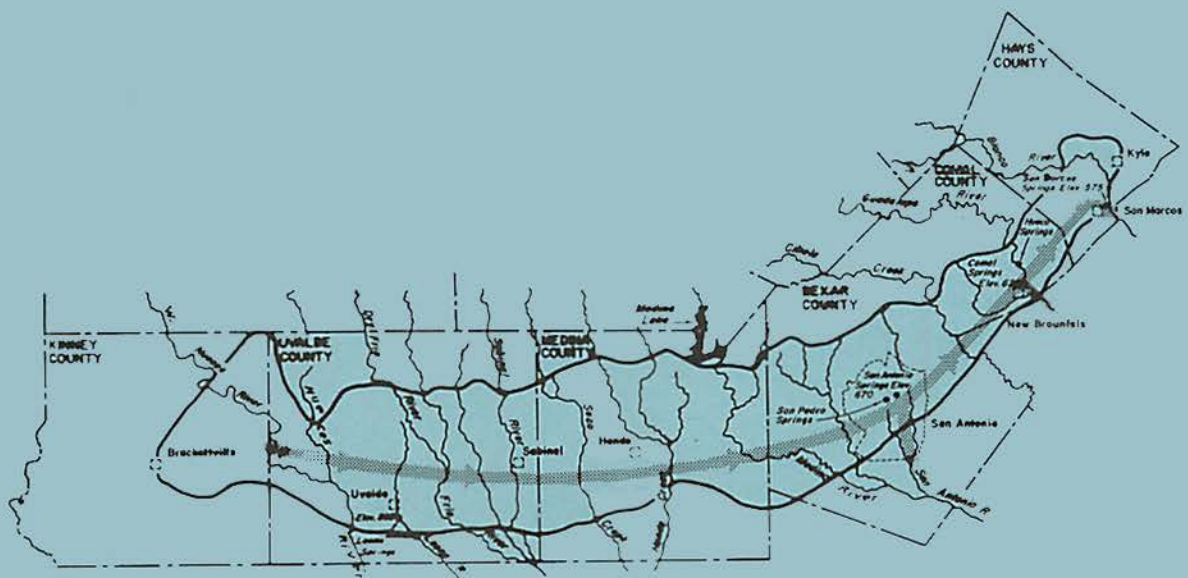


Ground-Water Discharge from the Edwards and Associated Limestones, San Antonio Area, Texas, 1973

Bulletin 32

Edwards Underground Water District
San Antonio, Texas



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

EDWARDS UNDERGROUND WATER DISTRICT

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BULLETIN 32

GROUND-WATER DISCHARGE FROM THE EDWARDS AND ASSOCIATED
LIMESTONES, SAN ANTONIO AREA, TEXAS, 1973

Compiled by

R. A. Rappmund
U. S. Geological Survey

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ABSTRACT

The estimated total well and spring discharge from the Edwards and associated limestones in the San Antonio area during 1973 was 838,000 acre-feet, which is the record high for the period 1934-73. The increase was due primarily to above-average springflow.

The total discharge from wells and springs for 1973 was about 12 percent more than in 1972, and 53 percent greater than the average for 1934-72.

About 37 percent of the total discharge came from wells, and approximately two-thirds of this discharge was from wells in Bexar County. Well discharge in 1973 was 16 percent less than in 1972, while springflow increased by about 41 percent.

INTRODUCTION

Records of ground-water discharge from the Edwards and associated limestones in the San Antonio area during 1973 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.

Those readers interested in using metric equivalents of the English units of measurements used in this report may convert to metric units by the following conversion factors:

From		Multiply by	To obtain	
Unit	Abbreviation		Unit	Abbreviation
acre-foot	ac-ft	1,233	cubic metre	m ³
		1.233×10^{-3}	cubic hectometre	hm ³
acre	ac	4,047	square metre	m ²
		0.4047	square hectometre	hm ²
million gallons per day	mgd	9.08×10^{-4}	cubic decimetre per second	dm ³ /s
		9.08×10^{-7}	cubic metre per second	m ³ /s

METHODS OF INVESTIGATION

The spring discharge was compiled from records of gages operated by the U. S. Geological Survey at points of discharge. Pumpage for agriculture was estimated from records of power consumption and irrigated acreage. Records of the annual canvass of pumpage in the San Antonio area by the Texas Water Development Board were used to compile municipal, military, and industrial usage.

GROUND-WATER DISCHARGE

The estimated discharge from the Edwards and associated limestones during 1973 is given in table 1. The discharge by springs was from San Marcos Springs in Hays County, Comal Springs in Comal County, San Antonio and San Pedro Springs in Bexar County, and the Leona River Springs in Uvalde County. The recorded discharge from Leona River Springs includes underflow through the gravel below the springs.

Major discharge by wells was from Bexar, Uvalde, and Medina Counties, while the major springflow was from Comal and Hays Counties. Wells in Bexar County supplied water for municipal and military use. Other wells in Bexar County and most of the large wells in Uvalde and Medina Counties supplied the irrigation needs for an estimated 65,000 acres. The remaining discharge, principally from wells in Bexar County, was for industrial, domestic, stock, and miscellaneous purposes.

The 1973 estimated total well and spring discharge from the Edwards and associated limestones was 838,000 acre-feet, which is the record high for the period 1934-73. The increase was due primarily to above-average springflow. About 37 percent of the total discharge came from wells, and approximately two-thirds of this discharge was from wells in Bexar County. Well discharge in 1973 was 16 percent less than in 1972, while springflow increased by about 41 percent.

The total discharge from wells and springs was about 12 percent more than 1972. Compared to the 1934-72 average, the total discharge was 53 percent greater.

Table 1.--Estimated discharge from the Edwards and associated limestones in the San Antonio area, 1973

(in millions of gallons per day)

County	Springs	Municipal and military	Agriculture	Industry	Domestic stock and misc.	Million gallons per day	Thousand acre-feet per year
Kinney	-	-	-	-	0.2	0.2	0.2
Uvalde	31.5	3.5	48.7	-	2.3	86.0	96.3
Medina	-	1.9	10.7	0.1	.6	13.3	14.9
Bexar	48.7	141.4	13.4	15.2	25.0	243.7	273.0
Comal	249.6	6.4	.2	1.5	.5	258.2	289.3
Hays	141.2	4.9	.4	-	.2	146.7	164.3
Total million gallons per day	471.0	158.1	73.4	16.8	28.8	748.1	
Total thousand acre-ft per year	527.6	177.1	82.2	18.8	32.3		838.0

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