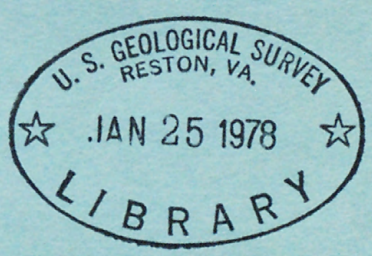
Hydrologic Data for Little Elm Creek, Trinity River Basin Texas, 1975

U. S. GEOLOGICAL SURVEY
Open-File Report No. 77-83



Prepared in cooperation with the city of Dallas and the Texas Water Development Board

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By R. M. Slade, Jr. and J. M. Taylor

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May 1977

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TRINITY RIVER BASIN, TEXAS

1975

By

R. M. Slade, Jr. and J. M. Taylor
U.S. Geological Survey

INTRODUCTION

History of Small Watershed Projects in Texas

The U.S. Soil Conservation Service is actively engaged in the implementation 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 that approximately 3,500 floodwater-retarding structures would be physically and economically feasible in Texas. As of September 30, 1975, 1,680 of these structures had been built.

The watershed-development program will have varying but important effects on the 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 watersheds were begun by the Geological Survey in 1951 and are now (1975) being made in three areas (fig. 1). Data collection in nine study areas has been completed. These studies 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. A summary of the development of the floodwater-retarding structures on each study area as of September 30, 1975, is shown in table 1.

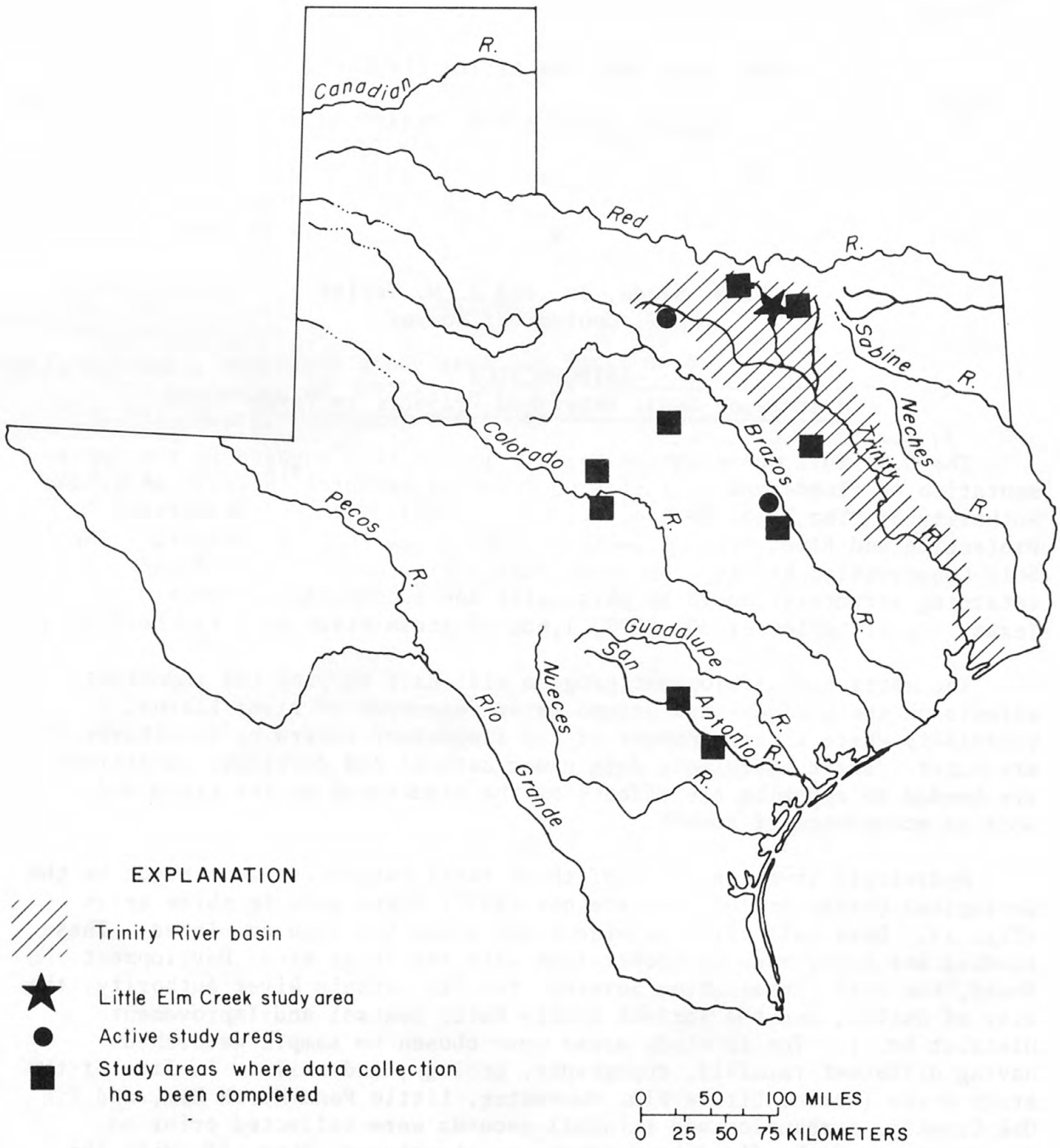

FIGURE 1.— Location of the Little Elm Creek study area and other study areas

Table 1.--Small watershed study areas in Texas as of September 30, 1975

Watershed	Drainage area above stream-gaging station (mi^2)	Data collection period	Floodwater-retarding structures above stream-gaging station	Period the structures were built
Trinity River basin:				
North Creek near Jacksboro	21.6	Aug. 1956 to	5	1970-72
Elm Fork Trinity River near Muenster	46.0	July 1956 to Sept. 1971	14	1954-57, 63
Little Elm Creek near Aubrey	75.5	June 1956 to	16	1966, 70-71
Honey Creek near McKinney	39.0	July 1951 to Sept. 1971	14	1951-57, 69, 73
Pin Oak Creek near Hubbard	17.6	Sept. 1956 to Sept. 1972	6	1962-63, 65
Brazos River basin:				
Green Creek near Alexander	46.1	Oct. 1954 to Sept. 1971	8	1954-56
Cow Bayou at Mooreville	85.0	Sept. 1954 to Sept. 1975	26	1955-58, 64-65
1/Little Pond Creek at Burlington	22.2	Oct. 1962 to Sept. 1972	None	-
1/North Elm Creek near Cameron	48.6	Oct. 1962 to Sept. 1972	None	-
Colorado River basin:				
Mukewater Creek at Trickham	70.0	Aug. 1951 to Sept. 1973	6	1961-62, 65
Deep Creek near Mercury	43.9	June 1951 to Sept. 1971	5	1951-53
San Antonio River basin:				
Calaveras Creek near Elmendorf	77.2	Aug. 1954 to Sept. 1971	7	1954-58
Escondido Creek at Kenedy	a/72.4	July 1954 to Sept. 1971	11	1954-58, 73

1/ Adjacent watersheds; considered as one study area.
a/ 8.43 mi^2 above Escondido Creek subwatershed No. 11 (Dry Escondido Creek) near Kenedy not included in this total.

Beginning with the 1975 water year, water-quality data is given for Little Elm Creek in the section "Compilation of data." A complete tabulation of data including laboratory analyses for the 1975 water year for the Trinity River basin is given in Water resources data for Texas, 1975, TX 75-1, vol. 1.

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

The English units of measurements used in this report may be converted to metric units by using the following conversion factors:

From		Multiply by	To obtain	
Unit	Abbreviation		Unit	Abbreviation
inches	--	25.4	millimeters	mm
feet	--	.3048	meters	m
miles	--	1.609	kilometers	km
square miles	mi^2	2.590	square kilometers	km^2
cubic feet per second	ft^3/s	.02832	cubic meters per second	m^3/s
feet per mile	ft/mi	.189	meters per kilometer	m/km
acre-feet	--	1233	cubic meters	m^3
		.001233	cubic hectometers	hm^3

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 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 sixteenth in a series of basic-data reports published annually for the Little Elm Creek study area, contains the rainfall, runoff, and storage data collected during the 1975 water year for the 75.5-mi^2 area above the stream-gaging station Little Elm Creek near Aubrey, Texas. The locations of floodwater-retarding structures and hydrologic-instrument installations in the area are shown on 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 analyses of rainfall-runoff relationships. Investigations in this watershed are scheduled to be discontinued on September 30, 1976.

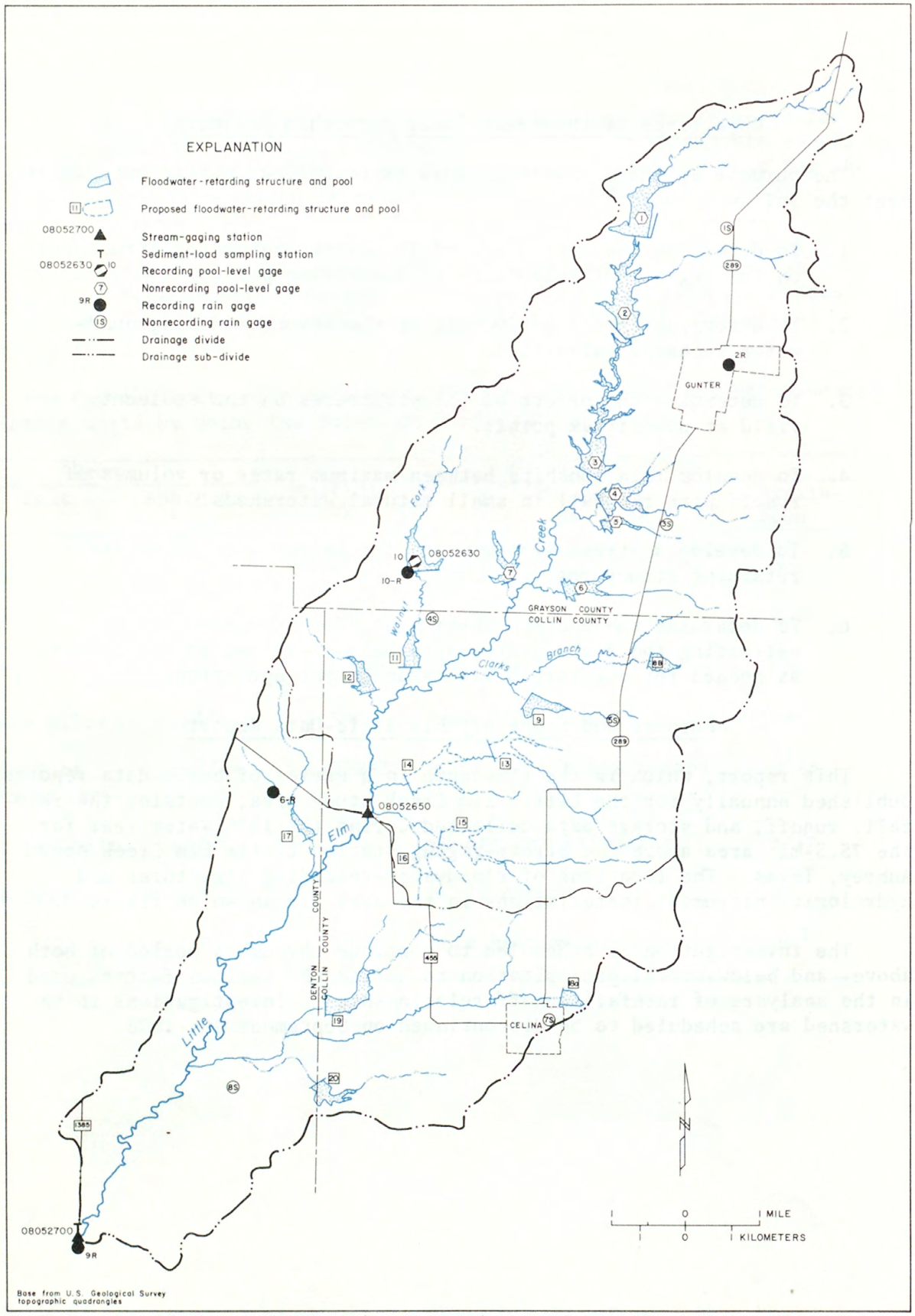

FIGURE 2.—Locations of floodwater-retarding structures (built and proposed) and hydrologic-instrument installations in the Little Elm Creek study area

DESCRIPTION OF THE WATERSHED

The headwaters of Little Elm Creek originate about 5 miles northeast of Gunter in Grayson County (fig. 2). The creek flows southwest through the northwest corner of Collin County, then into Denton County, and discharges into Garza-Little Elm Reservoir about 4 miles downstream from the stream-gaging station, Little Elm Creek near Aubrey. The length of the stream channel in the study area is about 29 miles. The principal tributaries to Little Elm Creek above the Aubrey stream-gaging station are Clarks Branch and Walnut Fork. The total drainage area above the Aubrey stream-gaging station is 75.5 mi^2. Above the Celina stream-gaging station, the total area is 46.7 mi^2.

The length of the watershed is about 19 miles, and the maximum width is about 7 miles. The watershed slopes from east to west; the eastern divide is 60 to 80 feet higher than the western divide. The main channel divides the watershed into unequal areas. The smaller western area has a more gentle valley slope than the larger eastern area. The low-water channel falls from an altitude of about 840 feet above mean sea level at the headwaters divide to 540 feet above mean sea level at the Aubrey stream-gaging station. In the 1-mile reach immediately downstream from the divide, the elevation decreases 80 feet. The streambed has an average slope of 7 ft/mi between river miles 21 and 27, measured upstream from the Aubrey stream-gaging station. Between river miles 14 and 21, the average slope of the streambed is 4 ft/mi, and between river miles 0 to 14, the average slope is 2.5 ft/mi.

The stream has mostly a straight course, although in detail it is distinctly sinuous, with old channels, cutoff meander loops, and the remnants of several oxbow lakes present in the lower reach. The stream has a wide flood plain in the lower half of the watershed.

Approximately 81 percent of the drainage area is in the Blackland Prairie area, the remainder is in the Forested Coastal Plain area. The Blackland soils are fine to medium textured and light gray to very dark brown in color. The Forested Coastal Plain soils are medium to coarse textured and light gray in color.

The climate of the study area is temperate and subhumid. Moderate winters with sudden changes in temperature are common, as are long summers with low humidity. The most common storms are thunderstorms that 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 causing serious flooding and sediment damage may occur during any season, but are most frequent in the spring. Records of the Environmental Data Service show that the long-term normal (1941-70) rainfall at Sherman (15 miles northeast) is 39.83 inches per year.

FLOODWATER-RETARDING STRUCTURES

There are 12 floodwater-retarding structures in the Little Elm Creek watershed upstream from the stream-gaging station Little Elm Creek near Celina. These structures have a combined capacity of 9,490 acre-feet below the emergency spillway and control runoff from 28.4 mi^2, or 61 percent of the area above the Celina stream-gaging station.

Four floodwater-retarding structures are located in the area between the Celina and Aubrey stream-gaging stations. The 16 floodwater-retarding structures have a combined capacity of 12,340 acre-feet below the emergency spillway and control runoff from 35.7 mi^2, or 47 percent of the area above the Aubrey stream-gaging station.

Table 2 contains a summary of the physical data at each of the 16 floodwater-retarding structures.

HYDROLOGIC INSTRUMENTS

Instruments to collect rainfall and stage data in the study area consist of a network of rain gages, staff gages at each of the 16 floodwater-retarding structures, a water-stage recorder at one of the structures, and 2 stream-gaging stations on Little Elm Creek. The locations of instruments are shown on figure 2.

Four recording and six nonrecording rain gages are located at points throughout the study area to define the total rainfall and rainfall intensities. Measurements of rainfall at nonrecording rain gages are made daily by local observers.

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

Site number	Drainage area (mi^2)	Date dam completed	Date gage established	Datum of gage above mean sea level, datum of 1929	Emergency spillway			Drop inlet			Diameter or dimensions of opening in orifice plate (in)	Portholes or weir notches					Controlled opening			Discharge pipe		Range of staff gages
					Width (ft)	Gage height crest (ft)	Pool contents (ac-ft)	Inside dimensions (ft)	Gage height crest (ft)	Pool contents (ac-ft)		Number and dimensions (in)	Gage height crest (ft)	Pool contents (ac-ft)	Dimensions of dewatering notch (in)	Date dewatering notch filled	Size of valve (in)	Gage height of invert of valve (ft)	Pool contents (ac-ft)	Diameter (in)	Height of constriction plate above invert of pipe (in)	
1	3.40	6-10-66	4- 8-66	674.00	90	29.0	977	2x6	19.00	179	15.5	(2) None	--	--	None	--	12	9.50	17	24	--	13.6-30.5
2	3.95	6-10-66	7-13-66	657.30	205	25.3	1,420	2.5x8.3	17.00	351	None	(4) 12x18	15.47	251	"	--	12	7.92	38	30	--	10.2-23.7
3	7.27	6-10-66	7-14-66	632.80	335	24.8	1,840	3.5x11	16.00	337	"	a/ b/	12.00 14.00	118 203	"	--	12	7.50	32	42	--	8.1-27.1
4	3.33	8-11-66	9-13-66	639.60	350	29.9	1,330	2x6	17.00	265	16x14	(2) 10x12	16.12	228	"	--	12	7.50	35	24	--	7.0-30.5
5	.50	3-16-66	4- 8-66	641.20	45	28.4	204	2x4	18.00	54	None	None	--	--	"	--	12	9.50	8.2	18	--	10.2-30.5
6	1.99	3-16-66	4- 7-66	625.50	145	31.2	744	2x4	19.00	158	17.25	"	--	--	"	--	12	10.50	18	24	--	10.2-37.3
7	1.28	3-16-66	4- 7-66	618.30	110	23.7	464	2x4	14.00	108	14	"	--	--	"	--	12	8.50	31	24	--	10.2-27.1
8-B	1.25	2-17-71	6- 7-71	676.73	100	28.3	495	2x4	17.27	109	--	"	--	--	12x36		12	7.77	15	18	9.63	6.8-32.7
9	.58	2-17-71	6- 8-71	638.25	60	23.2	220	2x4	16.25	55	--	"	--	--	12x36		12	7.75	2.1	18	9	3.4-29.8
10	2.10	3-16-66	4- 6-66	615.50	125	29.2	868	2x4	20.00	159	16.5x18	"	--	--	None	--	12	13.50	40	24	--	10.2-27.1
11	1.17	1-20-71	6- 8-71	601.10	130	20.9	400	2.5x7.5	12.20	60	--	"	--	--	12x22.75		12	7.70	15	30	--	6.7-23.7
12	1.62	1-20-71	6- 8-71	595.96	140	24.7	576	2x4	12.24	110	--	"	--	--	12x24		12	7.74	43	18	7.75	3.4-29.7
13																						
14																						
15																						
16																						
17	2.17	1-20-71	6-18-71	586.16	150	26.6	809	2x4	15.84	161	--	None	--	--	12x36	7-71	12	4.34	.7	18	9.38	3.4-30.5
18-A	1.05	8-17-70	8-13-70	712.42	100	30.2	524	2x4	15.58	111	--	"	--	--	12x36	7-71	12	4.08	14	24	7.75	3.4-37.3
19	2.01	8-17-70	8-14-70	87.34	100	19.4	769	2x4	10.76	168	--	"	--	--	12x36	7-71	12	4.26	40	24	10.38	6.8-23.7
20	2.06	8-17-70	8-13-70	88.51	100	27.5	809	2x4	15.59	150	--	"	--	--	12x36	7-71	12	4.09	6.0	24	8.50	6.8-30.5

a/ Twelve 7x8-inch portholes
b/ Twelve 7x8-inch portholes

A continuous water-stage recording gage is operated at floodwater-retarding structure site 10. Data collected at this site since April 1, 1966, are used to compute the contents, surface area, inflow, and outflow. Weekly readings of the staff gages at each of the 15 remaining floodwater-retarding structures provide data to determine the quantity of water retained or released from the structures.

Two continuous water-stage recorders at the stream-gaging stations Little Elm Creek near Celina and Little Elm Creek near Aubrey provide records of the stage, which together with measurements of streamflow are used to compute the runoff from the area above each streamflow station. The station near Aubrey was established on June 8, 1956; and the Celina station was established on February 21, 1966.

SUMMARY OF DATA FOR THE 1975 WATER YEAR

The average rainfall above the stream-gaging station Little Elm Creek near Aubrey (study area) during the 1975 water year was 41.10 inches, or 109 percent of the 19-year (1957-75) average of 37.77 inches for the area. Monthly rainfall totals ranged from 0.69 inch in August to 8.85 inches in October. The weighted-mean rainfall above the stream-gaging station Little Elm Creek near Celina was 42.11 inches. The weighted-mean rainfall above Little Elm Creek subwatershed No. 10 during the 1975 water year was 36.87 inches.

Runoff above site 10 was 1,800 acre-feet, which represents an equivalent depth of 16.07 inches. The yearly mean discharge was 67.3 ft^3/s at the stream-gaging station near Celina and 91.4 ft^3/s at the stream-gaging station near Aubrey. At the Celina station, the annual runoff was 48,700 acre-feet or 19.56 inches. The runoff for the year at the Aubrey station was 66,160 acre-feet or 16.44 inches.

A storm event is defined as a period of rainfall separated by at least 6 hours from other rainfall. Storms are selected for detailed rainfall-runoff computations on the basis of rainfall totals and distribution, the peak discharge produced from the rainfall at the stream-gaging station, and the assurance of good rainfall and runoff records for the storm periods selected. These storms will be used later in calibrating a watershed response model to show the effects of floodwater-retarding structures.

Four storm periods were selected for detailed computations. These computations include a time breakdown for rainfall and discharge with hydrographs and mass curves drawn for illustrations. The storms selected for the Celina and Aubrey stations occurred October 30-31, 1974, April 7-8, 1975, May 29-30, 1975, and June 8-10, 1975. The storms selected for site 10 occurred October 30-31, 1974, April 7-8, 1975, May 14-15, 1975, June 8, 1975, and June 9-10, 1975. A summary of rainfall-runoff data for the selected storms is shown in tables 3 and 4.

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

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 3.--Storm rainfall-runoff data, Little Elm Creek Subwatershed No. 10 near Gunter, Tex., 1975 water year

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (ft^3/s)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			
Little Elm Creek subwatershed No. 10 near Gunter, Tex. (Drainage area 2.10 mi^2)								
October 30-31,1974	23	6.99	0.84	1.10	2.05	5.44	0.78	2,180
April 7-8, 1975	23	2.13	.63	.71	.76	1.19	.56	388
May 14-15, 1975	10	.83	.37	.49	.58	.50	.60	265
June 8, 1975	20	2.13	.54	1.01	1.10	1.01	.47	590
June 9-10, 1975	12	2.31	.79	1.21	1.81	1.01	.44	440

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 4.--Storm rainfall-runoff data, at streamflow stations, 1975 water year

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (ft^3/s)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			
Little Elm Creek near Celina, Tex.								
Drainage area, 46.7 mi^2 of which 28.4 mi^2 is above floodwater-retarding structures								
October 30-31,1974	25	6.11	0.44	0.67	1.23	3.04	0.50	4,940
April 7-8, 1975	23	1.88	.39	.57	.69	1.10	.59	1,970
May 29-30, 1975	16	1.43	.42	.47	.91	.73	.51	1,170
June 8-10, 1975	53	5.47	.61	1.04	1.95	2.86	.52	3,250
Little Elm Creek near Aubrey, Tex.								
Drainage area, 75.5 mi^2 of which 35.7 mi^2 is above floodwater-retarding structures								
October 30-31,1974	23	5.94	.37	.63	1.21	3.32	.56	7,920
April 7-8, 1975	23	1.93	.40	.59	.73	.80	.41	1,710
May 29-30, 1975	16	1.70	.39	.59	1.02	.81	.48	1,330
June 8-10, 1975	52	4.92	.54	.97	1.50	2.14	.43	2,590

COMPILATION OF DATA

08052630 Little Elm Creek subwatershed No. 10 near Gunter, Tex.

LOCATION.--Lat 33°24'33", long 96°48'41", Grayson County, near center of dam on Walnut Fork tributary to Little Elm Creek, 1.6 miles (2.6 km) upstream from mouth, and 4.7 miles (7.6 km) southwest of Gunter.

DRAINAGE AREA.--2.10 mi^2 (5.44 km^2).

PERIOD OF RECORD.--April 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 615.51 ft (187.607 m) above mean sea level (Soil Conservation Service bench mark).

AVERAGE INFLOW.--9 years, 1,140 acre-ft/yr (1.41 hm^3/yr).

AVERAGE OUTFLOW.--9 years, 1,040 acre-ft/yr (1.28 hm^3/yr).

EXTREMES.--Current year: Maximum outflow, 31.9 ft^3/s (0.90 m^3/s) Oct. 31 (gage height, 28.24 ft or 8.608 m); no outflow for many days. Maximum inflow, 2,180 ft^3/s (61.7 m^3/s), average for 5-minute interval, Oct. 30, computed and adjusted as explained below; no inflow at times.

Period of record: Maximum outflow, 31.9 ft^3/s (0.90 m^3/s) Apr. 30, 1966, and Oct. 31, 1974; maximum gage height, 28.24 ft (8.608 m); no flow at times each year. Maximum inflow, 3,240 ft^3/s (91.8 m^3/s), average for 5-minute interval, May 30, 1967, computed from outflow and change in pool contents and adjusted for rainfall on pool surface during time of peak inflow; no inflow at times each year.

REMARKS.--Records good. Dam was completed Mar. 16, 1966, and storage began in April 1966. Pool is formed by rolled earthfill dam 1,588 ft (484 m) long, with a 130-foot-wide (40-metre) spillway at left end of dam with crest at gage height 29.2 ft (8.90 m). Outlet structure is a 2.0- by 4.0-foot (0.6- by 1.2-metre) uncontrolled concrete drop-inlet structure with crest at gage height 20.00 ft (6.096 m) and connected to a 24-inch (610-millimetre) concrete pipe with invert at gage height 13.0 ft (3.96 m). There is also a 12-inch (305-millimetre) controlled slide gate used as a water-supply outlet that is connected to the drop inlet at gage height 13.5 ft (4.11 m). Pool capacity is 868 acre-ft (1.07 hm^3) at spillway crest, 159 acre-ft (0.196 hm^3) at crest of drop inlet, and 40 acre-ft (0.049 hm^3) at controlled slide gate. Capacity table is based on Soil Conservation Service map prepared prior to construction and adjusted for borrow by the Geological Survey. Recording rain gage located at station. Records of precipitation and hydrologic data for selected storms are published elsewhere in basic-data report.

REVISIONS.--WSP 2122: Drainage area.

POOL WATER BUDGET, IN ACRE-FEET, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
Inflow 1/	637	215	61.0	40.0	183	70.5	164	149	268	5.2	2.2	4.0
Outflow	84.6	785	50.9	29.6	191	60.4	163	126	274	.1	0	0
(†)	+578	-583	+6.3	+7.7	-14.0	+3.6	-6.2	+16.3	-15.3	-12.4	-16.6	-6.1
(††)	8.91	2.60	2.03	2.37	1.30	1.76	2.87	5.14	5.12	1.74	.40	2.63

CAL YR 1974: Inflow 1,760 Outflow 1,670 † +12.1 †† 36.93
WTR YR 1975: Inflow 1,800 Outflow 1,760 † -41.7 †† 36.87

PEAK INFLOW (BASE, 100 FT^3/S)

DATE	TIME	DISCHARGE	DATE	TIME	DISCHARGE
10-30	2225	*2,180	5-14	2055	*265
11-10	0205	*282	6- 8.	2040	*590
4- 8	0040	*388	6- 9	2025	*440

1/ Inflow adjusted for rainfall on pool and pool losses.
† Change in contents, in acre-feet.
†† Rainfall, in inches.
* Average for 5-minute interval.

9-220 c
(Oct. 1961)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of _____ Sheets

08052600

Monthly and ~~annual discharge~~ yearly weighted-mean rainfall, in inches, of Little Elm Creek Subwatershed No. 10 River at near Gunter, Tex.

[Drainage area, 2.10 square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
				Station established April 1, 1966									
1966	-	-	-	-	-	-	11.14	0.71	1.92	4.44	6.89	3.29	-
1967	0.35	0.82	1.13	0.03	0.84	2.97	4.86	7.46	.84	.99	.29	4.64	25.22
1968	2.15	.44	1.82	2.73	1.31	5.09	3.94	4.99	3.41	2.03	1.90	7.24	37.05
1969	1.41	4.24	1.95	1.67	2.57	2.99	2.35	8.32	3.35	0	2.10	1.00	31.95
1970	4.10	.29	3.83	.81	4.50	2.11	7.42	2.80	.36	.20	3.20	6.73	36.35
1971	1.44	.26	.45	.59	.98	.10	1.60	3.55	.43	3.60	4.87	3.15	21.02
1972	4.90	3.74	5.09	0	.24	1.44	2.89	1.92	1.41	.30	3.25	4.12	29.30
1973	5.60	2.64	.33	2.48	1.28	4.25	2.25	2.81	5.16	4.80	.58	4.33	36.51
1974	5.76	2.01	.53	.27	.60	.31	4.28	1.45	7.26	.45	4.88	3.89	31.69
1975	8.91	2.60	2.03	2.37	1.30	1.76	2.87	5.14	5.12	1.74	.40	2.63	36.87

9-220c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of _____ Sheets

08052630

Monthly and ~~annual discharge~~ yearly net inflow, in acre-feet, of Little Elm Creek Subwatershed No. 10 River at/near Gunter, Tex.
[Drainage area, 2.10 square miles] (revised)

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
			Station established April 1, 1966										
1966	-	-	-	-	-	-	741.6	74.9	4.2	4.4	45.9	149.7	-
1967	6.2	0.6	4.8	2.2	2.4	10.1	136.1	382.1	50.9	6.8	2.9	6.8	611.9
1968	5.0	2.8	8.1	45.0	8.6	418	148	246	14.6	4.0	3.6	19.0	923
1969	4.8	119	19.3	49.5	197	104	32.5	573	24.7	.7	1.2	4.9	1,130
1970	12.8	1.9	129	1.4	262	230	571	105	14.9	0	0	128	1,460
1971	7.9	4.6	2.1	3.8	2.5	4.3	1.6	39.8	3.4	8.8	42.2	37.3	158
1972	210	214	372	0	2.8	2.6	9.1	3.4	0	.1	1.7	33.4	849
1973	202	92.3	4.2	112	83.0	306	139	122	261	91.6	17.4	340	1,770
1974	525	161	3.6	6.8	14.0	2.2	50.3	101	515	4.7	30.3	121	1,530
1975	637	215	61.0	40.0	183	70.5	164	149	268	5.2	2.2	4.0	1,800

9-220 c
(Oct. 1961)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of _____ Sheets

08052630

Monthly and ~~annual discharge~~ yearly outflow, in acre-feet, of Little Elm Creek Subwatershed No. 10 River at near Gunter, Tex.

[Drainage area, 2.10 square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
			Station established April 1, 1966										
1966	-	-	-	-	-	-	188.8	508.2	0	0	3.0	125.8	-
1967	10.6	0	0	0	0	0	101.5	74.8	396.3	0	0	0	583.2
1968	0	0	0	4.0	3.4	404	148	239	0	0	0	0	798
1969	0	90.2	23.1	31.4	202	106	9.4	579	10.1	0	0	0	1,050
1970	0	0	73.4	18.6	224	264	361	277	22.8	0	15.9	52.5	1,310
1971	1.6	0	0	0	0	0	2.7	0	0	52.8	5.5	0	62.6
1972	187	212	383	1.0	0	0	23.7	15.9	50.4	6.2	0	0	879
1973	82.8	96.7	.2	98.2	87.3	298	127	112	253	46.4	34.2	266	1,500
1974	487	225	4.5	0	1.7	.1	13.1	138	488	0	26.7	80.3	1,460
1975	84.6	785	50.9	29.6	191	60.4	163	126	274	.1	0	0	1,760

TX-74a
Rev. 2-74

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOL

ANNUAL SUMMARY

1975 WATER YEAR

08052630 Little Elm Creek subwatershed No. 10 near Gunter, Tex. Drainage Area 2.10 mi^2

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

Maxima: gage height, 28.24 ft; outflow, 31.9 ft^3/s; surface area, 114 acres; contents, 753 acre-feet; on Oct. 31, 1974.

Minima: gage height, 18.80 ft; surface area, 25.7 acres; contents, 125 acre-feet; on Sept. 30, 1975.

Maximum inflow, 2,180 ft^3/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on Oct. 30, 1974.

Averages: 9 water years, (1967-75); inflow, 1,140 acre-feet/year; outflow, 1,040 acre-feet/year; rainfall, 31.77 inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	637	215	61.0	1,760	40.0	183	70.5	164	149	268	5.2	2.2	4.0	1,800
Total Outflow	84.6	785	50.9	1,670	29.6	191	60.4	163	126	274	0.1	0	0	1,760
Total Consumption	18.1	27.0	9.4	214	9.2	9.8	11.3	16.3	20.5	27.3	22.0	19.7	15.8	206
†	+578	-583	+ 6.3	+12.1	+ 7.7	-14.0	+ 3.6	- 6.2	+16.3	- 15.3	-12.4	-16.6	- 6.1	-41.7
‡	34.9	52.9	33.4	33.8	33.0	35.0	33.3	34.7	34.1	36.9	31.0	28.1	26.3	34.5
††	8.91	2.60	2.03	36.93	2.37	1.30	1.76	2.87	5.14	5.12	1.74	0.40	2.63	36.87

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, at station

* Peak inflow - (base, 100 ft^3/s)

Date	Time	Discharge	Date	Time	Discharge
Oct. 30	2225	2,180	June 8	2040	590
Nov. 10	0205	282	June 9	2025	440
Apr. 8	0040	388			
May 14	2055	265			

* Averaged for 5-minute interval

08052650 Little Elm Creek near Celina, Tex.

LOCATION.--Lat 33°21'55", long 96°49'25", Collin County, on left bank at downstream side of bridge on Farm Road 455, 3.6 miles (5.8 km) northwest of Celina, and 10 miles (16 km) upstream from Mustang Creek.

DRAINAGE AREA.--46.7 mi² (121.0 km²).

PERIOD OF RECORD.--Discharge: February 1966 to current year.
Water quality: Specific conductance: October 1966 to current year. Water temperatures: February 1966 to current year. Sediment records: February 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 582.4 ft (177.5 m) above mean sea level (State Highway Department bench mark).

AVERAGE DISCHARGE.--9 years, 39.1 ft³/s (1.107 m³/s), 11.37 in/yr (289 mm/yr), 28,330 acre-ft/yr (34.9 hm³/yr).

EXTREMES.--Discharge: Current year: Maximum discharge, 4,940 ft³/s (140 m³/s) Oct. 31 (gage height, 13.18 ft or 4.017 m); no flow for many days.
Period of record: Maximum discharge, 5,340 ft³/s (151 m³/s) May 31, 1967 (gage height, 13.32 ft or 4.060 m); no flow for many days each year.
Water quality: Current year: Maximum daily sediment concentrations, 2,730 mg/l Apr. 8; no flow for many days. Maximum daily, sediment loads, 8,220 tons Apr. 8; minimum daily, 0 tons on many days.
Period of record: Maximum water temperatures (1966-69), 31.0°C June 20, 1969; minimum, freezing point Jan. 1, 1969. Maximum daily sediment concentrations, 2,730 mg/l Apr. 8, 1975; no flow for many days. Maximum daily sediment loads, 15,200 tons Apr. 28, 1966; minimum daily, 0 tons on many days.

REMARKS.--Discharge records fair. Small diversions for irrigation above station. Four standard and two recording rain gages are located in basin above station. At end of year, flow from 28.4 mi² (73.6 km²) above this station was partly controlled by 12 floodwater-retarding structures with a combined capacity of 9,490 acre-ft (11.7 hm³) below the flood-spillway crests, of which 1,530 acre-ft (1.89 hm³) is sediment-pool capacity. The capacity in these pools allocated to sediment storage will be used for conservation storage until eliminated by sedimentation.

REVISIONS.--WSP 2122: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	742	1.8	35	680	15	11	.02	102	.96		0
2	11	613	1.3	80	364	24	7.8	15	52	.60		0
3	7.2	579	.85	91	347	23	5.1	18	31	.25		0
4	4.5	508	.50	46	272	17	3.5	8.0	17	.14		0
5	3.0	458	1.3	28	428	12	2.2	5.3	9.0	.07		1.3
6	2.0	425	164	18	193	9.2	1.6	4.1	4.7	.01		15
7	1.3	392	56	13	113	7.2	151	3.0	2.7	0		12
8	.81	366	28	10	71	4.6	921	2.2	451	0		3.4
9	.32	325	17	7.7	45	4.5	305	1.5	1290	0		.50
10	.10	1200	44	8.3	29	13	224	.59	976	0		3.1
11	.02	454	158	5.8	21	8.8	139	.24	484	0		.59
12	.01	370	76	4.6	14	9.6	79	4.1	396	0		.08
13	.01	289	45	3.3	10	33	49	3.8	364	0		.02
14	69	184	29	2.1	8.0	31	31	112	324	0		.01
15	55	118	20	1.9	6.2	23	20	186	248	0		.01
16	26	86	14	1.6	5.0	149	14	77	137	0		0
17	12	65	9.8	1.2	4.0	106	9.4	34	70	0		0
18	7.9	48	7.5	.96	3.1	73	7.2	14	46	0		.21
19	5.5	36	5.7	1.1	2.4	47	4.7	7.1	34	0		.09
20	3.6	23	4.4	1.2	1.8	26	3.1	3.8	26	0		.02
21	2.3	14	3.4	.17	1.3	16	2.2	2.4	17	0		0
22	1.3	9.3	2.7	.05	13	10	1.6	1.2	12	0		0
23	.48	7.3	2.4	.03	19	8.3	1.4	11	8.0	0		0
24	.14	7.6	2.4	.06	27	5.9	1.1	7.6	4.9	0		0
25	.10	4.9	2.1	.71	25	3.6	.66	3.5	3.5	0		0
26	.29	3.1	9.7	.53	17	3.0	.23	1.6	2.7	0		0
27	.52	2.5	10	.20	11	47	.08	.64	2.2	0		0
28	81	1.8	7.8	.06	8.8	46	.05	1.1	1.9	0		0
29	53	1.9	7.5	.06	---	33	.04	444	1.6	0		0
30	192	2.7	12	.10	---	30	.02	473	1.3	0		0
31	2890	---	68	214	---	17	---	194	---	0		---
TOTAL	3437.40	7336.1	812.15	576.73	2739.6	855.7	1995.98	1639.79	5119.5	2.06	0	36.33
MEAN	111	245	26.2	18.6	97.8	27.6	66.5	52.9	171	.067	0	1.21
MAX	2890	1200	164	214	680	149	921	473	1290	.96	0	15
MIN	.01	1.8	.50	.03	1.3	3.0	.02	.02	1.3	0	0	0
CFSM	2.39	5.25	.56	.40	2.09	.59	1.42	1.13	3.66	.001	0	.03
IN.	2.74	5.84	.65	.46	2.18	.68	1.59	1.31	4.08	.001	0	.03
AC-FT	6820	14550	1610	1140	5430	1700	3960	3250	10150	4.1	0	72

CAL YR 1974 TOTAL 22240.14 MEAN 60.9 MAX 2890 MIN 0 CFSM 1.30 IN 17.72 AC-FT 44110
WTR YR 1975 TOTAL 24551.34 MEAN 67.3 MAX 2890 MIN 0 CFSM 1.44 IN 19.56 AC-FT 48700

08052650 Little Elm Creek near Celina, Tex.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	457	541	305	511	473	524	321	317		
2	---	191	---	537	349	476	477	646	325	324		
3	---	186	---	517	362	496	494	661	---	320		
4	284	186	---	439	357	463	493	628	---	331		
5	283	186	---	498	365	456	493	529	---	332		
6	291	187	367	465	352	466	510	460	---	---		
7	297	190	356	447	354	471	544	455	---	---		
8	301	189	352	507	361	471	312	455	---	---		
9	313	189	363	514	347	468	374	452	257	---		
10	320	195	363	545	404	520	407	453	234	---		
11	329	208	360	544	405	593	430	455	253	---		
12	---	215	366	531	406	605	514	750	229	---		
13	---	213	343	517	431	634	600	753	224	---		
14	524	207	357	504	444	615	351	390	216	---		
15	293	202	342	514	443	530	368	371	217	---		
16	447	200	380	520	463	387	374	347	224	---		
17	305	202	380	530	491	406	387	349	226	---		
18	543	198	395	531	497	409	396	348	228	---		
19	318	211	397	551	509	407	410	350	237	---		
20	324	211	409	---	503	410	408	353	234	---		
21	330	227	409	---	496	431	417	368	232	---		
22	331	248	412	---	497	427	430	391	247	---		
23	334	263	426	---	500	453	468	424	261	---		
24	335	272	457	---	505	475	467	419	260	---		
25	339	295	553	---	---	476	517	412	---	---		
26	342	307	555	---	513	476	517	394	263	---		
27	---	366	526	---	514	605	516	382	282	---		
28	430	457	526	---	512	444	520	381	286	---		
29	380	456	555	---	---	467	522	403	301	---		
30	376	455	564	673	---	465	529	326	312	---		
31	231	---	538	530	---	471	---	325	---	---		
MONTH	344	245	426	---	433	483	457	450	---	---		

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	19.0	9.0	9.0	13.0	17.0	9.0	25.0	22.0	25.0		
2	---	20.0	---	9.0	14.0	16.0	9.0	22.0	22.0	25.0		
3	---	20.0	---	9.0	14.0	16.0	9.0	20.0	---	25.0		
4	21.0	18.0	---	9.0	14.0	15.0	10.0	21.0	---	25.0		
5	21.0	18.0	---	10.0	10.0	14.0	11.0	21.0	---	25.0		
6	22.0	16.0	9.0	10.0	7.0	14.0	12.0	21.0	---	---		
7	23.0	16.0	9.0	10.0	5.0	14.0	12.0	22.0	---	---		
8	23.0	16.0	8.0	10.0	5.0	12.0	13.0	22.0	---	---		
9	21.0	15.0	5.0	9.0	7.0	11.0	12.0	22.0	22.0	---		
10	20.0	10.0	6.0	9.0	9.0	11.0	11.0	22.0	23.0	---		
11	20.0	13.0	8.0	9.0	10.0	10.0	11.0	22.0	24.0	---		
12	---	13.0	8.0	8.0	10.0	10.0	12.0	22.0	24.0	---		
13	---	13.0	8.0	8.0	11.0	10.0	15.0	22.0	26.0	---		
14	19.0	11.0	8.0	7.0	12.0	9.0	13.0	22.0	27.0	---		
15	16.5	10.0	9.0	9.0	14.0	8.0	15.0	22.0	27.0	---		
16	18.0	10.0	8.0	8.0	13.0	7.0	16.0	23.0	28.0	---		
17	18.0	10.0	9.0	8.0	13.0	12.0	16.0	23.0	28.0	---		
18	19.0	10.0	10.0	8.0	13.0	14.0	16.0	22.0	26.0	---		
19	19.0	12.0	9.0	8.0	13.0	15.0	16.0	22.0	28.0	---		
20	18.0	14.0	9.0	---	13.0	15.0	16.0	22.0	28.0	---		
21	17.0	15.0	10.0	---	14.0	16.0	16.0	21.0	25.0	---		
22	17.0	16.0	10.0	---	14.0	16.0	16.0	21.0	25.0	---		
23	18.0	17.0	10.0	---	9.0	14.0	16.0	21.0	28.0	---		
24	19.0	15.0	10.0	---	8.0	14.0	16.0	21.0	25.0	---		
25	20.0	15.0	9.0	---	---	15.0	16.0	23.0	25.0	---		
26	20.0	16.0	9.0	---	12.0	15.0	17.0	23.0	25.0	---		
27	---	14.0	10.0	---	14.0	14.0	20.0	23.0	25.0	---		
28	20.0	12.0	10.0	---	15.0	10.0	23.0	25.0	25.0	---		
29	20.0	9.0	10.0	---	---	8.0	25.0	23.0	25.0	---		
30	19.0	6.0	11.0	14.0	---	9.0	25.0	21.0	25.0	---		
31	18.0	---	11.0	13.0	---	9.0	---	---	---	---		
MONTH	19.5	14.0	9.0	---	11.5	12.5	15.0	22.0	25.5	---		

08052650 Little Elm Creek near Celina, Tex.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
JAN. 31...	1100	450	13.0	1890	2300
MAR. 16...	0900	182	7.0	1760	865

DATE	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM	SUS. SED. SIEVE DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM
JAN. 31...	98	99	100	65	72	78	87	93
MAR. 16...	99	100	--	80	88	93	97	98

08052650 Little Elm Creek near Celina, Tex.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCTOBER MEAN DISCHARGE (CFS)	OCTOBER MEAN CONCEN-TRATION (MG/L)	OCTOBER SEDIMENT DISCHARGE (TONS/DAY)	NOVEMBER MEAN DISCHARGE (CFS)	NOVEMBER MEAN CONCEN-TRATION (MG/L)	NOVEMBER SEDIMENT DISCHARGE (TONS/DAY)	DECEMBER MEAN DISCHARGE (CFS)	DECEMBER MEAN CONCEN-TRATION (MG/L)	DECEMBER SEDIMENT DISCHARGE (TONS/DAY)
1	17	40	1.8	742	201	371	1.8	35	.17
2	11	50	1.5	613	300	497	1.3	30	.11
3	7.2	40	.78	579	200	313	.85	30	.07
4	4.5	30	.36	508	120	165	.50	40	.05
5	3.0	90	.73	458	100	124	1.3	40	.14
6	2.0	27	.15	425	108	124	164	371	202
7	1.3	33	.12	392	103	109	56	98	15
8	.81	15	.03	366	105	104	28	112	8.5
9	.32	13	.01	325	178	178	17	90	4.1
10	.10	16	0	1200	377	1100	44	268	104
11	.02	14	0	454	145	178	158	329	162
12	.01	10	0	370	124	124	76	200	41
13	.01	10	0	289	112	87	45	95	12
14	69	760	346	184	126	63	29	53	4.2
15	55	1950	290	118	123	39	20	81	4.4
16	26	1220	86	86	131	30	14	41	1.6
17	12	120	3.9	65	44	7.7	9.8	33	.87
18	7.9	43	.92	48	113	15	7.5	37	.75
19	5.5	38	.56	36	109	11	5.7	32	.49
20	3.6	33	.32	23	114	7.1	4.4	27	.32
21	2.3	35	.22	14	90	3.4	3.4	26	.24
22	1.3	27	.09	9.3	95	2.4	2.7	46	.34
23	.48	24	.03	7.3	166	3.3	2.4	47	.30
24	.14	25	.01	7.6	56	1.2	2.4	46	.30
25	.10	14	0	4.9	36	.48	2.1	37	.21
26	.29	19	.01	3.1	52	.44	9.7	100	2.6
27	.52	20	.03	2.5	44	.30	10	39	1.1
28	81	600	131	1.8	37	.18	7.8	26	.55
29	53	220	31	1.9	40	.21	7.5	38	.77
30	182	189	833	2.7	34	.25	12	50	1.6
31	2890	535	5500	---	---	---	68	200	37
MONTH	3437.40	---	7228.57	7336.1	---	3658.96	812.15	---	606.78

DAY	JANUARY MEAN DISCHARGE (CFS)	JANUARY MEAN CONCEN-TRATION (MG/L)	JANUARY SEDIMENT DISCHARGE (TONS/DAY)	FEBRUARY MEAN DISCHARGE (CFS)	FEBRUARY MEAN CONCEN-TRATION (MG/L)	FEBRUARY SEDIMENT DISCHARGE (TONS/DAY)	MARCH MEAN DISCHARGE (CFS)	MARCH MEAN CONCEN-TRATION (MG/L)	MARCH SEDIMENT DISCHARGE (TONS/DAY)
1	35	200	19	680	400	734	15	66	2.7
2	80	450	97	364	220	216	24	68	4.4
3	91	520	128	347	240	225	23	48	3.0
4	46	70	8.7	272	170	125	17	58	2.7
5	28	70	5.3	428	300	347	12	59	1.9
6	18	66	3.2	193	166	87	9.2	49	1.2
7	13	50	1.8	113	133	41	7.2	75	1.5
8	10	34	.92	71	139	27	4.6	50	.62
9	7.7	45	.94	45	100	12	4.5	43	.52
10	8.3	55	1.2	29	93	7.3	13	52	1.8
11	5.8	56	.88	21	123	7.0	8.8	50	1.2
12	4.6	50	.62	14	57	2.2	9.6	137	3.6
13	3.3	31	.28	10	86	2.3	33	300	27
14	2.1	26	.15	8.0	81	1.8	31	200	17
15	1.9	23	.12	6.2	41	.69	23	200	12
16	1.6	21	.09	5.0	65	.88	149	1260	534
17	1.2	16	.05	4.0	42	.45	106	750	215
18	.96	20	.05	3.1	60	.50	73	120	24
19	1.1	17	.05	2.4	39	.25	47	120	15
20	1.2	20	.06	1.8	41	.20	26	102	7.2
21	.17	20	.01	1.3	33	.12	16	152	6.6
22	.05	20	0	13	150	5.3	10	172	4.6
23	.03	18	0	19	100	5.1	8.3	123	2.8
24	.06	15	0	27	100	7.3	5.9	44	.70
25	.71	15	.03	25	40	2.7	3.6	51	.50
26	.53	15	.02	17	73	3.4	3.0	47	.38
27	.20	10	.01	11	68	2.0	47	436	79
28	.06	10	0	8.8	56	1.3	46	220	27
29	.06	15	0	---	---	---	33	174	16
30	.10	27	.01	---	---	---	30	89	7.2
31	214	632	585	---	---	---	17	75	3.4
MONTH	576.73	---	853.49	2739.6	---	1864.79	855.7	---	1024.52

08052650 Little Elm Creek near Celina, Tex.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	11	82	2.4	.02	7	0	102	267	74
2	7.8	38	.80	15	200	8.1	52	400	56
3	5.1	92	1.3	18	150	7.3	31	150	13
4	3.5	81	.77	8.0	105	2.3	17	50	2.3
5	2.2	51	.30	5.3	150	2.1	9.0	50	1.2
6	1.6	48	.21	4.1	103	1.1	4.7	70	.89
7	151	2020	2200	3.0	107	.87	2.7	120	.87
8	921	2730	8220	2.2	94	.56	451	549	2270
9	305	350	288	1.5	60	.24	1290	428	1950
10	224	820	496	.59	44	.07	976	370	975
11	139	300	113	.24	54	.04	484	400	523
12	79	250	53	4.1	115	1.3	396	213	228
13	49	250	33	3.8	46	.47	364	165	162
14	31	200	17	112	1020	414	324	97	85
15	20	100	5.4	186	448	260	248	89	60
16	14	100	3.8	77	200	42	137	120	44
17	9.4	70	1.8	34	270	25	70	88	17
18	7.2	100	1.9	14	150	5.7	46	84	10
19	4.7	84	1.1	7.1	140	2.7	34	150	14
20	3.1	94	.79	3.8	44	.45	26	120	8.4
21	2.2	86	.51	2.4	140	.91	17	77	3.5
22	1.6	59	.25	1.2	145	.47	12	89	2.9
23	1.4	89	.34	11	170	5.0	8.0	36	.78
24	1.1	77	.23	7.6	96	2.0	4.9	79	1.0
25	.66	55	.10	3.5	120	1.1	3.5	70	.66
26	.23	40	.02	1.6	111	.48	2.7	70	.51
27	.08	64	.01	.64	96	.17	2.2	71	.42
28	.05	34	0	1.1	89	.26	1.9	85	.44
29	.04	10	0	444	860	1870	1.6	55	.24
30	.02	8	0	473	520	664	1.3	32	.11
31	---	---	---	194	350	183	---	---	---
MONTH	1995.98	---	11442.03	1639.79	---	3501.69	5119.5	---	6505.22

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	.96	25	.06	0			0	---	---
2	.60	25	.04	0			0	---	---
3	.28	37	.03	0			0	---	---
4	.14	28	.01	0			0	---	---
5	.07	28	.01	0			1.3	80	.28
6	.01	25	0	0			15	100	4.1
7	0	---	---	0			12	50	1.6
8	0	---	---	0			3.4	25	.23
9	0	---	---	0			.50	25	.03
10	0	---	---	0			3.1	100	.84
11	0	---	---	0			.59	25	.04
12	0	---	---	0			.08	25	.01
13	0	---	---	0			.02	25	0
14	0	---	---	0			.01	25	0
15	0	---	---	0			.01	30	0
16	0	---	---	0			0	---	---
17	0	---	---	0			0	---	---
18	0	---	---	0			.21	20	.01
19	0	---	---	0			.09	25	.01
20	0	---	---	0			.02	15	0
21	0	---	---	0			0	---	---
22	0	---	---	0			0	---	---
23	0	---	---	0			0	---	---
24	0	---	---	0			0	---	---
25	0	---	---	0			0	---	---
26	0	---	---	0			0	---	---
27	0	---	---	0			0	---	---
28	0	---	---	0			0	---	---
29	0	---	---	0			0	---	---
30	0	---	---	0			0	---	---
31	0	---	---	0			---	---	---
MONTH	2.06	---	---	0			36.33	---	---
YEAR	24551.34		36693.35						

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

08052650

Monthly and ~~annual discharge~~ yearly weighted-mean rainfall, in inches, of Little Elm Creek River at near Celina, Tex.
[Drainage area, 46.7 a/ square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
			Station established February 21, 1966										
1966	-	-	-	-	-	-	11.68	1.59	2.35	3.12	7.39	4.46	-
1967	0.50	0.80	1.44	0.09	1.26	3.44	5.15	8.81	1.05	1.91	1.00	4.63	30.08
1968	3.29	1.01	2.14	3.07	1.69	6.02	4.18	6.33	3.22	2.93	1.17	6.30	41.35
1969	1.68	4.25	1.84	1.90	3.07	2.67	2.85	8.52	4.46	.02	2.17	1.71	35.12
1970	5.91	.52	4.19	.60	5.54	3.24	8.53	3.01	.85	.49	3.84	7.51	44.23
1971	1.47	.47	.73	.82	1.45	.54	1.99	5.08	1.28	3.52	5.13	3.68	26.16
1972	6.23	3.83	6.90	.36	.29	1.49	2.86	2.01	1.19	1.41	3.61	4.28	34.46
1973	6.79	3.30	.60	3.30	1.64	5.09	3.78	3.89	6.84	5.04	1.05	8.77	50.09
1974	7.14	2.96	.80	1.09	1.32	.97	5.52	3.21	7.81	1.15	5.65	6.59	44.21
1975	9.07	2.99	2.52	2.18	2.20	2.68	3.18	6.22	6.36	1.94	.59	2.18	42.11

a/ Revised figure, prior to 1970 water year, 46.2 mi^2.

9-220 c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

0805650

Monthly and ~~annual~~ yearly mean discharge, in ft^3/s, of Little Elm Creek River at near Celina, Tex.

[Drainage area, 46.7 a/ square miles]

16—26489-6 U.S. GOVERNMENT PRINTING OFFICE

Water Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Annual
			Station established February 21, 1966										
1966	-	-	-	-	-	2.55	250	71.8	0.50	0.30	28.2	21.8	--
1967	2.19	0	0	0	0	2.53	43.1	97.6	89.3	0	0	0	19.6
1968	0	0	1.50	18.2	7.76	140	75.0	136	2.94	2.15	0	7.70	33.0
1969	2.18	32.0	13.8	14.5	82.2	54.0	34.1	228	19.6	.055	0	0	39.9
1970	14.8	.041	52.6	13.9	103	89.6	161	52.1	3.65	0	.020	40.1	43.7
1971	.88	.024	0	0	.071	.012	0	12.0	1.39	1.68	15.5	5.36	3.12
1972	90.2	67.5	253	1.08	.060	.065	.77	4.03	0	0	0	4.18	35.5
1973	69.5	50.1	1.20	37.6	36.0	128	67.2	49.4	128	7.21	3.02	111	57.1
1974	186	85.5	4.72	2.52	11.7	1.15	44.4	41.9	176	0	5.16	71.6	52.5
1975	111	245	26.2	18.6	97.8	27.6	66.5	52.9	171	.067	0	1.21	67.3

a/ Revised figure, prior to 1970 water year, 46.2 mi^2.

08052700 Little Elm Creek near Aubrey, Tex.

LOCATION.--Lat 33°17'00", long 96°53'33", Denton County, on left bank at downstream side of bridge on Farm Road 1385, 1.5 miles (2.4 km) upstream from Mustang Creek, 5.5 miles (8.8 km) east of Aubrey, and 18 miles (29 km) upstream from Lewisville Dam.

DRAINAGE AREA.--75.5 mi² (195.5 km²).

PERIOD OF RECORD.--Discharge: June 1956 to current year.
Water quality: Chemical analyses: January 1968. Specific conductance: December 1966 to current year. Water temperatures: February 1966 to current year. Sediment records: February 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 534.76 ft (162.995 m) above mean sea level (State Highway Department bench mark).

AVERAGE DISCHARGE.--19 years, 46.9 ft³/s (1.328 m³/s), 8.44 in/yr (214 mm/yr), 33,980 acre-ft/yr (41.9 hm³/yr).

EXTREMES.--Discharge: Current year: Maximum discharge, 7,920 ft³/s (224 m³/s) Oct. 31 (gage height, 17.04 ft or 5.194 m); no flow July 17-Sept. 8, Sept. 18-30.
Period of record: Maximum discharge, 7,920 ft³/s (224 m³/s) Oct. 31, 1974 (gage height, 17.04 ft or 5.194 m); maximum gage height, 17.34 ft (5.285 m) Apr. 26, 1957; no flow at times each year.
Historic: Maximum stage since about 1900, 18.2 ft (5.55 m) in May 1941, from information by local residents.
Water quality: Current year: Maximum daily sediment concentrations, 1,350 mg/l June 9; no flow for many days. Maximum daily sediment loads, 13,900 tons Oct. 31; minimum daily, 0 tons on many days.
Period of record: Maximum specific conductance (1966-68, 1971-74), 1,380 micromhos Jan. 24, Feb. 25, 1967; minimum daily, 195 micromhos June 4, 1968. Maximum water temperatures (1966-68, 1971-74), 33.0°C June 16, 1968; minimum, freezing point Feb. 22, 1968. Maximum daily sediment concentrations, 4,750 mg/l Aug. 13, 1966; no flow for many days. Maximum daily sediment loads, 17,900 tons May 31, 1967; minimum daily, 0 tons on many days.

REMARKS.--Discharge records good above 100 ft³/s (2.83 m³/s) and fair below. Small diversions for irrigation above station. Ten rain gages, six standard and four recording gages, are operated in basin above station. At end of year, flow from 35.7 mi² (92.5 km²) above this station was partly controlled by 16 floodwater-retarding structures with a combined capacity of 12,340 acre-ft (15.2 hm³) below the flood-spillway crests, of which 2,080 acre-ft (2.56 hm³) is sediment-pool capacity. The capacity in these pools allocated to sediment storage will be used for conservation storage until eliminated by sedimentation.

REVISIONS (WATER YEARS).--WRD Texas 1970: 1969.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	1250	4.3	51	889	16	26	.45	156	.69		0
2	12	734	3.1	76	640	32	14	2.6	83	.19		0
3	7.9	669	2.4	152	506	33	8.0	44	51	.18		0
4	6.0	627	2.0	64	386	30	6.2	16	27	.90		0
5	3.9	577	2.8	43	610	22	5.5	10	16	.50		0
6	2.9	545	235	23	288	19	4.9	7.2	11	.16		0
7	2.3	511	86	16	146	12	95	5.5	8.5	.07		0
8	2.0	483	41	14	82	7.8	1180	4.4	75	.04		0
9	1.6	453	23	11	59	7.0	355	3.2	1630	.04		3.3
10	1.2	1480	25	13	43	12	261	1.9	1650	.05		2.2
11	1.2	783	252	13	32	15	180	.78	572	.12		.78
12	.64	500	98	11	23	17	95	1.6	417	.11		.95
13	.40	434	62	6.5	17	43	63	4.2	375	.07		.20
14	43	296	41	4.6	12	51	40	103	332	.05		.12
15	131	199	29	3.6	7.6	39	24	251	273	.03		.08
16	36	136	21	2.9	6.7	129	16	111	162	.01		.04
17	21	79	15	2.8	5.9	114	12	46	77	0		.01
18	15	58	13	2.4	5.2	82	11	20	44	0		0
19	12	42	10	2.8	4.6	61	9.2	12	32	0		0
20	9.9	29	8.9	2.9	4.1	47	7.5	9.5	24	0		0
21	7.2	16	7.5	2.5	3.6	34	6.0	7.4	17	0		0
22	5.5	12	6.2	1.3	7.1	26	4.6	5.5	13	0		0
23	3.8	10	5.4	1.2	40	17	3.9	12	11	0		0
24	2.2	9.9	4.6	1.3	52	12	3.2	21	9.0	0		0
25	1.6	7.9	3.9	1.9	46	7.4	3.0	10	7.2	0		0
26	1.4	5.9	6.8	2.2	36	7.1	2.1	6.5	5.7	0		0
27	2.0	4.5	17	2.2	27	41	1.9	5.5	4.5	0		0
28	84	3.1	11	1.9	19	71	2.4	19	4.0	0		0
29	131	3.0	10	1.4	---	49	2.1	347	2.8	0		0
30	127	3.9	11	1.2	---	49	1.0	1020	1.9	0		0
31	4640	---	84	310	---	36	---	288	---	0		---
TOTAL	5333.64	9961.2	1141.9	842.6	3997.8	1138.3	2443.5	2396.23	6091.6	3.21	0	7.68
MEAN	172	332	36.8	27.2	143	36.7	81.5	77.3	203	.10	0	.26
MAX	4640	1480	252	310	889	129	1180	1020	1650	.90	0	3.3
MIN	.40	3.0	2.0	1.2	3.6	7.0	1.0	.45	1.9	0	0	0
CFSM	2.28	4.40	.49	.36	1.89	.49	1.08	1.02	2.69	.001	0	.003
IN.	2.63	4.91	.56	.42	1.97	.56	1.20	1.18	3.00	.001	0	.003
AC-FT	10580	19760	2260	1670	7930	2260	4850	4750	12080	6.4	0	15

CAL YR 1974 TOTAL 31422.21 MEAN 86.1 MAX 4640 MIN 0 CFSM 1.14 IN 15.48 AC-FT 62330
WTR YR 1975 TOTAL 33357.66 MEAN 91.4 MAX 4640 MIN 0 CFSM 1.21 IN 16.44 AC-FT 66160

08052700 Little Elm Creek near Aubrey, Tex.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	201	432	---	---	447	---	---	---			
2	293	---	460	---	---	458	---	---	269			
3	298	195	474	467	---	455	514	449	249			
4	307	211	480	---	---	438	---	---	277			
5	307	---	521	457	---	---	---	---	227			
6	316	---	---	453	---	---	---	---	302			
7	324	---	346	470	---	---	---	---	---			
8	328	---	369	484	381	508	---	---	265			
9	333	202	371	495	450	459	---	442	225			
10	344	260	375	567	---	---	---	---	218			
11	355	231	373	564	426	---	---	463	---			
12	---	---	365	532	---	---	---	474	---			
13	---	219	372	532	400	---	---	472	181			
14	536	---	395	---	446	---	---	515	196			
15	365	---	390	---	---	---	---	361	189			
16	333	---	---	---	---	---	---	---	---			
17	---	---	411	---	494	---	---	---	---			
18	---	---	419	---	531	---	---	302	---			
19	326	227	426	545	491	---	---	---	---			
20	---	231	---	571	536	---	---	357	---			
21	349	250	452	583	466	---	---	---	---			
22	362	---	465	581	---	---	---	344	---			
23	367	281	---	582	511	---	---	---	230			
24	373	---	500	581	573	---	---	---	---			
25	---	414	456	587	---	---	---	---	---			
26	388	393	---	615	490	---	---	---	---			
27	---	421	453	633	444	---	---	---	---			
28	581	---	453	677	429	---	---	---	---			
29	445	402	454	674	---	---	---	331	---			
30	225	400	---	---	---	---	---	282	---			
31	---	---	---	---	---	---	---	---	---			
MONTH	---	---	---	---	---	---	---	---	---			

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	16.0	9.0	---	---	15.5	---	---	---			
2	23.0	---	8.5	---	---	15.0	---	---	30.0			
3	24.0	21.0	8.0	---	---	9.5	9.0	---	27.0			
4	23.5	18.5	8.5	---	---	---	---	---	28.0			
5	24.0	---	9.0	---	---	---	---	---	28.5			
6	27.0	---	---	7.0	---	---	---	---	31.5			
7	25.0	---	---	---	---	---	---	---	---			
8	26.5	---	10.0	---	8.5	---	---	---	30.5			
9	27.0	14.0	7.5	14.0	9.0	---	---	23.0	25.0			
10	27.5	15.0	7.0	---	---	---	---	---	26.0			
11	22.5	12.5	7.0	---	10.0	---	---	24.0	---			
12	---	---	12.0	---	---	---	---	---	---			
13	---	---	10.0	---	10.5	---	---	26.5	30.0			
14	17.5	---	9.5	---	17.0	---	---	19.0	29.5			
15	16.5	---	9.5	---	---	---	---	---	29.0			
16	19.0	---	---	---	---	---	---	---	---			
17	---	---	10.0	---	11.0	---	---	---	---			
18	---	---	9.5	---	10.0	---	---	24.5	---			
19	23.0	14.5	10.0	---	17.0	---	---	---	---			
20	---	14.0	---	9.0	14.0	---	---	25.5	---			
21	19.0	16.0	---	9.0	15.5	---	---	---	---			
22	20.0	---	9.0	10.0	---	---	---	---	---			
23	20.5	19.0	---	10.0	---	---	---	---	30.0			
24	20.0	---	9.5	10.0	10.0	---	---	---	---			
25	---	12.0	---	11.0	---	---	---	---	---			
26	20.0	13.0	8.5	12.0	12.0	---	---	---	---			
27	---	13.0	8.5	---	12.0	---	---	---	---			
28	18.5	---	8.0	13.0	17.0	---	---	---	---			
29	17.5	6.0	---	13.0	---	---	---	23.5	---			
30	22.5	5.5	---	---	---	---	---	---	---			
31	---	---	---	---	---	---	---	---	---			
MONTH	---	---	---	---	---	---	---	---	---			

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM
OCT. 28...	2110	24	18.5	750	49	99	100	74	87	88	96	98

08052700 Little Elm Creek near Aubrey, Tex.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	18	70	3.4	1250	270	911	4.3	31	.36
2	12	99	3.2	734	100	198	3.1	22	.18
3	7.9	96	2.0	669	170	307	2.4	16	.10
4	6.0	120	1.9	627	172	291	2.0	38	.21
5	3.9	78	.82	577	100	156	2.8	70	.53
6	2.9	51	.40	545	70	103	235	770	489
7	2.3	59	.37	511	70	97	86	200	46
8	2.0	78	.42	483	50	65	41	100	11
9	1.6	46	.20	453	120	147	23	96	6.0
10	1.2	30	.10	1480	575	1930	25	270	18
11	1.2	23	.07	783	200	423	252	620	422
12	.64	25	.04	500	170	229	98	200	53
13	.40	25	.03	434	169	198	62	148	25
14	43	270	31	296	120	96	41	40	4.4
15	131	820	290	199	120	64	29	36	2.8
16	36	115	11	136	100	37	21	30	1.7
17	21	100	5.7	79	100	21	15	30	1.2
18	15	80	3.2	58	70	11	13	49	1.7
19	12	95	3.1	42	73	8.3	10	55	1.5
20	9.9	100	2.7	29	42	3.3	8.9	50	1.2
21	7.2	83	1.6	16	108	4.7	7.5	41	.83
22	5.5	59	.88	12	100	3.2	6.2	53	.89
23	3.8	43	.44	10	51	1.4	5.4	45	.66
24	2.2	99	.59	9.9	50	1.3	4.6	29	.36
25	1.6	50	.22	7.9	400	8.5	3.9	70	.74
26	1.4	50	.19	5.9	150	2.4	6.8	70	1.3
27	2.0	50	.27	4.5	36	.44	17	40	1.8
28	84	370	84	3.1	36	.30	11	49	1.5
29	131	250	88	3.0	35	.28	10	54	1.5
30	127	370	422	3.9	42	.44	11	100	3.0
31	4640	1160	13900	---	---	---	84	320	73
MONTH	5333.64	---	14857.84	9961.2	---	5318.56	1141.9	---	1171.46

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	51	100	14	889	700	1680	16	136	5.9
2	76	300	62	640	200	346	32	83	7.2
3	152	200	82	506	70	96	33	140	12
4	64	100	17	386	120	125	30	126	10
5	43	78	9.1	610	200	329	22	100	5.9
6	23	32	2.0	288	70	54	19	100	5.1
7	16	41	1.8	146	60	24	12	70	2.3
8	14	89	3.4	82	200	44	7.8	97	2.0
9	11	65	1.9	59	106	17	7.0	100	1.9
10	13	56	2.0	43	100	12	12	150	4.9
11	13	41	1.4	32	101	8.7	15	70	2.8
12	11	39	1.2	23	100	6.2	17	70	3.2
13	6.5	34	.60	17	150	6.9	43	70	8.1
14	4.6	30	.37	12	110	3.6	51	60	8.3
15	3.6	30	.29	7.6	100	2.1	39	60	6.3
16	2.9	30	.23	6.7	70	1.3	129	250	87
17	2.8	25	.19	5.9	60	.96	114	80	25
18	2.4	25	.16	5.2	46	.65	82	70	15
19	2.8	72	.54	4.6	85	1.1	61	70	12
20	2.9	19	.15	4.1	105	1.2	47	50	6.3
21	2.5	26	.18	3.6	98	.95	34	50	4.6
22	1.3	17	.06	7.1	150	2.9	26	50	3.5
23	1.2	16	.05	40	150	16	17	50	2.3
24	1.3	19	.07	52	120	17	12	50	1.6
25	1.9	14	.07	46	100	12	7.4	40	.80
26	2.2	21	.12	36	120	12	7.1	100	1.9
27	2.2	15	.09	27	100	7.3	41	200	22
28	1.9	22	.11	19	80	4.1	71	70	13
29	1.4	21	.08	---	---	---	49	50	6.6
30	1.2	25	.08	---	---	---	49	50	6.6
31	310	1030	1210	---	---	---	36	40	3.9
MONTH	842.6	---	1411.24	3997.8	---	2831.96	1138.3	---	298.00

08052700 Little Elm Creek near Aubrey, Tex.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	26	50	3.5	.45	30	.04	156	70	29
2	14	70	2.6	2.6	120	.84	83	143	32
3	8.0	115	2.5	44	370	44	51	198	27
4	6.2	70	1.2	16	70	3.0	27	167	12
5	5.5	50	.74	10	70	1.9	16	123	5.3
6	4.9	40	.53	7.2	50	.97	11	63	1.9
7	95	662	521	5.5	50	.74	8.5	50	1.1
8	1180	470	1500	4.4	40	.48	75	242	159
9	355	100	96	3.2	120	1.0	1630	1350	4600
10	261	60	42	1.9	90	.46	1650	150	668
11	180	50	24	.78	100	.21	572	70	108
12	95	50	13	1.6	90	.39	417	60	68
13	63	50	8.5	4.2	70	.79	375	100	101
14	40	70	7.6	103	1030	423	332	145	130
15	24	70	4.5	251	950	644	273	93	69
16	16	60	2.6	111	200	60	162	70	31
17	12	65	2.1	46	60	7.5	77	70	15
18	11	50	1.5	20	80	4.3	44	70	8.3
19	9.2	50	1.2	12	90	2.9	32	60	5.2
20	7.5	40	.81	9.5	80	2.1	24	65	4.2
21	6.0	40	.65	7.4	100	2.0	17	35	1.6
22	4.6	40	.50	5.5	120	1.8	13	35	1.2
23	3.9	50	.53	12	170	5.5	11	29	.86
24	3.2	50	.43	21	80	4.5	9.0	25	.61
25	3.0	50	.41	10	70	1.9	7.2	25	.49
26	2.1	40	.23	6.5	70	1.2	5.7	20	.31
27	1.9	40	.21	5.5	70	1.0	4.5	20	.24
28	2.4	40	.26	19	200	10	4.0	20	.22
29	2.1	30	.17	347	814	1290	2.8	20	.15
30	1.0	30	.08	1020	570	1570	1.9	15	.08
31	---	---	---	288	70	54	---	---	---
MONTH	2443.5	---	2239.35	2396.23	---	4140.52	6091.6	---	6080.76

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	.69	15	.03	0			0	---	---
2	.19	15	.01	0			0	---	---
3	.18	20	.01	0			0	---	---
4	.90	20	.05	0			0	---	---
5	.50	25	.03	0			0	---	---
6	.16	20	.01	0			0	---	---
7	.07	20	0	0			0	---	---
8	.04	15	0	0			0	---	---
9	.04	15	0	0			3.3	220	2.0
10	.05	30	0	0			2.2	120	.71
11	.12	30	.01	0			.78	50	.11
12	.11	30	.01	0			.95	60	.15
13	.07	30	.01	0			.20	40	.02
14	.05	30	0	0			.12	40	.01
15	.03	25	0	0			.08	30	.01
16	.01	25	0	0			.04	25	0
17	0	---	---	0			.01	15	0
18	0	---	---	0			0	---	---
19	0	---	---	0			0	---	---
20	0	---	---	0			0	---	---
21	0	---	---	0			0	---	---
22	0	---	---	0			0	---	---
23	0	---	---	0			0	---	---
24	0	---	---	0			0	---	---
25	0	---	---	0			0	---	---
26	0	---	---	0			0	---	---
27	0	---	---	0			0	---	---
28	0	---	---	0			0	---	---
29	0	---	---	0			0	---	---
30	0	---	---	0			0	---	---
31	0	---	---	0			---	---	---
MONTH	3.21	---	---	0			7.68	---	---
YEAR	33357.66		38352.87						

9-220 c
(Oct. 1961)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of _____ Sheets

08052700

yearly average rainfall
Monthly and ~~annual discharge~~, in inches, of Little Elm Creek ~~River~~ at near Aubrey, Tex.
[Drainage area, 75.5 square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
1957	2.16	2.78	2.87	2.47	2.34	5.96	13.16	16.28	0.68	1.86	0.20	5.99	56.75
1958	2.55	7.83	1.60	2.06	.73	3.60	7.22	3.85	4.37	2.23	1.81	1.96	39.81
1959	1.37	2.29	.69	.38	1.05	2.07	.55	2.16	6.76	4.71	2.10	1.34	25.47
1960	6.84	1.88	4.00	2.18	2.03	1.21	2.22	3.21	3.40	6.55	2.32	2.40	38.24
1961	1.70	.71	5.80	2.09	2.78	2.93	1.41	2.42	4.38	3.29	1.06	4.29	32.86
1962	2.65	2.79	2.37	1.01	1.00	2.54	4.70	1.50	7.10	3.10	3.34	9.63	41.73
1963	2.32	3.40	.75	.44	.44	.39	5.37	5.64	1.55	2.42	.32	.52	23.56
1964	.20	.93	1.11	1.80	1.60	4.66	5.37	4.48	1.49	1.06	4.03	10.64	37.37
1965	1.46	7.20	1.07	2.36	3.74	1.49	1.20	6.67	4.53	1.61	3.44	6.39	41.16
1966	1.45	2.07	1.36	1.00	2.12	1.47	12.01	1.30	2.30	2.57	6.63	4.18	38.46
1967	.56	.82	1.43	.17	1.14	3.19	4.82	8.12	1.14	1.42	.99	4.72	28.52
1968	3.29	.97	2.16	3.13	1.64	5.89	4.48	5.71	3.39	2.91	.98	6.53	41.02
1969	1.68	4.19	1.71	1.76	3.03	3.77	3.01	8.25	4.24	.03	2.07	1.89	35.57
1970	5.65	.50	4.36	.64	5.47	3.11	8.20	2.67	1.13	.44	3.90	7.11	43.18
1971	1.63	.47	.76	.75	1.47	.52	1.97	4.62	1.21	3.34	4.13	3.65	24.52
1972	6.35	3.96	6.84	.36	.26	1.64	2.88	2.09	1.52	1.20	3.34	4.94	35.38
1973	6.85	3.21	.68	3.24	1.68	4.96	3.96	4.33	6.70	5.15	.70	8.20	49.66
1974	7.27	3.09	.84	1.12	1.23	.82	5.77	2.76	7.55	1.19	5.08	6.46	43.18
1975	8.85	2.83	2.47	2.15	2.31	2.47	3.04	6.45	5.67	1.90	.69	2.27	41.10

9-220 c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of _____ Sheets

8-0527.00

Monthly and ~~annual~~ yearly-mean discharge, in ft^3/s, of Little Elm Creek River at/near Aubrey, Tex.

[Drainage area, 75.5 square miles]

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

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
			Station established June 8, 1956										
1956	-	-	-	-	-	-	-	-	-	0	0	0	-
1957	0	0.16	7.89	0.51	20.1	46.6	677	701	11.0	1.03	0	8.93	123
1958	3.06	193	7.99	21.5	1.41	41.5	113	278	25.1	.93	0	0	57.3
1959	0	0	0	0	0	.52	.10	0	12.2	13.9	.01	0	2.24
1960	52.3	46.7	41.7	54.1	24.4	2.14	.37	8.78	.04	28.8	.64	0	21.7
1961	0	0	31.9	60.2	54.6	18.8	1.54	9.27	4.40	3.92	0	6.45	15.7
1962	11.7	9.47	14.6	.80	.12	9.61	93.4	.88	78.7	15.4	.50	228	38.3
1963	4.31	50.6	5.47	.85	.07	.03	65.4	91.4	2.98	.07	0	0	18.5
1964	0	0	0	0	0	21.6	85.6	30.7	.74	0	.64	258	32.7
1965	3.01	29.1	7.16	31.0	97.8	3.61	.43	93.6	78.1	.25	0	78.4	56.1
1966	.24	7.41	.06	.34	44.3	2.18	281	94.2	1.04	0	28.5	22.0	39.7
1967	2.15	.001	.05	.028	.13	3.66	51.9	154	98.6	0	0	.57	26.0
1968	.58	.18	5.64	30.5	10.9	182	110	159	5.75	3.75	0	15.0	44.0
1969	5.15	48.3	19.1	17.7	107	75.5	49.5	294	24.9	.076	0	0	53.2
1970	20.6	.29	98.0	16.7	164	126	203	73.9	6.26	0	0	75.0	64.4
1971	2.19	.10	.094	.21	.31	.19	.12	13.8	2.62	1.75	18.8	5.91	3.89
1972	118	89.9	347	1.98	.23	.94	1.62	5.21	0	0	0	13.8	48.7
1973	127	82.6	1.98	55.1	51.2	160	95.2	70.9	167	13.6	6.24	148	81.4
1974	270	121	7.77	4.73	16.3	2.50	75.0	61.4	237	0	4.05	96.9	74.6
1975	172	332	36.8	27.2	143	36.7	81.5	77.3	203	.10	0	.26	91.4

TX-74a
Rev. 2-74

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOL

ANNUAL SUMMARY

1975 WATER YEAR

Little Elm Creek subwatershed No. 1 near Gunter, Tex. Drainage Area 3.40 mi²

Staff gage ~~Continuous water-stage recorder~~. ratio ——. Date of last sediment survey ——.

Maxima: gage height, 29.7 ft; outflow, 221 ft³/s; surface area, 155 acres; contents, 1080 acre-feet; on Oct. 31, 1974

Minima: gage height, 17.7 ft; surface area, 30.5 acres; contents, 135 acre-feet; on Sept. 30, 1975

Maximum inflow, —— ft³/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on ——.

Averages: —— water years, (——); inflow, —— acre-feet/year; outflow, —— acre-feet/year; rainfall, —— inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	1090	480	120	2,980	108	336	292	261	219	837	3.0	5.4	5.1	3,760
Total Outflow	265	1330	114	2,930	73.5	344	311	265	211	859	0	0	0	3770
Total Consumption	18.0	17.8	9.8	220	10.2	9.4	12.4	16.4	20.5	23.8	26.3	26.8	20.2	212
†	+844	-851	+4.7	+5.9	+31.7	-6.5	-23.6	-10.1	+7.7	-5.8	-17.4	-18.7	-11.0	-56.0
‡	40.3	59.5	39.5	40.2	39.3	41.6	40.9	40.8	39.8	51.8	37.0	33.9	31.6	41.3
††	9.70	2.97	2.39	50.09	2.07	2.82	2.61	2.77	6.18	7.27	1.94	.97	1.56	43.25

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, —— ft³/s)

Date	Time	Discharge	Date	Time	Discharge

TX-74a
Rev. 2-74

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOL

ANNUAL SUMMARY

1975 WATER YEAR

Little Elm Creek subwatershed No. 2 near Gunter, Tex. Drainage Area 3.95 mi²
Staff gage ~~Continuous water-stage recorder~~ ratio ——. Date of last sediment survey ——. Total Drainage Area 7.35 mi

Maxima: gage height, 25.3 ft; outflow, 107 ft³/s; surface area, 188 acres; contents, 1420 acre-feet; on Oct. 31, 1974.

Minima: gage height, 14.0 ft; surface area, 42.1 acres; contents, 179 acre-feet; on Sept. 30, 1975.

Maximum inflow, —— ft³/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on ——.

Averages: —— water years, (——); inflow, —— acre-feet/year; outflow, —— acre-feet/year; rainfall, —— inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	1,350	1,750	151	6,610	110	804	426	543	335	1,720	2.6	1.2	7.4	7,200
Total Outflow	252	2,870	127	6,450	96.2	745	467	554	246	1,790	.6	0	0	7,150
Total Consumption	37.2	46.8	17.2	417	17.5	20.3	26.5	35.2	42.2	56.7	40.4	36.8	27.8	405
†	+1110	-1140	+18.5	+18.4	+ 5.6	+54.4	-53.1	-31.2	+77.9	-75.6	-30.0	-32.8	-14.3	-111
‡	60.6	89.6	59.8	61.3	59.3	64.8	63.8	62.5	61.4	73.7	54.6	48.4	43.6	61.8
††	9.70	2.97	2.39	50.09	2.07	2.82	2.61	2.77	6.18	7.27	1.94	.97	1.56	43.25

1/ Inflow includes outflow from site no. 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, —— ft³/s)

Date	Time	Discharge	Date	Time	Discharge

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOL

ANNUAL SUMMARY

1975 WATER YEAR

Little Elm Creek subwatershed No. 3 near Gunter, Tex. Drainage Area 7.27 mi^2
Staff gage
~~Continuous water stage recorder~~: ratio ——. Date of last sediment survey ——. Total Drainage Area 14.6 mi^2

Maxima: gage height, 26.0 ft; outflow, 520 ft^3/s; surface area, 306 acres; contents, 2190 acre-feet; on Oct. 31, 1974.

Minima: gage height, 10.8 ft; surface area, 23.6 acres; contents, 85.4 acre-feet; on Sept. 30, 1975.

Maximum inflow, —— ft^3/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on ——.

Averages: —— water years, (——); inflow, —— acre-feet/year; outflow, —— acre-feet/year; rainfall, —— inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	2610	3830	274	13,100	169	1190	621	1150	398	2860	3.4	1.5	4.3	13,100
Total Outflow	654	5810	255	13,000	150	1220	607	1160	377	2860	.3	0	0	13,100
Total Consumption	24.0	66.0	9.7	340	9.5	15.3	14.9	26.5	26.5	61.0	21.6	18.6	14.3	308
†	+1990	-2010	+18.4	+ 13.9	+16.0	-32.1	+10.5	-14.1	+14.1	-13.8	-13.8	-15.5	-6.5	- 56.8
‡	37.0	82.8	34.8	41.0	33.9	43.7	37.3	41.5	35.3	54.6	30.4	26.5	24.0	40.2
††	7.76	2.94	2.49	48.42	1.93	2.23	2.91	3.16	6.16	7.10	1.82	.53	1.79	40.82

1/ Inflow includes outflow from site no. 2

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, —— ft^3/s)

Date	Time	Discharge	Date	Time	Discharge

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WATER BUDGET OF POOL

ANNUAL SUMMARY

1975 WATER YEAR

_____. Little Elm Creek subwatershed No. 4 near Gunter, Tex. Drainage Area 3.33 mi^2

~~Continuous water stage recorder~~ Staff gage ratio ____. Date of last sediment survey ____.

Maxima: gage height, 27.4 ft; outflow, 58.8 ft^3/s; surface area, 106 acres; contents, 1050 acre-feet; on Oct. 31, 1974

Minima: gage height, 14.7 ft; surface area, 34.5 acres; contents, 173 acre-feet; on Sept. 30, 1975

Maximum inflow, ____ ft^3/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on ____.

Averages: ____ water years, (____); inflow, ____ acre-feet/year; outflow, ____ acre-feet/year; rainfall, ____ inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	917	552	105	3,190	95.2	313	131	236	75.3	619	1.4	1.6	4.2	3,050
Total Outflow	142	1350	93.9	3,100	72.3	327	122	246	45.9	640	1.7	0	0	3,040
Total Consumption	24.9	28.4	12.5	293	12.9	13.0	16.1	22.4	27.2	36.9	28.2	27.4	22.3	272
†	+790	-808	+9.8	+ 2.2	+17.6	-18.1	+6.1	-16.7	+25.1	-22.6	-22.2	-23.5	-13.0	- 75.5
‡	43.7	57.6	43.2	44.0	42.9	44.8	43.4	44.0	42.4	42.9	40.3	37.6	35.4	43.6
††	8.83	3.23	2.89	51.39	2.08	2.14	3.34	3.87	6.40	7.24	1.87	.66	1.74	44.29

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, ____ ft^3/s)

Date	Time	Discharge	Date	Time	Discharge

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WATER BUDGET OF POOL

ANNUAL SUMMARY

1975 WATER YEAR

Little Elm Creek subwatershed No. 5 near Gunter, Tex. Drainage Area 0.50 mi²

~~Continuous water stage recorder: ratio~~ Staff gage ——. Date of last sediment survey ——.

Maxima: gage height, 25.9 ft; outflow, 18.1 ft³/s; surface area, 18.0 acres; contents, 152 acre-feet; on Oct. 31, 1974.

Minima: gage height, 16.2 ft; surface area, 7.0 acres; contents, 40.3 acre-feet; on Sept. 30, 1975.

Maximum inflow, —— ft³/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on ——.

Averages: —— water years, (——); inflow, —— acre-feet/year; outflow, —— acre-feet/year; rainfall, —— inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	112	51.3	12.6	417	15.2	29.2	12.0	18.5	13.8	119	0.3	1.1	1.0	386
Total Outflow	37.6	129	10.2	403	14.5	30.2	11.5	19.6	11.8	121	0	0	0	385
Total Consumption	4.8	2.8	2.2	51.5	2.2	1.8	2.7	3.2	5.5	6.0	5.5	5.7	4.6	47.0
†	+77.1	-78.4	+2.4	+ 1.6	0	-1.3	+0.3	-1.3	+0.8	-2.6	-4.0	-4.1	-2.6	-13.7
‡	8.4	8.6	8.3	8.2	8.3	8.3	8.3	8.3	8.3	8.5	7.8	7.5	7.1	8.1
††	9.57	3.38	3.12	53.20	2.16	2.09	3.54	4.26	6.52	7.28	1.90	.75	1.73	46.30

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, —— ft³/s)

Date	Time	Discharge	Date	Time	Discharge

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WATER BUDGET OF POOL

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1975 WATER YEAR

Little Elm Creek subwatershed No. 6 near Gunter, Tex. Drainage Area 1.99 mi²

Staff gage ~~Continuous water-stage recorder~~ ratio —. Date of last sediment survey —.

Maxima: gage height, 29.6 ft; outflow, 37.2 ft³/s; surface area, 70.8 acres; contents, 620 acre-feet; on Oct. 31, 1974.

Minima: gage height, 10.5 ft; surface area, 5.7 acres; contents, 18.1 acre-feet; on Sept. 30, 1975.

Maximum inflow, — ft³/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on —.

Averages: — water years, (—); inflow, — acre-feet/year; outflow, — acre-feet/year; rainfall, — inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	531	277	67.7	1,920	31.8	123	135	136	45.4	363	4.2	3.5	2.0	1,720
Total Outflow	91.3	728	63.4	1,880	22.3	136	130	138	32.3	373	0	0	107	1,820
Total Consumption	14.8	12.4	5.8	161	6.3	5.6	8.6	13.0	17.1	20.0	17.4	17.9	11.0	150
†	+449	-454	+5.4	+4.6	+8.2	-13.8	+4.2	-6.3	+9.2	-10.5	-9.2	-12.9	-115	-146
‡	26.6	31.8	26.4	26.9	26.2	26.7	26.6	26.6	26.3	28.5	25.6	24.8	9.3	25.4
††	9.57	3.38	3.12	53.20	2.16	2.09	3.54	4.26	6.52	7.28	1.90	.75	1.73	46.30

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, — ft³/s)

Date	Time	Discharge	Date	Time	Discharge

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WATER BUDGET OF POOL

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1975 WATER YEAR

_____. Little Elm Creek subwatershed No. 7 near Gunter, Tex. Drainage Area 1.28 mi²

~~Continuous water-stage recorder~~ Staff gage: ratio ____. Date of last sediment survey ____.

Maxima: gage height, 23.7 ft; outflow, 28.4 ft³/s; surface area, 58.6 acres; contents, 464 acre-feet; on Oct. 31, 1974.

Minima: gage height, 12.8 ft; surface area, 17.2 acres; contents, 85.7 acre-feet; on Sept. 30, 1975.

Maximum inflow, ____ ft³/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on ____.

Averages: ____ water years, (____); inflow, ____ acre-feet/year; outflow, ____ acre-feet/year; rainfall, ____ inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	391	141	306	1,130	15.9	91.0	41.9	80.7	43.0	267	3.8	3.0	1.0	1,110
Total Outflow	69.2	478	23.9	1,090	14.6	90.6	37.2	79.2	37.3	270	0	0	0	1,100
Total Consumption	11.4	12.6	6.4	131	6.3	6.6	7.6	10.4	12.5	17.0	13.4	13.7	11.4	129
†	+334	-342	+4.5	8.0	-2.0	-2.5	+2.0	-3.0	+4.7	-3.7	-6.1	-10.0	-5.8	-29.9
‡	21.1	27.5	20.6	21.0	20.4	21.2	20.6	20.9	20.5	24.0	19.7	18.8	17.8	21.1
††	9.50	3.14	2.46	48.07	1.81	1.93	2.86	3.04	6.74	6.84	2.13	.46	3.07	43.98

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, ____ ft³/s)

Date	Time	Discharge	Date	Time	Discharge

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WATER BUDGET OF POOL

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1975 WATER YEAR

Little Elm Creek subwatershed No. 8-B near Gunter, Tex. Drainage Area 1.25 mi²

~~Continuous water-stage recorder~~ Staff gage: ratio ——. Date of last sediment survey ——.

Maxima: gage height, 26.4 ft; outflow, 20.5 ft³/s; surface area, 49.8 acres; contents, 392 acre-feet; on Oct. 31, 1974.

Minima: gage height, 12.9 ft; surface area, 10.0 acres; contents, 51.9 acre-feet; on Sept. 30, 1975.

Maximum inflow, —— ft³/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on ——.

Averages: —— water years, (——); inflow, —— acre-feet/year; outflow, —— acre-feet/year; rainfall, —— inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	354	178	39.6	1,390	27.6	145	45.9	110	55.3	264	1.5	0.9	1.1	1,220
Total Outflow	90.8	477	37.0	1,380	25.0	146	40.9	110	43.9	270	0	0	0	1,240
Total Consumption	6.9	10.8	3.0	82.1	3.2	3.2	7.8	6.1	7.6	11.0	7.5	8.5	7.1	82.7
†	+268	-304	+2.1	-24.4	+2.1	-1.3	-.6	-3.2	+9.9	-10.3	-4.0	-7.2	-4.1	-52.6
‡	12.3	19.2	11.9	12.6	11.9	12.6	12.0	12.2	12.0	13.8	11.3	10.7	10.2	12.5
††	9.34	2.98	2.51	49.54	2.73	2.47	2.25	2.97	6.09	5.14	2.15	.39	2.26	41.28

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, —— ft³/s)

Date	Time	Discharge	Date	Time	Discharge

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WATER BUDGET OF POOL

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1975 WATER YEAR

Little Elm Creek subwatershed No. 9 near Celina, Tex. Drainage Area 0.58 mi²

~~Continuous water-stage recorder~~ Staff gage: ratio ———. Date of last sediment survey ———.

Maxima: gage height, 21.2 ft; outflow, 19.7 ft³/s; surface area, 27.6 acres; contents, 159 acre-feet; on Oct. 31, 1974.

Minima: gage height, 11.8 ft; surface area, 5.2 acres; contents, 14.1 acre-feet; on Sept 30, 1975.

Maximum inflow, ——— ft³/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on ———.

Averages: ——— water years, (———); inflow, ——— acre-feet/year; outflow, ——— acre-feet/year; rainfall, ——— inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	173	51.1	10.5	688	7.2	49.1	12.5	26.7	23.9	90.6	1.9	0.9	0.4	448
Total Outflow	49.5	176	9.3	672	3.8	50.4	11.0	26.2	18.0	94.5	0	0	0	439
Total Consumption	4.4	6.7	2.5	53.4	2.3	2.4	2.8	3.9	4.9	6.0	5.2	4.6	3.6	49.3
†	+126	-129	+ .3	0	+ 2.8	-1.9	+ .1	-1.4	+4.9	-5.6	-2.1	-3.5	-2.2	-11.6
‡	7.9	12.9	8.0	8.1	7.5	8.0	7.6	7.7	7.7	8.4	6.9	6.2	5.5	7.9
††	9.34	2.98	2.51	49.54	2.73	2.47	2.25	2.97	6.09	5.14	2.15	.39	2.26	41.28

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, ——— ft³/s)

Date	Time	Discharge	Date	Time	Discharge

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WATER BUDGET OF POOL

ANNUAL SUMMARY

1975 WATER YEAR

Little Elm Creek subwatershed No. 11 near Gunter, Tex. Drainage Area 1.17 mi²
~~Continuous water stage recorder~~ Staff gage: ratio ——. Date of last sediment survey ——. Total Drainage Area 3.27 mi²

Maxima: gage height, 21.2 ft; outflow, 128 ft³/s; surface area, 72.1 acres; contents, 421 acre-feet; on Oct. 31, 1974.

Minima: gage height, 9.7 ft; surface area, 10.3 acres; contents, 23.5 acre-feet; on Sept. 30, 1975.

Maximum inflow, —— ft³/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on ——.

Averages: —— water years, (——); inflow, —— acre-feet/year; outflow, —— acre-feet/year; rainfall, —— inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	527	875	65.9	2,840	50.2	327	142	255	178	445	1.7	1.1	1.8	2,870
Total Outflow	221	1190	62.3	2,800	42.6	332	135	255	160	456	.4	0	0	2,850
Total Consumption	9.0	9.9	5.0	107	4.9	5.1	6.6	8.9	11.4	13.2	9.2	8.8	6.8	98.8
†	+314	-320	+1.7	+ 3.0	+4.9	- 7.1	+4.3	-5.5	+15.3	-14.4	-5.5	-7.2	-1.9	- 21.4
‡	15.0	19.1	15.3	15.0	14.9	15.8	15.6	15.4	15.8	16.1	13.8	12.0	10.8	15.0
††	9.50	3.14	2.46	48.05	1.81	1.93	2.86	3.04	6.74	6.84	2.13	.46	3.07	43.98

1/ Inflow includes outflow from site no. 10

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, —— ft³/s)

Date	Time	Discharge	Date	Time	Discharge

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WATER BUDGET OF POOL

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1975 WATER YEAR

_____. Little Elm Creek subwatershed No. 12 near Celina, Tex. Drainage Area 1.62 mi²

~~Continuous water-stage recorder~~ Staff gage: ratio —. Date of last sediment survey —.

Maxima: gage height, 25.1 ft; outflow, 64 ft³/s; surface area, 63.7 acres; contents, 601 acre-feet; on Oct. 31, 1974.

Minima: gage height, 9.1 ft; surface area, 13.4 acres; contents, 59.9 acre-feet; on Sept. 30, 1975.

Maximum inflow, — ft³/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on —.

Averages: — water years, (—); inflow, — acre-feet/year; outflow, — acre-feet/year; rainfall, — inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	590	88.9	37.5	1,300	23.6	138	41.3	143	110	207	2.3	1.4	1.5	1,380
Total Outflow	96.6	595	33.3	1,250	15.7	143	34.9	143	86.4	229	0.3	0	0	1,380
Total Consumption	9.0	13.4	5.4	112	5.5	5.8	6.1	8.9	10.0	11.8	10.1	10.4	8.4	105
†	+504	-510	+2.1	+11.7	+4.8	-7.9	+4.0	-4.5	+23.1	-23.0	-5.4	-8.5	-3.4	-24.7
‡	16.9	32.0	15.9	17.4	15.7	16.9	15.7	17.2	16.2	19.0	15.1	14.2	13.5	17.4
††	9.46	3.01	2.44	46.67	1.80	1.94	2.82	2.99	6.77	6.44	1.96	0.49	3.01	43.13

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, — ft³/s)

Date	Time	Discharge	Date	Time	Discharge

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WATER BUDGET OF POOL

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1975 WATER YEAR

_____. Little Elm Creek subwatershed No. 17 near Celina, Tex. Drainage Area 2.17 mi^2

~~Continuous water-stage recorder~~ staff gage: ratio —. Date of last sediment survey —.

Maxima: gage height, 27.4 ft; outflow, 138 ft^3/s; surface area, 95.2 acres; contents, 882 acre-feet; on Oct. 31, 1974.

Minima: gage height, 14.5 ft; surface area, 29.5 acres; contents, 117 acre-feet; on Sept. 30, 1975.

Maximum inflow, — ft^3/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on —.

Averages: — water years, (—); inflow, — acre-feet/year; outflow, — acre-feet/year; rainfall, — inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	833	67.3	62.6	1,730	36.3	157	62.4	172	130	256	4.3	2.9	4.3	1,790
Total Outflow	136	769	53.6	1,620	28.2	164	51.4	169	112	257	0	0	0	1,740
Total Consumption	20.5	23.8	11.0	237	10.1	7.8	13.5	18.6	22.4	27.6	22.1	23.4	19.0	220
†	+710	-715	+5.1	+9.1	+3.3	-8.8	+5.5	-7.2	+17.2	-17.2	-14.2	-18.9	-7.5	-47.7
‡	37.2	50.2	36.5	37.1	36.2	37.0	36.5	37.2	36.8	38.4	34.5	32.0	30.2	36.9
††	9.28	2.44	2.33	40.77	1.76	1.98	2.65	2.78	6.89	4.72	1.25	0.61	2.74	39.43

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, — ft^3/s)

Date	Time	Discharge	Date	Time	Discharge

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WATER BUDGET OF POOL

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1975 WATER YEAR

_____ Little Elm Creek subwatershed No. 18-A near Celina, Tex. Drainage Area 1.05 mi^2

~~Continuous water-stage recorder~~ staff gage: ratio —. Date of last sediment survey —.

Maxima: gage height, 23.9 ft; outflow, 22.8 ft^3/s; surface area, 29.7 acres; contents, 283 acre-feet; on Oct. 31, 1974.

Minima: gage height, 14.5 ft; surface area, 11.6 acres; contents, 97.8 acre-feet; on Sept. 30, 1975.

Maximum inflow, — ft^3/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on —.

Averages: — water years, (—); inflow, — acre-feet/year; outflow, — acre-feet/year; rainfall, — inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	246	150	55.9	984	27.9	78.2	45.3	89.4	75.8	141	3.7	1.0	1.6	916
Total Outflow	84.1	310	54.9	952	21.2	81.5	42.2	87.1	73.0	139	0	0	0	893
Total Consumption	7.4	7.5	4.4	85.7	4.7	4.6	5.5	6.9	8.2	9.2	8.5	9.1	7.3	83.3
†	+165	-164	-0.4	+1.0	+4.7	-4.8	0	-1.2	+2.2	-4.1	-1.9	-7.0	-2.4	-13.9
‡	13.3	16.1	13.1	13.0	13.0	13.1	13.0	13.1	13.1	13.1	12.5	12.1	11.8	13.1
††	7.98	2.90	2.82	48.29	2.51	2.78	2.11	3.05	7.01	3.92	2.79	1.05	3.36	42.28

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, — ft^3/s)

Date	Time	Discharge	Date	Time	Discharge

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Rev. 2-74

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOL

ANNUAL SUMMARY

1975 WATER YEAR

. Little Elm Creek subwatershed No. 19 near Celina, Tex. Drainage Area 2.01 mi^2

~~Continuous water-stage recorder~~ staff gage ratio —. Date of last sediment survey —.

Maxima: gage height, 19.6 ft; outflow, 28.0 ft^3/s; surface area, 108 acres; contents, 791 acre-feet; on Oct. 31, 1974.

Minima: gage height, 9.4 ft; surface area, 28.9 acres; contents, 123 acre-feet; on Sept. 30, 1975.

Maximum inflow, — ft^3/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on —.

Averages: — water years, (—); inflow, — acre-feet/year; outflow, — acre-feet/year; rainfall, — inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	669	123	37.9	1,450	24.3	201	65.7	134	191	199	5.7	7.0	3.2	1,660
Total Outflow	88.1	710	29.2	1,330	13.9	209	56.7	131	136	246	0	0	0	1,620
Total Consumption	21.9	26.2	13.6	227	9.8	14.2	16.0	19.9	23.4	27.0	23.2	23.5	19.7	238
†	+596	-599	+3.1	55.4	+7.7	-8.8	+0.4	-6.4	+55.7	-55.7	-14.1	-15.0	-12.6	-48.7
‡	39.1	55.8	37.7	34.5	37.5	39.4	38.0	38.3	38.3	39.7	35.2	32.6	30.3	38.5
††	8.52	2.74	2.68	47.61	2.38	3.20	2.24	3.10	7.16	4.35	1.98	0.80	2.44	41.59

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, — ft^3/s)

Date	Time	Discharge	Date	Time	Discharge

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Rev. 2-74

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOL

ANNUAL SUMMARY

1975 WATER YEAR

Little Elm Creek subwatershed No. 20 near Celina, Tex. Drainage Area 2.06 mi²

~~Continuous water-stage recorder~~ staff gage: ratio —. Date of last sediment survey —.

Maxima: gage height, 26.6 ft; outflow, 23.4 ft³/s; surface area, 75.2 acres; contents, 740 acre-feet; on Oct. 31, 1974.

Minima: gage height, 14.1 ft; surface area, 22.8 acres; contents, 112 acre-feet; on Sept. 30, 1975.

Maximum inflow, — ft³/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on —.

Averages: — water years, (—); inflow, — acre-feet/year; outflow, — acre-feet/year; rainfall, — inches/year.

Pool water budget, in acre-feet, water year October 1974 to September 1975.

	Oct.	Nov.	Dec.	Calendar year 1974	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1975
Total Inflow 1/	63.2	10.4	43.6	1640	29.6	23.1	68.7	16.9	17.4	31.7	5.5	3.1	3.8	1780
Total Outflow	78.1	65.8	36.8	1560	18.4	23.6	64.2	17.1	14.4	33.5	0	0	0	1740
Total Consumption	18.1	22.0	10.6	207	10.8	11.9	12.6	11.2	19.7	25.8	18.2	19.7	14.7	195
†	+56.4	-56.7	+2.2	+4.0	+5.8	-5.8	-2.5	-4.8	+28.3	-29.4	-10.1	-15.5	-7.9	-42.7
‡	29.6	41.6	28.5	29.0	28.4	31.4	28.6	28.8	28.8	33.1	26.8	24.9	23.3	29.5
††	8.52	2.74	2.68	47.60	2.38	3.20	2.24	3.10	7.16	4.35	1.98	0.80	2.44	41.59

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, — ft³/s)

Date	Time	Discharge	Date	Time	Discharge

Form TX-88
10-69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

STUDY AREA Little Elm Creek

RAINFALL DATA SUMMARY

RAIN GAGE

1975 WATER YEAR

Date of storm	1-S	2-R	3-S	4-S	5-S	6-R	7-S	8-S	9-R	10-R		Avg.
October 13-14	1.77	1.61	1.30	1.69	1.82	1.50	1.48	2.00	1.61	1.34		
24-25	.34	.20	.30	.23	.27	.21	.34	.42	.22	.02		
28	1.02	(1.30)	1.55	.81	1.39	.66	1.12	1.33	1.00	.56		
30-31	6.57	3.82	6.42	6.77	5.86	6.91	5.04	5.30	5.42	6.99		
October total	9.70	6.93	9.57	9.50	9.34	9.28	7.98	9.05	8.25	8.91		8.85
November 4	.25	.35	.15	.37	.25	.20	.20	.23	.19	.25		
8	.09			.08	.11			.05				
9-10	2.10	2.03	3.23	2.11	2.00	1.83	1.98	1.84	1.80	2.11		
16				.01								
23	.27	.21		.33	.30	.20	.56	.33	.32			
29	.26	.24		.24	.32	.21	.16	.12	.17	.24		
November total	2.97	2.83	3.38	3.14	2.98	2.44	2.90	2.57	2.48	2.60		2.83
December 5-6	.81	.83	1.17	.84	.92	.87	.82	.95	.89	.84		
10	.65	.65	.60	.64	.60	.65	1.34	.63	.58	.47		
11									.03			
16-17			.15									
22			.23									
26	.45	.45	.26	.43	.50	.40	.54	.46	.40	.30		
28	.10	.06	.17	.03	.10	.11	.12	.10	.03			
30-31	.38	.32	.54	.52	.39	.30		.40	.23	.42		
December total	2.39	2.31	3.12	2.46	2.51	2.33	2.82	2.54	2.16	2.03		2.47
1974 Calender Year total												46.13
January 2	.38	.36	.36	.30	.34	.36	.16	.44	.29	.40		
5		.04										
9	.15	.16	.23	.19	.18	.11	.36	.20	.11	.19		
17	.02											
24	.22	.22	.27	.23	.25	.22	.54	.20	.20	.23		
29	.02											
30-31	1.12	.91	1.15	.73	1.58	.75	1.10	1.00	1.00	1.00		
31	.16	.17	.15	.36	.38	.32	.35	.40	.36	.55		
January Total	2.07	1.86	2.16	1.81	2.73	1.76	2.51	2.24	1.96	2.37		2.15

Form TX-88
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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

STUDY AREA Little Elm Creek

RAINFALL DATA SUMMARY

RAIN GAGE

1975 WATER YEAR

Date of storm	1-S	2-R	3-S	4-S	5-S	6-R	7-S	8-S	9-R	10-R		Avg.
February 1	.92	.88	.89	.72	.80	.68	.73	.85	.87	.40		
2	.28	.28	.30	.28		.25	.45	.35	.20	.10		
3	.16	.08	.10	.13	.40	.10	.17	.27	.13	.09		
4	.29	.35	.43	.47	.42	.45	.55	1.23	.48	.45		
7								.25	.05			
13				.04	.05		.18	.27				
22	.31	.28	.33	.16		.25	.29	.30	.02	.26		
23	.14	.17		.10	.80	.25	.29	.10	.08			
28	.72	.24	.04	.03			.12					
February Total	2.82	2.28	2.09	1.93	2.47	1.98	2.78	3.62	1.83	1.30		2.31
March 3	.08	.06	.04	.05	.09	.09		.08				
9	.39	.42	.52	.42	.37	.40	.56	.38	.29	.24		
10	.04					.04	.04		.06			
12	.06	.10	.42	.31	.17	.19	.15	.20	.23	.25		
13		.35	.35	.37	.25	.29	.20	.02	.24	.25		
15	.62	.50	.40	.47	.37	.48	.25	.65	.20	.44		
16	.10	.08										
17	.14	.06	.30	.10		.05		.09	.03	.05		
19					.05							
23	.05	.05	.09	.16	.09	.20	.03	.03		.08		
26	.42	.50	.40	.32	.55	.21	.18	.42	.27	.08		
27	.49	.45	.42	.37	.29	.45	.37	.45	.34	.37		
28	.06	.05		.08	.02	.03						
29	.16	.20	.60	.21		.22	.33	.04	.08			
March Total	2.61	2.82	3.54	2.86	2.25	2.65	2.11	2.36	1.74	1.76		2.47
April 1			.92									
6	.24	.20	.40	.25	.50	.24	.58	.40		.22		
7-8	1.70	1.81	1.75	2.01	1.86	1.94	1.89	2.14	2.17	2.26		
10	.21	.25	.35	.10	.12	.14	.12		.06	.16		
13	.26	.20	.20	.32	.22	.21	.23	.10	.21	.13		
22	.05	.09	.21									
28	.23	.25	.40	.29	.27	.25	.23	.52	.21	.10		
29	.08	.08	.03	.07								
April Total	2.77	2.88	4.26	3.04	2.97	2.78	3.05	3.16	2.65	2.87		3.04

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

STUDY AREA Little Elm Creek

RAINFALL DATA SUMMARY

RAIN GAGE

1975 WATER YEAR

Date of storm	1-S	2-R	3-S	4-S	5-S	6-R	7-S	8-S	9-R	10-R		Avg.
May 2	1.33	1.19	1.25	1.48	1.30	1.46	1.14	1.38	1.18	1.18		
6				.03								
11	.42	.30	.25	.09	.42		.35			.09		
13-14	.70	.90	1.25	1.45	1.22	1.07	1.10	1.73	.24	1.21		
14-15	.54	.57	.50	.68		.72	.65		.49	.83		
20	.19	.24	.30	.26	.25	.26	.30	.27	.23	.17		
23	.81	.84	.77	.94	.65	.81	.34	.57	.62	.63		
24					.02			.28	.16			
27-28	1.01	.80	.70	.31	.50	.40	.94	.63	1.43	.15		
29	.94	1.02	1.21	1.06	(1.27)	1.52	1.54	1.72	1.40	.72		
30	.24	.24	.29	.45	(.46)	.65	.65	.73	.28	.16		
May Total	6.18	6.10	6.52	6.74	6.09	6.89	7.01	7.31	6.53	5.14		6.45
June 7	.32	.05	.24	.29	.22	.25		.12	.12	.08		
8	4.36	4.90	4.92	4.15	3.66	2.01	1.44	2.22	2.42	2.13		
9	1.58	1.31	1.24	1.30	.74	1.50	1.05	2.40	1.30	2.01		
10	.23	.19	.18	.10	.13	.26			.31	.30		
15	.21	.17		.12						.09		
21	.02	.10		.24		.07	.12		.12	.06		
22	.33	.30	.30		.30	.49	.75	.04	.22	.19		
26	.22	.12	.40	.28	.05	.14	.04			.12		
28				.36	.04		.02		.04	.14		
June Total	7.27	7.14	7.28	6.84	5.14	4.72	3.92	4.78	4.53	5.12		5.67
July 3	.18	.39	.29	.62	.33	.42	.56	.25	.43	.71		
8									.19			
10	.79	.42	.42	.53		.20	.90	.20	.33	.36		
18					.02							
23									.17			
24	.39	.22	.12	.19	.15	.08	.22	.35	.08			
25	.21	.18	.36	.22	.61	.40	1.11	.37	.77	.40		
26	.26	.21	.46		.30				.16	.08		
27		.04										
28	.11	.30	.25	.57	.74	.15				.19		
July Total	1.94	1.79	1.90	2.13	2.15	1.25	2.79	1.17	2.13	1.74		1.90

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

RAINFALL DATA SUMMARY

STUDY AREA Little Elm Creek

RAIN GAGE

1975 WATER YEAR

Date of storm	1-S	2-R	3-S	4-S	5-S	6-R	7-S	8-S	9-R	10-R		Avs.
August 8									.05			
16								.10	.08			
17	.15	.12		.34	.27	.50	.93	.25	.84	.40		
18				.06					.04			
22	.28											
26	.48	.22	.75	.06		.07	.07	.20	.05			
27	.06	.09			.12	.04	.05		.22			
August Total	.97	.43	.75	.46	.39	.61	1.05	.55	1.28	.40		.69
September 9	.96	.75	.83	2.08	1.72	2.00	2.19	.93	1.31	2.01		
13	.17	.19	.20	.15	.22	.24	.48	.27	.20			
15	.39	.73	.70	.80	.32	.50	.65	.30	.51	.62		
19		.11					.04					
21	.04			.04				.01				
September Total	1.56	1.78	1.73	3.07	2.26	2.74	3.36	1.51	2.02	2.63		2.27
1975 Water Year Total												41.10

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period Oct. 30-31, 1974

08052630 Little Elm Creek subwatershed No. 10 near Gunter, Tex. D.A. 2.10 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
October 30																
0000	20.15	163.92							0				0			
1400	20.16	164.25	14	.33	.29	20.16	.39	.68	.12	33.3	.33	.29	.39	.0003	.0042	.0042
2000	20.16	164.25	6	0	0	20.16	.39	.39	0	33.3	0	0	.39	.0003	.0018	.0060
30	20.16	164.25	.50	0	0	20.16	.39	.39	0	33.3	0	0	.39	.0003	.0002	.0062
45	20.17	164.58	.25	.33	16.0	20.16	.39	16.4	.12	33.3	.33	16.0	.40	.0003	.0001	.0063
2100	20.30	168.98	.25	4.40	213	20.24	.90	214	.84	33.9	2.37	115	99	.0731	.0183	.0246
15	20.38	171.76	.25	2.78	135	20.34	1.9	137	.26	34.7	.75	36.3	101	.0745	.0186	.0432
30	20.62	180.40	.25	8.64	418	20.50	4.2	422	.76	36.0	2.28	110	312	.2303	.0576	.1008
45	21.12	199.90	.25	19.50	944	20.87	11.9	956	.19	39.0	.62	30.0	926	.6834	.1708	.2716
2200	21.86	233.13	.25	33.23	1,608	21.49	15.7	1,624	.68	44.9	2.54	123	1,500	1.1072	.2768	.5484
15	22.66	275.21	.25	42.08	2,037	22.26	19.4	2,056	.42	52.6	1.84	89.1	1,970	1.4541	.3635	.9119
20	22.92	290.26	.083	15.05	2,185	22.79	21.6	2,207	.08	57.9	.39	56.6	2,150	1.5869	.1317	1.0436
25	23.17	305.39	.083	15.13	2,197	23.04	22.6	2,220	.06	60.4	.30	43.6	2,180	1.6091	.1336	1.1772
30	23.40	319.90	.083	14.51	2,107	23.28	23.6	2,131	.04	63.1	.21	30.5	2,100	1.5500	.1286	1.3058
45	23.93	355.59	.25	35.69	1,727	23.66	24.8	1,752	.01	67.3	.06	2.9	1,750	1.2917	.3229	1.6287
2300	24.30	382.27	.25	26.68	1,291	24.12	26.3	1,317	.30	72.2	1.80	87.1	1,230	.9079	.2270	1.8557
15	24.61	405.70	.25	23.43	1,134	24.46	27.2	1,161	.12	75.6	.76	36.8	1,120	.8267	.2067	2.0624
30	24.84	423.70	.25	18.00	871	24.72	27.7	899	.12	78.2	.78	37.8	861	.6355	.1589	2.2213
45	25.05	440.60	.25	16.90	818	24.94	28.2	846	.21	80.4	1.41	68.2	778	.5742	.1436	2.3649
2400	25.25	457.10	.25	16.50	799	25.15	28.5	828	.27	82.5	1.86	90.0	738	.5447	.1362	2.5011
October 31																
0015	25.43	472.28	.25	15.18	735	25.34	28.8	764	.12	84.4	.84	40.7	723	.5336	.1334	2.6345
30	25.58	485.19	.25	12.91	625	25.50	29.0	654	.05	86.0	.36	17.4	637	.4702	.1176	2.7521
0100	25.83	507.20	.50	22.01	533	25.70	29.3	562	.01	88.0	.07	1.7	560	.4133	.2066	2.9587
0200	26.09	530.76	1.0	23.56	285	25.96	29.6	315	.04	90.6	.30	3.6	311	.2295	.2295	3.1882
0300	26.23	543.75	1.0	12.99	157	26.16	29.9	187	.17	92.8	1.31	15.9	171	.1262	.1262	3.3144
0400	26.37	556.96	1.0	13.21	160	26.30	30.0	190	.37	94.3	2.91	35.2	155	.1144	.1144	3.4288
15	26.49	568.44	.25	11.48	556	26.43	30.1	586	.58	95.7	4.63	224	362	.2672	.0668	3.4956
30	26.61	580.08	.25	11.64	563	26.55	30.3	593	.28	97.0	2.26	109	484	.3572	.0893	3.5849
0445	26.75	593.88	.25	13.80	668	26.68	30.4	698	.04	98.5	.33	16.0	682	.5034	.1258	3.7107

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period Oct. 30-31, 1974

08052630 Little Elm Creek subwatershed No. 10 near Gunter, Tex. D.A. 2.10 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
October 31 (cont'd)																
0500	26.92	610.91	.25	17.03	824	26.84	30.5	854	.03	100	.25	12.1	842	.6215	.1554	3.8661
05	26.98	616.99	.083	6.08	883	26.95	30.7	914	.02	101	.17	24.7	889	.6562	.0545	3.9206
15	27.09	628.24	.167	11.25	817	27.04	30.7	848	.04	102	.34	24.7	823	.6075	.1015	4.0221
30	27.22	641.71	.25	13.47	652	27.15	30.9	683	.08	104	.69	33.4	650	.4798	.1200	4.1421
0600	27.41	661.68	.50	19.97	483	27.32	31.0	514	.06	105	.52	12.6	501	.3698	.1849	4.3270
0700	27.67	689.62	1.0	27.94	338	27.54	31.3	369	.13	107	1.16	14.0	355	.2620	.2620	4.5890
0800	27.82	706.03	1.0	16.41	199	27.74	31.5	230	.17	109	1.54	18.6	211	.1557	.1557	4.7447
1000	28.08	735.02	2.0	28.99	175	27.95	31.7	207	.18	112	1.68	10.2	197	.1454	.2908	5.0355
1200	28.20	748.62	2.0	13.60	82.3	28.14	31.8	114	.02	113	.19	1.1	113	.0834	.1668	5.2023
1600	28.24	753.20	4.0	4.58	13.9	28.22	31.9	45.8	0				45.8	.0338	.1352	5.3375
2000	28.22	750.91	4.0	-2.29	-6.9	28.23	31.9	25.0	0				25.0	.0185	.0740	5.4115
2400	28.16	744.08	4.0	-6.83	-20.7	28.19	31.9	11.2	0				11.2	.0083	.0332	5.4447

TX-78 (Revised July 1969)

Sheet 1 of 2

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

Comp. by: JMT
Date 8/30/76
Check by PZH & RMS
Date 9/2/76

WEIGHTED PRECIPITATION RECORD

Study Area Little Elm Creek Subwatershed No 10 near Gunter, Tex. Date of storm October 30-31, 1974

Accumulated Precipitation in Inches for Recording Rain Gages													Accumulated Weighted Precipitation	
Weight Factor	1.000													
Date & Time	Gage 10-R Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Recording Gages All Gages	(Rec. Gages x K) All Gages
October 30														
0000	0													0
1245	0													0
1300	.12													.12
2030	.12													.12
45	.24													.24
2100	1.08													1.08
15	1.34													1.34
30	2.10													2.10
45	2.29													2.29
2200	2.97													2.97
15	3.39													3.39
30	3.57													3.57
45	3.58													3.58
2300	3.88													3.88
30	4.12													4.12
2400	4.60													4.60
October 31														
0000	4.60													4.60
30	4.77													4.77
0100	4.78													4.78
0200	4.82													4.82
0300	4.99													4.99
0400	5.36													5.36
15	5.94													5.94
30	6.22													6.22

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
10-R	1.00										
										WMR	6.99

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

TX-78 (Revised July 1969)

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

Sheet 2 of 2

Comp. by: JMT
Date 8/30/76
Check by DLH & RMS
Date 9/2/76

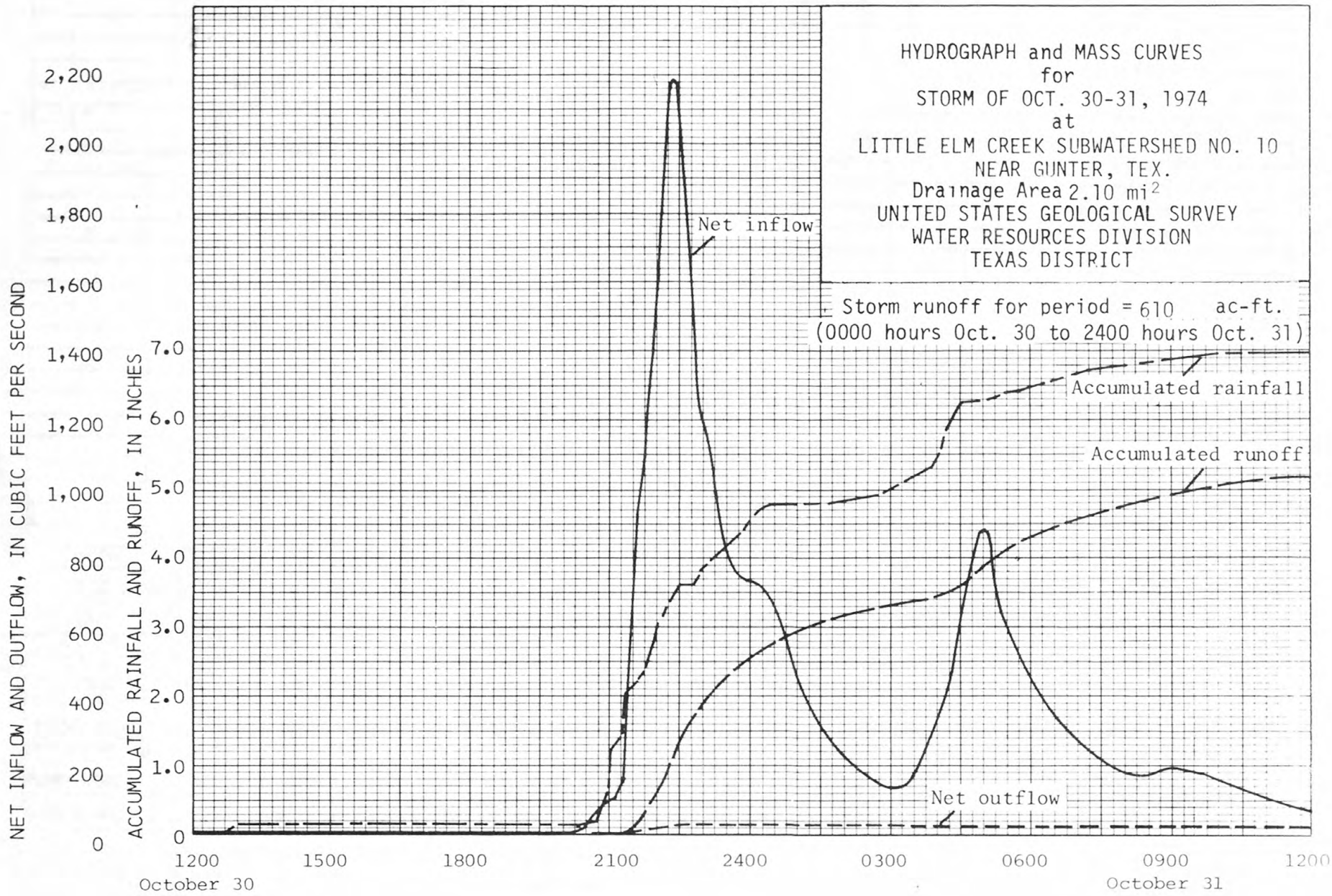
WEIGHTED PRECIPITATION RECORD

Study Area Little Elm Creek Subwatershed No10 near Gunter, Tex. Date of storm October 30-31, 1974

Date & Time	Accumulated Precipitation in Inches for Recording Rain Gages: Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Accumulated Weighted Precipitation: Recording Gages (Rec. Gages x K)	All Gages
Weight Factor														
October 31	continued													
0500	6.29													6.29
30	6.43													6.43
0600	6.49													6.49
0700	6.62													6.62
0800	6.79													6.79
1000	6.97													6.97
1200	6.99													6.99
2400	6.99													6.99

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 OCT. 30-31, 1974
at
LITTLE ELM CREEK SUBWATERSHED NO. 10
NEAR GUNTER, TEX.
Drainage Area 2.10 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 610 ac-ft.
(0000 hours Oct. 30 to 2400 hours Oct. 31)
Net inflow
Accumulated rainfall
Accumulated runoff
Net outflow
NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
2,200
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0
1200
1500
1800
2100
2400
0300
0600
0900
1200
October 30
October 31

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1-69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

Sheet 1 of 2

INFLOW AND OUTFLOW COMPUTATIONS

Storm period April 7-8, 1975

08052630 Little Elm Creek subwatershed No. 10 near Gunter, Tex. D.A. 2.10 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
	April 7															
0000	20.09	161.94							0							
0600	20.09	161.94	6	0	0	20.09	.12	.12	.06	32.7	.16	.32	0			
1200	20.12	162.92	6	.98	2.0	20.10	.15	2.2	.37	32.8	1.01	2.0	0.2	.0001	.0006	.0006
1600	20.16	164.25	4	1.33	4.0	20.14	.30	4.3	.37	33.1	1.02	3.1	1.2	.0009	.0036	.0042
1700	20.18	164.92	1	.67	8.1	20.17	.44	8.5	.20	33.3	.56	6.8	1.7	.0013	.0013	.0055
1800	20.30	168.98	1	4.06	49.1	20.24	.90	50.0					50.0	.0369	.0369	.0424
1900	20.47	174.95	1	5.97	72.2	20.38	2.4	74.6					74.6	.0551	.0551	.0975
2000	20.59	179.30	1	4.35	52.6	20.53	4.7	57.3					57.3	.0423	.0423	.1398
2100	20.66	181.89	1	2.59	31.3	20.62	6.5	37.8					37.8	.0279	.0279	.1677
2200	20.70	183.38	1	1.49	18.0	20.68	7.9	25.9					25.9	.0191	.0191	.1868
2300	20.72	184.14	1	0.76	9.2	20.71	8.6	17.8					17.8	.0131	.0131	.1999
15	20.78	186.42	.25	2.28	110.	20.75	9.6	120	.67	38.1	2.13	103	17.0	.0125	.0031	.2030
30	20.83	188.34	.25	1.92	92.9	20.80	10.8	104	.08	38.4	.26	12.6	91.4	.0675	.0169	.2199
45	20.91	191.46	.25	3.12	151.	20.87	11.9	163	.02	39.0	.06	2.9	160	.1181	.0295	.2494
2400	21.03	196.24	.25	4.78	231.	20.97	12.6	244	.03	39.8	.10	4.8	239	.1764	.0441	.2935
	April 8															
0015	21.16	201.56	.25	5.32	257	21.10	13.5	270	.03	41.0	.10	4.8	265	.1956	.0489	.3424
25	21.26	205.77	.167	4.21	305	21.21	14.2	319	.03	42.1	.11	8.0	311	.2295	.0383	.3807
35	21.37	210.52	.167	4.75	345	21.32	14.8	360	.02	43.2	.07	5.1	355	.2620	.0438	.4245
40	21.43	213.16	.083	2.64	383	21.40	15.2	398	.02	44.0	.07	10.2	388	.2864	.0238	.4483
50	21.54	218.09	.167	4.93	357	21.48	15.6	373	.05	44.8	.19	10.9	362	.2672	.0446	.4929
0100	21.64	222.68	.167	4.59	333	21.59	16.1	349	.06	45.9	.23	16.7	332	.2450	.0409	.5338
30	21.86	233.13	.50	10.45	253	21.75	17.0	270	.12	47.5	.48	11.6	258	.1904	.0952	.6290
45	21.95	237.54	.25	4.41	213	21.90	17.6	231	.06	49.0	.24	11.6	219	.1616	.0404	.6694
0200	22.03	241.54	.25	4.00	194	21.99	18.1	212	.05	49.9	.21	10.2	206	.1520	.0380	.7074
30	22.17	248.68	.5	7.14	173	22.10	18.6	192	.01	51.0	.04	1.0	191	.1410	.0705	.7779
0300	22.27	253.90	.5	5.22	126	22.22	19.1	145	.01	52.2	.04	1.0	144	.1063	.0532	.8311
0400	22.42	261.91	1	8.01	96.9	22.34	19.8	117					117	.0864	.0864	.9175
0600	22.56	269.60	2	7.69	46.5	22.49	20.5	67.0					67.0	.0495	.0990	1.0165
0900	22.61	272.38	3	2.78	11.2	22.58	20.9	32.1					32.1	.0237	.0711	1.0876
1200	22.61	272.38	3	0	0	22.61	21.0	21.0					21.0	.0155	.0465	1.1341

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period April 7-8, 1975

08052630 Little Elm Creek subwatershed No. 10 near Gunter, Tex. D.A. 2.10 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
	April 8 (continued)															
1500	22.56	269.60	3	-2.78	-11.2	22.58	20.9	9.7					9.7	.0072	.0216	1.1557
1800	22.50	266.27	3	-3.33	-13.4	22.53	20.6	7.2					7.2	.0053	.0159	1.1716
2100	22.43	262.46	3	-3.81	-15.4	22.46	20.3	4.9					4.9	.0036	.0108	1.1824
2400	22.35	258.14	3	-4.32	-17.4	22.39	20.0	2.6					2.6	.0019	.0057	1.1881

TX-78 (Revised July 1969)

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

WEIGHTED PRECIPITATION RECORD

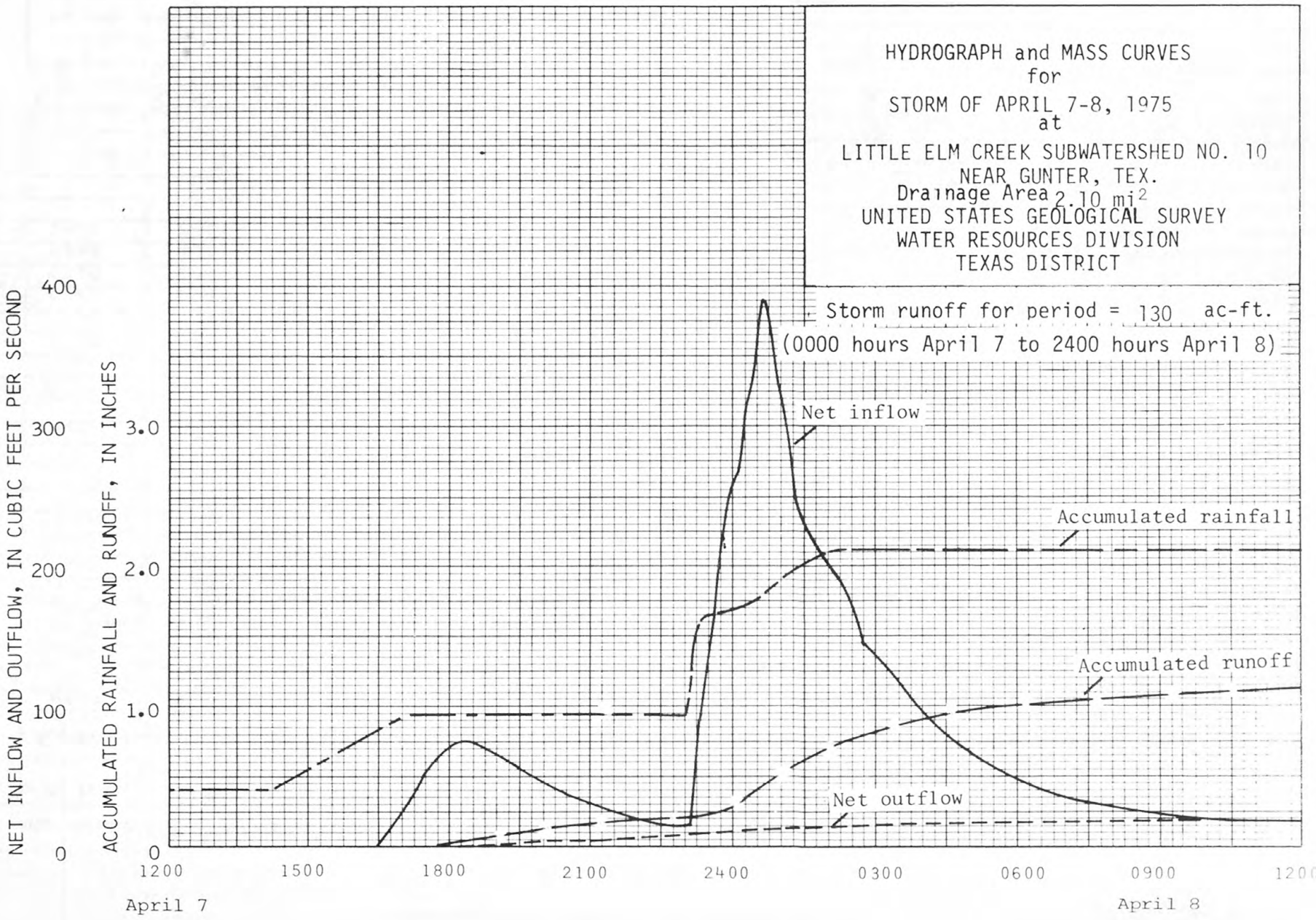
Sheet 1 of 1
Comp. by: JMT
Date 8/30/76
Check by RMS
Date

Study Area Little Elm Creek Subwatershed No.10 near Gunter, Tex Date of storm April 7-8, 1975

Weight Factor		1.000												Accumulated Weighted Precipitation	
		Accumulated Precipitation in Inches for Recording Rain Gages													
	Gage	10-R		Gage		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 7															
0000	0														
0400	0														
0600	.06													.06	.06
1000	.16													.16	.15
1200	.43													.43	.41
1400	.43													.43	.41
1500	.59													.59	.56
1600	.80													.80	.75
1700	1.00													1.00	.94
2300	1.00													1.00	.94
15	1.67													1.67	1.57
30	1.75													1.75	1.65
45	1.77													1.77	1.67
2400	1.80													1.80	1.70
April 8															
0000	1.80													1.80	1.70
15	1.83													1.83	1.72
30	1.88													1.88	1.77
0100	2.01													2.01	1.89
0200	2.24													2.24	2.11
0300	2.26													2.26	2.13
2400	2.26													2.26	2.13

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
4-S	.50	2.01	1.00								
10-R	.50	2.26	1.13								
										WMR	2.13

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 2.13/2.26 = 0.942


HYDROGRAPH and MASS CURVES
for
STORM OF APRIL 7-8, 1975
at
LITTLE ELM CREEK SUBWATERSHED NO. 10
NEAR GUNTER, TEX.
Drainage Area 2.10 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 130 ac-ft.
(0000 hours April 7 to 2400 hours April 8)
Net inflow
Accumulated rainfall
Accumulated runoff
Net outflow
NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
0
100
200
300
400
1.0
2.0
3.0
1200
1500
1800
2100
2400
0300
0600
0900
1200
April 7
April 8

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

Sheet 1 of 1

INFLOW AND OUTFLOW COMPUTATIONS

Storm period May 14-15, 1975

08052630 Little Elm Creek subwatershed No. 10 near Gunter, Tex. D.A. 2.10 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
	May 14															
0000	20.13	163.26														
1200	20.23	166.60	12	+ 3.34	+ 3.4	20.18	.50	3.9					3.9	—	—	—
1800	20.23	166.60	6	0	0	20.23	.83	.83	0				.83	—	—	—
1815	20.24	166.94	.25	+ .34	+ 16.5	20.24	.90	17.4	.07	33.9	.20	9.7	7.7	.0057	.0014	.0014
30	20.28	168.30	.25	+ 1.36	+ 65.8	20.26	1.1	66.9	.37	34.1	1.05	50.8	16.1	.0119	.0030	.0044
45	20.30	168.98	.25	+ .68	+ 32.9	20.29	1.3	34.2	.12	34.3	.34	16.5	17.7	.0131	.0033	.0077
1900	20.32	169.68	.25	+ .70	+ 33.9	20.31	1.5	35.4	.02	34.5	.06	2.9	32.5	.0240	.0060	.0137
30	20.33	170.02	.5	+ .34	+ 8.2	20.32	1.6	9.8	.02	34.6	.06	1.5	8.3	.0061	.0030	.0167
2000	20.34	170.37	.5	+ .35	+ 8.5	20.34	1.9	10.4	.02	34.7	.06	1.5	8.9	.0066	.0033	.0200
15	20.35	170.72	.25	+ .35	+ 16.9	20.34	1.9	18.8	0				18.8	.0139	.0035	.0235
30	20.36	171.07	.25	+ .35	+ 16.9	20.36	2.1	19.0	0				19.0	.0140	.0035	.0270
35	20.37	171.42	.083	+ .35	+ 50.8	20.36	2.1	52.9					52.9	.0390	.0032	.0302
45	20.44	173.88	.167	+ 2.46	+ 179	20.40	2.6	182	0				182	.1343	.0224	.0526
50	20.48	175.31	.083	+ 1.43	+ 208	20.46	3.5	212	0				212	.1565	.0130	.0656
55	20.53	177.11	.083	+ 1.80	+ 261	20.50	4.2	265	0				265	.1956	.0162	.0818
2100	20.57	178.57	.083	+ 1.46	+ 212	20.55	5.1	217	.01	36.4	.03	4.4	213	.1572	.0130	.0948
15	20.66	181.89	.25	+ 3.32	+ 161	20.62	6.5	168	0				168	.1240	.0310	.1258
45	20.80	187.18	.50	+ 5.29	+ 128	20.73	9.1	137	0				137	.1011	.0506	.1764
2200	20.85	189.12	.25	+ 1.94	+ 93.9	20.82	11.2	105	0				105	.0775	.0194	.1958
2300	21.01	195.42	1	+ 6.30	+ 76.2	20.93	12.3	88.5	0				88.5	.0653	.0653	.2611
2400	21.09	198.66	1	+ 3.24	+ 39.2	21.05	13.1	52.3	0				52.3	.0386	.0386	.2997
	May 15															
0200	21.17	201.98	2	+ 3.32	+ 20.1	21.13	13.6	33.7	0				33.7	.0249	.0498	.3495
0800	21.23	204.50	6	+ 2.52	+ 5.1	21.20	14.0	19.1	.20	42.0	.70	1.4	17.7	.0131	.0786	.4281
1600	21.14	200.73	8	− 3.77	− 5.7	21.18	13.9	8.2	0				8.2	.0061	.0488	.4769
2400	20.98	194.23	8	− 6.50	− 9.8	21.06	13.2	3.4					3.4	.0025	.0200	.4969

TX-78 (Revised July 1969)

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

WEIGHTED PRECIPITATION RECORD

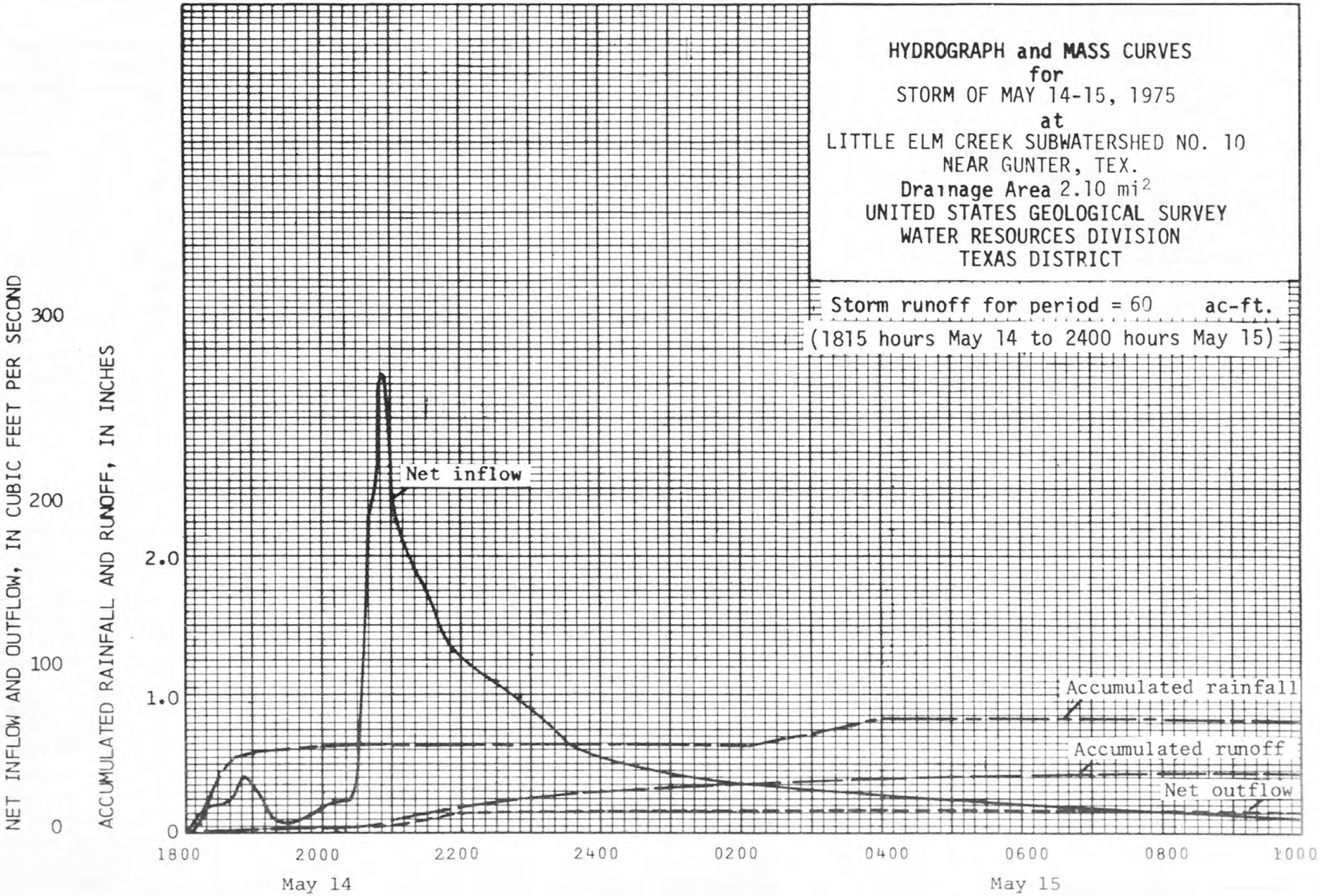
Sheet 1 of 1
Comp. by: JMT
Date 8/30/96
Check by DLH
Date 9/2/76

Study Area Little Elm Creek Subwatershed No 10 near Gunter, Tex. Date of storm May 14-15, 1975

Accumulated Precipitation in Inches for Recording Rain Gages													Accumulated Weighted Precipitation	
Weight Factor	1.000												Recording Gages	(Rec. Gages x K)
	Gage 10-R		Gage		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	Recorded	x Factor		
May 14														
0000	0													0
1800	0													0
15	.07													.07
30	.44													.44
45	.56													.56
1900	.58													.58
2000	.62													.62
2100	.63													.63
2400	.63													.63
May 15														
0000	.63													.63
0200	.63													.63
0300	.71													.71
0400	.83													.83
2400	.83													.83

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
10-R	1.00										
										WMR	.83

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


HYDROGRAPH and MASS CURVES
for
STORM OF MAY 14-15, 1975
at
LITTLE ELM CREEK SUBWATERSHED NO. 10
NEAR GUNTER, TEX.
Drainage Area 2.10 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 60 ac-ft.
(1815 hours May 14 to 2400 hours May 15)
NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
300
200
100
0
2.0
1.0
0
Net inflow
Accumulated rainfall
Accumulated runoff
Net outflow
1800
2000
2200
2400
0200
0400
0600
0800
1000
May 14
May 15

TX-64
1-69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period June 8, 1975

08052630 Little Elm Creek subwatershed No. 10 near Gunter, Tex. D.A. 2.10 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 8															
0000	20.12	162.92														
0100	20.12	162.92	1	0	0	20.12	.21	.21	0				.21	.0002	.0002	.0002
0200	20.17	164.58	1	+ 1.66	+20.1	20.14	.30	20.4	.51	33.1	1.41	17.1	3.3	.0024	.0024	.0026
0600	20.18	164.92	4	+ .34	+ 1.0	20.18	.50	1.5	.08	33.4	.22	.67	.83	.0006	.0024	.0050
1800	20.18	164.92	12	0	0	20.18	.50	.50				0	.50	.0004	.0048	.0098
15	20.18	164.92	.25	0	0	20.18	.50	.50				0	.50	.0004	.0001	.0099
30	20.20	165.58	.25	+ .66	+31.9	20.19	.56	32.5	.18	33.5	.50	24.2	8.3	.0061	.0015	.0114
45	20.22	166.26	.25	+ .68	+32.9	20.21	.69	33.6	.01	33.7	.03	1.5	32.1	.0237	.0059	.0173
1900	20.25	167.28	.25	+ 1.02	+49.4	20.24	.90	50.3	.07	33.9	.20	9.7	40.6	.0300	.0075	.0248
15	20.32	169.68	.25	+ 2.40	+116	20.28	1.2	117	.54	34.2	1.54	74.5	42.5	.0314	.0078	.0326
30	20.40	172.46	.25	+ 2.78	+135	20.36	2.1	137	.47	34.9	1.37	66.3	70.7	.0522	.0130	.0456
45	20.48	175.31	.25	+ 2.85	+138	20.44	3.2	141	.05	35.5	.15	7.3	134	.0989	.0247	.0703
2000	20.57	178.57	.25	+ 3.26	+158	20.52	4.6	163	.04	36.2	.12	5.8	157	.1159	.0290	.0993
15	20.66	181.89	.25	+ 3.32	+161	20.62	6.5	168	.02	37.0	.06	2.9	165	.1218	.0304	.1297
25	20.78	186.42	.167	+ 4.53	+329	20.72	8.9	338	.02	37.8	.06	4.4	334	.2465	.0412	.1709
30	20.86	189.51	.083	+ 3.09	+449	20.82	11.2	460	.01	38.6	.03	4.4	456	.3366	.0279	.1988
35	20.95	193.04	.083	+ 3.53	+513	20.90	12.1	525	.01	39.2	.03	4.4	521	.3846	.0319	.2307
40	21.05	197.04	.083	+ 4.00	+581	21.00	12.8	594	.01	40.0	.03	4.4	590	.4355	.0361	.2668
45	21.14	200.73	.083	+ 3.69	+536	21.10	13.4	549	.02	41.0	.07	10.2	539	.3978	.0330	.2998
2100	21.38	210.95	.25	+10.22	+495	21.26	14.4	509	.07	42.6	.25	12.1	497	.3668	.0917	.3915
15	21.56	219.00	.25	+ 8.05	+390	21.47	15.6	406	.01	44.7	.04	1.9	404	.2982	.0746	.4661
30	21.70	225.47	.25	+ 6.47	+313	21.63	16.3	329	.01	46.3	.04	1.9	327	.2414	.0604	.5265
45	21.81	230.70	.25	+ 5.23	+253	21.76	17.1	270					270	.1993	.0498	.5763
2200	21.89	234.58	.25	+ 3.88	+188	21.85	17.5	206					206	.1520	.0380	.6143
30	22.01	240.52	.5	+ 5.94	+144	21.95	18.0	162					162	.1196	.0598	.6741
2300	22.10	245.07	.5	+ 4.55	+110	22.06	18.5	128					128	.0945	.0472	.7213
2400	22.20	250.22	1	+ 5.15	+ 62.3	22.15	18.8	81.1					81.1	.0599	.0599	.7812
	June 9															
0100	22.27	253.90	1	+ 3.68	+ 44.5	22.24	19.3	63.8					63.8	.0471	.0471	.8283
0300	22.34	257.61	2	+ 3.71	+ 22.4	22.30	19.6	42.0					42.0	.0310	.0620	.8903
0600	22.35	258.14	3	+ .53	+ 2.1	22.34	19.8	21.9					21.9	.0162	.0486	.9389

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period June 8, 1975

08052630 Little Elm Creek subwatershed No. 10 near Gunter, Tex. D.A. 2.10 sq mi

Date and time	Gage height	Storage	Time int.	Change in storage		Mean G. Ht.	Outflow	Total inflow	Rainfall on Pool				Net Inflow			
									in	area ac	Storage ac-ft	Storage cfs	Rate cfs	Rate in/hr	in	Acc in
	ft	ac-ft	hrs	ac-ft	cfs	ft	cfs	cfs								
	June 9 (Continued)															
1200	22.27	253.90	6	- 4.24	- 8.6	22.31	19.6	11.0					11.0	.0081	.0486	.9875
1700	22.17	248.68	5	- 5.22	- 12.6	22.22	19.1	6.5					6.5	.0048	.0240	1.0115
1845	22.14	247.13	1.75	- 1.55	- 10.7	22.16	19.0	8.3	.19	516	.82	5.7	2.6	.0019	.0033	1.0148

TX-78 (Revised July 1969)

Sheet 1 of 1

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

Comp. by: JMT
Date 8/30/76
Check by DLH & RMS
Date 9/2/76

WEIGHTED PRECIPITATION RECORD

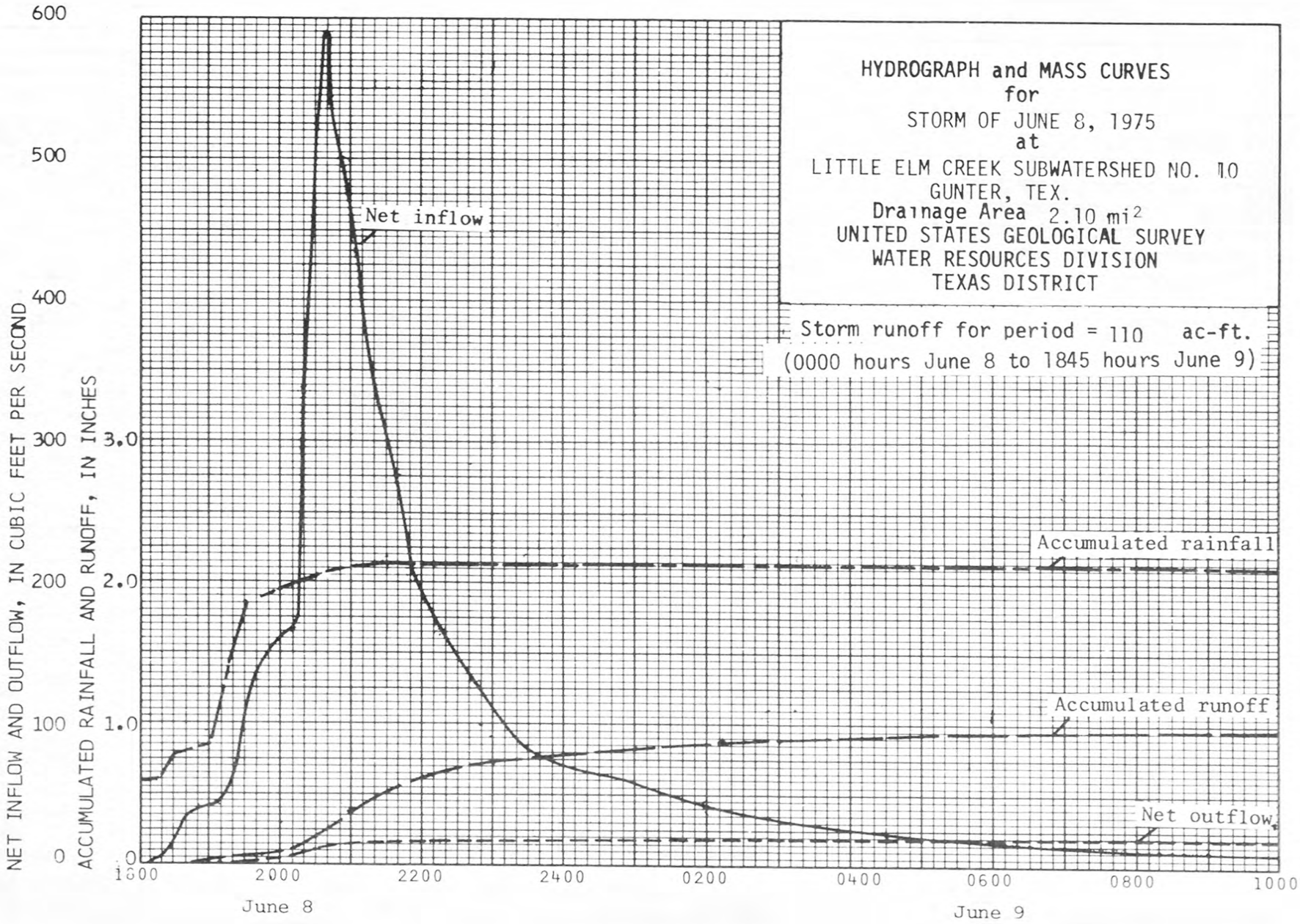
Study Area Little Elm Creek Subwatershed No. 10 near Gunter, Tex. Date of storm June 8, 1975

Weight Factor		1.000												Accumulated Weighted Precipitation	
		Accumulated Precipitation in Inches for Recording Rain Gages													
Date & Time	Gage	10-R Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Recording Gages All Gages	(Rec. Gages x K) All Gages
June 8															
0000		0													0
0100		0													0
30		.43													.43
0200		.51													.51
0300		.59													.59
1815		.59													.59
30		.77													.77
1900		.85													.85
15		1.39													1.39
30		1.86													1.86
2000		1.95													1.95
2100		2.11													2.11
30		2.13													2.13
2400		2.13													2.13

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
10-R	1.000										

WMR: 2.13

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


HYDROGRAPH and MASS CURVES
for
STORM OF JUNE 8, 1975
at
LITTLE ELM CREEK SUBWATERSHED NO. 10
GUNTER, TEX.
Drainage Area 2.10 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 110 ac-ft.
(0000 hours June 8 to 1845 hours June 9)
Net inflow
Accumulated rainfall
Accumulated runoff
Net outflow
NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
600
500
400
300
200
100
0
3.0
2.0
1.0
0
1800
2000
2200
2400
0200
0400
0600
0800
1000
June 8
June 9

TX-64
1-69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

Sheet 1 of 1

INFLOW AND OUTFLOW COMPUTATIONS

Storm period June 9-10, 1975

08052630 Little Elm Creek subwatershed No. 10 near Gunter, Tex. D.A. 2.10 sq mi

Date and time	Gage height	Storage	Time int.	Change in storage		Mean G. Ht.	Outflow	Total inflow	Rainfall on Pool				Net Inflow			
									in	area	Storage		Rate			Acc
	ft	ac-ft	hrs	ac-ft	cfs	ft	cfs	cfs		ac	ac-ft	cfs	cfs	in/hr	in	in
	June 9															
1845	22.14	247.13	1.75	-1.55	-10.7	22.16	19.0	8.3	.19	51.6	.82	5.7	2.6	.0019	.0033	—
1900	22.17	248.68	.25	+1.55	+75.0	22.16	19.0	94.0	.41	51.6	1.76	85.2	8.8	.0065	.0016	.0016
15	22.25	252.84	.25	+4.16	+201	22.21	19.1	220	.79	52.2	3.44	166	54.0	.0399	.0100	.0116
30	22.35	258.14	.25	+5.30	+257	22.30	19.6	279	.42	53.0	1.86	90.0	187	.1380	.0345	.0461
45	22.45	263.54	.25	+5.40	+261	22.40	20.1	281	.19	54.0	.86	41.6	239	.1764	.0441	.0902
2000	22.56	269.60	.25	+6.06	+293	22.50	20.5	314	.01	55.0	.05	2.4	312	.2303	.0576	.1478
15	22.67	275.78	.25	+6.18	+299	22.62	21.0	320					320	.2362	.0590	.2068
20	22.71	278.04	.083	+2.26	+328	22.69	21.3	349					349	.2576	.0214	.2282
25	22.76	280.92	.083	+2.88	+418	22.74	21.5	440					440	.3248	.0270	.2552
30	22.80	283.22	.083	+2.30	+334	22.78	21.6	356					356	.2628	.0218	.2770
45	22.90	289.07	.25	+5.85	+283	22.85	22.0	305					305	.2251	.0563	.3333
2100	22.98	293.83	.25	+4.76	+230	22.94	22.4	252					252	.1860	.0465	.3798
30	23.13	302.93	.5	+9.10	+220	23.06	22.8	243					243	.1794	.0897	.4695
2200	23.25	310.38	.5	+7.45	+180	23.19	23.3	203					203	.1498	.0749	.5444
2300	23.38	318.62	1	+8.24	+99.7	23.32	23.6	123					123	.0908	.0908	.6352
2400	23.44	322.50	1	+3.88	+46.9	23.41	24.0	70.9					70.9	.0523	.0523	.6875
	June 10															
0100	23.48	325.10	1	+2.60	+31.5	23.46	24.1	55.6					55.6	.0410	.0410	.7285
0500	23.54	329.04	4	+3.94	+11.9	23.51	24.3	36.2	.30	65.6	1.64	5.0	31.2	.0230	.0920	.8205
0900	23.55	329.70	4	+.66	+2.0	23.54	24.4	26.4					26.4	.0195	.0780	.8985
1300	23.53	328.38	4	-1.32	-4.0	23.54	24.4	20.4					20.4	.0151	.0604	.9589
1800	23.42	321.20	5	-7.18	-17.4	23.48	24.1	6.7					6.7	.0049	.0245	.9834
2400	23.28	312.26	6	-8.94	-18.0	23.35	23.8	5.8					5.8	.0043	.0258	1.0092

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

WEIGHTED PRECIPITATION RECORD

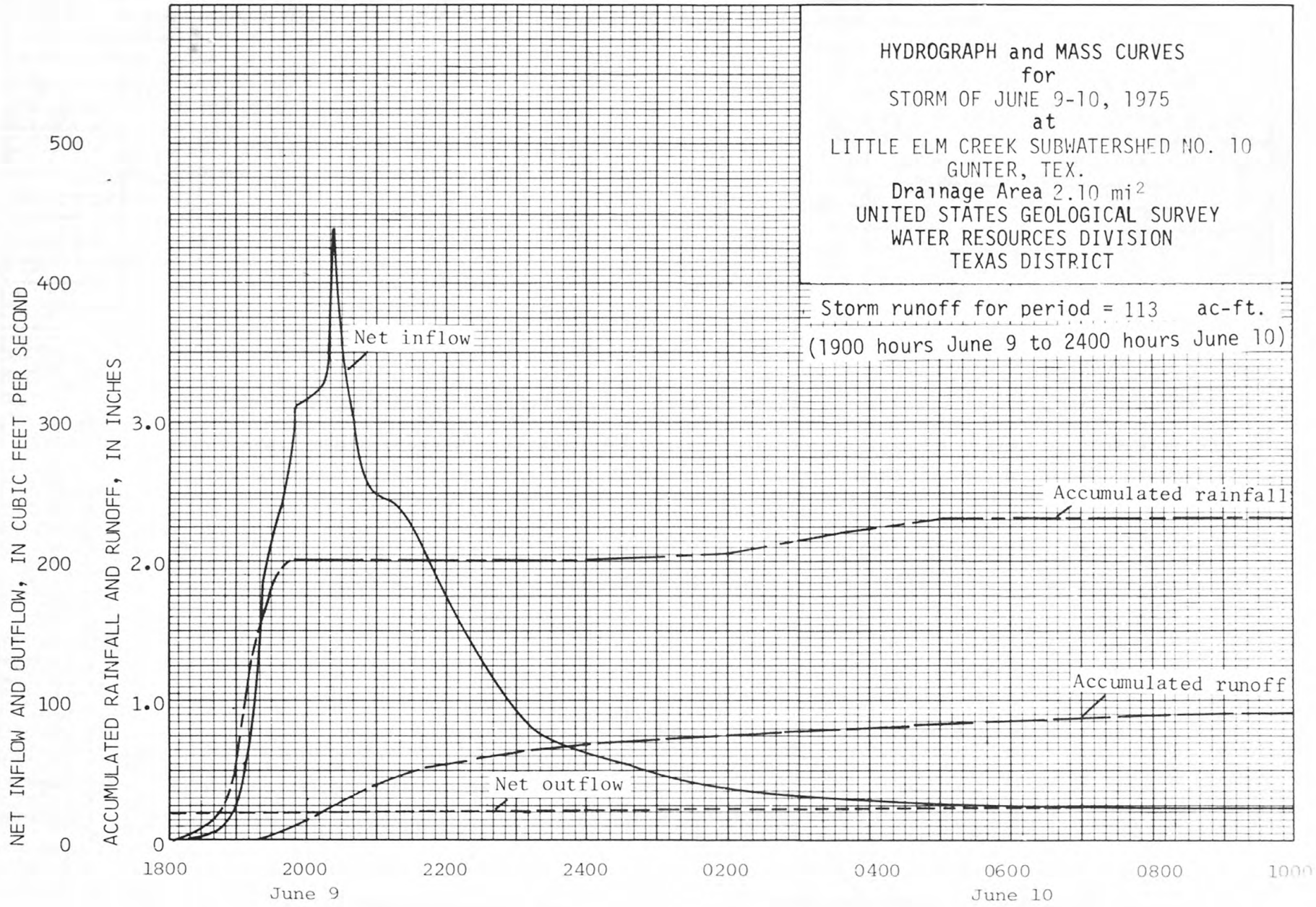
Sheet 1 of 1
Comp. by: JMT
Date 8/30/76
Check by RMS
Date

Study Area Little Elm Creek Subwatershed No. 10 near Gunter Tex. Date of storm June 9-10, 1975

Accumulated Precipitation in Inches for Recording Rain Gages													Accumulated Weighted Precipitation	
Weight Factor	1.000													
Date & Time	Gage 10-R Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Recording Gages All Gages	(Rec. Gages x K) All Gages
June 9														
0000	0													0
1700	0													0
1800	.04													.04
30	.10													.10
45	.19													.19
1900	.60													.60
15	1.39													1.39
30	1.81													1.81
45	2.00													2.00
2000	2.01													2.01
2400	2.01													2.01
June 10														
0200	2.04													2.04
0400	2.22													2.22
0500	2.31													2.31
2400	2.31													2.31

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
10-R	1.000										
										WMR:	2.31

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


HYDROGRAPH and MASS CURVES
for
STORM OF JUNE 9-10, 1975
at
LITTLE ELM CREEK SUBWATERSHED NO. 10
GUNTER, TEX.
Drainage Area 2.10 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 113 ac-ft.
(1900 hours June 9 to 2400 hours June 10)
Net inflow
Accumulated rainfall
Accumulated runoff
Net outflow
NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
0
100
200
300
400
500
1.0
2.0
3.0
1800
2000
2200
2400
0200
0400
0600
0800
1000
June 9
June 10

TX.-65 (Rev. 2-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Little Elm Creek near Celina Tex.

Period of Record October 30 - November 1, 1974 Drainage Area 46.7 sq mi.

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Discharge Inc.	Discharge In/Hr	Runoff Inches	Runoff Acc. In.
	October 30						
0000	3.98	0	31	6	.0010	.0060	.0060
1200	3.79		23	8.5	.0008	.0068	.0128
1700	3.74		21	4.5	.0007	.0032	.0160
2100	3.85		25	2.125	.0008	.0017	.0177
15	4.15		39	.25	.0013	.0003	.0180
30	4.87		82	.25	.0027	.0007	.0187
45	6.62		222	.25	.0074	.0018	.0205
2200	8.44		406	.25	.0135	.0034	.0239
15	9.56		635	.25	.0211	.0053	.0292
30	10.29		959	.25	.0318	.0080	.0372
45	10.82		1,370	.25	.0455	.0114	.0486
2300	11.28		1,830	.25	.0608	.0152	.0638
15	11.70		2,320	.25	.0770	.0192	.0830
30	12.00		2,730	.25	.0906	.0226	.1056
45	12.22		3,070	.25	.1019	.0255	.1311
2400	12.40	0	3,360	.125	.1116	.0140	.1451
	October 31						
0000	12.40	0	3,360	.25	.1116	.0279	.1730
30	12.70		3,920	.5	.1301	.0650	.2380
0100	13.01		4,560	.5	.1514	.0757	.3137
30	13.15		4,870	.425	.1617	.1011	.4148
0215	13.18		4,940	.75	.1640	.1230	.5378
0300	13.09		4,740	.875	.1574	.1377	.6755
0400	12.91		4,340	1	.1441	.1441	.8196
0500	12.02		4,360	1	.1448	.1448	.9644
0600	13.93	0	4,600	1	.1527	.1527	1.1171

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In
0700	13.01	0	4,560	1.5	.1514	.2271	1.3442
0900	12.62		3,760	2	.1248	.2496	1.5938
1100	12.29		3,180	2	.1056	.2112	1.8050
1300	11.81		2,460	2.5	.0817	.2042	2.0092
1600	11.21		1,760	3.5	.0584	.2044	2.2136
2000	10.73		1,290	4	.0428	.1712	2.3848
2400	10.35	0	999	2	.0332	.0664	2.4512
	November 1						
0000	10.35	0	999	3	.0332	.0996	2.5508
0600	9.98		799	6	.0265	.1590	2.7098
1200	9.76		706	6	.0234	.1404	2.8502
1800	9.62		652	6	.0216	.1296	2.9798
2400	9.52	0	624	3	.0207	.0621	3.0419

Computed by JMT Date 12/24/75 Checked by TRH, DLH Date 9/3/76

TX-78 (Revised July 1969)

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

WEIGHTED-PRECIPITATION RECORD

Sheet 1 of 2
Comp. by: JMT
Date 10/3/76
Check by DLH
Date 9/3/76

Study Area Little Elm Creek near Celina, Tex Date of storm October 30-31, 1974

Date & Time	Accumulated Precipitation in Inches for Recording Rain Gages												Accumulated Weighted Precipitation	
Weight Factor	Gage 2-R .45		Gage 6-R .13		Gage 10-R .42		Gage		Gage		Gage		Recording Gages	(Rec. Gages x K) All Gages
	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	All Gages	
October 30														
0000	0	0	0	0	0	0								
1200	0	0	0	0	0	0							0	0
30	0	0	.20	.03	0	0							.03	.03
1300	0	0	.20	.03	.12	.05							.08	.09
2000	0	0	.23	.03	.12	.05							.08	.09
15	0	0	1.18	.15	.12	.05							.20	.22
30	0	0	1.61	.21	.12	.05							.26	.29
45	0	0	2.18	.28	.24	.10							.38	.42
2100	0	0	2.46	.32	1.08	.45							.77	.85
15	0	0	2.89	.38	1.34	.56							.94	1.03
30	0	0	3.33	.43	2.10	.88							1.31	1.44
45	.04	.02	3.58	.47	2.29	.96							1.45	1.59
2200	.28	.13	3.60	.47	2.97	1.25							1.85	2.03
15	.30	.14	3.83	.50	3.39	1.42							2.06	2.26
30	.56	.25	4.05	.53	3.57	1.50							2.28	2.51
45	.80	.36	4.16	.54	3.58	1.50							2.40	2.64
2300	.83	.37	4.46	.58	3.88	1.63							2.58	2.84
15	1.00	.45	4.65	.60	4.06	1.71							2.76	3.03
30	1.31	.59	4.74	.62	4.12	1.73							2.94	3.23
45	1.59	.72	4.75	.62	4.35	1.83							3.17	3.48
2400	1.60	.72	4.76	.62	4.60	1.93							3.27	3.59
October 31														
0100	1.63	.73	4.77	.62	4.78	2.01							3.36	3.69
0200	1.69	.76	4.96	.64	4.82	2.02							3.42	3.76

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
1-S	.16	6.57	1.05	7-S	.02	5.04	.10				
2-R	.13	3.82	.50	10-R	.12	6.99	.84				
3-S	.20	6.42	1.28								
4-S	.14	6.77	.95								
5-S	.19	5.86	1.11								
6-R	.04	6.91	.28								
										WMR	6.11

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation 6.11 / 5.56 = 1.099

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

WEIGHTED-PRECIPITATION RECORD

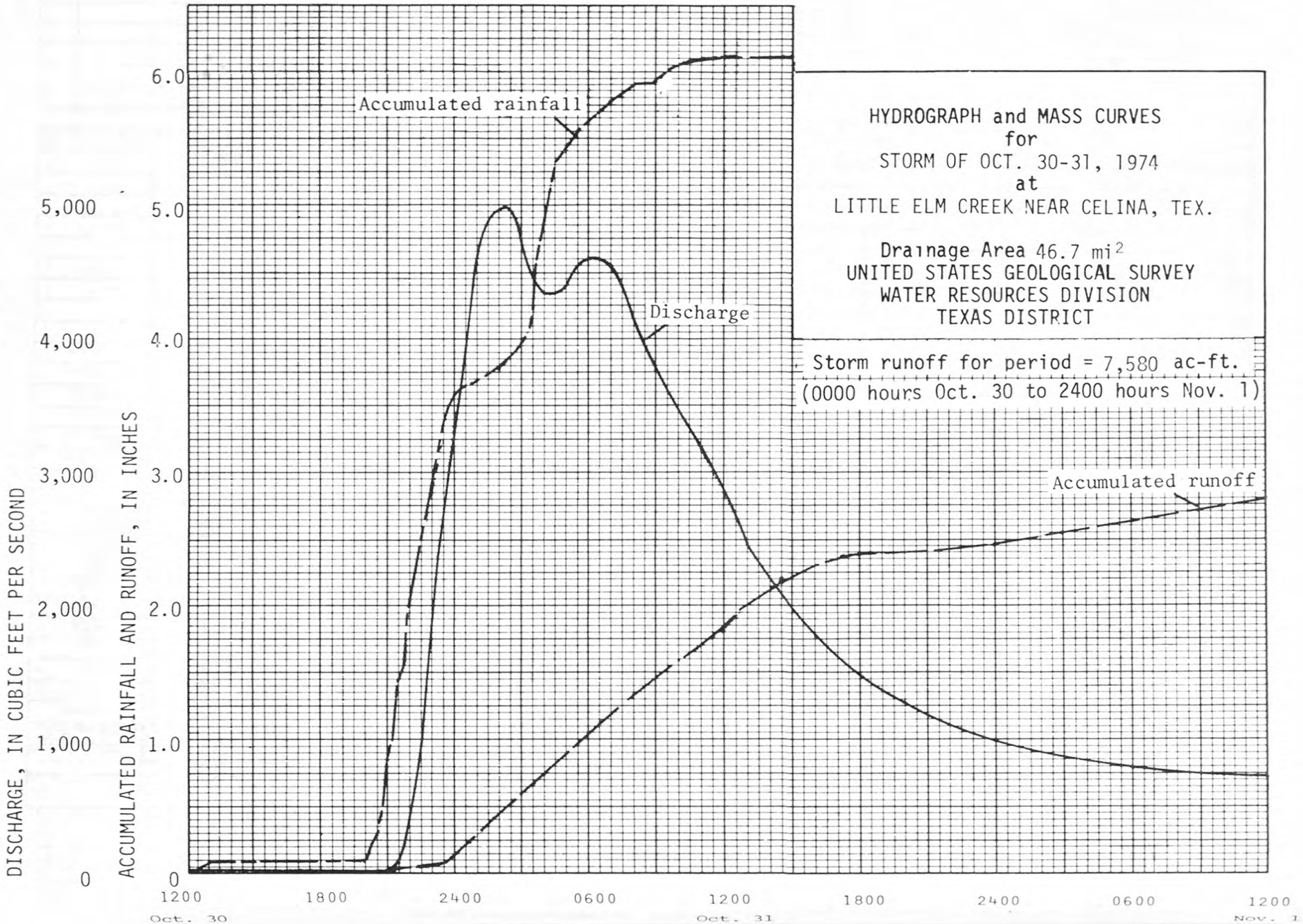
Sheet ___ of ___
Comp. by: JMT
Date 10/3/76
Check by DLH
Date 9/3/76

Study Area Little Elm Creek near Celina, Tex Date of storm October 30-31, 1974

Accumulated Precipitation in Inches for Recording Rain Gages													Accumulated Weighted Precipitation	
Weight Factor	.45		.13		.42									
	Gage 2-R		Gage 6R		Gage 10-R		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
October 31 continued														
0300	1.90	.86	5.22	.68	4.99	2.10							3.64	4.00
15	1.96	.88	5.35	.70	5.01	2.10							3.68	4.04
30	2.26	1.02	5.96	.77	5.05	2.12							3.91	4.30
45	2.82	1.27	6.05	.79	5.24	2.20							4.26	4.68
0400	3.11	1.40	6.07	.79	5.36	2.25							4.44	4.88
30	3.17	1.43	6.19	.80	6.22	2.61							4.84	5.32
0500	3.31	1.49	6.32	.82	6.29	2.64							4.95	5.44
30	3.38	1.52	6.40	.83	6.43	2.70							5.05	5.55
0600	3.42	1.54	6.48	.84	6.49	2.73							5.11	5.62
30	3.54	1.59	6.63	.86	6.53	2.74							5.19	5.70
0700	3.61	1.62	6.67	.87	6.62	2.78							5.27	5.79
0800	3.66	1.65	6.70	.87	6.79	2.85							5.37	5.90
0900	3.66	1.65	6.75	.88	6.81	2.86							5.39	5.92
1000	3.78	1.70	6.91	.90	6.97	2.93							5.53	6.08
1100	3.82	1.72	6.91	.90	6.98	2.93							5.55	6.10
1300	3.82	1.72	6.91	.90	6.99	2.94							5.56	6.11
1400	3.82	1.72	6.91	.90	6.99	2.94							5.56	6.11
2400	3.82	1.72	6.91	.90	6.99	2.94							5.56	6.11

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 OCT. 30-31, 1974
at
LITTLE ELM CREEK NEAR CELINA, TEX.
Drainage Area 46.7 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 7,580 ac-ft.
(0000 hours Oct. 30 to 2400 hours Nov. 1)
Accumulated rainfall
Discharge
Accumulated runoff
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
0
1,000
2,000
3,000
4,000
5,000
1.0
2.0
3.0
4.0
5.0
6.0
1200
1800
2400
0600
1200
1800
2400
0600
1200
Oct. 30
Oct. 31
Nov. 1

TX-65 (Rev. 2-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Little Elm Creek near Celina, Tex.

Period of Record April 7-9, 1975 Drainage Area 46.7 sq mi

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Discharge Inc.	Discharge In/Hr	Runoff Inches	Runoff Acc. In.
	April 7						
0000	3.10	-.24	1.9	5.5	.0001	.0006	.0006
1100	3.20		3.0	6	.0001	.0006	.0012
1200	3.26		3.8	.75	.0001	.0001	.0013
30	3.32		4.7	.5	.0002	.0001	.0014
1300	3.61	-.24	10	.5	.0003	.0002	.0016
30	3.85	-.20	18	.5	.0006	.0003	.0019
1400	3.94	-.18	22	.75	.0007	.0005	.0024
1500	4.05	-.16	27	.75	.0009	.0007	.0031
30	4.24	-.13	37	.5	.0012	.0006	.0037
1600	4.78	-.02	74	.375	.0025	.0009	.0046
15	5.28	0	113	.25	.0038	.0010	.0056
30	5.88		161	.25	.0053	.0013	.0069
45	6.46		208		.0069	.0017	.0086
1700	7.06		261		.0087	.0022	.0108
15	7.56		310		.0103	.0026	.0134
30	8.03		359		.0119	.0030	.0164
45	8.34		393	.25	.0130	.0032	.0196
1800	8.62		435	.375	.0144	.0054	.0250
30	8.90		482	.5	.0160	.0080	.0330
1900	9.03		507	1	.0168	.0168	.0498
2030	9.08		518	1.5	.0172	.0258	.0756
2200	8.88		479	1.25	.0159	.0199	.0955
2300	8.56		425	1	.0141	.0141	.1096
2400	9.58	0	640	.5	.0212	.0106	.1202

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In
	April 8						
0000	9.58	0	640	.25	.0212	.0053	.1255
30	9.92		773	.5	.0257	.0128	.1383
0100	10.40		1,030	.75	.0342	.0256	.1639
0200	10.94		1,480	1	.0491	.0491	.2130
0300	11.24		1,790	1	.0594	.0594	.2724
0400	11.41		1,970	1	.0654	.0654	.3378
0500	11.35		1,900	1.5	.0631	.0946	.4324
0700	11.02		1,560	2	.0518	.1036	.5360
0900	10.46		1,080	2	.0359	.0718	.6078
1100	9.97		795	2.5	.0264	.0660	.6738
1400	9.38		589	3	.0196	.0588	.7326
1700	8.92		486	3	.0161	.0483	.7809
2000	8.56		425	3.5	.0141	.0494	.8303
2400	8.04	0	360	2	.0120	.0240	.8543
	April 9						
0000	8.04	0	360	3	.0120	.0360	.8903
0600	7.63		317	6	.0105	.0630	.9533
1200	7.46		300	6	.0100	.0600	1.0133
1800	7.36		290	6	.0096	.0576	1.0709
2400	7.08	0	263	3	.0087	.0261	1.0970

Computed by JMT Date 12/24/75 Checked by TRH DLH Date 9/7/76

TX-78 (Revised July 1969)

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

WEIGHTED-PRECIPITATION RECORD

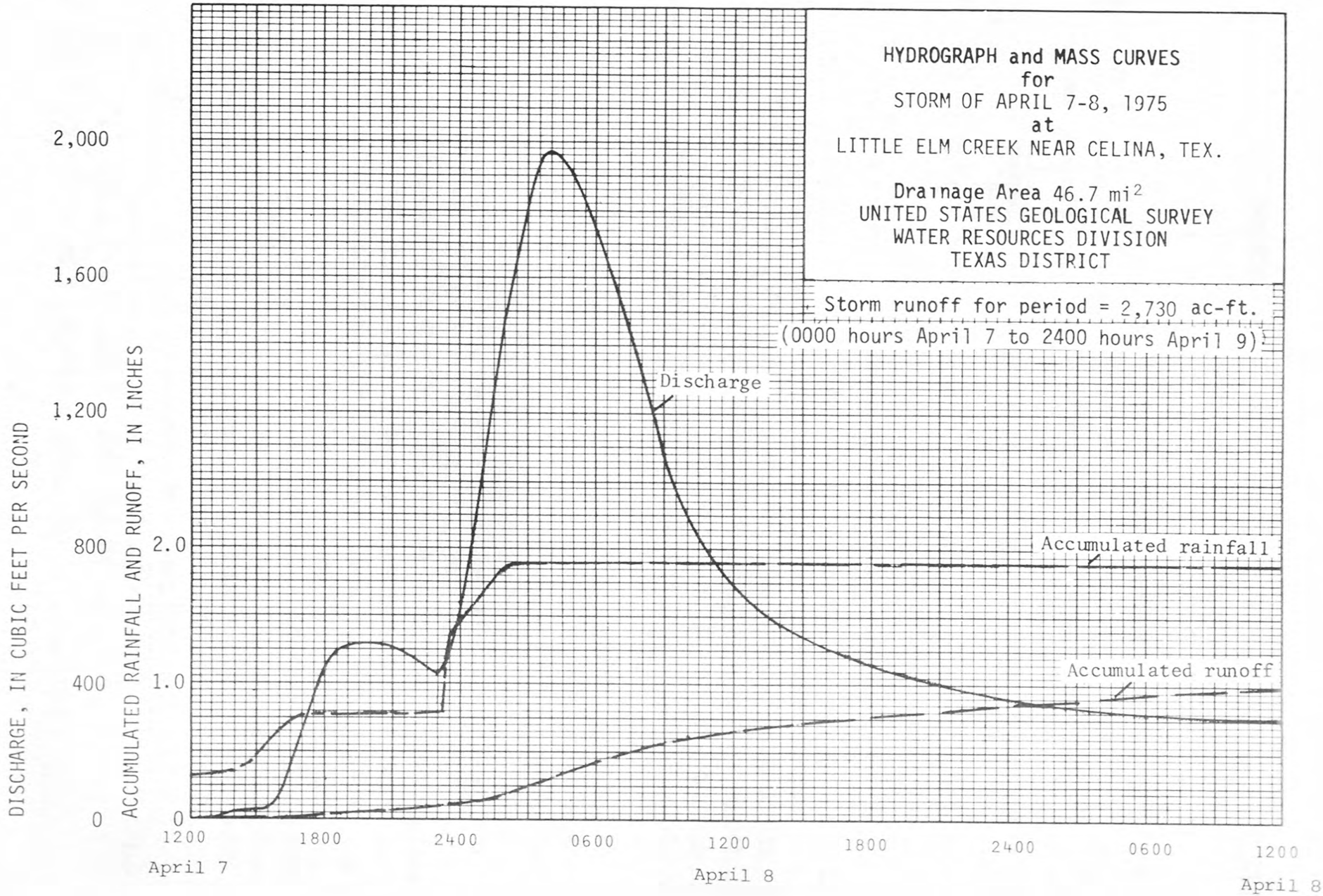
Sheet 1 of 1
Comp. by JMT
Date 9/3/76
Check by DLH
Date 9/7/76

Study Area Little Elm Creek near Celina, Tex Date of storm April 7-8, 1975

Weight Factor		.45		.13		.42								Accumulated Weighted Precipitation	
		Gage 2-R		Gage 6-R		Gage 10-R		Gage		Gage		Gage		Accumulated Precipitation in Inches for Recording Rain Gages	
Date & Time		Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recording Gages	(Rec. Gages x K) All Gages
April 7															
0000		0	0	0	0	0	0							0	0
0400		0	0	0	0	0	0							0	0
0600		.05	.02	.08	.01	.06	.03							.06	.06
1000		.13	.06	.28	.04	.10	.04							.14	.13
1200		.27	.12	.31	.04	.41	.17							.33	.31
1400		.30	.14	.47	.06	.41	.17							.37	.35
1500		.37	.17	.67	.09	.58	.24							.50	.47
1600		.63	.28	.76	.10	.78	.33							.71	.66
1700		.76	.34	.76	.10	.96	.40							.84	.79
2300		.76	.34	.76	.10	.96	.40							.84	.79
	15	1.00	.45	1.16	.15	1.58	.66							1.26	1.18
	30	1.27	.57	1.40	.18	1.66	.70							1.45	1.36
	45	1.36	.61	1.47	.19	1.72	.72							1.52	1.42
2400		1.41	.63	1.53	.20	1.78	.75							1.58	1.48
April 8															
	15	1.45	.65	1.56	.20	1.86	.78							1.63	1.52
	30	1.49	.67	1.59	.21	1.90	.80							1.68	1.57
0100		1.61	.72	1.73	.22	2.05	.86							1.80	1.68
0200		1.78	.80	1.90	.25	2.21	.93							1.98	1.85
0300		1.81	.81	1.94	.25	2.26	.95							2.01	1.88
2400		1.81	.81	1.94	.25	2.26	.95							2.01	1.88

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
1-S	.16	1.70	.27	7-S	.02	1.89	.04				
2-R	.13	1.81	.24	10-R	.12	2.26	.27				
3-S	.20	1.75	.35								
4-S	.14	2.01	.28								
5-S	.19	1.86	.35								
6-R	.04	1.94	.08								
WMR	Sum of Precipitation x Weight Factor		1.97	WMR	Sum of Precipitation x Weight Factor		.31	WMR	Sum of Precipitation x Weight Factor		1.88

WMR = Weighted mean rainfall for recording rain gages = Weighted precipitation 1.88 / Sum of weight factors 1.97 = .95


HYDROGRAPH and MASS CURVES
for
STORM OF APRIL 7-8, 1975
at
LITTLE ELM CREEK NEAR CELINA, TEX.
Drainage Area 46.7 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 2,730 ac-ft.
(0000 hours April 7 to 2400 hours April 9)
Discharge
Accumulated rainfall
Accumulated runoff
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
2,000
1,600
1,200
800
400
0
2.0
1.0
0
1200
1800
2400
0600
1200
1800
2400
0600
1200
April 7
April 8
April 8

TX-65 (Rev. 2-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Little Elm Creek near Celina Tex.

Period of Record May 29-30-1975 Drainage Area 46.7 59 mi

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Discharge Inc.	Discharge In/Hr	Runoff Inches	Runoff Acc. In.
	May 29						
0000	3.35	-.24	5.2	1	.0002	.0002	.0002
0200	3.43		6.6	2	.0002	.0004	.0006
0400	3.50		8.0	2	.0003	.0006	.0012
0600	3.55		9.0	2.5	.0003	.0008	.0020
0900	3.62		10	.625	.0003	.0005	.0025
15	3.63	-.24	11	.25	.0004	.0001	.0026
30	3.75	-.22	14		.0005	.0001	.0027
45	3.86	-.20	18		.0006	.0002	.0029
1000	4.06	-.16	27		.0009	.0002	.0031
15	4.79	-.02	75		.0025	.0006	.0037
30	6.11	0	180		.0060	.0015	.0052
45	7.68		322		.0107	.0027	.0079
1100	8.66		442		.0147	.0037	.0116
15	9.41		596		.0198	.0050	.0166
30	9.89		760		.0252	.0063	.0229
45	10.13		867	.25	.0288	.0072	.0301
1200	10.29		959	.375	.0318	.0119	.0420
30	10.49		1,100	.5	.0365	.0182	.0602
1300	10.58		1,170	.5	.0388	.0194	.0796
30	10.56		1,150	.5	.0382	.0191	.0987
1400	10.47		1,080	.75	.0359	.0269	.1256
1500	10.37		1,010	1.5	.0335	.0502	.1758
1700	10.22		912	2	.0303	.0606	.2364
1900	9.87		752	2	.0250	.0500	.2864
2100	9.37		587	1.5	.0195	.0292	.3156
2200	9.04		509	1	.0169	.0169	.3325
2300	8.66	0	442	1	.0147	.0147	.3472
2400	8.24	0	382	.5	.0127	.0064	.3536
	May 30						
0000	8.24	0	382	.25	.0127	.0032	.3568
30	8.28		387	.5	.0128	.0064	.3632
0100	8.93		488	.5	.0162	.0081	.3713
30	9.60		645	.5	.0214	.0107	.3820
0200	9.93		777	.625	.0258	.0161	.3981
45	10.08		844	1	.0280	.0280	.4261
0400	10.00		808	1.125	.0268	.0302	.4563
0500	9.97		795	1	.0264	.0264	.4827
0600	9.92		773	1	.0257	.0257	.5084
0700	9.77		711	1.5	.0236	.0354	.5438
0900	9.36		584	2	.0194	.0388	.5826
1100	8.86		476	2	.0158	.0316	.6142
1300	8.20		378	2	.0125	.0250	.6392
1500	7.66		320	2.5	.0106	.0265	.6657
1800	7.22		276	3	.0092	.0276	.6933
2100	6.99		255	3	.0085	.0255	.7188
2400	6.83	0	240	1.5	.0080	.0120	.7308

Computed by JMT Date 1/5/76 Checked by DCH Date 9/7/76

TX-78 (Revised July 1969)

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

WEIGHTED-PRECIPITATION RECORD

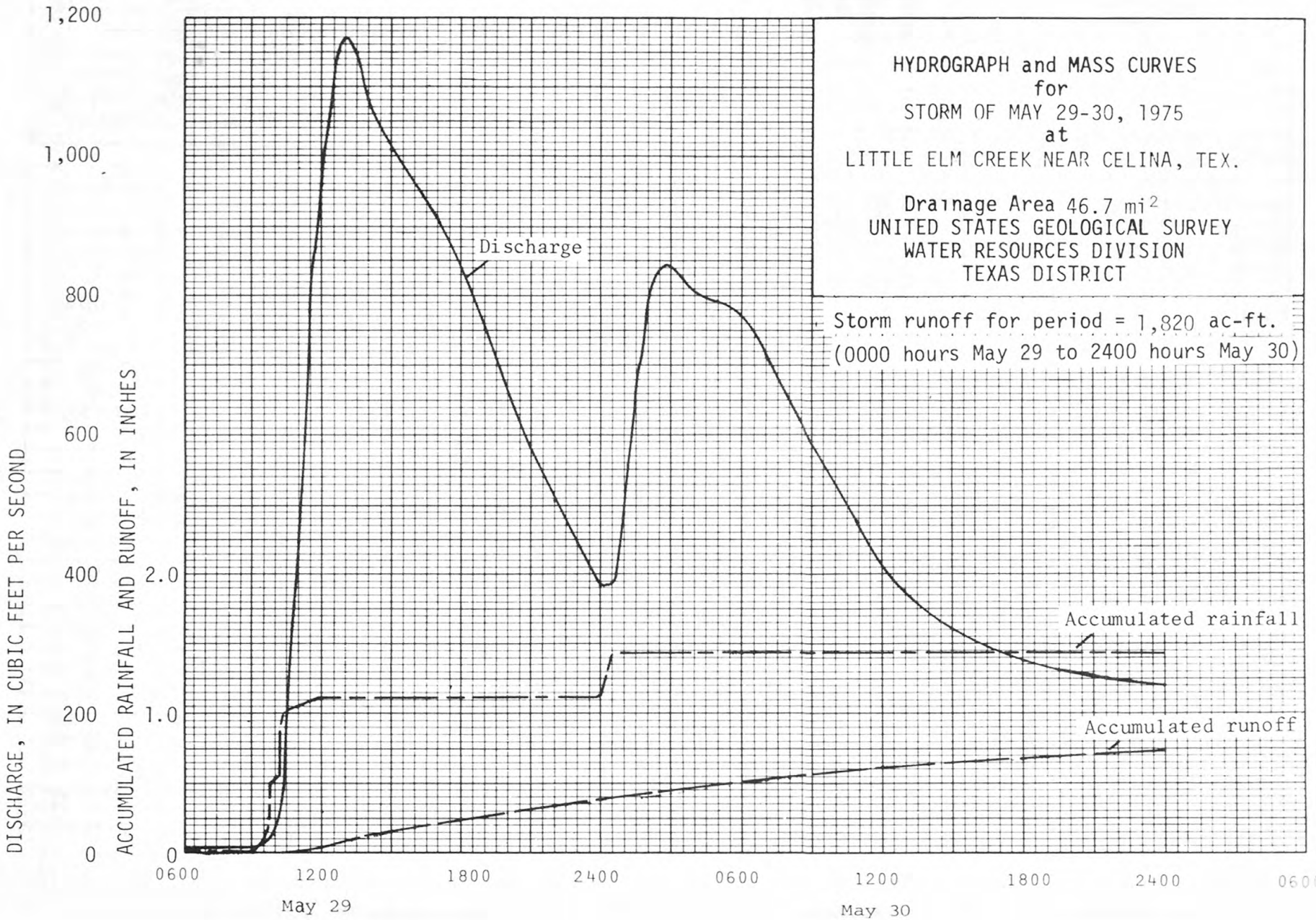
Comp. by: JHW
Date 9/3/76
Check by DLH
Date 9/7/76

Study Area Little Elm Creek near Celina, Tex. Date of storm May 29-30, 1975

	Accumulated Precipitation in Inches for Recording Rain Gages												Accumulated Weighted Precipitation	
Weight Factor	.45		.13		.42									
	Gage 2-R		Gage 6-R		Gage 10-R		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
May 29														
0000	0	0	0	0	0	0							0	0
0900	0	0	0	0	0	0							0	0
15	.02	.01	0	0	0	0							.01	.01
30	.07	.03	.17	.02	0	0							.05	.06
45	.55	.25	.61	.08	.19	.08							.41	.48
1000	.61	.27	.62	.08	.22	.09							.44	.52
15	.82	.37	.97	.13	.27	.11							.61	.71
30	.90	.40	1.36	.18	.59	.25							.83	.97
1100	.95	.43	1.38	.18	.62	.26							.87	1.02
30	1.00	.45	1.45	.19	.65	.27							.91	1.07
1200	1.01	.46	1.52	.20	.72	.30							.95	1.11
2400	1.01		1.52	.20	.72	.30							.96	1.11
May 30														
15	1.11	.50	1.83	.24	.72	.30							1.04	1.22
30	1.25	.56	2.17	.28	.86	.36							1.20	1.41
45	1.26	.57	2.17	.28	.88	.37							1.22	1.43
0100	1.26	.57	2.17	.28	.88	.37							1.22	1.43
2400	1.26	.57	2.17	.28	.88	.37							1.22	1.43

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
1-S	.16	1.18	.19	7-S	.02	2.19	.04				
2-R	.13	1.26	.16	10-R	.12	.88	.11				
3-S	.20	1.50	.30								
4-S	.14	1.51	.21								
5-S	.19	1.73	.33								
6-R	.04	2.17	.09							WMR	1.43

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 1.43 / 1.22 = 1.172


HYDROGRAPH and MASS CURVES
for
STORM OF MAY 29-30, 1975
at
LITTLE ELM CREEK NEAR CELINA, TEX.
Drainage Area 46.7 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 1,820 ac-ft.
(0000 hours May 29 to 2400 hours May 30)
Discharge
Accumulated rainfall
Accumulated runoff
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
1,200
1,000
800
600
400
200
0
2.0
1.0
0
0600
1200
1800
2400
0600
1200
1800
2400
0600
May 29
May 30

TX-65 (Rev. 2-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Little Elm Creek near Celina, Tex.

Period of Record June 8-12, 1975 Drainage Area 46.7 mi²

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Discharge Inc.	Discharge In/Hr	Runoff Inches	Runoff Acc. In.
	June 8, 1975						
0000	3.09	-.24	1.8	.5	.0001	.0000	.0000
0100	3.13		2.2	1	.0001	.0001	.0001
0200	3.25		3.7	1	.0001	.0001	.0002
0300	3.34		5.0	1.5	.0002	.0003	.0005
0500	3.30		4.4	2	.0001	.0002	.0007
0700	3.38		5.7	1.5	.0002	.0003	.0010
0800	3.54	-.24	8.8	.75	.0003	.0003	.0012
30	3.80	-.21	16	.5	.0005	.0005	.0014
0900	3.95	-.18	22	1.25	.0007	.0007	.0023
1100	4.19	-.14	34	3	.0011	.0011	.0056
1500	3.85	-.20	18	3.5	.0006	.0006	.0077
1800	3.68	-.23	12	1.75	.0004	.0004	.0084
30	3.68	-.23	12	.375	.0004	.0004	.0086
45	3.83	-.21	17	.25	.0006	.0006	.0088
1900	4.75	-.03	72	.25	.0024	.0024	.0094
15	6.54	0	215	.25	.0071	.0071	.0112
30	8.15		372	.25	.0124	.0124	.0143
45	9.10		522	.25	.0173	.0173	.0186
2000	9.95		786	.375	.0261	.0261	.0284
30	10.70		1,270	.5	.0422	.0422	.0495
2100	11.22		1,770	.5	.0588	.0588	.0789
30	11.83		2,490	.5	.0827	.0827	.1203
2200	12.25		3,110	.75	.1033	.1033	.1978
2300	12.33		3,250	1	.1079	.1079	.3057
2400	12.32	0	3,230	.5	.1072	.1072	.3593

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In
	June 9, 1975						
0000	12.32	0	3,230	.5	.1072	.0536	.4129
0100	12.27		3,150	1.5	.1046	.1569	.5698
0300	11.72		2,340	2	.0777	.1554	.7252
0500	10.84		1,390	2	.0461	.0922	.8174
0700	10.27		945	2	.0314	.0628	.8802
0900	9.89		760	2.5	.0252	.0630	.9432
1200	9.64		660	4.5	.0219	.0986	1.0418
1800	9.19		543	3.25	.0180	.0585	1.1003
30	9.35		582	.5	.0193	.0096	1.1099
1900	9.86		748	.5	.0248	.0124	1.1223
30	10.33		986	.5	.0327	.0164	1.1387
2000	10.68		1,250	.75	.0415	.0311	1.1698
2100	11.12		1,660	1	.0551	.0551	1.2249
2200	11.32		1,870	1	.0621	.0621	1.2870
2300	11.37		1,930	1	.0641	.0641	1.3511
2400	11.38	0	1,940	.5	.0644	.0322	1.3833
	June 10, 1975						
0000	11.38	0	1,940	1	.0644	.0644	1.4477
0200	11.24		1,790	3	.0594	.1782	1.6259
0600	10.55		1,140	5	.0378	.1890	1.8149
1200	10.03		821	6	.0273	.1638	1.9787
1800	9.55		632	6	.0210	.1260	2.1047
2400	9.29	0	567	3	.0188	.0564	2.1611

Computed by JMT Date 1/5/76 Checked by TRH Date 1/19/76

TX-65 (Rev. 2-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Little Elm Creek near Celina, Tex

Period of Record June 8-12, 1975 Drainage Area 46.7 mi^2

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft^3/s	Discharge Inc.	Discharge In/Hr	Runoff Inches	Runoff Acc. In.
	June 11, 1975						
0000	9.29	0	567	3	.0188	.0564	2.2125
0600	9.14		532	6	.0177	.1062	2.3237
1200	8.87		477	6	.0158	.0948	2.4185
1800	8.62		435	6	.0144	.0864	2.5049
2400	8.51	0	417	3	.0138	.0414	2.5463
	June 12, 1975						
0000	8.51	0	417	6	.0138	.0828	2.6291
1200	8.35		394	12	.0131	.1572	2.7863
2400	8.22	0	380	6	.0126	.0756	2.8619

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft^3/s	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In

Computed by JMT Date 11/5/76 Checked by TRH Date 11/19/76

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

WEIGHTED-PRECIPITATION RECORD

Comp. by: [illegible]
Date 9/3/76
Check by DLH & RMS
Date

Study Area Little Elm Creek near Celina, Tex Date of storm June 8-10, 1975

Weight Factor		.45		.13		.42								Accumulated Weighted Precipitation	
		Gage 2-R		Gage 6-R		Gage 10-R		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
June 8															
0000		0	0	0	0	0	0							0	0
0100		0	0	0	0	0	0							0	0
15		.12	.05	0	0	.21	.09							.14	.15
30		.47	.21	.28	.04	.43	.18							.43	.45
45		.66	.30	.51	.07	.48	.20							.57	.60
0200		.67	.30	.66	.09	.51	.21							.60	.63
15		.68	.31	.70	.09	.52	.22							.62	.65
30		.68	.31	.73	.09	.54	.23							.63	.66
0300		.73	.33	.76	.10	.59	.25							.68	.71
30		.74	.33	.79	.10	.59	.25							.68	.71
1800		.74	.33	.79	.10	.59	.25							.68	.71
15		.81	.36	.79	.10	.59	.25							.71	.74
30		1.94	.87	.79	.10	.77	.32							1.29	1.35
45		2.82	1.27	.79	.10	.79	.33							1.70	1.78
1900		3.55	1.60	.79	.10	.85	.36							2.06	2.15
15		4.19	1.89	.79	.10	1.39	.58							2.57	2.69
30		4.55	2.05	1.56	.20	1.86	.78							3.03	3.17
45		4.74	2.13	1.80	.23	1.89	.79							3.15	3.29
2000		4.75	2.14	1.85	.24	1.95	.82							3.20	3.35
30		4.80	2.16	1.90	.25	2.02	.85							3.26	3.41
2100		4.88	2.20	1.99	.26	2.11	.89							335	3.50
2200		4.90	2.20	2.01	.26	2.13	.89							3.35	3.50
2400		4.90	2.20	2.01	.26	2.13	.89							3.35	3.50
														3.35	3.50
June 9															
0000		4.90	2.20	2.01	.26	2.13	.89							3.35	3.50
1700		4.90	2.20	2.01	.26	2.13	.89							3.35	3.50

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
1-S	.16	6.17	.99	7-S	.02	2.99	.06				
2-R	.13	6.40	.83	10-R	.12	4.44	.53				
3-S	.20	6.34	1.27								
4-S	.14	5.55	.78								
5-S	.19	4.53	.86								
6-R	.04	3.77	.15							WMR:	5.47

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 5.47 / 5.23 = 1.046

TX-78 (Revised July 1969)

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

WEIGHTED-PRECIPITATION RECORD

Sheet 2 of 2
Comp. by: JMT
Date 9/3/76
Check by DLH & RMS
Date

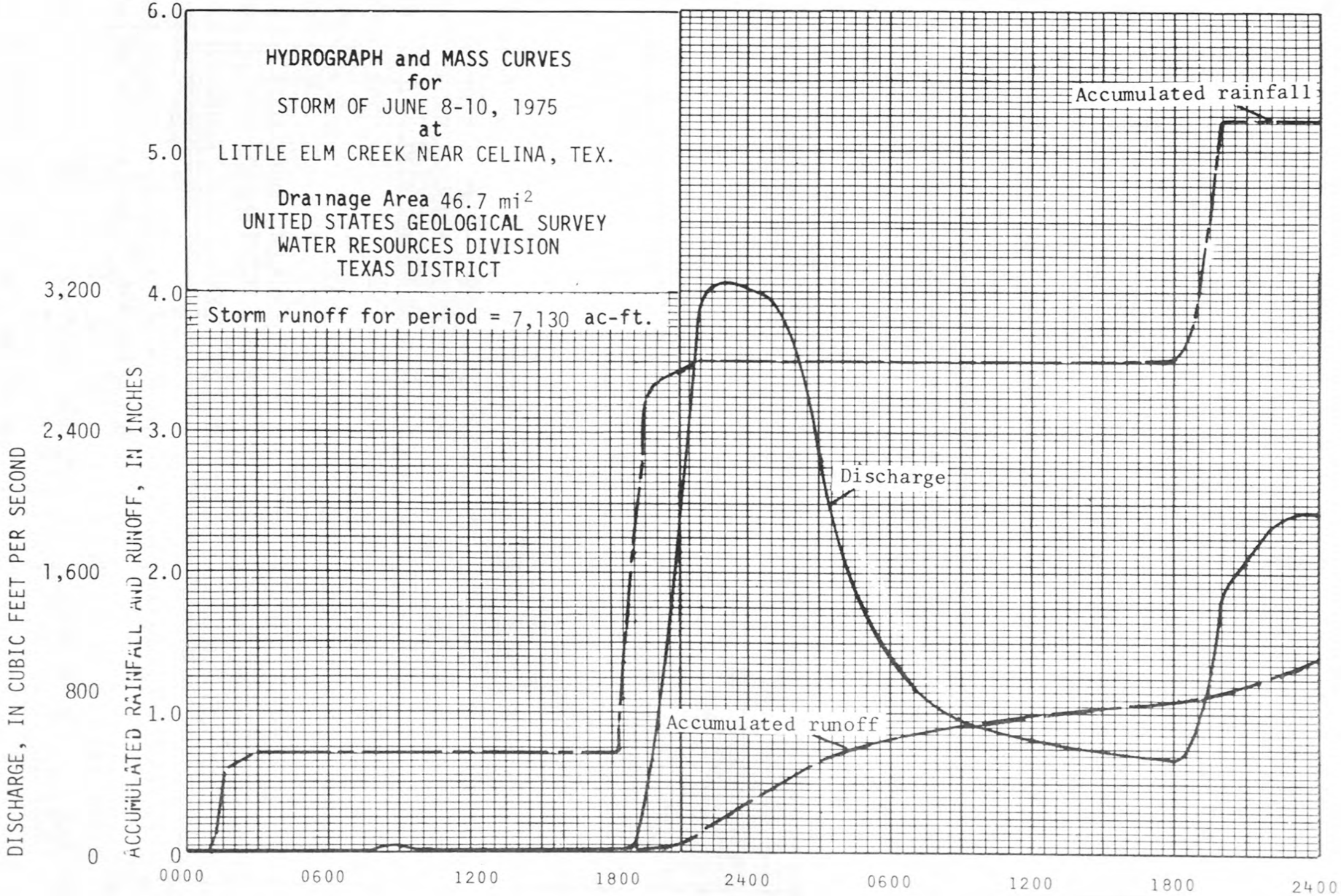
Study Area Little Elm Creek near Celina, Tex

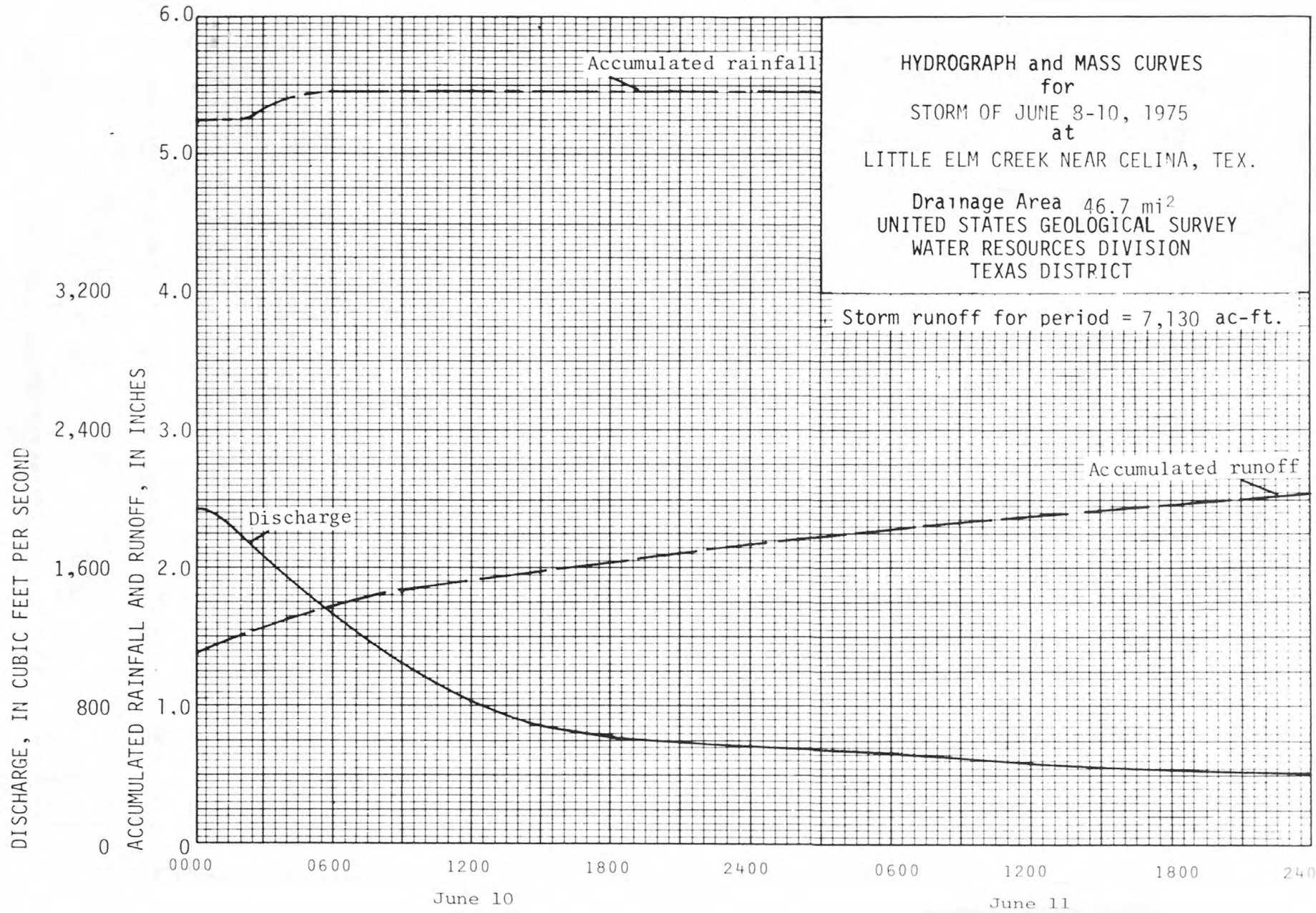
Date of storm June 8-10, 1975

Weight Factor			.45		.13		.42								Accumulated Weighted Precipitation	
	Accumulated Precipitation in Inches for Recording Rain Gages															
Date & Time	Gage 2-R Recorded	x Factor	Gage 6-R Recorded	x Factor	Gage 10-R Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Recording Gages	(Rec. Gages x K) All Gages	All Gages	
June 9 continued																
1800	4.90	2.20	2.01	.26	2.17	.91							3.37	3.53		
15	4.90	2.20	2.21	.29	2.20	.92							3.41	3.57		
30	4.91	2.21	2.81	.37	2.23	.94							3.52	3.68		
45	4.97	2.24	3.01	.39	2.32	.97							3.60	3.77		
1900	5.01	2.25	3.25	.42	2.73	1.15							3.82	4.00		
15	5.08	2.29	3.26	.42	3.52	1.48							4.19	4.38		
30	5.14	2.31	3.31	.43	3.94	1.65							4.39	4.59		
45	5.84	2.63	3.50	.46	4.13	1.73							4.82	5.04		
2000	6.20	2.79	3.51	.46	4.14	1.74							4.99	5.22		
15	6.21	2.79	3.51	.46	4.14	1.74							4.99	5.22		
30	6.21	2.79	3.51										4.99	5.22		
2400	6.21	2.79	3.51	.46	4.14	1.74							4.99	5.22		
													4.99	5.22		
June 10																
0000	6.21	2.79	3.51	.46	4.14	1.74							4.99	5.22		
0200	6.25	2.81	3.59	.46	4.17	1.75							5.02	5.25		
0400	6.36	2.86	3.75	.49	4.35	1.83							5.18	5.42		
0600	6.40	2.88	3.77	.49	4.44	1.86							5.23	5.47		
2400	6.40	2.88	3.77	.49	4.44	1.86							5.23	5.47		

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

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


HYDROGRAPH and MASS CURVES
for
STORM OF JUNE 8-10, 1975
at
LITTLE ELM CREEK NEAR CELINA, TEX.
Drainage Area 46.7 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 7,130 ac-ft.
Accumulated rainfall
Discharge
Accumulated runoff
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
3,200
2,400
1,600
800
0
6.0
5.0
4.0
3.0
2.0
1.0
0
0000
0600
1200
1800
2400
0600
1200
1800
2400
June 8
June 9


HYDROGRAPH and MASS CURVES
for
STORM OF JUNE 8-10, 1975
at
LITTLE ELM CREEK NEAR CELINA, TEX.
Drainage Area 46.7 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 7,130 ac-ft.
Accumulated rainfall
Accumulated runoff
Discharge
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
3,200
2,400
1,600
800
0
6.0
5.0
4.0
3.0
2.0
1.0
0
0000
0600
1200
1800
2400
0600
1200
1800
2400
June 10
June 11

TX-65 (Rev. 2-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Little Elm Creek near Aubrey Tex.

Period of Record October 30 to November 2, 1974 Drainage Area 75.5 mi²

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Discharge Inc.	Discharge In/Hr	Runoff Inches	Runoff Acc. In.
	October 30						
0000	7.42	-.65	52	6	.0011	.0066	.0066
1200	7.13	-.79	36	8	.0007	.0056	.0122
1600	7.25	-.73	43	4.25	.0009	.0038	.0160
2030	7.25	-.73	43	2.5	.0009	.0022	.0182
2100	7.28	-.72	44	.5	.0009	.0004	.0186
30	8.20	-.26	106	.375	.0022	.0008	.0194
45	9.25	0	182	.25	.0037	.0009	.0203
2200	10.30	0	257	.375	.0053	.0020	.0223
30	12.03	+.42	510	.5	.0105	.0052	.0275
2300	13.52	+.42	1,010	.5	.0207	.0103	.0378
30	14.44	+.08	1,430	.5	.0293	.0146	.0524
2400	14.93	+.01	1,900	.25	.0390	.0098	.0622
	October 31						
0000	14.93	+.01	1,900	.5	.0390	.0195	.0817
0100	15.28	0	2,380	1	.0488	.0488	.1305
0200	15.37		2,520	1	.0517	.0517	.1822
0300	15.56		2,920	1	.0599	.0599	.2421
0400	16.05		4,260	1	.0873	.0823	.3294
0500	16.64		6,260	1	.1283	.1283	.4577
0600	16.92		7,400	1	.1517	.1517	.6094
0700	17.02		7,840	.75	.1607	.1205	.7299
30	17.04		7,920	.5	.1624	.0812	.8111
0800	17.00		7,760	.75	.1591	.1193	.9304
0900	16.91		7,360	2	.1509	.3018	1.2322
1200	16.64	0	6,260	3	.1283	.3849	1.6171
1500	16.20	0	4,770	3	.0978	.2934	1.9105
1800	15.78	0	3,470	3	.0711	.2133	2.1238
2100	15.41	0	2,590	3	.0531	.1593	2.2831
2400	15.08	0	2,080	1.5	.0426	.0639	2.3470
	November 1						
0000	15.08	0	2,080	3	.0426	.1278	2.4748
0600	14.46	+.08	1,450	6	.0297	.1782	2.6530
1200	13.82	+.35	1,150	6	.0236	.1416	2.7946
1800	13.20	+.62	949	6	.0195	.1170	2.9116
2400	12.85	+.70	831	3	.0170	.0510	2.9626
	November 2						
0000	12.85	+.70	831	6	.0170	.1020	3.0646
1200	12.55	+.70	713	12	.0146	.1752	3.2398
2400	12.45	+.70	680	6	.0139	.0834	3.3232

Computed by JMT Date 5/20/75 Checked by CAB, GB, DLH Date 9/3/76

TX-78 (Revised July 1969)

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

WEIGHTED PRECIPITATION RECORD

Sheet 1 of 2
Comp. by: JMT
Date 8/30/76
Check by DLH
Date 9/2/76

Study Area Little Elm Creek near Aubrey, Tex. Date of storm October 30-31, 1974

Weight Factor		.294		.345		.088		.273						Accumulated Weighted Precipitation	
		Gage 2-R		Gage 6-R		Gage 9-R		Gage 10-R		Gage		Gage		Accumulated Precipitation in Inches for Recording Rain Gages	
Date & Time		Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recording Gages	All Gages (Rec. Gages x K)
October	30														
0000		0	0	0	0	0	0	0	0					0	0
1200		0	0	0	0	0	0	0	0					0	0
30		0	0	.20	.07	.23	.02	0	0					.09	.09
1300		0	0	.20	.07	.23	.02	.12	.03					.12	.12
2000		0	0	.23	.08	.25	.02	.12	.03					.13	.13
15		0	0	1.18	.41	.58	.05	.12	.03					.49	.49
30		0	0	1.61	.56	1.20	.11	.12	.03					.70	.71
45		0	0	2.18	.75	1.43	.13	.24	.07					.95	.96
2100		0	0	2.46	.85	1.60	.14	1.08	.29					1.28	1.29
15		0	0	2.89	1.00	1.90	.17	1.34	.37					1.54	1.55
30		0	0	3.33	1.15	2.04	.18	2.10	.57					1.90	1.92
45		.04	.01	3.58	1.24	2.04	.18	2.29	.63					2.06	2.08
2200		.28	.08	3.60	1.24	2.17	.19	2.97	.81					2.32	2.34
15		.30	.09	3.83	1.32	2.38	.21	3.39	.93					2.55	2.57
30		.56	.16	4.05	1.40	2.48	.22	3.57	.97					2.75	2.77
45		.80	.24	4.16	1.44	2.62	.23	3.58	.98					2.89	2.91
2300		.83	.24	4.46	1.54	2.84	.25	3.88	1.06					3.09	3.11
15		1.00	.29	4.65	1.60	3.10	.27	4.06	1.11					3.27	3.30
30		1.31	.39	4.74	1.64	3.19	.28	4.12	1.12					3.43	3.46
45		1.59	.47	4.75	1.64	3.20	.28	4.35	1.19					3.58	3.61
2400		1.60	.47	4.76	1.64	3.20	.28	4.60	1.26					3.65	3.68
October	31														
0100		1.63	.48	4.77	1.65	3.21	.28	4.78	1.30					3.71	3.74
0200		1.69	.50	4.96	1.71	3.37	.30	4.82	1.32					3.83	3.86

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
1-S	.10	6.57	.66	7-S	.11	5.04	.55				
2-R	.09	3.82	.34	8-S	.12	5.30	.64				
3-S	.13	6.42	.83	9-R	.03	5.42	.16				
4-S	.09	6.77	.61	10-R	.08	6.99	.56				
5-S	.13	5.86	.76								
6-R	.12	6.91	.83								

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation WMR 5.94

5.94 / 5.89 = 1.008

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

WEIGHTED PRECIPITATION RECORD

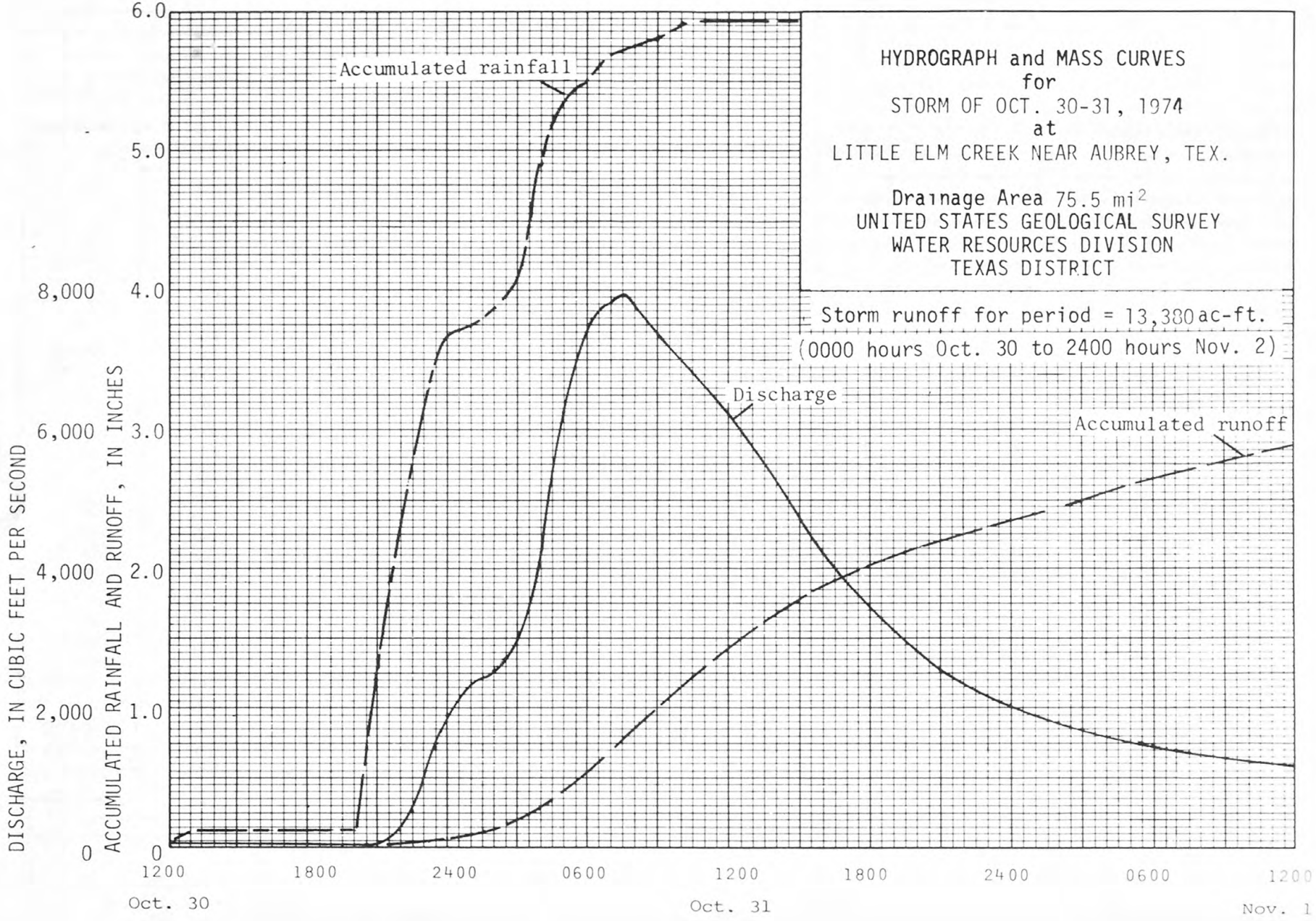
Comp. by: [illegible]
Date 8/30/76
Check by OLH
Date 9/2/76

Study Area Little Elm Creek near Aubrey, Tex. Date of storm October 30-31, 1974

Date & Time	Accumulated Precipitation in Inches for Recording Rain Gages												Accumulated Weighted Precipitation	
Weight Factor	.294		.345		.088		.273							
	Gage 2-R		Gage 6-R		Gage 9R		Gage 10-R		Gage		Gage		Recording Gages All Gages	(Rec. Gages x K) All Gages
	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor	Recorded	x Factor		
October 31 continued														
0300	1.90	.56	5.22	1.80	3.86	.34	4.99	1.36					4.06	4.09
15	1.96	.58	5.35	1.85	3.98	.35	5.01	1.37					4.15	4.18
30	2.26	.66	5.96	2.06	4.26	.37	5.05	1.38					4.47	4.51
45	2.82	.83	6.05	2.09	4.59	.40	5.24	1.42					4.74	4.78
0400	3.11	.91	6.07	2.09	4.60	.40	5.36	1.46					4.86	4.90
30	3.17	.93	6.19	2.14	4.73	.42	6.22	1.70					5.19	5.23
0500	3.31	.97	6.32	2.18	4.92	.43	6.29	1.72					5.30	5.34
30	3.38	.99	6.40	2.21	4.99	.44	6.43	1.76					5.40	5.44
0600	3.42	1.01	6.48	2.24	5.01	.44	6.49	1.77					5.46	5.50
30	3.54	1.04	6.63	2.29	5.19	.46	6.53	1.78					5.57	5.61
0700	3.61	1.06	6.67	2.30	5.24	.46	6.62	1.81					5.63	5.68
0800	3.66	1.08	6.70	2.31	5.25	.46	6.79	1.86					5.70	5.75
0900	3.66	1.08	6.75	2.33	5.32	.47	6.81	1.86					5.74	5.79
1000	3.78	1.11	6.91	2.38	5.40	.48	6.97	1.90					5.87	5.92
1100	3.82	1.12	6.91	2.38	5.40	.48	6.98	1.91					5.89	5.94
1300	3.82	1.12	6.91	2.38	5.40	.48	6.99	1.91					5.89	5.94
1400	3.82	1.12	6.91	2.38	5.42	.48	6.99	1.91					5.89	5.94
2400	3.82	1.12	6.91	2.38	5.42	.48	6.99	1.91					5.89	5.94

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 OCT. 30-31, 1974
at
LITTLE ELM CREEK NEAR AUBREY, TEX.
Drainage Area 75.5 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 13,380 ac-ft.
(0000 hours Oct. 30 to 2400 hours Nov. 2)
Accumulated rainfall
Discharge
Accumulated runoff
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
0
2,000
4,000
6,000
8,000
1.0
2.0
3.0
4.0
5.0
6.0
1200
1800
2400
0600
1200
1800
2400
0600
1200
Oct. 30
Oct. 31
Nov. 1

TX.-65 (Rev. 2-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Little Elm Creek near Aubrey, Tex.

Period of Record April 7-9, 1975 Drainage Area 75.5 sq mi.

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Discharge Inc.	Discharge In/Hr	Runoff Inches	Runoff Acc. In.
	April 7						
0000	6.23	-1.41	4.6	2.5	.0001	.0002	.0002
0500	6.22		4.6	3.5	.0001	.0004	.0006
0200	6.24		4.7	2	.0001	.0002	.0008
0900	6.23		4.6	1.5	.0001	.0002	.0010
1000	6.24		4.7	1	.0001	.0001	.0011
1100	6.30	-1.41	5.4	1	.0001	.0001	.0012
1200	6.40	-1.31	7.6	1	.0002	.0002	.0014
1300	6.30	-1.41	5.4	1	.0001	.0001	.0015
1400	6.30	-1.41	5.4	.75	.0001	.0001	.0016
30	6.40	-1.31	7.6	.5	.0002	.0001	.0017
1500	6.63	-.74	22	.5	.0005	.0002	.0019
30	6.91	-.48	40	.5	.0008	.0004	.0023
1600	7.30	-.37	59	.5	.0012	.0006	.0029
30	7.41	-.34	65	.5	.0013	.0006	.0035
1700	7.25	-.39	56	.5	.0011	.0006	.0041
30	7.07	-.42	48	.5	.0010	.0005	.0046
1800	7.21	-.39	54	.5	.0011	.0006	.0052
30	7.91	-.22	94	.5	.0019	.0010	.0062
1900	8.82	-.01	154	.5	.0032	.0016	.0078
30	9.58	+.17	216	.5	.0044	.0022	.0100
2000	10.12	+.30	267	.75	.0055	.0041	.0141
2100	10.82	+.46	347	1	.0071	.0071	.0212
2200	11.34	+.58	426	1	.0087	.0087	.0299
2300	11.72	+.66	498	1	.0102	.0102	.0401
2400	12.30	+.70	638	.5	.0131	.0066	.0467

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In
	April 8						
0000	12.30	+.70	638	.25	.0131	.0033	.0500
30	12.66	+.70	755	.5	.0155	.0078	.0578
0100	13.07	+.68	917	1.25	.0188	.0235	.0813
0300	13.84	+.35	1,170	2.5	.0240	.0600	.1413
0600	14.29	+.15	1,360	3	.0279	.0837	.2250
0900	14.71	+.03	1,650	2	.0338	.0676	.2926
1000	14.75	+.02	1,690	1.125	.0346	.0389	.3315
1115	14.79	0	1,710	1.25	.0351	.0439	.3754
1230	14.74	-.05	1,600	1.375	.0328	.0451	.4205
1400	14.66	-.08	1,480	2.25	.0303	.0682	.4887
1700	14.21	-.15	1,080	3	.0221	.0663	.5550
2000	13.53	-.18	751	3.5	.0154	.0539	.6089
2400	12.55	-.24	487	2	.0100	.0200	.6289
	April 9						
0000	12.55	-.24	487	3	.0100	.0300	.6589
0600	11.83	-.28	375	6	.0077	.0462	.7051
1200	11.46	-.30	334	9	.0068	.0612	.7663
2400	11.13	-.31	301	6	.0062	.0372	.8035

Computed by JMT Date 1/14/76 Checked by DLH, GB Date 9/3/76

TX-78 (Revised July 1969)

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

WEIGHTED PRECIPITATION RECORD

Sheet 1 of 1
Comp. by: JMT
Date 8/30/76
Check by DLH & RMS
Date 10/2/76

Study Area Little Elm Creek near Aubrey, Tex Date of storm April 7-8, 1975

Date & Time	Accumulated Precipitation in Inches for Recording Rain Gages: Gage 2-R (Weight Factor .294) Recorded	x Factor	Gage 6-R (.345) Recorded	x Factor	Gage 9-R (.088) Recorded	x Factor	Gage 10-R (.273) Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Accumulated Weighted Precipitation: Recording Gages	(Rec. Gages x K) All Gages
April 7														
0000	0	0	0	0	0	0	0	0					0	0
0400	0	0	0	0	0	0	0	0					0	0
0600	.05	.01	.08	.03	.12	.01	.06	.02					.07	.07
1000	.13	.04	.28	.10	.24	.02	.10	.03					.19	.18
1200	.27	.08	.31	.11	.40	.04	.41	.11					.34	.33
1400	.30	.09	.47	.16	.44	.04	.41	.11					.40	.38
1500	.37	.11	.67	.23	.60	.05	.58	.16					.45	.43
1600	.63	.19	.76	.26	.82	.07	.78	.21					.73	.70
1700	.76	.22	.76	.26	1.00	.04	.96	.26					.83	.80
2300	.76	.22	.76	.26	1.00	.09	.96	.26					.93	.80
15	1.00	.29	1.16	.40	1.52	.13	1.58	.43					1.25	1.20
30	1.27	.37	1.40	.48	1.70	.15	1.66	.45					1.45	1.39
45	1.36	.40	1.47	.51	1.74	.15	1.72	.47					1.53	1.47
2400	1.41	.41	1.53	.53	1.80	.16	1.78	.49					1.59	1.53
April 8														
15	1.45	.43	1.56	.54	1.83	.16	1.86	.51					1.64	1.57
30	1.49	.44	1.59	.55	1.87	.16	1.90	.52					1.67	1.60
0100	1.61	.47	1.73	.60	2.01	.18	2.06	.56					1.81	1.74
0200	1.78	.52	1.90	.66	2.14	.19	2.21	.60					1.97	1.89
0300	1.81	.53	1.94	.67	2.17	.19	2.26	.62					2.01	1.93
2400	1.81	.53	1.94	.67	2.17	.19	2.26	.62					2.01	1.93

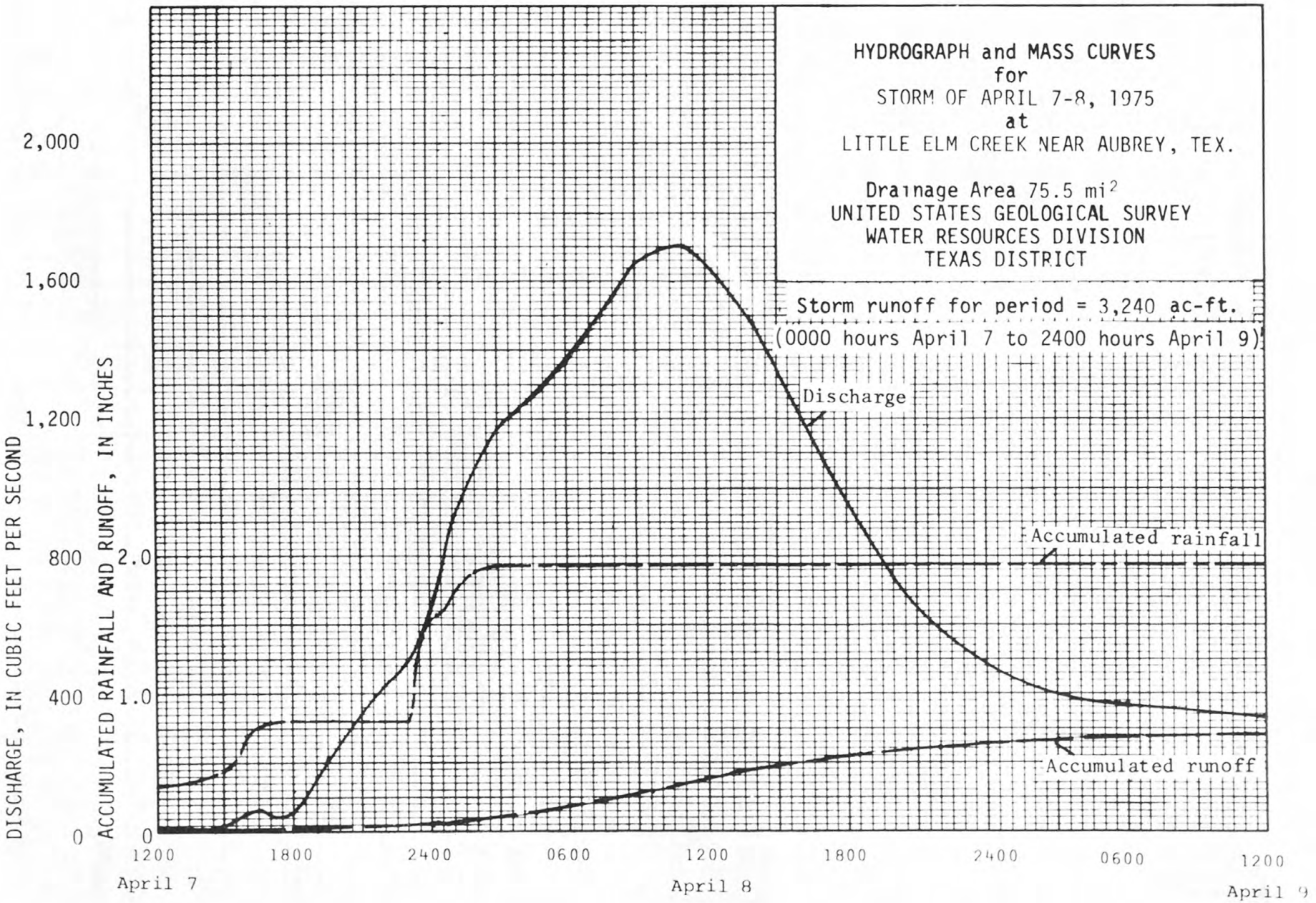
Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
1-S	.10	1.70	.17
2-R	.09	1.81	.16
3-S	.13	1.75	.23
4-S	.09	2.01	.18
5-S	.13	1.86	.24
6-R	.12	1.94	.23

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor
7-S	.11	1.89	.21
8-S	.12	2.14	.26
9-R	.03	2.17	.07
10-R	.08	2.26	.18

Rain Gage	Weight Factor	Precipitation	Precipitation x Weight Factor

WMR = Sum of Precipitation x Weight Factor WMR 1.93

K = WMR / Total Recording Gages Weighted Precipitation = 1.93 / 2.01 = 0.960


HYDROGRAPH and MASS CURVES
for
STORM OF APRIL 7-8, 1975
at
LITTLE ELM CREEK NEAR AUBREY, TEX.
Drainage Area 75.5 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 3,240 ac-ft.
(0000 hours April 7 to 2400 hours April 9)
Discharge
Accumulated rainfall
Accumulated runoff
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
2,000
1,600
1,200
800
400
0
2.0
1.0
0
1200
1800
2400
0600
1200
1800
2400
0600
1200
April 7
April 8
April 9

TX-65 (Rev. 2-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Little Elm Creek near Aubrey, Tex.

Period of Record May 29-31, 1975 Drainage Area 75.5 mi²

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Inc.	In/Hr	Runoff Inches	Acc. In.
	May 29						
0000	6.46	-1.27	9.0	3.5	.0002	.0007	.0007
0700	6.35	-1.33	6.8	4.5	.0001	.0004	.0011
0900	6.35	-1.33	6.8	1.25	.0001	.0001	.0012
30	6.42	-1.29	8.2	.5	.0002	.0001	.0013
1000	6.51	-1.23	10	.375	.0002	.0001	.0014
15	6.79	-1.06	18	.25	.0004	.0001	.0015
30	7.07	-.89	31	|	.0006	.0002	.0017
45	7.33	-.72	46	|	.0009	.0002	.0019
1100	8.07	-.46	90	|	.0018	.0004	.0023
15	8.84	-.42	131	.25	.0027	.0007	.0030
30	9.33	-.40	161	.375	.0033	.0012	.0042
1200	10.47	-.34	244	.75	.0050	.0038	.0080
1300	12.10	-.26	414	1.5	.0085	.0128	.0208
1500	13.02	-.21	588	2	.0121	.0242	.0450
1700	13.25	-.20	652	2.5	.0134	.0335	.0785
2000	13.51	-.19	739	3.5	.0151	.0528	.1313
2400	13.99	-.16	954	2	.0196	.0392	.1705
	May 30						
0000	13.99	-.16	954	2	.0196	.0392	.2097
0400	14.47	-.13	1,280	4	.0262	.1048	.3145
0800	14.49	-.13	1,300	2.625	.0266	.0698	.3843
0915	14.52	-.12	1,330	1.25	.0273	.0341	.4184
1030	14.49	-.13	1,300	1.375	.0266	.0366	.4550
1200	14.45	-.13	1,260	2.25	.0258	.0580	.5130
1500	14.12	-.16	1,020	3	.0209	.0627	.5757
1800	13.61	-.18	782	3	.0160	.0480	.6237
2100	12.94	-.22	565	3	.0116	.0348	.6585
2400	12.31	-.25	447	1.5	.0092	.0138	.6723
	May 31						
0000	12.31	-.25	447	3	.0092	.0276	.6999
0600	11.37	-.30	326	6	.0067	.0402	.7401
1200	10.71	-.33	263	9	.0054	.0486	.7887
2400	9.99	-.37	207	6	.0042	.0252	.8139

Computed by JMT Date 1/14/76 Checked by GB, DLH Date 9/7/76

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

WEIGHTED PRECIPITATION RECORD

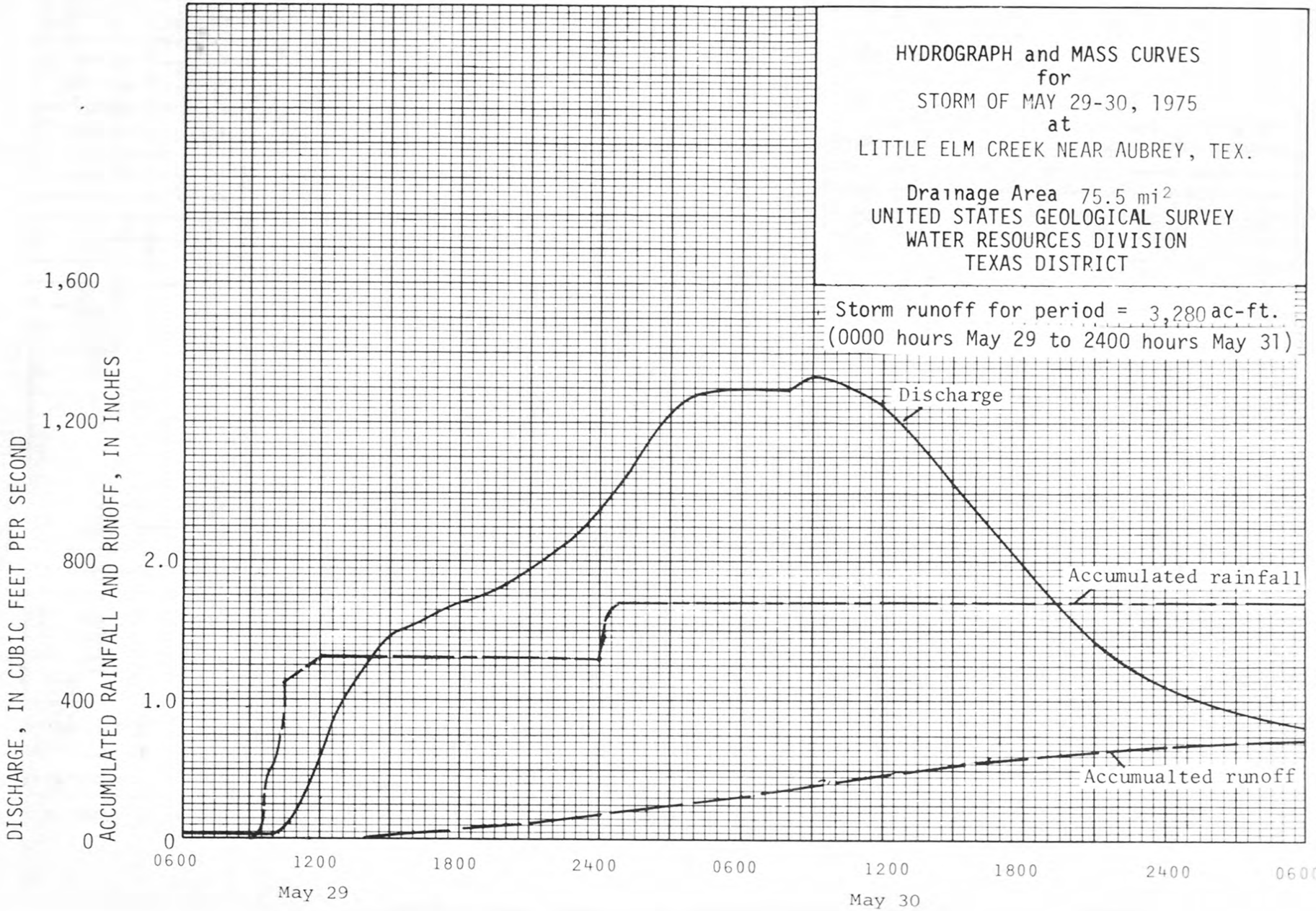
Comp. by: JMT
Date 8/31/76
Check by DLH
Date 9/3/76

Study Area Little Elm Creek near Aubrey, Tex Date of storm May 29-30, 1975

Accumulated Precipitation in Inches for Recording Rain Gages													Accumulated Weighted Precipitation	
Weight Factor	.294		.345		.088		.273							
Date & Time	Gage 2-R Recorded	x Factor	Gage 6-R Recorded	x Factor	Gage 9-R Recorded	x Factor	Gage 10-R Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Recording Gages All Gages	(Rec. Gages x K) All Gages
May 29														
0600	0	0	0	0	0	0	0						0	0
0900	0	0	0	0	0	0	0						0	0
15	.02	.01	0	0	0	0	0						.01	.01
30	.07	.02	.17	.06	0	0	0						.08	.09
45	.55	.16	.61	.21	.06	.01	.19	.05					.43	.48
1000	.61	.18	.62	.21	.14	.01	.22	.06					.46	.52
15	.82	.24	.97	.33	.36	.03	.27	.07					.67	.75
30	.90	.26	1.36	.47	1.19	.10	.59	.16					.89	1.11
1100	.95	.28	1.38	.48	1.29	.11	.62	.17					1.04	1.17
30	1.00	.29	1.46	.50	1.33	.12	.65	.18					1.09	1.23
1200	1.01	.30	1.52	.52	1.38	.12	.72	.20					1.14	1.28
2400	1.01	.30	1.52	.52	1.38	.12	.72	.20					1.14	1.28
May 30														
15	1.11	.33	1.83	.63	1.40	.12	.72	.20					1.28	1.44
30	1.25	.37	2.17	.75	1.68	.14	.86	.23					1.49	1.68
45	1.26	.37	2.17	.75	1.67	.15	.88	.24					1.51	1.70
0100	1.26	.37	2.17	.75	1.68	.15	.88	.24					1.51	1.70
2400	1.26	.37	2.17	.75	1.68	.15	.88	.24					1.51	1.70

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
1-S	.10	1.18	.12	7-S	.11	2.19	.24				
2-R	.09	1.26	.11	8-S	.12	2.45	.29				
3-S	.13	1.50	.20	9-R	.03	1.68	.05				
4-S	.09	1.51	.14	10-R	.08	.88	.07				
5-S	.13	1.73	.22								
6-R	.12	2.17	.26							WMR	1.70

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 1.70 / 1.51 = 1.126


HYDROGRAPH and MASS CURVES
for
STORM OF MAY 29-30, 1975
at
LITTLE ELM CREEK NEAR AUBREY, TEX.
Drainage Area 75.5 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 3,280 ac-ft.
(0000 hours May 29 to 2400 hours May 31)
Discharge
Accumulated rainfall
Accumualted runoff
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
1,600
1,200
800
400
0
2.0
1.0
0
0600
1200
1800
2400
0600
1200
1800
2400
0600
May 29
May 30

TX-65 (Rev. 2-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Little Elm Creek near Aubrey, Tex

Period of Record June 8-12, 1975 Drainage Area 75.5 mi²

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Discharge Inc.	Discharge In/Hr	Runoff Inches	Runoff Acc. In.
	June 8, 1975						
0000	6.38	-1.31	7.4	.75	.0002	.0002	.0002
0130	6.39	-1.31	7.5	.875	.0002	.0002	.0004
45	6.46	-1.27	9.0	.25	.0002	.0001	.0005
0200	6.56	-1.21	12	.375	.0002	.0001	.0006
30	6.61	-1.17	13	.5	.0003	.0002	.0008
0300	6.59	-1.19	12	.75	.0002	.0002	.0010
0400	6.52	-1.23	10	1.5	.0002	.0003	.0013
0600	6.52	-1.23	10	1.5	.0002	.0003	.0016
0700	6.61	-1.17	13	1	.0003	.0003	.0019
0800	6.93	-.97	24	1.5	.0005	.0008	.0027
1000	7.23	-.79	40	2	.0008	.0016	.0043
1200	7.14	-.84	35	3	.0007	.0021	.0064
1600	6.91	-.98	24	3	.0005	.0015	.0079
1800	7.10	-.87	33	1.5	.0007	.0010	.0089
1900	7.16	-.83	36	.75	.0007	.0005	.0094
30	7.63	-.54	66	.5	.0014	.0007	.0101
2000	8.07	-.47	90	.5	.0018	.0009	.0110
30	9.02	-.42	141	.5	.0029	.0014	.0124
2100	9.94	-.37	203	.5	.0042	.0021	.0145
30	10.79	-.33	270	.5	.0055	.0028	.0173
2200	11.52	-.29	342	.75	.0070	.0052	.0225
2300	12.35	-.25	453	1	.0093	.0093	.0318
2400	12.70	-.23	513	.5	.0105	.0052	.0370
	June 9, 1975						
0000	12.70	-.23	513	1.5	.0105	.0158	.0528
0300	13.08	-.21	603	3	.0124	.0372	.0900
0600	13.43	-.19	710	2.5	.0146	.0365	.1265
0800	14.00	-.16	958	2	.0196	.0392	.1657
1000	14.82	-.02	1,720	2	.0353	.0706	.2363
1200	15.32	0	2,440	1.75	.0500	.0875	.3238
1330	15.41		2,590	1.5	.0531	.0796	.4034
1500	15.34		2,470	1.75	.0506	.0886	.4920
1700	15.12		2,140	1.5	.0439	.0658	.5578
1800	14.98		1,950	.75	.0400	.0300	.5878
30	14.95		1,910	.5	.0392	.0196	.6074
1900	15.00		1,970	.75	.0404	.0303	.6377
2000	15.12		2,140	1	.0439	.0439	.6816
2100	15.22		2,280	1	.0467	.0467	.7283
2200	15.20		2,260	1.5	.0463	.0694	.7977
2400	14.99	0	1,960	1	.0402	.0402	.8379
	June 10, 1975						
0000	14.99	0	1,960	2	.0402	.0804	.9183
0400	14.82		1,750	3.5	.0359	.1256	1.0439
0700	14.79		1,710	3	.0351	.1053	1.1492
1000	14.88		1,820	2.5	.0373	.0932	1.2424
1200	14.94		1,900	2	.0390	.0780	1.3204
1400	14.92		1,870	2.5	.0383	.0958	1.4162
1700	14.73		1,640	3	.0336	.1008	1.5170
2000	14.40		1,330	3.5	.0273	.0956	1.6126
2400	13.79	0	935	2	.0192	.0384	1.6510
	June 11, 1975						
0000	13.79	0	935	3	.0192	.0576	1.7086

Computed by JMT Date 1/15/76 Checked by DLH Date 9/7/76

TX.-65 (Rev. 2-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Little Elm Creek near Aubrey, Tex

Period of Record June 8-12, 1975 Drainage Area 75.5 mi^2

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft^3/s	Discharge Inc.	Discharge In/Hr	Runoff Inches	Runoff Acc. In.
	June 11, 1975 (continued)						
0600	12.88	0	606	6	.0124	.0744	1.7830
1200	12.46	|	511	9	.0105	.0945	1.8775
2400	12.06	0	447	6	.0092	.0552	1.9327
	June 12, 1975						
0000	12.06	0	447	6	.0092	.0552	1.9879
1200	11.83	|	413	12	.0085	.1020	2.0899
2400	11.70	0	394	6	.0081	.0486	2.1385

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft^3/s	Discharge Inc.	Discharge In/Hr.	Runoff Inches	Runoff Acc. In

Computed by JMT Date 11/15/76 Checked by DLH Date 9/7/76

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

WEIGHTED PRECIPITATION RECORD

Comp. by JMT
Date 8/31/76
Check by DLH
Date 9/3/76

Study Area Little Elm Creek near Aubrey, Tex. Date of storm June 8-10, 1975

Date & Time	Accumulated Precipitation in Inches for Recording Rain Gages: Gage 2-R Recorded	x Factor (.294)	Gage 6-R Recorded	x Factor (.345)	Gage 9-R Recorded	x Factor (.088)	Gage 10-R Recorded	x Factor (.223)	Gage Recorded	x Factor	Gage Recorded	x Factor	Accumulated Weighted Precipitation: Recording Gages	(Rec. Gages x K) All Gages	All Gages
June 8															
0000	0	0	0	0	0	0	0	0					0	0	
0100	0	0	0	0	0	0	0	0					0	0	
15	.12	.04	0	0	.20	.02	.21	.06					.12	.12	
30	.42	.14	.28	.10	.67	.06	.43	.12					.42	.44	
45	.66	.19	.51	.18	.90	.08	.48	.13					.58	.60	
0200	.67	.20	.66	.23	1.00	.09	.51	.14					.66	.69	
15	.68	.20	.70	.24	1.04	.09	.52	.14					.67	.70	
30	.68	.20	.73	.25	1.08	.10	.54	.15					.70	.73	
0300	.73	.21	.76	.26	1.12	.10	.59	.16					.73	.76	
30	.74	.22	.79	.27	1.18	.10	.59	.16					.75	.78	
1800	.74	.22	.79	.27	1.18	.10	.59	.16					.75	.78	
15	.81	.24	.79	.27	1.18	.10	.59	.16					.77	.80	
30	1.94	.57	.79	.27	1.18	.10	.79	.21					1.15	1.19	
45	2.82	.83	.79	.27	1.18	.10	.79	.22					1.42	1.47	
1900	3.55	1.04	.79	.27	1.38	.12	.85	.23					1.66	1.72	
15	4.19	1.23	.79	.27	2.16	.19	1.39	.38					2.07	2.15	
30	4.55	1.34	1.56	.54	2.29	.20	1.86	.51					2.59	2.69	
45	4.74	1.39	1.80	.62	2.30	.20	1.89	.52					2.73	2.83	
2000	4.75	1.40	1.85	.64	2.54	.21	1.95	.53					2.78	2.89	
30	4.80	1.41	1.90	.66	2.37	.21	2.02	.55					2.83	2.94	
2100	4.88	1.43	1.99	.69	2.41	.21	2.11	.58					2.91	3.02	
2200	4.90	1.44	2.01	.69	2.42	.21	2.13	.58					2.92	3.03	
2400	4.90	1.44	2.01	.69	2.42	.21	2.13	.58					2.92	3.03	
June 9															
1700	4.90	1.44	2.01	.69	2.42	.21	2.13	.58					2.92	3.03	

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
1-S	.10	6.17	.62	7-S	.11	2.99	.33				
2-R	.09	6.40	.58	8-S	.12	4.62	.55				
3-S	.13	6.34	.82	9-R	.03	4.03	.12				
4-S	.09	5.55	.50	10-R	.08	4.44	.36				
5-S	.13	4.53	.59								
6-R	.12	3.77	.45							WMR	4.92

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 4.92 / 4.74 = 1.038

TX-78 (Revised July 1969)

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

WEIGHTED-PRECIPITATION RECORD

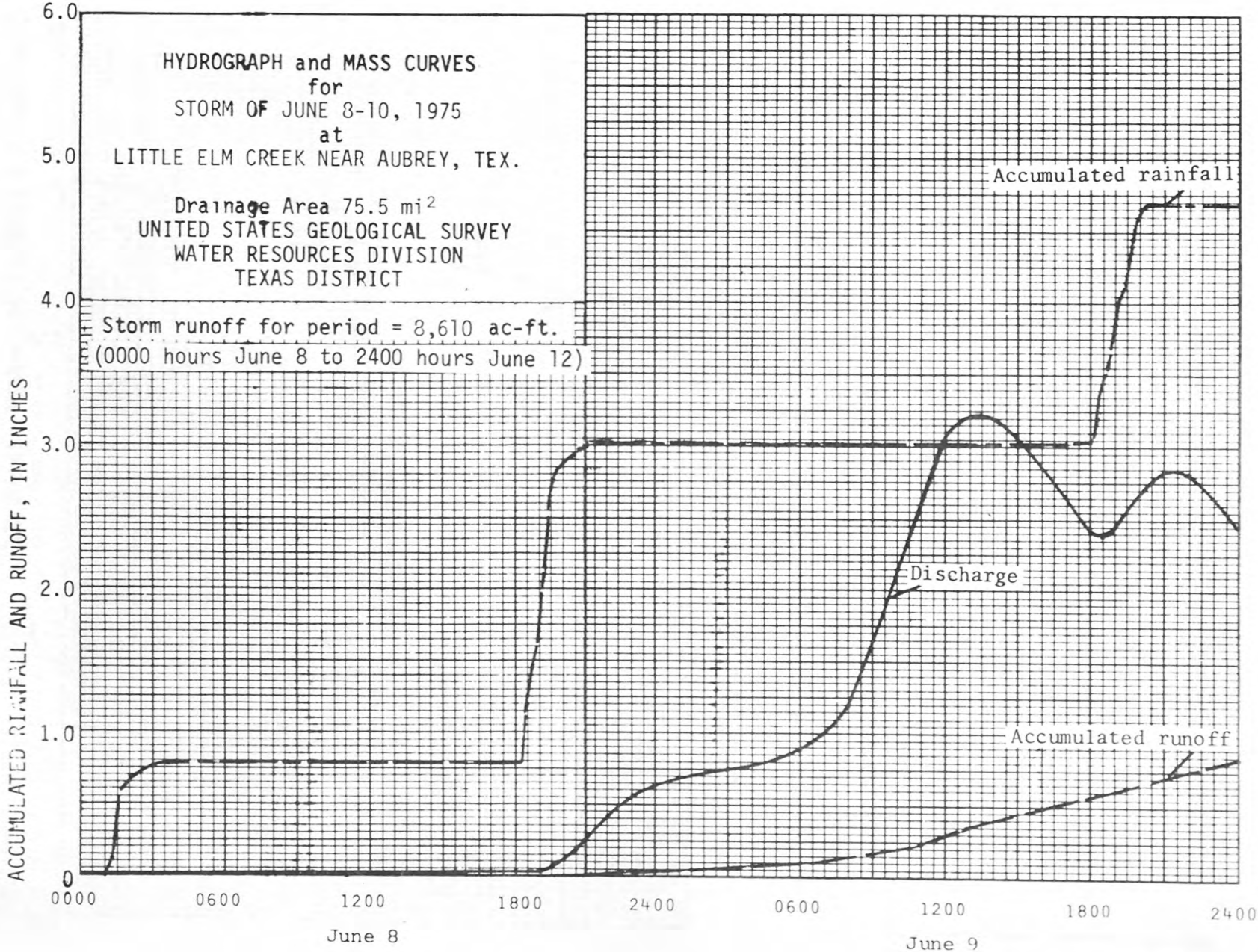
Sheet 2 of 2
Comp. by: JMT
Date 8/31/76
Check by DLH
Date 9/3/76

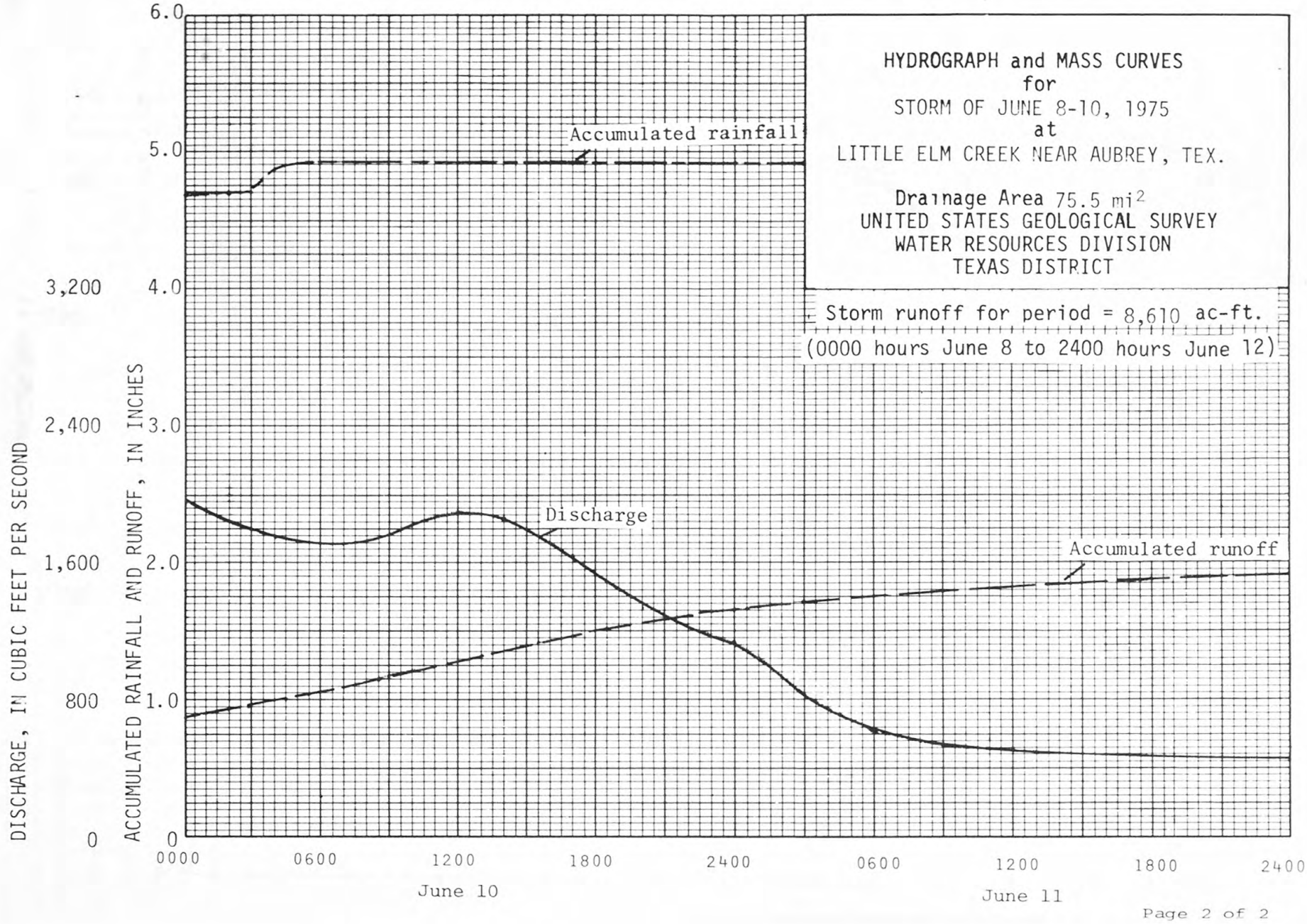
Study Area Little Elm Creek near Aubrey, Tex Date of storm June 8-10, 1975

Date & Time	Gage 2-R Recorded	x Factor	Gage 6R Recorded	x Factor	Gage 9-R Recorded	x Factor	Gage 10-R Recorded	x Factor	Gage Recorded	x Factor	Gage Recorded	x Factor	Accumulated Weighted Precipitation Recording Gages All Gages	Accumulated Weighted Precipitation (Rec. Gages x K) All Gages
	Weight Factor .294		Weight Factor .345		Weight Factor .088		Weight Factor .273							
June 9 continued														
1800	4.90	1.44	2.01	.69	2.44	.21	2.17	.59					2.93	3.04
15	4.90	1.44	2.21	.76	2.97	.26	2.20	.60					3.06	3.18
30	4.91	1.44	2.81	.97	3.39	.30	2.23	.61					3.32	3.45
45	4.97	1.46	3.01	1.04	3.43	.30	2.32	.63					3.43	3.56
1900	5.01	1.47	3.26	1.12	3.63	.32	2.73	.75					3.66	3.80
15	5.08	1.49	3.26	1.12	3.64	.32	3.52	.96					3.89	4.09
30	5.14	1.51	3.31	1.14	3.66	.32	3.94	1.08					4.05	4.20
45	5.84	1.72	3.50	1.21	3.69	.32	4.13	1.13					4.38	4.55
2000	6.20	1.82	3.51	1.21	3.70	.33	4.14	1.13					4.49	4.66
15	6.21	1.83	3.51	1.21	3.71	.33	4.14	1.13					4.50	4.67
30	6.21	1.83	3.51	1.21	3.72	.33	4.14	1.13					4.50	
2400	6.21	1.83	3.51	1.21	3.72	.33	4.14	1.13					4.50	
June 10														
0000	6.21	1.83	3.51	1.21	3.72	.33	4.14	1.13					4.50	4.67
0200	6.26	1.84	3.54	1.22	3.75	.33	4.17	1.14					4.53	4.70
0400	6.36	1.87	3.75	1.29	4.01	.35	4.35	1.19					4.70	4.88
0500	6.40	1.88	3.77	1.30	4.03	.35	4.44	1.21					4.74	4.92
2400	6.40	1.88	3.77	1.30	4.03	.35	4.44	1.21					4.74	4.92

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

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


HYDROGRAPH and MASS CURVES
for
STORM OF JUNE 8-10, 1975
at
LITTLE ELM CREEK NEAR AUBREY, TEX.
Drainage Area 75.5 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 8,610 ac-ft.
(0000 hours June 8 to 2400 hours June 12)
Accumulated rainfall
Discharge
Accumulated runoff
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
3,200
2,400
1,600
800
0
6.0
5.0
4.0
3.0
2.0
1.0
0
0000
0600
1200
1800
2400
0600
1200
1800
2400
June 8
June 9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3.0
2.0
1.0
0
0000
0600
1200
1800
2400
0600
1200
1800
2400
June 10
June 11