0.5	<1	<2	<5	<1	0.01J	NA
	AY-68-28-406	11/08/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
	AY-68-28-407	12/03/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
	AY-68-28-515	12/06/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
	AY-68-28-518	5/01/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
	AY-68-29-414	4/19/2002	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05
Comal	DX-68-22-802	7/22/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
	DX-68-23-304	6/04/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
	DX-68-30-225	7/22/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
	DX-68-23-5KG	1/24/2002	NA	NA	<0.51	<0.51	<0.51	<0.51	<0.51	<0.051	<0.051
Hays	LR-69-09-113	8/29/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA

B = Estimated result. Result is less than reporting limit (RL)
J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
NA = Not analyzed

Table C-5 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Hepta-chlor	Hepta-chlor-epoxide	Mala-thion	MCPA	MCPP	Mer-phos	Meth-oxy-chlor	Methyl para-thion	Mevin-phos
Bexar	AY-68-27-307	4/10/2002	<0.05	<0.05	<0.5	<50	<50	<0.5	<0.1	<0.5	<0.5
	AY-68-27-609	4/19/2002	<0.05	<0.05	<0.5	<50	<50	<0.5	<0.1	<0.5	<0.5
	AY-68-27-611	4/24/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
	AY-68-28-113	12/06/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
	AY-68-28-210	12/05/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
	AY-68-28-313	7/04/2002	NA	NA	<1	<120	<120	<1	NA	<0.5	<2
	AY-68-28-313	7/06/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
	AY-68-28-313	7/08/2002	<0.05	<0.05	<1	NA	NA	<1	<0.5	<0.5	<2
	AY-68-28-313	7/12/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
	AY-68-28-406	11/08/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
	AY-68-28-407	12/03/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
	AY-68-28-515	12/06/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
	AY-68-28-518	5/01/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
	AY-68-29-414	4/19/2002	<0.05	<0.05	<0.5	<50	<50	<0.5	<0.1	<0.5	<0.5
Comal	DX-68-22-802	7/22/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
	DX-68-23-304	6/04/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
	DX-68-30-225	7/22/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
	DX-68-23-5KG	1/24/2002	<0.051	<0.051	<0.51	<50	<50	<0.51	<0.099	<0.51	<0.51
Hays	LR-69-09-113	8/29/2002	<0.05	<0.05	<1	NA	NA	<1	<0.5	<0.5	<2

B = Estimated result. Result is less than reporting limit (RL)
J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
NA = Not analyzed

Table C-6 Analytical data for volatile organic compounds (VOC) in water samples from wells completed in the Edwards Aquifer, 2002

County	State Well Number	Date Sampled	1,1,1-Trichloro-ethane	1,1,2,2-Tetrachloro-ethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloro-ethane	1,1-Dichloro-ethane	1,1-Dichloro-ethene	1,2,4-Trichloro-benzene	1,2-Dibromo-3-chloro-propane	1,2-Dibromo-ethane
Bexar	AY-68-27-307	4/10/2002	<1	<1	<1	<1	<1	0.64J	<1	<2	<1
	AY-68-27-609	4/19/2002	<1	<1	<1	<1	<1	<1	<1	<2	<1
	AY-68-27-611	4/24/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-28-113	12/6/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-28-210	12/5/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-28-313	7/4/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-28-313	7/6/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-28-313	7/8/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-28-313	7/12/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-28-406	11/8/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-28-407	12/3/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-28-515	12/6/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-28-518	5/1/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-29-109	6/25/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-29-401	6/25/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-29-406	5/29/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-29-410	6/25/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-29-414	4/19/2002	<1	<1	<1	<1	<1	<1	<1	<2	<1
	AY-68-29-414	6/25/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-29-415	6/25/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-29-4CC	5/29/2002	<1	<1	4J	<1	<1	<1	<1	<1	<1
	AY-68-29-4RD	5/29/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-29-4JJ	6/10/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-29-4GL	6/10/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-28-6SG	6/10/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	AY-68-29-4LZ	5/29/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
Comal	DX-68-23-304	6/4/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	DX-68-23-5KG	1/24/2002	<1	<1	<1	<1	<1	<1	<1	<2	<1
Hays	LR-67-01-303	12/10/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
	LR-69-09-113	8/29/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
Uvalde	YP-69-51-114	6/26/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1

Concentrations in micrograms per liter (ug/L)
B = Method blank contamination. The associated method blank contains the target analyte at a reportable level
J = Estimated result. Result is less than reporting limit (RL).

Table C-6 Analytical data for volatile organic compounds (VOC) in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	1,2-Dichloro-benzene	1,2-Dichloro-ethane	1,2-Dichloro-propane	1,3-Dichloro-benzene	1,4-Dichloro-benzene	2-Buta-none	2-Hexa-none	4-Methyl-2-pentanone	Acetone
Bexar	AY-68-27-307	4/10/2002	<1	<1	<1	<1	<1	<5	<5	<5	<10
	AY-68-27-609	4/19/2002	<1	<1	<1	<1	<1	<5	<5	<5	<10
	AY-68-27-611	4/24/2002	<1	<1	<1	<1	<1	<5	<5	<5	2J
	AY-68-28-113	12/6/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-28-210	12/5/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-28-313	7/4/2002	<1	<1	<1	<1	<1	<5	<5	<5	2J
	AY-68-28-313	7/6/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-28-313	7/8/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-28-313	7/12/2002	<1	<1	<1	<1	<1	<5	<5	<5	2J
	AY-68-28-406	11/8/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-28-407	12/3/2002	<1	<1	<1	<1	<1	<5	<5	<5	2J
	AY-68-28-515	12/6/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-28-518	5/1/2002	<1	<1	<1	<1	<1	<5	<5	<5	5J
	AY-68-29-109	6/25/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-29-401	6/25/2002	<1	<1	<1	<1	<1	<5	<5	<5	3J
	AY-68-29-406	5/29/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-29-410	6/25/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-29-414	4/19/2002	<1	<1	<1	<1	<1	<5	<5	<5	<10
	AY-68-29-414	6/25/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-29-415	6/25/2002	<1	<1	<1	<1	<1	<5	<5	<5	3J
	AY-68-29-4CC	5/29/2002	<1	<1	<1	<1	<1	<5	<5	<5	1J
	AY-68-29-4RD	5/29/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-29-4JJ	6/10/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-29-4GL	6/10/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-28-6SG	6/10/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	AY-68-29-4LZ	5/29/2002	<1	<1	<1	<1	<1	<5	<5	<5	1J
Comal	DX-68-23-304	6/4/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	DX-68-23-5KG	1/24/2002	<1	<1	<1	<1	<1	<5	<5	<5	<10
Hays	LR-67-01-303	12/10/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
	LR-69-09-113	8/29/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
Uvalde	YP-69-51-114	6/26/2002	<1	<1	<1	<1	<1	<5	<5	<5	2J

Concentrations in micrograms per liter (ug/L)
B = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
J = Estimated result. Result is less than reporting limit (RL).

Table C-6 Analytical data for volatile organic compounds (VOC) in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Benzene	Bromo-chloro-methane	Bromo-dichloro-methane	Bromo-form	Bromo-methane	Carbon disulfide	Carbon tetra-chloride	Chloro-benzene	Chloro-ethane
Bexar	AY-68-27-307	4/10/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-27-609	4/19/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-27-611	4/24/2002	<1	<1	<1	<1	<2	0.6J	<1	<1	<2
	AY-68-28-113	12/6/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-28-210	12/5/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-28-313	7/4/2002	<1	<1	<1	<1	0.7J B	<1	<1	<1	<2
	AY-68-28-313	7/6/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-28-313	7/8/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-28-313	7/12/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-28-406	11/8/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-28-407	12/3/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-28-515	12/6/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-28-518	5/1/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-29-109	6/25/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-29-401	6/25/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-29-406	5/29/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-29-410	6/25/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-29-414	4/19/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-29-414	6/25/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-29-415	6/25/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-29-4CC	5/29/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-29-4RD	5/29/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-29-4JJ	6/10/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-29-4GL	6/10/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-28-6SG	6/10/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	AY-68-29-4LZ	5/29/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
Comal	DX-68-23-304	6/4/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	DX-68-23-5KG	1/24/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
Hays	LR-67-01-303	12/10/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
	LR-69-09-113	8/29/2002	<1	<1	<1	<1	0.4J	<1	<1	<1	<2
Uvalde	YP-69-51-114	6/26/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2

Concentrations in micrograms per liter (ug/L)
B = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
J = Estimated result. Result is less than reporting limit (RL).

Table C-6 Analytical data for volatile organic compounds (VOC) in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Chloro-form	Chloro-methane	cis-1,2-Dichloro-ethene	cis-1,3-Dichloro-propene	Cyclo-hexane	Dibromo-chloro-methane	Dichloro-difluoro-methane	Ethyl-benzene	Isopropyl-benzene
Bexar	AY-68-27-307	4/10/2002	<1	<2	<0.5	<1	<2	<1	<2	<1	<1
	AY-68-27-609	4/19/2002	<1	<2	<0.5	<1	<2	<1	<2	<1	<1
	AY-68-27-611	4/24/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-28-113	12/6/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-28-210	12/5/2002	<1	<2	<1	<1	<10	0.2J	<2	<1	<10
	AY-68-28-313	7/4/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-28-313	7/6/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-28-313	7/8/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-28-313	7/12/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-28-406	11/8/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-28-407	12/3/2002	<1	0.3J	<1	<1	<10	<1	<2	<1	<10
	AY-68-28-515	12/6/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-28-518	5/1/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-29-109	6/25/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-29-401	6/25/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-29-406	5/29/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-29-410	6/25/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-29-414	4/19/2002	<1	<2	<0.5	<1	<2	<1	<2	<1	<1
	AY-68-29-414	6/25/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-29-415	6/25/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-29-4CC	5/29/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-29-4RD	5/29/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-29-4JJ	6/10/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-29-4GL	6/10/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-28-6SG	6/10/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	AY-68-29-4LZ	5/29/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
Comal	DX-68-23-304	6/4/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	DX-68-23-5KG	1/24/2002	<1	<2	<0.5	<1	<2	<1	<2	<1	<1
Hays	LR-67-01-303	12/10/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
	LR-69-09-113	8/29/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
Uvalde	YP-69-51-114	6/26/2002	<1	0.5J	<1	<1	<10	<1	<2	<1	<10

Concentrations in micrograms per liter (ug/L)
B = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
J = Estimated result. Result is less than reporting limit (RL).

Table C-6 Analytical data for volatile organic compounds (VOC) in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Methyl tertbutyl ether	Methylene-chloride	Styrene	Tetrachloro-ethene	Toluene	trans-1,2-Dichloro-ethene	trans-1,3-Dichloro-propene	Trichloro-ethene	Trichloro-fluoro-methane
Bexar	AY-68-27-307	4/10/2002	<1	<1	<1	<1	<1	<0.5	<1	<1	<2
	AY-68-27-609	4/19/2002	<1	<1	<1	<1	<1	<0.5	<1	<1	<2
	AY-68-27-611	4/24/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-28-113	12/6/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-28-210	12/5/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-28-313	7/4/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-28-313	7/6/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-28-313	7/8/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-28-313	7/12/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-28-406	11/8/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-28-407	12/3/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-28-515	12/6/2002	<5	<2	<1	<1	0.2J	<1	<1	<1	<10
	AY-68-28-518	5/1/2002	<5	0.5J B	<1	<1	<1	<1	<1	<1	<10
	AY-68-29-109	6/25/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-29-401	6/25/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-29-406	5/29/2002	<5	<2	<1	0.4J	<1	<1	<1	<1	<10
	AY-68-29-410	6/25/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-29-414	4/19/2002	<1	<1	<1	0.53J	<1	<0.5	<1	<1	<2
	AY-68-29-414	6/25/2002	<5	<2	<1	0.8J	<1	<1	<1	<1	<10
	AY-68-29-415	6/25/2002	<5	<2	<1	0.5J	<1	<1	<1	<1	<10
	AY-68-29-4CC	5/29/2002	<5	<2	<1	<1	<1	<1	<1	<1	0.6J
	AY-68-29-4RD	5/29/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-29-4JJ	6/10/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-29-4GL	6/10/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-28-6SG	6/10/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	AY-68-29-4LZ	5/29/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
Comal	DX-68-23-304	6/4/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	DX-68-23-5KG	1/24/2002	<1	<1	<1	<1	<1	<0.5	<1	<1	<2
Hays	LR-67-01-303	12/10/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
	LR-69-09-113	8/29/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
Uvalde	YP-69-51-114	6/26/2002	<5	<2	<1	4	<1	<1	<1	<1	<10

Concentrations in micrograms per liter (ug/L)
B = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
J = Estimated result. Result is less than reporting limit (RL).

Table C-6 Analytical data for volatile organic compounds (VOC) in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Vinyl chloride	Xylenes (total)
Bexar	AY-68-27-307	4/10/2002	<2	<2
	AY-68-27-609	4/19/2002	<2	<2
	AY-68-27-611	4/24/2002	<1	<1
	AY-68-28-113	12/6/2002	<1	<1
	AY-68-28-210	12/5/2002	<1	<1
	AY-68-28-313	7/4/2002	<1	<1
	AY-68-28-313	7/6/2002	<1	<1
	AY-68-28-313	7/8/2002	<1	<1
	AY-68-28-313	7/12/2002	<1	<1
	AY-68-28-406	11/8/2002	<1	<1
	AY-68-28-407	12/3/2002	<1	<1
	AY-68-28-515	12/6/2002	<1	<1
	AY-68-28-518	5/1/2002	<1	<1
	AY-68-29-109	6/25/2002	<1	<1
	AY-68-29-401	6/25/2002	<1	<1
	AY-68-29-406	5/29/2002	<1	<1
	AY-68-29-410	6/25/2002	<1	<1
	AY-68-29-414	4/19/2002	<2	<2
	AY-68-29-414	6/25/2002	<1	<1
	AY-68-29-415	6/25/2002	<1	<1
	AY-68-29-4CC	5/29/2002	<1	<1
	AY-68-29-4RD	5/29/2002	<1	<1
	AY-68-29-4JJ	6/10/2002	<1	<1
	AY-68-29-4GL	6/10/2002	<1	<1
	AY-68-28-6SG	6/10/2002	<1	<1
	AY-68-29-4LZ	5/29/2002	<1	<1
Comal	DX-68-23-304	6/4/2002	<1	<1
	DX-68-23-5KG	1/24/2002	<2	<2
Hays	LR-67-01-303	12/10/2002	<1	<1
	LR-69-09-113	8/29/2002	<1	<1
Uvalde	YP-69-51-114	6/26/2002	<1	<1

Concentrations in micrograms per liter (ug/L)
B = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
J = Estimated result. Result is less than reporting limit (RL).

Table C-7 Analytical data for semivolatile organic compounds (SVOC) in water samples from wells completed in the Edwards Aquifer, 2002

County	State Well Number	Date Sampled	2,4,5-Tri-chloro-phenol	2,4,6-Tri-chloro-phenol	2,4-Dichloro-phenol	2,4-Dimethyl-phenol	2,4-Dinitro-phenol	2,4-Dinitro-toluene	2,6-Dinitro-toluene	2-Chloronaph-thalene	2-Chloro-phenol
Bexar	AY-68-27-307	4/10/2002	<20	<10	<10	<10	<50	<10	<10	<10	<10
	AY-68-27-609	4/19/2002	<20	<10	<10	<10	<50	<10	<10	<10	<10
	AY-68-27-611	4/24/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
	AY-68-28-113	12/06/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
	AY-68-28-210	12/05/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
	AY-68-28-406	11/08/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
	AY-68-28-407	12/03/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
	AY-68-28-515	12/06/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
	AY-68-28-518	05/01/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
	AY-68-29-414	4/19/2002	<20	<10	<10	<10	<50	<10	<10	<10	<10
Comal	DX-68-23-5KG	01/24/2002	<20	<10	<10	<10	<50	<10	<10	<10	<10

County	State Well Number	Date Sampled	2-Methyl-4,6-Dinitro-phenol	2Methyl-naph-thalene	2-Methyl-phenol	2-Nitro-phenol	3&4 Methyl-phenol	3,3-Di-chloro-benzi-dine	4-Bromo-phenyl-ether	4-Chloro-3-methyl-phenol	4-Chloro-aniline
Bexar	AY-68-27-307	4/10/2002	<50	<10	<10	<10	NA	<50	<10	<10	<10
	AY-68-27-609	4/19/2002	<50	<10	<10	<10	NA	<50	<10	<10	<10,
	AY-68-27-611	4/24/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
	AY-68-28-113	12/06/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
	AY-68-28-210	12/05/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
	AY-68-28-406	11/08/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
	AY-68-28-407	12/03/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
	AY-68-28-515	12/06/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
	AY-68-28-518	05/01/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
	AY-68-29-414	4/19/2002	<50	<10	<10	<10	NA	<50	<10	<10	<10
Comal	DX-68-23-5KG	01/24/2002	<50	<10	<10	<10	NA	<50	<10	<10	<10

J = Estimated result. Result is less than reporting limit (RL).
B = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
NA = Not analyzed

Table C-7 Analytical data for semivolatile organic compounds (SVOC) in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	4-Chloro-phenyl-ether	4-Nitro-phenol	Acena-phthene	Acena-phthy-lene	Aceto-phenone	Anthra-cene	Benzo(a)-anthrax-cene	Benzo(a)-pyrene	Benzo-(b)fluor-anthene
Bexar	AY-68-27-307	4/10/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
	AY-68-27-609	4/19/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
	AY-68-27-611	4/24/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-113	12/06/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-210	12/05/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-406	11/08/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-407	12/03/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10,
	AY-68-28-515	12/06/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-518	05/01/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
	AY-68-29-414	4/19/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
Comal	DX-68-23-5KG	01/24/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10

County	State Well Number	Date Sampled	Benzo-(ghi)-perylene	Benzo(k)-fluor-anthene	bis(2-Chloro-ethoxy)-methane	bis(2-Chloro-ethyl)-ether	bis(2-Ethyl-hexyl)-phthalate	Butyl-benzyl-phthalate	Carba-zole	Chry-sene	Di-n-butyl-phtha-late
Bexar	AY-68-27-307	4/10/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-27-609	4/19/2002	<10	<10	<10	<10	3.6J B	<10	<10	<10	<10
	AY-68-27-611	4/24/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-113	12/06/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-210	12/05/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-406	11/08/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-407	12/03/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-515	12/06/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-518	05/01/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-29-414	4/19/2002	<10	<10	<10	<10	2.2J B	<10	<10	<10	<10
Comal	DX-68-23-5KG	01/24/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10

J = Estimated result. Result is less than reporting limit (RL).
B = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
NA = Not analyzed

Table C-7 Analytical data for semivolatile organic compounds (SVOC) in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Di-n-octyl-phthalate	Di-benzo-(a,h)an-thracene	Di-benzo-furan	Diethyl-phthalate	Di-methyl-phtha-late	Diphenyl	Fluor-anthene	Fluo-rene	Hexa-chloro-benzene
Bexar	AY-68-27-307	4/10/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-27-609	4/19/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-27-611	4/24/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-113	12/06/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-210	12/05/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-406	11/08/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-407	12/03/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-515	12/06/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-28-518	05/01/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
	AY-68-29-414	4/19/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
Comal	DX-68-23-5KG	01/24/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10

County	State Well Number	Date Sampled	Hexa-chloro-buta-diene	Hexa-chloro-cyclopen-tadiene	Hexa-chloro-ethane	Indeno-(1,2,3-cd)-pyrene	Isopho-rone	m-Nitro-aniline	N-Nitro-sodin-propyla-mine	N-Nitro-sodi-phenyl-amine	Naph-thalene
Bexar	AY-68-27-307	4/10/2002	<10	<50	<10	<10	<10	<50	<10	<10	<10
	AY-68-27-609	4/19/2002	<10	<50	<10	<10	<10	<50	<10	<10	<10
	AY-68-27-611	4/24/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
	AY-68-28-113	12/06/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
	AY-68-28-210	12/05/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
	AY-68-28-406	11/08/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
	AY-68-28-407	12/03/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
	AY-68-28-515	12/06/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
	AY-68-28-518	05/01/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
	AY-68-29-414	4/19/2002	<10	<50	<10	<10	<10	<50	<10	<10	<10
Comal	DX-68-23-5KG	01/24/2002	<10	<50	<10	<10	<10	<50	<10	<10	<10

J = Estimated result. Result is less than reporting limit (RL).
B = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
NA = Not analyzed

Table C-7 Analytical data for semivolatile organic compounds (SVOC) in water samples from wells completed in the Edwards Aquifer, 2002 (cont'd)

County	State Well Number	Date Sampled	Nitro-benzene	o,o,o-Triethyl-phosphoro-thioate	o-Nitro-aniline	p-Nitro-aniline	Penta-chloro-phenol	Phen-anthrene	Phenol	Pro-namide	Pyrene
Bexar	AY-68-27-307	4/10/2002	<10	NA	<50	<50	<50	<10	<10	<20	<10
	AY-68-27-609	4/19/2002	<10	NA	<50	<50	<50	<10	<10	<20	<10
	AY-68-27-611	4/24/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
	AY-68-28-113	12/06/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
	AY-68-28-210	12/05/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
	AY-68-28-406	11/08/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
	AY-68-28-407	12/03/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
	AY-68-28-515	12/06/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
	AY-68-28-518	05/01/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
	AY-68-29-414	4/19/2002	<10	NA	<50	<50	<50	<10	<10	<20	<10
Comal	DX-68-23-5KG	01/24/2002	<10	NA	<50	<50	<50	<10	<10	<20	<10

J = Estimated result. Result is less than reporting limit (RL).
B = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
NA = Not analyzed

Table C-8 Field Measurements collected while sampling water from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002

Station Name	Date Sampled	Time Sampled	Water Temp (ºC)	Field Conductivity (µS/cm)	Field Alkalinity (mg/L)	Field pH (std units)	Hardness (mg/L)
Blanco River at Wimberley	05/21/2002	11:15	22.4	470	142	8.00	220
Blanco River at Wimberley	11/26/2002	12:00	14.1	514	218	7.60	244
Dry Frio River at Reagan Wells	05/15/2002	9:25	21.3	388	126	7.77	185
Dry Frio River at Reagan Wells	11/20/2002	10:00	15.5	427	188	8.17	198
Frio River at Concan	05/15/2002	10:20	22.5	382	128	7.77	179
Frio River at Concan	11/20/2002	11:15	15.4	444	190	8.14	219
Hondo Creek near Tarpley	05/16/2002	11:15	23.6	399	108	7.87	175
Hondo Creek near Tarpley	11/21/2002	12:10	15.3	496	204	8.04	236
Medina River at Bandera	05/20/2002	13:20	20.8	488	78	8.00	232
Medina River at Bandera	11/22/2002	10:30	14.9	573	240	8.47	307
Nueces River at Laguna	05/14/2002	13:10	22.6	416	150	7.85	187
Nueces River at Laguna	11/19/2002	15:00	20.2	430	184	8.00	199
Panther Springs Creek at Loop 1604 N	07/04/2002	10:55	25.8	144	58	7.49	68
Sabinal River near Sabinal	05/15/2002	13:15	23.2	427	132	7.77	196
Sabinal River near Sabinal	11/20/2002	15:00	18.0	485	206	8.04	215
Seco Creek at Miller Ranch	05/16/2002	9:20	22.2	406	106	7.98	189
Seco Creek at Miller Ranch	11/21/2002	10:35	13.5	472	194	8.04	224
Comal Spring #1 (DX-68-23-301)	3/12/2002	14:50	23.2	546	186	7.14	269
Comal Spring #1 (DX-68-23-301)	6/4/2002	10:50	23.2	547	210	6.90	235
Comal Spring #1 (DX-68-23-301)	10/17/2002	10:45	23.1	548	226	7.17	221
Comal Spring #7	3/12/2002	16:30	23.6	546	188	7.13	270

Table C-8 Field Measurements collected while sampling water from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Time Sampled	Water Temp (ºC)	Field Conductivity (µS/cm)	Field Alkalinity (mg/L)	Field pH (std units)	Hardness (mg/L)
Comal Spring #7	6/4/2002	12:45	23.6	549	228	7.27	259
Comal Spring #7	10/17/2002	11:45	23.6	554	224	7.24	226
Hueco Springs A (DX-68-15-901)	3/12/2002	12:50	20.5	606	230	6.92	312
Hueco Springs A (DX-68-15-901)	6/5/2002	11:50	21.6	599	276	6.78	317
Hueco Springs A (DX-68-15-901)	10/3/2002	13:15	22.0	604	264	7.05	286
Hueco Springs B	3/12/2002	11:20	20.5	606	234	6.78	309
Hueco Springs B	6/5/2002	10:25	26.6	600	252	6.91	330
Hueco Springs B	10/3/2002	12:30	21.9	609	268	7.04	294
San Antonio Springs	3/14/2002	9:50	24.1	487	172	6.80	241
San Antonio Springs	10/2/2002	14:45	24.3	494	194	7.23	230
San Pedro Springs	3/14/2002	10:40	23.7	508	178	7.03	259
San Pedro Springs	6/3/2002	9:30	23.8	505	176	7.03	251
San Pedro Springs	10/2/2002	11:30	23.8	510	204	7.10	
San Marcos Springs-Hotel (LR-67-01-801)	6/6/2002	12:40	21.4	592	240	7.09	265
San Marcos Springs-Hotel (LR-67-01-801)	10/9/2002	12:25	21.6	595	270	7.25	273
San Marcos Springs-Deep (LR-67-01-819)	6/6/2002	14:45	22.2	594	250	7.80	264
San Marcos Springs-Deep (LR-67-01-819)	10/9/2002	11:35	23.9	599	246	7.25	266

Table C-9 Analytical data for major ions in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002

Station	Date Sampled	Calcium dissolved (mg/L)	Magnesium dissolved (mg/L)	Sodium dissolved (mg/L)	Potassium dissolved (mg/L)	Chloride dissolved (mg/L)	Sulfate dissolved (mg/L)	Fluoride dissolved (mg/L)	Silica dissolved (mg/L)	Total Dissolved Solids (mg/L)
Blanco River at Wimberley	5/21/2002	60.0	17.0	7.54	0.991B	11.5	31.7	0.223	4.20	270
Blanco River at Wimberly	11/26/2002	73.3	14.8	6.86	1.00	11.9	19.4	0.173	3.76	300
Comal Springs #1 (DX-68-23-301)	3/12/2002	82.2	15.4J	9.9	1.3B J	15.6J	23.6	0.32B	5.4	282
Comal Springs #1 (DX-68-23-301)	6/4/2002	79.5	16.2	10.1	1.01	17.5	23.8	0.182	14.4	300
Comal Springs #1 (DX-68-23-301)	10/17/2002	66.8	13.2	8.26	0.674B	21.2	24.3	0.196	4.48	310
Comal Springs #7	3/12/2002	81.2	16.4J	10.7	1.4B J	17J	25.6	0.33B	5.5	302
Comal Springs #7	6/4/2002	76.4	16.7	10.6	1.95	18.7	25.3	0.204	5.64	290
Comal Springs #7	10/17/2002	67.1	14.1	9.00	0.700B	20.9	25.4	0.180	4.66	320
Dry Frio River at Reagan Wells	5/15/2002	54.8	11.8	5.73	0.511B	10.8	13.4	0.099B	4.62	220
Dry Frio River at Reagan Wells	11/20/2002	59.6	12.0	5.24	<1	9.26	11.7	0.106	4.07	240
Frio River at Concan	5/15/2002	49.8	13.4	6.44	0.880B	11.4	14.4	0.120	4.93	220
Frio River at Concan	11/20/2002	64.1	14.3	6.34	<1	10.1	13.4	0.142	5.12	260
Hondo Creek near Tarpley	5/16/2002	52.8	10.6	7.39	1.18	12.6	44.7	0.208	5.61	240
Hondo Creek near Tarpley	11/21/2002	78.4	9.67	7.15	0.960B	11.5	23.9	0.220	5.41	310
Hueco Springs A (DX-68-15-901)	3/12/2002	105	12.1J	8.6	1.3B J	13.5J	21	0.35B	4.7	337
Hueco Springs A (DX-68-15-901)	6/5/2002	101	15.7	9.55	1.50	15.4	27.1	0.215	5.49	360
Hueco Springs A (DX-68-15-901)	10/3/2002	96.7	10.8	7.98	1.19	12.3	20.1	0.263	5.00	340
Hueco Springs B	3/12/2002	104	12.1J	8.5	1.3B J	13.9J	21	0.4B	4.7	248
Hueco Springs B	6/5/2002	105	16.5	10.1	2.36	15.5	27.1	0.217	5.80	340
Hueco Springs B	10/3/2002	99.8	11.0	8.12	1.14	12.3	19.9	0.225	5.16	360

B = Estimated result between the method detection limit and the reporting limit
J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Table C-9 Analytical data for major ions in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station	Date Sampled	Calcium dissolved (mg/L)	Magnesium dissolved (mg/L)	Sodium dissolved (mg/L)	Potassium dissolved (mg/L)	Chloride dissolved (mg/L)	Sulfate dissolved (mg/L)	Fluoride dissolved (mg/L)	Silica dissolved (mg/L)	Total Dissolved Solids (mg/L)
Medina River at Bandera	5/20/2002	66.7	16.0	5.68	1.00	9.76	71.2	0.194	4.27	330
Medina River at Bandera	11/22/2002	92.7	18.4	6.64	1.83	10.9	65.2	0.241	5.68	330
Nueces River at Laguna	5/14/2002	53.0	13.2	7.21	0.767B	13.3	13.4	0.130	4.81	230
Nueces River at Laguna	11/19/2002	57.6	13.5	6.70	0.658B	11.2	10.7	0.147	5.03	240
Panther Springs Creek at Loop 1604 N	7/4/2002	25.0	1.25	1.06	2.67	1.78	2.58	0.025B	3.52	100
Sabinal River near Sabinal	5/15/2002	58.3	12.3	6.75	1.06	11.3	27.1	0.153	5.50	230
Sabinal River near Sabinal	11/20/2002	66.8	11.7	6.53	1.14	11.1	19.7	0.190	5.21	310
San Antonio Springs	3/14/2002	71.6	15.2J	9.10	1.2B J	17.1J	16.7	0.29B	5.4	271
San Antonio Springs	10/2/2002	67.2	15.2	9.08	0.902B	16.5	16.2	0.258	5.69	280
San Pedro Springs	3/14/2002	76.8	15J	10.6	1.2B J	18.7J	20.9	0.3B	5.7	288
San Pedro Springs	6/3/2002	74.1	16.0	10.9	0.592B	20.4	20.1	0.192	6.02	260
San Pedro Springs	10/2/2002	67.5	14.4	9.75	0.976B	17.9	18.5	0.320	5.64	270
Seco Creek at Miller Ranch	5/16/2002	56.7	11.6	6.58	0.973B	11.6	55.1	0.174	5.79	260
Seco Creek at Miller Ranch	11/21/2002	72.7	10.3	6.48	1.01	11.5	25.9	0.207	5.57	310
San Marcos Spring-Deep (LR-67-01-819)	6/6/2002	81.9	14.4	9.29	0.952B	20.6	25.9	0.186	4.88	330
San Marcos Spring-Deep (LR-67-01-819)	10/9/2002	83.1	14.3	9.34	0.700B	17.7	22.8	0.253	4.78	330
San Marcos Spring-Hotel (LR-67-01-801)	6/6/2002	77.5	17.4	9.58	0.553B	22.5	27.8	0.192	4.55	320
San Marcos Spring-Hotel (LR-67-01-801)	10/9/2002	81.0	17.2	9.49	0.843B	17.9	23.7	0.234	4.59	300

B = Estimated result between the method detection limit and the reporting limit
J = Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Table C-10 Analytical data for metals in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002

Station Name	Date Sampled	Aluminum dissolved (mg/L)	Antimony dissolved (mg/L)	Arsenic dissolved (mg/L)	Barium dissolved (mg/L)	Beryllium dissolved (mg/L)	Boron dissolved (mg/L)	Bromide dissolved (mg/L)	Cadmium dissolved (mg/L)
Blanco River at Wimberley	5/21/2002	NA	0.0008B	<0.01	0.0311	<0.01	NA	NA	<0.01
Blanco River at Wimberley	11/26/2002	NA	0.00655B	<0.01	0.029	0.0013B	NA	NA	<0.01
Comal Springs #1 (DX-68-23-301)	3/12/2002	NA	<0.01	<0.01	0.047B	<0.005	NA	NA	<0.002
Comal Springs #1 (DX-68-23-301)	6/4/2002	NA	<0.01	<0.01	0.0517	<0.01	NA	NA	<0.01
Comal Springs #1 (DX-68-23-301)	6/4/2002	*<0.004	*<0.001	*<0.002	*0.048	*<0.001	*0.139	*0.0906	*<0.001
Comal Springs #1 (DX-68-23-301)	10/17/2002	NA	0.0035B	<0.01	0.0421	<0.01	NA	NA	<0.01
Comal Springs #7	3/12/2002	NA	<0.01	<0.01	0.053B	<0.005	NA	NA	<0.002
Comal Springs #7	6/4/2002	NA	<0.01	<0.01	0.0515	<0.01	NA	NA	<0.01
Comal Springs #7	10/17/2002	NA	0.0013B	<0.01	0.0482	<0.01	NA	NA	<0.01
Dry Frio River at Reagan Wells	5/15/2002	NA	0.00105B	<0.01	0.0373	<0.01	NA	NA	<0.01
Dry Frio River at Reagan Wells	11/20/2002	NA	0.0015B	<0.01	0.0352	0.0013B	NA	NA	<0.01
Frio River at Concan	5/15/2002	NA	<0.01	<0.01	0.031	<0.01	NA	NA	<0.01
Frio River at Concan	11/20/2002	NA	<0.01	<0.01	0.0343	0.0013B	NA	NA	<0.01
Hondo Creek near Tarpley	5/16/2002	NA	<0.01	<0.01	0.0273	<0.01	NA	NA	<0.01
Hondo Creek near Tarpley	11/21/2002	NA	0.00315B	<0.01	0.033	0.0012B	NA	NA	<0.01
Hueco Springs A (DX-68-15-901)	3/12/2002	NA	<0.01	<0.01	0.033B	<0.005	NA	NA	<0.002
Hueco Springs A (DX-68-15-901)	6/5/2002	NA	0.0024B	0.003B	0.0352	<0.01	NA	NA	<0.01
Hueco Springs A (DX-68-15-901)	10/3/2002	NA	0.00915B	<0.01	0.0347	<0.01	NA	NA	<0.01
Hueco Springs B	3/12/2002	NA	<0.01	<0.01	0.033B	<0.005	NA	NA	<0.002
Hueco Springs B	6/5/2002	NA	0.0008B	<0.01	0.0362	0.0002B	NA	NA	0.0003B
Hueco Springs B	10/3/2002	NA	0.0064B	<0.01	0.0339	0.0003B	NA	NA	<0.01
Medina River at Bandera	5/20/2002	NA	<0.01	<0.01	0.0283	<0.01	NA	NA	<0.01
Medina River at Bandera	11/22/2002	NA	0.0063B	<0.01	0.0333	0.0009B	NA	NA	<0.01
Nueces River at Laguna	5/14/2002	NA	<0.01	<0.01	0.0377	<0.01	NA	NA	<0.01
Nueces River at Laguna	11/19/2002	NA	0.00235B	<0.01	0.0386	0.0013B	NA	NA	<0.01
Panther Springs Creek at Loop 1604 N	7/4/2002	NA	0.0013B	0.004B	0.0104	<0.01	NA	NA	<0.01
Sabinal River near Sabinal	5/15/2002	NA	<0.01	<0.01	0.0322	<0.01	NA	NA	<0.01
Sabinal River near Sabinal	11/20/2002	NA	0.00735B	<0.01	0.034	0.0014B	NA	NA	<0.01

*Data provided by TWDB
B = Estimated result between the method detection limit and the reporting limit
NA = Not analyzed

Table C-10 Analytical data for metals in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Aluminum dissolved (mg/L)	Antimony dissolved (mg/L)	Arsenic dissolved (mg/L)	Barium dissolved (mg/L)	Beryllium dissolved (mg/L)	Boron dissolved (mg/L)	Bromide dissolved (mg/L)	Cadmium dissolved (mg/L)
San Antonio Springs	3/14/2002	NA	<0.01	<0.01	0.045B	<0.005	NA	NA	<0.002
San Antonio Springs	10/2/2002	NA	0.00755B	<0.01	0.0466	0.0001B	NA	NA	<0.01
San Pedro Springs	3/14/2002	NA	<0.01	<0.01	0.046B	<0.005	NA	NA	<0.002
San Pedro Springs	6/3/2002	NA	<0.01	<0.01	0.0471	<0.01	NA	NA	<0.01
San Pedro Springs	10/2/2002	NA	0.0078B	<0.01	0.0457	<0.01	NA	NA	<0.01
Seco Creek at Miller Ranch	5/16/2002	NA	0.0011B	<0.01	0.0278	<0.01	NA	NA	<0.01
Seco Creek at Miller Ranch	11/21/2002	NA	0.0054B	<0.01	0.0305	0.0011B	NA	NA	<0.01
San Marcos Springs-Deep (LR-67-01-819)	6/6/2002	NA	<0.01	<0.01	0.0395	<0.01	NA	NA	<0.01
San Marcos Springs-Deep (LR-67-01-819)	10/9/2002	NA	0.0063B	<0.01	0.0377	0.0002B	NA	NA	<0.01
San Marcos Springs- Hotel (LR-67-01-801)	6/6/2002	NA	0.00085B	0.003B	0.0338	<0.01	NA	NA	<0.01
San Marcos Springs- Hotel (LR-67-01-801)	10/9/2002	NA	0.0021B	<0.01	0.0347	<0.01	NA	NA	<0.01

*Data provided by TWDB
B = Estimated result between the method detection limit and the reporting limit
NA = Not analyzed

Table C-10 Analytical data for metals in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Chromium, dissolved (mg/L)	Cobalt, dissolved (mg/L)	Copper, dissolved (mg/L)	Iron, dissolved (mg/L)	Lead, dissolved (mg/L)	Lithium, dissolved (mg/L)	Manganese, dissolved (mg/L)	Mercury, dissolved (mg/L)
Blanco River at Wimberly	5/21/2002	0.0009B	NA	<0.01	0.0072B	<0.01	NA	0.0015B	<0.0002
Blanco River at Wimberly	11/26/2002	<0.01	NA	<0.01	0.0082B	<0.01	NA	0.0036B	<0.0002
Comal Springs #1 (DX-68-23-301)	3/12/2002	<0.005	NA	<0.025	<0.1	<0.003	NA	<0.015	<0.0002
Comal Springs #1 (DX-68-23-301)	6/4/2002	<0.01	NA	<0.01	0.0063B	<0.01	NA	<0.01	<0.0002
Comal Springs #1 (DX-68-23-301)	6/4/2002	*<0.001	*<0.001	*<0.001	*<0.05	*<0.001	*0.006	*<0.001	NA
Comal Springs #1 (DX-68-23-301)	10/17/2002	<0.01	NA	<0.01	<0.01	<0.01	NA	0.0006B	<0.0002
Comal Springs #7	3/12/2002	<0.005	NA	<0.025	<0.1	<0.003	NA	<0.015	<0.0002
Comal Springs #7	6/4/2002	<0.01	NA	<0.01	<0.01	<0.01	NA	<0.01	<0.0002
Comal Springs #7	10/17/2002	<0.01	NA	<0.01	<0.01	<0.01	NA	0.0007B	<0.0002
Dry Frio River at Reagan Wells	5/15/2002	0.0011B	NA	0.002B	0.0036B	<0.01	NA	0.0027B	<0.0002
Dry Frio River at Reagan Wells	11/20/2002	<0.01	NA	<0.01	<0.01	<0.01	NA	0.0007B	<0.0002
Frio River at Concan	5/15/2002	0.0009B	NA	0.002B	0.0042B	<0.01	NA	0.0014B	<0.0002
Frio River at Concan	11/20/2002	<0.01	NA	<0.01	<0.01	<0.01	NA	0.0003B	<0.0002
Hondo Creek near Tarpley	5/16/2002	0.0009B	NA	0.002B	0.0043B	<0.01	NA	0.005B	<0.0002
Hondo Creek near Tarpley	11/21/2002	<0.01	NA	<0.01	<0.01	<0.01	NA	0.0015B	0.00016B
Hueco Springs A (DX-68-15-901)	3/12/2002	<0.005	NA	<0.025	<0.1	<0.003	NA	<0.015	<0.0002
Hueco Springs A (DX-68-15-901)	6/5/2002	0.0005B	NA	0.004B	0.0049B	0.0018B	NA	<0.01	<0.0002
Hueco Springs A (DX-68-15-901)	10/3/2002	<0.01	NA	0.0026B	0.0068B	<0.01	NA	<0.01	<0.0002
Hueco Springs B	3/12/2002	<0.005	NA	<0.025	<0.1	<0.003	NA	<0.015	<0.0002
Hueco Springs B	6/5/2002	0.0009B	NA	0.004B	0.0209	0.0021B	NA	<0.01	<0.0002
Hueco Springs B	10/3/2002	<0.01	NA	<0.01	0.002B	<0.01	NA	<0.01	0.00017B
Medina River at Bandera	5/20/2002	0.0019B	NA	<0.01	0.0068B	<0.01	NA	0.0023B	<0.0002
Medina River at Bandera	11/22/2002	<0.01	NA	<0.01	0.0568	<0.01	NA	0.0031B	<0.0002
Nueces River at Laguna	5/14/2002	0.001B	NA	0.003B	<0.01	<0.01	NA	0.0007B	<0.0002
Nueces River at Laguna	11/19/2002	<0.01	NA	<0.01	<0.01	<0.01	NA	0.0003B	<0.0002
Panther Springs Creek at Loop 1604 N	7/4/2002	0.0014B	NA	0.013	0.0066B	<0.01	NA	0.0017B	<0.0002
Sabinal River near Sabinal	5/15/2002	0.001B	NA	0.002B	0.0041B	<0.01	NA	0.0033B	<0.0002
Sabinal River near Sabinal	11/20/2002	<0.01	NA	<0.01	<0.01	<0.01	NA	0.0012B	<0.0002

*Data provided by TWDB
B = Estimated result between the method detection limit and the reporting limit
NA = Not analyzed

Table C-10 Analytical data for metals in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Chromium dissolved (mg/L)	Cobalt dissolved (mg/L)	Copper dissolved (mg/L)	Iron dissolved (mg/L)	Lead dissolved (mg/L)	Lithium dissolved (mg/L)	Manganese dissolved (mg/L)	Mercury Dissolved (mg/L)
San Antonio Springs	3/14/2002	<0.005	NA	<0.025	<0.1	0.0023B	NA	<0.015	<0.0002
San Antonio Springs	10/2/2002	0.0004B	NA	<0.01	<0.01	<0.01	NA	0.0009B	<0.0002
San Pedro Springs	3/14/2002	<0.005	NA	<0.025	<0.1	<0.003	NA	<0.015	<0.0002
San Pedro Springs	6/3/2002	<0.01	NA	<0.01	0.053	<0.01	NA	<0.01	<0.0002
San Pedro Springs	10/2/2002	0.0005B	NA	0.002B	<0.01	<0.01	NA	0.0012B	<0.0002
Seco Creek at Miller Ranch	5/16/2002	0.0011B	NA	0.003B	0.106	<0.01	NA	0.0016B	<0.0002
Seco Creek at Miller Ranch	11/21/2002	<0.01	NA	<0.01	<0.01	<0.01	NA	0.0009B	0.00014B
San Marcos Spring-Deep (LR-67-01-819)	6/6/2002	<0.01	NA	0.008B	0.0024B	<0.01	NA	0.0007B	<0.0002
San Marcos Spring-Deep (LR-67-01-819)	10/9/2002	<0.01	NA	0.0027B	<0.01	<0.01	NA	0.0005B	<0.0002
San Marcos Springs-Hotel (LR-67-01-801)	6/6/2002	0.0006B	NA	<0.01	0.0016B	<0.01	NA	0.001B	<0.0002
San Marcos Springs-Hotel (LR-67-01-801)	10/9/2002	<0.01	NA	0.0025B	<0.01	<0.01	NA	0.0016B	<0.0002

*Data provided by TWDB
B = Estimated result between the method detection limit and the reporting limit
NA = Not analyzed

Table C-10 Analytical data for metals in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Molybdenum dissolved (mg/L)	Nickel dissolved (mg/L)	Selenium dissolved (mg/L)	Silver dissolved (mg/L)	Strontium dissolved (mg/L)	Thallium dissolved (mg/L)	Vanadium dissolved (mg/L)	Zinc dissolved (mg/L)
Blanco River at Wimberly	5/21/2002	NA	0.0049B	0.0097B	<0.01	0.53	<0.01	NA	0.0065B
Blanco River at Wimberly	11/26/2002	NA	<0.01	<0.01	<0.01	0.335	<0.01	NA	0.0066B
Comal Springs #1 (DX-68-23-301)	3/12/2002	NA	<0.04	0.007	<0.005	0.56	<0.01	NA	0.021
Comal Springs #1 (DX-68-23-301)	6/4/2002	NA	0.0032B	0.0088B	<0.01	0.563	<0.01	NA	0.0081B
Comal Springs #1 (DX-68-23-301)	6/4/2002	*<0.001	*0.002	*<0.004	NA	*0.578	*<0.001	*0.003	*<0.004
Comal Springs #1 (DX-68-23-301)	10/17/2002	NA	<0.01	<0.01	<0.01	0.513	<0.01	NA	0.0042B
Comal Springs #7	3/12/2002	NA	<0.04	0.0052	<0.005	0.66	<0.01	NA	0.021
Comal Springs #7	6/4/2002	NA	0.0041B	0.0143	<0.01	0.636	<0.01	NA	0.0059B
Comal Springs #7	10/17/2002	NA	<0.01	<0.01	<0.01	0.614	<0.01	NA	0.0047B
Dry Frio River at Reagan Wells	5/15/2002	NA	0.0034B	0.0076B	<0.01	0.36	<0.01	NA	0.0071B
Dry Frio River at Reagan Wells	11/20/2002	NA	<0.01	<0.01	0.0012B	0.33	<0.01	NA	0.0051B
Frio River at Concan	5/15/2002	NA	0.0033B	0.006B	<0.01	0.263	<0.01	NA	0.0107
Frio River at Concan	11/20/2002	NA	0.0012B	<0.01	0.0019B	0.285	<0.01	NA	0.0082B
Hondo Creek near Tarpley	5/16/2002	NA	0.0034B	0.0045B	<0.01	0.369	<0.01	NA	0.0079B
Hondo Creek near Tarpley	11/21/2002	NA	<0.01	<0.01	<0.01	0.39	<0.01	NA	0.0024B
Hueco Springs A (DX-68-15-901)	3/12/2002	NA	<0.04	0.0071	<0.005	0.31	<0.01	NA	0.014B
Hueco Springs A (DX-68-15-901)	6/5/2002	NA	0.0048B	0.0175	<0.01	0.421	<0.01	NA	0.0033B
Hueco Springs A (DX-68-15-901)	10/3/2002	NA	<0.01	<1	<0.01	0.27	<0.01	NA	0.0057B
Hueco Springs B	3/12/2002	NA	<0.04	0.0059	<0.005	0.31	<0.01	NA	0.015B
Hueco Springs B	6/5/2002	NA	0.0018B	0.0245	0.0015B	0.429	0.0031B	NA	0.003B
Hueco Springs B	10/3/2002	NA	<0.01	<1	<0.01	0.263	<0.01	NA	0.0048B
Medina River at Bandera	5/20/2002	NA	0.0059B	0.0052B	<0.01	0.698	<0.01	NA	0.023
Medina River at Bandera	11/22/2002	NA	<0.01	<0.01	0.0014B	0.718	<0.01	NA	0.0066B
Nueces River at Laguna	5/14/2002	NA	0.0041B	0.0084B	<0.01	0.227	<0.01	NA	0.0055B
Nueces River at Laguna	11/19/2002	NA	<0.01	<0.01	0.0021B	0.223	<0.01	NA	0.0043B
Panther Springs Creek at Loop 1604 N	7/4/2002	NA	0.006B	<1	<0.01	0.0359B	<0.01	NA	0.0059B
Sabinal River near Sabinal	5/15/2002	NA	0.0037B	0.0088B	<0.01	0.327	<0.01	NA	0.0087B
Sabinal River near Sabinal	11/20/2002	NA	<0.01	<0.01	<0.01	0.324	<0.01	NA	0.0054B

*Data provided by TWDB
B = Estimated result between the method detection limit and the reporting limit
NA = Not analyzed

Table C-10 Analytical data for metals in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Molybdenum dissolved (mg/L)	Nickel dissolved (mg/L)	Selenium dissolved (mg/L)	Silver dissolved (mg/L)	Strontium dissolved (mg/L)	Thallium dissolved (mg/L)	Vanadium dissolved (mg/L)	Zinc dissolved (mg/L)
San Antonio Springs	3/14/2002	NA	<0.04	0.0056	<0.005	0.52	<0.01	NA	0.025
San Antonio Springs	10/2/2002	NA	<0.01	<1	<0.01	0.539	<0.01	NA	0.0014B
San Pedro Springs	3/14/2002	NA	<0.04	0.0055	<0.005	0.52	<0.01	NA	0.011B
San Pedro Springs	6/3/2002	NA	0.0036B	0.0137	0.0007B	0.535	<0.01	NA	0.0056B
San Pedro Springs	10/2/2002	NA	<0.01	<1	<0.01	0.534	<0.01	NA	0.0027B
Seco Creek at Miller Ranch	5/16/2002	NA	0.0043B	0.0073B	<0.01	0.447	<0.01	NA	0.0061B
Seco Creek at Miller Ranch	11/21/2002	NA	0.0009B	<0.01	<0.01	0.424	<0.01	NA	0.0049B
San Marcos Spring-Deep (LR-67-01-819)	6/6/2002	NA	0.0021B	0.0057B	<0.01	0.108	<0.01	NA	0.0043B
San Marcos Spring-Deep (LR-67-01-819)	10/9/2002	NA	<0.01	<0.01	<0.01	0.513	<0.01	NA	0.0082B
San Marcos Springs-Hotel (LR-67-01-801)	6/6/2002	NA	0.0029B	0.0132B	0.0006B	0.525	<0.01	NA	0.005B
San Marcos Springs-Hotel (LR-67-01-801)	10/9/2002	NA	<0.01	<0.01	<0.01	0.538	<0.01	NA	0.0082B

*Data provided by TWDB
B = Estimated result between the method detection limit and the reporting limit
NA = Not analyzed

Table C-11 Analytical data for nutrients in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002

Station Name	Date Sampled	Nitrate as N (mg/L)	Nitrate-Nitrite as N (mg/L)	Phos-phorus (mg/L)	Ortho-phosphate (mg/L)	Total Organic Carbon (mg/L)
Blanco River at Wimberley	5/21/2002	0.295B	NA	NA	NA	48
Blanco River at Wimberley	11/26/2002	NA	0.46B	<0.1	NA	<1
Comal Springs #1 (DX-68-23-301)	3/12/2002	NA	2.00	NA	<1	NA
Comal Springs #1 (DX-68-23-301)	6/4/2002	NA	1.85	NA	0.118	NA
Comal Springs #1 (DX-68-23-301)	6/4/2002	NA	*2.04	NA	NA	NA
Comal Springs #1 (DX-68-23-301)	10/17/2002	NA	1.88	<0.1	0.0133B	NA
Comal Springs #7	3/12/2002	NA	1.90	NA	<1	NA
Comal Springs #7	6/4/2002	NA	1.65	NA	0.15	NA
Comal Springs #7	10/17/2002	NA	1.84	<0.1	0.0184B	NA
Dry Frio River at Reagan Wells	5/15/2002	0.29B	NA	NA	NA	36.7
Dry Frio River at Reagan Wells	11/20/2002	0.837B	NA	<0.1	NA	2.38
Frio River at Concan	5/15/2002	0.369B	NA	NA	NA	37.7
Frio River at Concan	11/20/2002	0.72B	NA	<0.1	NA	2.22
Hondo Creek near Tarpley	5/16/2002	<1	NA	NA	NA	1.55
Hondo Creek near Tarpley	11/21/2002	NA	<2	<0.1	NA	1.77
Hueco Springs A (DX-68-15-901)	3/12/2002	NA	1.50	NA	<1	NA
Hueco Springs A (DX-68-15-901)	6/5/2002	NA	1.22	NA	0.0183B	NA
Hueco Springs A (DX-68-15-901)	10/3/2002	NA	1.39	<0.1	0.0269B	NA
Hueco Springs B	3/12/2002	NA	1.50	NA	<1	NA
Hueco Springs B	6/5/2002	NA	1.21	NA	0.0156B	NA
Hueco Springs B	10/3/2002	NA	1.38	<0.1	0.0091B	NA
Medina River at Bandera	5/20/2002	<1	NA	NA	NA	41.5
Medina River at Bandera	11/22/2002	NA	3.00	<0.1	NA	2.21
Nueces River at Laguna	5/14/2002	0.772B	NA	NA	NA	41.8
Nueces River at Laguna	11/19/2002	0.836B	NA	<0.1	NA	2.1
Panther Springs Creek at Loop 1604 N	7/4/2002	0.16	NA	NA	NA	NA
Sabinal River near Sabinal	5/15/2002	<1	NA	NA	NA	40.9
Sabinal River near Sabinal	11/20/2002	NA	<2	<0.1	NA	1.98
San Antonio Springs	3/14/2002	NA	1.90	NA	<1	NA
San Antonio Springs	10/2/2002	NA	1.71	0.0082B	0.0271B	NA
San Pedro Springs	3/14/2002	NA	2.20	NA	0.31B	NA
San Pedro Springs	6/3/2002	NA	1.85	NA	<0.03	NA
San Pedro Springs	10/2/2002	NA	1.84	0.0065B	0.022B	NA
Seco Creek at Miller Ranch	5/16/2002	<1	NA	NA	NA	29.2

*Data provided by TWDB
B = Estimated result between the method detection limit and the reporting limit
NA = Not analyzed

Table C-11 Analytical data for nutrients in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Nitrate as N (mg/L)	Nitrate-Nitrite as N (mg/L)	Phosphorus (mg/L0	Ortho-phosphate (mg/L)	Total Organic Carbon (mg/L)
Seco Creek at Miller Ranch	11/21/2002	NA	<2	<0.1	NA	1.91
San Marcos Springs-Deep (LR-67-01-819)	6/6/2002	NA	1.39	NA	<0.03	NA
San Marcos Springs-Deep (LR-67-01-819)	10/9/2002	NA	1.52	<0.1	0.023B	NA
San Marcos Springs-Hotel (LR-67-01-801)	6/6/2002	NA	0.95	NA	0.0049B	NA
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	NA	1.11	<0.1	0.0154B	NA

*Data provided by TWDB
B = Estimated result between the method detection limit and the reporting limit
NA = Not analyzed

Table C-12 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002

Station Name	Date Sampled	2,4,5-T	2,4,5-TP (Silvex)	2,4-D	2,4-DB	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha BHC
Blanco River at Wimberley	5/21/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
Blanco River at Wimberley	11/26/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
Comal Springs #1 (DX-68-23-301)	3/12/2002	<0.1	<0.1	<0.45	<0.7	<0.05	<0.05	<0.05	<0.05	<0.05
Comal Springs #1 (DX-68-23-301)	6/04/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
Comal Springs #1 (DX-68-23-301)	10/17/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
Comal Springs #7	3/12/2002	<0.1	<0.1	<0.45	<0.71	<0.05	<0.05	<0.05	<0.05	<0.05
Comal Springs #7	6/04/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
Comal Springs #7	10/17/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
Dry Frio River at Reagan Wells	5/15/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
Dry Frio River at Reagan Wells	11/20/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
Frio River at Concan	5/15/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
Frio River at Concan	11/20/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
Hondo Creek near Tarpley	5/16/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
Hondo Creek near Tarpley	11/21/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
Hueco Springs A (DX-68-15-901)	3/12/2002	<0.1	<0.1	<0.46	<0.72	<0.052	<0.052	<0.052	<0.052	<0.052
Hueco Springs A (DX-68-15-901)	6/05/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
Hueco Springs A (DX-68-15-901)	10/03/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
Hueco Springs B	3/12/2002	<0.1	<0.1	<0.45	<0.7	<0.05	<0.05	<0.05	<0.05	<0.05
Hueco Springs B	6/05/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
Hueco Springs B	10/03/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
Medina River at Bandera	5/20/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
Medina River at Bandera	11/22/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
Nueces River at Laguna	5/14/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
Nueces River at Laguna	11/19/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
Panther Springs Creek at Loop 1604 N	7/04/2002	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA
Sabinal River near Sabinal	5/15/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
Sabinal River near Sabinal	11/20/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
San Antonio Springs	3/14/2002	<0.1	<0.1	<0.45	<0.7	<0.05	<0.05	<0.05	<0.05	<0.05
San Antonio Springs	10/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
San Pedro Springs	3/14/2002	<0.1	<0.1	<0.45	<0.7	<0.05	<0.05	<0.05	<0.05	<0.05
San Pedro Springs	6/03/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
San Pedro Springs	10/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
Seco Creek at Miller Ranch	5/16/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
Seco Creek at Miller Ranch	11/21/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
San Marcos Springs-Deep (LR-67-01-819)	6/06/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<0.50	<0.50	<0.50	NA	<0.2	<0.1	<0.1	<0.05	<0.05
San Marcos Springs-Hotel (LR-67-01-801)	6/06/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.1	<0.05	<0.05

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level.
NA = Not analyzed

Table C-12 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	alpha-Chlordane	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Atrazine
Blanco River at Wimberley	5/21/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Blanco River at Wimberley	11/26/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Comal Springs #1 (DX-68-23-301)	3/12/2002	<0.05	<0.99	<0.99	<0.99	<0.99	<0.99	<0.99	<0.99	NA
Comal Springs #1 (DX-68-23-301)	6/04/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Comal Springs #1 (DX-68-23-301)	10/17/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Comal Springs #7	3/12/2002	<0.05	<1	<1	<1	<1	<1	<1	<1	NA
Comal Springs #7	6/04/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Comal Springs #7	10/17/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Dry Frio River at Reagan Wells	5/15/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Dry Frio River at Reagan Wells	11/20/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Frio River at Concan	5/15/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Frio River at Concan	11/20/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Hondo Creek near Tarpley	5/16/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Hondo Creek near Tarpley	11/21/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Hueco Springs A (DX-68-15-901)	3/12/2002	<0.052	<1	<1	<1	<1	<1	<1	<1	NA
Hueco Springs A (DX-68-15-901)	6/05/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Hueco Springs A (DX-68-15-901)	10/03/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Hueco Springs B	3/12/2002	<0.05	<1	<1	<1	<1	<1	<1	<1	NA
Hueco Springs B	6/05/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Hueco Springs B	10/03/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Medina River at Bandera	5/20/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Medina River at Bandera	11/22/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Nueces River at Laguna	5/14/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Nueces River at Laguna	11/19/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Panther Springs Creek at Loop 1604 N	7/04/2002	NA	NA	NA	NA	NA	NA	NA	NA	<2
Sabinal River near Sabinal	5/15/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Sabinal River near Sabinal	11/20/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
San Antonio Springs	3/14/2002	<0.05	<1	<1	<1	<1	<1	<1	<1	NA
San Antonio Springs	10/02/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
San Pedro Springs	3/14/2002	<0.05	<0.99	<0.99	<0.99	<0.99	<0.99	<0.99	<0.99	NA
San Pedro Springs	6/03/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
San Pedro Springs	10/02/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Seco Creek at Miller Ranch	5/16/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.1J
Seco Creek at Miller Ranch	11/21/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
San Marcos Springs-Deep (LR-67-01-819)	6/06/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
San Marcos Springs-Hotel (LR-67-01-801)	6/06/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level
NA = Not analyzed

Table C-12 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Azinphos-methyl	Bentazon	beta BHC	Bolstar (Sulprofos)	Carbophenothion	Chlorpyrifos	Chlorpyrifos Methyl	Coumaphos	Dalapon
Blanco River at Wimberley	5/21/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
Blanco River at Wimberley	11/26/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Comal Springs #1 (DX-68-23-301)	3/12/2002	<0.5	NA	<0.05	NA	NA	<0.5	NA	<0.5	<2
Comal Springs #1 (DX-68-23-301)	6/04/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
Comal Springs #1 (DX-68-23-301)	10/17/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Comal Springs #7	3/12/2002	<0.5	NA	<0.05	NA	NA	<0.5	NA	<0.5	<2
Comal Springs #7	6/04/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
Comal Springs #7	10/17/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Dry Frio River at Reagan Wells	5/15/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
Dry Frio River at Reagan Wells	11/20/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Frio River at Concan	5/15/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
Frio River at Concan	11/20/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Hondo Creek near Tarpley	5/16/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
Hondo Creek near Tarpley	11/21/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Hueco Springs A (DX-68-15-901)	3/12/2002	<0.5	NA	<0.052	NA	NA	<0.5	NA	<0.5	<2.1
Hueco Springs A (DX-68-15-901)	6/05/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
Hueco Springs A (DX-68-15-901)	10/03/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Hueco Springs B	3/12/2002	<0.5	NA	<0.05	NA	NA	<0.5	NA	<0.5	<2
Hueco Springs B	6/05/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
Hueco Springs B	10/03/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Medina River at Bandera	5/20/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
Medina River at Bandera	11/22/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Nueces River at Laguna	5/14/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
Nueces River at Laguna	11/19/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Panther Springs Creek at Loop 1604 N	7/04/2002	<1	<2	NA	<1	<1	<1	<1	<1	<120
Sabinal River near Sabinal	5/15/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
Sabinal River near Sabinal	11/20/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
San Antonio Springs	3/14/2002	<0.5	NA	<0.05	NA	NA	<0.5	NA	<0.5	<2
San Antonio Springs	10/02/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
San Pedro Springs	3/14/2002	<0.5	NA	<0.05	NA	NA	<0.5	NA	<0.5	<2
San Pedro Springs	6/03/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
San Pedro Springs	10/02/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Seco Creek at Miller Ranch	5/16/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
Seco Creek at Miller Ranch	11/21/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
San Marcos Springs-Deep (LR-67-01-819)	6/06/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA
San Marcos Springs-Hotel (LR-67-01-801)	6/06/2002	<1	<2	<0.05	<1	<1	<1	<1	<1	<120
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<1.0	<2.0	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	NA

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level
NA = Not analyzed

Table C-12 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	delta BHC	Demeton	Diazinon	Dicamba	Dichlo-fenthion	Dichlor-prop	Dichlor-vos	Dieldrin	Dimeth-oate
Blanco River at Wimberley	5/21/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
Blanco River at Wimberley	11/26/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
Comal Springs #1 (DX-68-23-301)	3/12/2002	<0.05	<0.5	<0.5	<0.15	NA	<0.5	<0.5	<0.05	<0.5
Comal Springs #1 (DX-68-23-301)	6/04/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
Comal Springs #1 (DX-68-23-301)	10/17/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
Comal Springs #7	3/12/2002	<0.05	<0.5	<0.5	<0.15	NA	<0.5	<0.5	<0.05	<0.5
Comal Springs #7	6/04/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
Comal Springs #7	10/17/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
Dry Frio River at Reagan Wells	5/15/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
Dry Frio River at Reagan Wells	11/20/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
Frio River at Concan	5/15/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
Frio River at Concan	11/20/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
Hondo Creek near Tarpley	5/16/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
Hondo Creek near Tarpley	11/21/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
Hueco Springs A (DX-68-15-901)	3/12/2002	<0.052	<0.5	<0.5	<0.15	NA	<0.52	<0.5	<0.052	<0.5
Hueco Springs A (DX-68-15-901)	6/05/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
Hueco Springs A (DX-68-15-901)	10/03/2002	0.01J	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
Hueco Springs B	3/12/2002	<0.05	<0.5	<0.5	<0.15	NA	<0.5	<0.5	<0.05	<0.5
Hueco Springs B	6/05/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
Hueco Springs B	10/03/2002	0.04J	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
Medina River at Bandera	5/20/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
Medina River at Bandera	11/22/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
Nueces River at Laguna	5/14/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
Nueces River at Laguna	11/19/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
Panther Springs Creek at Loop 1604 N	7/04/2002	NA	<2.5	0.022J	<1.2	<1	<6	<2	NA	<2
Sabinal River near Sabinal	5/15/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
Sabinal River near Sabinal	11/20/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
San Antonio Springs	3/14/2002	<0.05	<0.5	<0.5	<0.15	NA	<0.5	<0.5	<0.05	<0.5
San Antonio Springs	10/02/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
San Pedro Springs	3/14/2002	<0.05	<0.5	<0.5	<0.15	NA	<0.5	<0.5	<0.05	<0.5
San Pedro Springs	6/03/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
San Pedro Springs	10/02/2002	0.006J	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
Seco Creek at Miller Ranch	5/16/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
Seco Creek at Miller Ranch	11/21/2002	<0.05	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
San Marcos Springs-Deep (LR-67-01-819)	6/06/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	0.01J	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0
San Marcos Springs-Hotel (LR-67-01-801)	6/06/2002	<0.05	<2.5	<1	<1.2	<1	<6	<2	<0.1	<2
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	0.01J	<2.5	<1.0	NA	<1.0	NA	<2.0	<0.1	<2.0

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level
NA = Not analyzed

Table C-12 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Dinoseb	Disulfoton	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan-sulfate	Endrin	Endrinal-dehyde
Blanco River at Wimberley	5/21/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
Blanco River at Wimberley	11/26/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
Comal Springs #1 (DX-68-23-301)	3/12/2002	<0.5	<0.5	NA	<0.05	<0.05	<0.05	<0.05	<0.05
Comal Springs #1 (DX-68-23-301)	6/04/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
Comal Springs #1 (DX-68-23-301)	10/17/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
Comal Springs #7	3/12/2002	<0.5	<0.5	NA	<0.05	<0.05	<0.05	<0.05	<0.05
Comal Springs #7	6/04/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
Comal Springs #7	10/17/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
Dry Frio River at Reagan Wells	5/15/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
Dry Frio River at Reagan Wells	11/20/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
Frio River at Concan	5/15/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
Frio River at Concan	11/20/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
Hondo Creek near Tarpley	5/16/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
Hondo Creek near Tarpley	11/21/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
Hueco Springs A (DX-68-15-901)	3/12/2002	<0.52	<0.5	NA	<0.052	<0.052	<0.052	<0.052	<0.052
Hueco Springs A (DX-68-15-901)	6/05/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
Hueco Springs A (DX-68-15-901)	10/03/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
Hueco Springs B	3/12/2002	<0.5	<0.5	NA	<0.05	<0.05	<0.05	<0.05	<0.05
Hueco Springs B	6/05/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
Hueco Springs B	10/03/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
Medina River at Bandera	5/20/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
Medina River at Bandera	11/22/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
Nueces River at Laguna	5/14/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
Nueces River at Laguna	11/19/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
Panther Springs Creek at Loop 1604 N	7/04/2002	<6	<2	NA	NA	NA	NA	NA	NA
Sabinal River near Sabinal	5/15/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
Sabinal River near Sabinal	11/20/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
San Antonio Springs	3/14/2002	<0.5	<0.5	NA	<0.05	<0.05	<0.05	<0.05	<0.05
San Antonio Springs	10/02/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
San Pedro Springs	3/14/2002	<0.5	<0.5	NA	<0.05	<0.05	<0.05	<0.05	<0.05
San Pedro Springs	6/03/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
San Pedro Springs	10/02/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
Seco Creek at Miller Ranch	5/16/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
Seco Creek at Miller Ranch	11/21/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
San Marcos Springs-Deep (LR-67-01-819)	6/06/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1
San Marcos Springs-Hotel (LR-67-01-801)	6/06/2002	<6	<2	<0.05	NA	NA	<0.1	<0.1	<0.1
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<6.0	<2.0	<0.05	NA	NA	<0.1	<0.1	<0.1

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level
NA = Not analyzed

Table C-12 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	EPN	Ethion	Ethoprop	Ethylpara-thion	Famphur	Fensulfo-thion	Fenthion	gamma BHC (Lindane)	gamma-Chlordane
Blanco River at Wimberley	5/21/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
Blanco River at Wimberley	11/26/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
Comal Springs #1 (DX-68-23-301)	3/12/2002	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05
Comal Springs #1 (DX-68-23-301)	6/04/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
Comal Springs #1 (DX-68-23-301)	10/17/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
Comal Springs #7	3/12/2002	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05
Comal Springs #7	6/04/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
Comal Springs #7	10/17/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
Dry Frio River at Reagan Wells	5/15/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
Dry Frio River at Reagan Wells	11/20/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
Frio River at Concan	5/15/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
Frio River at Concan	11/20/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
Hondo Creek near Tarpley	5/16/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
Hondo Creek near Tarpley	11/21/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
Hueco Springs A (DX-68-15-901)	3/12/2002	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052	<0.052
Hueco Springs A (DX-68-15-901)	6/05/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
Hueco Springs A (DX-68-15-901)	10/03/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
Hueco Springs B	3/12/2002	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05
Hueco Springs B	6/05/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
Hueco Springs B	10/03/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
Medina River at Bandera	5/20/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
Medina River at Bandera	11/22/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
Nueces River at Laguna	5/14/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
Nueces River at Laguna	11/19/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
Panther Springs Creek at Loop 1604 N	7/04/2002	<1	<0.5	0.076J B	<1	<2	<5	<1	NA	NA
Sabinal River near Sabinal	5/15/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
Sabinal River near Sabinal	11/20/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
San Antonio Springs	3/14/2002	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05
San Antonio Springs	10/02/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
San Pedro Springs	3/14/2002	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05
San Pedro Springs	6/03/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
San Pedro Springs	10/02/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
Seco Creek at Miller Ranch	5/16/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
Seco Creek at Miller Ranch	11/21/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
San Marcos Springs-Deep (LR-67-01-819)	6/06/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA
San Marcos Springs-Hotel (LR-67-01-801)	6/06/2002	<1	<0.5	<0.5	<1	<2	<5	<1	<0.1	NA
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<1.0	<0.50	<0.50	<1.0	<2.0	<5.0	<1.0	<0.1	NA

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level
NA = Not analyzed

Table C-12 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Heptachlor	Heptachlor-epoxide	Malathion	MCPA	MCPP	Merphos	Methoxy-chlor	Methyl parathion	Mevinphos
Blanco River at Wimberley	5/21/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
Blanco River at Wimberley	11/26/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
Comal Springs #1 (DX-68-23-301)	3/12/2002	<0.05	<0.05	<0.5	<50	<50	<0.5	<0.1	<0.5	<0.5
Comal Springs #1 (DX-68-23-301)	6/04/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
Comal Springs #1 (DX-68-23-301)	10/17/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
Comal Springs #7	3/12/2002	<0.05	<0.05	<0.5	<50	<50	<0.5	<0.1	<0.5	<0.5
Comal Springs #7	6/04/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
Comal Springs #7	10/17/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
Dry Frio River at Reagan Wells	5/15/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
Dry Frio River at Reagan Wells	11/20/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
Frio River at Concan	5/15/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
Frio River at Concan	11/20/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
Hondo Creek near Tarpley	5/16/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
Hondo Creek near Tarpley	11/21/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
Hueco Springs A (DX-68-15-901)	3/12/2002	<0.052	<0.052	<0.5	<52	<52	<0.5	<0.1	<0.5	<0.5
Hueco Springs A (DX-68-15-901)	6/05/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
Hueco Springs A (DX-68-15-901)	10/03/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
Hueco Springs B	3/12/2002	<0.05	<0.05	<0.5	<50	<50	<0.5	<0.099	<0.5	<0.5
Hueco Springs B	6/05/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
Hueco Springs B	10/03/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
Medina River at Bandera	5/20/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
Medina River at Bandera	11/22/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
Nueces River at Laguna	5/14/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
Nueces River at Laguna	11/19/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
Panther Springs Creek at Loop 1604 N	7/04/2002	NA	NA	<1	<120	<120	<1	NA	<0.5	<2
Sabinal River near Sabinal	5/15/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
Sabinal River near Sabinal	11/20/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
San Antonio Springs	3/14/2002	<0.05	<0.05	<0.5	<50	<50	<0.5	<0.1	<0.5	<0.5
San Antonio Springs	10/02/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
San Pedro Springs	3/14/2002	<0.05	<0.05	<0.5	<50	<50	<0.5	<0.1	<0.5	<0.5
San Pedro Springs	6/03/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
San Pedro Springs	10/02/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
Seco Creek at Miller Ranch	5/16/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
Seco Creek at Miller Ranch	11/21/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
San Marcos Springs-Deep (LR-67-01-819)	6/06/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0
San Marcos Springs-Hotel (LR-67-01-801)	6/06/2002	<0.05	<0.05	<1	<120	<120	<1	<0.5	<0.5	<2
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<0.05	<0.05	<1.0	NA	NA	<1.0	<0.5	<0.50	<2.0

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level
NA = Not analyzed

Table C-12 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Mononcroto-phos	Naled	o,o,o-Triethylphos-phorothioate	Pentachlor-ophenol	Phorate	Picloram	Ronnel	Simazine	Stirophos (Tetrachlor-vinphos)
Blanco River at Wimberley	5/21/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Blanco River at Wimberley	11/26/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
Comal Springs #1 (DX-68-23-301)	3/12/2002	NA	NA	<0.5	<0.05	<0.5	NA	<0.5	NA	NA
Comal Springs #1 (DX-68-23-301)	6/04/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Comal Springs #1 (DX-68-23-301)	10/17/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
Comal Springs #7	3/12/2002	NA	NA	<0.5	<0.05	<0.5	NA	<0.5	NA	NA
Comal Springs #7	6/04/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Comal Springs #7	10/17/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
Dry Frio River at Reagan Wells	5/15/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Dry Frio River at Reagan Wells	11/20/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
Frio River at Concan	5/15/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Frio River at Concan	11/20/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
Hondo Creek near Tarpley	5/16/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Hondo Creek near Tarpley	11/21/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
Hueco Springs A (DX-68-15-901)	3/12/2002	NA	NA	<0.5	<0.052	<0.5	NA	<0.5	NA	NA
Hueco Springs A (DX-68-15-901)	6/05/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Hueco Springs A (DX-68-15-901)	10/03/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
Hueco Springs B	3/12/2002	NA	NA	<0.5	<0.05	<0.5	NA	<0.5	NA	NA
Hueco Springs B	6/05/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Hueco Springs B	10/03/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
Medina River at Bandera	5/20/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Medina River at Bandera	11/22/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
Nueces River at Laguna	5/14/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Nueces River at Laguna	11/19/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
Panther Springs Creek at Loop 1604 N	7/04/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Sabinal River near Sabinal	5/15/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Sabinal River near Sabinal	11/20/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
San Antonio Springs	3/14/2002	NA	NA	<0.5	<0.05	<0.5	NA	<0.5	NA	NA
San Antonio Springs	10/02/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
San Pedro Springs	3/14/2002	NA	NA	<0.5	<0.05	<0.5	NA	<0.5	NA	NA
San Pedro Springs	6/03/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
San Pedro Springs	10/02/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
Seco Creek at Miller Ranch	5/16/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
Seco Creek at Miller Ranch	11/21/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
San Marcos Springs-Deep (LR-67-01-819)	6/06/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0
San Marcos Springs-Hotel (LR-67-01-801)	6/06/2002	<10	<5	NA	<1	<1	<0.5	<1	<2	<1
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<10.0	<5.0	NA	<1.0	<1.0	<0.50	<1.0	<2.0	<1.0

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level
NA = Not analyzed

Table C-12 Analytical data for pesticides, herbicides, and PCB (Aroclors) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Sulfotepp	Terbufos	Tetrachlor-vinphos	Thionazin	Tokuthion	Toxaphene	Trichloronate
Blanco River at Wimberley	5/21/2002	<0.5	<0.5	NA	<1	<1	<0.6	<1
Blanco River at Wimberley	11/26/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
Comal Springs #1 (DX-68-23-301)	3/12/2002	<0.5	NA	<0.2	<0.5	<0.5	<2	<0.5
Comal Springs #1 (DX-68-23-301)	6/04/2002	<0.5	<1	NA	<1	<1	<0.6	<1
Comal Springs #1 (DX-68-23-301)	10/17/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
Comal Springs #7	3/12/2002	<0.5	NA	<0.2	<0.5	<0.5	<2	<0.5
Comal Springs #7	6/04/2002	<0.5	<1	NA	<1	<1	<0.6	<1
Comal Springs #7	10/17/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
Dry Frio River at Reagan Wells	5/15/2002	<0.5	<1	NA	<1	<1	<0.6	<1
Dry Frio River at Reagan Wells	11/20/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
Frio River at Concan	5/15/2002	<0.5	<1	NA	<1	<1	<0.6	<1
Frio River at Concan	11/20/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
Hondo Creek near Tarpley	5/16/2002	<0.5	<0.5	NA	<1	<1	<0.6	<1
Hondo Creek near Tarpley	11/21/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
Hueco Springs A (DX-68-15-901)	3/12/2002	<0.5	NA	<0.2	<0.5	<0.5	<2.1	<0.5
Hueco Springs A (DX-68-15-901)	6/05/2002	<0.5	<1	NA	<1	<1	<0.6	<1
Hueco Springs A (DX-68-15-901)	10/03/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
Hueco Springs B	3/12/2002	<0.5	NA	<0.2	<0.5	<0.5	<2	<0.5
Hueco Springs B	6/05/2002	<0.5	<1	NA	<1	<1	<0.6	<1
Hueco Springs B	10/03/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
Medina River at Bandera	5/20/2002	<0.5	<0.5	NA	<1	<1	<0.6	<1
Medina River at Bandera	11/22/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
Nueces River at Laguna	5/14/2002	<0.5	<1	NA	<1	<1	<0.6	<1
Nueces River at Laguna	11/19/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
Panther Springs Creek at Loop 1604 N	7/04/2002	<0.5	<0.5	NA	<1	<1	NA	<1
Sabinal River near Sabinal	5/15/2002	<0.5	<0.5	NA	<1	<1	<0.6	<1
Sabinal River near Sabinal	11/20/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
San Antonio Springs	3/14/2002	<0.5	NA	<0.2	<0.5	<0.5	<2	<0.5
San Antonio Springs	10/02/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
San Pedro Springs	3/14/2002	<0.5	NA	<0.2	<0.5	<0.5	<2	<0.5
San Pedro Springs	6/03/2002	<0.5	<1	NA	<1	<1	<0.6	<1
San Pedro Springs	10/02/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
Seco Creek at Miller Ranch	5/16/2002	<0.5	<0.5	NA	<1	<1	<0.6	<1
Seco Creek at Miller Ranch	11/21/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
San Marcos Springs-Deep (LR-67-01-819)	6/06/2002	<0.5	<1	NA	<1	<1	<0.6	<1
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0
San Marcos Springs-Hotel (LR-67-01-801)	6/06/2002	<0.5	<1	NA	<1	<1	<0.6	<1
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<0.50	<1.0	NA	<1.0	<1.0	<0.6	<1.0

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level
NA = Not analyzed

Table C-13 Analytical data for volatile organic compounds (VOC) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002

Station Name	Date Sampled	1,1,1-Trichloro-ethane	1,1,2,2-Tetrachloro-ethane	1,1,2-Trichloro-1,2,2-tri-fluoroethane	1,1,2-Trichloro-ethane	1,1-Dichloro-ethane	1,1-Dichloro-ethene	1,2,4-Trichloro-benzene	1,2-Dibromo-3-chloro-propane	1,2-Dibromo-ethane
Comal Springs #1 (DX-68-23-301)	3/12/2002	<1	<1	<1	<1	<1	<1	<1	<2	<1
Comal Springs #1 (DX-68-23-301)	6/4/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
Comal Springs #1 (DX-68-23-301)	10/17/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
Comal Springs #7	3/12/2002	<1	<1	<1	<1	<1	<1	<1	<2	<1
Comal Springs #7	6/4/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
Comal Springs #7	10/17/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
Hueco Springs A (DX-68-15-901)	3/12/2002	<1	<1	<1	<1	<1	<1	<1	<2	<1
Hueco Springs A (DX-68-15-901)	6/5/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
Hueco Springs A (DX-68-15-901)	10/3/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
Hueco Springs B	3/12/2002	<1	<1	<1	<1	<1	<1	<1	<2	<1
Hueco Springs B	6/5/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
San Antonio Springs	3/14/2002	<1	<1	<1	<1	<1	<1	<1	<2	<1
San Antonio Springs	10/2/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
San Pedro Springs	3/14/2002	<1	<1	<1	<1	<1	<1	<1	<2	<1
San Pedro Springs	6/3/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
San Pedro Springs	10/2/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
San Marcos Springs-Deep (LR-67-01-819)	6/6/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
San Marcos Springs-Deep (LR-67-01-819)	10/9/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
San Marcos Springs-Hotel (LR-67-01-801)	6/6/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1
San Marcos Springs-Hotel (LR-67-01-801)	10/9/2002	<1	<1	<10	<1	<1	<1	<1	<1	<1

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level.

Table C-13 Analytical data for volatile organic compounds (VOC) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	1,2-Dichloro-benzene	1,2-Dichloro-ethane	1,2-Dichloro-propane	1,3-Dichloro-benzene	1,4-Dichloro-benzene	2-Butanone	2-Hexanone	4-Methyl-2-pentanone	Acetone
Comal Springs #1 (DX-68-23-301)	3/12/2002	<1	<1	<1	<1	<1	<5	<5	<5	<10
Comal Springs #1 (DX-68-23-301)	6/4/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
Comal Springs #1 (DX-68-23-301)	10/17/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
Comal Springs #7	3/12/2002	<1	<1	<1	<1	<1	<5	<5	<5	<10
Comal Springs #7	6/4/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
Comal Springs #7	10/17/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
Hueco Springs A (DX-68-15-901)	3/12/2002	<1	<1	<1	<1	<1	<5	<5	<5	<10
Hueco Springs A (DX-68-15-901)	6/5/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
Hueco Springs A (DX-68-15-901)	10/3/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
Hueco Springs B	3/12/2002	<1	<1	<1	<1	<1	<5	<5	<5	<10
Hueco Springs B	6/5/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
San Antonio Springs	3/14/2002	<1	<1	<1	<1	<1	<5	<5	<5	<10
San Antonio Springs	10/2/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
San Pedro Springs	3/14/2002	<1	<1	<1	<1	<1	<5	<5	<5	<10
San Pedro Springs	6/3/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
San Pedro Springs	10/2/2002	<1	<1	<1	<1	<1	<5	<5	<5	2J
San Marcos Springs-Deep (LR-67-01-819)	6/6/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
San Marcos Springs-Deep (LR-67-01-819)	10/9/2002	<1	<1	<1	<1	<1	<5	<5	<5	<20
San Marcos Springs-Hotel (LR-67-01-801)	6/6/2002	<1	<1	<1	<1	<1	<5	<5	<5	1J
San Marcos Springs-Hotel (LR-67-01-801)	10/9/2002	<1	<1	<1	<1	<1	<5	<5	<5	3J

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level

Table C-13 Analytical data for volatile organic compounds (VOC) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Benzene	Bromo-chloro-methane	Bromo-dichloro-methane	Bromo-form	Bromo-methane	Carbon disulfide	Carbon tetra-chloride	Chloro-benzene	Chloro-ethane
Comal Springs #1 (DX-68-23-301)	3/12/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
Comal Springs #1 (DX-68-23-301)	6/4/2002	<1	<1	<1	<1	<2	0.6J	<1	<1	<2
Comal Springs #1 (DX-68-23-301)	10/17/2002	0.4J	<1	<1	<1	<2	1	<1	<1	<2
Comal Springs #7	3/12/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
Comal Springs #7	6/4/2002	<1	<1	<1	<1	<2	1	<1	<1	<2
Comal Springs #7	10/17/2002	0.5J	<1	<1	<1	<2	<1	<1	<1	<2
Hueco Springs A (DX-68-15-901)	3/12/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
Hueco Springs A (DX-68-15-901)	6/5/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
Hueco Springs A (DX-68-15-901)	10/3/2002	<1	<1	<1	<1	0.8J B	1	<1	<1	<2
Hueco Springs B	3/12/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
Hueco Springs B	6/5/2002	<1	<1	<1	<1	<2	2	<1	<1	<2
San Antonio Springs	3/14/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
San Antonio Springs	10/2/2002	<1	<1	<1	<1	<2	25	<1	<1	<2
San Pedro Springs	3/14/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
San Pedro Springs	6/3/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
San Pedro Springs	10/2/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
San Marcos Springs-Deep (LR-67-01-819)	6/6/2002	<1	<1	<1	<1	<2	0.6J	<1	<1	<2
San Marcos Springs-Deep (LR-67-01-819)	10/9/2002	<1	<1	<1	<1	0.4J B	4	<1	<1	<2
San Marcos Springs-Hotel (LR-67-01-801)	6/6/2002	<1	<1	<1	<1	<2	<1	<1	<1	<2
San Marcos Springs-Hotel (LR-67-01-801)	10/9/2002	<1	<1	<1	<1	0.5J B	<1	<1	<1	<2

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level

Table C-13 Analytical data for volatile organic compounds (VOC) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Chloro-form	Chloro-methane	cis-1,2-Dichloro-ethene	cis-1,3-Dichloro-propene	Cyclo-hexane	Dibromo-chloro-methane	Dichloro-difluoro-methane	Ethyl-benzene	Isopropyl-benzene
Comal Springs #1 (DX-68-23-301)	3/12/2002	<1	<2	<0.5	<1	<2	<1	<2	<1	<1
Comal Springs #1 (DX-68-23-301)	6/4/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
Comal Springs #1 (DX-68-23-301)	10/17/2002	<1	0.4J	<1	<1	<10	<1	<2	<1	<10
Comal Springs #7	3/12/2002	<1	<2	<0.5	<1	<2	<1	<2	<1	<1
Comal Springs #7	6/4/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
Comal Springs #7	10/17/2002	<1	0.3J	<1	<1	<10	<1	<2	<1	<10
Hueco Springs A (DX-68-15-901)	3/12/2002	<1	<2	<0.5	<1	<2	<1	<2	<1	<1
Hueco Springs A (DX-68-15-901)	6/5/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
Hueco Springs A (DX-68-15-901)	10/3/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
Hueco Springs B	3/12/2002	<1	<2	<0.5	<1	<2	<1	<2	<1	<1
Hueco Springs B	6/5/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
San Antonio Springs	3/14/2002	<1	<2	<0.5	<1	<2	<1	<2	<1	<1
San Antonio Springs	10/2/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
San Pedro Springs	3/14/2002	<1	<2	<0.5	<1	<2	<1	<2	<1	<1
San Pedro Springs	6/3/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
San Pedro Springs	10/2/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
San Marcos Springs-Deep (LR-67-01-819)	6/6/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
San Marcos Springs-Deep (LR-67-01-819)	10/9/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
San Marcos Springs-Hotel (LR-67-01-801)	6/6/2002	<1	<2	<1	<1	<10	<1	<2	<1	<10
San Marcos Springs-Hotel (LR-67-01-801)	10/9/2002	<1	0.3J	<1	<1	<10	<1	<2	<1	<10

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level

Table C-13 Analytical data for volatile organic compounds (VOC) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Methyl tertbutyl-ether	Methy-lene-chloride	Styrene	Tetra-chloro-ethene	Toluene	trans-1,2-Dichloro-ethene	trans-1,3-Dichloro-propen	Trichloro-ethene	Trichloro-fluoro-methane
Comal Springs #1 (DX-68-23-301)	3/12/2002	<1	<1	<1	<1	<1	<0.5	<1	<1	<2
Comal Springs #1 (DX-68-23-301)	6/4/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
Comal Springs #1 (DX-68-23-301)	10/17/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
Comal Springs #7	3/12/2002	<1	<1	<1	<1	<1	<0.5	<1	<1	<2
Comal Springs #7	6/4/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
Comal Springs #7	10/17/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
Hueco Springs A (DX-68-15-901)	3/12/2002	<1	<1	<1	<1	<1	<0.5	<1	<1	<2
Hueco Springs A (DX-68-15-901)	6/5/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
Hueco Springs A (DX-68-15-901)	10/3/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
Hueco Springs B	3/12/2002	<1	<1	<1	<1	<1	<0.5	<1	<1	<2
Hueco Springs B	6/5/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
San Antonio Springs	3/14/2002	<1	<1	<1	<1	<1	<0.5	<1	<1	<2
San Antonio Springs	10/2/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
San Pedro Springs	3/14/2002	<1	<1	<1	<1	<1	<0.5	<1	<1	<2
San Pedro Springs	6/3/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
San Pedro Springs	10/2/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
San Marcos Springs-Deep (LR-67-01-819)	6/6/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
San Marcos Springs-Deep (LR-67-01-819)	10/9/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
San Marcos Springs-Hotel (LR-67-01-801)	6/6/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10
San Marcos Springs-Hotel (LR-67-01-801)	10/9/2002	<5	<2	<1	<1	<1	<1	<1	<1	<10

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level

Table C-13 Analytical data for volatile organic compounds (VOC) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Vinyl chloride	Xylenes (total)
Comal Springs #1 (DX-68-23-301)	3/12/2002	<2	<2
Comal Springs #1 (DX-68-23-301)	6/4/2002	<1	<1
Comal Springs #1 (DX-68-23-301)	10/17/2002	<1	<1
Comal Springs #7	3/12/2002	<2	<2
Comal Springs #7	6/4/2002	<1	<1
Comal Springs #7	10/17/2002	<1	<1
Hueco Springs A (DX-68-15-901)	3/12/2002	<2	<2
Hueco Springs A (DX-68-15-901)	6/5/2002	<1	<1
Hueco Springs A (DX-68-15-901)	10/3/2002	<1	<1
Hueco Springs B	3/12/2002	<2	<2
Hueco Springs B	6/5/2002	<1	<1
San Antonio Springs	3/14/2002	<2	<2
San Antonio Springs	10/2/2002	<1	<1
San Pedro Springs	3/14/2002	<2	<2
San Pedro Springs	6/3/2002	<1	<1
San Pedro Springs	10/2/2002	<1	<1
San Marcos Springs-Deep (LR-67-01-819)	6/6/2002	<1	<1
San Marcos Springs-Deep (LR-67-01-819)	10/9/2002	<1	<1
San Marcos Springs-Hotel (LR-67-01-801)	6/6/2002	<1	<1
San Marcos Springs-Hotel (LR-67-01-801)	10/9/2002	<1	<1

J = Estimated concentration between the method detection limit and the reporting limit
B = Blank contamination. The associated method blank contains the target analyte at a reportable level

Table C-14 Analytical data for semivolatile organic compounds (SVOC) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002

Station Name	Date Sampled	2,4,5-Trichloro-phenol	2,4,6-Trichloro-phenol	2,4-Dichloro-phenol	2,4-Di-methyl-phenol	2,4-Dinitro-phenol	2,4-Dinitro-toluene	2,6-Dinitro-toluene	2-Chloro-naph-thalene	2-Chloro-phenol
Comal Springs #1 (DX-68-23-301)	12/03/2002	<20	<9.9	<9.9	<9.9	<50	<9.9	<9.9	<9.9	<9.9
Comal Springs #1 (DX-68-23-301)	10/17/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
Comal Springs #7	12/03/2002	<20	<10	<10	<10	<50	<10	<10	<10	<10
Comal Springs #7	10/17/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
Hueco Springs A (DX-68-15-901)	12/03/2002	<21	<10	<10	<10	<52	<10	<10	<10	<10
Hueco Springs A (DX-68-15-901)	10/03/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
Hueco Springs B	12/03/2002	<20	<9.9	<9.9	<9.9	<50	<9.9	<9.9	<9.9	<9.9
Hueco Springs B	10/03/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
San Antonio Springs	03/14/2002	<20	<10	<10	<10	<50	<10	<10	<10	<10
San Antonio Springs	10/02/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
San Pedro Springs	03/14/2002	<20	<10	<10	<10	<50	<10	<10	<10	<10
San Pedro Springs	10/02/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<10	<10	<10	<10	<50	<10	<10	<10	<10

Station Name	Date Sampled	2-Methyl-4,6-dinitro-phenol	2-Methyl-naph-thalene	2-Methyl-phenol	2-Nitro-phenol	3,4-Methyl-phenol	3,3-Di-chloro-benzi-dine	4-Bromo-phenyl-phenyl-ether	4-Chloro-3-methyl-phenol	4-Chloro-aniline
Comal Springs #1 (DX-68-23-301)	12/03/2002	<50	<9.9	<9.9	<9.9	NA	<50	<9.9	<9.9	<9.9
Comal Springs #1 (DX-68-23-301)	10/17/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
Comal Springs #7	12/03/2002	<50	<10	<10	<10	NA	<50	<10	<10	<10
Comal Springs #7	10/17/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
Hueco Springs A (DX-68-15-901)	12/03/2002	<52	<10	<10	<10	NA	<52	<10	<10	<10
Hueco Springs A (DX-68-15-901)	10/03/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
Hueco Springs B	12/03/2002	<50	<9.9	<9.9	<9.9	NA	<50	<9.9	<9.9	<9.9
Hueco Springs B	10/03/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
San Antonio Springs	03/14/2002	<50	<10	<10	<10	NA	<50	<10	<10	<10
San Antonio Springs	10/02/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
San Pedro Springs	03/14/2002	<50	<10	<10	<10	NA	<50	<10	<10	<10
San Pedro Springs	10/02/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<50	<10	<10	<10	<10	<20	<10	<10	<10

NA = Not analyzed
J = Estimated concentration between the method detection limit and the reporting limit

Table C-14 Analytical data for semivolatile organic compounds (SVOC) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	4-Chloro-phenyl-phenyl-ether	4-Nitro-phenol	Acena-phthene	Acena-phthylene	Aceto-phenone	Anthra-cene	Benzo-(a)-anthra-cene	Benzo-(a)-pyrene	Benzo-(b)-fluor-anthene
Comal Springs #1 (DX-68-23-301)	12/03/2002	<9.9	<50	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9
Comal Springs #1 (DX-68-23-301)	10/17/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
Comal Springs #7	12/03/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
Comal Springs #7	10/17/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
Hueco Springs A (DX-68-15-901)	12/03/2002	<10	<52	<10	<10	<10	<10	<10	<10	<10
Hueco Springs A (DX-68-15-901)	10/03/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
Hueco Springs B	12/03/2002	<9.9	<50	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9
Hueco Springs B	10/03/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
San Antonio Springs	03/14/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
San Antonio Springs	10/02/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
San Pedro Springs	03/14/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
San Pedro Springs	10/02/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<10	<50	<10	<10	<10	<10	<10	<10	<10

Station Name	Date Sampled	Benzo-(ghi)-pery-lene	Benzo-(k)fluor-anthene	bis(2-Chloro-ethoxy)-methane	bis(2-Chloro-ethyl)-ether	bis(2-Ethyl-hexyl)-phthalate	Butyl-benzyl-phtha-late	Car-bazole	Chrysene	Di-n-butyl-phtha-late
Comal Springs #1 (DX-68-23-301)	12/03/2002	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9
Comal Springs #1 (DX-68-23-301)	10/17/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
Comal Springs #7	12/03/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
Comal Springs #7	10/17/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hueco Springs A (DX-68-15-901)	12/03/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hueco Springs A (DX-68-15-901)	10/03/2002	<10	<10	<10	<10	9J	<10	<10	<10	<10
Hueco Springs B	12/03/2002	<9.9	<9.9	<9.9	<9.9	3.1J	<9.9	<9.9	<9.9	<9.9
Hueco Springs B	10/03/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
San Antonio Springs	03/14/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
San Antonio Springs	10/02/2002	<10	<10	<10	<10	29	<10	<10	<10	<10
San Pedro Springs	03/14/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
San Pedro Springs	10/02/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<10	<10	<10	<10	16	<10	<10	<10	<10

NA = Not analyzed
J = Estimated concentration between the method detection limit and the reporting limit

Table C-14 Analytical data for semivolatile organic compounds (SVOC) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Di-n-octy-phtha-late	Dibenzo-(a,h)-anthra-cene	Dibenzo-furan	Diethyl-phtha-late	Dimethyl-phthalate	Diphenyl	Fluor-anthene	Fluorene	Hexa-chloro-benzene
Comal Springs #1 (DX-68-23-301)	12/03/2002	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9
Comal Springs #1 (DX-68-23-301)	10/17/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
Comal Springs #7	12/03/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
Comal Springs #7	10/17/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hueco Springs A (DX-68-15-901)	12/03/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hueco Springs A (DX-68-15-901)	10/03/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hueco Springs B	12/03/2002	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9	<9.9
Hueco Springs B	10/03/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
San Antonio Springs	03/14/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
San Antonio Springs	10/02/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
San Pedro Springs	03/14/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
San Pedro Springs	10/02/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<10	<10	<10	<10	<10	<10	<10	<10	<10

Station Name	Date Sampled	Hexa-chloro-buta-diene	Hexa-chloro-cyclo-penta-diene	Hexa-chloro-ethane	Indeno-(1,2,3-cd)-pyrene	Iso-phor-one	m-Nitro-aniline	N-Nitro-sodi-n-propyla-mine	N-Nitro-sodi-phenyl-amine	Naphtha-lene
Comal Springs #1 (DX-68-23-301)	12/03/2002	<9.9	<50	<9.9	<9.9	<9.9	<50	<9.9	<9.9	<9.9
Comal Springs #1 (DX-68-23-301)	10/17/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
Comal Springs #7	12/03/2002	<10	<50	<10	<10	<10	<50	<10	<10	<10
Comal Springs #7	10/17/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
Hueco Springs A (DX-68-15-901)	12/03/2002	<10	<52	<10	<10	<10	<52	<10	<10	<10
Hueco Springs A (DX-68-15-901)	10/03/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
Hueco Springs B	12/03/2002	<9.9	<50	<9.9	<9.9	<9.9	<50	<9.9	<9.9	<9.9
Hueco Springs B	10/03/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
San Antonio Springs	03/14/2002	<10	<50	<10	<10	<10	<50	<10	<10	<10
San Antonio Springs	10/02/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
San Pedro Springs	03/14/2002	<10	<50	<10	<10	<10	<50	<10	<10	<10
San Pedro Springs	10/02/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<10	<10	<10	<10	<10	<50	<10	<10	<10

NA = Not analyzed
J = Estimated concentration between the method detection limit and the reporting limit

Table C-14 Analytical data for semivolatile organic compounds (SVOC) in water samples from streams crossing the Edwards Aquifer Recharge Zone and springs discharging from the Edwards Aquifer, 2002 (cont'd)

Station Name	Date Sampled	Nitroben-zene	o,o,o-Triethyl-phosphor-othioate	o-Nitro-aniline	p-Nitro-aniline	Penta-chloro-phenol	Phen-anth-rene	Phenol	Prona-mide	Pyrene
Comal Springs #1 (DX-68-23-301)	12/03/2002	<9.9	NA	<50	<50	<50	<9.9	<9.9	<20	<9.9
Comal Springs #1 (DX-68-23-301)	10/17/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
Comal Springs #7	12/03/2002	<10	NA	<50	<50	<50	<10	<10	<20	<10
Comal Springs #7	10/17/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
Hueco Springs A (DX-68-15-901)	12/03/2002	<10	NA	<52	<52	<52	<10	<10	<21	<10
Hueco Springs A (DX-68-15-901)	10/03/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
Hueco Springs B	12/03/2002	<9.9	NA	<50	<50	<50	<9.9	<9.9	<20	<9.9
Hueco Springs B	10/03/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
San Antonio Springs	03/14/2002	<10	NA	<50	<50	<50	<10	<10	<20	<10
San Antonio Springs	10/02/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
San Pedro Springs	03/14/2002	<10	NA	<50	<50	<50	<10	<10	<20	<10
San Pedro Springs	10/02/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
San Marcos Springs-Deep (LR-67-01-819)	10/09/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10
San Marcos Springs-Hotel (LR-67-01-801)	10/09/2002	<10	<10	<50	<50	<50	<10	<10	<10	<10

NA = Not analyzed
J = Estimated concentration between the method detection limit and the reporting limit

APPENDIX D – Conversion Factors

Volume	Equivalent Units
1 cubic foot	7.48 gallons
	62.41 lbs. of water
1 acre-foot	43,560 cubic feet
	325,851 gallons
	Covers one acre of land (209 feet by 209 feet) one foot deep
1 million gallons	3.07 acre-feet

Flow Rate	
1 cubic foot per second (cfs)	448.80 gallons per minute
	646,272 gallons per day
	1.98 acre-feet per day
	19.4 million gallons per day
	59.50 acre-feet per month
	236 million gallons per year
	723 acre-feet per year
1 million gallons per day (mgd)	3.07 acre-feet per day
	1,120 acre-feet per year
1,000 gallons per minute (gpm)	2.23 cfs
	4.42 acre-feet per day

Cost	
10 cents per 1,000 gallons	$100 per 1 million gallons
	$32.59 per acre foot
0.61 cents per 1,000 gallons	$2.00 per acre foot
7.7 cents per 1,000 gallons	$25.00 per acre foot

Metric conversions	
1 acre	0.4 hectares
1 gallon	3.8 liters
1 cubic foot	0.28 cubic meters
1 cubic meter per second	448,830 gallons per minute
	26,293,000 gallons per hour