Records of Precipitation, Water Levels and Ground-Water Recharge to the Edwards and Associated Limestones San Antonio Area, Texas, 1969

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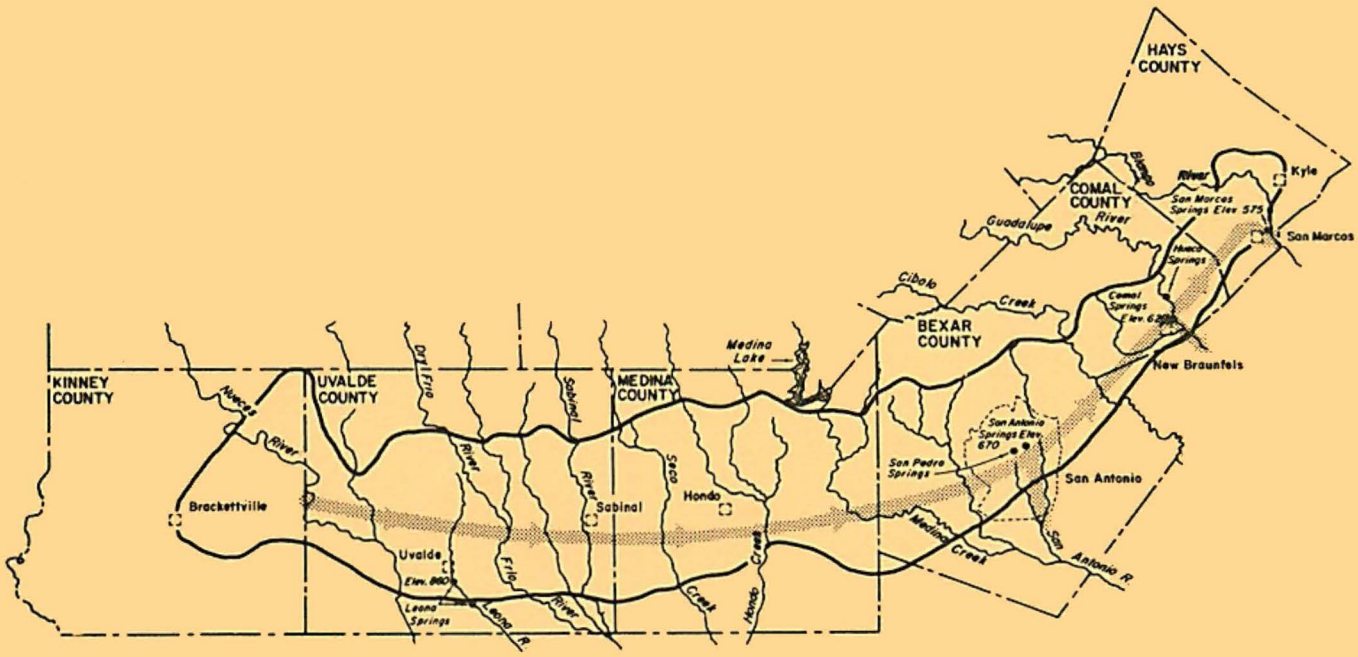

Prepared in cooperation with the U.S. Geological Survey and the Texas Water Development Board

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TABLES

RECORDS OF PRECIPITATION, WATER LEVELS, AND GROUND-WATER RECHARGE TO THE EDWARDS AND ASSOCIATED LIMESTONES, SAN ANTONIO AREA, TEXAS, 1969

Compiled by

Paul Rettman
United States Geological Survey

INTRODUCTION

Records of precipitation, water levels, and estimates of recharge to the Edwards and associated limestones in the San Antonio area during 1969 are summarized in this report. The compilation of these basic records is part of a continuing hydrologic investigation by the U. S. Geological Survey in cooperation with the Edwards Underground Water District and the Texas Water Development Board. Previous reports are given in the list of references.

PRECIPITATION

The annual precipitation at selected stations throughout the San Antonio area for 1969 and the annual average for each of these stations are shown in table 1. Rainfall was above average throughout the recharge area during 1969.

Table 1.--Precipitation at selected stations in the San Antonio area, 1969

Station	Precipitation (inches)	Long-term mean (inches)
Brackettville	28.53	20.65 (80 years)
Uvalde	33.38	24.19 (68 years)
Sabinal	33.05	25.68 (51 years)
Hondo	32.30	28.58 (66 years)
San Antonio	31.42	27.98 (93 years)
Boerne	38.07	32.26 (75 years)
New Braunfels	33.01	31.21 (76 years)
San Marcos	36.59	33.04 (69 years)

Data from the U. S. Department of Commerce (1969).

WATER LEVELS

The recorded high and low water levels in five selected key wells during 1969 are shown in table 2. During the year, the water levels fluctuated just below the record high. The record highs and lows are also given in table 2. Ground-water storage in the Edwards limestone was above average during 1969.

GROUND WATER RECHARGE

Recharge to the Edwards and associated limestones is chiefly from streams that lose most of their base blow and a part of their flood flow 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 1969 is given in table 3. Streamflow records for January-September 1969 will be published by the U. S. Geological Survey in late 1970.

Table 2.--Annual recorded high and low water levels in key wells in the Edwards and associated limestones in the San Antonio area, 1969

(feet above mean sea level)

Well	High	Low	Record High	Record Low	Period of Record
H-5-1 (Uvalde County)	875.0	866.6	878.5 (11-22-61)	811.0 (4-13-57)	1929-32 1934-69
J-1-82 (Medina County)	698.4	670.1	710.3 (2-27-61)	622.3 (8-18-56)	1950-69
J-17 1/ (Bexar County)	676.1	642.8	685.5 2/ (6-26-35)	612.5 2/ (8-17-56)	1932-69 3/
G-49 (Comal County)	626.3	623.4	627.3 (2-19-61)	613.3 (8-21-56)	1948-69
H-23 (Hays County)	589.1	568.1	593.8 (3-29-68)	542.2 (7-12-56)	1937-69

1/ Replaces well 26 and reflects almost the same water level. The water-level data shown is a composite record of wells 26 and J-17.

2/ Record high and low for well 26.

3/ Composite record of wells 26 and J-17.

Table 3.--Monthly mean discharge at stream-gaging stations in the San Antonio area, October-December 1969

(Figures rounded to nearest cubic foot per second)

Station	1969		
	Oct.	Nov.	Dec.
West Nueces River near Brackettville	69	8	4
Nueces River at Laguna	764	234	265
Nueces River below Uvalde	799	201	250
Dry Frio River near Reagan Wells	258	53	54
Frio River at Concan	648	164	185
Frio River below Dry Frio River near Uvalde	717	1/	0
Sabinal River near Sabinal	317	93	77
Sabinal River at Sabinal	261	11	3
Seco Creek at Miller Ranch near Utopia	46	13	10
Seco Creek at Crook Ranch near D'Hanis	8	0	0
Hondo Creek near Tarpley	110	38	37
Hondo Creek at King Waterhole near Hondo	63	0	0
Medina River near Pipe Creek	662	156	167
Medina River near Riomedina	21	20	26
Salado Creek (upper station) at San Antonio	2	1	1
Cibolo Creek at Selma	0	0	0
Guadalupe River at Comfort	965	246	283
Guadalupe River near Spring Branch	1,260	347	550
Guadalupe River at Sattler	669	548	429
Guadalupe River above Comal River at New Braunfels	753	579	549
Comal River at New Braunfels	268	286	304
Blanco River at Wimberley	93	64	126
Blanco River near Kyle	65	37	111
Plum Creek at Lockhart	0	1	37
San Marcos River springflow at San Marcos	152	144	149

1/ Less than 0.5

The recharge in each basin of the San Antonio area for 1969 and the average annual recharge for the period 1934-68 are given in table 4. The basic methods employed by Petitt and George (1956) and by Garza (1962) were used for estimating the 1969 recharge.

Springflow from the Edwards Plateau was the main source of recharge during the first nine months of 1969, while floods during the last three months furnished the main source of recharge. The total recharge was about 10 percent above the average annual (see table 4).

Table 4.--Estimated recharge to the Edwards and associated limestones in the San Antonio area, 1969

(in thousands of acre-feet)

Basin	1969	1934-68 Average
Nueces and West Nueces Rivers	119.7	95.3
Frio and Dry Frio Rivers	113.8	85.6
Sabinal River	30.7	32.2
Medina Lake	55.4	50.8
Cibolo and Dry Comal Creeks	99.9	89.8
Blanco River and adjacent area	46.6	32.0
Area between Sabinal and Medina Rivers	84.2	72.6
Area between Cibolo Creek and Medina River	26.6	56.6
Totals	576.9	514.9

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