Annual Compilation and Analysis of Hydrologic Data for Honey Creek, Trinity River Basin Texas, 1970

U.S. GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Compilation + analysis of hydrologic data

Prepared in cooperation with the Texas Water Development Board and the Soil Conservation Service

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By B.B. Hampton

U.S. GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
Texas District Open-File Report
I.D. Yost, District Chief

Prepared in cooperation with the Texas Water Development Board and the Soil Conservation Service

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ANNUAL COMPILATION AND ANALYSIS OF HYDROLOGIC DATA FOR HONEY CREEK, TRINITY RIVER BASIN, TEXAS 1970

By

B. B. Hampton

INTRODUCTION

History of Small Watershed Projects in Texas

The U.S. Soil Conservation Service is actively engaged in the installation of flood- and soil-erosion reducing measures in Texas under the authority of "The Flood Control Act of 1936 and 1944" and "Watershed Protection and Flood Prevention Act" (Public Law 566), as amended. The Soil Conservation Service has found a total of approximately 3,500 floodwater-retarding structures to be physically and economically feasible in Texas. As of September 30, 1970, 1,439 of these structures had been built.

This watershed-development program will have varying but important effects on the natural surface- and ground-water resources of river basins, especially where a large number of the floodwater-retarding structures are built. Basic hydrologic data under natural and developed conditions are needed to appraise the effects of the structures on the yield and mode of occurrence of runoff.

Hydrologic investigations of these small watershed study areas were begun by the U.S. Geological Survey in 1951 and are now being made in 12 areas (fig. 1). These investigations are being made in cooperation with the Texas Water Development Board, the Soil Conservation Service, the San Antonio River Authority, the city of Dallas, and the Tarrant County Water Control and Improvement District No. 1. The 12 study areas were chosen to sample watersheds having different rainfall, topography, geology, and soils. In five of the study areas (North, Little Elm, Mukewater, Little Pond-North Elm, and Pin Oak Creeks), streamflow and rainfall records were collected prior to construction of the floodwater-retarding structures, thus affording the opportunity for analyses of the conditions "before and after" development. Structures have now been built in four of these study areas. A summary of the development of the floodwater-retarding structures in each study area as of September 30, 1970, is shown in table 1.

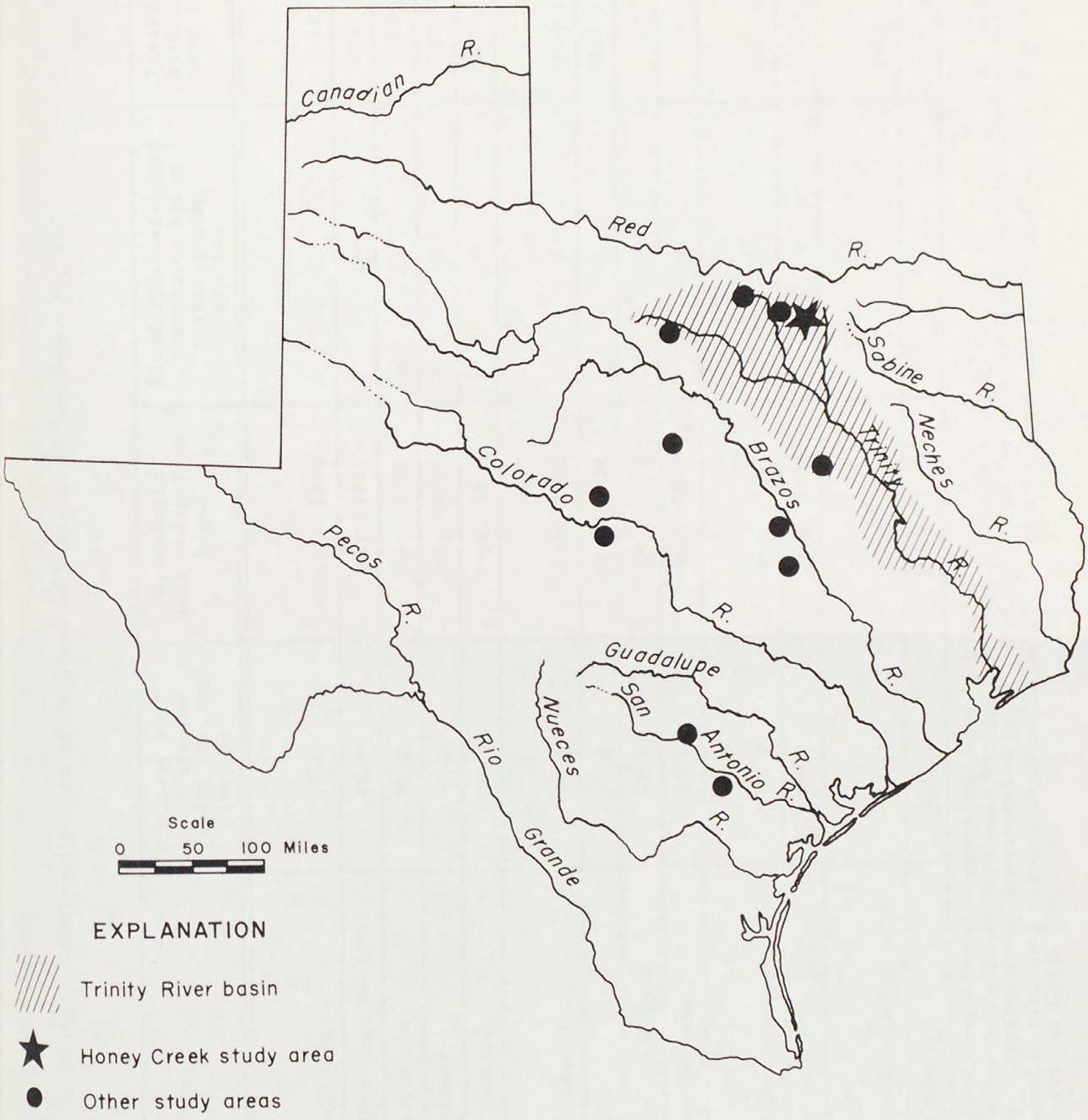

FIGURE 1. — Location of the Honey Creek study area

Table 1.--Small watershed study areas in Texas as of September 30, 1970

Watershed	Drainage area above stream-gaging station (sq mi)	Hydrologic data collection began	Floodwater-retarding structures above stream-gaging station	Period the structures were built
Trinity River basin:				
North Creek near Jacksboro	21.6	Aug. 1956	1	1970
Elm Fork Trinity River near Muenster	46.0	July 1956	14	1954-57, 63
Little Elm Creek near Aubrey	75.5	June 1956	11	1966, 70
Honey Creek near McKinney	39.0	July 1951	13	1951-57, 69
Pin Oak Creek near Hubbard	17.6	Sept. 1956	6	1962-63, 65
Brazos River basin:				
Green Creek near Alexander	46.1	Oct. 1954	8	1954-56
Cow Bayou at Mooreville	85.0	Sept. 1954	26	1955-58, 64-65
1/Little Pond Creek at Burlington	22.2	Oct. 1962	None	-
1/North Elm Creek near Cameron	48.6	Oct. 1962	None	-
Colorado River basin:				
Mukewater Creek at Trickham	70.0	Aug. 1951	6	1961-62, 65
Deep Creek near Mercury	a/43.9	June 1951	5	1951-53
San Antonio River basin:				
Calaveras Creek near Elmendorf	77.2	Aug. 1954	c/7	1954-58
Escondido Creek at Kenedy	b/72.4	July 1954	10	1954-58

1/ Adjacent watersheds; considered as one study area.
a/ 8.31 sq mi above Dry Prong Deep Creek near Mercury not included in this total.
b/ 8.43 sq mi above Escondido Creek subwatershed No. 11 (Dry Escondido Creek) near Kenedy not included in this total.
c/ Six of the floodwater-retarding structures above Calaveras Creek near Elmendorf are in part of a 65.0 sq mi area controlled by Calaveras Creek Dam.

Objectives of the Texas Small Watershed Projects

The purpose of these investigations is to collect sufficient data to meet the following objectives:

1. To determine the net effect of floodwater-retarding structures on the regimen of streamflow at downstream points.

2. To determine the effectiveness of the structures as groundwater recharge facilities.

3. To determine the effect of the structures on the sediment yield at downstream points.

4. To develop relationships between maximum rates and/or volumes of runoff with rainfall in small natural watersheds.

5. To develop a stream-system model for basins with floodwater-retarding structures.

6. To determine the minimum instrumentation necessary for estimating the flood hydrographs below a system of structures, as needed for downstream water-management operation.

Purpose and Scope of this Basic-Data Report

This report, which is the eleventh in a series of basic-data reports published annually for the Honey Creek study area, contains the rainfall, runoff, and storage data collected during the 1970 water year for the 39.0-square-mile area above the stream-gaging station Honey Creek near McKinney, Texas. The locations of floodwater-retarding structures and hydrologic-instrument installations in the area are shown as figure 2.

The investigation is scheduled to continue through a period of both above- and below-normal precipitation to define the various factors used in the development of rainfall-runoff relationships.

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

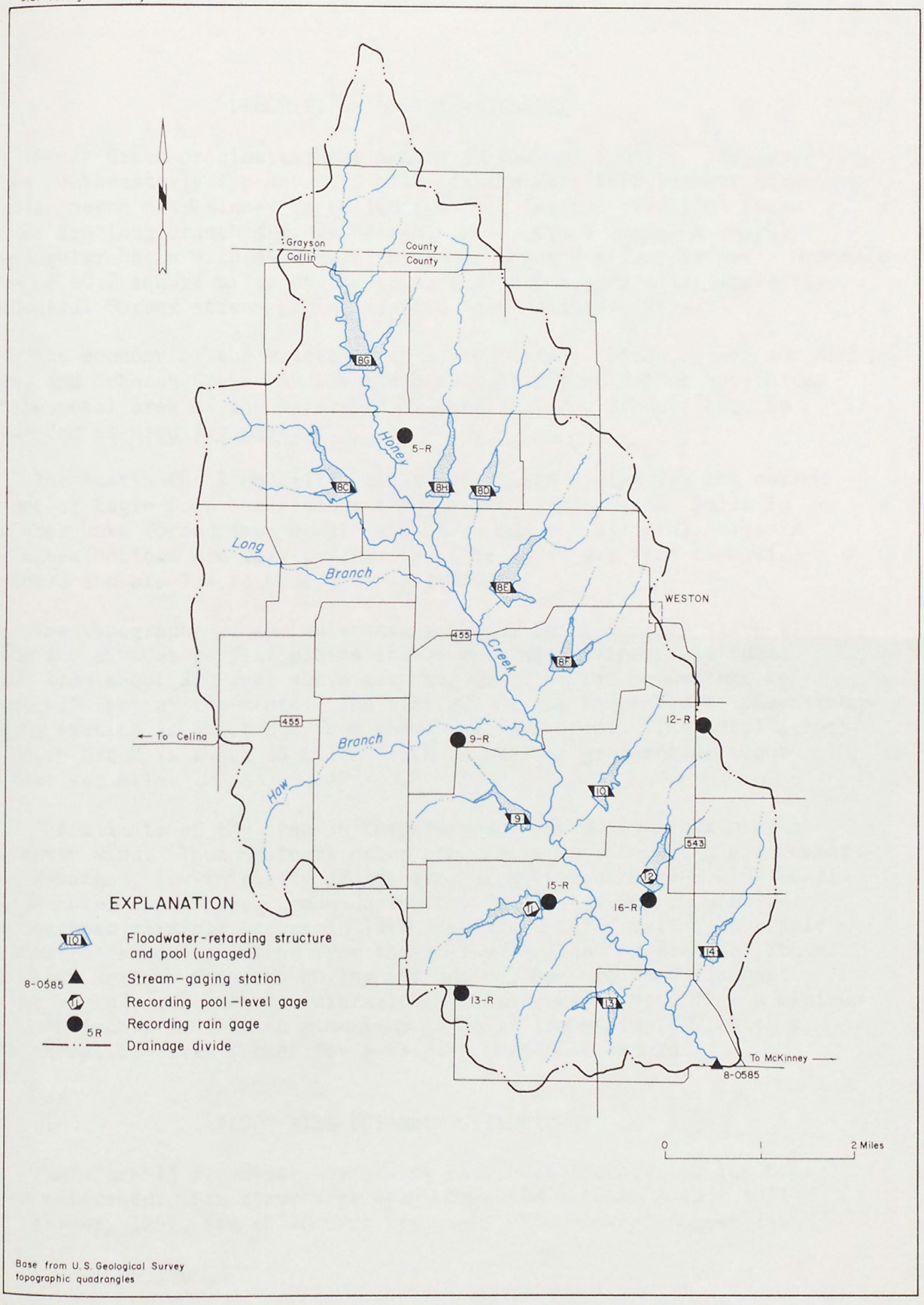

FIGURE 2.— Locations of floodwater-retarding structures and hydrologic-instrument installations in the Honey Creek study area

DESCRIPTION OF THE WATERSHED

Honey Creek originates near Gunter in Grayson County. The creek flows southeasterly for about 15 miles to the East Fork Trinity River, 3 miles north of McKinney in Collin County. Its two principal tributaries are Long Branch and Haw Branch. Honey Creek drains a roughly rectangular basin with an average width of about 4 miles; it has a drainage area of 50.7 square miles at the mouth and 39.0 square miles above the Geological Survey stream-gaging station near McKinney, Texas.

The economy of the watershed is agricultural; cotton, grain sorghums, corn, and Johnson Grass hay are the principal crops. About two-thirds of the total area of the watershed is used for crop production; the remainder is used for pasture.

The Austin Chalk underlies all of the basin except for the narrow fringe of Eagle Ford Shale along the northwestern divide. Soils in the area have formed from chalks and marls and the alluvial soils in the creek bottoms are very productive. The soils are fine to medium textured and are low to moderately permeable.

The topography of the watershed ranges from moderately steep slopes along the divides to flat plains in the central section. Altitudes range from about 810 feet above mean sea level at the headwaters to about 525 feet at the mouth. The altitude of the streambed at the stream-gaging station is about 564 feet above mean sea level. The total length of Honey Creek is about 15 miles, with an average gradient of about 19 feet per mile.

The climate of the area is temperate and subhumid with a prevailing south wind. Thunderstorms occur frequently in the spring and summer. Long-duration, low-intensity storms triggered by southward-moving continental polar fronts are common during the fall and winter. Some of the heaviest rainfall occurs in late summer and early fall as a result of hurricanes moving inland from the Gulf of Mexico. Individual storms may cause serious flooding during any season, but are most frequent in the spring. The annual rainfall at McKinney has ranged from a minimum of 20.76 inches in 1925 to a maximum of 76.12 inches in 1877, with a mean annual of 39.24 inches for a 58-year period of record.

FLOODWATER-RETARDING STRUCTURES

There are 13 floodwater-retarding structures located in the Honey Creek watershed. Six structures were completed between August 1951 and February 1952, six structures were completed between August 1955

and July 1957, and one structure was completed in December 1968. These 13 structures provide capacity for flood-detention storage of 6,930 acre-feet of flood runoff from 24.6 square miles of the 39.0 square mile drainage area.

Table 2 contains a summary of the physical data at each of the 13 floodwater-retarding structures.

HYDROLOGIC INSTRUMENTS

Instruments to collect rainfall, runoff, and storage data in the Honey Creek study area consist of a network of rain gages, water-stage recorders at floodwater-retarding structure sites 11 and 12, and a stream-gaging station on Honey Creek downstream from all floodwater-retarding structures. Prior to October 1, 1969, staff gages were operated at ten floodwater-retarding structures, sites 8-C, 8-D, 8-E, 8-F, 8-G, 8-H, 9, 10, 13, and 14, at which weekly readings were obtained to provide data to determine the quantity of water retained or released from the structures. On September 30, 1969, staff gage readings at all of these sites were discontinued. Also on September 30, 1969, rainfall readings at all ten nonrecording rain gages in the study area were discontinued. The locations of instruments are shown on figure 2.

Six recording rain gages are located at points throughout the study area to define the total rainfall and rainfall intensities. Since discontinuance of the nonrecording gages, average rather than weighted-mean rainfall has been computed for the study area.

Two recording pool-level gages are operated at floodwater-retarding structures sites 11 and 12. Data collection at these sites began September 11, 1952. These records include contents, surface area, inflow, and outflow.

A continuous water-stage recorder at the stream-gaging station on Honey Creek near McKinney provides records of the stage, which together with measurements of streamflow, are used to compute the runoff from the study area. Streamflow records at this gage began July 23, 1951.

SUMMARY OF DATA FOR THE 1970 WATER YEAR

Rainfall

The yearly average rainfall for subwatershed No. 11 was 38.22 inches, or 110 percent of the 18-year (1953-70) average of 34.60 inches for the area above site 11.

Table 2.--Floodwater-retarding structure data, Honey Creek study area.

Site Number	Drainage Area (sq mi)	Date Dam Completed	Date Gages Established	Datum of Gage above Mean Sea Level	Emergency Spillway			Drop Inlet		Portholes or weir notches			Controlled opening		Pipe Diameter through dam (in.)	Inside Dimensions of Drop Inlet Box	Inside Dimensions of Orifice Plate	Range of Staff Gages
					Width (ft)	Gage Height (ft)	Contents (ac-ft)	Gage Height (ft)	Pool Content (ac-ft)	size (in.)	Gage Height at Bottom (ft)	Pool Content (ac-ft)	Gage Height at Bottom (ft)	Pool Content (ac-ft)				
8-A	3.71	12-15-68	*	*	170	29.0	1,265	17.5	323	10"x20"	14.5	195	3.6	14.0	24	2.0'x6.0'	-	-
8-C	2.10	9-15-56	3-18-57†	694.80	100	27.5	629	18.00	152	-	-	-	0.5	1.0	17	2.5'x2.5'	13"	6.8-30.5
8-D	1.46	7-18-57	11- 5-57†	679.70	100	26.9	464	18.00	120	-	-	-	6.0	1.6	17	2.5'x2.5'	12"	13.3-27.1
8-E	1.93	7-18-57	11- 5-57†	654.00	150	26.3	738	16.00	220	-	-	-	1.0	10	17	2.5'x2.5'	13"	10.2-30.5
8-F	1.45	7-21-55	9- 2-55†	651.19	150	24.0	550	12.00	120	-	-	-	6.3	36	12	2.5'x2.5'	-	6.8-27.1
8-G	3.96	7-21-55	9-16-55†	706.26	250	26.5	1276	12.00	195	6"x30"	11.5	180	2.5	24	17	2.5'x2.5'	-	3.4-30.5
8-H	2.18	9-15-56	3-28-57†	677.00	150	28.2	748	16.00	188	-	-	-	6.5	43	17	2.5'x2.5'	14"	0.0-27.1
9	1.37	12-29-51	12- 9-54†	624.42	150	25.6	526	12.00	119	-	-	-	2.5	28	12	2.5'x2.5'	-	3.4-30.5
10	1.25	1- 9-52	3-31-55†	635.86	140	26.1	429	12.00	82	-	-	-	2.5	4.3	12	2.5'x2.5'	-	10.2-27.1
11	2.14	2- 9-52	9-11-52	629.00	200	26.8	1213	14.84	431	-	-	-	4.8	1.23	12	2.5'x2.5'	-	6.8-30.5
12	1.26	1-11-52	9-11-52	623.00	150	27.0	507	14.99	121	-	-	-	5.0	5.5	12	2.5'x2.5'	-	0.0-29.9
13	.89	2- 9-52	12- 3-54†	612.06	80	23.1	427	12.00	140	-	-	-	2.5	28	12	2.5'x2.5'	-	3.4-27.1
14	.91	8-30-51	12- 9-54†	618.12	100	24.1	350	12.00	85	-	-	-	2.5	8.7	12	2.5'x2.5'	-	6.8-27.1

* Gage not established at this site.

† Gage discontinued September 30, 1969.

The yearly average rainfall for subwatershed No. 12 was 36.65 inches, or 108 percent of the 18-year (1953-70) average of 33.92 inches for the area above site 12.

The yearly average rainfall in the study area for the 1970 water year was 38.03 inches, or 109 percent of the 17-year (1954-70) average of 34.97 inches. The monthly rainfall totals ranged from 0.06 inch in July to 6.18 inches in September.

Runoff

Annual inflow was 1,340 acre-feet at subwatershed No. 11, outflow was 1,210 acre-feet, and there was a net change in pool content of 3.9 acre-feet. Total runoff into site 11 during the 1970 water year was 11.74 inches.

Annual inflow into subwatershed No. 12 was 662 acre-feet, outflow was 620 acre-feet, and there was a net change in pool content of 1.4 acre-feet. Total runoff into site 12 during the 1970 water year was 9.85 inches.

The yearly mean discharge at the stream-gaging station Honey Creek near McKinney was 28.9 cfs (cubic feet per second), compared with the 19-year average of 19.3 cfs. Annual runoff at the stream-gaging station was 20,930 acre-feet, or 10.06 inches.

A storm 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 at the stream-gaging station, and the assurance of good rainfall and runoff records.

Four storm periods were selected for detailed computations. These computations include a detailed time breakdown of rainfall and discharge with hydrographs and mass curves drawn for illustrations. The storms selected occurred on March 2-3, April 25, April 30, and June 1, 1970. No storm computations were made for the storms of April 25 and April 30 at floodwater-retarding site 11 due to instrumentation difficulties. A summary of rainfall-runoff data for the four storms is shown in table 3.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 3.--Storm rainfall-runoff data, 1970 water year.

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (cfs)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			
08057500 Honey Creek subwatershed No. 11 near McKinney, Tex. (Drainage area, 2.14 sq. mi.)								
March 2-3, 1970	9.0	1.47	0.34	0.51	0.77	0.91	0.62	353
April 25, 1970			Record	Missing				about 2,000
April 30, 1970			Record	Missing				
June 1, 1970	5.2	1.08	.39	.55	.83	.43	.40	167
08058000 Honey Creek subwatershed No. 12 near McKinney, Tex. (Drainage area, 1.26 sq. mi.)								
March 2-3, 1970	8.2	1.25	0.50	0.74	0.84	0.88	0.70	354
April 25, 1970	10.5	2.82	.47	.85	1.30	2.00	.71	1,270
April 30, 1970	8.5	1.08	.24	.46	.70	.61	.56	362
June 1, 1970	6.0	1.39	.25	.49	.80	.59	.42	403

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 3.--Storm rainfall-runoff data, 1970 water year.--Continued

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (cfs)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			
08058500 Honey Creek near McKinney, Tex. (Drainage area, 39.0 sq. mi., of which 20.9 sq. mi. is above floodwater-retarding structures)								
March 2-3, 1970	9.2	1.30	0.27	0.45	0.58	0.93	0.72	1,140
April 25, 1970	10.5	2.70	.41	.77	1.16	1.65	.61	2,650
April 30, 1970	8.8	1.35	.26	.49	.69	1.07	.79	1,530
June 1, 1970	7.0	1.21	.26	.50	.76	.40	.33	709

COMPILATION AND ANALYSIS OF DATA

08057500 Honey Creek subwatershed No. 11 near McKinney, Tex.

LOCATION.--Lat 33°18'12", long 96°41'22", Collin County, near center of dam on unnamed tributary of Honey Creek, 1.5 miles west of Farm Road 543, and 8.4 miles northwest of McKinney.

DRAINAGE AREA.--2.14 sq mi.

PERIOD OF RECORD.--September 1952 to current year.

GAGE.--Water-stage recorder and concrete drop inlet. Datum of gage is 629.00 ft above mean sea level (Soil Conservation Service bench mark).

AVERAGE INFLOW.--18 years, 904 acre-ft per year.

AVERAGE OUTFLOW.--18 years, 701 acre-ft per year.

EXTREMES.--Current year: Maximum outflow, 7.0 cfs Apr. 30 (gage height, 19.47 ft); no outflow at times. Maximum inflow, 2,000 cfs (average for 5-minute interval) Apr. 25, computed from estimated change in pool contents and adjusted for outflow and rainfall on pool surface during time of peak inflow.
Period of record: Maximum outflow, 716 cfs May 26, 1957 (gage height, 28.77 ft); no outflow at times each year. Maximum inflow, 3,360 cfs (average for 5-minute interval) Apr. 30, 1966, computed and adjusted as above.

REMARKS.--Records fair. The pool is formed by a rolled earthfill dam, 1,303 ft long with an emergency spillway located at right end of dam. The dam was completed Feb. 9, 1952, but no appreciable storage began until April 1952. The first outflow occurred on Apr. 21, 1957. The outlet structure consists of an uncontrolled 2.5-foot square concrete drop-inlet structure that is connected to a 12-inch concrete outlet pipe. The emergency spillway crest is at gage height 26.8 ft; crest of drop-inlet structure is at gage height 14.84 ft; and invert at bottom of outlet pipe is at gage height 4.8 ft. There is also an 8-inch controlled outlet pipe connected to the drop inlet at gage height 4.8 ft. Pool capacity is 1,170 acre-ft at crest of emergency spillway, 428 acre-ft at crest of drop inlet, and 123 acre-ft at the controlled outlet pipe. The area and capacity tables presently in use are based on a sedimentation survey by the Soil Conservation Service in July 1967. The dam was built by the Soil Conservation Service for flood control and conservation. One recording rain gage above station and one at station are operated in basin.

POOL WATER BUDGET, IN ACRE-FEET, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
Inflow 1/	5.3	3.3	21.9	22.4	233	288	375	279	110	0.1	1.6	0.3
Outflow	0	0	0	0	90.7	372	158	338	235	6.2	6.2	0
(††)	4.79	.44	3.53	.47	5.42	3.08	5.97	3.21	1.38	.06	3.15	6.72

CAL YR 1969 Inflow 1,490 Outflow 1,400 †† 37.39
WTR YR 1970 Inflow 1,340 Outflow 1,210 †† 38.22

PEAK INFLOW (BASE, 100 CFS)

DATE	TIME	DISCHARGE
3- 2	2235	*353
3- 3	0610	*226
	about	about
4-25	1525	*2,000
6- 1	0135	*167

1/ Inflow adjusted for rainfall on pool and pool losses.
†† Weighted mean rainfall, in inches.
* Peaks computed on 5-minute interval.

(Oct. 1961)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of ____ Sheets

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Monthly and ~~annual discharge~~ yearly weighted-mean rainfall, in inches, of Honey Creek Subwatershed No. 11 River at near McKinney, Tex.

[Drainage area, 2.14 square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
1953	*0.15	*7.40	*3.09	*0.76	*1.69	*3.19	*7.74	*3.10	*0.29	2.64	2.25	2.19	*32.35
1954	3.01	3.28	1.71	2.36	.40	.62	5.44	5.12	4.48	2.77	1.76	3.92	34.87
1955	4.06	.95	1.54	1.88	2.88	2.37	2.26	4.96	2.39	1.27	.32	6.52	31.40
1956	.91	.60	.19	.80	5.25	.42	1.91	3.02	1.06	.88	.49	.56	16.09
1957	3.00	3.40	2.03	2.32	1.69	5.85	11.84	17.40	.49	.17	.05	4.41	52.65
1958	3.07	7.72	1.78	2.12	.67	3.83	8.35	3.58	1.91	1.63	1.79	3.29	39.74
1959	.85	2.48	.71	.15	1.21	2.79	1.02	2.99	6.86	4.95	1.66	.73	26.40
1960	4.63	.71	3.39	2.14	2.05	.98	2.03	2.77	3.29	6.82	5.45	2.26	36.52
1961	2.05	.52	4.65	1.96	2.14	3.30	2.56	4.37	3.88	3.88	.14	4.69	34.14
1962	2.61	2.46	2.79	1.27	1.48	2.49	4.85	1.20	6.84	2.80	1.56	6.57	36.92
1963	2.56	3.19	1.20	.39	.41	1.25	4.35	7.16	1.60	2.21	.87	.41	25.60
1964	0	1.20	1.17	1.89	1.56	3.84	5.00	5.09	1.38	.08	6.00	11.44	38.65
1965	1.12	7.70	.94	2.17	4.05	.76	1.38	6.50	3.41	.06	2.49	3.81	34.39
1966	1.30	1.75	1.13	.91	2.19	.90	14.85	.92	3.79	1.93	7.06	3.09	39.82
1967	.57	.75	1.27	.28	.67	2.33	3.81	6.49	.45	1.29	5.09	5.88	28.88
1968	3.28	.89	2.27	3.11	1.35	6.07	4.47	4.53	4.27	3.59	2.19	5.80	41.82
1969	1.29	3.19	1.14	2.34	2.57	3.59	2.71	8.85	4.45	.25	1.71	2.16	34.25
1970	4.79	.44	3.53	.47	5.43	3.08	5.97	3.21	1.38	.06	3.14	6.72	38.22

* From U.S. Weather Bureau Station at McKinney, Texas

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(Oct. 1961)

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GEOLOGICAL SURVEY
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Sheet 1 of ____ Sheets

8-0575.00

Monthly and ~~annual discharge~~ yearly Net Inflow, in acre-feet, of Honey Creek Subwatershed No. 11 River at near McKinney, Tex.

[Drainage area, 2.14 square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL	
1953	0.2	15.4	16.3	8.6	11.4	37.7	91.2	109	4.5	8.9	5.2	8.5	317	
1954	6.6	10.0	6.9	20.1	12.3	2.4	58.0	138	54.8	8.5	6.1	19.0	343	
1955	25.9	4.3	6.1	14.4	54.9	59.8	38.3	45.2	6.6	2.7	.8	25.0	284	
1956	1.8	1.4	.7	4.4	107	3.7	6.7	36.6	2.2	1.6	.8	.6	168	
1957	3.4	14.0	5.4	4.8	10.3	92.3	957	1605	107	42.7	.8	13.1	2,856	
1958	13.2	234	96.0	144	58.6	173	442	448	33.6	5.8	6.6	14.4	1,669	
1959	2.6	9.1	4.8	4.5	8.1	16.6	10.4	19.6	38.0	34.8	8.9	4.6	162	
1960	1.6	.9	12.4	66.6	85.8	37.5	10.3	15.1	2.9	33.6	60.8	6.0	334	
1961	5.8	8.1	68.5	145	139	115	92.3	220	14.3	5.1	0	4.3	817	
1962	17.7	9.6	104	54.0	52.7	72.6	211	26.8	67.5	5.6	.4	41.5	663	
1963	7.0	46.2	92.6	30.8	22.3	15.6	61.9	239	19.0	2.5	1.5	7.0	545	
1964	0	.2	.1	.1	0	5.1	83.7	61.8	10.8	.1	9.0	392	563	
1965	30.3	526	70.5	102	295	57.3	26.6	150	37.9	.2	2.5	.7	1,300	
1966	.8	3.2	13.0	2.1	20.8	4.8	992	239	12.7	.2	2.2	9.1	1,300	
1967	1.5	7.2	5.8	5.2	3.6	11.8	42.2	177	14.4	4.4	30.3	85.3	389	
1968	8.8	46.0	105	198	116	535	285	267	40.3	8.8	7.2	30.8	1,650	
1969	8.3	34.5	80.8	109	194	252	139	680	71.4	1.7	5.0	2.8	1,580	
1970	5.3	3.3	21.9	22.4	233	288	375	279	110	.1	1.6	.3	1,340	

9-220.c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of _____ Sheets

8-0575.00

Monthly and yearly Outflow ~~annual discharge~~, in acre-feet, of Honey Creek Subwatershed No. 11 River at/near McKinney, Tex.

[Drainage area, 2.14 square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
1953	0.4	0	0	0	0	0	0	38.8	9.7	12.0	4.5	4.4	70
1954	0	0	0	0	0	0	0	0	0	24.0	12.9	30.2	67
1955	0	0	0	0	0	0	0	0	5.5	31.7	34.0	3.5	75
1956	0	0	0	0	0	0	9.8	0	7.0	20.0	27.0	0	64
1957	0	0	0	0	0	0	133	1340	449	352	24.9	0	2,300
1958	0	117	83.0	131	47.0	147	120	454	256	0	0	0	1,360
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	14.7	2.0	17
1961	0	0	7.7	150	135	102	55.0	247	1.6	3.0	0	0	701
1962	0	0	39.6	48.5	46.1	43.8	160	83.6	47.1	3.2	0	0	472
1963	0	4.8	82.4	25.2	24.6	148	28.6	20.2	88.6	0	0	0	422
1964	0	0	0	0	0	0	0	0	0	0	0	133	133
1965	177	240	364	101	271	79.3	16.7	109	70.6	0	0	0	1,430
1966	0	0	0	0	0	0	97.2	628	399	8.6	0	0	1,130
1967	0	0	0	0	0	0	0	14.9	102	0	0	26.2	143
1968	.6	28.1	95.3	167	136	298	401	383	36.3	2.9	0	0	1,550
1969	0	2.8	68.8	66.4	216	258	126	387	348	0	0	0	1,470
1970	0	0	0	0	90.7	372	158	338	235	6.2	6.2	0	1,210

TX-74a
Rev. 6-68

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOL

ANNUAL SUMMARY

1970 WATER YEAR

08057500 Honey Creek subwatershed No. 11 near McKinney, Tex. Drainage Area 2.14 sq. mi.

Continuous water-stage recorder: ratio 1:6. Date of last sediment survey July 1967.

Maxima: gage height, 19.47 ft; outflow, 7.0 c.f.s.; surface area, 56.1 acres; contents, 653 acre-feet; on Apr. 30.

Minima: gage height, 12.35 ft; surface area, 36.1 acres; contents, 331 acre-feet; on Dec. 27.

Maximum inflow, about 2,000 c.f.s. (averaged for 5-min. interval and adjusted for rainfall on pool surface) on Apr. 25.

Averages: 18 water years, (1952-70); inflow, 904 acre-feet/year; outflow, 701 acre-feet/year; rainfall, 34.60 inches/year.

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Pool water budget, in acre-feet, water year October 1969 to September 1970.

	Oct.	Nov.	Dec.	Calendar year 1969	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Water year 1970
Total Inflow 1/	5.3	3.3	21.9	1,490	22.4	233	288	375	279	110	0.1	1.6	0.3	1,340
Total Outflow	0	0	0	1,400	0	90.7	372	158	338	235	6.2	6.2	0	1,210
Total Consumption	22.8	11.4	9.1	288	8.9	11.0	16.1	19.9	31.1	32.6	34.2	30.4	29.4	257
†	-4.1	-7.0	23.8	-71.1	15.0	150	-88.3	217	-78.1	-150	-40.2	-26.7	-7.5	3.9
‡	36.8	36.6	36.4	———	38.5	42.3	46.0	44.3	47.8	45.3	40.6	38.5	37.8	———
††	4.79	0.44	3.53	37.39	0.47	5.42	3.08	5.97	3.21	1.38	0.06	3.15	6.72	38.22

1/ Inflow adjusted for rainfall on pool and pool losses.
† Change in contents, in acre-feet.
‡ Mean surface area, in acres.
†† Weighted mean rainfall, in inches.
* Peaks computed on 5-minute interval.

Peak inflow - (base, 100 c.f.s.)

Date	Time	Discharge	Date	Time	Discharge
Mar. 2	2235	*353			
Mar. 3	0610	*226			
Apr. 25	about 1525	about *2,000			
June 1	0135	*167			

08058000 Honey Creek subwatershed No. 12 near McKinney, Tex.

LOCATION.--Lat 33°18'20", long 96°40'12", Collin County, near center of dam on unnamed tributary of Honey Creek, 0.5 mile west of Farm Road 543, and 7.8 miles northwest of McKinney.

DRAINAGE AREA.--1.26 sq mi.

PERIOD OF RECORD.--September 1952 to current year.

GAGE.--Water-stage recorder and concrete drop inlet. Datum of gage is 623.00 ft above mean sea level (levels by Soil Conservation Service).

AVERAGE INFLOW.--18 years, 538 acre-ft per year.

AVERAGE OUTFLOW.--18 years, 455 acre-ft per year.

EXTREMES.--Current year: Maximum outflow, 7.9 cfs Apr. 25 (gage height, 20.41 ft); no outflow for many days. Maximum inflow, 1,270 cfs (average for 5-minute interval) Apr. 25 computed from change in pool contents and adjusted for outflow and rainfall on pool surface during time of peak inflow.
Period of record: Maximum outflow, 766 cfs May 26, 1957 (gage height, 29.23 ft); no outflow most of time each year. Maximum inflow, 1,490 cfs (average for 15-minute interval) May 21, 1957, computed and adjusted as above.

REMARKS.--Records good. The pool is formed by a rolled earthfill dam, 1,253 ft long with an emergency spillway located at right end of dam. The dam was completed Jan. 11, 1952, but no appreciable storage began until April 1952. The first outflow occurred on May 12, 1954. The outlet structure consists of an uncontrolled 2.5-foot square concrete drop-inlet structure that is connected to a 12-inch concrete outlet pipe. The emergency spillway crest is at gage height 27.0 ft; crest of drop-inlet structure is at gage height 14.99 ft; and invert at bottom of outlet pipe is at gage height 5.0 ft. There is also an 8-inch controlled outlet pipe connected to the drop inlet at gage height 5.0 ft. Pool capacity is 477 acre-ft at the emergency spillway crest, 104 acre-ft at the crest of drop inlet, and zero acre-ft at the controlled outlet pipe. The area and capacity tables presently in use are based on a sedimentation survey completed by the Soil Conservation Service in July 1969. The dam was built by the Soil Conservation Service for flood control and conservation. One recording rain gage above station and one at station are operated in basin.

POOL WATER BUDGET, IN ACRE-FEET, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
Inflow 1/	9.5	4.0	50.1	15.6	127	133	212	56.1	52.4	0	2.2	0.1
Outflow	0	0	28.6	15.3	111	151	116	146	51.8	0	0	0
(††)	4.81	.32	3.46	.44	5.48	2.82	6.10	3.52	1.64	.03	2.80	5.26

CAL YR 1969: Inflow 730 Outflow 671 †† 34.63
WTR YR 1970: Inflow 662 Outflow 620 †† 36.68

PEAK INFLOW (BASE, 100 CFS)

DATE	TIME	DISCHARGE
3- 2	2250	*354
3- 3	0600	*134
4-25	1530	*1,270
4-30	0810	*362
5-26	1535	*274
6- 1	0200	*403

1/ Inflow adjusted for rainfall on pool and pool losses.
†† Weighted-mean rainfall, in inches.
* 5-minute interval.

9-2220-c
(Oct. 1961)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of ____ Sheets

8-0580.00

yearly weighted-mean rainfall
Monthly and ~~annual discharge~~, in inches, of Honey Creek Subwatershed No. 12 River at near McKinney, Tex.
[Drainage area, 1.26 square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
1953										3.03	2.02	2.39	*32.35
1954	3.15	3.10	1.62	2.29	.37	.62	5.28	5.34	4.04	1.57	2.75	4.41	34.54
1955	4.57	.92	1.25	1.99	2.96	2.25	2.61	4.16	2.52	1.06	.32	3.68	28.29
1956	.51	.63	.22	.98	5.22	.40	2.00	3.62	.37	.73	.44	.62	15.74
1957	2.93	3.16	2.04	2.29	2.02	5.59	13.39	17.70	1.08	.08	.15	4.62	55.05
1958	2.95	7.85	1.77	2.06	.69	3.83	9.02	3.22	2.38	1.21	1.67	4.24	40.89
1959	1.11	2.25	.68	.11	1.06	3.09	.72	3.10	5.86	4.32	3.09	.90	26.29
1960	4.56	.87	4.01	2.17	2.11	1.14	1.25	3.72	4.58	5.14	4.39	3.11	37.05
1961	2.13	.57	4.88	1.72	2.30	3.13	2.91	3.45	3.67	2.47	1.17	5.72	34.12
1962	2.80	2.66	2.56	1.14	1.45	2.72	4.82	1.20	5.37	3.06	1.39	7.17	36.34
1963	2.13	2.76	.78	.42	.39	1.08	4.26	8.27	.54	2.45	.54	.48	24.10
1964	.01	1.09	1.15	1.74	1.54	3.71	4.87	4.69	.83	.07	3.99	11.22	34.91
1965	.77	7.13	1.01	2.12	3.74	.68	1.45	8.13	3.56	.26	2.71	3.93	35.49
1966	1.17	1.67	.98	.84	2.20	.72	14.88	.90	2.24	3.39	6.96	3.50	39.45
1967	.33	.65	1.24	.33	.65	2.28	4.25	6.66	.64	1.33	1.72	5.79	25.87
1968	3.48	.88	2.31	2.73	1.68	5.88	5.06	5.12	3.70	3.67	1.06	6.07	41.64
1969	1.72	3.12	.97	2.27	2.38	3.27	2.48	7.68	4.14	.12	2.43	1.27	31.85
1970	4.81	.32	3.46	.44	5.48	2.82	6.10	3.52	1.64	0	2.80	5.26	36.65

* From U.S. Weather Bureau Station at McKinney, Tex.

9-220 c
(Oct. 1961)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of _____ Sheets

8-0580.00

Monthly and ~~annual discharge~~ Yearly Net Inflow, in acre-feet, of Honey Creek Subwatershed No. 12 River at near McKinney, Tex.

[Drainage area, 1.26 square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL	
1953	0.1	14.0	20.0	1.0	2.8	8.0	94.6	75.1	2.3	5.6	2.7	3.2	229	
1954	3.7	5.1	4.9	11.8	6.8	3.2	40.0	100	46.7	3.1	10.2	27.0	262	
1955	66.0	9.4	7.1	21.1	67.5	58.1	44.8	34.5	6.4	1.2	.5	6.0	323	
1956	.8	1.4	.3	3.8	80.8	.8	9.1	41.9	.7	.8	.7	.4	142	
1957	4.2	6.9	4.2	3.5	6.9	34.0	684	1023	4.2	.2	.8	7.6	1,780	
1958	5.4	151	50.3	67.8	33.2	86.2	352	173	9.1	2.5	2.6	7.1	940	
1959	2.4	3.8	1.7	1.2	2.8	9.0	5.5	11.1	16.5	14.8	6.2	2.6	78	
1960	14.4	3.3	41.1	43.8	44.9	16.5	6.9	16.4	21.7	10.4	14.5	3.9	238	
1961	4.2	2.9	49.7	65.0	56.3	47.9	44.0	122	7.4	3.5	.2	12.0	415	
1962	54.9	11.9	57.0	21.5	17.2	37.7	113	18.1	49.0	4.9	1.2	77.4	464	
1963	4.3	49.6	31.8	9.3	5.0	8.2	33.1	170	11.9	2.2	0	.7	326	
1964	.7	.7	2.2	2.6	1.5	9.2	67.3	35.3	4.6	.4	4.1	221	350	
1965	8.8	247	26.5	37.3	145	20.2	8.7	151	52.1	.9	.8	6.3	705	
1966	.7	5.9	4.1	4.3	29.4	6.0	632	51.4	5.6	2.4	18.9	25.4	786	
1967	3.7	2.8	4.4	4.5	1.8	8.7	13.0	154	2.0	2.9	2.4	66.5	267	
1968	4.9	7.4	37.4	75.8	51.8	268	167	213	41.0	26.6	2.7	51.3	947	
1969	27.5	31.6	35.7	54.5	97.2	130	51.0	292	36.0	1.9	2.3	1.5	761	
1970	9.5	4.0	50.1	15.6	127	133	212	56.1	52.4	0	2.2	.1	662	

9-220 c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of ____ Sheets

8-0580.00

Monthly and yearly Outflow ~~annual discharge~~, in acre-feet, of Honey Creek Subwatershed No. 12 River at near McKinney, Tex.

[Drainage area, 1.26 square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL	
1953	0.7	0	3.6	3.1	0.5	3.1	13.0	79.8	11.4	0	0.6	0.1	116	
1954	0	0	0	0	0	0	0	27.0	37.0	0	0	0	64	
1955	54.5	0	0	13.0	61.0	48.0	39.0	23.0	0	0	0	0	238	
1956	0	0	0	0	15.0	1.0	0	29.0	0	0	0	0	45	
1957	0	0	0	0	0	0	226	1050	344	0	0	0	1,620	
1958	0	108	47.0	64.0	30.0	79.0	101	395	.2	0	0	0	824	
1959	0	0	0	0	0	0	0	0	0	0	0	0	0	
1960	0	0	0	39.2	44.0	12.9	0	11.1	17.4	0	0	0	125	
1961	0	0	39.9	67.2	55.3	43.8	13.5	143	2.2	0	0	0	365	
1962	42.5	8.0	55.5	19.6	15.1	29.1	114	9.8	42.7	.1	0	59.0	395	
1963	.3	44.4	31.3	6.5	.2	2.4	26.2	91.8	84.3	0	0	0	287	
1964	0	0	0	0	0	0	23.6	26.8	2.2	0	0	152	205	
1965	50.2	214	64.1	37.1	146	16.7	4.8	139	61.3	0	0	0	733	
1966	0	0	0	0	5.3	2.1	235	463	0	0	0	26.9	732	
1967	.9	0	0	0	0	0	4.0	20.3	125	0	0	43.3	194	
1968	0	2.5	34.7	76.0	50.0	246	189	212	33.2	17.0	.2	40.1	901	
1969	22.3	25.5	34.4	45.7	101	126	45.2	295	29.2	0	0	0	724	
1970	0	0	28.6	15.3	111	151	116	146	51.8	0	0	0	620	

TX-74a
Rev. 6-68

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOL

ANNUAL SUMMARY

1970 WATER YEAR

08058000. Honey Creek subwatershed No. 12 near McKinney, Tex. Drainage Area 1.26 sq. mi.

Continuous water-stage recorder: ratio 1:6. Date of last sediment survey July 1969.

Maxima: gage height, 20.41 ft; outflow, 7.9 c.f.s.; surface area, 29.0 acres; contents, 230 acre-feet; on Apr. 25.

Minima: gage height, 13.25 ft; surface area, 15.2 acres; contents, 75.1 acre-feet; on Oct. 11.

Maximum inflow, 1,270 c.f.s. (averaged for 5-min. interval and adjusted for rainfall on pool surface) on Apr. 25.

Averages: 18 water years, (1952-70); inflow, 538 acre-feet/year; outflow, 455 acre-feet/year; rainfall, 33.92 inches/year.

Pool water budget, in acre-feet, water year October 1969 to September 1970.

	Oct.	Nov.	Dec.	Calendar year 1969	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1970
Total Inflow 1/	9.5	4.0	50.1	730	15.6	121	133	212	56.1	52.4	0	2.2	0.1	662
Total Outflow	0	0	28.6	671	15.3	111	151	116	146	51.8	0	0	0	620
Total Consumption	7.2	5.9	4.6	108	3.1	4.3	5.3	7.9	12.6	11.4	12.8	11.9	7.5	94.5
†	+8.3	-1.5	+21.1	-0.2	-2.2	+20.6	-19.2	+97.2	-95.9	-7.6	-12.7	-6.1	-0.6	+1.4
‡	15.9	16.3	16.6	——	18.3	18.8	18.9	20.2	19.4	18.3	17.0	15.9	15.7	—
††	4.81	.32	3.46	34.63	.44	5.48	2.22	6.10	3.52	1.64	.03	2.80	5.26	36.68

1/ Inflow adjusted for rainfall on pool and pool losses.
† Change in contents, in acre-feet.
‡ Mean surface area, in acres.
†† Weighted mean rainfall, in inches.

Peak inflow - (base, 100 c.f.s.)

Date	Time	Discharge	Date	Time	Discharge
Mar. 2	2250	*354	May 26	1535	*274
Mar. 3	0600	*134	June 1	0200	*403
Apr. 25	1530	*1,270			
Apr. 30	0810	*362			

* 5-minute interval.

08058500 Honey Creek near McKinney, Tex.

LOCATION.--Lat 33°16'42", long 96°39'27", Collin County, on right bank at downstream side of bridge on county road, 4.5 miles downstream from Haw Branch, 5.6 miles upstream from mouth, and 6.0 miles northwest of McKinney.

DRAINAGE AREA.--39.0 sq mi.

PERIOD OF RECORD.--July 1951 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 563.68 ft above mean sea level (Soil Conservation Service reference mark).

AVERAGE DISCHARGE.--19 years, 19.3 cfs (13,980 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,650 cfs Apr. 25 (gage height, 16.54 ft); no flow at times.
Period of record: Maximum discharge, 7,920 cfs May 26, 1957 (gage height, 20.29 ft); no flow at times.
Maximum stage since at least 1930, 23.0 ft in spring of 1950, from information by local resident.

REMARKS.--Records good. Station operated as part of the Honey Creek basin hydrologic cooperative program of the Geological Survey and Soil Conservation Service to evaluate rainfall-runoff relations, and the effects of floodwater-retarding structures. At end of year, flow from 24.6 sq mi above this station was partly controlled by 13 floodwater-retarding structures with a total combined capacity of 9,080 acre-ft below the flood-spillway crests, of which 6,930 acre-ft is floodwater-retarding capacity and 2,150 acre-ft is sediment-pool capacity. The capacity in these pools allocated to sediment storage will be used for conservation storage until eliminated by sedimentation. Diversions for irrigation above station. Six recording rain gages are operated in basin above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.72	.57	34	186	155	14	268	264	.98	0	2.6
2	0	.64	.50	29	130	106	13	206	100	.89	0	6.7
3	0	.98	.50	16	48	487	12	135	62	.72	.98	1.2
4	0	.89	.57	13	26	240	11	99	34	.80	.37	.32
5	0	.72	.80	16	19	147	11	88	27	1.5	0	.04
6	0	.64	3.2	14	17	92	10	67	21	.80	0	0
7	0	.72	2.4	12	16	69	10	50	17	.43	0	0
8	0	.72	1.2	10	15	57	9.7	41	16	.37	0	0
9	0	.64	.98	9.0	13	50	10	38	15	.37	0	0
10	0	.72	.89	8.0	11	35	78	35	13	.72	0	0
11	0	.80	.72	9.0	10	29	33	27	13	.64	0	0
12	7.8	.64	.72	8.3	9.0	27	24	18	13	.72	0	0
13	11	.72	.72	7.8	8.6	24	18	15	12	.72	0	0
14	1.2	.50	.72	7.0	8.6	22	14	15	12	.57	0	0
15	.80	.50	.72	6.1	69	21	14	14	11	.27	0	0
16	.32	.72	.72	5.6	46	24	16	13	11	.19	0	0
17	.27	.89	.72	5.3	27	157	16	13	11	.19	0	5.3
18	.32	.64	.89	5.6	21	63	17	12	6.1	.11	0	1.8
19	.32	.50	.89	4.3	17	44	36	12	3.6	.06	0	.64
20	.57	.50	.80	3.6	12	50	20	9.0	2.6	.02	0	2.3
21	.72	.50	.89	3.6	12	231	13	6.1	2.3	.01	0	3.0
22	.72	.50	.72	3.8	13	119	12	4.3	2.3	.02	0	3.4
23	.64	.57	.64	3.8	20	57	15	5.1	3.2	.06	0	65
24	.72	.57	.72	3.6	341	40	19	5.6	2.1	.06	.04	30
25	.43	.57	.72	3.8	347	34	760	4.3	1.8	.04	0	22
26	.57	.64	.64	3.6	214	27	332	162	1.5	.04	0	13
27	.98	.64	.80	3.4	129	24	273	80	1.4	.02	0	8.3
28	1.4	.64	2.2	3.6	307	20	223	57	1.3	0	0	7.5
29	.98	.64	276	3.8	------	17	146	33	1.2	0	0	4.1
30	2.3	.50	119	2.8	------	15	514	30	1.1	0	0	4.3
31	1.1	------	52	2.4	------	14	------	42	------	0	0	------
TOTAL	33.16	19.57	473.56	261.8	2,092.2	2,497	2,693.7	1,604.4	682.5	11.32	1.39	181.50
MEAN	1.07	.65	15.3	8.45	74.7	80.5	89.8	51.8	22.8	.37	.045	6.05
MAX	11	.98	276	34	347	487	760	268	264	1.5	.98	65
MIN	0	.50	.50	2.4	8.6	14	9.7	4.3	1.1	0	0	0
AC-FT	66	39	939	519	4,150	4,950	5,340	3,180	1,350	22	2.8	360

CAL YR 1969 TOTAL 13,644.79 MEAN 37.4 MAX 1,190 MIN 0 AC-FT 27,060
WTR YR 1970 TOTAL 10,552.10 MEAN 28.9 MAX 760 MIN 0 AC-FT 20,930

9-220c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of _____ Sheets

8-0585.00

Monthly and ~~annual discharge~~ yearly average rainfall, in inches, of Honey Creek River at near McKinney, Tex.

[Drainage area, 39.0 square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
1954	3.91	3.43	1.39	2.53	0.34	0.67	5.48	5.32	4.07	2.01	2.09	4.74	35.99
1955	4.55	.82	1.75	1.95	3.12	2.76	1.93	4.74	2.82	1.04	.58	3.49	29.55
1956	.66	.60	.21	.96	4.50	.34	2.29	3.52	.33	.98	.49	.36	15.24
1957	3.08	3.31	2.18	2.32	1.96	6.09	13.64	17.41	.71	.49	.23	5.32	56.75
1958	2.78	7.44	1.72	2.04	.71	3.61	8.72	2.56	3.07	1.37	1.78	3.23	39.01
1959	1.00	2.63	.72	.22	1.32	2.57	.80	2.60	6.88	5.35	2.17	.83	27.09
1960	5.28	1.68	3.77	2.03	2.26	1.21	1.57	3.01	4.30	5.70	4.26	2.71	37.78
1961	1.64	.63	4.75	1.83	2.43	2.94	2.13	2.84	3.95	3.40	1.25	4.66	32.45
1962	2.67	2.38	2.46	1.11	1.34	2.72	5.49	1.19	6.61	3.23	1.81	8.60	39.61
1963	2.40	3.00	1.05	.38	.38	.93	4.41	7.21	.71	2.30	.49	.36	23.62
1964	0	1.02	1.15	1.71	1.61	4.11	4.57	5.16	1.07	.21	4.25	11.41	36.27
1965	1.87	6.99	.98	2.24	3.79	1.18	1.32	7.03	3.69	.56	2.99	4.43	37.07
1966	1.21	1.82	1.18	.90	2.20	.96	14.32	1.11	2.67	2.43	7.42	3.44	39.66
1967	.58	.71	1.56	.33	.81	2.66	4.73	6.94	.78	1.41	1.99	5.58	28.08
1968	3.24	1.04	2.40	3.07	1.65	6.16	4.83	5.09	3.86	3.14	1.17	6.22	41.87
1969	1.75	3.60	1.52	2.13	2.82	3.80	2.98	8.41	4.65	.21	2.67	1.95	36.49
1970	4.86	.40	3.61	.46	5.54	2.93	6.02	3.03	1.39	.06	3.55	6.18	38.03

9-220 c
(Oct. 1961)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

08058500

Monthly and ~~annual~~ yearly mean discharge, in cfs, of Honey Creek ~~River~~ at near McKinney, Tex.

[Drainage area, 39.0 square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
1951	-	-	-	-	-	-	-	-	-	-	0.12	0	-
1952	0	0.02	0.07	0.09	0.51	0.99	52.5	21.6	6.6	0.84	0	0	6.82
1953	0	1.33	2.28	1.30	1.25	4.71	43.9	46.3	.85	.04	0	0	8.52
1954	1.58	1.87	.28	6.15	1.23	.28	17.4	33.0	17.5	0	.01	1.67	6.76
1955	6.56	.41	.87	3.03	22.9	10.7	7.68	7.66	2.90	.05	0	0	5.11
1956	0	0	0	0	12.1	.02	.80	10.0	0	0	0	0	1.87
1957	0	.94	.01	0	.20	9.25	223	434	57.8	6.42	.03	.47	61.4
1958	.25	48.3	16.3	25.9	15.8	29.9	90.8	150	15.4	.30	0	.71	32.9
1959	0	.34	1.14	.95	1.18	1.39	1.65	.50	5.76	13.6	.003	0	2.22
1960	.98	21.6	14.2	24.9	20.3	7.20	2.73	3.95	4.22	4.34	2.07	.07	8.83
1961	.04	.17	8.19	31.6	39.2	20.7	6.54	33.1	1.82	1.37	.12	2.25	12.0
1962	4.85	1.72	14.9	6.73	6.02	13.5	78.9	12.0	26.7	1.83	.36	65.0	19.2
1963	2.30	15.7	17.3	5.06	2.71	4.39	14.6	63.2	19.6	.60	.003	0	12.2
1964	0	0	0	0	.15	1.90	12.9	13.1	1.32	0	0	83.4	9.28
1965	14.0	151	22.5	22.6	85.5	15.9	7.49	54.9	28.8	1.09	.03	3.56	33.4
1966	.15	.49	.51	.57	8.23	1.47	212	126	7.62	.51	8.38	6.44	30.9
1967	.84	.37	.56	.68	.73	4.11	24.3	52.3	39.0	.24	.12	4.77	10.7
1968	.61	1.16	8.08	32.8	19.8	160	90.6	85.7	12.6	3.41	.42	6.28	35.3
1969	6.76	18.1	18.6	21.4	69.1	66.0	39.9	202	32.8	1.26	.047	.022	39.6
1970	1.07	.65	15.3	8.45	74.7	80.5	89.8	51.8	22.8	.37	.045	6.05	28.9

Form A-88
Rev. 1-63

UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey - Water Resources Division

RAINFALL DATA SUMMARY

STUDY AREA HONEY CREEK 1970 WATER YEAR

Date of Storm	RAIN GAGES 5-R	9-R	12-R	13-R	15-R	16-R	Average
Oct. 12, 1969	3.81	3.15	3.31	3.85	2.96	2.90	
27	.75	.70	.87	.74	.67	.80	
28	.13	.20	.14	.11	.11	.06	
29-30	.55	.66	.74	.50	.64	.80	
October Totals	5.24	4.71	5.06	5.20	4.38	4.56	4.86
Nov. 2, 1969	.20	.13	.14	.21	.16	.12	
3	0	0	0	.10	.05	.07	
26-27	.27	.27	.20	.23	.14	.10	
November Totals	.47	.40	.34	.54	.35	.29	.40

Form A-88
Rev. 1-63

UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey - Water Resources Division

RAINFALL DATA SUMMARY

STUDY AREA HONEY CREEK 1970 WATER YEAR

Date of Storm	RAIN GAGES 5-R	9-R	12-R	13-R	15-R	16-R	Average
Dec. 5, 1969	0.65	0.68	0.74	0.63	0.56	0.70	
6	.57	.54	.58	.58	.70	.47	
19	.02	.10	.15	.02	.10	.10	
28-29	2.73	2.40	2.37	2.22	2.25	1.80	
December Totals	3.97	3.72	3.84	3.45	3.61	3.07	3.61
1969 Calendar Year Total							38.49
Jan. 2, 1970	0	0	0	0	.07	0	
5	.51	.44	.47	.48	.39	.40	
January Totals	.51	.44	.47	.48	.46	.40	.46

Form A-88
Rev. 1-63

UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey - Water Resources Division

RAINFALL DATA SUMMARY

STUDY AREA HONEY CREEK 1970 WATER YEAR

Date of Storm	RAIN GAGES 5-R	9-R	12-R	13-R	15-R	16-R	Average
Feb. 1, 1970	1.79	1.62	1.72	1.50	1.55	1.45	
8	.11	.05	.09	.32	0	.19	
15	.92	.82	.86	.82	.80	.88	
22-23	.40	.42	.43	.50	.50	.27	
24	1.89	1.76	1.61	1.55	1.55	1.55	
27-28	.82	.84	.96	.87	.90	.95	
February Totals	5.93	5.51	5.67	5.56	5.30	5.29	5.54
Mar. 2-3, 1970	1.23	1.08	1.30	1.33	1.62	1.21	
11	.22	.12	.12	.19	.06	.05	
16-17	1.02	.82	.70	.73	.60	.72	
20-21	.63	.67	.82	.88	.74	.72	
March Totals	3.10	2.69	2.94	3.13	3.02	2.70	2.93

Form A-88
Rev. 1-63

UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey - Water Resources Division

RAINFALL DATA SUMMARY

STUDY AREA HONEY CREEK 1970 WATER YEAR

Date of Storm	RAIN GAGES 5-R	9-R	12-R	13-R	15-R	16-R	Average
Apr. 9, 1970	0.80	1.05	1.14	1.60	0.42	0.46	
15	.30	.30	.28	.32	.12	.22	
16	.05	.10	.15	.03	.15	.14	
18	.27	.20	.39	.30	.58	.42	
23	.10	.30	.63	.10	.32	.56	
25	2.68	2.57	2.91	2.55	2.74	2.73	
30	1.75	1.50	1.10	1.66	1.05	1.06	
April Totals	5.95	6.02	6.60	6.56	5.38	5.59	6.02
May 26, 1970	1.90	1.40	1.65	2.20	2.20	3.02	
28	.35	.40	.35	.50	.50	.36	
30	.30	.38	.95	.35	.67	.71	
May Totals	2.55	2.18	2.95	3.05	3.37	4.09	3.03

Form A-88
Rev. 1-63

UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey - Water Resources Division

RAINFALL DATA SUMMARY

STUDY AREA HONEY CREEK 1970 WATER YEAR

Date of Storm	RAIN GAGES 5-R	9-R	12-R	13-R	15-R	16-R	Average
June 1, 1970	1.05	1.27	1.25	0.72	1.45	1.53	
3	0	0	0	.10	.04	.06	
4	0	0	0	.10	.08	.06	
22	0	0	0	0	.26	.38	
June Totals	1.05	1.27	1.25	.92	1.83	2.03	1.39
July 11, 1970	.12	.10	0	.12	0	0	
July Totals	.12	.10	0	.12	0	0	.06

Form A-88
Rev. 1-63

UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey - Water Resources Division

RAINFALL DATA SUMMARY

STUDY AREA HONEY CREEK 1970 WATER YEAR

Date of Storm	RAIN GAGES 5-R	9-R	12-R	13-R	15-R	16-R	Average
Aug. 16, 1970	0.10	0	0	0	0	0	
19	1.10	.90	1.00	1.35	1.14	1.00	
22	.20	.22	.50	.18	.53	.50	
23	1.84	1.50	.90	.99	.55	.90	
31	1.70	1.86	.40	1.20	.35	.40	
August Totals	4.94	4.48	2.80	3.72	2.57	2.80	3.55
Sept. 1, 1970	1.50	.80	.32	.40	.48	.32	
2	.50	.72	1.79	1.15	1.36	1.79	
13	.25	.33	.14	.21	.21	.14	
16-17	2.55	2.23	1.64	2.36	2.36	1.65	
21	.20	.20	0	.28	.28	0	
23	2.14	1.60	1.28	2.02	2.02	1.23	
25	0	.10	.16	.16	.16	.07	
September Totals	7.14	5.98	5.33	6.58	6.87	5.20	6.18
1970 Water Year Total							38.03

Form A-64
(Rev. 9-65)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period March 2-3, 1970

08057500 Honey Creek subwatershed No. 11 near McKinney, Tex. D.A. 2.14 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage ac-ft	Change in storage cfs	Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool in	Rainfall on Pool area ac	Rainfall on Pool Storage ac-ft	Rainfall on Pool Storage cfs	Net Inflow Rate cfs	Net Inflow Rate in/hr	Net Inflow in	Acc in
	Mar. 2,	1970														
0000	16.88	519.04														
1200	16.86	518.10	12	-.94	-1.0	16.87	6.7	5.7					5.7	.0041	0.0492	0.0492
2100	16.82	516.21	9	-1.89	-2.5	16.84	6.7	4.2					4.2	.0030	.0270	.0762
30	16.82	516.21	.5	0	0	16.82	6.7	6.7					6.7	.0049	.0024	.0786
45	16.82	516.21	.25	0	0	16.82	6.7	6.7	0				6.7	.0049	.0012	.0798
2200	16.85	517.62	.25	+1.41	+68.2	16.84	6.7	74.9	.20	47.0	.78	37.8	37.1	.0269	.0067	.0865
15	16.92	520.93	.25	+3.31	+160	16.88	6.7	167	.45	47.2	1.77	85.7	81.3	.0589	.0147	.1012
30	17.00	524.72	.25	+3.79	+183	16.96	6.7	190	.10	47.4	.39	18.9	171	.1238	.0309	.1321
35	17.05	527.10	.083	+2.38	+346	17.02	6.7	353					353	.2556	.0212	.1533
40	17.09	529.01	.083	+1.91	+277	17.07	6.7	284					284	.2056	.0171	.1704
50	17.14	531.40	.167	+2.39	+174	17.12	6.8	181					181	.1311	.0219	.1923
2300	17.18	533.33	.167	+1.93	+140	17.16	6.8	147					147	.1064	.0178	.2101
30	17.30	539.12	.5	+5.79	+140	17.24	6.8	147					147	.1064	.0532	.2633
2400	17.41	544.47	.50	+5.35	+129	17.35	6.8	136					136	.0985	.0492	.3125
	Mar. 3,	1970														
0000	17.41	544.47														
0100	17.52	549.87	1	+5.40	+65.3	17.46	6.8	72.1					72.1	.0522	.0522	.3647
0200	17.58	552.82	1	+2.95	+35.7	17.55	6.9	42.6					42.6	.0308	.0308	.3955
0300	17.61	554.31	1	+1.49	+18.0	17.60	6.9	24.9					24.9	.0180	.0180	.4135
0400	17.63	555.30	1	+.99	+12.0	17.62	6.9	18.9	0				18.9	.0137	.0137	.4272
30	17.64	555.80	.5	+.50	+12.1	17.64	6.9	19.0	.05	49.6	.21	5.1	13.9	.0101	.0050	.4322
45	17.65	556.30	.25	+.50	+24.2	17.64	6.9	31.1	.14	49.6	1.58	28.1	3.0	.0022	.0006	.4328
0500	17.67	557.29	.25	+.99	+47.9	17.66	6.9	54.8	.27	49.7	1.12	54.2	.6	.0004	.0001	.4329
15	17.70	558.78	.25	+1.49	+72.1	17.68	6.9	79.0	.29	49.8	1.20	58.1	20.9	.0151	.0038	.4367
30	17.73	560.28	.25	+1.50	+72.6	17.72	6.9	79.5	.05	49.9	.20	9.7	69.8	.0505	.0126	.4493
45	17.77	562.28	.25	+2.00	+96.8	17.75	6.9	104	.03	50.0	.12	5.8	98.2	.0711	.0178	.4671

Comp. by: BBH
Checked by: CMW

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period March 2-3, 1970

08057500 Honey Creek subwatershed No. 11 near McKinney, Tex. D.A. 2.14 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage ac-ft	Change in storage cfs	Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool in	Rainfall on Pool area ac	Rainfall on Pool Storage ac-ft	Rainfall on Pool Storage cfs	Net Inflow Rate cfs	Net Inflow Rate in/hr	Net Inflow in	Acc in
	March 3, 1970 continued															
0600	17.81	564.28	.25	+2.00	+96.8	17.79	6.9	104	.04	50.2	.17	8.2	95.8	.0694	.0174	.4845
5	17.83	565.29	.083	+1.01	+147	17.82	6.9	154	0				154	.1115	.0093	.4938
10	17.86	566.80	.083	+1.51	+219	17.84	6.9	226					226	.1636	.0136	.5074
15	17.88	567.81	.083	+1.01	+147	17.87	6.9	154					154	.1115	.0093	.5167
30	17.93	570.34	.25	+2.53	+122	17.90	6.9	129					129	.0934	.0234	.5401
0700	18.01	574.40	.5	+4.06	+98.3	17.97	6.9	105					105	.0760	.0380	.5781
0730	18.07	577.47	.5	+3.07	+74.3	18.04	6.9	81.2					81.2	.0588	.0294	.6075
0815	18.15	581.57	.75	+4.10	+66.0	18.11	6.9	72.9					72.9	.0528	.0396	.6471
0900	18.20	584.14	.75	+2.57	+41.4	18.18	6.9	48.3					48.3	.0350	.0262	.6733
1000	18.25	586.73	1.00	+2.59	+31.3	18.22	6.9	38.2					38.2	.0277	.0277	.7010
1200	18.31	589.84	2	+3.11	+18.8	18.28	6.9	25.7					25.7	.0186	.0372	.7382
1800	18.37	592.97	6	+3.13	+6.3	18.34	6.9						13.2	.0096	.0576	.7958
2400	18.37	592.97	6	0	0	18.37	6.9						6.9	.0050	.0300	.8258
	March 4, 1970															
0000	18.37	592.97														
1200	18.35	591.92	12	-1.05	-1.1	18.36	6.9	5.9					5.9	.0043	.0516	.8774
2400	18.30	589.32	12	-2.60	-2.6	18.32	6.9	4.3					4.3	.0031	.0372	.9146

Comp. by: BBH
Checked by: CMW

TX-78 (Revised July 1969)

UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY - WATER RESOURCES DIVISION
TEXAS DISTRICT

WEIGHTED-PRECIPITATION RECORD

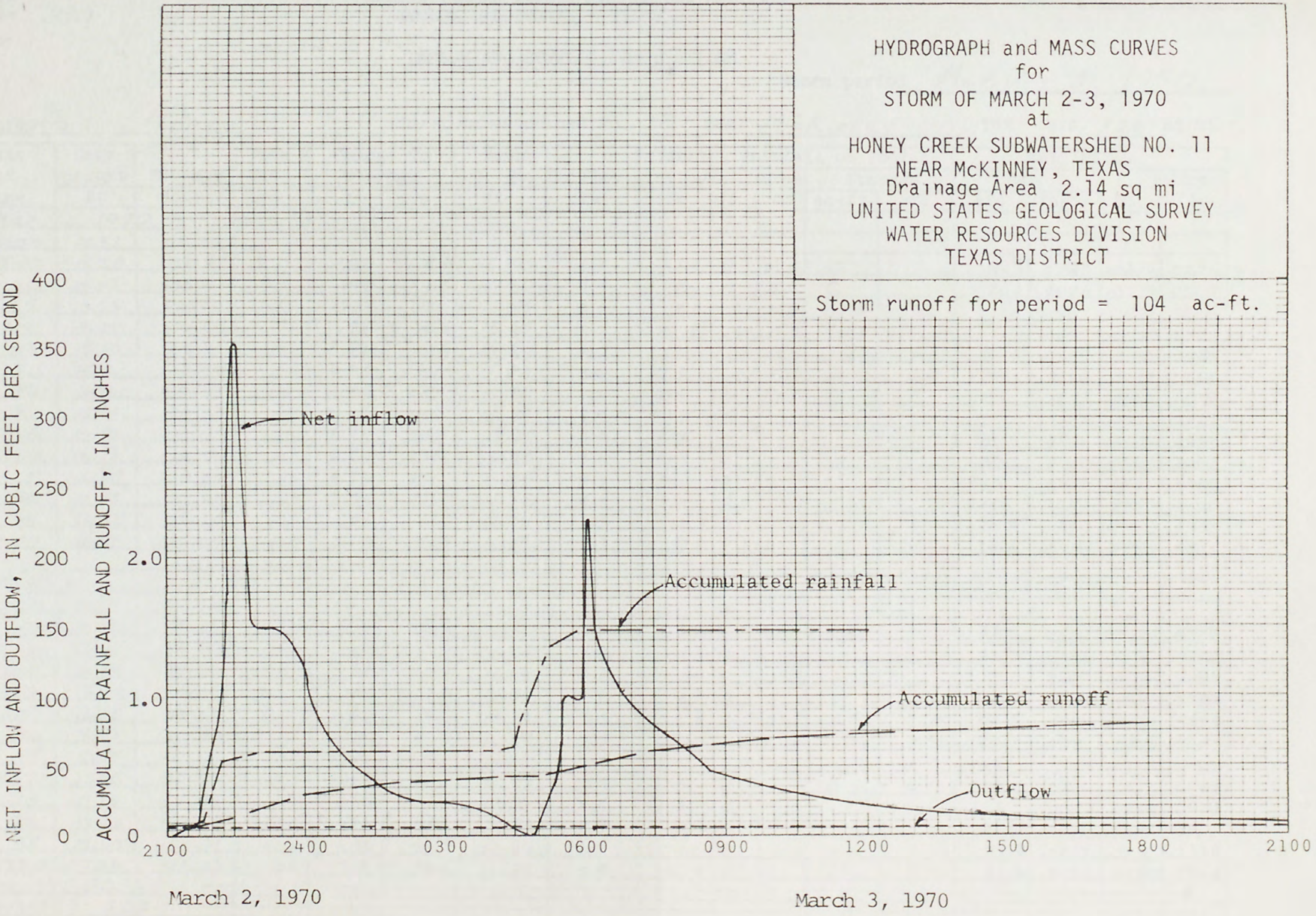
Sheet 1 of 1
Comp. by: BBH
Date 5/13/71
Check by JMT
Date 5/20/71

Study Area Honey Creek subwatershed No. 11 near McKinney, Tex. Date of storm March 2-3, 1970

Date & Time	Weight Factor	Gage 13-R Recorded	Gage 13-R x Factor	Gage 15-R Recorded	Gage 15-R x Factor	Gage Recorded	Gage x Factor	Gage Recorded	Gage x Factor	Gage Recorded	Gage x Factor	Gage Recorded	Gage x Factor	Accumulated Weighted Precipitation Recording Gages	Accumulated Weighted Precipitation (Rec. Gages x K) All Gages
		.50		.50											
March 2, 1970															
2100		0	0	0	0										0
15		.04	.02	0	0										.02
30		.10	.05	0	0										.05
45		.20	.10	0	0										.10
2200		.40	.20	.20	.10										.30
15		.46	.23	.65	.32										.55
2300		.46	.23	.75	.38										.61
2400		.46	.23	.75	.38										.61
March 3, 1970															
0400		.46	.23	.75	.38										.61
15		.46	.23	.75	.38										.61
30		.46	.23	.80	.40										.63
45		1.00	.50	.94	.47										.97
0500		1.09	.54	1.21	.60										1.14
15		1.19	.60	1.50	.75										1.35
30		1.25	.62	1.55	.78										1.40
45		1.33	.66	1.58	.79										1.45
0600		1.33	.66	1.62	.81										1.47
1200		1.33	.66	1.62	.81										1.47

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
										WMR	

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation =


HYDROGRAPH and MASS CURVES
for
STORM OF MARCH 2-3, 1970
at
HONEY CREEK SUBWATERSHED NO. 11
NEAR McKINNEY, TEXAS
Drainage Area 2.14 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 104 ac-ft.
NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
400
350
300
250
200
150
100
50
0
2.0
1.0
0
Net inflow
Accumulated rainfall
Accumulated runoff
Outflow
2100
2400
0300
0600
0900
1200
1500
1800
2100
March 2, 1970
March 3, 1970

Form A-64
(Rev. 5-65)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period Mar. 2 - 3, 1970

08058000 Honey Creek subwatershed No. 12 near McKinney, Tex. D.A. 1.26 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage ac-ft	Change in storage cfs	Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool in	Rainfall on Pool area ac	Rainfall on Pool Storage ac-ft	Rainfall on Pool Storage cfs	Net Inflow Rate cfs	Net Inflow Rate in/hr	Net Inflow in	Net Inflow Acc in
Mar. 2, 1970																
0000	15.51	113.77														
1200	15.28	109.41	12	- 4.36	- 4.4	15.40	6.3	1.9	0	19.0	0		1.9	.0023	.0276	.0276
2100	15.23	108.47	9	- .94	- 1.3	15.26	3.4	2.1	0	18.8	0		2.1	.0026	.0234	.0510
2145	15.23	108.47	.75	0	0	15.23	2.8	2.8	.09	18.7	0.14	2.2	.6	.0007	.0005	.0515
2200	15.27	109.22	.25	+ .75	+ 36.3	15.25	3.2	39.5	.50	18.7	.78	37.8	1.7	.0021	.0005	.0520
15	15.34	110.54	.25	+ 1.32	+ 63.9	15.30	4.2	68.1	.19	18.8	.30	14.5	53.6	.0659	.0165	.0685
30	15.52	113.97	.25	+ 3.43	+ 166	15.43	6.6	173	.01	19.1	.02	1.0	172	.2116	.0529	.1214
40	15.72	117.85	.167	+ 3.88	+ 282	15.62	7.1	289	0	19.4	0	0	289	.3555	.0594	.1808
45	15.84	120.23	.083	+ 2.38	+ 346	15.78	7.2	353	0				353	.4342	.0360	.2168
50	15.96	122.62	.083	+ 2.39	+ 347	15.90	7.2	354	0				354	.4354	.0361	.2524
2300	16.13	126.06	.167	+ 3.44	+ 250	16.04	7.3	257	0				257	.3161	.0528	.3057
15	16.35	130.62	.25	+ 4.56	+ 221	16.24	7.3	228	0				228	.2804	.0701	.3758
30	16.46	132.92	.25	+ 2.30	+ 111	16.40	7.3	118	0				118	.1451	.0363	.4121
45	16.52	134.18	.25	+ 1.26	+ 61.0	16.49	7.3	68.3	0				68.3	.0840	.0210	.4331
2400	16.57	135.24	.25	+ 1.06	+ 51.3	16.54	7.3	58.6	0				58.6	.0721	.0180	.4511
Mar. 3																
0000	16.57	135.24							0							
30	16.62	136.31	.50	+ 1.07	+ 25.9	16.60	7.3	33.2	0				33.2	.0408	.0209	.4715
0100	16.65	136.95	.50	+ .64	+ 15.5	16.64	7.3	22.8	0				22.8	.0280	.0140	.4855
0200	16.68	137.59	1.0	+ .64	+ 7.7	16.66	7.3	15.0	0				15.0	.0184	.0184	.5039
0400	16.70	138.02	2	+ .43	+ 2.6	16.69	7.3	9.9	0		0	0	9.9	.0122	.0244	.5283
0500	16.75	139.10	1	+ 1.08	+ 13.1	16.72	7.4	20.5	.23	21.5	0.41	5.0	15.5	.0191	.0191	.5474
30	16.83	140.82	.50	+ 1.72	+ 41.6	16.79	7.4	49.0	.09	21.6	.16	3.9	45.1	.0555	.0278	.5752
45	16.93	142.98	.25	+ 2.16	+ 105	16.88	7.4	112	.10	21.7	.18	8.7	103	.1267	.0317	.6069
0600	17.05	145.60	.25	+ 2.62	+ 127	16.99	7.4	134	0		0	0	134	.1648	.0412	.6481
15	17.15	147.80	.25	+ 2.20	+ 106	17.10	7.4	113	0				113	.1390	.0348	.6829
30	17.23	149.58	.25	+ 1.78	+ 86.2	17.19	7.4	93.6	0				93.6	.1151	.0288	.7117
45	17.29	150.91	.25	+ 1.33	+ 64.4	17.26	7.4	71.8	0				71.8	.0883	.0221	.7338
0700	17.34	152.03	.25	+ 1.12	+ 54.2	17.32	7.4	61.6	0				61.6	.0758	.0190	.7528
Comp. by: BCTh																→
Checked by: JDB																→

Form A-64
(Rev. 9-65)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period Mar. 2-3, 1970

08058000 Honey Creek subwatershed No. 12 near McKinney, Tex. D.A. 1.26 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage ac-ft	Change in storage cfs	Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool in	Rainfall on Pool area ac	Rainfall on Pool Storage ac-ft	Rainfall on Pool Storage cfs	Net Inflow Rate cfs	Net Inflow Rate in/hr	Net Inflow in	Net Inflow Acc in
Mar. 3, 1970	continued															
0730	17.38	152.92	.50	+ .89	+21.5	17.36	7.4	28.9	0		0	0	28.9	.0355	.0178	.7706
0800	17.41	153.60	.50	+ .68	+16.5	17.40	7.5	24.0	0				24.0	.0295	.0148	.7854
0900	17.44	154.27	1.0	+ .67	+ 8.1	17.42	7.5	15.6	0				15.6	.0192	.0192	.8046
1200	17.45	154.50	3	+ .23	+ .9	17.44	7.5	8.4	0				8.4	.0103	.0309	.8355
1800	17.36	152.47	6	-2.03	-4.1	17.40	7.5	3.4	0				3.4	.0042	.0252	.8607
2400	17.24	149.80	6	-2.67	-5.4	17.30	7.4	2.0	0				2.0	.0025	.0150	.8757

Comp. by: BCM
Checked by: JDB

TX-78 (Revised July 1969)

UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY - WATER RESOURCES DIVISION
TEXAS DISTRICT

WEIGHTED-PRECIPITATION RECORD

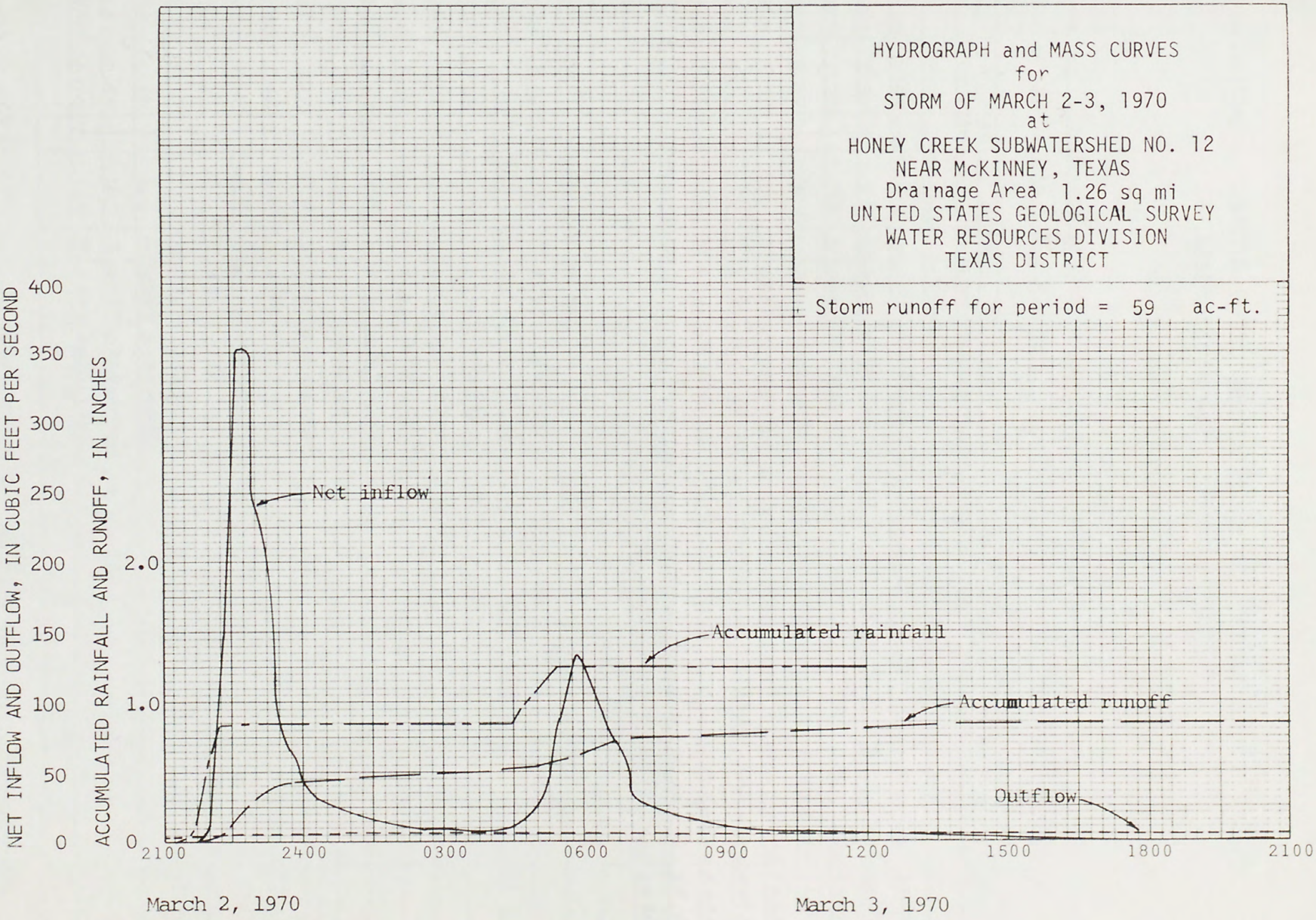
Sheet 1 of 1
Comp. by: BBH
Date 5/13/71
Check by JWT
Date 5/20/71

Study Area Honey Creek subwatershed No. 12 near McKinney, Tex. Date of storm March 2-3, 1970

Accumulated Precipitation in Inches for Recording Rain Gages											Accumulated Weighted Precipitation	
Weight Factor	.50		.50								Recording Gages	(Rec. Gages x K)
Gage	12-R		16-R								All Gages	All Gages
Date & Time	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor		
March 2, 1970												
2100	0	0	0	0								0
15	0	0	0	0								0
30	.05	.04	0	0								.04
45	.12	.06	.09	.04								.10
2200	.60	.30	.59	.30								.60
15	.90	.45	.76	.39								.84
2300	.90	.45	.79	.40								.85
2400	.90	.45	.79	.40								.85
March 3, 1970												
0400	.90	.45	.79	.40								.85
30	.90	.45	.79	.40								.85
45	1.05	.52	.93	.50								1.02
0500	1.10	.55	1.02	.51								1.06
15	1.20	.60	1.11	.56								1.16
30	1.30	.65	1.21	.60								1.25
45	1.30	.65	1.21	.60								1.25
1200	1.30	.65	1.21	.60								1.25

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
										WMR	

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation =


HYDROGRAPH and MASS CURVES
for
STORM OF MARCH 2-3, 1970
at
HONEY CREEK SUBWATERSHED NO. 12
NEAR McKINNEY, TEXAS
Drainage Area 1.26 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 59 ac-ft.
NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
400
350
300
250
200
150
100
50
0
2.0
1.0
0
Net inflow
Accumulated rainfall
Accumulated runoff
Outflow
2100
2400
0300
0600
0900
1200
1500
1800
2100
March 2, 1970
March 3, 1970

TX-65 (Rev. 7-69)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Honey Creek near McKinney, Tex.

Period of Record March 2-3, 1970 Drainage Area 39.0 sq mi

Time	G. Ht. Feet	Sh. Adj.	Discharge C. f. s.	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In.
			March 2, 1970				
0000	2.55	+.05	119	6	.0047	.0282	.0282
1200	2.37		95	10.5	.0038	.0399	.0681
2100	2.28		84	5	.0033	.0165	.0846
2200	2.27		83	1	.0033	.0033	.0879
2300	2.53		116	.75	.0046	.0035	.0914
30	4.00		252	.5	.0100	.0050	.0964
2400	5.96	+.05	419	.25	.0166	.0042	.1006
			2532250	24			
			106				
			March 3, 1970				
0000	5.96	+.05	419	.5	.0166	.0083	.1089
0100	7.38	0	552	.75	.0219	.0164	.1253
30	7.43		557	.5	.0221	.0110	.1363
0200	7.14		525	1.25	.0209	.0261	.1624
0400	5.54		377	1.5	.0150	.0225	.1849
0500	5.00		328	.75	.0130	.0098	.1947
30	4.90		320	.5	.0127	.0064	.2011
0600	5.00		328	.5	.0130	.0065	.2076
30	5.45		368	.5	.0146	.0073	.2149
0700	6.30		445	.5	.0177	.0088	.2237
30	7.42		556	.5	.0221	.0110	.2347
0800	8.50		676	.75	.0269	.0202	.2549
0900	10.17		964	.75	.0383	.0287	.2836
30	10.65		1,100	.5	.0437	.0218	.3054
1000	11.04	0	1,140	.5	.0453	.0226	.3280

Time	G. Ht. Feet	Sh. Adj.	Discharge C. f. s.	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In
			March 3, 1970 cont.				
1030	10.96	0	1,120	.5	.0445	.0222	.3502
1100	10.49	0	1,030	.75	.0409	.0307	.3809
1200	8.83	0	717	1	.0285	.0285	.4094
1300	7.07	-.54	466	1	.0185	.0185	.4279
1400	6.10	-.20	409	1.5	.0162	.0243	.4522
1600	5.29	-.13	342	2	.0136	.0272	.4794
1800	4.94	0	323	2	.0128	.0256	.5050
2000	4.72		306	3	.0122	.0366	.5416
2400	4.49	0	287	2	.0114	.0228	.5644
			11679250	24			
			487				

Computed by BBH Date 1-13-71 Checked by JDB - CMW Date 5-7-71

TX-65 (Rev. 7-69)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Honey Creek near McKinney, Tex.

Period of Record March 4-5, 1970 Drainage Area 39.0 sq mi

Time	G. Ht. Feet	Sh. Adj.	Discharge C. f. s.	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In.
			March 4, 1970				
0000	4.49	0	287	.5	.0114	.0057	.5701
0100	4.44		283	1	.0112	.0112	.5813
0200	4.39		279	1.5	.0111	.0166	.5979
0400	4.27		270	2	.0107	.0214	.6193
0600	4.16		261	4	.0104	.0416	.6609
1200	3.88		238	6	.0095	.0570	.7179
1800	3.68		222	6	.0088	.0528	.7707
2400	3.33	0	194	3	.0077	.0231	.7938
			5771	24			
			240				
			March 5, 1970				
0000	3.33	0	194	6	.0077	.0462	.8400
1200	2.76		143	12	.0057	.0684	.9084
2400	2.53	0	109	6	.0043	.0258	.9342
			3,534	24			
			147				
Total runoff in acre-feet =						1,940	

Time	G. Ht. Feet	Sh. Adj.	Discharge C. f. s.	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In

Computed by BBH Date 1-13-71 Checked by JDB-CMW- Date 5-7-71

TX-78 (Revised July 1969)

UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY - WATER RESOURCES DIVISION
TEXAS DISTRICT

WEIGHTED-PRECIPITATION RECORD

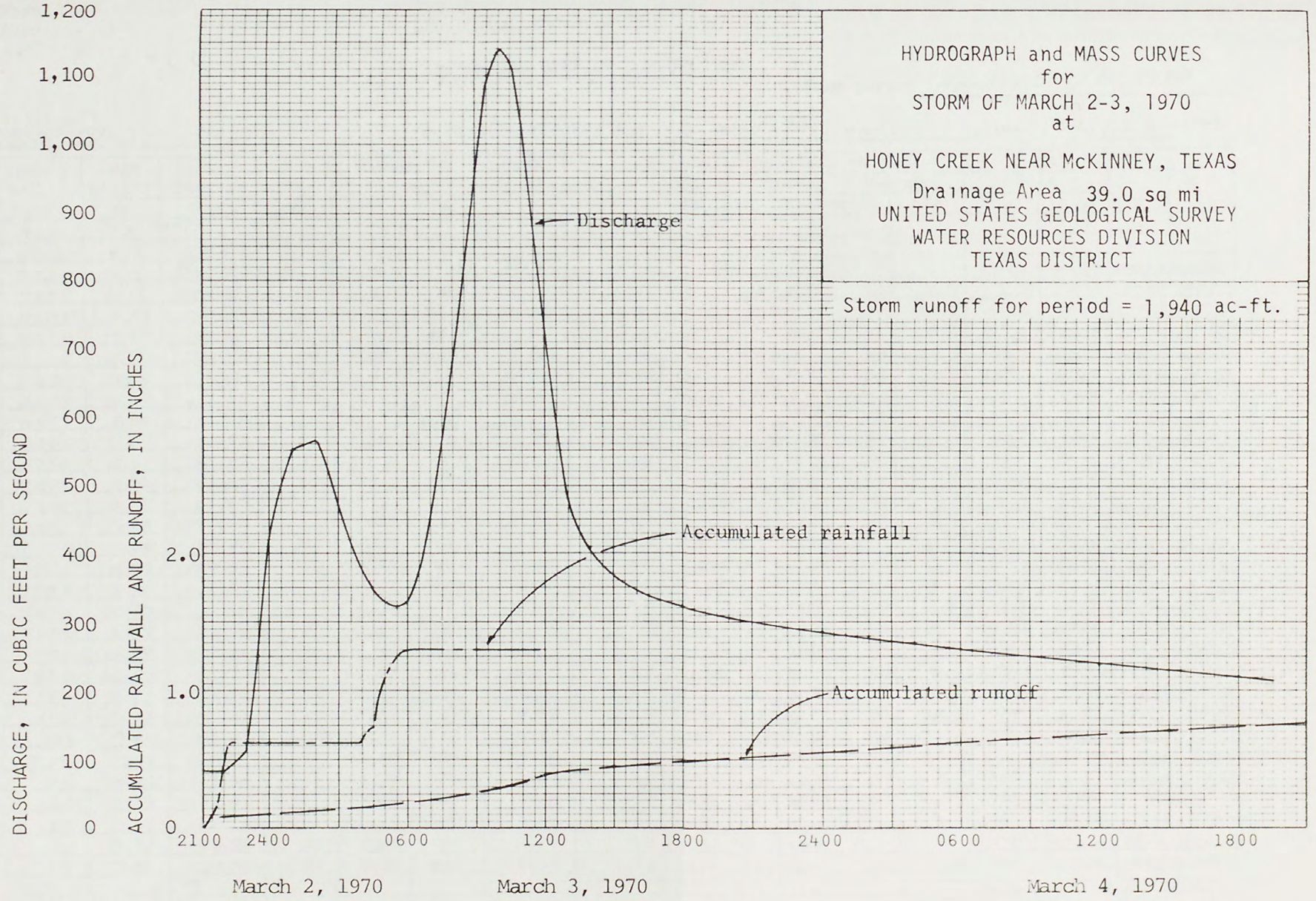
Sheet 1 of 1
Comp. by: BBH
Date 5/1/71
Check by CMW
Date 5/7/71

Study Area Honey Creek nr. McKinney, Tex. Date of storm March 2-3, 1970

Date & Time	Accumulated Precipitation in Inches for Recording Rain Gages: Gage 5-R Recorded	Gage 5-R x Factor	Gage 9-R Recorded	Gage 9-R x Factor	Gage 12-R Recorded	Gage 12-R x Factor	Gage 13-R Recorded	Gage 13-R x Factor	Gage 15-R Recorded	Gage 15-R x Factor	Gage 16-R Recorded	Gage 16-R x Factor	Accumulated Average ~~Weighted~~ Precipitation ~~Recording Gages (Wt. Gages x K)~~ All Gages	Accumulated Average Precipitation All Gages
Weight Factor														
March 2, 1970														
2000	0		0		0		0		0		0			0
45	0		0		0		0		0		0			0
2100	.06		0		0		0		0		0			.01
15	.20		0		0		.04		0		0			.04
30	.26		.13		.08		.10		0		0			.10
45	.37		.23		.12		.20		0		.09			.17
2200	.40		.45		.60		.40		.20		.59			.44
15	.40		.50		.90		.46		.65		.78			.62
2300	.40		.50		.90		.46		.75		.79			.63
2400	.40		.50		.90		.46		.75		.79			.63
March 3														
0400	.40		.50		.90		.46		.75		.79			.63
15	.90		.50		.90		.46		.75		.79			.72
30	1.02		.50		.90		.46		.80		.79			.74
45	1.08		.85		1.05		1.00		.94		.99			.98
0500	1.18		.90		1.10		1.09		1.21		1.02			1.08
15	1.20		1.00		1.20		1.19		1.50		1.11			1.20
30	1.20		1.05		1.30		1.25		1.55		1.21			1.26
45	1.23		1.08		1.30		1.33		1.58		1.21			1.29
0600	1.23		1.08		1.30		1.33		1.62		1.21			1.30
1200	1.23		1.08		1.30		1.33		1.62		1.21			1.30

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
										WMR:	

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 1.00


HYDROGRAPH and MASS CURVES
for
STORM OF MARCH 2-3, 1970
at
HONEY CREEK NEAR McKINNEY, TEXAS
Drainage Area 39.0 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 1,940 ac-ft.
Discharge
Accumulated rainfall
Accumulated runoff
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
2.0
1.0
0
2100
2400
0600
1200
1800
2400
0600
1200
1800
March 2, 1970
March 3, 1970
March 4, 1970

Form A-64
(Rev. 9-65)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period April 25-26, 1970

08058000 Honey Creek subwatershed No. 12 near McKinney, Tex. D.A. 1.26 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage ac-ft	Change in storage cfs	Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool in	Rainfall on Pool area ac	Rainfall on Pool Storage ac-ft	Rainfall on Pool Storage cfs	Net Inflow Rate cfs	Net Inflow Rate in/hr	Net Inflow in	Net Inflow Acc in
April 25, 1970																
0000	15.12	106.42														
0500	15.11	106.24	5	- .18	.94	15.12	0.95	0.5	0	18.5	0	0	0.5	.0006	.0030	.0030
0530	15.13	106.61	.50	+ .37	+ 9.0	15.12	.95	10.0	.18	18.5	.28	6.8	3.2	.0039	.0020	.0050
0600	15.30	109.78	.50	+ 3.17	+ 76.7	15.22	2.6	79.3	.60	18.7	.94	22.7	56.6	.0696	.0348	.0398
0610	15.43	112.24	.167	+ 2.46	+ 179	15.36	5.5	184	.03	18.9	.05	3.6	180	.2214	.0370	.0768
0615	15.50	113.58	.083	+ 1.34	+ 195	15.46	6.8	202	.02	19.1	.03	4.4	198	.2435	.0202	.0970
0620	15.58	115.12	.083	+ 1.54	+ 224	15.54	7.0	231	.02	19.3	.03	4.4	227	.2792	.0232	.1202
0630	15.69	117.26	.167	+ 2.14	+ 155	15.64	7.1	162	.02	19.4	.03	2.2	160	.1968	.0329	.1531
0645	15.80	119.43	.25	+ 2.17	+ 105	15.74	7.2	112	.06	19.6	.10	4.8	107	.1316	.0329	.1860
0700	15.87	120.82	.25	+ 1.39	+ 67.3	15.84	7.2	74.5	.02	19.8	.03	1.5	73.0	.0898	.0224	.2084
0730	15.97	122.82	.50	+ 2.00	+ 48.4	15.92	7.2	55.6	.01	20.0	.02	.5	55.1	.0678	.0339	.2423
0800	16.03	124.03	.50	+ 1.21	+ 29.3	16.00	7.2	36.5	.04	20.2	.07	1.7	34.8	.0428	.0214	.2637
0900	16.10	125.45	1	+ 1.42	+ 17.2	16.06	7.3	24.5	.06	20.3	.10	1.2	23.3	.0287	.0287	.2924
1000	16.15	126.48	1	+ 1.03	+ 12.5	16.12	7.3	19.8	.18	20.4	.31	3.8	16.0	.0197	.0197	.3121
1030	16.20	127.50	.50	+ 1.02	+ 24.7	16.18	7.3	32.0	0	20.5	0	0	32.0	.0394	.0197	.3318
1100	16.29	129.36	.50	+ 1.86	+ 45.0	16.24	7.3	52.3	0	20.6	0	0	52.3	.0643	.0322	.3640
1200	16.37	131.03	1	+ 1.67	+ 20.2	16.33	7.3	27.5	0	20.8	0	0	27.5	.0338	.0338	.3978
1300	16.40	131.66	1	+ .63	+ 7.6	16.38	7.3	14.9	.08	20.9	.14	1.7	13.2	.0162	.0162	.4140
1330	16.45	132.71	.5	+ 1.05	+ 25.4	16.42	7.3	32.7	.12	21.0	.21	5.1	27.6	.0339	.0170	.4310
1400	16.54	134.61	.5	+ 1.90	+ 46.0	16.50	7.3	53.3	.06	21.1	.10	2.4	50.9	.0626	.0313	.4623
1430	16.65	136.95	.5	+ 2.34	+ 56.6	16.60	7.3	63.9	.11	21.3	.20	4.8	59.1	.0727	.0364	.4937
1445	16.77	139.52	.25	+ 2.57	+ 124	16.71	7.4	131	.42	21.4	.75	36.3	94.7	.1165	.0291	.5278
1500	17.17	148.25	.25	+ 8.73	+ 423	16.97	7.4	430	.45	21.8	.82	39.7	390	.4797	.1199	.6477
05	17.44	154.27	.083	+ 6.02	+ 874	17.30	7.4	881	.11	22.3	.20	29.0	852	1.0480	.0870	.7347
10	17.73	160.87		+ 6.60	+ 958	17.58	7.5	966	.09	22.8	.17	24.7	941	1.1574	.0961	.8308
15	18.02	167.64		+ 6.77	+ 983	17.88	7.5	990	.02	23.4	.04	5.8	984	1.2103	.1005	.9313
20	18.35	175.58		+ 7.94	+ 1,150	18.18	7.6	1,160	.01	24.1	.02	2.9	1,160	1.4268	.1184	1.0497
25	18.69	184.02		+ 8.44	+ 1,230	18.52	7.6	1,240	0	24.8	0	0	1,240	1.5252	.1266	1.1763
30	19.03	192.70	.083	+ 8.68	+ 1,260	18.86	7.7	1,270	0	25.5	0	0	1,270	1.5621	.1297	1.3060
1545	19.66	209.36	.25	+ 16.66	+ 806	19.34	7.8	814	.01	26.5	0.02	1.0	813	1.0000	.2500	1.5560
Comp. by: BCM												DLT			JDB	
Checked by: JDB																

Form A-64
(Rev. 5-65)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period April 25-26, 1970

08058000 Honey Creek subwatershed No. 12 near McKinney, Tex. D.A. 1.26 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage ac-ft	Change in storage cfs	Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool in	Rainfall on Pool area ac	Rainfall on Pool Storage ac-ft	Rainfall on Pool Storage cfs	Net Inflow Rate cfs	Net Inflow Rate in/hr	Net Inflow in	Net Inflow Acc in
April	25	continued														
1600	20.00	218.75	.25	+ 9.39	+454	19.83	7.8	462	0	27.6	0	0	462	.5683	.1421	1.6981
30	20.23	225.26	.50	+ 6.51	+158	20.12	7.9	166	.01	28.3	.02	0.5	166	.2042	.1021	1.8002
1700	20.33	228.13	.50	+2.87	+ 69.5	20.28	7.9	77.4	0	28.7	0	0	77.4	.0952	.0476	1.8478
1800	20.39	229.86	1	+1.73	+ 20.9	20.36	7.9	28.8	0	28.9	0	0	28.8	.0354	.0354	1.8832
2000	20.41	230.44	2	+ .58	+ 3.5	20.40	7.9	11.4	0	29.0	0	0	11.4	.0140	.0280	1.9112
2400	20.38	229.57	4	- .87	- 2.6	20.39	7.9	5.3	0	29.0	0	0	5.3	.0065	.0260	1.9372
April	26															
0000	20.38	229.57														
1200	20.21	224.69	12	- 4.88	- 4.9	20.30	7.9	3.0	0	28.7	0	0	3.0	.0037	.0444	1.9816
2400	19.97	217.91	12	-6.78	- 6.8	20.09	7.9	1.1	0	28.2	0	0	1.1	.0014	.0168	1.9984

Comp. by BCM — DLT — JDB →
Checked by JDB — JDB →

UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY - WATER RESOURCES DIVISION
TEXAS DISTRICT

WEIGHTED-PRECIPITATION RECORD

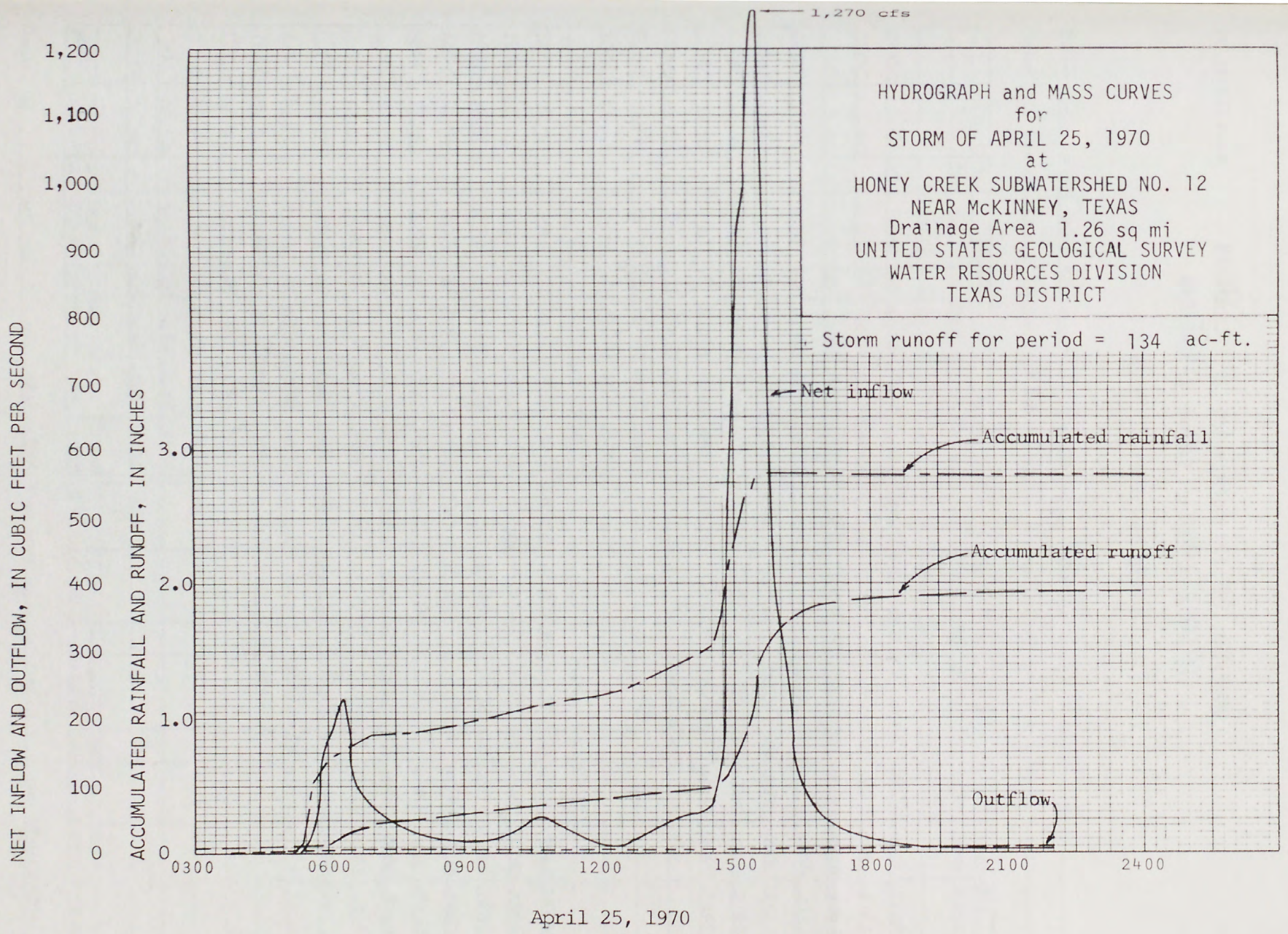
Sheet 1 of 1
Comp. by: BBH
Date 5/14/71
Check by JMT
Date 5/20/71

Study Area Honey Creek subwatershed No. 12 near McKinney, Tex. Date of storm April 25, 1970

Accumulated Precipitation in Inches for Recording Rain Gages													Accumulated Weighted Precipitation	
Weight Factor	.50		.50											
	Gage 12-R		Gage 16-R		Gage		Gage		Gage		Gage		Recording Gages	(Rec. Gages x K)
Date & Time	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	All Gages	All Gages
April 25, 1970														
0500	0	0	0	0										0
15	0	0	0	0										0
30	0	0	.18	.09										.09
45	.32	.16	.73	.36										.52
0600	.58	.29	.78	.39										.68
30	.65	.32	.87	.44										.76
0700	.76	.38	.95	.48										.86
0800	.76	.38	1.00	.50										.88
0900	.85	.42	1.06	.53										.95
1000	.85	.42	1.24	.62										1.04
1100	.98	.49	1.24	.62										1.11
1200	1.03	.52	1.24	.62										1.14
1300	1.18	.59	1.32	.66										1.25
1400	1.32	.66	1.50	.75										1.41
15	1.35	.68	1.56	.78										1.46
30	1.41	.70	1.61	.80										1.50
45	1.52	.76	2.03	1.02										1.78
1500	2.02	1.01	2.48	1.24										2.25
15	2.55	1.28	2.70	1.35										2.63
30	2.87	1.44	2.71	1.36										2.80
45	2.91	1.46	2.72	1.36										2.82
1600	2.91	1.46	2.72	1.36										2.82
1800	2.91	1.46	2.73	1.36										2.82
2400	2.91	1.46	2.73	1.36										2.82

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
										WMR	

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 1.00


1,270 cfs
HYDROGRAPH and MASS CURVES
for
STORM OF APRIL 25, 1970
at
HONEY CREEK SUBWATERSHED NO. 12
NEAR McKINNEY, TEXAS
Drainage Area 1.26 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 134 ac-ft.
Net inflow
Accumulated rainfall
Accumulated runoff
Outflow
NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
3.0
2.0
1.0
0
0300
0600
0900
1200
1500
1800
2100
2400
April 25, 1970

TX-65 (Rev. 7-69)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Honey Creek near McKinney, Tex.

Period of Record April 25-26, 1970 Drainage Area 39.0

Time	G. Ht. Feet	Sh. Adj.	Discharge C.f.s.	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In.
			April 25, 1970				
0000	1.41	0	14	2.5	.0006	.0015	0.0015
0500	1.40		14	2.75	.0006	.0016	.0031
30	1.40		14	.5	.0006	.0003	.0034
0600	1.40		14	.5	.0006	.0003	.0037
30	1.50		18	.5	.0007	.0004	.0041
0700	1.76		33	.5	.0013	.0006	.0047
30	3.05		172	.5	.0068	.0034	.0081
0800	4.67		302	.75	.0120	.0090	.0171
0930	5.56		378	1	.0150	.0150	.0321
1000	5.62		384	.5	.0153	.0076	.0397
30	5.56		378	1	.0150	.0150	.0547
1200	5.06		333	1.75	.0132	.0231	.0778
1400	4.29		271	1.25	.0108	.0135	.0913
1430	4.30		272	.5	.0108	.0054	.0967
1500	4.71		305	.75	.0121	.0091	.1058
1600	7.90		609	.625	.0242	.0151	.1209
15	10.00		930	.25	.0369	.0092	.1301
30	13.00		1,580	.25	.0628	.0157	.1458
45	14.05		1,860	.25	.0739	.0185	.1643
1700	14.60		2,010	.625	.0799	.0499	.2142
1800	15.52		2,280	1	.0905	.0906	.3048
1900	16.22		2,520	.75	.1001	.0751	.3799
30	16.46		2,620	.375	.1040	.0390	.4189
45	16.54		2,650	.25	.1053	.0263	.4452
2000	16.50	0	2,640	.625	.1049	.0656	.5108
BBH	JDB BBH	← →	-BBH- -JDB-	→ ←		BBH JMT	→ →

Time	G. Ht. Feet	Sh. Adj.	Discharge C.f.s.	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In
	April 25, 1970 cont.						
2100	15.42	0	2,250	.75	.0894	.0670	.5778
30	14.30		1,930	.5	.0767	.0384	.6162
2200	13.08		1,600	.5	.0636	.0318	.6480
30	11.73		1,290	.5	.0513	.0256	.6736
2300	10.42		1,010	.75	.0401	.0301	.7037
30	9.00		742	.5	.0295	.0148	.7185
2400	7.87	0	606	.25	.0240	.0060	.7245
			18231625	24			
			760				
			April 26, 1970				
0000	7.87	0	606	.25	.0241	.0060	.7305
30	6.95		505	.5	.0201	.0100	.7405
0100	6.36		450	.75	.0179	.0134	.7539
0200	5.80		400	2	.0159	.0318	.7857
0500	5.18		344	3	.0137	.0411	.8268
0800	5.00		328	3.5	.0130	.0455	.8723
1200	4.81		313	8	.0124	.0992	.9715
2400	4.55	0	292	6	.0116	.0696	1.0411
			7977.50	24			
			332				
BBH	JDB BBH	← →	BBH JDB	→ ←		BBH JMT	→ →

Computed by ✓ Date Jan. 1971 Checked by ✓ Date Jan. 1971

TX.-65 (Rev. 7-69)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Honey Creek near McKinney, Tex.

Period of Record April 27-29, 1970 Drainage Area 39.0

Time	G. Ht. Feet	Sh. Adj.	Discharge C. f. s.	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In.
			April 27, 1970				
0000	4.55	0	292	6	.0116	.0696	1.1107
1200	4.35		276	12	.0110	.1320	1.2427
2400	4.01	0	249	6	.0099	.0594	1.3021
			6558	24			
			273				
			April 28, 1970				
0000	4.01	0	249	6	.0099	.0594	1.3615
1200	3.73		226	12	.0090	.1080	1.4695
2400	3.28	0	190	6	.0075	.0450	1.5145
			5346	24			
			223				
			April 29, 1970				
0000	3.28	0	190	6	.0075	.0450	1.5595
1200	2.75		142	12	.0056	.0672	1.6267
2400	2.55	0	112	6	.0044	.0264	1.6531
			3516	24			
			146				
Total Runoff in acre-feet = 3440							
BBH	JDB / BBH	←	BBH →	←	BBH →	←	JMT →

Time	G. Ht. Feet	Sh. Adj.	Discharge C. f. s.	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In

Computed by ✓ Date Jan. 1971 Checked by ✓ Date Jan. 1971

TX-78 (Revised July 1969)

UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY - WATER RESOURCES DIVISION
TEXAS DISTRICT

WEIGHTED-PRECIPITATION RECORD

Sheet 1 of 1
Comp. by: BBH
Date 5/3/71
Check by JWT
Date 5/20/71

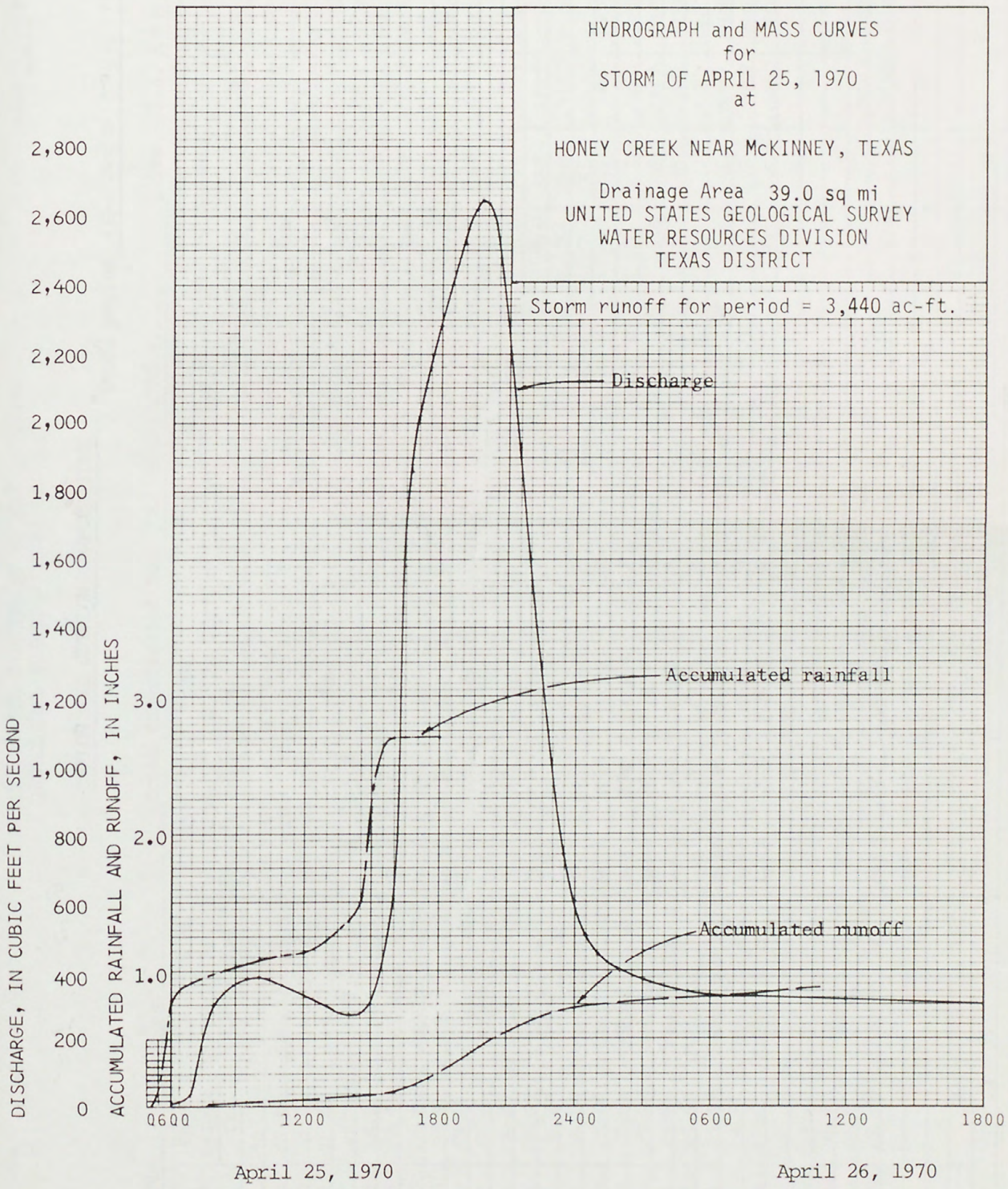
Study Area Honey Creek near McKinney, Tex Date of storm April 25, 1970

Date & Time	Accumulated Precipitation in Inches for Recording Rain Gages: Gage 5-R Recorded	Gage 5-R x Factor	Gage 9-R Recorded	Gage 9-R x Factor	Gage 12-R Recorded	Gage 12-R x Factor	Gage 13-R Recorded	Gage 13-R x Factor	Gage 15-R Recorded	Gage 15-R x Factor	Gage 16-R Recorded	Gage 16-R x Factor	Accumulated Weighted Precipitation Recording Gages All Gages	Accumulated Weighted Precipitation (Rec. Gages x K) All Gages
Weight Factor														
April 25, 1970														
0000	0		0		0		0				0		0	0
0500	0		0		0		0				0		0	0
15	0		0		0		0				0		0	0
30	.05		0		0		0				.18		.05	.05
45	.68		.32		.32		0				.73		.41	.41
0600	.90		.77		.58		.85				.78		.78	.78
30	.99		.83		.65		.92				.87		.85	.85
0700	1.00		.90		.76		1.00				.95		.92	.92
0800	1.08		1.00		.76		1.05				1.00		.98	.98
0900	1.14		1.05		.85		1.10				1.06		1.04	1.04
1000	1.15		1.10		.85		1.12				1.24		1.09	1.09
1100	1.15		1.10		.98		1.15				1.24		1.12	1.12
1200	1.15		1.10		1.03		1.15				1.24		1.13	1.13
1300	1.20		1.20		1.18		1.20				1.32		1.22	1.22
1400	1.30		1.32		1.32		1.32				1.50		1.35	1.36
15	1.38		1.38		1.35		1.35				1.56		1.40	1.41
30	1.45		1.48		1.41		1.40				1.61		1.47	1.48
45	1.70		1.58		1.52		1.55				2.03		1.68	1.69
1500	2.10		1.90		2.02		1.95				2.48		2.09	2.10
15	2.55		2.20		2.55		2.25				2.70		2.45	2.46
30	2.58		2.42		2.87		2.55				2.71		2.63	2.64
45	2.68		2.57		2.91		2.55				2.72		2.69	2.70
1600	2.68		2.57		2.91		2.55				2.72		2.69	2.70
1800	2.68		2.57		2.91		2.55				2.73		2.69	2.70

No record

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
5-R			2.68	16-R			2.73				
9-R			2.57			Total	16.18				
12-R			2.91								
13-R			2.55			Average	2.70				
15-R			2.74								

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 2.70 / 2.69 = 1.004


HYDROGRAPH and MASS CURVES
for
STORM OF APRIL 25, 1970
at
HONEY CREEK NEAR McKINNEY, TEXAS
Drainage Area 39.0 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 3,440 ac-ft.
Discharge
Accumulated rainfall
Accumulated runoff
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
2,800
2,600
2,400
2,200
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
3.0
2.0
1.0
0600
1200
1800
2400
0600
1200
1800
April 25, 1970
April 26, 1970

Form A-64
(Rev. 5-65)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

Sheet 1 of 1

INFLOW AND OUTFLOW COMPUTATIONS

Storm period April 30 to May 1, 1970

08058000 Honey Creek subwatershed No. 12 near McKinney, Tex. D.A. 1.26 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage ac-ft	Change in storage cfs	Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool in	Rainfall on Pool area ac	Rainfall on Pool Storage ac-ft	Rainfall on Pool Storage cfs	Net Inflow Rate cfs	Net Inflow Rate in/hr	Net Inflow in	Net Inflow Acc in
April 30, 1970																
0000	18.39	176.56														
0700	18.23	172.67	7	-3.89	- 6.7	18.31	7.6	0.9	0	24.4	0	0	0.9	.0011	.0077	.0077
15	18.23	172.67	.25	0	0	18.23	7.6	7.6	.07	24.2	0.14	6.8	.8	.0010	.0002	.0079
30	18.26	173.39	.25	+.72	+34.8	18.24	7.6	42.4	.35	24.2	.71	34.4	8.0	.0098	.0024	.0103
45	18.30	174.36	.25	+.97	+46.9	18.28	7.6	54.5	.16	24.3	.32	15.5	39.0	.0480	.0120	.0223
55	18.42	177.29	.167	+2.93	+213	18.36	7.6	221	.10	24.5	.20	14.5	206	.2534	.0423	.0646
0800	18.48	178.78	.083	+1.49	+216	18.45	7.6	224	.05	24.7	.10	14.5	210	.2583	.0214	.0860
05	18.55	180.52	.083	+1.74	+253	18.52	7.6	261	.04	24.8	.08	11.6	249	.3063	.0254	.1114
10	18.65	183.02	.083	+2.50	+363	18.60	7.6	371	.03	25.0	.06	8.7	362	.4453	.0370	.1484
15	18.73	185.03	.083	+2.01	+292	18.69	7.6	300	.01	25.2	.02	2.9	297	.3653	.0303	.1787
30	18.89	189.10	.25	+4.07	+197	18.81	7.7	205	.08	25.4	.17	8.2	197	.2423	.0606	.2393
45	19.07	193.73	.25	+4.63	+224	18.98	7.7	232	.04	25.8	.09	4.4	228	.2804	.0701	.3094
0900	19.22	197.65	.25	+3.92	+190	19.14	7.7	198	0	26.1	0	0	198	.2435	.0609	.3703
15	19.32	200.28	.25	+2.63	+127	19.27	7.7	135	0	26.4	0	0	135	.1660	.0415	.4118
30	19.39	202.12	.25	+1.84	+89.1	19.36	7.7	96.8	0	26.6	0	0	96.8	.1191	.0298	.4416
1000	19.46	203.97	.5	+1.85	+44.8	19.42	7.8	52.6	0	26.7	0	0	52.6	.0647	.0324	.4740
1100	19.52	205.57	1	+1.60	+19.4	19.49	7.8	27.2	.05	26.9	.11	1.3	25.9	.0319	.0319	.5059
1200	19.54	206.11	1	+.54	+6.5	19.53	7.8	14.3	0		0	0	14.3	.0176	.0176	.5235
1300	19.55	206.38	1	+.27	+3.3	19.54	7.8	11.1	0		0	0	11.1	.0137	.0137	.5372
1500	19.54	206.11	2	-.27	-1.6	19.54	7.8	6.2	.08	27.0	.18	1.1	5.1	.0063	.0126	.5498
1800	19.52	205.57	3	-.54	-2.2	19.53	7.8	5.6	0		0	0	5.6	.0069	.0207	.5705
2400	19.42	202.91	6	-2.66	-5.4	19.47	7.8	2.4	0		0	0	2.4	.0030	.0180	.5885
May 1																
0000	19.42	202.91														
1200	19.15	195.82	12	-7.09	-7.2	19.28	7.7	.5	0		0	0	.5	.0006	.0072	.5957
2400	18.88	188.84	12	-6.98	-7.0	19.02	7.7	.7	0		0	0	.7	.0009	.0108	.6065

Comp. by: BCM
Checked by: DLT

TX-78 (Revised July 1969)

UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY - WATER RESOURCES DIVISION
TEXAS DISTRICT

WEIGHTED-PRECIPITATION RECORD

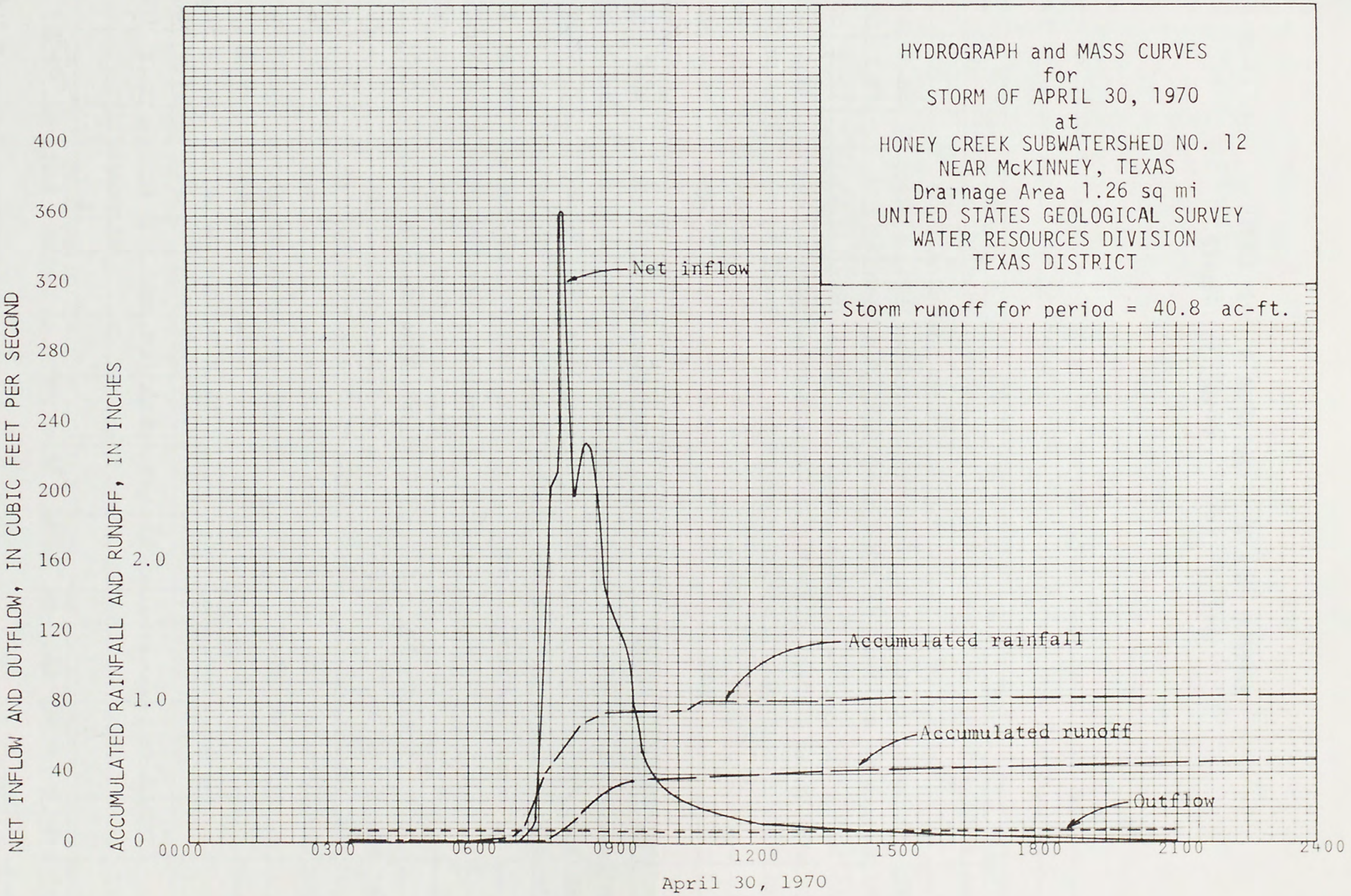
Sheet 1 of 1
Comp. by: BBH
Date 5/20/71
Check by JMT
Date 5/20/71

Study Area Honey Creek subwatershed No. 12 near McKinney, Tex. Date of storm April 30, 1970

Accumulated Precipitation in Inches for Recording Rain Gages												Accumulated Weighted Precipitation	
Weight Factor	.50		.50									Recording Gages (Rec. Gages x K)	All Gages
	Gage 12-R		Gage 16-R		Gage		Gage		Gage		Gage		
Date & Time	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	All Gages
April 30, 1970													
0600	0	0	0	0									0
0630	0	0	0	0									0
45	.08	.04	0	0									.04
0700	.08	.04	0	0									.04
15	.08	.04	.07	.04									.08
30	.22	.11	.42	.21									.32
45	.50	.25	.58	.29									.54
0800	.62	.31	.73	.36									.67
15	.75	.38	.81	.40									.78
30	.83	.42	.89	.44									.86
45	.90	.45	.93	.46									.91
0900	.95	.48	.93	.46									.94
15	.95	.48	.93	.46									.94
1000	.95	.48	.93	.46									.94
15	.95	.48	.93	.46									.94
30	1.00	.50	.93	.46									.96
45	1.05	.52	.93	.46									.98
1100	1.10	.55	.98	.49									1.04
1400	1.10	.55	.98	.49									1.04
1500	1.10	.55	1.06	.53									1.08
2400	1.10	.55	1.06	.53									1.08

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
										WMR	

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 1.00


HYDROGRAPH and MASS CURVES
for
STORM OF APRIL 30, 1970
at
HONEY CREEK SUBWATERSHED NO. 12
NEAR McKINNEY, TEXAS
Drainage Area 1.26 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 40.8 ac-ft.
Net inflow
Accumulated rainfall
Accumulated runoff
Outflow
NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
400
360
320
280
240
200
160
120
80
40
0
2.0
1.0
0
0000
0300
0600
0900
1200
1500
1800
2100
2400
April 30, 1970

TX.-65 (Rev. 7-69)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Honey Creek near McKinney, Tex.

Period of Record April 30 - May 3, 1970 Drainage Area 39.0

Time	G. Ht. Feet	Sh. Adj.	Discharge C.f.s.	Inc.	In/Hr.	Runoff Inches	Acc. In.
			April 30, 1970				
0000	2.55	0	112	3	.0044	.0032	0.0132
0600	2.52		108	3.5	.0043	.0150	.0282
0700	2.51		106	1	.0042	.0042	.0324
0800	2.56		113	.75	.0045	.0034	.0358
30	2.78		146	.5	.0058	.0029	.0387
0900	4.40		280	.5	.0111	.0056	.0443
30	6.73		484	.5	.0192	.0096	.0539
1000	7.92		611	.75	.0243	.0182	.0721
1100	9.85		900	.75	.0358	.0268	.0989
30	10.93		1,120	.5	.0445	.0222	.1211
1200	12.15		1,380	.5	.0548	.0274	.1485
30	12.66		1,500	.375	.0596	.0224	.1709
45	12.79		1,530	.5	.0608	.0304	.2013
1330	12.50		1,460	.625	.0580	.0362	.2375
1400	11.95		1,340	.75	.0532	.0399	.2774
1500	10.64		1,060	1	.0421	.0421	.3195
1600	8.85		720	1	.0286	.0286	.3481
1700	7.43		557	.75	.0221	.0166	.3647
30	7.23		535	.5	.0212	.0106	.3753
1800	7.30		543	.75	.0216	.0162	.3915
1900	7.48		563	1	.0224	.0224	.4139
2000	7.12		523	1.5	.0208	.0312	.4451
2200	5.72		393	2	.0156	.0312	.4763
2400	5.12	0	339	1	.0135	.0135	.4898
			1233.000	24			
			514				
BBH	JDB BBH		JDB	BBH		JMT	

Time	G. Ht. Feet	Sh. Adj.	Discharge C.f.s.	Inc.	In/Hr.	Runoff Inches	Acc. In
			May 1, 1970				
0000	5.12	0	339	3	.0135	.0405	.5303
0600	4.51		289	6	.0115	.0690	.5993
1200	4.18		262	6	.0104	.0624	.6617
1800	3.90		240	6	.0095	.0570	.7187
2400	3.72	0	226	3	.0090	.0270	.7457
			6441	24			
			268				
			May 2, 1970				
0000	3.72	0	226	6	.0090	.0540	.7997
1200	3.52		210	12	.0083	.0996	.8993
2400	3.12	0	178	6	.0071	.0426	.9419
			4944	24			
			206				
			May 3, 1970				
0000	3.12	0	178	6	.0071	.0426	.9841
1200	2.66		129	12	.0051	.0612	1.0457
2400	2.50	0	105	6	.0042	.0252	1.0709
			3246	24			
			135				
Runoff in acre-feet = 2,230							
BBH	JDB BBH		JDB	BBH		JMT	

Computed by ✓ Date Jan. 1971 Checked by ✓ Date Jan. 1971

TX-78 (Revised July 1969)

UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY - WATER RESOURCES DIVISION
TEXAS DISTRICT

WEIGHTED-PRECIPITATION RECORD

Sheet 1 of 1
Comp. by: BRH
Date 5/19/71
Check by JWT
Date 5/20/71

Study Area Honey Creek near McKinney, Tex. Date of storm April 30, 1970

Date & Time	Gage 5-R Recorded	Gage 5-R x Factor	Gage 9-R Recorded	Gage 9-R x Factor	Gage 12-R Recorded	Gage 12-R x Factor	Gage 13-R Recorded	Gage 13-R x Factor	Gage 15-R Recorded	Gage 15-R x Factor	Gage 16-R Recorded	Gage 16-R x Factor	Accumulated Weighted Precipitation Recording Gages	Accumulated Weighted Precipitation (Rec. Gages x K) All Gages
Weight Factor														
April 30, 1970														
0600			0		0		0				0		0	0
15			0		0		0				0		0	0
30			.05		0		.10				0		.04	.04
45			.26		.08		.10				0		.11	.11
0700			.29		.08		.12				0		.12	.12
15			.29		.08		.12				.07		.14	.14
30			.35		.22		.50				.42		.37	.37
45			.68		.50		.70				.58		.62	.63
0800			.76		.62		.86				.73		.74	.75
15			.80		.75		.92				.81		.82	.83
30			1.00		.83		1.08				.89		.95	.97
45			1.15		.90		1.20				.93		1.04	1.06
0900			1.28		.95		1.32				.93		1.12	1.14
15			1.30		.95		1.33				.93		1.13	1.15
30			1.30		.95		1.35				.93		1.13	1.15
1000			1.30		.95		1.35				.93		1.13	1.15
1100			1.35		1.10		1.42				.98		1.21	1.23
1200			1.36		1.10		1.42				.98		1.22	1.24
1300			1.39		1.10		1.45				.98		1.23	1.25
1345			1.40		1.10		1.49				.98		1.24	1.26
1400			1.40		1.10		1.65				.98		1.28	1.30
15			1.48		1.10		1.66				.98		1.30	1.32
30			1.48		1.10		1.66				.98		1.30	1.32
1500			1.50		1.10		1.66				1.06		1.33	1.35
1600			1.50		1.10		1.66				1.06		1.33	1.35

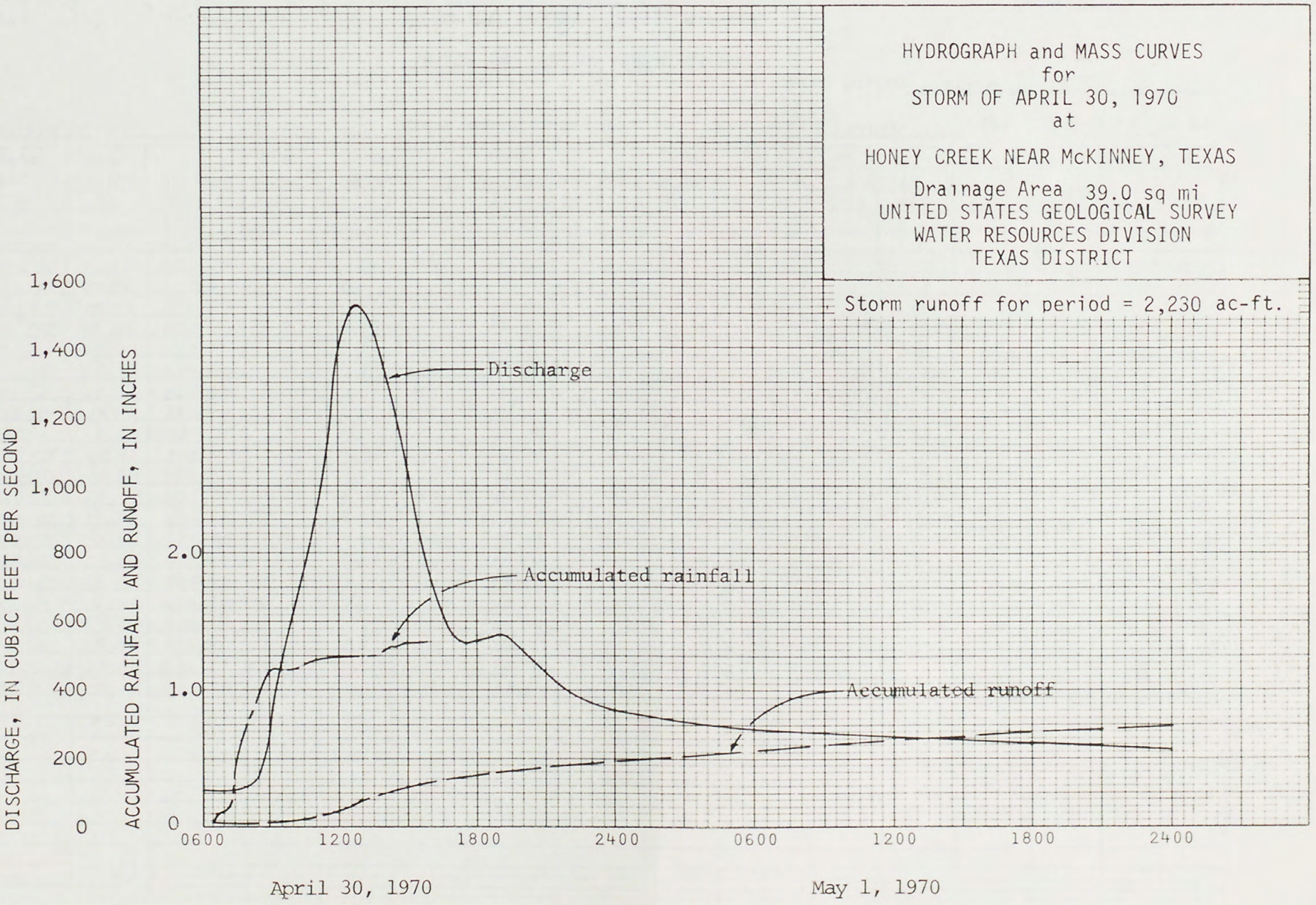
No record (5-R)
No record (15-R)

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
5-R			1.35
9-R			1.50
12-R			1.10
13-R			1.66
15-R			1.05

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
16-R			1.06
Tot.			7.11
Average			1.185

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor

WMR : Sum of Precipitation x Weight Factor K : WMR / Total Recording Gages Weighted Precipitation : 1.35 / 1.33 = 1.015


HYDROGRAPH and MASS CURVES
for
STORM OF APRIL 30, 1970
at
HONEY CREEK NEAR McKINNEY, TEXAS
Drainage Area 39.0 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 2,230 ac-ft.
Discharge
Accumulated rainfall
Accumulated runoff
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
1,600
1,400
1,200
1,000
800
600
400
200
0
2.0
1.0
0
0600
1200
1800
2400
0600
1200
1800
2400
April 30, 1970
May 1, 1970

Form A-64
(Rev. 9-65)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

Sheet 1 of 1

INFLOW AND OUTFLOW COMPUTATIONS

Storm period June 1, 1970

08057500 Honey Creek subwatershed No. 11 near McKinney, Tex. D.A. 2.14 sq mi

Date and time	Gage height	Storage	Time int.	Change in storage		Mean G. Ht.	Outflow	Total inflow	Rainfall on Pool				Net Inflow			
										area	Storage		Rate			Acc
	ft	ac-ft	hrs	ac-ft	cfs	ft	cfs	cfs	in	ac	ac-ft	cfs	cfs	in/hr	in	in
June 1,	1970															
0000	18.00	573.89														
0030	17.99	573.38	.5	- .51	- 12	18.00	6.9	0	0		0	0	0	0.0000	0.0000	0.0000
0045	17.99	573.38	.25	0	0	17.99	6.9	6.9	0		0	0	6.9	.0050	.0012	.0012
0100	18.00	573.89	.25	+ .51	+ 24.7	18.00	6.9	31.6	.15	50.9	.64	31.0	.6	.0004	.0001	.0013
0115	18.02	574.91	.25	+ 1.02	+ 49.4	18.01	6.9	56.3	.23	50.9	.98	47.4	8.9	.0064	.0016	.0029
0130	18.07	577.47	.25	+ 2.56	+124	18.04	6.9	131	.52	51.0	2.21	107	24.0	.0174	.0044	.0073
35	18.10	579.00	.083	+ 1.53	+222	18.08	6.9	229	.10	51.2	.43	62.4	167	.1209	.0100	.0173
0145	18.14	581.06	.167	+ 2.06	+ 150	18.12	6.9	157	.11	51.3	.47	34.1	123	.0891	.0149	.0322
0200	18.19	583.63	.25	+ 2.57	+ 124	18.16	6.9	131	.05	51.5	.21	10.2	121	.0876	.0219	.0541
0230	18.28	588.28	.5	+ 4.65	+ 113	18.24	6.9	120	.04	51.7	.17	4.1	116	.0840	.0420	.0961
0315	18.47	595.06	.75	+ 6.98	+ 109	18.34	6.9	116	.04	52.1	.17	2.7	113	.0818	.0614	.1575
0400	18.49	599.26	.75	+ 4.20	+ 67.6	18.45	6.9	74.5	.04	52.5	.17	2.7	71.8	.0520	.0390	.1965
0500	18.58	604.00	1	+ 4.74	+ 57.4	18.54	7.0	64.4	.12	52.8	.53	6.4	58.0	.0420	.0420	.2385
0600	18.66	608.25	1	+ 4.25	+ 51.4	18.62	7.0	58.4	.05	53.1	.22	2.7	55.7	.0403	.0403	.2788
0700	18.72	611.45	1	+ 3.20	+ 38.7	18.69	7.0	45.7	0				45.7	.0331	.0331	.3119
0800	18.76	613.59	1	+ 2.14	+ 25.9	18.74	7.0	32.9	0				32.6	.0236	.0236	.3355
0900	18.78	614.66	1	+ 1.07	+ 12.9	18.77	7.0	19.9	0				19.9	.0144	.0144	.3499
1100	18.81	616.27	2	+ 1.61	+ 9.7	18.80	7.0	16.7	0				16.7	.0121	.0242	.3741
1300	18.82	616.81	2	+ .54	+ 3.3	18.82	7.0	10.3	0				10.3	.0075	.0150	.3891
1800	18.82	616.81	5	0	0	18.82	7.0	7.0	0				7.0	.0051	.0255	.4146
2100	18.81	616.27	3	- .54	- 2.2	18.82	7.0	4.8	0				4.8	.0035	.0105	.4251
2400	18.79	615.20	3	-1.07	- 4.3	18.80	7.0	2.7	0				2.7	.0020	.0060	.4311

Comp. by: BBH
Checked by: JDB

TX-78 (Revised July 1969)

UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY - WATER RESOURCES DIVISION
TEXAS DISTRICT

WEIGHTED-PRECIPITATION RECORD

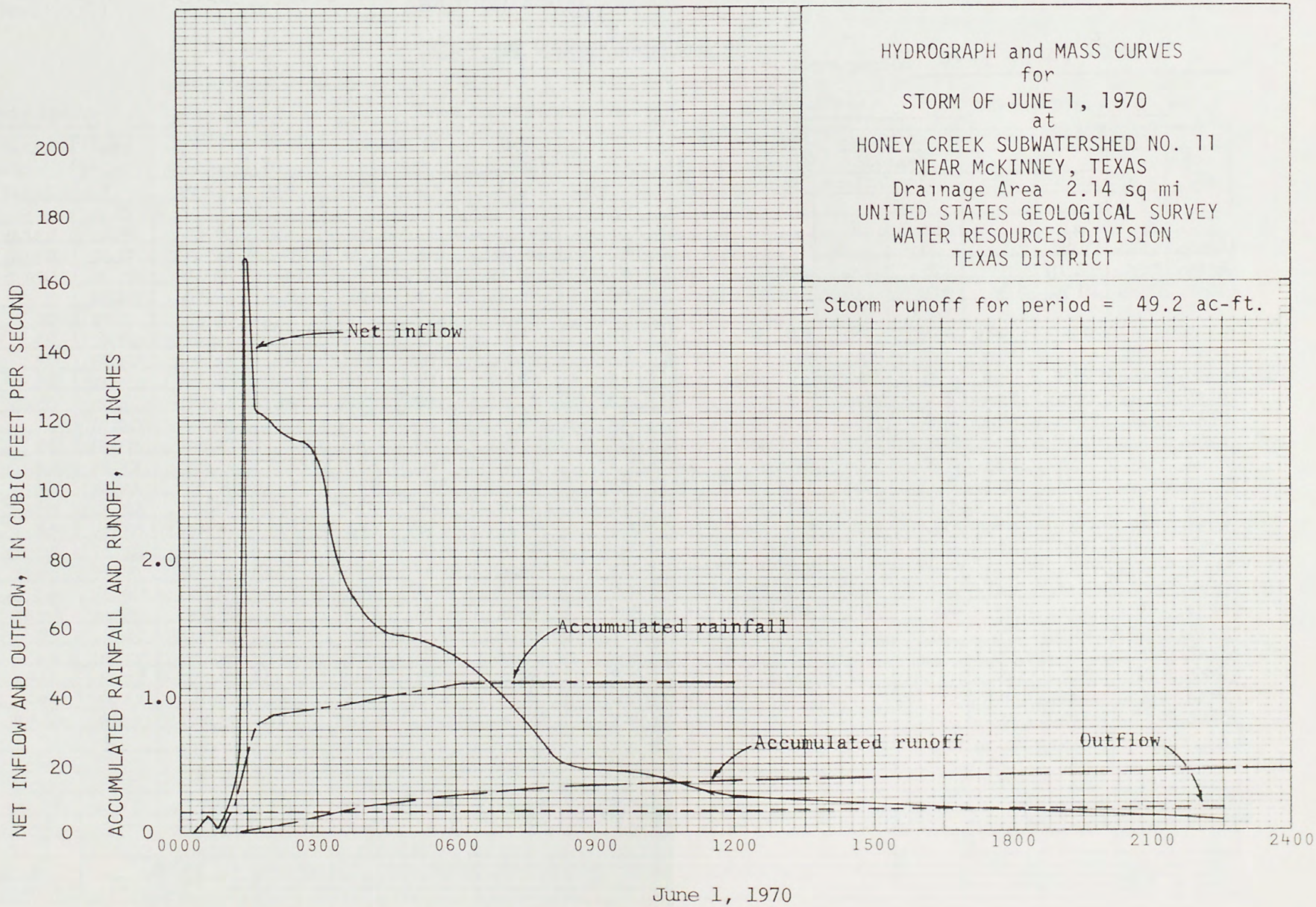
Sheet 1 of 1
Comp. by: BBH
Date 5/13/71
Check by JMT - AAB
Date 5/20/71 - 6/1/71

Study Area HONEY CREEK SUBWATERSHED - No. 11 NEAR McKINNEY, TEXAS Date of storm JUNE 1, 1970

Accumulated Precipitation in Inches for Recording Rain Gages											Accumulated Weighted Precipitation	
Weight Factor	1.00										Recording Gages	(Rec. Gages x K)
Gage	15-R		Gage		Gage		Gage		Gage		All Gages	All Gages
Date & Time	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor		
JUNE 1, 1970												
0000	0										0	0
15	0										0	0
30	0										0	0
45	0										0	0
0100	0.15										0.15	0.11
15	0.38										0.38	0.28
30	0.90										0.90	0.67
45	1.11										1.11	0.83
0200	1.16										1.16	0.86
30	1.20										1.20	0.89
0300	1.24										1.24	0.92
0400	1.28										1.28	0.95
0500	1.40										1.40	1.04
0600	1.45										1.45	1.08
1200	1.45										1.45	1.08

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
13-R	0.500	0.72	0.36								
15-R	0.500	1.45	0.72								
			1.08								
										WMR	

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 1.08 / 1.45 = 0.745


HYDROGRAPH and MASS CURVES
for
STORM OF JUNE 1, 1970
at
HONEY CREEK SUBWATERSHED NO. 11
NEAR McKINNEY, TEXAS
Drainage Area 2.14 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 49.2 ac-ft.
Net inflow
Accumulated rainfall
Accumulated runoff
Outflow
NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
0
20
40
60
80
100
120
140
160
180
200
1.0
2.0
0000
0300
0600
0900
1200
1500
1800
2100
2400
June 1, 1970

Form A-64
(Rev. 9-65)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

Sheet 1 of 1

INFLOW AND OUTFLOW COMPUTATIONS

Storm period June 1-2, 1970

08058000 Honey Creek subwatershed No. 12 near McKinney, Tex. D.A. 1.26 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage ac-ft	Change in storage cfs	Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool in	Rainfall on Pool area ac	Rainfall on Pool Storage ac-ft	Rainfall on Pool Storage cfs	Net Inflow Rate cfs	Net Inflow Rate in/hr	Net Inflow in	Net Inflow Acc in
June	1, 1970															
0000	15.15	106.98														
0045	15.15	106.98	.75	0	0	15.15	1.4	1.4	0		0	0	1.4	.0017	.0013	.0013
0100	15.17	107.35	.25	+ .37	+ 17.9	15.16	1.6	19.5	.11	18.6	.17	8.2	11.3	.0139	.0035	.0048
15	15.20	107.91	.25	+ .56	+ 27.1	15.18	1.9	29.0	.20	18.6	.31	15.0	14.0	.0172	.0043	.0091
30	15.26	109.03	.25	+ 1.12	+ 54.2	15.23	2.8	57.0	.33	18.7	.51	24.7	32.3	.0397	.0099	.0190
40	15.40	111.67	.167	+ 2.64	+ 192	15.33	4.8	197	.29	18.9	.46	33.4	164	.2017	.0337	.0527
50	15.57	114.93	.167	+ 3.26	+ 237	15.48	6.8	244	.06	19.2	.10	7.3	237	.2915	.0487	.1014
55	15.67	116.88	.083	+ 1.95	+ 283	15.62	7.1	290	.03	19.4	.05	7.3	283	.3481	.0289	.1303
0200	15.81	119.63	.083	+ 2.75	+ 399	15.74	7.2	406	.01	19.6	.02	2.9	403	.4957	.0411	.1714
10	16.00	123.42	.167	+ 3.79	+ 275	15.90	7.2	282	.02	20.0	.03	2.2	280	.3444	.0575	.2289
20	16.14	126.27	.167	+ 2.85	+ 207	16.07	7.3	214	.05	20.3	.08	5.8	208	.2558	.0427	.2716
30	16.23	128.12	.167	+ 1.85	+ 134	16.18	7.3	141	.02	20.5	.03	2.2	139	.1710	.0286	.3002
45	16.33	130.20	.25	+ 2.08	+ 101	16.28	7.3	108	.02	20.7	.03	1.5	106	.1304	.0326	.3328
0300	16.40	131.66	.25	+ 1.46	+ 70.7	16.36	7.3	78.0	.02	20.9	.03	1.5	76.5	.0941	.0235	.3563
30	16.47	133.13	.5	+ 1.47	+ 35.6	16.44	7.3	42.9	.02	21.0	.04	1.0	41.9	.0515	.0258	.3821
0400	16.52	134.18	.5	+ 1.05	+ 25.4	16.50	7.3	32.7	.02	21.1	.04	1.0	31.7	.0390	.0195	.4016
0500	16.58	135.46	1	+ 1.28	+ 15.5	16.55	7.3	22.8	.14	21.2	.25	3.0	19.8	.0244	.0244	.4260
30	16.63	136.52	.5	+ 1.06	+ 25.6	16.60	7.4	33.0	.09	21.3	.16	3.9	29.1	.0358	.0179	.4439
0600	16.72	138.45	.5	+ 1.93	+ 46.7	16.68	7.4	54.1	.10	21.4	.18	4.4	49.7	.0611	.0306	.4745
30	11.80	140.17	.5	+ 1.72	+ 41.6	16.76	7.4	49.0	0		0	0	49.0	.0603	.0302	.5047
0700	16.85	141.25	.5	+ 1.08	+ 26.1	16.82	7.4	33.5	0				33.5	.0412	.0206	.5253
0800	16.88	141.90	1	+ .65	+ 7.9	16.86	7.4	15.3	0				15.3	.0188	.0188	.5441
1200	16.83	140.82	4	- 1.09	- 3.3	16.86	7.4	4.1	0				4.1	.0050	.0200	.5641
2400	16.52	134.18	12	-6.64	- 6.7	16.68	7.4	0.7					0.7	.0009	.0108	.5749
June	2															
0000	16.52	134.18														
1200	16.19	127.30	12	-6.88	- 6.9	16.36	7.3	.4	0				.4	.0005	.0060	.5809
2400	15.85	120.42	12	-6.88	- 6.9	16.02	7.2	.3	0				.3	.0004	.0048	.5857
Comp. by:	BCM															→
Checked by:	DLT													*	JDB	→

TX-78 (Revised July 1969)

UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY - WATER RESOURCES DIVISION
TEXAS DISTRICT

WEIGHTED-PRECIPITATION RECORD

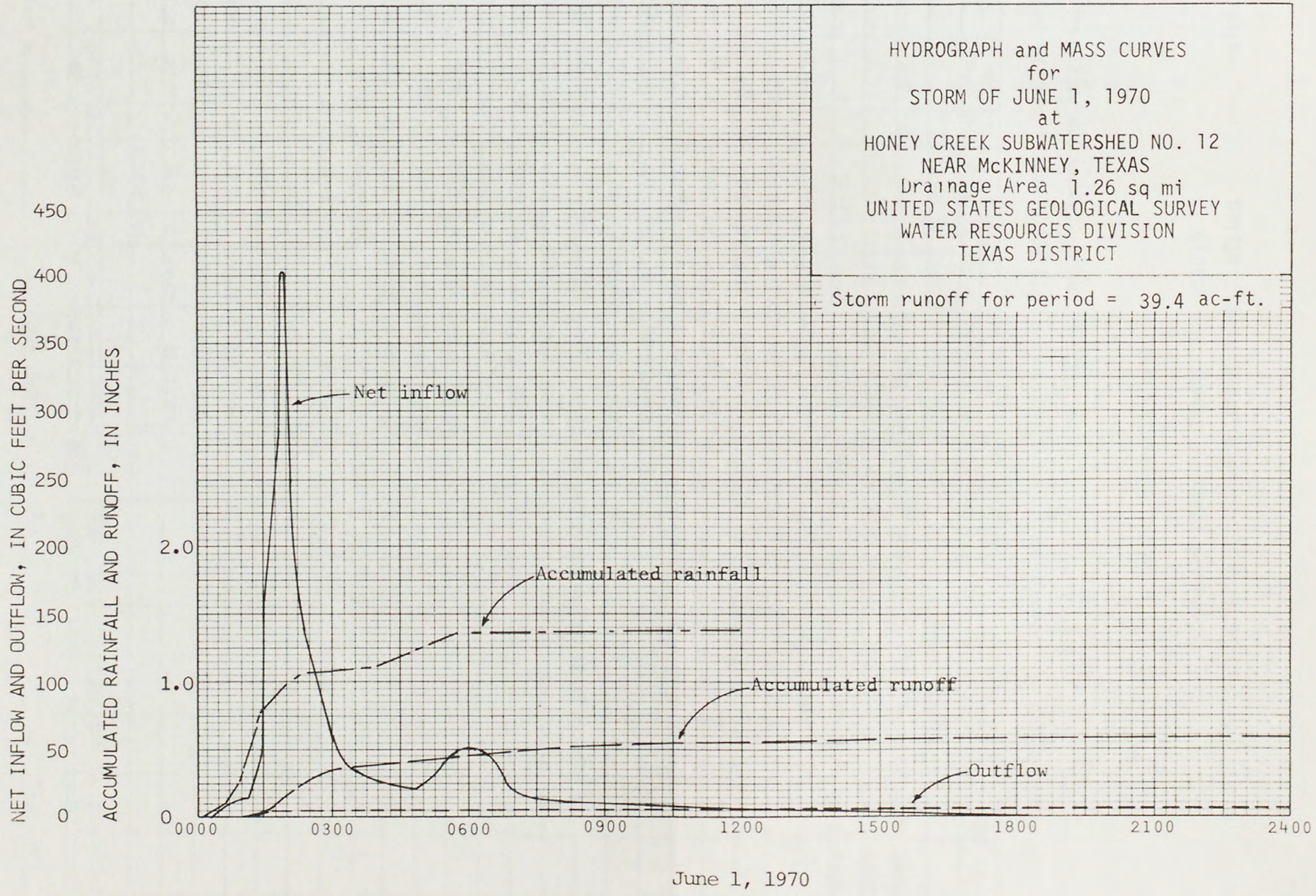
Sheet 1 of 1
Comp. by: BBH
Date 5/20/71
Check by JMT
Date 5/20/71

Study Area Honey Creek subwatershed No. 12 near McKinney, Tex. Date of storm June 1, 1970

Accumulated Precipitation in Inches for Recording Rain Gages													Accumulated Weighted Precipitation	
Weight Factor	.50		.50										Recording Gages	(Rec. Gages x K)
	Gage 12-R		Gage 16-R		Gage		Gage		Gage		Gage			
Date & Time	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	All Gages	All Gages
June 1, 1970														
0000	0	0	0	0										0
15	.10	.05	0	0										.05
30	.12	.06	0	0										.06
45	.29	.14	0	0										.14
0100	.46	.23	.11	.06										.29
15	.77	.38	.31	.16										.54
30	.91	.46	.64	.32										.78
45	.93	.46	.96	.48										.94
0200	.96	.48	1.03	.52										1.00
30	1.03	.52	1.12	.56										1.08
0300	1.05	.52	1.16	.58										1.10
0400	1.05	.52	1.20	.60										1.12
0500	1.22	.61	1.34	.67										1.28
0600	1.24	.62	1.53	.76										1.39
0700	1.25	.62	1.53	.76										1.39
1200	1.25	.62	1.53	.76										1.39

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
										WMR	

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 1.00


HYDROGRAPH and MASS CURVES
for
STORM OF JUNE 1, 1970
at
HONEY CREEK SUBWATERSHED NO. 12
NEAR McKINNEY, TEXAS
Drainage Area 1.26 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 39.4 ac-ft.
NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
450
400
350
300
250
200
150
100
50
0
2.0
1.0
0
Net inflow
Accumulated rainfall
Accumulated runoff
Outflow
0000
0300
0600
0900
1200
1500
1800
2100
2400
June 1, 1970

TX.-65 (Rev. 7-69)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Honey Creek near McKinney, Tex.

Period of Record June 1-3, 1970 Drainage Area 39.0 sq mi

Time	G. Ht. Feet	Sh. Adj.	Discharge C. f. s.	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In.
			June 1, 1970				
0000	1.71	0	30	.5	.0012	.0006	0.0006
0100	1.71		30	.75	.0012	.0009	.0015
30	1.75		32	.5	.0013	.0006	.0021
0200	4.40		280	.325	.0111	.0036	.0057
15	6.30		445	.25	.0177	.0044	.0101
30	7.85		604	.375	.0240	.0090	.0191
0300	8.63		692	.75	.0275	.0206	.0397
0400	8.78		709	.75	.0282	.0212	.0609
30	8.47		672	.5	.0267	.0134	.0743
0500	7.90		610	.75	.0242	.0182	.0925
0600	6.46		459	1	.0182	.0182	.1107
0700	5.74		395	1	.0157	.0157	.1264
0800	5.23		349	1.5	.0139	.0208	.1472
1000	4.13		258	2	.0103	.0206	.1678
1200	3.46		205	4	.0081	.0324	.2002
1800	2.85		154	6	.0061	.0366	.2368
2400	2.62	0	122	3	.0048	.0144	.2512
			634400	24			
			264				
			June 2, 1970				
0000	2.62	0	122	6	.0048	.0288	.2800
1200	2.43		96	12	.0038	.0456	.3256
2400	2.33	0	84	6	.0033	.0198	.3454
			2388	24			
			100				
BBH	JDB BBH	←	JDB	BBH	←	JMT	→

Time	G. Ht. Feet	Sh. Adj.	Discharge C. f. s.	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In
			June 3, 1970				
0000	2.33	0	84	6	.0033	.0198	.3652
1200	2.07		58	12	.0023	.0276	.3928
2400	1.92	0	46	6	.0018	.0108	.4036
			1476	24			
			62				
Runoff in acre-feet = 839							
BBH	JDB BBH	←	JDB	BBH	←	JMT	→

Computed by ✓ Date Jan. 1971 Checked by ✓ Date Jan. 1971

TX-78 (Revised July 1969)

UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY - WATER RESOURCES DIVISION
TEXAS DISTRICT

WEIGHTED-PRECIPITATION RECORD

Sheet 1 of 1
Comp. by: BBH
Date 5/4/71
Check by JMT
Date 5/18/71

Study Area Honey Creek near McKinney, Tex. Date of storm June 1, 1970

Accumulated Precipitation in Inches for Recording Rain Gages

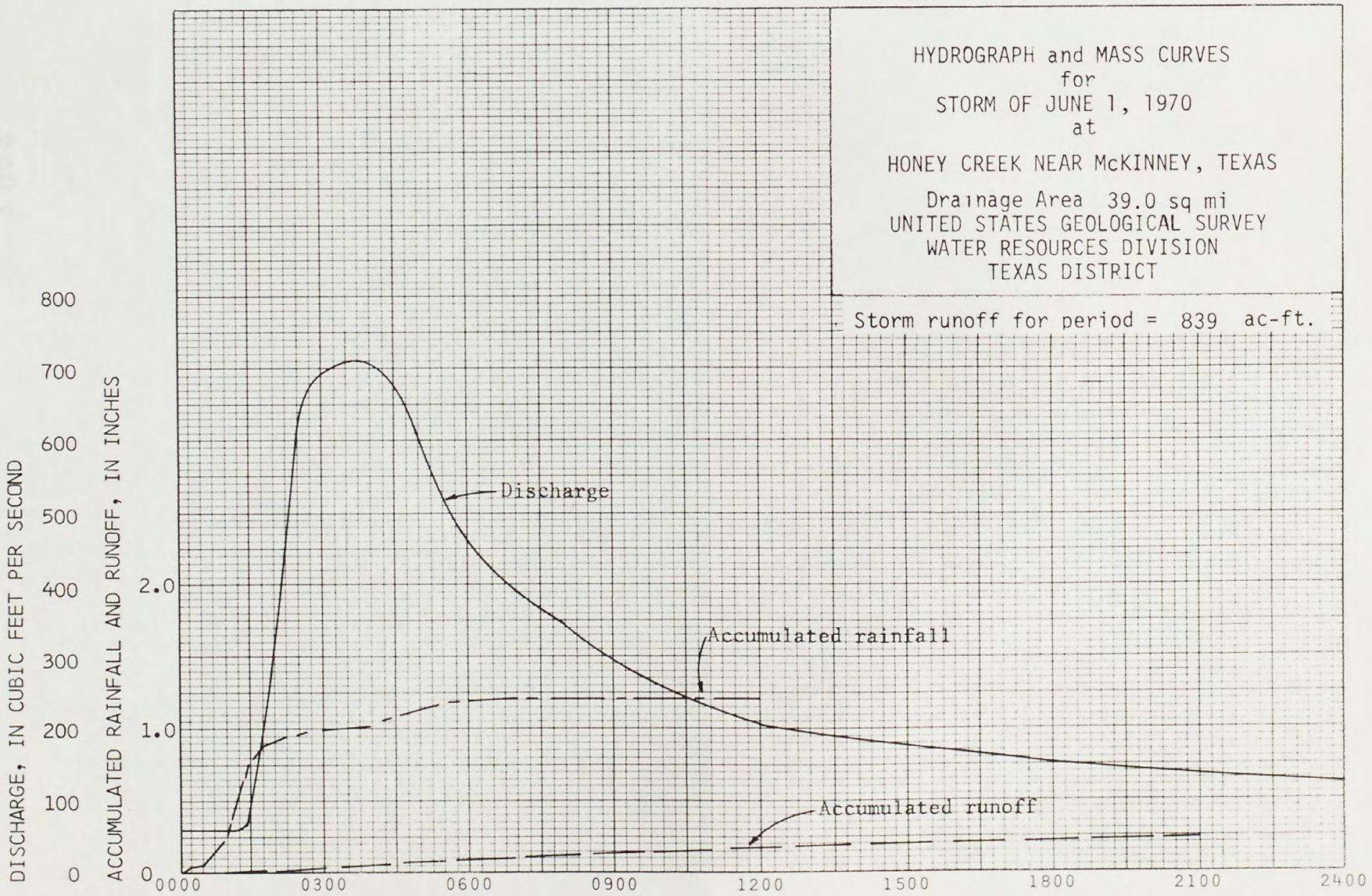
Weight Factor													Accumulated Weighted Precipitation	
	Gage 5-R		Gage 9-R		Gage 12-R		Gage 13-R		Gage 15-R		Gage 16-R		Recording Gages	(Rec. Gages x K)
Date & Time	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	All Gages	All Gages
June 1, 1970														
0000			0		0				0		0		0	0
15			.10		.10				0		0		.05	.04
30			.10		.12				0		0		.06	.05
45			.28		.29				0		0		.14	.12
0100			.42		.46				.15		.11		.28	.25
15			.80		.77				.38		.31		.56	.49
30			1.50		.91				.90		.64		.86	.75
45			1.01		.93				1.11		.96		1.00	.88
0200			1.01		.96				1.16		1.03		1.04	.91
30			1.02		1.03				1.20		1.12		1.09	.96
0300			1.08		1.05				1.24		1.16		1.13	.99
0400			1.10		1.05				1.28		1.20		1.16	1.02
0500			1.22		1.22				1.40		1.34		1.30	1.14
0600			1.25		1.24				1.45		1.53		1.37	1.20
0700			1.27		1.25				1.45		1.53		1.38	1.21
1200			1.27		1.25				1.45		1.53		1.38	1.21

No record

No record

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor	Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
5-R			1.05	16-R			1.53				
9-R			1.27			Total	7.27				
12-R			1.25								
13-R			.72			Average	1.21				
15-R			1.45								
										WMR:	

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 1.21 / 1.38 = 0.877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Drainage Area 39.0 sq mi
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WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 839 ac-ft.
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
800
700
600
500
400
300
200
100
0
2.0
1.0
0
Discharge
Accumulated rainfall
Accumulated runoff
0000
0300
0600
0900
1200
1500
1800
2100
2400
June 1, 1970