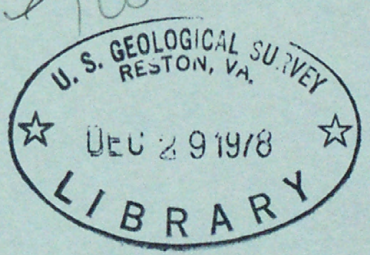
Hydrologic Data for North Creek Trinity River Basin Texas, 1976

U. S. GEOLOGICAL SURVEY.
OFR/WRD 77-732



Prepared in cooperation with the Tarrant County Water Control and Improvement District No. 1, the Soil Conservation Service, and the Texas Department of Water Resources

Hydrologic Data for North Creek Trinity River Basin Texas, 1976

By C. C. KIDWELL

U. S. GEOLOGICAL SURVEY
OFR/WRD 77-732

Prepared in cooperation with the Tarrant County Water Control and Improvement District No. 1, the Soil Conservation Service, and the Texas Department of Water Resources

July 1978

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY
H. William Menard, Director

Reproduced by the Texas Department of Water Resources
as part of the continuing program of cooperation in
water-resources investigations between the Department
of Water Resources and the U.S. Geological Survey

Copies of this report may be obtained from the
U.S. Geological Survey
Federal Building
300 East 8th Street
Austin, TX 78701

CONTENTS

ILLUSTRATIONS

TABLES

HYDROLOGIC DATA FOR NORTH CREEK

TRINITY RIVER BASIN, TEXAS

1976

By

C. C. Kidwell
U.S. Geological Survey

INTRODUCTION

History of Small Watershed Projects in Texas

The U.S. Soil Conservation Service is actively engaged in the installation of flood- and soil-erosion reducing structures 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, 1976, 1,673 (corrected figure) of these structures had been built.

This watershed-development program will have varying but important effects on 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.

During the period 1951-62, the U.S. Geological Survey began hydrologic investigations in 12 small watersheds (fig. 1). As of Sept. 30, 1976, data collection in ten of these study areas has been completed and is now in progress in the remaining two. 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 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 in each study area as of Sept. 30, 1976, is shown in table 1.

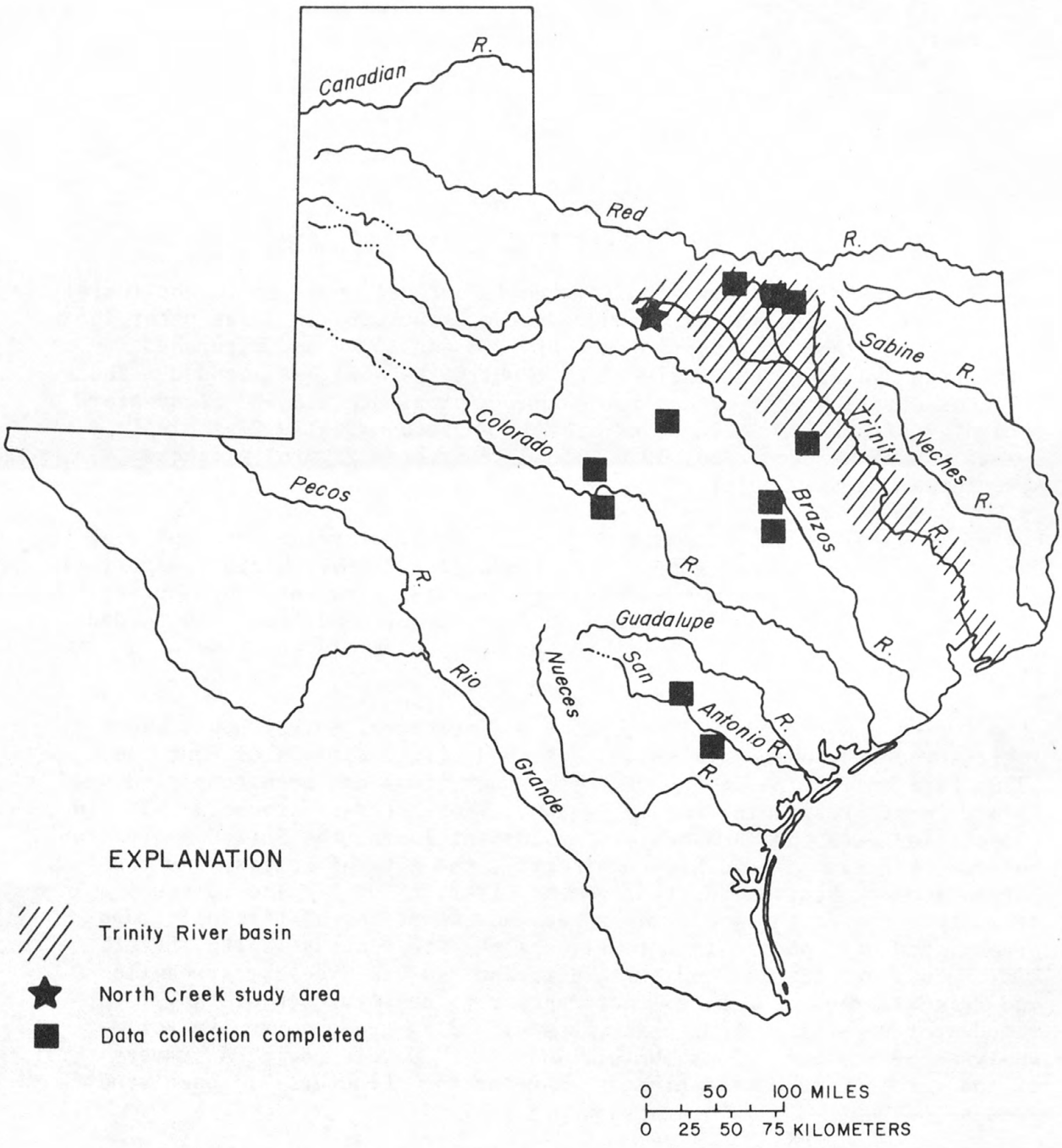


FIGURE 1. - Location of the North Creek study area and other study areas

Table 1.--Small watershed study areas in Texas as of September 30, 1976

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 Sept. 1976	17	1966, 70-71, 76
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.

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	m^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 ground-water 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 mimimum 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 contains the rainfall, runoff, and storage data collected during the 1976 water year for the 21.6-square-mile area above the stream-gaging station North Creek near Jacksboro, Texas. The locations of floodwater-retarding structures and hydrologic-instrument installations in the area are shown on figure 2.

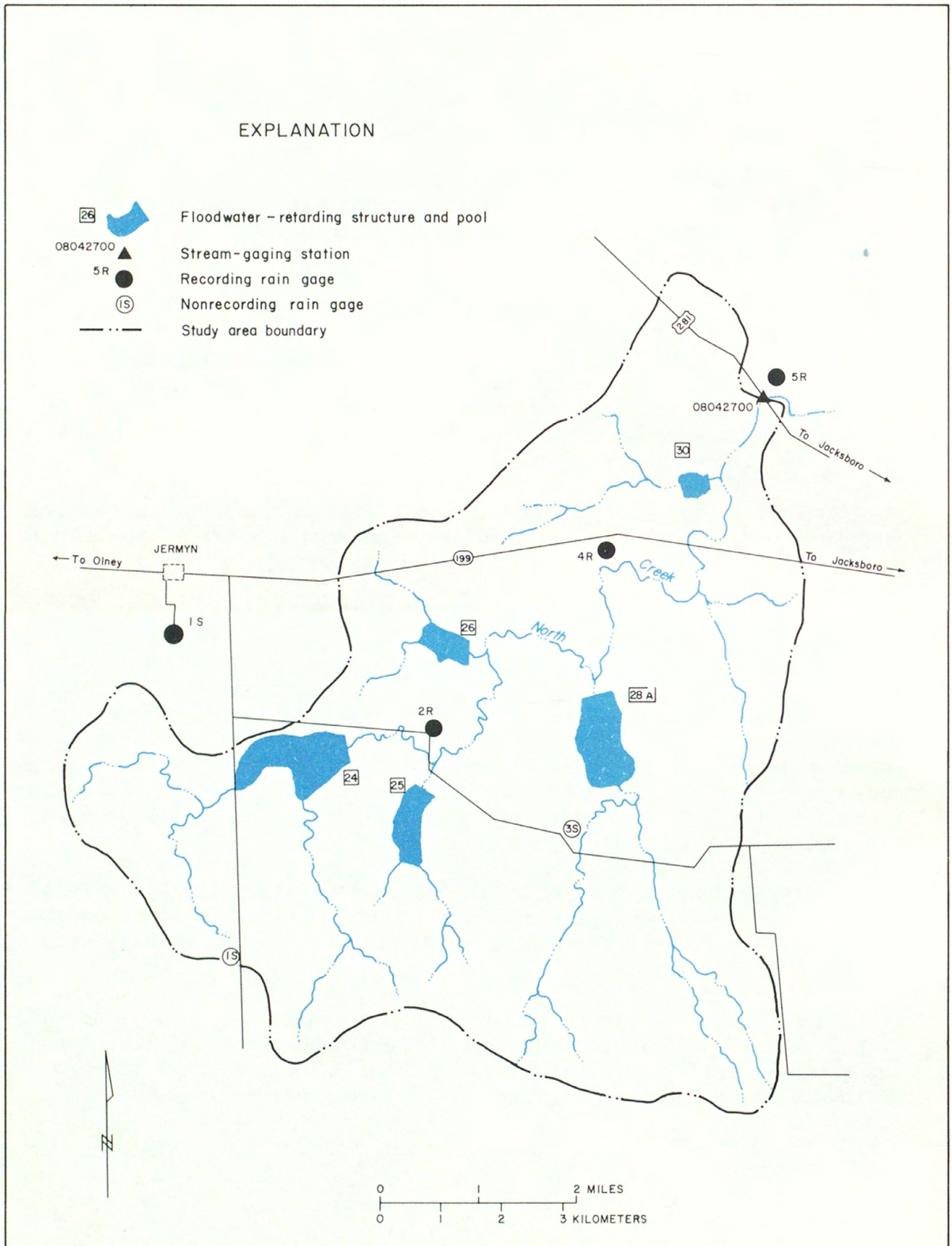
To facilitate early publication and distribution of this report, certain material has been included that does not conform to the formal publication standards of the U.S. Geological Survey.

DESCRIPTION OF THE WATERSHED

The headwaters of North Creek are near the town of Jermyn in the western part of Jack County. The Creek flows northeasterly for approximately 19 miles where it flows into Big Cleveland Creek, 4 miles upstream from the West Fork Trinity River. North Creek drains a 43.1-square-mile area; however, this report is concerned only with the 21.6 square miles of the watershed above the Geological Survey stream-gaging station at the U.S. Highway 281 bridge near Jacksboro. This area is referred to as the "study area" (fig. 2).

The topography of the watershed ranges from steep to gently rolling. Altitudes in the watershed range from about 1,310 feet at the headwaters to about 1,090 feet at the gaging station. The average channel gradient is about 18.4 ft/mi.

Underlying rocks in the study area are limestone, shale, and sandstone. The ridges are formed by the harder sandstones and limestones, and the deep valleys are cut into the shale. The soils are fine to medium textured and are slightly to moderately permeable.



Based on map from Work Plan of North Creek Watershed furnished by U.S. Soil Conservation Service (February 1960)

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

Most of the watershed area is used as range land, with oats and wheat grazed by livestock during winter months and harvested during spring and early summer. Livestock is the principal source of income for the area.

Climate of the study area is temperate and subhumid with a prevailing south wind. The most common storms are thunderstorms occurring frequently in the spring and summer. Long-duration low-intensity storms, triggered by southward-moving continental polar fronts, occur during the fall and winter. In late summer and early fall, hurricanes moving inland from the Gulf of Mexico cause some of the heaviest rainfall. Individual storms, although most frequent in the spring, may cause serious flooding and sediment damage during any season.

The records of the Environmental Data Service show that the normal annual rainfall for the 30-year base period (1941-70) at Graham (about 18 miles southwest of the study area) is 28.03 inches. During this period, the annual rainfall has ranged from 14.12 inches in 1956 to 48.99 inches in 1957. The wettest months are April, May, June, September, and October.

FLOODWATER-RETARDING STRUCTURES

There are five floodwater-retarding structures in the North Creek study area. These structures have a total capacity of 4,425 acre-feet below flood-spillway crests and regulate streamflow from 16.3 square miles, or 75 percent of the study area. Table 2 contains a summary of the physical data at each of the five floodwater-retarding structures in the study area.

HYDROLOGIC INSTRUMENTS

Instruments to collect rainfall, runoff, and storage data in the study area consist of a network of rain gages, staff gages, a water-stage recorder at site 28-A, and a stream-gaging station on North Creek near Jacksboro, Texas. The locations of these instruments are shown on figure 2.

Three recording and two nonrecording rain gages are located at points throughout the study area and are used to define the total rainfall and rainfall intensities within the area (fig. 2). Rain gages, except for the one at the streamflow station, are serviced weekly by local residents.

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

Site number	Drainage area (mi^2)	Date dam completed	Date station established	Datum of gage above mean sea level	Emergency spillway			Principal spillway		Controlled outlet		Diameter of pipe through dam (in)	Range of staff gages
					Width (ft)	Gage height (ft)	Contents 1/ (acre-ft)	Gage height (ft)	Contents 2/ (acre-ft)	Gage height of invert (ft)	Contents (acre-ft)		
24	5.47	1-11-71	5-20-71	1,174.38	210	49.6	1,400	29.80	133	25.36	68.9	24	17.5-54.3
25	1.39	5-24-72	5-11-72	1,177.65	80	22.4	381	8.21	34.3	2.69	3.8	a/ 18	0-27.1
26	1.41	10-23-71	5-19-71	1,133.56	100	28.8	360	10.18	25.0	5.65	4.9	b/ 24	6.7-35.7
28-A	6.82	3-31-72	c/ 3-14-72	1,090.39	100	33.5	1,940	18.12	245	8.61	24.5	30	6.8-47.5
30	1.20	10-23-70	5-19-71	1,031.24	60	47.5	344	24.80	41.0	20.20	19.8	d/ 24	10.2-54.3

1/ Total capacity

2/ Sediment-pool capacity; to be used for flood retardation until filled with sediment. The floodwater-retarding pool capacity is the capacity between the principal spillway and the emergency spillway.

a/ A 9-inch constriction plate in the pipe reduces the cross-sectional area by 50 percent.

b/ A 17-1/2-inch constriction plate in the pipe reduces the cross-sectional area by 78 percent.

c/ Continuous water-stage recorder installed Oct. 5, 1972.

d/ A 17-3/4-inch constriction place in the pipe reduces the cross-sectional area by 79 percent.

On October 5, 1972, a continuous water-stage recording gage was installed at one representative floodwater-retarding structure (site 28-A). Data are collected to compute the contents, surface area, inflow, and outflow of this site. Weekly staff-gage readings of pool levels are made by Soil Conservation Service personnel at each of the five sites. These readings provide data to determine the amount of water retained or released from the structures in the study area.

The stream-gaging station on North Creek near Jacksboro continuously records the water level which, with measurements of streamflow, is used to compute the runoff from the study area. Streamflow records at this gage began August 8, 1956. Records of runoff for the 1976 water year are given in the section "Compilation of data."

SUMMARY OF DATA FOR THE 1976 WATER YEAR

The weighted-mean rainfall in the study area during the 1976 water year was 25.87 inches, which is less than the 19-year average of 30.05 inches for the period 1958-76. Monthly rainfall totals ranged from 0 inch in January to 6.56 inches in September. The mean discharge for 1976 at the stream-gaging station was 1.26 ft^3/s, compared with the 14-year (1957-70) average of 5.75 ft^3/s. The annual runoff from the basin above the stream-gaging station was 914 acre-feet or 0.79 inch.

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

Two storms were selected for detailed computations for the 1976 water year. The storms selected occurred on April 19, 1976 and Sept. 19, 1976. Rainfall and discharge were computed on the basis of a refined time breakdown. Patterns of the storms are illustrated by the hydrographs and mass curves included. A summary of rainfall-runoff data is shown in table 3. Computations and graphs are given in the section "Compilation of data."

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 3.--Storm rainfall-runoff data, 1976 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			
North Creek subwatershed No. 28-A near Jermyn, Tex. (Drainage area 6.82 mi^2)								
April 19, 1976	9.0	1.72	0.54	0.81	1.27	0.19	0.11	418
Sept. 19, 1976	21	4.48	.29	.38	.62	.60	.13	787
North Creek near Jacksboro, Tex. (Drainage area 21.6 mi^2 of which 16.3 mi^2 is above floodwater-retarding structures)								
April 19, 1976	9.0	1.37	.35	.60	.96	.07	.05	310
Sept. 19, 1976	21	4.77	.31	.37	.68	.58	.12	1,260

COMPILATION OF DATA

08042650 North Creek subwatershed No. 28-A near Jermyn, Tex.

LOCATION.--Lat 33°14'52", long 98°19'19", Jack County, near center of earthfill dam on unnamed tributary of North Creek, 0.2 miles (0.3 km) upstream from North Creek, and 4.0 miles (6.4 km) southeast of Jermyn.

DRAINAGE AREA.--6.82 mi² (17.66 km²).

PERIOD OF RECORD.--March 1972 to current year.

GAGE.--Water-stage recorder and flat-crested weir on concrete drop inlet. Datum of gage is 1,090.39 ft (332.351 m) above mean sea level (Soil Conservation Service bench mark). Prior to Oct. 5, 1972, staff gage at same datum.

EXTREMES.--Current year: Maximum outflow, 73.2 ft³/s (2.07 m³/s) Sept. 19 (gage height, 19.47 ft or 5.934 m); no outflow October to August. Maximum inflow, 787 ft³/s (22.3 m³/s), average for 5-minute interval, Sept. 19, computed and adjusted as explained below; no inflow at times.

Period of record: Maximum outflow, 96.2 ft³/s (2.72 m³/s) Oct. 30, 1974 (gage height, 22.80 ft or 6.949 m); no outflow most of time each year. Maximum inflow, 1,430 ft³/s (40.5 m³/s), average for 5-minute interval, Oct. 30, 1974, computed from change in pool contents and adjusted for rainfall on pool surface during time of peak inflow; no inflow at times each year.

REMARKS.--Records poor. The pool is formed by a rolled earthfill dam 1,800 ft (549 m) long with a 100-foot-wide (30-meter) earthen spillway at the left end of dam. The crest of emergency spillway is at gage height 33.5 ft (10.21 m). The dam was completed in March 1972, and storage began May 12, 1972. The outlet structure consists of a 2.5- by 7.5-foot (0.8- by 2.3-meter) uncontrolled concrete drop-inlet structure that is connected to a 30-inch (762-millimeter) concrete outlet pipe. The drop-inlet structure is also equipped with a 12-inch-diameter (305-millimeter) slide gate near the bottom of the tower with invert at a gage height of 8.61 ft (2.62 m). The crest of the drop inlet is at gage height 18.12 ft (5.52 m). The capacity of pool at crest of emergency spillway is 1,940 acre-ft (2.39 hm³), the capacity at crest of the drop inlet is 245 acre-ft (0.302 hm³), and the capacity at the crest of the controlled outlet pipe is 24 acre-ft (0.030 hm³). The capacity table below 18.12 ft (5.52 m) was computed using the average-end-area method from a surface area table based on a survey of Mar. 14, 1972. The capacity table above 18.12 ft (5.52 m) was computed using the average-end-area method and based on an area table furnished by the Soil Conservation Service.

POOL WATER BUDGET, IN ACRE-FEET, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
INFLOW 1/	2.7	5.8	12.3	0	0	0	73.2	2.2	4.9	12.6	21.9	243
OUTFLOW	0	0	0	0	0	0	0	0	0	0	0	125
(†)	-31.3	-19.3	-8.4	-15.6	-15.4	-17.6	+63.5	-15.7	-19.4	-10.8	+1.6	+112
(††)	.32	.89	1.63	0	0	1.00	4.98	2.92	2.39	2.65	3.35	6.75

CAL YR 1975:	INFLOW 757	OUTFLOW 590	† -62.8	†† 32.60		
WTR YR 1976:	INFLOW 379	OUTFLOW 125	† +32.6	†† 26.88		

PEAK INFLOW (BASE, 200 FT³/S).--Apr. 19 (1820) *418 ft³/s; Sept. 19 (1110) *787 ft³/s.

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

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

08042650

Monthly and yearly weighted-mean rainfall, in inches _____, of North Creek Subwatershed No. 28-A near Jermyn, Tex.
[Drainage area, 6.82 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 March 14, 1972 (continuous recorder installed Oct. 5, 1972)												
1972	--	--	--	--	--	0.59	3.21	5.36	1.75	1.81	0.79	1.84	--
1973	3.96	1.13	.43	3.79	1.51	2.34	2.83	1.62	2.56	5.46	0	5.55	31.18
1974	4.14	1.39	0	.33	1.61	.54	3.72	1.60	2.12	.89	7.09	5.45	28.88
1975	7.32	.93	1.40	1.49	2.41	1.45	1.81	8.12	4.20	4.25	4.72	1.31	39.41
1976	.32	.89	1.63	0	0	1.00	4.98	2.92	2.39	2.65	3.35	6.75	26.88

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

08042650

North Creek
Monthly and yearly net inflow, in acre-feet, of Subwatershed No. 28-A near Jermyn, Tex.
[Drainage area, 6.82 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 March 14, 1972 (continuous recorder installed Oct. 5, 1972)												
1972	--	--	--	--	--	0	0	190	2.4	1.2	0.7	0.9	--
1973	8.1	.6	.1	2.6	1.8	3.2	2.0	1.5	4.6	152	.7	4.1	181
1974	146	4.0	1.4	.2	.2	.7	35.6	12.3	10.3	.2	64.5	109	384
1975	501	67.1	3.2	14.5	124	7.7	29.8	355	101	29.6	67.7	6.9	1,310
1976	2.7	5.8	12.3	0	0	0	73.2	2.2	4.9	12.6	21.9	243	379

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

08042650

North Creek

Monthly and yearly net outflow, in acre-feet of Subwatershed No. 28-A near Jermyn, Tex.

[Drainage area, 6.82 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 March 14, 1972 (continuous recorder installed Oct. 5, 1972)												
1972	--	--	--	--	--	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	23.8	0	0	0	0	0	0	0	0	0	0	15.9	39.7
1975	342	219	0	0	92.8	0	15.6	332	93.4	9.8	46.6	0	1,150
1976	0	0	0	0	0	0	0	0	0	0	0	125	125

TX-74a
Rev. 2-74

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOL

ANNUAL SUMMARY

1976 WATER YEAR

08042650 North Creek subwatershed No. 28-A near Jermyn, Tex. Drainage Area 6.82 mi^2

Continuous water-stage recorder: ratio 1:6. Date of last sediment survey March 14, 1972

Maxima: gage height, 19.47 ft; outflow, 73.2 ft^3/s; surface area, 55.7 acres; contents, 311 acre-feet; on Sept. 19.

Minima: gage height, 13.48 ft; surface area, 22.0 acres; contents, 104 acre-feet; on Aug. 29.

Maximum inflow, 787 ft^3/s (averaged for 5-min. interval and adjusted for rainfall on pool surface) on Setp. 19.

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

Pool water budget, in acre-feet, water year October 1975 to September 1976

	Oct	Nov.	Dec.	Calendar year 1975	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1976
Total Inflow 1/	2.7	5.8	12.3	757	0	0	0	73.2	2.2	4.9	12.6	21.9	243	379
Total Outflow	0	0	0	590	0	0	0	0	0	0	0	0	125	125
Total Consumption	35.0	27.5	24.7	339	a/ 15.6	b/ 15.4	19.7	19.2	25.2	29.7	29.3	26.9	22.3	290
†	-31.3	-19.3	-8.4	-62.8	-15.6	-15.4	-17.6	+63.5	-15.7	-19.4	-10.8	+1.6	+112	23.6
‡	35.4	32.0	29.7	38.9	28.4	26.6	24.6	25.9	30.4	28.0	26.6	23.8	30.6	28.5
††	.32	.89	1.63	32.60	0	0	1.00	4.98	2.92	2.39	2.65	3.35	6.75	26.88

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.
* Average for 5-minute interval
a/ Includes 2.9 ac-ft of pumpage from reservoir
b/ Includes 3.2 ac-ft of pumpage from reservoir

Peak inflow – (base, _____ ft^3/s)

Date	Time	Discharge	Date	Time	Discharge
April 19	1820	*418			
Sept. 19	1110	*787			

08042700 North Creek near Jacksboro, Tex.

LOCATION.--Lat 33°16'57", long 98°17'53", Jack County, near left bank on downstream side of bridge on U.S. Highway 281, 1.7 miles (2.7 km) upstream from Henderson Creek, 8.4 miles (13.5 km) upstream from mouth, and 9.5 miles (15.3 km) northwest of Jacksboro.

DRAINAGE AREA.--21.6 mi² (55.9 km²).

PERIOD OF RECORD.--August 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,016.33 ft (309.78 m) above mean sea level (State Highway Department bench mark), unadjusted.

AVERAGE DISCHARGE.--14 years (1956-70) prior to completion of floodwater-retarding structures, 5.75 ft³/s (0.163 m³/s), 3.62 in/yr (92 mm/yr), 4,170 acre-ft/yr (5.14 hm³/yr); 6 years (1970-76) regulated, 1.93 ft³/s (0.0547 m³/s), 1.22 in/yr (31 mm/yr), 1,400 acre-ft/yr (1.73 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 1,260 ft³/s (35.7 m³/s) Sept. 19 (gage height, 12.52 ft or 3.816 m); no flow for many days.
Period of record: Maximum discharge, 6,990 ft³/s (198 m³/s) Apr. 28, 1957 (gage height, 24.45 ft or 7.452 m); no flow at times each year.
Maximum stage since at least 1900, that of Apr. 28, 1957. Significant floods occurred in April 1915, from information by local resident, and flood of May 3, 1956, reached a stage of 21.58 ft (6.578 m), from floodmark (discharge, 5,700 ft³/s or 161 m³/s, from rating curve).

REMARKS.--Records poor. No diversions above station. Six rain gages (two nonrecording and four recording) are operated in the basin. At end of year, flow from 16.3 mi² (42.2 km²) above this station was partly controlled by five floodwater-retarding structures with a combined detention capacity of 3,940 acre-ft (4.86 hm³).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	.06	.15	.25	.20	.19	0	.23	.15	0	0	.18
2	.06	.38	.22	.20	.22	.24	0	.20	.06	0	0	0
3	.05	.20	.24	.20	.22	.22	0	.16	.03	1.6	0	2.0
4	.08	.09	.24	.19	.22	.27	0	.14	.01	.60	0	.19
5	.11	.09	.27	.23	.24	.14	.02	1.0	0	0	0	0
6	.08	.10	.20	.27	.17	.04	.07	.44	0	0	0	0
7	.05	.11	.17	.22	.17	.04	.01	.19	0	0	0	0
8	.04	.11	.22	.17	.20	.03	.15	.07	0	0	0	0
9	.02	.09	.24	.20	.24	.01	.08	.04	0	0	0	.24
10	.01	.07	.22	.30	.25	.15	0	.04	0	0	0	.21
11	.01	.07	.24	.22	.24	.22	.02	.03	0	0	0	0
12	.01	.08	.24	.22	.23	.27	0	.05	0	0	0	0
13	.01	.07	.24	.22	.24	.20	.01	.03	0	0	0	0
14	.01	.13	.24	.17	.22	.22	.05	.02	0	0	0	0
15	.01	.13	.20	.20	.21	.21	.06	.02	0	0	0	0
16	.04	.14	.17	.24	.21	.17	.66	.02	0	0	0	0
17	.05	.15	.20	.22	.21	.19	.21	.01	0	.55	0	0
18	.04	.13	.17	.25	.19	.23	.13	.01	0	.01	0	0
19	.03	.15	.20	.21	.19	.22	35	.01	.08	0	0	279
20	.05	.13	.22	.18	.25	.19	2.9	.01	0	0	0	56
21	.05	.09	.22	.19	.18	.11	.49	.01	0	0	0	4.8
22	.03	.09	.24	.21	.09	.11	.33	0	7.4	0	0	1.7
23	.05	.11	.27	.25	.12	.11	.30	.01	.38	0	0	.74
24	.04	.15	1.1	.25	.20	.14	1.3	.01	.01	0	0	.29
25	.02	.17	.60	.21	.14	.22	.23	.01	0	0	0	.07
26	.02	.17	.30	.15	.07	.20	.21	.01	0	0	0	.02
27	.02	.20	.27	.17	.10	.11	.21	0	0	0	0	.01
28	.04	.24	.27	.22	.12	.06	.29	0	0	0	0	.01
29	.02	.30	.24	.22	.09	.12	.37	0	0	0	21	.02
30	.02	.20	.24	.24	---	0	.25	0	0	0	1.8	0
31	.05	---	.27	.20	---	0	---	2.8	---	0	2.4	---
TOTAL	1.21	4.20	8.31	6.67	5.43	4.63	43.35	5.57	8.12	2.76	25.2	345.48
MEAN	.039	.14	.27	.22	.19	.15	1.45	.18	.27	.089	.81	11.5
MAX	.11	.38	1.1	.30	.25	.27	35	2.8	7.4	1.6	21	279
MIN	.01	.06	.15	.15	.07	0	0	0	0	0	0	0
CFSM	.001	.006	.01	.01	.008	.006	.07	.008	.01	.004	.04	.53
IN.	.002	.007	.01	.01	.009	.008	.07	.010	.01	.005	.04	.59
AC-FT	2.4	8.3	16	13	11	9.2	86	11	16	5.5	50	685

CAL YR 1975	TOTAL	1222.40	MEAN 3.35	MAX 205	MIN .01	CFSM .16	IN 2.11	AC-FT 2420				
WTR YR 1976	TOTAL	460.93	MEAN 1.26	MAX 279	MIN 0	CFSM .06	IN .79	AC-FT 914				

9-220 c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet _____ of _____ Sheets

08042700

yearly average rainfall

Monthly and ~~annual discharge~~, in inches, of North Creek River at near Jacksboro, Texas

[Drainage area, 21.6 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	CAL YR
1957	-	-	2.32	0.94	3.80	1.89	14.42	10.69	3.98	2.09	0.05	2.52	-	
1958	4.53	6.79	.94	1.99	.73	2.83	5.95	3.06	1.81	3.17	1.36	3.54	36.70	38.55
1959	2.20	1.35	.70	.27	.48	.84	1.21	3.88	7.47	2.72	1.26	1.61	23.99	32.84
1960	9.84	.52	2.74	2.82	1.74	1.03	2.10	3.52	2.08	4.22	1.87	5.18	37.66	29.94
1961	2.72	.01	2.65	3.85	1.53	3.91	.06	2.53	3.30	4.75	2.17	4.51	31.99	34.07
1962	2.97	3.74	1.00	.14	.40	2.60	2.34	2.85	7.99	5.75	2.04	9.54	41.37	40.21
1963	2.25	2.82	1.48	.07	.42	.14	4.74	3.04	1.84	1.13	2.27	1.40	21.60	20.78
1964	1.38	3.31	1.04	2.49	1.10	1.65	2.16	6.43	1.14	.41	3.84	3.20	28.16	29.78
1965	.03	6.57	.76	2.42	1.50	.36	2.84	5.71	1.56	.12	2.95	6.52	31.34	27.87
1966	2.40	.38	1.11	1.87	1.18	1.99	10.76	.34	2.65	.55	4.43	5.77	33.43	30.81
1967	.65	.46	.16	0	.32	.61	1.73	6.00	1.53	3.22	.20	7.30	22.18	25.44
1968	2.52	.76	1.25	4.27	1.97	4.65	1.51	2.41	3.04	5.07	1.46	1.97	30.88	31.33
1969	.94	3.21	.83	.67	2.20	4.83	3.14	5.51	3.51	.75	1.89	5.46	32.94	36.34
1970	3.38	.81	4.19	.01	2.53	2.47	5.49	1.24	.42	.32	.70	3.25	24.81	19.42
1971	2.35	.32	.32	.19	1.05	.20	.92	2.86	1.35	5.36	4.05	5.77	24.74	29.07
1972	3.84	.71	2.77	.23	.79	.83	3.00	5.69	1.86	1.32	1.01	1.98	24.03	21.98
1973	3.89	1.04	.34	3.69	1.40	2.26	2.28	2.09	2.28	5.24	.04	5.58	30.13	30.55
1974	3.99	1.70	0	.30	1.45	.51	3.30	1.73	2.39	.91	7.07	5.41	28.76	32.60
1975	7.05	1.04	1.44	1.40	2.42	1.37	1.81	7.94	4.03	4.59	4.55	1.37	39.01	32.26
1976	.39	.88	1.51	0	.14	.88	4.57	2.73	2.19	2.77	3.25	6.56	25.87	

GPO 849 - 229

9-220 c
(Oct. 1951)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet _____ of _____ Sheets

08-0427.00

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

[Drainage area, 21.6 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 Aug. 8, 1956										
1956	-	-	-	-	-	-	-	-	-	-	0.10	0	-
1957	16.0	9.32	1.65	0	13.3	1.62	162	98.6	13.9	0.74	0	0.003	26.3
1958	1.43	21.6	.12	.39	.10	1.85	29.3	23.5	.31	2.77	0	1.01	6.85
1959	.08	0	0	0	0	0	0	.17	21.3	14.4	0	.17	3.00
1960	48.2	0	.006	3.48	3.44	.08	1.57	.67	.41	.30	.32	9.25	5.69
1961	1.51	0	0	13.9	.65	19.8	.02	2.54	.04	17.4	.07	1.10	4.84
1962	3.69	2.13	.01	0	0	.57	.92	.01	45.5	15.2	.57	19.0	7.09
1963	.96	7.49	2.86	.03	.08	.06	14.7	2.09	2.13	0	.05	0	2.52
1964	0	2.38	0	.54	.30	0	.26	15.1	.26	0	.65	.54	1.69
1965	0	16.4	0	.33	.01	.003	1.10	16.7	.003	0	0	18.7	4.42
1966	1.10	0	0	.315	.421	5.40	66.8	3.23	2.59	0	1.17	2.67	6.90
1967	.060	.003	.012	.001	.002	.013	.055	12.5	.706	1.75	0	5.45	1.73
1968	.006	0	0	2.90	.30	13.1	.89	.49	3.25	3.10	0	.18	2.04
1969	0	.098	.005	.016	.51	12.5	3.12	33.6	3.25	0	0	2.64	4.71
1970	.012	.0003	5.50	.085	.55	1.80	23.8	1.39	.003	0	0	0	2.75
			Runoff affected by floodwater-retarding structures										
1971	.005	0	0	0	0	0	0	.40	0	4.52	.62	3.86	.79
1972	1.40	0	1.16	.13	.050	.18	.80	18.9	0	0	0	0	1.91
1973	.23	.001	0	.17	.008	.12	.29	.27	.016	3.97	.003	.77	.49
1974	3.91	.10	0	0	.30	0	1.74	.67	.95	0	3.45	2.43	1.13
1975	22.0	9.46	.22	.52	3.61	.46	.68	16.5	9.85	3.61	4.16	.31	5.98
1976	.039	.14	.27	.22	.19	.15	1.45	.18	.27	.089	.81	11.5	1.26

TX-74a
Rev. 2-74

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOL

ANNUAL SUMMARY

1976 WATER YEAR

____ North Creek subwatershed No. 24 near Jermyn, Tex. Drainage Area 5.47 mi^2

~~Continuous water stage~~ Staff-gage recorder: ratio ____. Date of last sediment survey May 21, 1971.

Maxima: gage height, 30.80 ft; outflow, 37.2 ft^3/s; surface area, 28.0 acres; contents, 158 acre-feet; on Sept. 19, 1976

Minima: gage height, 24.66 ft; surface area, 8.1 acres; contents, 62.8 acre-feet; on Aug 29, 1976.

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 1975 to September 1976.

	Oct.	Nov.	Dec.	Calendar year 1975	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1976
Total Inflow 1/	.9	.7	1.6	371	0	.2	1.9	5.5	3.3	1.4	5.6	8.5	126.6	156
Total Outflow	0	0	0	314	0	0	0	0	0	0	0	0	69.0	69.0
Total Consumption	10.5	6.8	5.0	144	4.3	4.4	7.3	7.8	9.1	9.8	9.6	10.0	8.8	93.4
†	-9.1	-5.1	-1.6	-32.4	-4.3	-4.0	-4.7	+1.6	-3.3	-6.7	-1.2	+1.3	+55.9	+18.8
‡	16.2	14.2	13.4	19.8	13.1	12.6	11.8	11.5	11.4	10.5	10.0	9.0	12.6	12.2
††	.40	.85	1.58	32.40	0	.15	.70	4.12	2.70	1.95	3.33	3.70	6.17	25.65

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

TX-74a
Rev. 2-74

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOL

ANNUAL SUMMARY

1976 WATER YEAR

North Creek subwatershed No. 25 near Jermyn, Tex. Drainage Area 1.39 mi^2

~~Continuous water stage~~ Staff-gage recorder: ratio ———. Date of last sediment survey June 8, 1972.

Maxima: gage height, 8.50 ft; outflow, 3.9 ft^3/s; surface area, 8.5 acres; contents, 36.7 acre-feet; on Sept. 19, 1976.

Minima: gage height, 3.06 ft; surface area, 3.2 acres; contents, 4.9 acre-feet; on Aug 29, 1976

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 1975 to September 1976.

	Oct.	Nov.	Dec.	Calendar year 1975	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1976
Total Inflow 1/	.3	1.0	1.4	88.7	0	.1	.2	2.7	.6	.4	3.5	3.9	25.3	39.4
Total Outflow	0	0	0	65.1	0	0	0	0	0	0	0	0	1.6	1.6
Total Consumption	4.9	3.7	3.4	57.3	2.6	2.7	2.6	2.9	3.3	3.4	4.5	4.3	3.9	42.2
†	-4.4	-2.3	-1.2	-12.8	-2.6	-2.6	-2.1	+1.5	-1.6	-2.2	+.2	+.8	+22.7	+6.2
‡	6.6	6.1	5.8	7.4	5.6	5.3	5.1	5.0	5.0	4.6	4.5	3.8	5.7	5.3
††	.40	.85	1.58	32.40	0	.15	.70	4.12	2.70	1.95	3.33	3.70	6.17	25.65

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

TX-74a
Rev. 2-74

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOL

ANNUAL SUMMARY

1976 WATER YEAR

North Creek subwatershed No. 26 near Jermyn, Tex. Drainage Area 1.41 mi^2

~~Continuous water-stage~~ Staff-gage recorder: ratio ———. Date of last sediment survey May 19, 1971.

Maxima: gage height, 11.40 ft; outflow, 9.0 ft^3/s; surface area, 5.4 acres; contents, 18.0 acre-feet; on Sept 19, 1977.

Minima: gage height, 7.74 ft; surface area, 4.2 acres; contents, 12.0 acre-feet; on Aug. 29, 1976

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 1975 to September 1976.

	Oct.	Nov.	Dec.	Calendar year 1975	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1976
Total Inflow 1/ A/	0	1.0	2.2	150	.9	.7	.6	5.7	1.5	1.5	.1	3.6	23.1	40.9
Total Outflow	0	0	0	138	0	0	0	0	0	0	0	0	14.9	14.9
Total Consumption	3.5	2.3	2.1	36.4	1.7	2.0	2.1	2.2	3.0	3.5	4.2	4.0	3.4	34.0
†	-3.3	-.9	+.8	-6.7	-.8	-1.2	-1.2	+5.3	-.3	-1.1	-2.6	+1.0	+7.5	+3.2
‡	5.7	5.4	5.3	6.2	5.4	5.2	5.0	5.2	5.6	5.5	5.3	4.7	5.6	5.3
††	.40	.85	1.58	32.40	0	.15	.70	4.12	2.70	1.95	3.33	3.70	6.17	25.65

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.
A/ Some spring flow Dec - Mar.

Peak inflow – (base, ——— ft^3/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

1976 WATER YEAR

_____ North Creek subwatershed No. 30 near Jermyn, Tex. Drainage Area 1.20 mi^2

~~Continuous water stage~~ Staff-gage recorder: ratio ____. Date of last sediment survey May 20, 1971.

Maxima: gage height, 2.86 ft; outflow, 0 ft^3/s; surface area, 3.8 acres; contents, 22.1 acre-feet; on Sept. 19, 1976.

Minima: gage height, 12.44 ft; surface area, 1.2 acres; contents, 3.1 acre-feet; on Aug 29, 1976.

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 1975 to September 1976

	Oct.	Nov.	Dec.	Calendar year 1975	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year 1976
Total Inflow 1/	.1	.5	.1	113	0	0	0	4.3	0	1.9	.4	.5	18.4	26.2
Total Outflow	0	0	0	60.7	0	0	0	0	0	0	0	0	0	0
Total Consumption	6.9	5.4	3.8	81.4	3.4	2.7	2.9	2.8	3.1	3.0	2.9	2.3	2.6	44.8
†	-6.7	-4.6	-3.3	-15.0	-3.4	-2.7	-2.7	+2.2	-2.7	-.8	-2.1	-1.5	+16.7	-11.6
‡	4.4	3.9	3.3	5.2	2.9	2.5	2.1	2.0	2.0	1.8	1.7	1.3	1.8	2.5
††	.25	.85	1.45	30.05	0	.14	.87	4.38	2.77	1.90	2.70	2.95	6.20	21.46

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

Form A-88
Rev. 1-63

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-AUSTIN DISTRICT

RAINFALL DATA SUMMARY

STUDY AREA North Creek — 1976 WATER YEAR

RAIN GAGES

Date of storm	1-S	2-R	3-S	4-R	5-R		Avg.												By V
Oct. 15	.79	.40	.32	.25	.21														
October Totals	.79	.40	.32	.25	.21		.39												
Nov. 2	.87	.75	.80	.77	.70														
12&13	.10	0	0	0	0														
19	0	.10	.09	.08	.07														
23	.01	0	0	0	.07														
November Total	.98	.85	.89	.85	.84		.88												
Dec. 1	0	0	0	0	.02														
18	0	0	0	0	.05														
23	.05	.08	.10	.05	0														
24	1.20	1.22	1.22	1.12	1.15														
25	.15	.28	.31	.28	.27														
December Totals	1.40	1.58	1.63	1.45	1.49		1.51												
1975 Calendar Year Total							32.26												
January Totals	0	0	0	0	0		0												
Feb 4	.23	.15	0	.14	.18														
17	.02	0	0	0	0														
February Totals	.25	.15	0	.14	.18		.14												
Mar 7	.62	.50	.64	.61	.59														
8	.02	.10	.15	.16	.21														
11	.15	.10	.13	.10	.09														
13	.07	0	.08	0	.06														
March Totals	.86	.70	1.00	.87	.95		.88												
Apr. 7	.35	.25	.46	.40	.33														
12	.13	0	0	0	.05														
15	1.30	1.10	1.27	1.18	1.12														
17	.05	.15	.15	.05	.08														
18	.27	.17	.25	.10	.31														
19	.83	1.41	2.04	1.75	2.20														
23	.37	.46	.37	.42	.52														
24	.03	.03	0	.03	0														
28	.80	.50	.40	.34	.47														
29	.12	.05	.04	.11	.02														

Form TX-88
10-69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

RAINFALL DATA SUMMARY--Continued

STUDY AREA North Creek

RAIN GAGE

1976 WATER YEAR

Date of storm	1-S	2-R	3-S	4-R	5-R		Avg.
April Totals	4.25	4.12	4.98	4.38	5.10		4.57
May 5	.74	.77	.93	.75	.76		
12	.12	.15	.15	.20	.38		
23	.43	.52	.53	.30	.28		
25	.28	.20	.22	.22	.17		
30	.37	.38	.39	.35	.27		
31	.68	.68	.70	.95	.79		
May Totals	2.62	2.70	2.92	2.77	2.65		2.73
June 7	.42	.15	0	0	0		
17-19	.25	.40	.67	.50	1.61		
22	.88	1.15	1.34	1.10	1.32		
24	.08	.15	.15	.10	0		
26	0	0	0	0	.11		
30	.02	.10	.23	.20	0		
June Totals	1.65	1.95	2.39	1.90	3.04		2.19
July 3	.62	1.15	1.36	1.20	1.37		
10	.32	.23	.27	.20	.33		
15&16	2.03	1.75	.90		.25		
20	0	.15	0		0		
25	.14	.05	.12		.09		
July Totals	3.11	3.33	2.65	(2.70)	2.04		2.77
Aug 24	.02	0	0		.19		
29	2.50	1.92	1.74		1.44		
30	1.23	1.38	1.24		.47		
31	.33	.40	.37		.08		
August Totals	4.08	3.70	3.35	(2.95)	2.18		3.25
Sept 1	.25	0	.20		0		
2&3	0	.30	.79		.07		
9	1.03	.85	.87		.86		
19	5.75	4.70	4.48	(4.72)	5.14		
27&28	.45	.32	.41		.15		
September Totals	7.48	6.17	6.75	(6.20)	6.22		6.56
1976 Water Year Total							25.87

Form A-64
(Rev. 5-65)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

Sheet 1 of 1

INFLOW AND OUTFLOW COMPUTATIONS

Storm period April 19 & 20, 1976

08042650 North Creek subwatershed No. 28-A near Jermyn, Tex. D.A. 6.82 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
April 19, 1976																
1200	13.72	109.14														
1400	13.75	109.82	2.0	+.68	4.1	13.74		4.1	.12	22.7	.23	1.4	2.7	.0006	.0012	.0012
1530	13.75	109.82	1.5	0	0	13.75		0	.03	22.7	.06	.5	0	.0000	.0000	.0012
1600	13.80	110.96	.50	+1.14	27.6	13.78		27.6	.46	22.8	.87	21.1	6.5	.0015	.0008	.0020
1700	13.99	115.38	1.0	+4.42	53.5	13.90		53.5	.88	23.2	1.70	20.6	32.9	.0076	.0076	.0096
30	14.04	116.56	.50	+1.18	28.6	14.02		28.6	0	23.6	0	0	28.6	.0066	.0033	.0129
45	14.14	118.95	.25	+2.39	116	14.09		116	0	23.9	0	0	116	.0267	.0067	.0196
1800	14.38	124.82	.25	+5.87	284	14.26		284	0	24.5	0	0	284	.0653	.0163	.0359
10	14.57	129.61	.167	+4.79	348	14.48		348	0	25.2	0	0	348	.0800	.0134	.0493
15	14.68	132.44	.083	+2.83	411	14.62		411	0	25.7	0	0	411	.0945	.0078	.0571
20	14.79	135.32	.083	+2.88	418	14.74		418	0	26.1	0	0	418	.0961	.0080	.0651
25	14.89	137.96	.083	+2.64	383	14.84		383	0	26.5	0	0	383	.0881	.0073	.0724
30	14.98	140.38	.083	+2.42	351	14.94		351	0	26.8	0	0	351	.0807	.0067	.0791
40	15.14	144.74	.167	+4.36	316	15.06		316	0	27.2	0	0	316	.0727	.0121	.0912
50	15.27	148.35	.167	+3.61	262	15.20		262	0	27.7	0	0	262	.0603	.0101	.1013
1900	15.38	151.45	.167	+3.10	225	15.32		225	0	28.2	0	0	225	.0518	.0081	.1100
15	15.51	155.17	.25	+3.72	180	15.44		180	0	28.6	0	0	180	.0414	.0104	.1204
30	15.61	158.07	.25	+2.90	140	15.56		140	0	29.0	0	0	140	.0322	.0080	.1284
45	15.69	160.42	.25	+2.35	114	15.65		114	.09	29.3	.22	10.6	103	.0237	.0059	.1343
2000	15.75	162.20	.25	+1.78	86.2	15.72		86.2	.08	29.6	.20	9.7	76.5	.0176	.0044	.1387
30	15.84	164.89	.50	+2.68	64.9	15.80		64.9	.02	29.8	.05	1.2	63.7	.0147	.0074	.1461
2100	15.90	166.88	.50	+1.80	43.6	15.87		43.6	.02	30.1	.05	1.2	42.4	.0098	.0049	.1510
2200	16.00	169.72	1.0	+3.04	36.8	15.95		36.8	.02	30.4	.05	.6	36.2	.0083	.0083	.1593
2400	16.11	173.11	2.0	+3.39	26.5	16.06		20.5	0	30.9	0	0	20.5	.0047	.0094	.1687
April 20, 1976																
0600	16.23	176.87	6.0	+3.76	7.6	16.17		7.6	0	31.3	0	0	7.6	.0017	.0102	.1789
1200	16.31	179.41	6.0	+2.54	5.1	16.27		5.1	0	31.9	0	0	5.1	.0012	.0066	.1855
1800	16.34	180.37	6.0	+.96	1.9	16.32		1.9	0	32.0	0	0	1.9	.0004	.0024	.1879
2400	16.34	180.37	6.0	0	0	16.34		0	0	32.1	0	0	0	.0000	.0000	.1879

No outflow

TX-78 (Revised July 1969)

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

WEIGHTED-PRECIPITATION RECORD

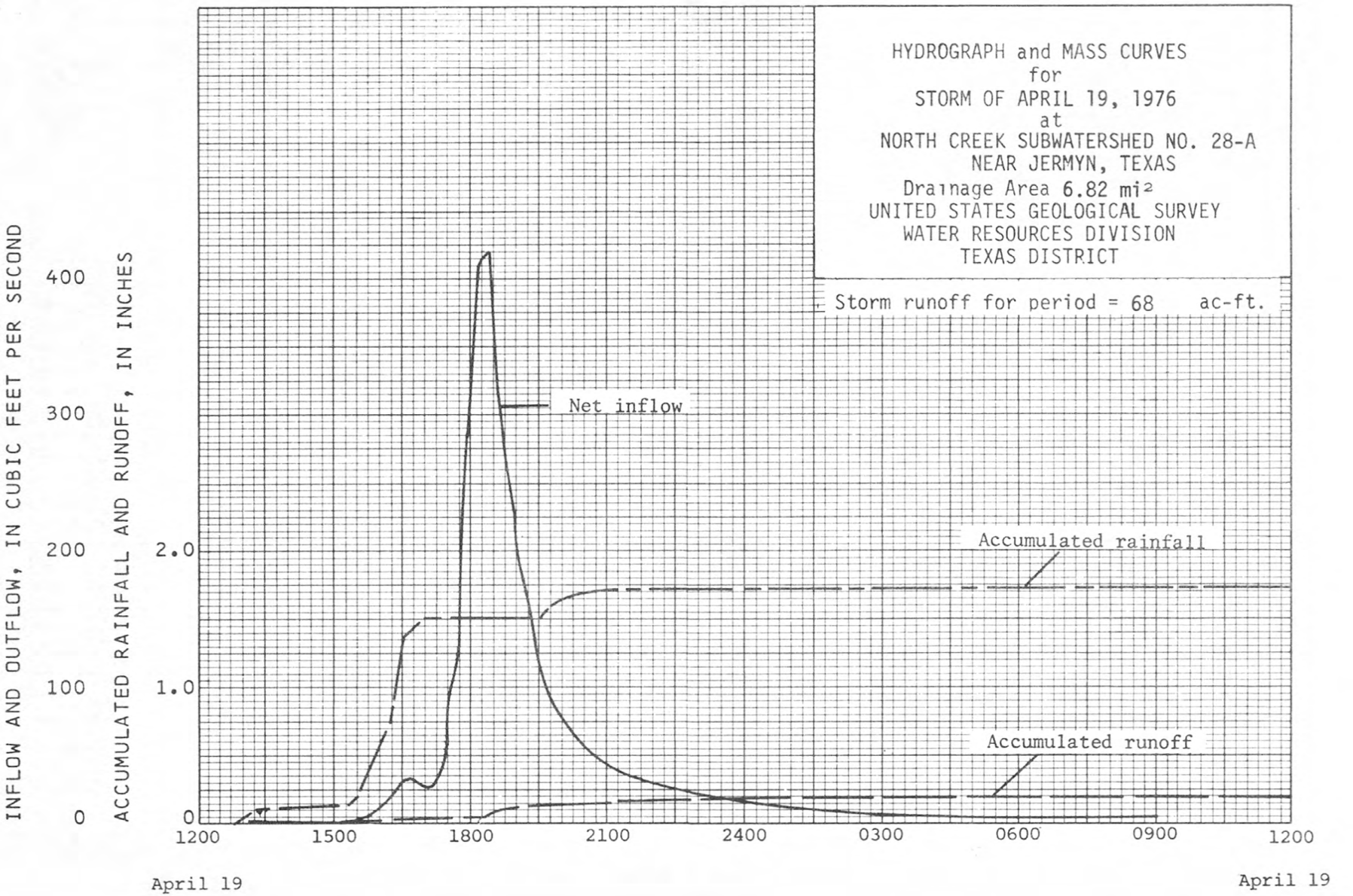
Sheet 1 of 1
Comp. by: CCK
Date 12/10/76
Check by EDL
Date 12/10/76

Study Area 08042650 North Creek SWS #28-A near Jermyn, Tex Date of storm April 19, 1976

Weight Factor		0										Accumulated Weighted Precipitation	
	Accumulated Precipitation in Inches for Recording Rain Gages												
Date & Time	Gage Recorded	2R 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
April	19,1976													
1300	0												0	0
15	.08												.08	.12
1400	.08												.08	.12
1530	.10												.10	.15
45	.27												.27	.41
1600	.40												.40	.61
15	.58												.58	.88
30	.93												.93	1.42
1700	.98												.98	1.49
1930	.98												.98	1.49
2000	1.09												1.09	1.66
2200	1.13												1.13	1.72
2400	1.13												1.13	1.72

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
2R	0	1.13									
35	1.0	1.72									
										WMR	1.72

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 1.72 / 1.13 = 1.522


HYDROGRAPH and MASS CURVES
for
STORM OF APRIL 19, 1976
at
NORTH CREEK SUBWATERSHED NO. 28-A
NEAR JERMYN, TEXAS
Drainage Area 6.82 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 68 ac-ft.
INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
400
300
200
100
0
2.0
1.0
0
Net inflow
Accumulated rainfall
Accumulated runoff
1200
1500
1800
2100
2400
0300
0600
0900
1200
April 19
April 19

TX.-65 (Rev. 2-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station 08042700 North Creek near Jacksboro, Tex.

Period of Record April 19 & 20, 1976 Drainage Area 21.6 mi² of which 16.3 mi² is above flood detention structures

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Inc.	In/Hr	// Runoff Inches	Acc. In.
	April 19, 1976						
0000	4.39	+.22	.22	8	.0000	.0000	.0000
0200	4.50		.60	10	.0000	.0000	.0000
30	4.49		.54	6	.0000	.0000	.0000
0330	4.53		.73	12	.0001	.0002	.0002
0530	4.49		.54	18	.0000	.0000	.0002
0800	4.49		.54	26	.0000	.0000	.0002
1200	4.57		.93	24	.0001	.0003	.0005
1400	4.57		.93	14	.0001	.0002	.0007
1530	4.71		1.9	8	.0001	.0001	.0008
1600	4.66		1.5	4	.0001	.0001	.0009
30	4.66	+.22	1.5	4	.0001	.0001	.0010
1700	5.15	+.15	6.8	4	.0005	.0002	.0012
30	6.88	0	122	4	.0088	.0044	.0056
1800	8.37		310	4	.0223	.0112	.0168
30	7.81		232	4	.0167	.0084	.0252
1900	8.27		295	4	.0212	.0106	.0358
30	8.17		281	4	.0202	.0101	.0459
2000	7.45		186	4	.0134	.0067	.0526
30	6.48		83	4	.0060	.0030	.0556
2100	6.02		42	5	.0030	.0019	.0575
45	5.66		20	5	.0014	.0009	.0584
2215	5.84		30	5	.0022	.0014	.0598
2300	5.66	0	20	7	.0014	.0012	.0610
2400	5.41	+.02	10	4	.0007	.0004	.0614
			6809.26	192			
			35				

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft³/s	Inc.	In/Hr.	Runoff Inches	Acc. In
	April 20, 1976						
0000	5.41	+.02	10	1	.0007	.0004	.0618
0100	5.20	+.16	8.1	2	.0006	.0006	.0624
0200	5.10	+.22	7.2	2	.0005	.0005	.0629
0300	5.04	+.25	6.6	2	.0005	.0005	.0634
0400	4.97	+.27	5.7	2	.0004	.0004	.0638
0500	4.91		4.8	2	.0003	.0003	.0641
0600	4.87		4.2	2	.0003	.0003	.0644
0700	4.82		3.6	2	.0003	.0003	.0647
0800	4.78		3.1	2	.0002	.0002	.0649
0900	4.75		2.7	2	.0002	.0002	.0651
1000	4.72		2.4	2	.0002	.0002	.0653
1100	4.69		2.1	2	.0002	.0002	.0655
1200	4.67		2.0	2	.0001	.0001	.0656
1300	4.64		1.7	2	.0001	.0001	.0657
1400	4.63		1.6	2	.0001	.0001	.0658
1500	4.61		1.5	2	.0001	.0001	.0659
1600	4.58		1.3	2	.0001	.0001	.0660
1700	4.57		1.2	2	.0001	.0001	.0661
1800	4.55		1.1	2	.0001	.0001	.0662
1900	4.53		1.0	2	.0001	.0001	.0663
2000	4.52		.93	2	.0001	.0001	.0664
2100	4.51		.88	2	.0001	.0001	.0665
2200	4.50		.83	2	.0001	.0001	.0666
2300	4.49		.78	2	.0001	.0001	.0667
2400	4.48	+.27	.73	1	.0001	.0001	.0668
			141.37	48			
			2.9				

// Unadjusted for storage in upstream reservoirs

Computed by CCK Date 11/06/77 Checked by EDL Date 11/07/77

TX-78 (Revised July 1969)

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

WEIGHTED-PRECIPITATION RECORD

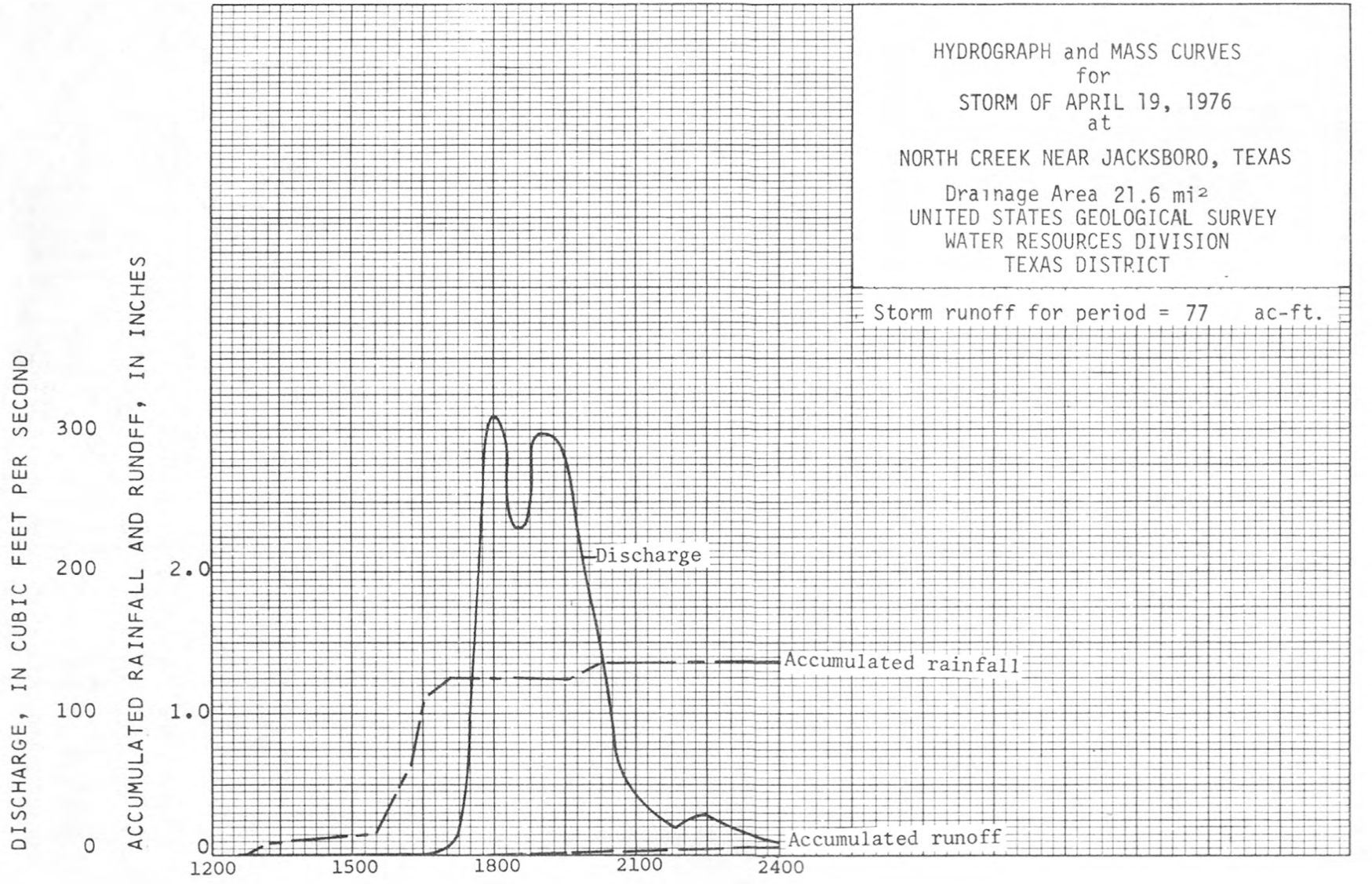
Sheet 1 of 1
Comp. by: CCK
Date 2/03/77
Check by EDL
Date 2/07/77

Study Area 08042700 North Creek near Jacksboro, TEX Date of storm April 19, 1976

Date & Time	Accumulated Precipitation in Inches for Recording Rain Gages												Accumulated Weighted Precipitation	
Weight Factor		.70		.25		.05								
	Gage	2R	Gage	4R	Gage	5R	Gage		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		
April 19, 1976														
1300	0	0	0	0	0	0							0	0
15	.08	.06	.07	.02	.25	.01							.09	.10
1400	.08	.06	.10	.02	.25	.01							.09	.10
1530	.10	.07	.10	.02	.35	.02							.11	.13
45	.27	.19	.35	.09	.60	.03							.31	.36
1600	.40	.28	.40	.10	.80	.04							.42	.49
15	.58	.41	.63	.16	1.40	.07							.64	.74
30	.93	.65	.85	.21	1.65	.08							.94	1.09
1700	.98	.69	1.15	.29	1.75	.09							1.07	1.24
1930	.98	.69	1.15	.29	1.75	.09							1.07	1.24
2000	1.09	.76	1.18	.30	1.80	.09							1.15	1.34
2200	1.13	.79	1.20	.30	1.82	.09							1.18	1.37
2400	1.13	.79	1.20	.30	1.82	.09							1.18	1.37

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
1S	.10	.83	.08								
2R	.25	1.13	.28								
3S	.36	1.72	.62								
4R	.22	1.20	.26								
5R	.07	1.82	.13								
										WMR	1.37

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation 1.37 / 1.18 = 1.1610


HYDROGRAPH and MASS CURVES
for
STORM OF APRIL 19, 1976
at
NORTH CREEK NEAR JACKSBORO, TEXAS
Drainage Area 21.6 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 77 ac-ft.
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
300
200
100
0
2.0
1.0
0
Discharge
Accumulated rainfall
Accumulated runoff
1200
1500
1800
2100
2400
April 19

Form A-64
(Rev. 5-65)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period Sept. 19 & 20, 1976

08042650 North Creek subwatershed No. 28-A near Jermyn, Tex. D.A. 6.82 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	Storage ac-ft	Storage cfs	Net Inflow Rate cfs	Net Inflow Rate in/hr	Net Inflow in	Acc in
	Sept. 19, 1976															
0000	14.28	122.35														
0200	14.34	123.83	2.0	+1.48	9.0	14.31	0	9.0	.59	24.6	1.21	7.3	1.7	.0004	.0008	.0008
0400	14.42	125.82	2.0	+1.99	12.0	14.38	0	12.0	.33	24.9	.68	4.1	7.9	.0018	.0036	.0044
0600	14.76	134.53	2.0	+8.71	52.7	14.59	0	52.7	1.14	25.6	2.43	14.7	38.0	.0087	.0174	.0218
0800	15.48	154.31	2.0	+19.78	120	15.12	0	120	.94	27.4	2.15	13.0	107	.0246	.0492	.0710
0900	16.30	179.09	1.0	+24.78	300	15.89	0	300	.53	30.2	1.33	16.1	284	.0653	.0653	.1363
30	16.81	195.95	.50	+16.86	408	16.56	0	408	.09	33.1	.25	6.0	402	.0925	.0462	.1825
1000	17.20	209.66	.50	+13.71	332	17.00	0	332	.29	35.1	.85	20.6	311	.0715	.0358	.2183
15	17.38	216.23	.25	+6.57	318	17.29	0	318	.04	36.5	.12	5.8	312	.0718	.0180	.2363
30	17.60	224.47	.25	+8.24	399	17.49	0	399	.29	37.5	.90	43.6	355	.0816	.0204	.2567
40	17.77	231.01	.167	+6.54	475	17.68	0	475	.06	38.4	.19	13.8	461	.1060	.0177	.2744
50	17.97	238.96	.167	+7.95	577	17.87	0	577	.05	39.7	.16	11.6	565	.1300	.0217	.2961
55	18.08	243.50	.083	+4.54	659	18.02	0	659	.01	41.2	.03	4.4	655	.1506	.0125	.3086
1100	18.20	248.58	.083	+5.08	738	18.14	.1	738	.01	42.4	.03	4.4	734	.1688	.0140	.3226
05	18.32	253.82	.083	+5.24	761	18.26	2.4	763	0	43.6	0	0	763	.1755	.0146	.3372
10	18.44	259.20	.083	+5.38	781	18.38	6.2	787	0	44.8	0	0	787	.1810	.0150	.3522
20	18.65	268.96	.167	+9.76	709	18.54	12.8	722	0	46.4	0	0	722	.1661	.0277	.3799
30	18.80	276.18	.167	+7.22	524	18.72	21.8	546	0	48.2	0	0	546	.1256	.0210	.4009
45	18.97	284.66	.25	+8.48	410	18.88	30.9	441	0	49.8	0	0	441	.1014	.0254	.4263
1200	19.11	291.86	.25	+7.20	348	19.04	41.1	389	0	51.4	0	0	389	.0895	.0224	.4487
30	19.30	301.93	.50	+10.07	244	19.20	52.2	296	0	53.0	0	0	296	.0681	.0340	.4827
1300	19.43	309.04	.50	+7.11	172	19.36	64.4	236	0	54.6	0	0	236	.0543	.0272	.5099
1400	19.47	311.26	1.0	+2.22	26.9	19.45	71.6	98.5	0	55.5	0	0	98.5	.0227	.0227	.5326
1600	19.37	305.74	2.0	-5.52	-33.4	19.42	69.1	35.7	.04	55.2	.18	1.1	34.6	.0080	.0160	.5486
1800	19.22	297.65	2.0	-8.09	-48.9	19.30	59.7	10.8	.03	54.0	.14	.8	10.0	.0023	.0046	.5532
2100	19.03	287.72	3.0	-9.93	-40.0	19.12	46.5	6.5	.04	52.2	.17	.7	5.8	.0013	.0039	.5571
2400	18.90	281.13	3.0	-6.59	-26.5	18.96	35.9	9.4	0	50.6	0	0	9.4	.0022	.0066	.5637
	Sept. 20, 1976															
0600	18.73	272.78	6.0	-8.35	-16.8	18.82	27.4	10.6	0	49.2	0	0	10.6	.0024	.0144	.5781
1200	18.60	266.58	6.0	-6.20	-12.5	18.66	18.7	6.2	0	47.6	0	0	6.2	.0014	.0084	.5865

Form A-64
(Rev. 5-65)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

INFLOW AND OUTFLOW COMPUTATIONS

Storm period Sept 19 & 20, 1976

08042650 North Creek subwatershed No. 28-A near Jermun, Tex. D.A. 6.82 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
	Sept. 20, 1976		continued													
1800	18.50	261.93	6.0	-4.65	-9.4	18.55	13.2	3.8	0	46.5	0	0	3.8	.0009	.0054	.5919
2400	18.43	258.74	6.0	-3.19	-6.4	18.46	9.2	2.8	0	45.6	0	0	2.8	.0006	.0036	.5955

TX-78 (Revised July 1969)

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

WEIGHTED-PRECIPITATION RECORD

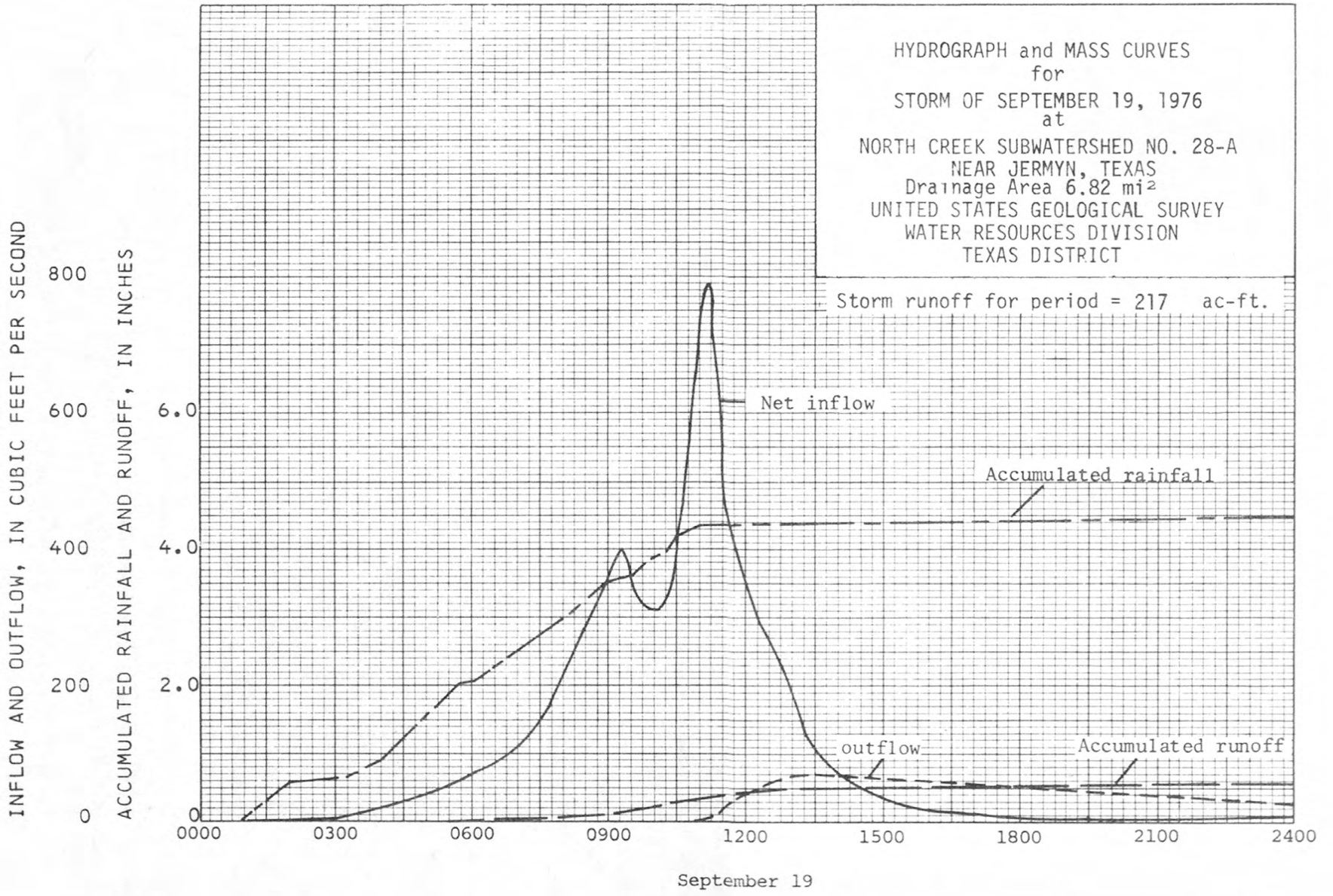
Sheet 1 of 1
Comp. by: CCK
Date 12/10/76
Check by EDL
Date 12/14/76

Study Area 08042650 North Creek SWS 28-A near Jermyn, TX Date of storm Sept 19, 1976

Accumulated Precipitation in Inches for Recording Rain Gages											Accumulated Weighted Precipitation	
Weight Factor		0										
	Gage	2R	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	All Gages	All Gages
Sept. 19,	1976											
0030	0										0	0
0115	.20										.20	.19
0200	.62										.62	.59
0315	.72										.72	.69
0400	.97										.97	.92
0545	2.12										2.12	2.02
0600	2.16										2.16	2.06
0800	3.15										3.15	3.00
0900	3.70										3.70	3.53
30	3.80										3.80	3.62
1000	4.10										4.10	3.91
15	4.14										4.14	3.95
30	4.45										4.45	4.24
40	4.51										4.51	4.30
50	4.56										4.56	4.35
55	4.57										4.57	4.36
1100	4.58										4.58	4.37
1500	4.58										4.58	4.37
1600	4.63										4.63	4.41
1800	4.66										4.66	4.44
2100	4.70										4.70	4.48
2400	4.70										4.70	4.48

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
2R	0	4.70									
35	1.0	4.48									
										WMR: 4.48	

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = 4.48 / 4.70 = 0.953


HYDROGRAPH and MASS CURVES
for
STORM OF SEPTEMBER 19, 1976
at
NORTH CREEK SUBWATERSHED NO. 28-A
NEAR JERMYN, TEXAS
Drainage Area 6.82 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 217 ac-ft.
Net inflow
Accumulated rainfall
outflow
Accumulated runoff
INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
800
600
400
200
0
6.0
4.0
2.0
0
0000
0300
0600
0900
1200
1500
1800
2100
2400
September 19

TX.-65 (Rev. 2-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station 08042700 North Creek near Jacksboro, Tex

Period of Record Sept. 19 & 20, 1976 Drainage Area 21.6 mi^2 of which 16.3 mi^2 is above flood detention structures

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft^3/s	Inc.	In/Hr	‖ Runoff Inches	Acc. In.
	Sept. 19, 1976						
0000	3.65	+.17	0	4	.0000	.0000	.0000
0200	4.36		.06	6	.0000	.0000	.0000
0300	4.24		0	3	.0000	.0000	.0000
30	4.83		2.5	3	.0002	.0002	.0002
0430	4.74	+.17	1.7	4	.0001	.0001	.0003
0530	5.31	+.06	8.3	3	.0006	.0004	.0007
0600	5.77	0	26	4	.0019	.0019	.0026
0730	6.60		94	5	.0067	.0084	.0110
0830	6.42		77	3	.0055	.0041	.0151
0900	7.66		213	2	.0153	.0076	.0227
30	9.93		588	2	.0422	.0211	.0438
1000	11.42		946	2	.0679	.0340	.0778
30	12.28		1190	2	.0854	.0427	.1205
1100	12.51		1260	2	.0905	.0452	.1657
30	12.28		1190	2	.0854	.0427	.2084
1200	11.69		1020	2	.0732	.0366	.2450
30	11.13		870	2	.0625	.0312	.2762
1300	10.40		692	3	.0497	.0373	.3135
1400	9.04		418	4	.0300	.0300	.3435
1500	8.39		313	6	.0225	.0338	.3773
1700	7.87		240	10	.0172	.0430	.4203
2000	7.36		175	10	.0126	.0315	.4518
2200	7.09		145	8	.0104	.0208	.4726
2400	6.90	0	124	4	.0089	.0089	.4815
			26830.96				
			279				

Time	G. Ht. Feet	Sh. Adj.	Discharge Ft^3/s	Inc.	In/Hr.	‖ Runoff Inches	Acc. In
	Sept. 20, 1976						
0000	6.90	0	124	1	.0089	.0134	.4949
0300	6.63		96	2	.0069	.0207	.5156
0600	6.43		78	2	.0056	.0168	.5324
0900	6.27		62	2	.0045	.0135	.5459
1200	6.17		54	3	.0039	.0176	.5635
1800	5.89		33	3	.0024	.0108	.5743
2100	5.58	0	16	2	.0011	.0033	.5776
2400	5.36	+.04	9.0	1	.0006	.0009	.5785
			898	16			
			56				

‖ Unadjusted for storage in upstream reservoirs

Computed by CCK Date 11/07/77 Checked by EDL Date 11/07/77

TX-78 (Revised July 1969)

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

WEIGHTED-PRECIPITATION RECORD

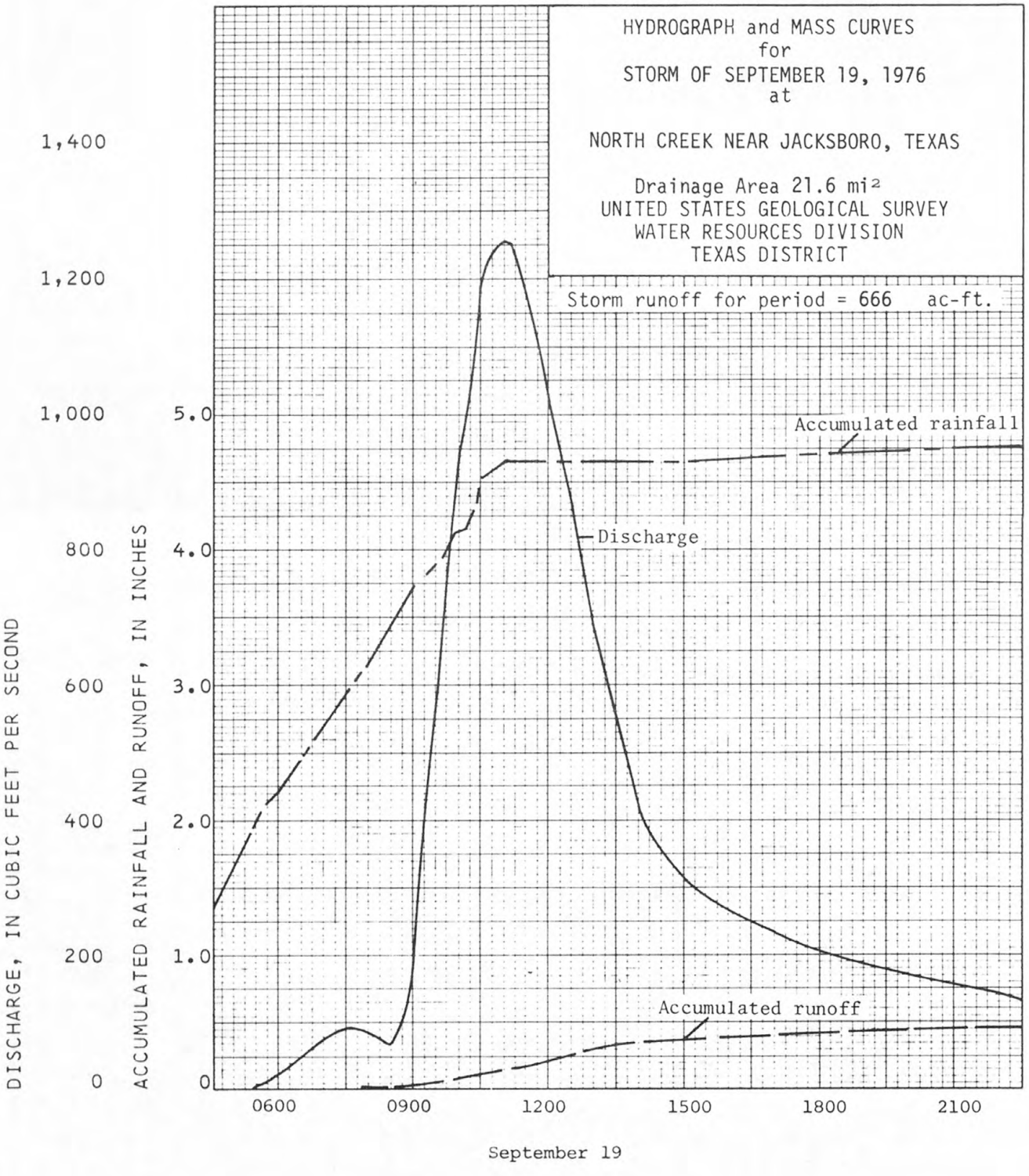
Sheet 1 of 1
Comp. by: CCK
Date 2/03/77
Check by EDL
Date 2/07/77

Study Area 08042700 North Creek near Jacksboro Date of storm Sept. 19, 1976

Date & Time	Accumulated Precipitation in Inches for Recording Rain Gages: Gage 2R, Weight Factor .70, Recorded	x Factor	Gage 4R, Weight Factor .25, Recorded	x Factor	Gage 5R, Weight Factor .05, Recorded	x Factor	Gage, Recorded	x Factor	Gage, Recorded	x Factor	Gage, Recorded	x Factor	Accumulated Weighted Precipitation: Recording Gages All Gages	Recording Gages (Rec. Gages x K) All Gages
Sept. 19, 1976														
0030	0	0	0	0	0	0							0	0
0115	.20	.14	.20	.05	.27	.01							.20	.20
0200	.62	.43	.62	.16	.84	.04							.63	.64
0315	.72	.50	.72	.18	1.01	.05							.73	.74
0400	.97	.68	.97	.24	1.22	.06							.98	.99
0545	2.12	1.48	2.12	.53	2.13	.11							2.12	2.14
0600	2.16	1.51	2.16	.54	2.18	.11							2.16	2.18
0800	3.15	2.20	3.15	.79	2.84	.14							3.13	3.16
0900	3.70	2.59	3.70	.92	3.73	.19							3.70	3.73
30	3.80	2.66	3.80	.95	4.25	.21							3.82	3.85
1000	4.10	2.87	4.10	1.02	4.66	.23							4.12	4.16
15	4.14	2.90	4.14	1.04	4.86	.24							4.18	4.22
30	4.45	3.12	4.46	1.12	4.91	.25							4.49	4.53
1100	4.58	3.21	4.60	1.15	5.06	.25							4.61	4.65
1500	4.58	3.21	4.60	1.15	5.06	.25							4.61	4.65
1600	4.63	3.24	4.65	1.16	5.08	.25							4.65	4.69
1800	4.66	3.26	4.68	1.17	5.12	.26							4.69	4.73
2100	4.70	3.29	4.72	1.18	5.14	.26							4.73	4.77
2400	4.70	3.29	4.72	1.18	5.14	.26							4.73	4.77

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
1S	.10	5.75	.58								
2R	.25	4.70	1.18								
3S	.36	4.48	1.61								
4R	.22	4.72	1.04								
5R	.07	5.14	.36								
										WMR:	4.77

WMR = Sum of Precipitation x Weight Factor K = WMR / Total Recording Gages Weighted Precipitation = $\frac{4.77}{4.73} = 1.0085$


HYDROGRAPH and MASS CURVES
for
STORM OF SEPTEMBER 19, 1976
at
NORTH CREEK NEAR JACKSBORO, TEXAS
Drainage Area 21.6 mi²
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT
Storm runoff for period = 666 ac-ft.
Accumulated rainfall
Discharge
Accumulated runoff
DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES
1,400
1,200
1,000
800
600
400
200
0
5.0
4.0
3.0
2.0
1.0
0
0600
0900
1200
1500
1800
2100
September 19