Hydrologic Data for Urban Studies in the Austin, Texas Metropolitan Area, 1972

By E. E. WEHMEYER

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Open-file report

Prepared in cooperation with the Texas Water Development Board

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U.S. Geological Survey

INTRODUCTION

The U.S. Geological Survey, in cooperation with the Texas Water Development Board, began hydrologic studies in the Austin urban area in 1954. The objectives of this project are as follows:

1. To determine the effects of progressive urbanization on infiltration, rates of peak discharge, and rainfall-runoff relations in the Waller Creek watershed.

2. To provide rainfall and runoff data from the rural Wilbarger Creek watershed to be used for comparative purposes in determining the effects of existing and progressive urbanization in the Waller Creek watershed.

3. To provide applied research facilities for studies at The University of Texas at Austin.

The purpose of this report is to present rainfall and runoff data for the Waller Creek and Wilbarger Creek study areas for the 1972 water year (October 1, 1971 to September 30, 1972).

To facilitate the publication and distribution of this report at the earliest feasible time, certain material has been included that does not conform to the formal publication standards of the U.S. Geological Survey.

For those readers interested in using the metric system, metric equivalents of English units of measurements are given in parentheses. The English units used in this report may be converted to metric units by the following conversion factors:

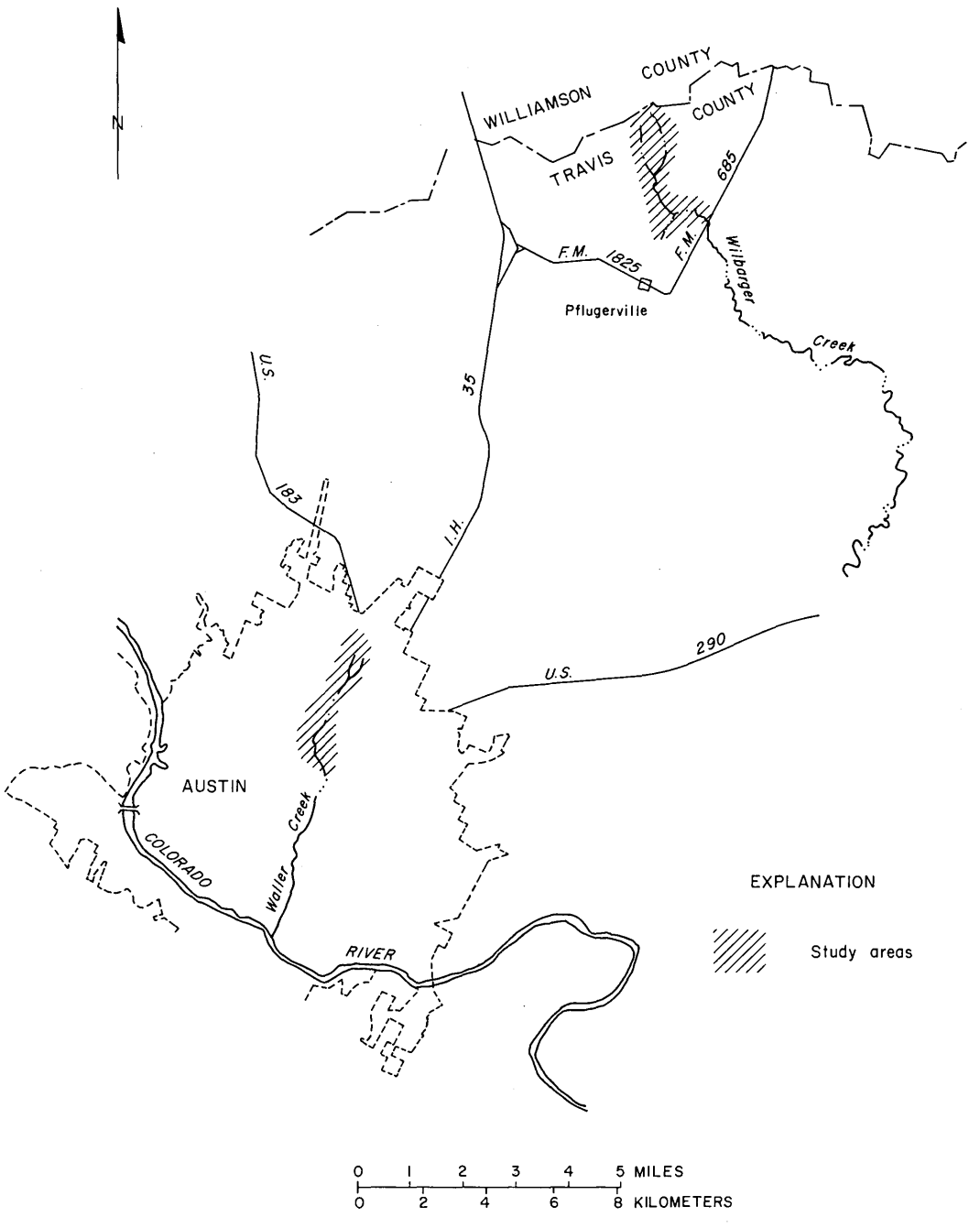
From Unit	Abbreviation	Multiply by	To obtain Unit	Abbreviation
inch	in	25.4	millimeter	mm
foot	ft	0.3048	meter	m
mile	mi	1.609	kilometer	km
square mile	mi^2	2.590	square kilometer	km^2
cubic foot per second	ft^3/s	28.32	cubic decimeter per second	dm^3/s
		0.02832	cubic meter per second	m^3/s
foot per mile	ft/mi	0.3048/1.609	meter per kilometer	m/km
acre-foot	ac-ft	1233	cubic meter	m^3
		1.233×10^{-3}	cubic hectometer	hm^3

WATERSHED FEATURES

Waller Creek Study Area

The Waller Creek drainage area (fig. 1) lies entirely within the city of Austin, with the headwaters originating in the northern part of the city. The creek flows south for 6.6 miles (10.6 kilometers) to the Colorado River. Storm sewers and street gutters divert runoff both into and out of the natural drainage area.

Throughout the year, low flow is partially sustained by return flow of city water from industrial and residential users. Low flow during the summer months is partly sustained by drainage from municipal and private swimming pools.



Base from General Highway Map of Texas

FIGURE 1.-Location of Waller Creek and Wilbarger Creek study areas

In 1954, 20.6 percent of the drainage area above 23d Street was impervious cover, i.e., streets, sidewalks, roofs, etc; this cover had increased to 28.6 percent by 1962 and to 35.2 percent by 1966. Impervious cover in the drainage area above 38th Street increased from 13 percent in 1954 to 21 percent in 1962 and to 33.3 percent in 1966. Soil in the watershed is predominantly clay, which is underlain by Cretaceous chalk that crops out along most of the channel.

The slope index for Waller Creek is 48.6 feet per mile (9.2 meters per kilometer) at 38th Street and 47.3 feet per mile (9.0 meters per kilometer) at 23d Street. These indices were computed by determining the difference in elevation between the two points that were 85 and 10 percent of the main channel distance upstream from the gaging station, and then dividing by the distance between the two points.

Records of the Environmental Data Service show that the mean-annual rainfall (based on the period 1931-60), approximately 1.5 miles (2 kilometers) east of the watershed, is 32.58 inches (827.5 millimeters). Rainfall is generally well distributed throughout the year; however, individual storms may cause serious flooding in any season. The major storms usually occur during the months of April-May and September-October.

Wilbarger Creek Study Area

The headwaters of Wilbarger Creek originate in Travis County near the Williamson County line (fig. 1). The creek flows southeasterly about 40 miles (64 kilometers) to the Colorado River. The Wilbarger Creek study area is about 15 miles (24 kilometers) north of the city of Austin.

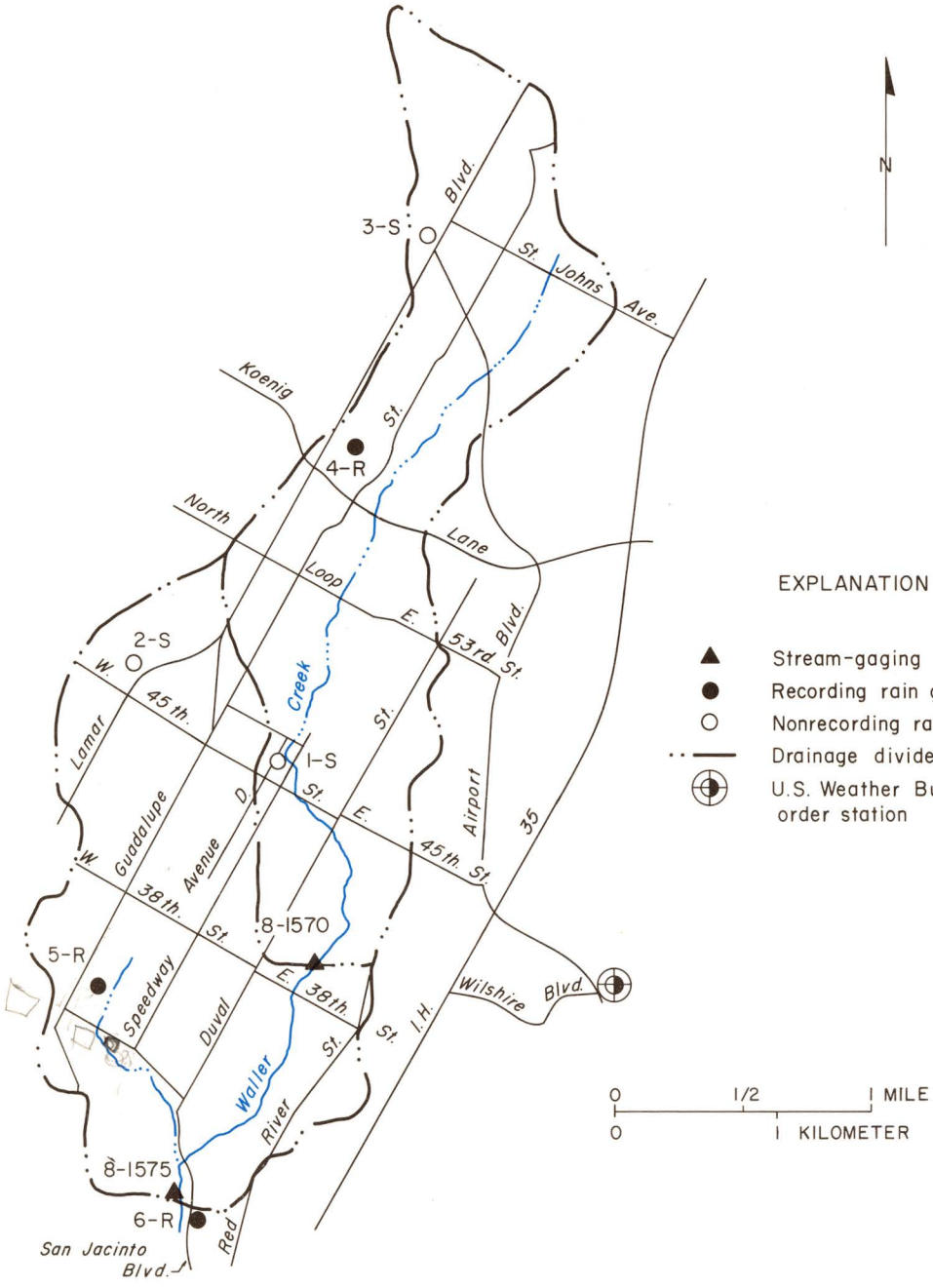
The Soil in the watershed is predominantly clay, which is underlain by Cretaceous chalk that crops out at many places along the channel. The principal land use is farming and ranching.

The slope index, calculated by the 85-10 percent method, is 39.2 feet per mile (7.4 meters per kilometer). Runoff characteristics are slightly affected by farming practices, stock tanks, and vegetation.

HYDROLOGIC INSTRUMENTS

Waller Creek Study Area

Instruments to collect rainfall and runoff data in the Waller Creek study area consist of a network of three recording and three nonrecording rain gages and two stream-gaging stations. Figure 2 shows the locations of instruments in the study area.



Base from General Highway Map of Texas

FIGURE 2.-- Locations of hydrologic-instrument installations in the Waller Creek study area

The rain gages are distributed in the study area to measure the total rainfall and to define rainfall intensities on the watershed.

One stream-gaging station is maintained at 38th Street and the other at 23d Street. Low-water concrete controls were constructed at each stream-gaging station to stabilize the stage-discharge relationship. Records at the 38th Street station began April 5, 1955, and at the 23d Street station on December 23, 1954. Pertinent station information and records of daily, monthly, and yearly runoff for the 1972 water year for both stations are included in the section "Compilation of Data".

Wilbarger Creek Study Area

Instruments to collect rainfall and runoff data in the Wilbarger Creek study area consist of a network of three recording rain gages and one stream-gaging station. Figure 3 shows the locations of instruments in the study area.

The rain gages are distributed in the study area to measure the total rainfall and to define rainfall intensities on the watershed.

A continuous-recording stream-gaging station equipped with a concrete low-water control is maintained on Wilbarger Creek. Records at this station began August 9, 1963. Pertinent station information and records of daily, monthly, and yearly runoff for the 1972 water year are included in the section "Compilation of Data".

SUMMARY OF DATA FOR WALLER CREEK, 1972 WATER YEAR

The weighted-mean rainfall in the study area upstream from 38th Street was 35.41 inches (899.4 millimeters), 9 percent above the mean annual rainfall for Austin of 32.58 inches (827.5 millimeters). Mean daily discharge was 1.60 ft^3/s (cubic feet per second) or 45.3 dm^3/s (cubic decimeters per second); annual runoff was 9.40 inches (238.8 millimeters), or 27 percent of rainfall.

The weighted-mean rainfall in the study area upstream from 23d Street was 34.94 inches (887.5 millimeters), 7 percent above the mean annual rainfall for Austin. Mean daily discharge was 3.44 ft^3/s (94.4 dm^3/s); annual runoff was 11.34 inches (288.0 millimeters), or 32 percent of rainfall.

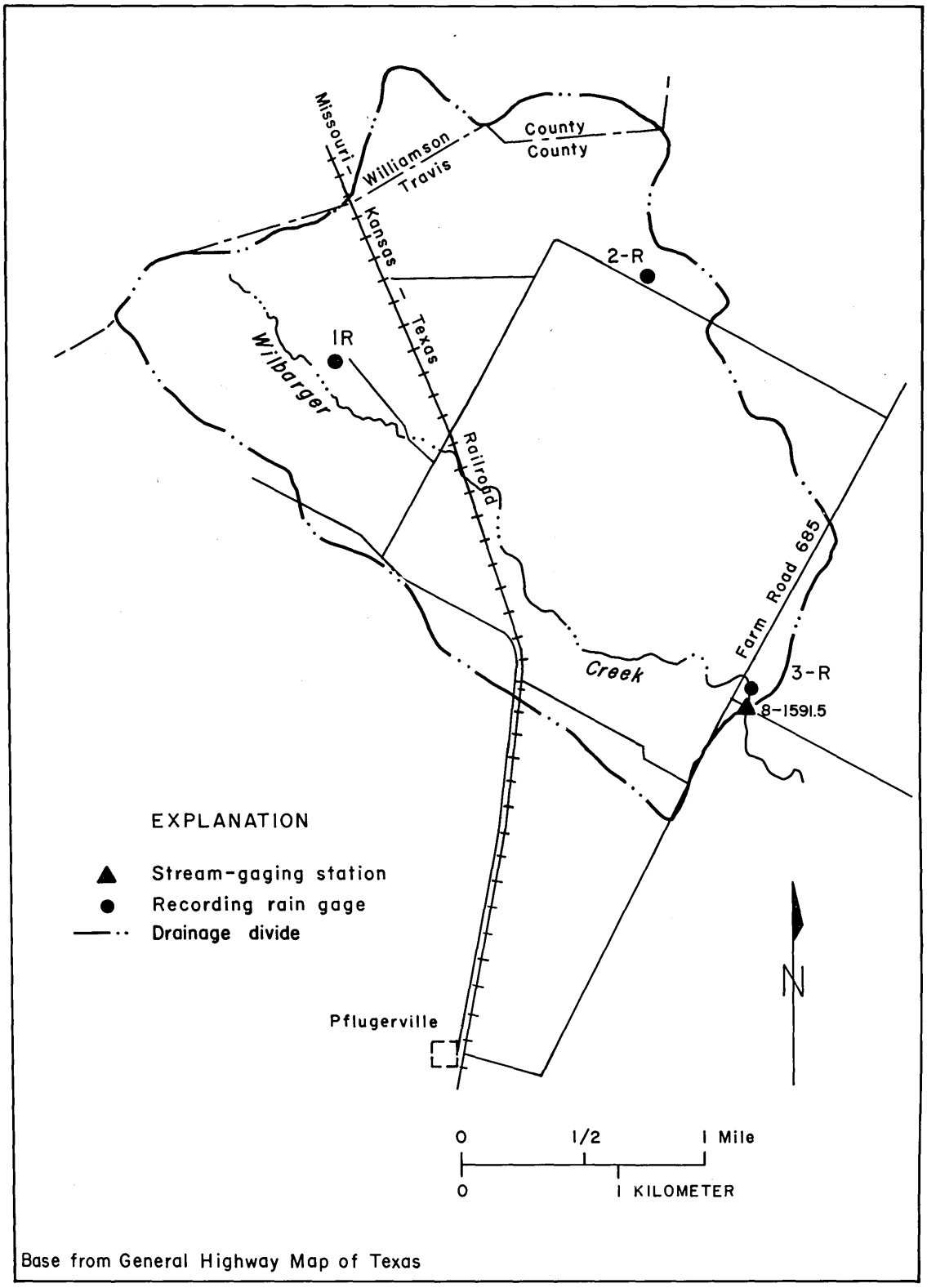


FIGURE 3.-- Locations of hydrologic-instrument installations in the Wilbarger Creek study area

A storm event is defined as a period of rainfall separated by at least 6 hours from other rainfall. Storms are selected for detailed rainfall-runoff computations on the basis of rainfall totals and distribution, the peak discharge produced from the rainfall, and the assurance of good rainfall and runoff records for the storm periods selected.

Two storm periods, November 17-18, 1971 and May 1-2 1972, were selected for analysis. A summary of rainfall-runoff data for each storm is shown in table 1. Computations with hydrograph and mass curves for each storm are included in the section "Compilation of Data".

SUMMARY OF DATA FOR WILBARGER CREEK, 1972 WATER YEAR

Weighted-mean rainfall in the study area was 30.35 inches (770.9 millimeters), 7 percent below the mean annual rainfall for Austin. Mean daily discharge was 0.96 ft^3/s (27.2 dm^3/s); annual runoff was 2.83 inches (71.9 millimeters), or 9 percent of rainfall.

Three storm periods, November 17-18, 1971, December 5, 1971, and May 1-2, 1972 were selected for analysis. A summary of rainfall-runoff data for each storm is shown in table 1. Computations with hydrograph and mass curves for each storm are included in the section "Compilation of Data".

TX-35
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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 1.--Storm rainfall-runoff data, 1972 water year

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (ft^3/s)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			
Waller Creek at 38th St., Austin, Texas (Drainage area, 2.31 mi^2)								
Nov. 17-18, 1971	15.5	3.86	.55	1.00	1.08	.91	.24	388
May 1-2, 1972	12.2	2.79	.79	1.49	2.01	1.10	.39	1,400
Waller Creek at 23rd St., Austin, Texas (Drainage area 4.13 mi^2)								
Nov. 17-18, 1971	16.2	3.68	.52	.82	1.10	1.00	.27	765
May 1-2, 1972	12.5	2.81	.78	1.36	1.98	1.06	.38	2,160

TX-35
6/69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 1.--Storm rainfall-runoff data, 1972 water year

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (ft^3/s)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			
Wilbarger Creek near Pflugerville, Texas (Drainage area, 4.61 mi^2)								
Nov. 17-18, 1971	16.5	4.22	.69	1.13	1.43	.41	.10	563
Dec. 5, 1971	10.5	1.12	.18	.36	.43	.25	.22	158
May 1-2, 1972	5.8	2.70	.45	.79	1.27	.32	.12	464

COLORADO RIVER BASIN

08157000 Waller Creek at 38th Street, Austin, Tex. 1/

LOCATION.--Lat 30°17'49", long 97°43'36", Travis County, on right bank 200 ft upstream from bridge at East 38th Street in Austin, 1.1 miles upstream from West Branch of Waller Creek, and 3.3 miles upstream from Colorado River.

DRAINAGE AREA.--2.31 sq mi.

PERIOD OF RECORD.--April 1955 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 555.44 ft above mean sea level.

AVERAGE DISCHARGE.--17 years, 1.66 cfs (9.76 inches per year, 1,200 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,400 cfs May 2 (gage height, 7.09 ft); minimum daily, 0.08 cfs Sept. 16, 18, 20.
Period of record: Maximum discharge, 1,970 cfs Oct. 29, 1960 (gage height, 7.77 ft); no flow for many days in 1955-57, 1964.

REMARKS.--Records good. Flow slightly regulated at times by a small reservoir at Holy Cross High School (formerly St. Mary's Academy) on East 41st Street and a small swimming pool at the school which is drained into the creek every week or two during the summer. Water from other swimming pools also drain into the creek. Station is part of hydrologic research project to study rainfall-runoff relation for small urban areas. Two recording and three nonrecording rain gages are distributed in the area so that rainfall on the watershed can be determined.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	.13	2.2	.79	.94	.25	.25	11	.60	.42	.40	.13
2	.10	.12	18	.25	.38	.20	.23	57	.22	.42	.53	.45
3	2.3	.10	.61	.26	.26	.19	.19	.35	.60	.20	5.4	.45
4	4.5	.11	.36	1.5	.29	.20	.17	.29	.49	5.6	11	.53
5	.16	.12	35	.28	.43	.19	.18	7.5	.24	.53	.57	.13
6	.15	.13	3.0	.30	.44	.20	.19	7.5	.67	.46	.49	.10
7	.13	.12	.80	.25	.23	.23	.18	9.0	.44	.67	.20	.10
8	.18	.12	3.1	.24	.22	.21	.18	.73	.49	1.9	.48	.10
9	1.9	.13	3.4	.24	.25	.21	.18	.35	.75	.71	.44	.09
10	.15	.13	2.3	.22	.25	.21	.18	20	.51	2.5	.25	.10
11	.13	.14	.60	.21	2.0	.22	.17	1.2	.51	.44	.43	.09
12	.12	.17	.42	.20	.26	.22	.17	1.5	.25	.45	.53	.09
13	.12	.14	.51	.23	.19	.22	.17	6.7	.54	.43	.46	.09
14	.14	.11	.31	.21	.19	.22	.17	2.5	.48	.44	.21	.09
15	.12	.12	.27	.18	.20	.22	.14	.53	16	.42	.21	.09
16	.09	.16	.28	.19	.20	.22	.15	2.7	82	.43	.66	.08
17	.17	16	.24	.19	.22	.29	.16	.55	3.9	.31	.56	.12
18	.52	41	.22	.20	.21	.27	.14	.37	.82	2.7	.48	.08
19	.43	.23	.22	.20	.20	.22	.15	.32	.29	9.1	.41	.09
20	10	.18	.22	.20	.21	.42	.14	.29	.47	.54	.39	.08
21	.16	.16	.22	.20	.21	.23	4.1	.28	.51	.96	.19	.11
22	.15	4.4	.24	.20	.20	.19	.16	.29	.51	.75	7.7	.11
23	.22	1.4	.28	.20	.21	.17	.14	.31	.56	.48	2.8	.21
24	.13	.17	.31	.19	.20	.19	.14	.26	.48	.21	.71	1.2
25	.11	.17	.28	.21	.21	.20	.14	.23	.46	.43	.46	.12
26	.11	.15	.26	.19	.21	.20	.32	.21	.24	.41	4.8	11
27	5.9	.14	.25	.19	.21	.20	18	.21	.45	.45	.46	.40
28	.15	.13	.25	.19	.23	.19	2.1	.19	.47	.42	.17	.12
29	.15	.13	.26	9.7	.22	.19	.23	.20	.44	.41	.13	1.2
30	.14	.13	.27	5.4	------	.17	.22	.19	.46	.56	.13	1.2
31	.13	------	2.0	1.3	------	.17	------	.20	------	.16	.14	------
TOTAL	28.86	66.44	76.68	24.31	9.47	6.71	29.04	132.95	114.85	33.91	41.79	18.75
MEAN	.93	2.21	2.47	.78	.33	.22	.97	4.29	3.83	1.09	1.35	.63
MAX	10	41	35	9.7	2.0	.42	18	57	82	9.1	11	11
MIN	.09	.10	.22	.18	.19	.17	.14	.19	.22	.16	.13	.08
CFSM	.40	.96	1.07	.34	.14	.10	.42	1.86	1.66	.47	.58	.27
IN.	.46	1.07	1.23	.39	.15	.11	.47	2.14	1.85	.55	.67	.30
AC-FT	57	132	152	48	19	13	58	264	228	67	83	37
(††)	2.81	4.44	4.24	1.64	.35	.11	2.29	6.86	4.96	2.64	3.35	1.72

CAL YR 1971 TOTAL 431.21 MEAN 1.18 MAX 46 MIN .06 CFSM .51 IN 6.94 AC-FT 855 †† 29.12
WTR YR 1972 TOTAL 583.76 MEAN 1.60 MAX 82 MIN .08 CFSM .69 IN 9.40 AC-FT 1,160 †† 35.41

PEAK DISCHARGE (BASE, 300 CFS)

DATE	TIME	G.HT.	DISCHARGE	DATE	TIME	G.HT.	DISCHARGE
11-18	0015	5.15	388	5- 2	0030	7.09	1,400
12- 5	0445	5.13	380	6-16	1630	6.12	790

†† Weighted-mean rainfall, in inches.

1/This table reproduced from U.S. Geological Survey, 1972, Water Resources Data for Texas, Part 1, Surface Water Records.

9-220c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of 1 Sheets

8-1570.

Monthly and yearly weighted-mean rainfall in inches, of Waller Creek River at near 38th St., Austin, Tex.
[Drainage area, 2.31 square miles]

16—26489-5 U. S. GOVERNMENT PRINTING OFFICE

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL	Cal. Yr.
1956	-	-	-	-	-	0.49	0.60	3.00	1.40	0.44	1.37	0.21	-	
1957	1.31	2.04	2.08	0.49	2.73	3.49	9.37	7.07	5.06	.57	.03	6.85	41.09	50.37
1958	10.21	3.24	1.26	3.06	6.81	2.65	5.02	3.34	4.62	2.15	.84	7.20	50.40	43.99
1959	6.18	.92	1.20	.44	2.80	.26	4.86	2.20	3.30	4.39	5.07	4.00	35.62	38.60
1960	7.41	1.68	2.19	1.22	2.43	1.30	1.12	1.03	4.25	2.52	3.52	1.46	30.13	37.50
1961	12.11	2.13	4.41	1.48	5.03	.72	.15	1.21	11.95	8.37	.76	3.89	52.21	38.67
1962	1.01	2.36	1.74	.69	.99	1.19	4.87	1.43	8.71	.03	3.38	4.19	30.59	33.82
1963	3.96	1.26	3.12	.53	2.64	.24	2.77	1.42	3.59	.10	.47	1.30	21.40	16.92
1964	.91	1.68	1.27	2.85	1.51	2.25	1.47	1.91	5.71	1.19	1.62	7.91	30.28	34.36
1965	4.10	2.79	1.05	4.29	5.80	1.34	1.72	9.22	1.85	.32	.69	6.43	39.60	43.64
1966	3.50	3.33	5.15	1.42	2.73	.59	4.29	3.49	.94	.35	7.04	3.70	36.53	26.25
1967	.96	.08	.66	.15	1.43	.91	4.27	3.77	0	.99	5.03	6.71	24.96	36.13
1968	4.80	4.55	3.52	8.37	1.63	2.77	2.49	6.68	2.90	2.90	.77	2.98	44.36	38.35
1969	.58	5.59	.69	.40	4.16	2.90	4.92	2.91	2.13	.30	4.52	1.15	30.25	32.37
1970	3.26	.88	4.84	1.98	6.03	2.93	1.26	7.58	.21	.31	1.56	4.98	35.82	31.87
1971	4.92	0	.11	.04	.98	.59	1.08	1.47	2.16	1.56	7.09	2.66	22.66	29.12
1972	2.81	4.44	4.24	1.64	.35	.11	2.29	6.86	4.96	2.64	3.35	1.72	35.41	

9-220 c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

8-1570

Monthly and yearly mean discharge, in ft^3/s, of Waller Creek at 38th Street, Austin, Tex.
[Drainage area, 2.31 square miles]

16—26489-5 U. S. GOVERNMENT PRINTING OFFICE

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
1955	-	-	-	-	-	-	0.15	0.78	0.37	0.30	0.28	0.04	-
1956	0	0.04	0.24	0.21	0.29	0.05	.03	.62	.24	.20	.27	.04	0.19
1957	.05	.39	.38	.11	.84	.90	5.87	4.21	5.26	.77	.68	1.94	1.77
1958	9.52	1.70	1.14	1.82	7.91	1.92	2.82	2.87	2.77	1.80	1.05	2.62	3.13
1959	2.63	1.53	1.43	1.04	1.65	1.00	2.72	.93	1.42	2.07	1.65	1.75	1.65
1960	3.59	1.14	1.12	.87	1.17	.92	.72	.54	1.82	1.26	1.52	.67	1.28
1961	10.0	1.41	2.86	1.59	3.99	.82	.47	.60	8.28	6.07	.97	2.17	3.27
1962	.78	1.19	1.02	.80	.82	.89	1.96	.82	5.81	.70	2.30	2.02	1.59
1963	1.40	.59	1.32	.67	1.91	.59	1.68	.65	1.52	.85	.84	.56	1.04
1964	.22	.34	.44	1.00	.82	1.04	.59	.64	3.18	.55	.62	4.23	1.13
1965	2.07	1.30	.68	2.66	4.85	1.00	1.23	6.10	1.39	.84	.90	3.03	2.15
1966	1.97	1.87	3.10	.89	1.73	.76	2.06	1.62	.89	.59	3.21	1.32	1.67
1967	.46	.22	.29	.21	.57	.35	1.72	1.32	.45	.55	2.34	3.07	.96
1968	2.67	3.44	2.10	10.1	1.47	2.11	1.56	4.44	1.83	1.80	.66	1.04	2.78
1969	.35	2.19	.57	.37	2.59	1.60	2.60	1.66	1.33	.55	2.29	.55	1.38
1970	1.01	.31	2.16	1.00	4.50	2.19	.73	4.53	.63	.54	.77	1.58	1.65
1971	2.45	.26	.22	.23	.49	.38	.51	.52	1.01	.74	3.68	.94	.96
1972	.93	2.21	2.47	.78	.33	.22	.97	4.29	3.83	1.09	1.35	.63	1.60

COLORADO RIVER BASIN

08157500 Waller Creek at 23d Street, Austin, Tex. 1/

LOCATION.--Lat 30°17'08", long 97°44'01", Travis County, on San Jacinto Boulevard, 50 ft upstream from bridge on East 23d Street in Austin, and 2.1 miles upstream from Colorado River.

DRAINAGE AREA.--4.13 sq mi.

PERIOD OF RECORD.--December 1954 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 509.95 ft above mean sea level.

AVERAGE DISCHARGE.--17 years, 3.58 cfs (11.77 inches per year, 2,590 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,160 cfs May 2 (gage height, 6.91 ft); minimum daily, 0.42 cfs Nov. 7.
Period of record: Maximum discharge, 3,710 cfs Oct. 29, 1960 (gage height, 7.96 ft); minimum daily, 0.2 cfs at times in 1955-57.
Maximum flood since 1885 occurred Apr. 22, 1915, stage unknown.

REMARKS.--Records good. Some regulation by small dam upstream. Diversion of city water into channel during the summer months from municipal and private swimming pools. Some diversions into and out of drainage area by storm sewers. Station is part of a hydrologic research project to study rainfall-runoff relation for small urban areas. Three recording and three nonrecording rain gages located in watershed.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.81	.56	4.3	1.6	2.2	1.0	.70	17	1.4	1.2	.95	.86
2	.77	.59	33	.69	1.1	.81	.72	101	1.1	1.2	1.6	1.0
3	4.5	.54	1.3	.90	.89	.85	.86	1.4	1.2	1.2	9.6	1.1
4	7.9	.58	.86	3.0	.99	.86	.80	1.2	1.2	11	27	1.2
5	.87	.58	62	.82	1.3	.71	.94	14	1.1	1.4	1.3	.99
6	.82	.63	5.5	.88	1.3	1.1	1.0	14	1.3	1.3	1.2	.85
7	.77	.42	1.6	.87	1.1	1.2	1.0	20	1.3	1.5	1.1	.89
8	1.2	.58	6.1	.84	1.1	1.1	.91	2.1	1.5	2.4	1.1	.88
9	5.0	.72	6.7	.96	1.1	1.0	.92	1.4	2.5	1.6	1.2	.85
10	.74	.76	3.8	1.1	1.3	.96	1.0	37	1.6	3.3	1.2	.85
11	.72	.62	1.3	.90	4.0	.97	1.0	3.3	1.4	1.1	1.2	.93
12	.75	.73	1.2	.93	1.2	.90	1.1	3.8	1.3	1.3	1.3	.93
13	.72	.64	1.4	.92	.93	.95	.99	17	1.6	1.2	1.1	1.2
14	.94	.60	1.3	.77	1.0	.99	.98	5.9	1.4	1.2	1.1	.98
15	.83	.76	1.2	.68	1.0	1.0	.87	1.9	17	1.1	.95	1.0
16	.74	.70	1.0	.67	1.0	.92	.86	6.3	132	1.0	1.3	.91
17	1.1	31	.83	.85	.98	.99	.83	1.9	6.6	1.8	1.2	.90
18	1.4	80	.74	.99	.96	.96	.91	1.5	2.2	3.3	1.4	.99
19	1.7	.88	.84	1.1	.85	.81	.93	1.3	1.5	14	2.5	.93
20	21	.76	.93	1.1	.89	1.5	.88	1.2	1.3	1.4	1.1	.98
21	.82	.84	.98	.99	1.1	1.1	8.5	1.1	1.5	2.6	1.2	1.0
22	.84	7.8	.88	.93	1.1	1.7	.89	1.2	1.4	4.2	25	.98
23	.93	2.8	.91	.97	1.1	1.7	.86	1.3	1.4	1.2	6.2	2.0
24	.77	.60	.94	1.1	1.1	1.1	.97	1.5	1.3	1.2	1.9	4.2
25	.56	.54	.85	.90	1.1	.98	.97	1.2	1.2	1.0	1.2	1.0
26	.69	.64	.81	.86	1.0	.93	2.1	1.1	1.3	1.2	9.4	24
27	12	.65	.98	1.0	.90	1.1	35	1.0	1.2	1.2	1.3	1.8
28	.61	.66	1.0	.80	1.1	1.1	6.5	.98	1.3	1.2	1.0	.93
29	.58	.67	1.2	17	1.0	.84	1.0	1.0	1.3	1.1	.87	1.5
30	.54	.66	1.1	9.6	------	.59	.94	.99	1.3	1.2	.84	2.4
31	.51	------	4.6	3.2	------	.67	------	.98	------	1.1	.82	------
TOTAL	72.13	138.51	150.15	57.92	34.69	31.39	75.93	265.55	193.7	70.7	109.13	59.03
MEAN	2.33	4.62	4.84	1.87	1.20	1.01	2.53	8.57	6.46	2.28	3.52	1.97
MAX	21	80	62	17	4.0	1.7	35	101	132	14	27	24
MIN	.51	.42	.74	.67	.85	.59	.70	.98	1.1	1.0	.82	.85
CFSM	.56	1.12	1.17	.45	.29	.24	.61	2.08	1.56	.55	.85	.48
IN.	.65	1.25	1.35	.52	.31	.28	.68	2.39	1.74	.64	.98	.53
AC-FT	143	275	298	115	69	62	151	527	384	140	216	117
(††)	2.78	4.21	4.24	1.64	.33	.09	2.36	7.11	4.37	2.38	3.64	1.79

CAL YR 1971 TOTAL 1,040.22 MEAN 2.85 MAX 80 MIN .42 CFSM .69 IN 9.37 AC-FT 2,060 †† 28.92
WTR YR 1972 TOTAL 1,258.83 MEAN 3.44 MAX 132 MIN .42 CFSM .83 IN 11.34 AC-FT 2,500 †† 34.94

PEAK DISCHARGE (BASE, 800 CFS)

DATE	TIME	G.HT.	DISCHARGE
5- 2	0030	6.91	2,160
6-16	1600	5.10	975
8-22	1800	4.88	860

†† Weighted-mean rainfall, in inches.

1/This table reproduced from U.S. Geological Survey, 1972, Water Resources Data for Texas, Part 1, Surface Water Records.

9-2200
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of 1 Sheets

8-1575.

Monthly and yearly weighted-mean rainfall in inches, of Waller Creek at 23rd St., Austin, Tex.
[Drainage area, 4.13 square miles]

16—26489-5 U. S. GOVERNMENT PRINTING OFFICE

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL	Cal. Yr.
1956	-	-	-	-	-	0.42	0.58	3.08	1.04	0.43	1.38	0.21	-	
1957	1.31	2.06	2.08	0.50	2.51	3.73	9.53	6.84	5.04	.63	.02	6.70	40.95	49.99
1958	10.11	3.14	1.24	3.05	6.62	2.60	4.82	3.16	4.02	2.02	.68	7.32	48.78	42.38
1959	6.01	.88	1.20	.44	2.69	.22	4.80	2.04	3.41	4.79	4.70	4.04	35.22	38.23
1960	7.22	1.67	2.21	1.17	2.35	1.29	1.12	.98	4.34	2.39	3.60	1.49	29.83	37.93
1961	12.53	2.17	4.50	1.44	4.92	.67	.18	1.09	11.98	8.27	.88	3.82	52.47	38.19
1962	.94	2.30	1.68	.65	.92	1.20	4.82	1.39	8.32	.02	3.75	4.35	30.34	33.49
1963	3.83	1.12	3.12	.49	2.64	.22	2.92	1.16	3.56	.07	.49	1.27	20.89	16.74
1964	.86	1.70	1.36	3.00	1.56	2.14	1.46	1.75	5.52	.98	1.74	8.00	30.06	34.12
1965	4.16	2.78	1.04	4.36	5.79	1.46	1.85	9.92	1.57	.32	.65	6.38	40.28	44.34
1966	3.58	3.41	5.05	1.33	2.86	.62	4.06	3.52	.89	.32	7.33	3.86	36.83	26.62
1967	1.02	.10	.71	.17	1.43	.87	4.40	3.87	0	.80	5.09	6.32	24.78	35.62
1968	4.62	4.54	3.51	8.63	1.56	2.53	2.38	7.28	2.69	2.87	.82	2.82	44.25	38.44
1969	.60	5.62	.64	.34	4.08	2.78	4.97	3.03	2.18	.27	4.85	1.32	30.68	32.71
1970	3.27	.83	4.79	1.92	5.85	2.81	1.24	6.91	.23	.43	1.88	4.79	34.95	31.01
1971	4.86	0	.09	.04	.90	.69	1.06	1.50	2.39	1.84	6.39	2.88	22.64	28.92
1972	2.78	4.21	4.24	1.64	.33	.09	2.36	7.11	4.37	2.38	3.64	1.79	34.94	

9-220 c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

8-1575.

Monthly and yearly mean discharge, in ft^3/s, of Waller Creek @ 23rd St Austin, Tex.
[Drainage area, 4.13 square miles]

16—20489-5 U. S. GOVERNMENT PRINTING OFFICE

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
1955	-	-	-	1.29	3.92	1.21	0.86	3.70	1.80	1.04	0.81	0.56	-
1956	0.55	0.72	0.84	.75	1.21	.56	.59	2.53	.76	.79	1.08	.60	0.92
1957	.97	1.44	1.31	.52	2.35	3.55	12.7	9.02	11.1	1.82	1.42	4.39	4.19
1958	18.1	3.63	2.50	4.09	14.7	4.42	6.98	6.45	5.50	4.32	2.37	6.11	6.55
1959	5.62	2.51	2.03	1.58	3.03	1.67	6.44	2.27	3.15	5.13	3.47	4.28	3.43
1960	8.92	2.77	2.63	2.27	3.21	2.52	2.12	1.65	4.12	2.70	3.15	1.81	3.16
1961	21.7	3.20	5.45	3.71	8.81	2.17	1.47	1.95	18.7	14.8	2.15	4.20	7.36
1962	1.63	2.85	2.32	1.66	1.88	2.02	4.31	1.91	10.8	1.33	5.21	4.67	3.37
1963	4.07	1.33	2.84	1.24	3.90	1.42	4.34	1.90	3.82	1.70	1.74	1.76	2.49
1964	1.10	1.22	1.14	2.30	1.86	2.36	1.60	1.68	6.66	1.51	1.79	9.54	2.71
1965	5.24	2.98	1.59	5.02	8.84	2.33	2.53	14.7	2.91	1.80	1.85	6.41	4.66
1966	3.44	3.49	5.20	1.65	3.14	1.64	3.48	3.10	1.66	1.42	6.91	2.72	3.16
1967	1.14	.63	.83	.65	1.37	1.01	4.00	3.03	1.06	1.25	4.91	5.41	2.11
1968	5.01	5.79	3.85	14.7	2.91	3.61	2.90	8.56	3.29	3.79	1.61	2.13	4.87
1969	1.01	4.06	1.17	.95	4.56	2.73	4.34	3.85	2.65	1.30	4.37	1.61	2.70
1970	2.46	1.26	3.67	2.12	7.77	4.07	1.68	7.73	1.58	1.42	1.96	3.44	3.24
1971	4.89	.94	.86	1.05	1.64	1.48	1.60	1.70	2.99	2.43	6.83	2.61	2.43
1972	2.33	4.62	4.84	1.87	1.20	1.01	2.53	8.57	6.46	2.28	3.52	1.97	3.44

COLORADO RIVER BASIN

08159150 Wilbarger Creek near Pflugerville, Tex. 1/

LOCATION.--Lat 30°27'16", long 97°36'02", Travis County, on left bank downstream from county road (Pfluger Lane), 800 ft downstream from Farm Road 685, 1.6 miles northeast of Pflugerville, and 1.9 miles downstream from Missouri-Kansas-Texas Railroad.

DRAINAGE AREA.--4.61 sq mi.

PERIOD OF RECORD.--August 1963 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 670.61 ft above mean sea level.

AVERAGE DISCHARGE.--9 years, 1.84 cfs (5.42 inches per year, 1,330 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 563 cfs Nov. 18 (gage height, 4.28 ft); no flow for many days.
Period of record: Maximum discharge, 1,760 cfs June 16, 1964 (gage height, 6.92 ft); no flow at times each year.
Maximum stage since at least 1894, occurred in September 1921, stage unknown, from information by local residents.

REMARKS.--Records good. Station is part of a hydrologic research project to study rainfall-runoff relations for small urban-rural areas. Three recording rain gages located in watershed above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	.11	2.3	2.1	.33	.13	.02	.21	.07	.02	
2		0	4.8	1.8	1.8	.33	.12	40	.21	.06	.03	
3		0	.81	1.8	.99	.30	.11	.55	.21	.04	.05	
4		0	.52	2.0	.88	.25	.09	.38	.20	.32	.05	
5		0	31	1.2	.91	.25	.11	.33	.17	.17	.03	
6		0	9.0	1.7	1.3	.25	.11	13	.15	.10	.03	
7		0	5.1	1.5	.96	.25	.10	3.1	.15	.09	.02	
8		0	3.7	1.5	.88	.25	.07	2.2	.15	.08	.02	
9		0	8.3	1.5	.88	.25	.06	1.2	.19	.08	.02	
10		0	8.2	1.5	.88	.25	.06	7.5	.21	.08	.03	
11		0	3.6	1.4	1.4	.25	.08	5.1	.21	.08	.04	
12		0	2.9	1.2	1.4	.25	.07	5.4	.21	.08	.04	
13		0	2.6	1.0	1.0	.25	.05	3.6	.21	.07	.03	
14		0	2.7	.91	.89	.24	.04	3.1	.21	.05	.02	
15		0	2.0	.69	.84	.21	.04	2.4	.24	.04	.02	
16		0	1.8	.62	.72	.20	.03	2.0	8.4	.04	.02	
17		1.1	1.6	.62	.65	.18	.02	2.7	1.7	.04	.02	
18		50	1.5	.83	.53	.17	.02	1.8	.68	.04	.03	
19		.10	1.5	.88	.49	.15	.02	1.4	.45	.06	.01	
20		.07	1.4	.88	.49	.20	.02	1.1	.34	.08	.01	
21		.06	1.2	.88	.49	.25	.02	.98	.25	.03	0	
22		.10	.98	.87	.49	.21	.02	.79	.23	.06	0	
23		.96	.98	.64	.49	.21	.02	.55	.18	.07	0	
24		.15	.98	.55	.49	.20	.02	.55	.18	.04	.02	
25		.15	.98	.55	.46	.18	.02	.53	.17	.03	.01	
26		.14	.98	.52	.43	.18	.03	.37	.13	.02	0	
27		.13	.98	.49	.41	.17	.06	.33	.13	.02	0	
28		.12	.98	.49	.33	.14	.11	.32	.12	.02	0	
29		.09	.98	3.5	.33	.13	.07	.28	.10	.02	0	
30		.09	1.8	2.9	------	.13	.04	.25	.08	.02	0	
31		------	1.3	1.7	------	.13	------	.24	------	.02	0	------
TOTAL	0	53.26	105.28	38.92	23.91	6.74	1.76	102.07	16.07	2.02	.57	0
MEAN	0	1.78	3.40	1.26	.82	.22	.059	3.29	.54	.065	.018	0
MAX	0	50	31	3.5	2.1	.33	.13	40	8.4	.32	.05	0
MIN	0	0	.11	.49	.33	.13	.02	.02	.08	.02	0	0
CFSM	0	.39	.74	.27	.18	.05	.01	.71	.12	.01	.004	0
IN.	0	.43	.85	.31	.19	.05	.01	.82	.13	.02	.004	0
AC-FT	0	106	209	77	47	13	3.5	202	32	4.0	1.1	0
(††)	2.68	4.84	3.82	1.34	.45	.44	.87	5.86	2.62	2.02	3.85	1.56

CAL YR 1971 TOTAL 166.15 MEAN .46 MAX 50 MIN 0 CFSM .10 IN 1.34 AC-FT 330 †† 24.27
WTR YR 1972 TOTAL 350.60 MEAN .96 MAX 50 MIN 0 CFSM .21 IN 2.83 AC-FT 695 †† 30.35

PEAK DISCHARGE (BASE, 400 CFS).--Nov. 18 (0030) 563 cfs (4.28 ft); May 2 (0145) 464 cfs (3.94 ft).

†† Weighted-mean rainfall, in inches.

1/This table reproduced from U.S. Geological Survey, 1972, Water Resources Data for Texas, Part 1, Surface Water Records.

9-220c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of 1 Sheets

8-1591.5

Monthly and yearly weighted-mean rainfall in inches, of Wilbarger Creek near Pflugerville, Tex.

[Drainage area, 4.61 square miles]

16—26480-5 U. S. GOVERNMENT PRINTING OFFICE

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL	Cal. Yr.
1964	1.33	1.85	1.44	2.86	1.43	2.24	2.87	4.70	7.43	0.23	1.59	7.52	35.49	38.01
1965	2.99	2.97	1.18	5.07	6.39	.87	1.65	5.87	2.00	.23	3.23	4.97	37.42	40.75
1966	2.60	3.36	4.51	1.40	2.86	.71	5.64	2.67	1.63	.15	4.95	4.00	34.48	25.43
1967	.55	.10	.77	.28	1.94	.85	4.01	4.60	0	.64	2.46	4.87	21.07	32.15
1968	5.13	4.10	3.27	8.17	1.63	2.32	2.62	6.55	4.00	2.36	2.37	3.20	45.72	39.32
1969	.29	4.69	1.12	.32	3.97	2.80	4.63	1.33	2.76	.18	4.85	.98	27.92	29.98
1970	3.33	.66	4.17	1.59	5.20	3.50	.95	7.58	.36	.49	.63	5.21	33.67	30.89
1971	5.30	0	.08	0	1.09	.93	1.01	1.12	.95	1.23	4.95	1.65	18.31	24.27
1972	2.68	4.84	3.82	1.34	.45	.44	.87	5.86	2.62	2.02	3.85	1.56	30.35	

9-220 c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of 1 Sheets

8-1591.5

Monthly and yearly mean discharge, in ft^3/s, of Wilbarger Creek near Pflugerville, Tex.
[Drainage area, 4.61 square miles]

16—20489-5 U. S. GOVERNMENT PRINTING OFFICE

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
1963	-	-	-	-	-	-	-	-	-	-	0	0	-
1964	0	0	0	0	0	0.03	1.67	4.23	10.4	0.07	0	2.02	1.53
1965	.43	1.62	.71	6.45	15.4	2.01	.75	3.32	.57	.05	.08	.72	2.59
1966	.13	1.50	7.36	1.88	3.73	2.01	5.90	3.57	.18	.03	.18	.79	2.26
1967	.26	.10	.12	.091	.15	.043	.30	1.87	.042	0	.0003	.026	.25
1968	.97	6.03	5.69	16.7	3.80	4.63	3.15	8.59	2.27	1.18	.078	.085	4.45
1969	.020	.16	.46	.22	3.74	5.43	7.07	.89	.15	.011	.019	.012	1.49
1970	.006	.003	.51	1.26	9.53	11.4	1.07	8.94	1.37	.058	.002	.013	2.82
1971	2.29	.26	.15	.095	.068	.059	.029	0	0	0	.002	0	.25
1972	0	1.78	3.40	1.26	.82	.22	.059	3.29	.54	.065	.018	0	.96

Form TX-88
10-69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

RAINFALL DATA SUMMARY

STUDY AREA WALLER CREEK

1972 WATER YEAR

Date of storm	1-S	2-S	3-S	4-R	5-R	6-R	W.M.R. 23 RD	W.M.R. 38 TH	W.M.R. 23 RD *	W.M.R. 38 TH *	W.M.R. 23 RD **	W.M.R. 38 TH **
	.264	.101	.190	.161	.187	.097						
	.360	.006	.338	.287	.009	—						
	.264	.101	—	.351	.187	.097						
	.360	.006	—	.625	.009	—						
	—	.232	—	.378	.232	.158						
	—	.259	—	.574	.167	—						
OCT. 3-4	.75	.75		.82	.62	.57						
5	.01	.02		-	.01	-						
8	-	T		.08	.09	.07						
8-9	-	.25		.21	-	-						
9	.41			-	(.50)	.46						
14	.06	-		.02	-	-						
17	.15	T		.10	.04	.05						
18	.08	.12		.05	.03	.05						
19	-	.05		-	-	.08						
19-20	.96	.75		.74	.91	1.00						
23	.05	-		.03	-	-						
26-27	.62	.56		.61	-	-						
27	T	-		-	.50	.57						
OCT. TOTALS	3.09	2.50		2.66	2.70	2.85			2.78	2.81		
NOV. 15		T		.05	-	-						
17-18		4.00		3.90	3.50	2.92						
18		-		-	.04	-						
22		.57		.53	.37	.37						
30		T		.04	.05	.02						
NOV. TOTALS		4.57		4.52	3.96	3.31					4.21	4.44
DEC. 1-2		.85		1.36	1.52	.81						
2		.62		-	-	.66						
4-5		1.62		(1.66)	1.51	1.47						
5-6		.14		(.14)	.17	.20						
6		.10		.04	.09	.06						
8		.32		.24	.23	(.27)						
9		.36		.38	.27	(.31)						
11		T		.04	.04	.02						
12		.05		.05	.05	.01						
13		T		.02	.02	.01						

( ) AMOUNT ESTIMATED * USE THESE FACTORS WHEN 3-S NOT IN OPERATION

** do 1-S & 3-S do

RAIN GAGE

1972 WATER YEAR

Date of storm	1-S	2-S	3-S	4-R	5-R	6-R	W.M.R. 23RD	W.M.R. 38TH	W.M.R. 23RD *	W.M.R. 38TH *	W.M.R. 23RD * *	W.M.R. 38TH * *
	.264	.101	.190	.161	.187	.097						
	.360	.006	.338	.287	.009							
	.264	.101	-	.351	.187	.097						
	.360	.006	-	.625	.009							
	-	.232	-	.378	.232	.158						
	-	.259	-	.574	.167							
DEC. 14		.04		-	-	-						
26	.01	T		-	-	-						
27	.03	.06		-	.02	-						
28	.05	T		-	.02	-						
29	.05	T		.03	-	-						
30	.16	.04		.04	-	.02						
31	.23	.26		.17	.21	.37						
DEC. TOTALS		4.46		4.17	4.14	4.21					4.24	4.24
JAN. 1	.03	-		.08	.12	.05						
4	.12	.20		.05	.11	(.18)						
8	.10	T		.08	.02	(.02)						
15	-	-		-	-	.03						
18	T	-	.01	-	-	-						
23	T	-	.01	-	-	-						
26	T	T	.01	-	-	-						
27	.01	T	.01	-	-	.01						
28	.04	.08	-	-	-	-						
29	-	-	.68	-	.89	-						
29-30	1.20	1.28	.47	1.20	-	1.01						
30	.05	-	T	-	.33	-						
31	.20	.18	.17	.17	.15	.16						
JAN. TOTALS	1.75	1.74		1.58	1.62	1.46			1.64	1.64		
FEB. 1	.01	-	-	-	.05	.08						
3	-	-	.06	-	-	-						
5	.08	T	-	-	-	.02						
6	-	-	-	-	.07	.03						
10-11	.22	.33	.31	.31	.15	.18						
11	.03	T	-	-	.01	-						
13	-	-	.02	-	-	-						
16	-	-	-	-	-	.02						

Form TX-88
10-69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

STUDY AREA WALLER CREEK

RAINFALL DATA SUMMARY

1972 WATER YEAR

Date of storm	1-S	2-S	3-S	4-R	5-R	6-R	RAIN GAGE W.M.R. 23 RD	W.M.R. 38 TH	* W.M.R. 23 RD	* W.M.R. 38 TH	* * W.M.R. 23 RD	* * W.M.R. 38 TH
	.264	.101	.190	.161	.187	.097						
	.360	.006	.338	.287	.009	—						
	.264	.101	-	.351	.187	.097						
	.360	.006	-	.625	.009	—						
	-	.232	-	.378	.232	.158						
	-	.259	-	.574	.167	—						
FEB. 27	—	T	-	-	-	-						
28	T	T	-	-	-	-						
FEB. TOTALS	.34	.33	.39	.31	.28	.33	.33	.35				
MARCH 10	.01	T	-	-	-	-						
20	.06	.10	.12	.14	.07	.02						
MARCH TOTALS	.07	.10	.12	.14	.07	.02	.09	.11				
APRIL 21	.47	.52	.48	.54	.46	(.47)						
26	.T	.25	.25	.24	.25	.15						
27	1.62	1.61	1.26	1.23	1.35	-						
27-28	-	-	-	-	-	1.56						
28	.28	.41	.31	.14	.37	-						
APRIL TOTALS	2.37	2.79	2.30	2.15	2.43	2.18	2.36	2.29				
MAY 1-2	3.16	3.20	2.56	2.55	2.85	2.31						
5	.24	1.08	.73	.63	.65	.51						
6	.89	.02	.97	.46	.50	.40						
6-7	.80	.06	.11	.57	.80	-						
7	-	-	-	-	-	2.84						
10	1.27	1.25	1.20	1.30	1.31	(1.18)						
11-12	.15	.12	.11	.10	.14	(.10)						
13-14	.87	.65	.44	.51	.92	(.33)						
16	.30	.34	.27	.25	.27	(.31)						
MAY TOTALS	7.68	6.72	6.39	6.37	7.44	7.98	7.11	6.86				
JUNE 9	.22	.04	.02	.15	.15	.11						
9 PM		.20	-	-	.04	.07						
9-10	-	-	-	-	3.17	.10						
10	-	.08	-	.05		-						
13	.16	.07	.08	.06		.05						
15-16	2.75	3.97	7.35	3.89		2.44						

Form TX-88
10-69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

STUDY AREA WALLER CREEK

RAINFALL DATA SUMMARY

1972 WATER YEAR

RAIN GAGE

Date of storm	1-S	2-S	3-S	4-R	5-R	6-R	W.M.R. 23RD	W.M.R. 38TH	W.M.R. 23RD *	W.M.R. 38TH *	W.M.R. 23RD **	W.M.R. 38TH **
	.264	.101	.190	.161	.187	.097						
	.360	.006	.338	.287	.009	—						
	.264	.101		.351	.187	.097						
	.360	.006		.625	.009	—						
	—	.232		.378	.232	.158						
	—	.259		.574	.167	—						
JUNE 17	.14	.28	.02	.03	.16	.16						
JUNE TOTALS	3.27	4.64	7.47	4.18	3.52	2.93	4.37	4.96				
JULY 4	.63	.75	.77	.75	.64	.40						
8	.15	.12	.39	.12	.05	-						
9	.11	T	-	-	-	-						
10	T	-	.08	.50	.01	-						
17	.10	.10	.18	.11	(.09)	.08						
18AM	.06	T	-	-	-	-						
18PM		.40	.40	.17	(.07)	.07						
19	.94	.74	.40	.58	(.40)	.36						
21	1.09	.08	-	.03	.13	.15						
22	.24	.24	-	-	.45	.10						
29	03	-	-	-	-	.05						
JULY TOTALS	3.35	2.43	2.22	2.26	1.84	1.21	2.38	2.64				
AUG. 2	.01	T	-	(.01)	.02	-						
3	.52	.68	.56	(.68)	.36	.47						
4	.99	1.26	.93	(1.26)	1.39	.97						
10	.02	T	.22	(.10)	-	.01						
11	.03	T	.02	-	.03	.02						
18	T	.04	-	-	-	.01						
19	T	-	-	-	.19	.38						
22	1.11	.92	.65	.52	1.20	1.90						
23	.37	.35	.37	.29	.36	.35						
26	.45	.70	.34	(.41)	.28	.39						
28	-	T	.08	-	-	-						
29	-	.05	.07	.05	.09	-						
AUG. TOTALS	3.50	4.00	3.18	3.32	3.92	4.50	3.64	3.35				
SEPT. 2	T	T	.31	.20	.04	-						
5	-	T	.03	.05	-	-						

Form TX-88
10-69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

STUDY AREA WALLER CREEK

RAINFALL DATA SUMMARY

1972 WATER YEAR

RAIN GAGE

Date of storm	1-S	2-S	3-S	4-R	5-R	6-R		W.M.R. 23 RD	W.M.R 38 TH		W.M.R. 23 RD *	W.M.R. 38 TH *		W.M.R. 23 RD **	W.M.R. 38 TH **
	.264	.101	.190	.161	.187	.097									
	.360	.006	.338	.287	.009										
	.264	.101		.351	.187	.097									
	.360	.006		.625	.009										
	-	.232		378	.232	.158									
	-	.259		.574	.167										
SEPT. 12	-	.04	-	-	-	-									
21	-	.05	.06	-	-	-									
23	.36	.45	.42	.12	.20	.15									
24 AM	.06	.17	02	.28	.31	.22									
24 PM	-	-	-	-	.13	-									
26	1.17	1.28	.73	1.08	1.14	1.12									
29	.12	.12	.05	(.10)	.13	.10									
SEPT. TOTALS	1.71	2.11	1.62	1.83	1.95	1.59		1.79	1.72						
WATER YEAR TOTALS		36.39		33.49	33.87	32.57		34.94	35.41						

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RAINFALL DATA SUMMARY

STUDY AREA WILBARGER CREEK — 1972 WATER YEAR

RAIN GAGES

Date of Storm	1-R .431	2-R .301	3-R .268	W.M.R	By BTB / EEW
OCTOBER 3-4	.97	.90			
8	.07	.08			
9	.14	.15			
16	.05	-			
17AM	.17	.15			
17PM	.19	.25			
19	.37	.02			
19-20	.33	.42	.30		
26-27	.52	.57	.53		
OCT. TOTALS	2.81	2.54	*	2.68	
NOVEMBER 17-18	4.26	4.17			
22	.55	.60			
30	.06	.03			
NOV. TOTALS	4.87	4.80	*	4.84	
DECEMBER 1-2	.73	.70			
2AM-PM	.67	.58			
2PM	.05	-			
5	1.23	1.00			
6AM	.10	.11			
6AM-PM	.23	.19			
8	.10	.04			
9AM	[.35	.19			
9PM	L	.28			
13	.06	-			
30	(.40)	.35			
31AM-PM	(.05)	.05	.13		
31 PM	(.10)	.07	.12		
DEC. TOTALS	4.07	3.56	*	3.82	
JANUARY 1AM	(.05)	.03	.—		
1 PM	-	.04	.05		
3	.14	.24	.10		
4	(.03)	.04	.04		
5	(.13)	.04	.22		
6	-	-	.03		
16	-	-	.11		
26	.04	-	-		BTB EEW

Date of Storm	1-R .431	2-R .301	3-R .268	W.M.R	By BTB / EEW
JANUARY 29	—	.95	—		
29-30	1.06	—	.51		
30	—	.05	.06		
JAN. TOTALS	1.45	1.39	1.12	1.34	
FEBRUARY 1	.16	.11	.13		
4	—	—	.05		
10-11	(.25)	.30	—		
11	—	—	.32		
12	—	—	.05		
FEB. TOTALS	.41	.41	.55	.45	
MARCH 20	.60	.39	.24		
MARCH TOTALS	.60	.39	.24	.44	
APRIL 21	.18	.08	—		
27	.83	.73	.24		
28	.15	.10	.07		
29	-	—	.05		
APRIL TOTALS	1.16	.91	.36	.87	
MAY 1-2	2.72	2.56	2.83		
5	—	—	.27		
5-6	.45	.33	-		
6	1.02	.91	.75		
7 AM	.32	.56	.29		
7 PM	.10	-	.09		
8	[.91	.02	.03		
10	L	.95	.92		
11-12	.13	.10	.15		
13-14	.15	.12	.21		
16	(.20)	.20	.22		
MAY TOTALS	6.00	5.75	5.76	5.86	
JUNE 12-13	[	.10	.17		
13		.05	.20		
14	.90	.10	.22		
15-16	L	.98	.21		
16	1.18	1.43	2.59		BTB EEW

Date of Storm	1-R .431	2-R .301	3-R .268	W.M.R	By BTB / EEW
JUNE	—	.05	L		
JUNE TOTALS	2.08	2.71	3.39	2.62	
JULY 4	1.10	1.38	1.22		
8	.02	.04	.06		
17	.07	.35	.07		
19	.23	.51	.43		
21	(.10)	.14	.13		
22	(.05)	.30	.05		
JULY TOTALS	1.57	2.72	1.96	2.02	
AUGUST 2	(.05)	.05	.09		
3	1.46	1.09	.80		
10	.92	.60	.24		
12	.10	.07	(.10)		
17	1.14	.62	.49		
22	.18	.05	.12		
23	.83	1.17	.43		
29	.16	.08	.11		
AUG. TOTALS	4.84	3.73	2.38	3.85	
SEPTEMBER 5	.22	.20	.07		
15	.13	.42	.08		
16	.12	.22	.07		
21	.50	.55	.20		
23	.48	.11	.34		
26	.12	.32	.09		
29	.10	.03	.19		
SEPT. TOTALS	1.67	1.85	1.04	1.56	
WATER YEAR TOTAL	31.53	30.76	—	30.35	BTB EEW

* = RECORD LOST AT 3-R USE FACTORS 1-R = .501 2-R = .499
( ) = AMOUNT ESTIMATED

STA. NO. 08157000 — STORM RAINFALL AND RUNOFF RECORD — 1972 WATER YEAR

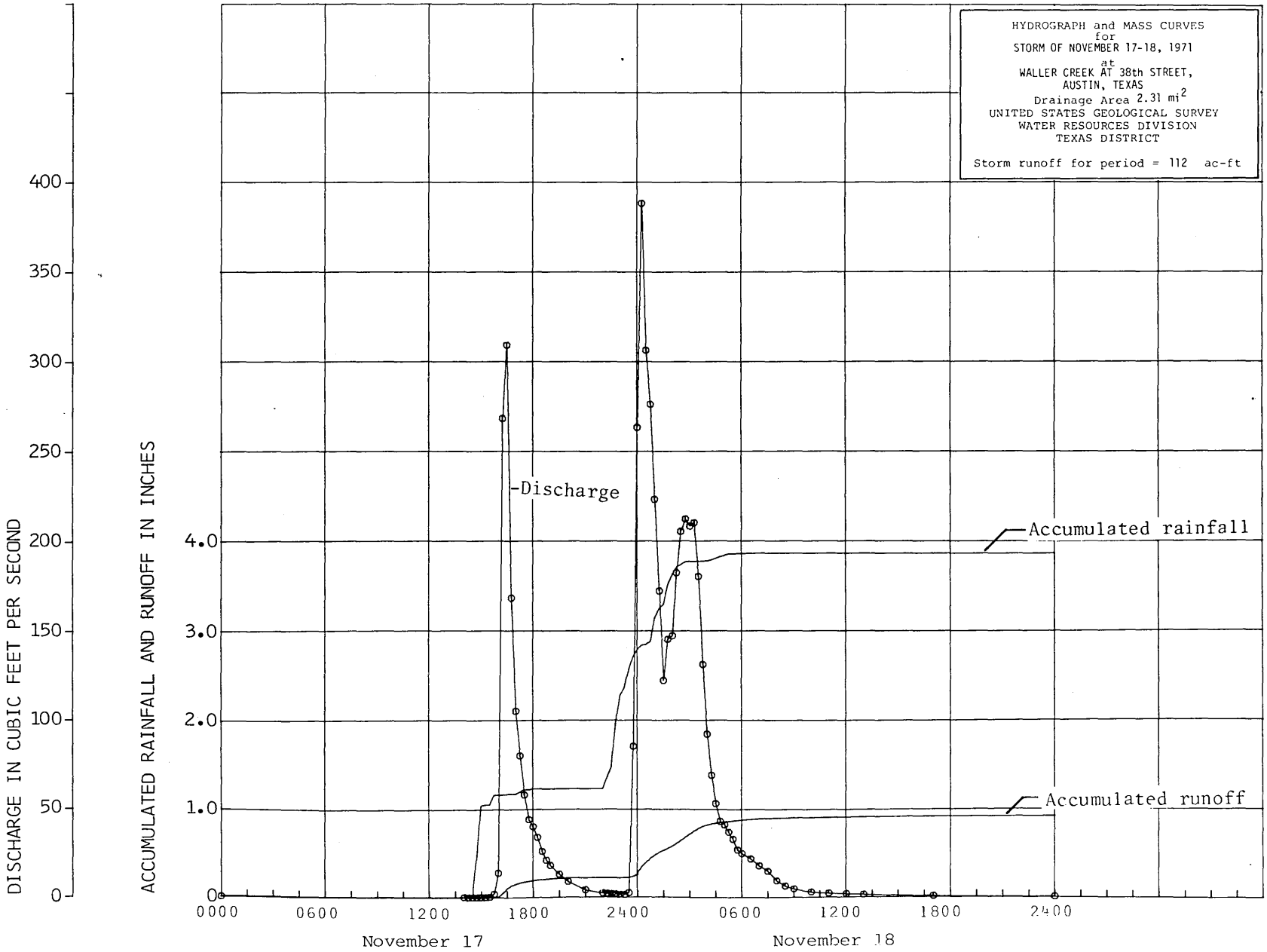
WALLER CREEK AT 38TH ST., AUSTIN, TEXAS — STORM OF NOVEMBER 17-18, 1971

DATE & TIME	GAGE NUMBER 4-F	GAGE NUMBER 5-F	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
NOV. 17					
0000	0.0	0.0	0.0	0.2	0.0011
1400	0.0	0.0	0.0	0.3	0.0027
1415	0.0	0.01	0.00	0.3	0.0027
1430	0.05	0.02	0.04	0.3	0.0028
1445	0.59	0.05	0.49	0.3	0.0028
1500	1.14	0.58	1.04	0.3	0.0029
1515	1.15	0.58	1.05	0.3	0.0029
1530	1.15	0.58	1.05	0.4	0.0030
1545	1.25	0.71	1.16	2.2	0.0034
1600	1.25	0.72	1.16	14.0	0.0057
1615	1.25	0.72	1.16	268.0	0.0507
1630	1.26	0.72	1.17	309.0	0.1025
1645	1.26	0.72	1.17	168.0	0.1307
1700	1.25	0.72	1.17	105.0	0.1483
1715	1.28	0.75	1.19	80.0	0.1617
1730	1.31	0.77	1.22	58.0	0.1714
1745	1.31	0.77	1.22	44.0	0.1788
1800	1.32	0.77	1.23	40.0	0.1855
1815	1.32	0.77	1.23	34.0	0.1912
1830	1.32	0.77	1.23	26.0	0.1956
1845	1.32	0.77	1.23	21.0	0.1991
1900	1.32	0.77	1.23	18.0	0.2036
1930	1.32	0.77	1.23	13.0	0.2080
2000	1.32	0.77	1.23	9.0	0.2125
2100	1.32	0.77	1.23	4.3	0.2154
2200	1.32	0.77	1.23	2.4	0.2164
2215	1.47	0.84	1.36	2.2	0.2168
2230	1.59	0.91	1.48	2.0	0.2171
2245	2.10	1.27	1.96	1.9	0.2174
2300	2.38	1.74	2.28	1.7	0.2177
2315	2.46	1.84	2.36	1.6	0.2180
2330	2.66	2.02	2.56	2.6	0.2184
2345	2.79	2.24	2.71	85.0	0.2327
2400	2.85	2.26	2.79	263.0	0.2547
NOV. 18					
0000	2.88	2.26	2.79	263.0	0.2768
0015	2.92	2.33	2.83	388.0	0.3418
0030	2.93	2.33	2.84	306.0	0.3931
0045	2.97	2.33	2.88	276.0	0.4394
0100	3.25	2.52	3.14	223.0	0.4768

STA. NO. 08157000 — STORM RAINFALL AND RUNOFF RECORD — 1972 WATER YEAR

WALLER CREEK AT 38TH ST., AUSTIN, TEXAS — STORM OF NOVEMBER 17-18, 1971

DATE & TIME	GAGE NUMBER 4-R	GAGE NUMBER 5-R	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
NOV. 18					
0115	3.30	2.86	3.25	172.0	0.5057
0130	3.35	2.87	3.29	122.0	0.5261
0145	3.56	3.11	3.51	145.0	0.5504
0200	3.68	3.18	3.62	147.0	0.5751
0215	3.75	3.32	3.70	182.0	0.6056
0230	3.78	3.35	3.73	205.0	0.6400
0245	3.81	3.37	3.76	212.0	0.6756
0300	3.82	3.37	3.77	208.0	0.7104
0315	3.82	3.37	3.77	210.0	0.7457
0330	3.82	3.37	3.77	180.0	0.7758
0345	3.82	3.38	3.77	131.0	0.7978
0400	3.82	3.39	3.77	92.0	0.8132
0415	3.83	3.41	3.79	69.0	0.8248
0430	3.85	3.41	3.80	53.0	0.8337
0445	3.87	3.42	3.82	43.0	0.8409
0500	3.88	3.45	3.83	41.0	0.8478
0515	3.90	3.46	3.85	37.0	0.8540
0530	3.90	3.46	3.85	33.0	0.8595
0545	3.90	3.48	3.86	27.0	0.8641
0600	3.90	3.48	3.86	25.0	0.8703
0630	3.90	3.49	3.86	22.0	0.8777
0700	3.90	3.50	3.86	18.0	0.8838
0730	3.90	3.50	3.86	15.0	0.8888
0800	3.90	3.50	3.86	9.6	0.8920
0830	3.90	3.50	3.86	6.6	0.8942
0900	3.90	3.50	3.86	5.0	0.8967
1000	3.90	3.50	3.86	3.1	0.8988
1100	3.90	3.50	3.86	2.4	0.9004
1200	3.90	3.50	3.86	2.0	0.9018
1300	3.90	3.50	3.86	1.6	0.9045
1700	3.90	3.50	3.86	0.8	0.9073
2400	3.90	3.50	3.86	0.4	0.9082


HYDROGRAPH and MASS CURVES
for
STORM OF NOVEMBER 17-18, 1971
at
WALLER CREEK AT 38th STREET,
AUSTIN, TEXAS
Drainage Area 2.31 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 112 ac-ft
DISCHARGE IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF IN INCHES
-Discharge
Accumulated rainfall
Accumulated runoff
0
50
100
150
200
250
300
350
400
1.0
2.0
3.0
4.0
0000
0600
1200
1800
2400
0600
1200
1800
2400
November 17
November 18

STA. NO. 08157000 STORM RAINFALL AND RUNOFF RECORD 1972 WATER YEAR

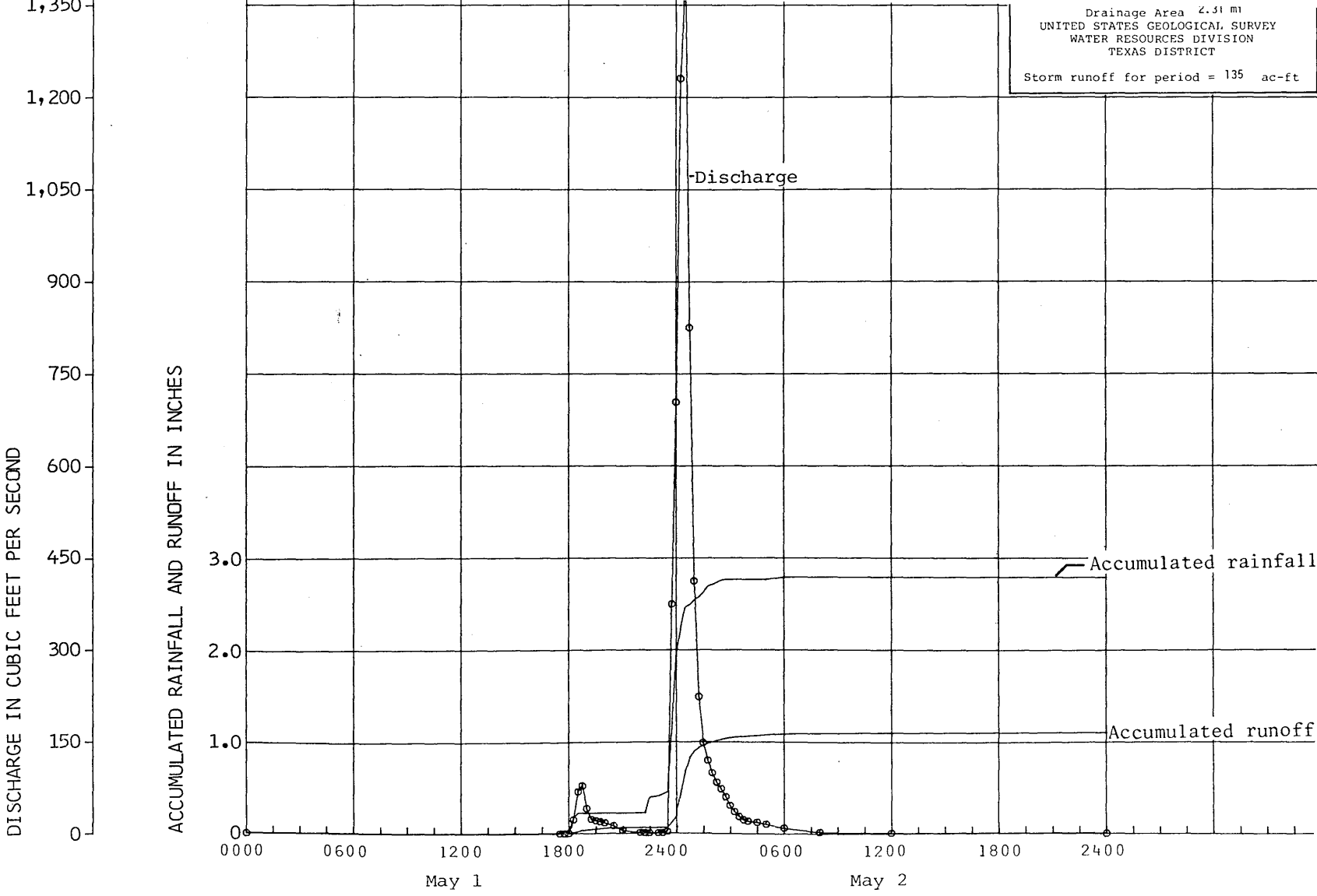
WALLER CREEK AT 38TH ST.,AUSTIN,TEXAS STORM OF MAY 1-2,1972

DATE & TIME	GAGE NUMBER 4-E	GAGE NUMBER 5-E	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
MAY 1					
0000	0.0	0.0	0.0	0.2	0.0009
1730	0.0	0.0	0.0	0.2	0.0020
1745	0.0	0.0	0.0	0.2	0.0020
1800	0.0	0.15	0.03	0.5	0.0021
1815	0.09	0.49	0.18	23.0	0.0059
1830	0.15	0.49	0.23	69.0	0.0175
1845	0.15	0.49	0.23	79.0	0.0307
1900	0.15	0.49	0.23	42.0	0.0378
1915	0.15	0.49	0.23	24.0	0.0418
1930	0.15	0.49	0.23	22.0	0.0455
1945	0.15	0.49	0.23	20.0	0.0489
2000	0.15	0.49	0.23	18.0	0.0534
2030	0.15	0.49	0.23	13.0	0.0577
2100	0.15	0.49	0.23	5.6	0.0606
2200	0.15	0.49	0.23	1.5	0.0612
2215	0.15	0.49	0.23	1.3	0.0614
2230	0.35	0.49	0.40	1.2	0.0617
2300	0.36	0.50	0.41	1.0	0.0620
2315	0.38	0.52	0.44	1.1	0.0622
2330	0.40	0.54	0.46	2.7	0.0626
2345	1.12	0.95	1.16	374.0	0.1253
2400	1.80	1.90	1.95	703.0	0.1843
MAY 2					
0000	1.80	1.90	1.95	703.0	0.2432
0015	2.05	2.25	2.23	1230.0	0.4495
0030	2.25	2.54	2.47	1400.0	0.6843
0045	2.27	2.57	2.49	825.0	0.8226
0100	2.32	2.60	2.54	412.0	0.8917
0115	2.35	2.64	2.57	223.0	0.9291
0130	2.39	2.70	2.62	148.0	0.9540
0145	2.45	2.77	2.69	119.0	0.9739
0200	2.47	2.80	2.71	99.0	0.9905
0215	2.49	2.82	2.73	84.0	1.0046
0230	2.51	2.85	2.76	73.0	1.0168
0245	2.52	2.85	2.76	60.0	1.0269
0300	2.52	2.85	2.76	46.0	1.0346
0315	2.52	2.85	2.76	36.0	1.0407
0330	2.52	2.85	2.76	28.0	1.0453
0345	2.52	2.85	2.76	23.0	1.0492
0400	2.52	2.85	2.76	21.0	1.0545

STA. NO. 08157000	STORM RAINFALL AND RUNOFF RECORD	1972 WATER YEAR

WALLER CREEK AT 38TH ST., AUSTIN, TEXAS — STORM OF MAY 1-2, 1972

DATE & TIME	GAGE NUMBER 4-R	GAGE NUMBER 5-R	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
MAY 2					
0430	2.52	2.85	2.76	19.0	1.0609
0500	2.52	2.85	2.76	16.0	1.0689
0600	2.55	2.85	2.79	9.9	1.0789
0800	2.55	2.85	2.79	3.0	1.0849
1200	2.55	2.85	2.79	1.7	1.0940
2400	2.55	2.85	2.79	0.5	1.0962


Drainage Area 2.31 mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 135 ac-ft
Discharge
Accumulated rainfall
Accumulated runoff
DISCHARGE IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF IN INCHES
1,350
1,200
1,050
900
750
600
450
300
150
0
3.0
2.0
1.0
0
0000
0600
1200
1800
2400
0600
1200
1800
2400
May 1
May 2

STA. NO. 08157500	STORM RAINFALL AND RUNOFF RECORD	1972 WATER YEAR

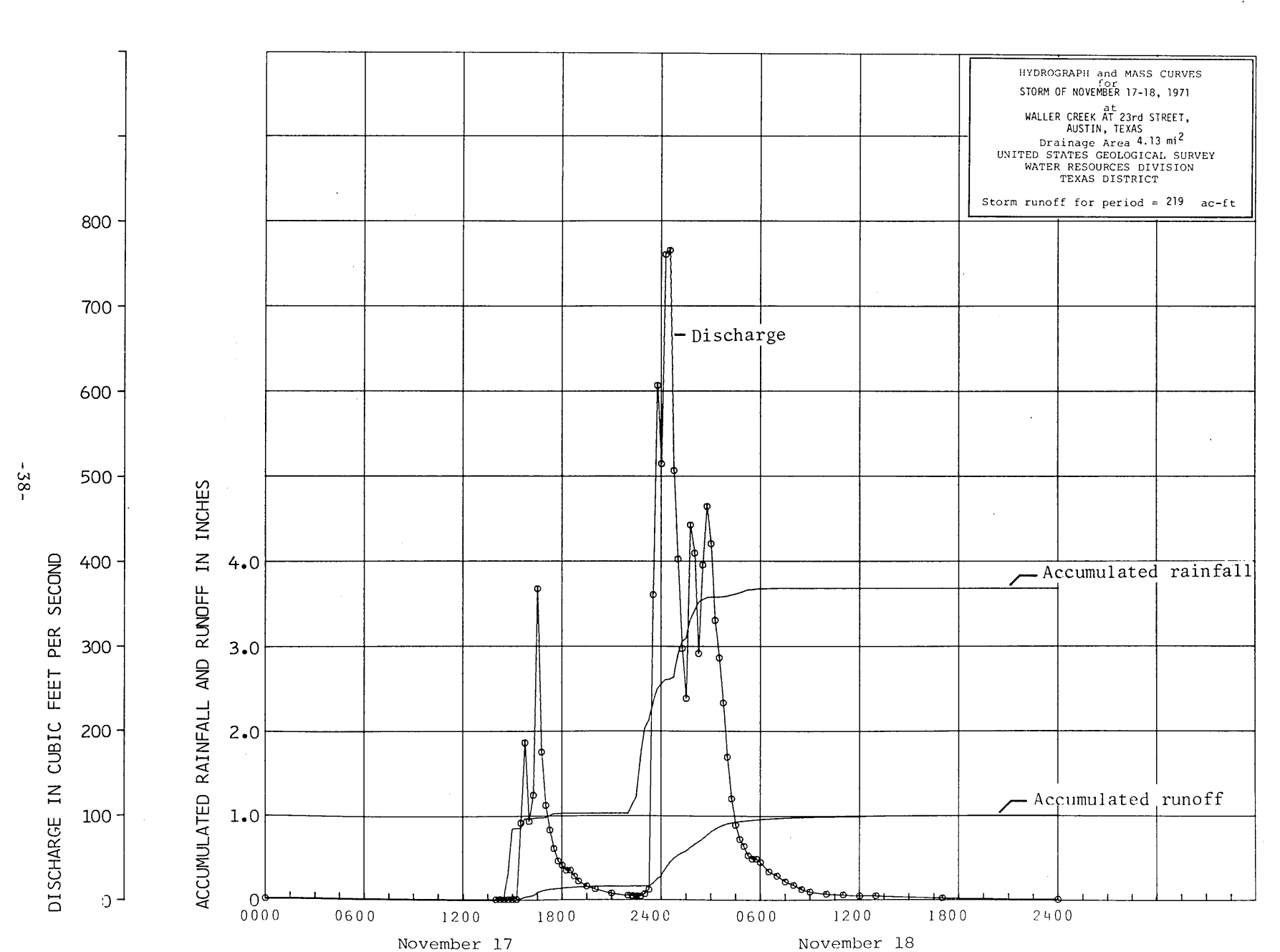
WALLER CREEK AT 23RD ST., AUSTIN, TEXAS — STORM OF NOVEMBER 17-18, 1971

DATE & TIME	GAGE NUMBER 4-R	5-R	6-R	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
NOV. 17						
0000	0.0	0.0	0.0	0.0	0.6	0.0017
1400	0.0	0.0	0.0	0.0	0.9	0.0041
1415	0.0	0.01	0.0	0.00	1.0	0.0042
1430	0.05	0.02	0.0	0.03	0.9	0.0043
1445	0.59	0.05	0.06	0.33	0.9	0.0044
1500	1.14	0.58	0.30	0.85	1.1	0.0045
1515	1.15	0.58	0.31	0.85	1.1	0.0046
1530	1.15	0.58	0.33	0.85	91.0	0.0131
1545	1.25	0.71	0.42	0.96	186.0	0.0306
1600	1.25	0.72	0.42	0.97	93.0	0.0393
1615	1.25	0.72	0.42	0.97	124.0	0.0509
1630	1.26	0.72	0.43	0.98	367.0	0.0853
1645	1.26	0.72	0.43	0.98	175.0	0.1018
1700	1.26	0.72	0.44	0.98	112.0	0.1123
1715	1.28	0.75	0.45	1.00	83.0	0.1201
1730	1.31	0.77	0.45	1.02	61.0	0.1258
1745	1.31	0.77	0.45	1.02	46.0	0.1301
1800	1.32	0.77	0.45	1.03	41.0	0.1339
1815	1.32	0.77	0.45	1.03	35.0	0.1372
1830	1.32	0.77	0.45	1.03	35.0	0.1405
1845	1.32	0.77	0.45	1.03	28.0	0.1431
1900	1.32	0.77	0.45	1.03	22.0	0.1462
1930	1.32	0.77	0.45	1.03	16.0	0.1492
2000	1.32	0.77	0.45	1.03	13.0	0.1529
2100	1.32	0.77	0.45	1.03	7.9	0.1558
2200	1.32	0.77	0.45	1.03	5.2	0.1571
2215	1.47	0.84	0.45	1.13	4.7	0.1575
2230	1.59	0.91	0.45	1.22	4.4	0.1579
2245	2.10	1.27	0.94	1.67	4.1	0.1583
2300	2.38	1.74	1.23	2.03	6.9	0.1590
2315	2.46	1.84	1.36	2.13	12.0	0.1601
2330	2.66	2.02	1.55	2.32	360.0	0.1938
2345	2.79	2.24	1.74	2.49	606.0	0.2507
2400	2.88	2.26	1.81	2.55	514.0	0.2748
NOV. 18						
0000	2.88	2.26	1.81	2.55	514.0	0.2989
0015	2.92	2.33	1.83	2.60	760.0	0.3702
0030	2.93	2.33	1.84	2.61	765.0	0.4419
0045	2.97	2.33	1.87	2.63	506.0	0.4894
0100	3.25	2.52	2.22	2.89	402.0	0.5271

STA. NO. 08157500 — STORM RAINFALL AND RUNOFF RECORD — 1972 WATER YEAR

WALLER CREEK AT 23RD ST., AUSTIN, TEXAS — STORM OF NOVEMBER 17-18, 1971

DATE & TIME	GAGE NUMBER 4-R	5-R	6-R	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
NOV. 18						
0115	3.30	2.86	2.30	3.06	297.0	0.5550
0130	3.35	2.87	2.35	3.09	238.0	0.5773
0145	3.56	3.11	2.44	3.31	442.0	0.6188
0200	3.58	3.18	2.69	3.42	409.0	0.6571
0215	3.75	3.32	2.74	3.51	291.0	0.6844
0230	3.78	3.35	2.76	3.54	395.0	0.7215
0245	3.81	3.37	2.79	3.57	464.0	0.7650
0300	3.82	3.37	2.79	3.57	420.0	0.8044
0315	3.82	3.37	2.79	3.57	330.0	0.8353
0330	3.82	3.37	2.79	3.57	286.0	0.8622
0345	3.82	3.38	2.79	3.58	233.0	0.8840
0400	3.82	3.39	2.81	3.58	169.0	0.8999
0415	3.83	3.41	2.83	3.60	120.0	0.9111
0430	3.85	3.41	2.84	3.61	89.0	0.9195
0445	3.87	3.42	2.85	3.63	72.0	0.9262
0500	3.88	3.45	2.86	3.64	64.0	0.9322
0515	3.90	3.46	2.88	3.66	53.0	0.9372
0530	3.90	3.46	2.90	3.66	49.0	0.9418
0545	3.90	3.48	2.91	3.67	49.0	0.9464
0600	3.90	3.48	2.92	3.67	45.0	0.9527
0630	3.90	3.49	2.92	3.68	34.0	0.9591
0700	3.90	3.50	2.92	3.68	29.0	0.9646
0730	3.90	3.50	2.92	3.68	22.0	0.9687
0800	3.90	3.50	2.92	3.68	18.0	0.9721
0830	3.90	3.50	2.92	3.68	13.0	0.9745
0900	3.90	3.50	2.92	3.68	10.0	0.9773
1000	3.90	3.50	2.92	3.68	7.3	0.9801
1100	3.90	3.50	2.92	3.68	6.2	0.9824
1200	3.90	3.50	2.92	3.68	4.7	0.9841
1300	3.90	3.50	2.92	3.68	5.0	0.9888
1700	3.90	3.50	2.92	3.68	2.5	0.9940
2400	3.90	3.50	2.92	3.68	1.1	0.9954


HYDROGRAPH and MASS CURVES
for
STORM OF NOVEMBER 17-18, 1971
at
WALLER CREEK AT 23rd STREET,
AUSTIN, TEXAS
Drainage Area 4.13 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 219 ac-ft
DISCHARGE IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF IN INCHES
Discharge
Accumulated rainfall
Accumulated runoff
0
100
200
300
400
500
600
700
800
1.0
2.0
3.0
4.0
0000
0600
1200
1800
2400
0600
1200
1800
2400
November 17
November 18

STA. NO. 08157500 — STORM RAINFALL AND RUNOFF RECORD — 1972 WATER YEAR

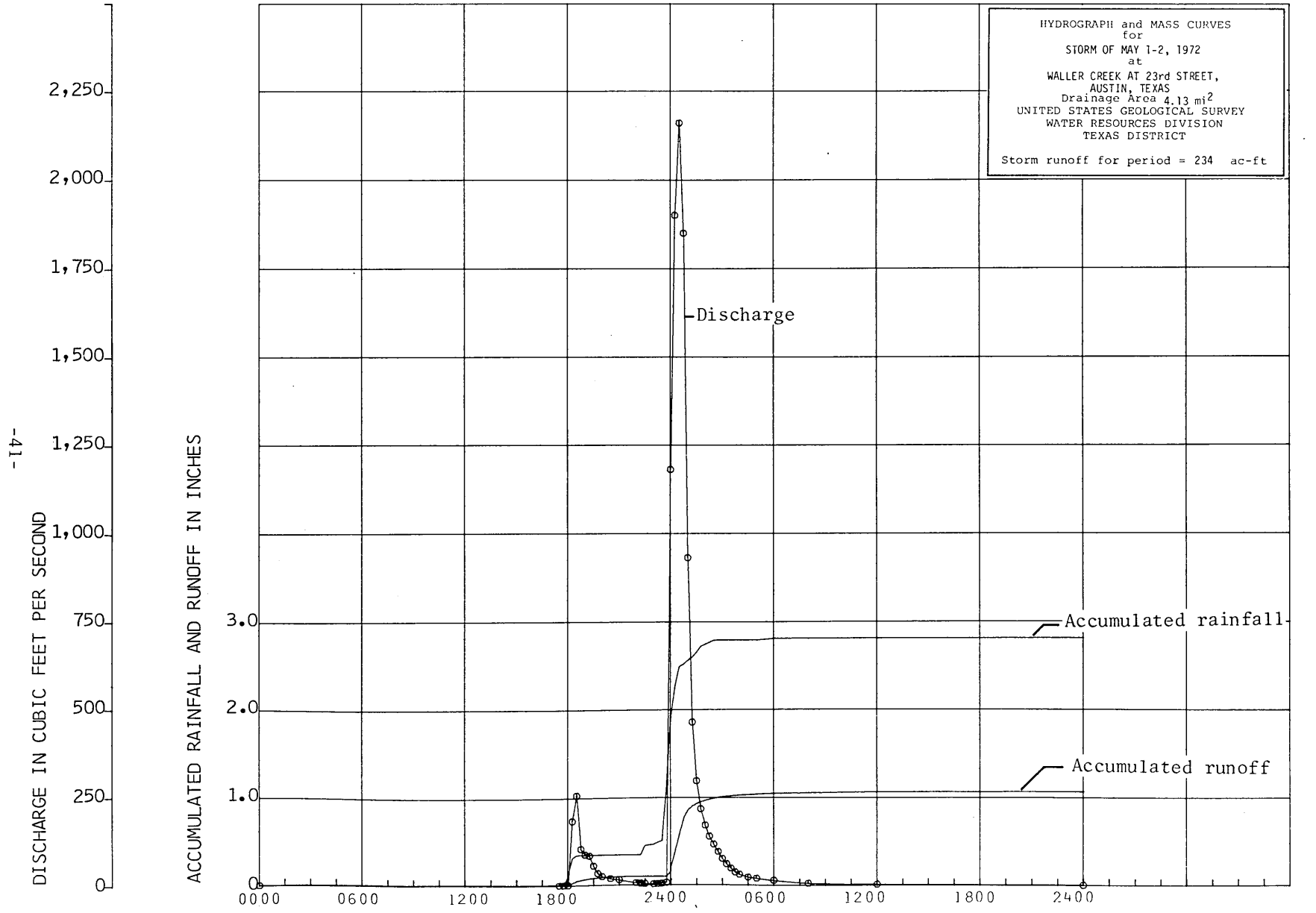
WALLER CREEK AT 23RD ST.,AUSTIN,TEXAS — STORM OF MAY 1-2,1972

DATE & TIME	GAGE NUMBER 4-R	5-R	6-R	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
MAY 1						
0000	0.0	0.0	0.0	0.0	0.9	0.0029
1730	0.0	0.0	0.0	0.0	1.2	0.0069
1745	0.0	0.0	0.07	0.01	1.2	0.0070
1800	0.0	0.15	0.48	0.11	1.5	0.0071
1815	0.09	0.44	0.59	0.31	184.0	0.0244
1830	0.15	0.49	0.60	0.35	257.0	0.0485
1845	0.15	0.49	0.61	0.35	104.0	0.0583
1900	0.15	0.49	0.61	0.35	88.0	0.0665
1915	0.15	0.49	0.61	0.35	85.0	0.0745
1930	0.15	0.49	0.61	0.35	56.0	0.0797
1945	0.15	0.49	0.61	0.35	35.0	0.0830
2000	0.15	0.49	0.61	0.35	26.0	0.0867
2030	0.15	0.49	0.61	0.35	20.0	0.0904
2100	0.15	0.49	0.61	0.35	16.0	0.0949
2200	0.15	0.49	0.61	0.35	7.1	0.0966
2215	0.15	0.49	0.61	0.35	5.8	0.0971
2230	0.35	0.49	0.61	0.46	4.8	0.0978
2400	0.36	0.50	0.64	0.47	3.9	0.0984
2315	0.38	0.52	0.66	0.49	4.4	0.0988
2330	0.40	0.54	0.67	0.51	5.4	0.0993
2345	1.12	0.95	0.83	1.09	7.9	0.1000
2400	1.80	1.90	1.01	1.87	1180.0	0.1554
MAY 2						
0000	1.80	1.90	1.01	1.87	1180.0	0.2107
0015	2.05	2.25	1.93	2.25	1900.0	0.3889
0030	2.25	2.54	2.06	2.49	2160.0	0.5915
0045	2.27	2.57	2.09	2.52	1850.0	0.7651
0100	2.32	2.60	2.12	2.56	931.0	0.8524
0115	2.35	2.64	2.15	2.60	464.0	0.8959
0130	2.39	2.70	2.22	2.65	297.0	0.9238
0145	2.45	2.77	2.27	2.72	217.0	0.9441
0200	2.47	2.80	2.29	2.74	171.0	0.9602
0215	2.49	2.82	2.30	2.76	140.0	0.9733
0230	2.51	2.85	2.31	2.79	117.0	0.9843
0245	2.52	2.85	2.31	2.79	96.0	0.9933
0300	2.52	2.85	2.31	2.79	76.0	1.0004
0315	2.52	2.85	2.31	2.79	61.0	1.0061
0330	2.52	2.85	2.31	2.79	49.0	1.0107
0345	2.52	2.85	2.31	2.79	38.0	1.0143
0400	2.52	2.85	2.31	2.79	32.0	1.0188

STA. NO. 08157500	STORM RAINFALL AND RUNOFF RECORD	1972 WATER YEAR

WALLER CREEK AT 2320 ST.,AUSTIN,TEXAS — STORM OF MAY 1-2,1972

DATE & TIME	GAGE NUMBER 4-R	5-R	6-R	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
MAY 2						
0430	2.52	2.85	2.31	2.79	24.0	1.0233
0500	2.52	2.85	2.31	2.79	21.0	1.0292
0600	2.55	2.85	2.31	2.81	15.0	1.0377
0800	2.55	2.85	2.31	2.81	6.7	1.0452
1200	2.55	2.85	2.31	2.81	3.8	1.0566
2400	2.55	2.85	2.31	2.81	1.8	1.0607


HYDROGRAPH and MASS CURVES
for
STORM OF MAY 1-2, 1972
at
WALLER CREEK AT 23rd STREET,
AUSTIN, TEXAS
Drainage Area 4.13 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 234 ac-ft
DISCHARGE IN CUBIC FEET PER SECOND
2,250
2,000
1,750
1,500
1,250
1,000
750
500
250
0
Discharge
ACCUMULATED RAINFALL AND RUNOFF IN INCHES
3.0
2.0
1.0
0
Accumulated rainfall
Accumulated runoff
0000
0600
1200
1800
2400
0600
1200
1800
2400

STA. NO. 08159150	STORM RAINFALL AND RUNOFF RECORD	1972 WATER YEAR

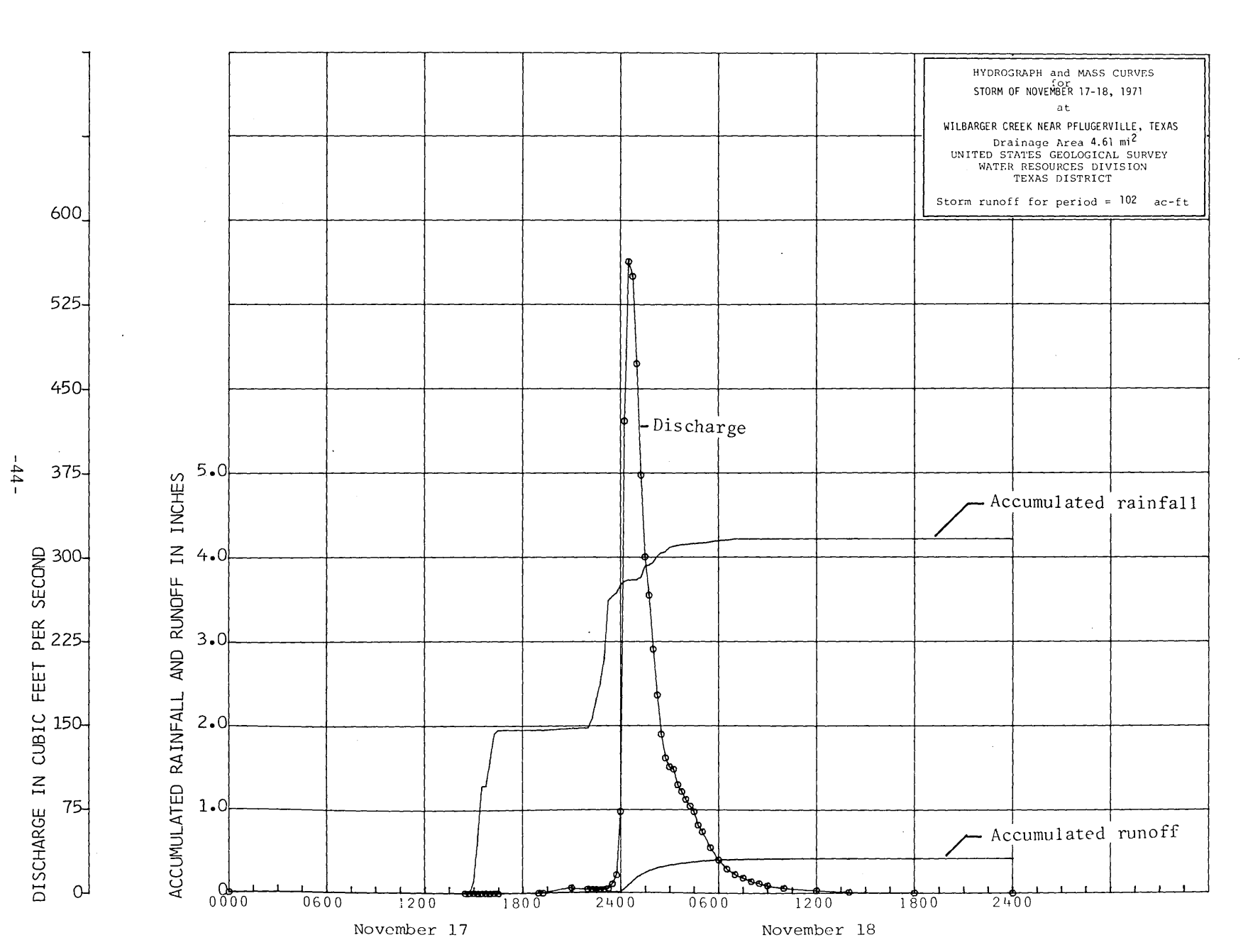
WILBARGER CREEK NEAR VERNON, TEXAS — STORM OF NOVEMBER 17-18, 1971

DATE & TIME	GAGE NUMBER 1-R	GAGE NUMBER 2-R	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
NOV. 17					
0000	0.0	0.0	0.0	0.0	0.0
1430	0.0	0.0	0.0	0.0	0.0
1445	0.01	0.01	0.01	0.0	0.0
1500	0.15	0.16	0.15	0.0	0.0
1515	0.72	0.60	0.66	0.0	0.0
1530	1.17	1.40	1.28	0.0	0.0
1545	1.17	1.40	1.28	0.0	0.0
1600	1.60	1.55	1.58	0.0	0.0
1615	2.01	1.80	1.91	0.0	0.0
1630	2.01	1.89	1.95	0.0	0.0
1900	2.01	1.89	1.95	0.0	0.0
1915	2.01	1.89	1.95	0.0	0.0
2100	2.02	1.92	1.97	4.5	0.0021
2200	2.03	1.92	1.98	3.3	0.0028
2215	2.14	2.02	2.08	3.1	0.0030
2230	2.35	2.25	2.30	2.7	0.0033
2245	2.54	2.46	2.50	2.6	0.0035
2300	2.78	2.82	2.80	2.6	0.0037
2315	3.54	3.44	3.49	3.7	0.0040
2330	3.58	3.49	3.54	7.9	0.0047
2345	3.62	3.52	3.57	16.0	0.0060
2400	3.70	3.64	3.67	73.0	0.0091
NOV. 18					
0000	3.70	3.64	3.67	73.0	0.0122
0015	3.75	3.67	3.71	421.0	0.0475
0030	3.77	3.69	3.73	563.0	0.0948
0045	3.77	3.69	3.73	550.0	0.1411
0100	3.77	3.69	3.73	472.0	0.1807
0115	3.78	3.75	3.77	373.0	0.2121
0130	3.94	3.85	3.90	300.0	0.2373
0145	3.96	3.85	3.91	266.0	0.2596
0200	3.99	3.89	3.94	218.0	0.2780
0215	4.06	3.96	4.01	177.0	0.2928
0230	4.10	4.00	4.05	142.0	0.3048
0245	4.12	4.01	4.07	121.0	0.3149
0300	4.16	4.06	4.11	113.0	0.3244
0315	4.18	4.08	4.13	111.0	0.3337
0330	4.19	4.09	4.14	97.0	0.3419
0345	4.19	4.10	4.15	91.0	0.3495
0400	4.19	4.11	4.15	84.0	0.3566

STA. NO. 08159150 — STORM RAINFALL AND RUNOFF RECORD — 1972 WATER YEAR

WILBARGER CREEK NEAR PFLUGERVILLE, TEXAS — STORM OF NOVEMBER 17-18, 1971

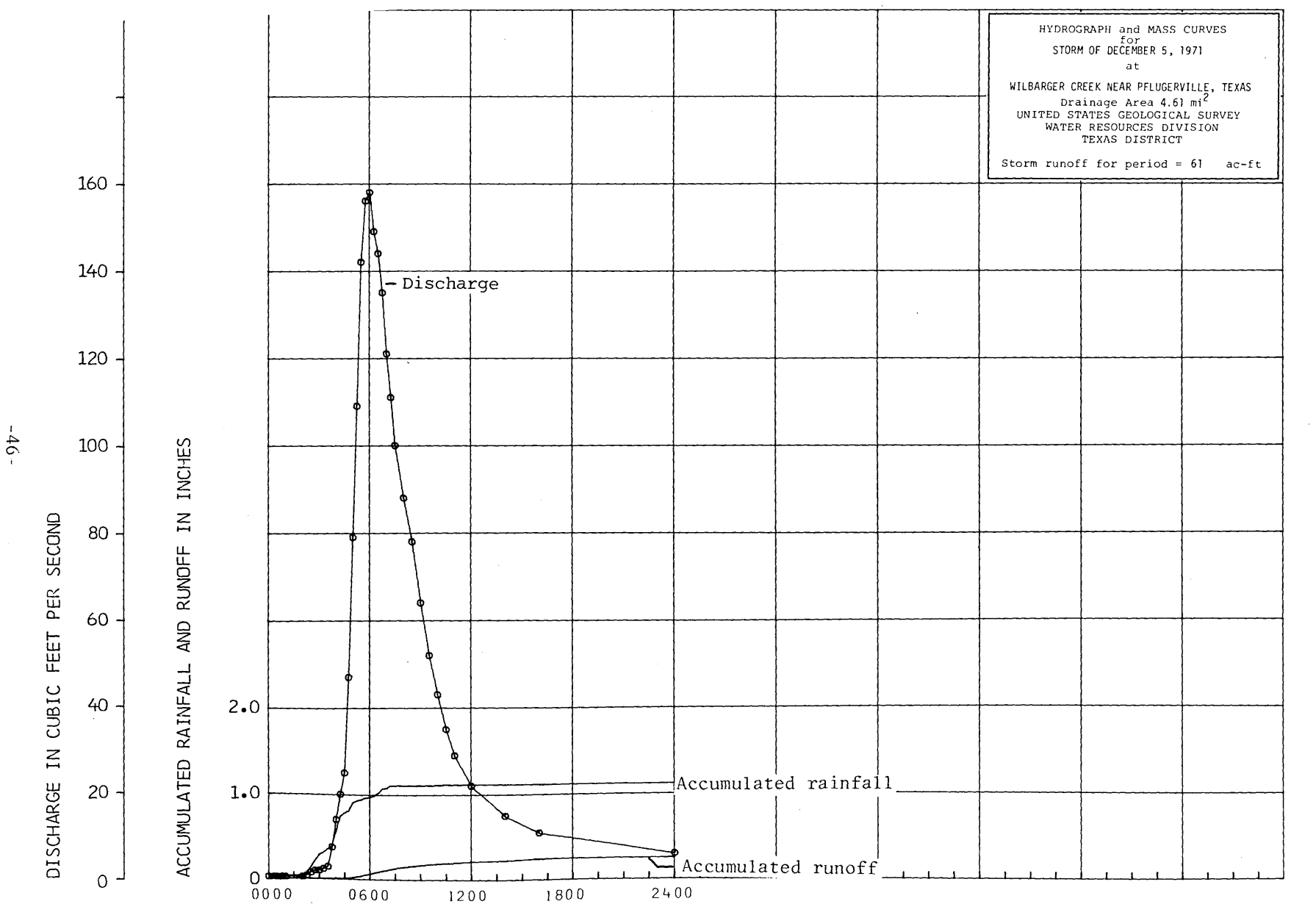
DATE & TIME	GAGE NUMBER 1-R	GAGE NUMBER 2-R	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
NOV. 18					
0415	4.20	4.11	4.16	78.0	0.3632
0430	4.20	4.12	4.16	73.0	0.3693
0445	4.21	4.12	4.17	61.0	0.3744
0500	4.20	4.13	4.17	55.0	0.3814
0530	4.22	4.14	4.18	41.0	0.3882
0600	4.23	4.16	4.20	30.0	0.3933
0630	4.23	4.17	4.20	22.0	0.3970
0700	4.26	4.17	4.22	17.0	0.3998
0730	4.26	4.17	4.22	14.0	0.4022
0800	4.26	4.17	4.22	11.0	0.4040
0830	4.26	4.17	4.22	9.1	0.4056
0900	4.26	4.17	4.22	7.1	0.4074
1000	4.26	4.17	4.22	4.8	0.4098
1200	4.26	4.17	4.22	2.6	0.4115
1400	4.26	4.17	4.22	1.1	0.4126
1800	4.26	4.17	4.22	0.4	0.4134
2400	4.26	4.17	4.22	0.2	0.4135


HYDROGRAPH and MASS CURVES
for
STORM OF NOVEMBER 17-18, 1971
at
WILBARGER CREEK NEAR PFLUGERVILLE, TEXAS
Drainage Area 4.61 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 102 ac-ft
DISCHARGE IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF IN INCHES
Discharge
Accumulated rainfall
Accumulated runoff
0
75
150
225
300
375
450
525
600
0
1.0
2.0
3.0
4.0
5.0
0000
0600
1200
1800
2400
0600
1200
1800
2400
November 17
November 18

STA. NO. 08159150 STORM RAINFALL AND RUNOFF RECORD 1972 WATER YEAR

WILBARGER CREEK NEAR PFLUGERVILLE, TEXAS STORM OF DECEMBER 5, 1971

DATE & TIME	GAGE NUMBER 1-R	GAGE NUMBER 2-R	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
DEC. 5					
0000	0.0	0.0	0.0	0.5	0.0000
0015	0.02	0.0	0.01	0.5	0.0001
0030	0.03	0.01	0.02	0.5	0.0001
0045	0.05	0.02	0.04	0.5	0.0001
0100	0.06	0.02	0.04	0.5	0.0002
0200	0.07	0.03	0.05	0.5	0.0004
0215	0.09	0.07	0.08	0.8	0.0004
0230	0.14	0.14	0.14	1.5	0.0005
0245	0.22	0.22	0.22	2.0	0.0007
0300	0.29	0.28	0.29	2.0	0.0009
0315	0.34	0.29	0.32	2.4	0.0011
0330	0.38	0.33	0.36	2.9	0.0013
0345	0.42	0.36	0.39	7.5	0.0020
0400	0.61	0.52	0.57	14.0	0.0031
0415	0.85	0.64	0.75	20.0	0.0048
0430	0.89	0.67	0.78	25.0	0.0069
0445	0.92	0.70	0.81	47.0	0.0109
0500	1.03	0.78	0.91	79.0	0.0175
0515	1.05	0.81	0.93	109.0	0.0267
0530	1.06	0.83	0.95	142.0	0.0386
0545	1.08	0.85	0.97	156.0	0.0517
0600	1.08	0.86	0.97	158.0	0.0650
0615	1.10	0.87	0.99	149.0	0.0775
0630	1.13	0.91	1.02	144.0	0.0896
0645	1.18	0.96	1.07	135.0	0.1009
0700	1.18	0.98	1.08	121.0	0.1111
0715	1.23	0.98	1.11	111.0	0.1204
0730	1.23	0.98	1.11	100.0	0.1330
0800	1.23	0.98	1.11	88.0	0.1478
0830	1.23	0.98	1.11	78.0	0.1609
0900	1.23	0.98	1.11	64.0	0.1717
0930	1.23	0.98	1.11	52.0	0.1804
1000	1.23	0.99	1.11	43.0	0.1877
1030	1.23	1.00	1.12	35.0	0.1936
1100	1.23	1.00	1.12	29.0	0.2009
1200	1.23	1.00	1.12	22.0	0.2120
1400	1.23	1.00	1.12	15.0	0.2220
1600	1.23	1.00	1.12	11.0	0.2405
2400	1.23	1.00	1.12	6.0	0.2486


HYDROGRAPH and MASS CURVES
for
STORM OF DECEMBER 5, 1971
at
WILBARGER CREEK NEAR PFLUGERVILLE, TEXAS
Drainage Area 4.61 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 61 ac-ft
DISCHARGE IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF IN INCHES
0
20
40
60
80
100
120
140
160
1.0
2.0
0000
0600
1200
1800
2400
Discharge
Accumulated rainfall
Accumulated runoff

STA. NO. 08159150 — STORM RAINFALL AND RUNOFF RECORD — 1972 WATER YEAR

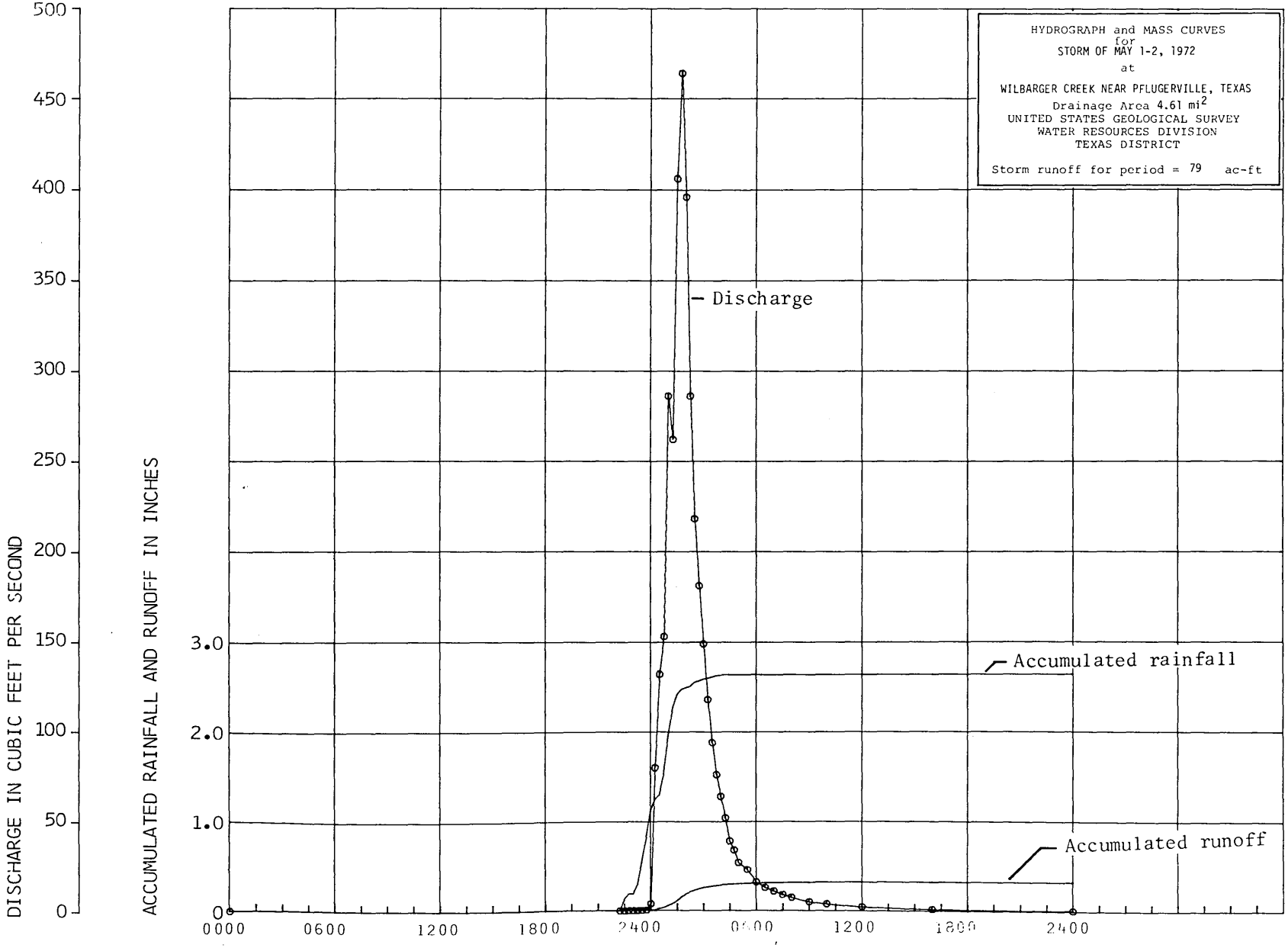
WILBARGER CREEK NEAR PFLUGERVILLE, TEXAS — STORM OF MAY 1-2, 1972

DATE & TIME	GAGE NUMBER 1-R	2-R	3-R	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
MAY 1						
0000	0.0	0.0	0.0	0.0	0.0	0.0
2215	0.0	0.0	0.0	0.0	0.0	0.0
2230	0.0	0.28	0.0	0.08	0.0	0.0
2245	0.0	0.38	0.13	0.15	0.0	0.0
2300	0.0	0.39	0.15	0.16	0.0	0.0
2315	0.0	0.61	0.21	0.24	0.0	0.0
2330	0.0	1.12	0.24	0.40	0.1	0.0000
2345	0.02	1.63	0.37	0.60	0.3	0.0000
2400	0.17	2.10	0.72	0.90	4.0	0.0002
MAY 2						
0000	0.17	2.10	0.72	0.90	4.0	0.0004
0015	0.22	2.29	1.18	1.10	80.0	0.0071
0030	0.26	2.34	1.49	1.22	132.0	0.0182
0045	0.72	2.36	1.87	1.52	153.0	0.0310
0100	1.52	2.38	2.25	1.97	286.0	0.0551
0115	2.10	2.42	2.52	2.31	262.0	0.0771
0130	2.39	2.45	2.69	2.49	406.0	0.1112
0145	2.48	2.47	2.71	2.54	464.0	0.1502
0200	2.50	2.49	2.76	2.57	396.0	0.1835
0215	2.52	2.50	2.80	2.59	286.0	0.2075
0230	2.55	2.56	2.81	2.62	218.0	0.2258
0245	2.58	2.56	2.81	2.64	181.0	0.2410
0300	2.62	2.56	2.82	2.66	149.0	0.2536
0315	2.64	2.56	2.83	2.67	118.0	0.2635
0330	2.67	2.56	2.83	2.68	94.0	0.2714
0345	2.70	2.56	2.83	2.69	76.0	0.2778
0400	2.71	2.56	2.83	2.70	64.0	0.2831
0415	2.72	2.56	2.83	2.70	52.0	0.2875
0430	2.72	2.56	2.83	2.70	39.0	0.2908
0445	2.72	2.56	2.83	2.70	34.0	0.2936
0500	2.72	2.56	2.83	2.70	27.0	0.2971
0530	2.72	2.56	2.83	2.70	23.0	0.3009
0600	2.72	2.56	2.83	2.70	16.0	0.3036
0630	2.72	2.56	2.83	2.70	13.0	0.3058
0700	2.72	2.56	2.83	2.70	11.0	0.3076
0730	2.72	2.56	2.83	2.70	9.1	0.3092
0800	2.72	2.56	2.83	2.70	7.5	0.3111
0900	2.72	2.56	2.83	2.70	5.1	0.3128
1000	2.72	2.56	2.83	2.70	4.0	0.3148
1200	2.72	2.56	2.83	2.70	2.4	0.3172

STA. NO. 08159150	STORM RAINFALL AND RUNOFF RECORD	1972 WATER YEAR

WILBARGER CREEK NEAR PFLUGERVILLE, TEXAS — STORM OF MAY 1-2, 1972

DATE & TIME	GAGE NUMBER 1-R	2-R	3-R	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT^3/S	ACCUM. RUNOFF IN.
MAY 2						
1600	2.72	2.56	2.83	2.70	1.1	0.3194
2400	2.72	2.56	2.83	2.70	0.5	0.3201


HYDROGRAPH and MASS CURVES
for
STORM OF MAY 1-2, 1972
at
WILBARGER CREEK NEAR PFLUGERVILLE, TEXAS
Drainage Area 4.61 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 79 ac-ft
Discharge
Accumulated rainfall
Accumulated runoff
DISCHARGE IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF IN INCHES
500
450
400
350
300
250
200
150
100
50
0
3.0
2.0
1.0
0
0000
0600
1200
1800
2400
0600
1200
1800
2400