EDWARDS UNDERGROUND WATER DISTRICT

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San Antonio, Texas

BULLETIN 21

RECORDS OF PRECIPITATION, AQUIFER HEAD, AND GROUND-WATER RECHARGE TO THE EDWARDS AND ASSOCIATED LIMESTONES SAN ANTONIO AREA, TEXAS, -1968

Compiled by

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Prepared in cooperation with the Geological Survey,
United States Department of the Interior,
and the Texas Water Development Board

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The Edwards and associated limestones, the principal aquifer in the San Antonio area, has been the subject of numerous geologic and hydrologic reports. Records of precipitation, water levels, and estimates of recharge to the aquifer during 1968 are summarized in this report, which is part of the basic-data collection published by the Edwards Underground Water District. The compilation of these basic records (and data) is part of the continuing hydrologic investigation by the U. S. Geological Survey in cooperation with the Edwards Underground Water District and the Texas Water Development Board.

The annual precipitation at selected stations throughout the San Antonio area for 1968 and the annual average for each of these stations are shown in table 1. Rainfall was excessive during the first few months of 1968, and the yearly totals are generally above average.

Table 1.--Precipitation, in inches, at selected stations in the San Antonio area, Texas, 1968

Station	Precipitation	Long-term mean
Brackettville	17.26	20.36 (79 years)
Uvalde	25.20	23.69 (67 years)
Sabinal	31.74	24.98 (50 years)
Hondo	31.91	28.09 (65 years)
San Antonio	30.40	27.42 (92 years)
Boerne	35.14	31.71 (74 years)
New Braunfels	35.97	30.82 (75 years)
San Marcos	37.13	32.48 (68 years)

The recorded high and low water levels in five selected key wells during 1968 are shown in table 2. During the year, the water levels fluctuated just below the record high. The record highs and lows are shown in table 2. Ground-water storage in the Edwards limestone stayed well above average during 1968.

Recharge to the Edwards and associated limestones is chiefly from streams which lose most of their base flow and a part of their floodflow as they cross the Balcones fault zone on the outcrop of the aquifer. The recharge is estimated from discharge records at gaging stations located above and below the infiltration areas on most of the streams. The monthly mean discharge at the gaging stations for October-December 1968 are shown in table 3. Streamflow records for January-September 1968 are being published by the U. S. Geological Survey (U. S. Department of the Interior, 1968).

Table 2.--Annual recorded high and low water levels (feet above mean sea level) in key wells tapping the Edwards and associated limestones, San Antonio area, Texas, 1968

Well	High	Low	Record High	Record Low	Period of Record
H-5-1 (Uvalde County)	873.4	864.9	878.5 (11-22-61)	811.0 (4-13-57)	1929-32, 1934-68
J-1-82 (Medina County)	701.9	679.1	710.3 (2-27-61)	622.3 (8-18-56)	1950-68
*J-17 (Bexar County)	678.3	655.9	** 685.5 (6-26-35)	** 612.5 (8-17-56)	***1932-68
G-49 (Comal County)	627.2	624.6	627.3 (2-19-61)	613.3 (8-21-56)	1948-68
H-23 (Hays County)	593.8	574.4	593.8 (3-29-68)	542.2 (7-12-56)	1937-68

* Replaces well 26 and reflects almost the same water level (feet above mean sea level). The water-level data shown is a composite record of wells 26 and J-17.

** Record High and Low for Well 26.

*** Composite record - wells 26 and J-17.

Table 3.--Monthly mean discharge, in cubic feet per second, at stream-gaging stations in the San Antonio area, October-December 1968.

(Figures rounded to nearest cubic foot per second)

Station	1968		
	Oct.	Nov.	Dec.
West Nueces River near Brackettville	0	0	0
Nueces River at Laguna	82	74	89
Nueces River below Uvalde	29	23	21
Dry Frio River near Reagan Wells	16	11	14
Frio River at Concan	71	66	73
Frio River below Dry Frio River near Uvalde	0	0	0
Sabinal River near Sabinal	36	27	28
Sabinal River at Sabinal	2	1	1
Seco Creek at Miller Ranch near Utopia	6	5	5
Seco Creek at Crook Ranch near D'Hanis	0	0	0
Hondo Creek near Tarpley	10	7	10
Hondo Creek at King Waterhole near Hondo	0	0	0
Medina River near Pipe Creek	53	50	57
Medina River near Riomedina	18	17	19
Salado Creek (upper station) at San Antonio	1	1	1
Cibolo Creek at Selma	0	0	0
Guadalupe River at Comfort	70	88	98
Guadalupe River near Spring Branch	109	110	142
Guadalupe River at Sattler	104	101	100
Guadalupe River above Comal River at New Braunfels	146	135	165
Comal River at New Braunfels	300	298	308
Blanco River at Wimberley	48	40	56
Blanco River near Kyle	22	24	51
Plum Creek at Lockhart	0	37	57
San Marcos River spring flow at San Marcos	150	143	142

The recharge in each basin of the San Antonio area for 1968 and the average annual recharge for the period 1934-67 are shown in table 4. The basic methods employed by Petitt and George (1956) and by Garza (1962) were used for estimating the 1968 recharge.

Total recharge in 1968 was in excess of the average annual recharge (see table 4) by nearly 350 thousand acre-feet. The above-average recharge was due to the high intensity of the rainfall and the recharge area's ability to take recharge.

Table 4.--Estimated recharge, in thousands of acre-feet, to the Edwards and associated limestones, San Antonio area, Texas, 1968

Basin	1968	1934-67 Average
Nueces and West Nueces Rivers	130.8	94.2
Frio and Dry Frio Rivers	176.0	82.9
Sabinal River	66.4	31.2
Medina Lake	59.9	50.5
Cibolo and Dry Comal Creeks	120.5	88.9
Blanco River and adjacent area	49.3	31.5
Area between Sabinal and Medina Rivers	198.7	68.8
Area between Cibolo Creek and Medina River	83.1	55.8
Totals	884.7	503.8

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