

Annual Compilation and Analysis of Hydrologic Data for Escondido Creek, San Antonio River Basin, Texas 1970

By D. R. Reddy

U.S. GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

Texas District Open-File Report

I. D. Yost, District Chief



OF 72-308

*Prepared in cooperation with the San Antonio River
Authority, the Soil Conservation Service, and the
Texas Water Development Board*

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CONTENTS

	Page
Introduction-----	1
History of small watershed projects in Texas-----	1
Objectives of the Texas small watershed project-----	4
Purpose and scope of this basic-data report-----	4
Description of the watershed-----	6
Floodwater-retarding structures-----	7
Hydrologic instruments-----	7
Summary of data for the 1970 water year-----	9
Compilation and analysis of data-----	12
<u>San Antonio River basin</u>	
Escondido Creek subwatershed No. 1 near Kenedy, Tex.-----	13
Monthly and yearly weighted-mean rainfall-----	14
Monthly and yearly net inflow-----	15
Monthly and yearly outflow-----	16
Water budget of pool, annual summary-----	17
Escondido Creek at Kenedy, Tex.-----	18
Monthly and yearly weighted-mean rainfall-----	19
Monthly and yearly mean discharge-----	20
Escondido Creek subwatershed No. 11 near Kenedy, Tex.-----	21
Monthly and yearly weighted-mean rainfall-----	22
Monthly and yearly net inflow-----	23
Monthly and yearly outflow-----	24
Water budget of pool, annual summary-----	25
Water budget of pools, annual summary	
Site 2-----	26
Site 3-----	27
Site 4-----	28
Site 5-----	29
Site 6-----	30
Site 7-----	31
Site 8-----	32
Site 9-----	33
Site 10-----	34
Rainfall data summary-----	35
Storm of May 26, 1970	
At site 1	
Inflow and outflow computations-----	39
Weighted-precipitation record-----	40
Hydrograph and mass curves-----	41
At stream-gaging station	
Runoff computations-----	42
Weighted-precipitation record-----	43
Hydrograph and mass curves-----	44

CONTENTS--Continued

	Page
Storm of May 26, 1970--Continued	
At site 11	
Inflow and outflow computations-----	45
Weighted-precipitation record-----	46
Hydrograph and mass curves-----	47
Storm of May 28, 1970	
At site 1	
Inflow and outflow computations-----	48
Weighted-precipitation record-----	49
Hydrograph and mass curves-----	50
At stream-gaging station	
Runoff computations-----	51
Weighted-precipitation record-----	52
Hydrographs and mass curves-----	53
At site 11	
Inflow and outflow computations-----	54
Weighted-precipitation record-----	55
Hydrograph and mass curves-----	56
Storm of May 31, 1970	
At site 1	
Inflow and outflow computations-----	57
Weighted-precipitation record-----	58
Hydrograph and mass curves-----	59
At stream-gaging station	
Runoff computations-----	60
Weighted-precipitation record-----	61
Hydrograph and mass curves-----	62
At site 11	
Inflow and outflow computations-----	63
Weighted-precipitation record-----	64
Hydrograph and mass curves-----	65

ILLUSTRATIONS

	Page
Figure 1. Map showing the location of the Escondido Creek study area-----	2
2. Map showing the locations of floodwater-retarding structures and hydrologic-instrument installations in the Escondido Creek study area-----	5

TABLES

Table 1. Small watershed study areas in Texas as of Sept. 30, 1970-----	3
2. Floodwater-retarding structure data, Escondido Creek study area-----	8
3. Storm rainfall-runoff data, 1970 water year-----	10

ANNUAL COMPILATION AND ANALYSIS OF HYDROLOGIC DATA FOR
ESCONDIDO CREEK, SAN ANTONIO RIVER BASIN, TEXAS
1970

By

D. R. Reddy

INTRODUCTION

History of Small Watershed Projects in Texas

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

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

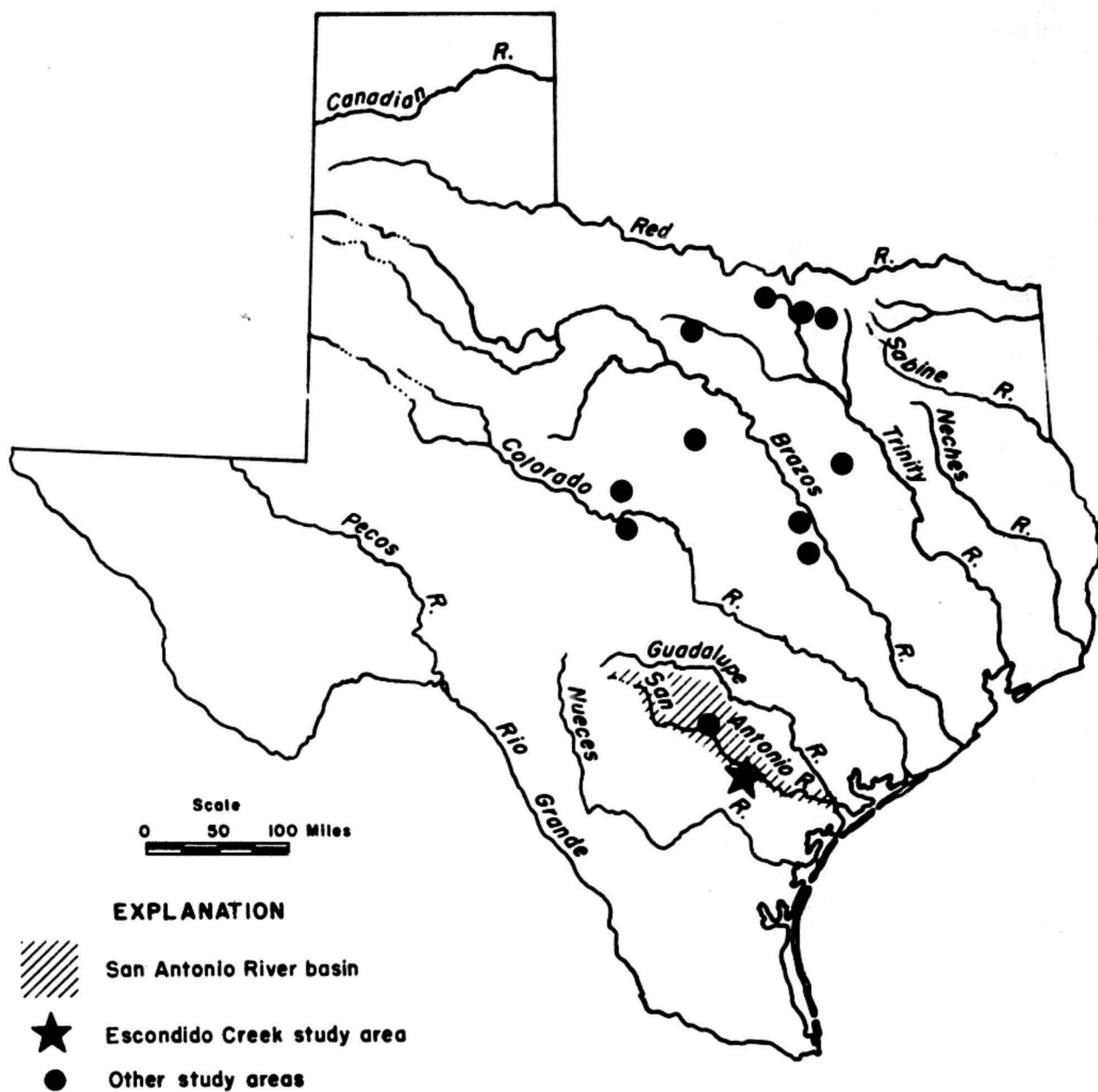


FIGURE 1. - Location of the Escondido Creek study area

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

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

1/ Adjacent watersheds; considered as one study area.

a/ 8.31 sq mi above Dry Prong Deep Creek near Mercury not included in this total.

b/ 8.43 sq mi above Escondido Creek subwatershed No. 11 (Dry Escondido Creek) near Kenedy not included in this total.

c/ Six of the floodwater-retarding structures above Calaveras Creek near Elmendorf are in part of a 65.0 sq mi area controlled by Calaveras Creek Dam.

Objectives of the Texas Small Watersheds Project

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 and/or volumes of runoff with rainfall in small natural watersheds.
5. To develop a stream-system model for basins with floodwater-retarding structures.
6. To determine the minimum instrumentation necessary for estimating the flood hydrographs below a system of structures, as needed for downstream water-management operation.

Purpose and Scope of this Basic-Data Report

This report, which is the tenth in a series of basic-data reports published annually for the Escondido Creek study area, contains the rain fall, runoff, and storage data collected during the 1970 water year for the 72.4-square-mile area above stream-gaging station Escondido Creek at Kenedy, Texas. The locations of floodwater-retarding structures and hydrologic-instrument installations in the Escondido Creek study 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 relationship.

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

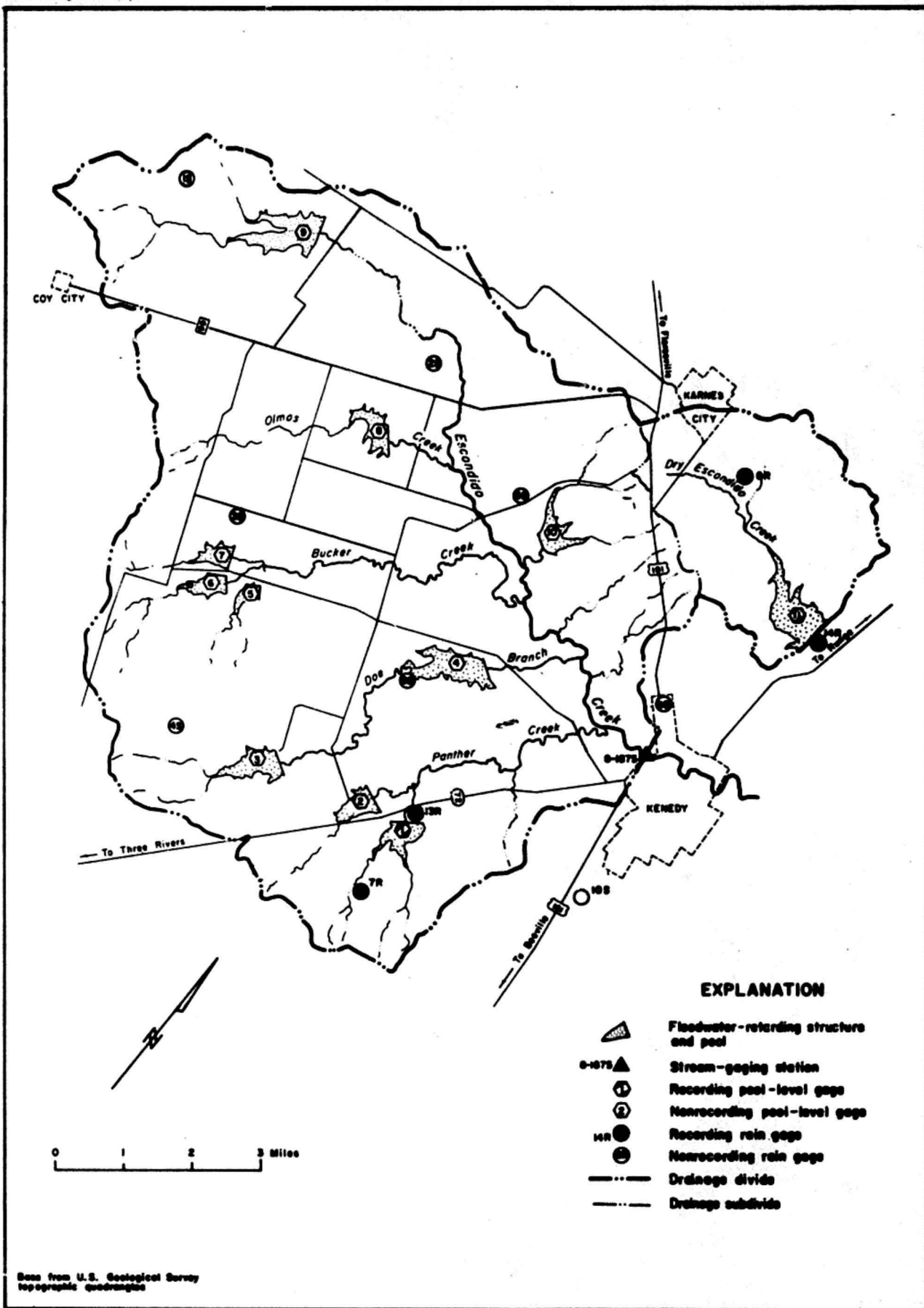


FIGURE 2.—Locations of floodwater-retarding structures and hydrologic-instrument installations in the Escondido Creek study area

DESCRIPTION OF THE WATERSHED

The headwaters of Escondido Creek originate near the community of Coy City in Karnes County (fig. 2). The creek flows eastward for approximately 20 miles before emptying into the San Antonio River about 3 miles west of Runge, Texas. The major tributaries of Escondido Creek are Doe Branch, and Panther, Bucker, and Olmos Creeks. Escondido Creek basin drains a rectangular basin with a drainage area of about 117 square miles. However, this report is concerned only with the 72.4 square miles of the watershed above the Geological Survey stream-gaging station at Kenedy, Texas. This area is referred to as the "study area" (fig. 2).

Land use in the watershed consists of about 46 percent in pasture, 46 percent in cultivation, and 8 percent in formerly cultivated and miscellaneous lands. A small portion of the land is wooded, primarily along stream channels.

The upland soils are clay or chalky marl and are moderately permeable. Sandy soils, mingled with the clays and marls, are present in the middle and lower part of the watershed and are moderately to highly permeable.

Portions of the watershed in areas adjacent to the channel and in some areas along the upland divides are almost flat; however, most of the watershed is moderately hilly to rolling. Altitudes above mean sea level range from 550 feet on the extreme southwestern divide to 200 feet at the mouth of Escondido Creek. From the headwater divide to the stream-gaging station at Kenedy, the slope of the streambed averages about 12 feet per mile. Between the stream-gaging station and the San Antonio River, the channel slope averages about 5.4 feet per mile.

Climate of the study area is temperate and subhumid. 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 occur during the late 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. The National Weather Service normal rainfall (based on period 1931-60) for Karnes City is 31.93 inches. The minimum annual rainfall since 1931 was 16.68 inches in 1956, and the maximum annual rainfall for the same period was 56.57 inches in 1935. The average annual temperature is 70°F. The weighted-mean rainfall on the study area during the 16-year period, 1955-70, was 29.36 inches.

FLOODWATER-RETARDING STRUCTURES

There are 11 floodwater-retarding structures in the Escondido Creek watershed and all but site No. 11 are upstream from the stream-gaging station (fig. 2). The 10 structures above the stream-gaging station have a combined total capacity of 14,060 acre-feet and control an area of 36.5 square miles, or 50 percent of the drainage area.

Table 2 contains a summary of the physical data at each of the 11 floodwater-retarding structures.

HYDROLOGIC INSTRUMENTS

Instruments to collect rainfall, runoff, and storage data consist of a network of rain gages, staff gages, or water-stage recorders at each of the 11 floodwater-retarding structures, and a stream-gaging station on Escondido Creek downstream from 10 of the structures. Location of instruments is shown on figure 2.

Four recording and eight nonrecording rain gages are located to provide the best geometric coverage of the study area to define the total rainfall and rainfall intensities. Weighted-mean rainfall for the study area and each subwatershed is determined by the Thiessen method using various combinations of 11 of the 12 rain gages. Measurements of rainfall at all gages are made at weekly intervals by Soil Conservation Service personnel.

A continuous water-stage recording gage is operated on two representative floodwater-retarding pools (sites 1 and 11), at which data are collected to compute the contents, surface area, inflow, and outflow. Records at these sites began October 11, 1954, at site 1, and January 31, 1958, at site 11. Records of pool content, inflow, and outflow at sites 1 and 11 are shown in the section "Compilation and Analysis of Data". Weekly readings of staff gages are made by Soil Conservation Service personnel at each of the remaining 9 floodwater-retarding pools. These provide data to determine the quantity of water retained or released from the structures. The water budget of pools for the 1970 water year is shown in the section "Compilation and Analysis of Data".

A continuous water-stage recorder at the stream-gaging station Escondido Creek at Kenedy records the stage, which together with measurements of streamflow allows the computation of the runoff from the study area. Streamflow records at this gage began July 26, 1954.

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

Site Number	Drainage Area (sq mi)	Date Dam Completed	Date Pool- Level Gage Established	Datum of Gage above Mean Sea Level	Emergency Spillway			Drop Inlet		Portholes			Controlled Opening		Pipe Diameter through Dam (in.)	Range of Staff Gages (ft)
					Number and Width (ft)	Gage Height (ft)	Content (ac-ft)	Gage Height (ft)	Pool Content (ac-ft)	Number and Size (in.)	Gage Height at Bottom (ft)	Pool Content (ac-ft)	Gage Height at Bottom (ft)	Pool Content (ac-ft)		
1	3.29	9-13-54	10-11-54	350.0	1 250	27.7	905	18.0	220	1 10 dia.	16.0	150	9.2	23.2	12	3.4- 30.0
2	2.69	6-10-55	9-11-55	352.2	1 225	27.7	1,010	18.0	260	1 10x17	16.6	200	10.51	46.8	22	6.8- 33.9
3	4.78	2- 7-56	7- 5-56	381.0	1 350	35.7	1,690	23.0	447	Plugged	-	-	11.23	est 14	17	6.8- 40.7
4	6.24	11-17-56	2- 6-57	229.1	1 500	29.3	2,360	18.0	532	Plugged	-	-	7.25	18.2	28	3.4- 33.9
5	1.48	4-19-56	7- 5-56	373.7	1 150	28.6	580	18.0	115	Plugged	-	-	8.5	1.0	17	0 - 33.9
6	2.29	2- 5-55	3-14-55	383.0	1 225	30.5	1,270	18.0	204	Plugged	-	-	6.5	10.5	14	3.4- 33.9
7	2.12	2- 7-56	7- 4-56	378.7	1 150	26.9	794	18.5	220	1 6x18	18.0	199	7.2	est 10	17	0 - 32.6
8	3.95	2-17-57	2- 5-57	338.7	2 150; 150	29.1	1,470	18.0	400	2 8x8	13.6	194	8.5	53.6	17	10.2- 33.9
9	6.90	2-17-57	6- 5-58	385.0	1 450	29.5	3,050	18.0	601	2 10x10 2 Plugged	13.8 -	263 -	6.3	est 40	19	10.2- 33.9
10	2.75	10- 4-54	3-15-55	305.2	1 250	29.2	946	18.0	183	1 10 dia.	16.9	148	6.5	est 4	14	6.8- 33.9
11	8.43	1-31-58	1-31-58	285.1	2 200; 200	32.8	2,670	18.0	236	4 10x10	15.7	140	9.4	29.9	28	3.3- 39.1

SUMMARY OF DATA FOR THE 1970 WATER YEAR

The mean annual rainfall (1931-60) at the National Weather Service at Karnes City is 31.93 inches. The weighted-mean rainfall over the study area for the 1970 water year was 33.85 inches, or 115 percent of the 16-year (1955-70) average of 29.36 inches. Monthly rainfall ranged from 0.48 inch in April to 8.70 inches in May. Yearly mean discharge at the stream-gaging station was 9.61 cfs (cubic feet per second), compared with the 16-year (1955-70) average of 14.0 cfs. Annual runoff at the stream-gaging station was 6,960 acre-feet, or 1.80 inches.

Weighted-mean rainfall for subwatershed No. 1 was 36.49 inches, and runoff was 389 acre-feet. This runoff represents an equivalent depth of 2.22 inches.

Weighted-mean rainfall for subwatershed No. 11 was 34.35 inches, and runoff was 673 acre-feet. This runoff represents an equivalent depth of 1.50 inch.

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.

For the 1970 water year three storms were selected for detailed computations. These computations include detailed time breakdown of rainfall and discharge. Hydrographs and mass curves are drawn for illustrations. The storms selected occurred May 26, May 28, and May 31, 1970. A summary of rainfall-runoff data for the storms is shown in table 3. Computations and curves for the storms are shown in the section "Compilation and Analysis of Data".

TX-35
6/69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

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

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (cfs)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			
Escondido Creek Subwatershed No. 1 near Kenedy, Tex. (Drainage area, 3.29 sq mi)								
May 26, 1970	1.7	0.98	0.41	0.62	0.90	0.10	0.10	98.7
May 28, 1970	4.1	1.30	.34	.55	.88	.24	.18	180
May 31, 1970	1.2	1.63	.96	1.44	1.61	.49	.30	605
Escondido Creek at Kenedy, Tex. (Drainage area, 72.4 sq mi, of which 36.5 sq mi is above floodwater-retarding structures)								
May 26, 1970	6.0	1.37	0.49	0.89	1.24	0.12	0.09	666
May 28, 1970	4.0	1.36	.36	.70	1.00	.13	.10	618
May 31, 1970	1.9	2.02	.68	1.36	1.92	.37	.18	2,060

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

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

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COMPI LATION AND ANALYSIS OF DATA

GUADALUPE RIVER BASIN

08187000 Escondido Creek subwatershed No. 1 near Kenedy, Tex.

LOCATION.--Lat 28°46'41", long 97°53'41", Karnes County, near center of dam on an unnamed fork of Panther Creek, 900 ft upstream from State Highway 72, and 3.9 miles southwest of Kenedy.

DRAINAGE AREA.--3.29 sq mi.

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

GAGE.--Water-stage recorder and concrete drop inlet control. Datum of gage is 350.00 ft above mean sea level (levels by Soil Conservation Service).

AVERAGE INFLOW.--16 years, 469 acre-ft per year.

AVERAGE OUTFLOW.--16 years, 219 acre-ft per year.

EXTREMES.--Current year: Maximum outflow, 4.6 cfs June 1 (gage height, 18.20 ft); no outflow for most of year. Maximum inflow, 605 cfs (average for 5-minute interval) May 31, computed from change in reservoir contents and adjusted for outflow and rainfall on pool surface; no inflow for many days.

Period of record: Maximum outflow, 2,360 cfs Sept. 21, 1967 (gage height, 30.06 ft; 31.0 ft, from floodmarks at spillway), from rating curve extended above 200 cfs on basis of flow-through-culvert measurement; no outflow for most of time each year. Maximum inflow, 5,260 cfs (average for 5-minute interval) Oct. 25, 1960. Maximum inflow was computed as explained above. No inflow at times.

CORRECTION.--Minimum inflow for water year 1969 is no inflow for many days; the previously published statement was in error.

REMARKS.--Records good. Dam was completed Sept. 21, 1954, but no appreciable storage began until July 1955. The first outflow occurred on Apr. 27, 1957. The pool is formed by a rolled-fill earthen dam about 2,300 ft long, with an earthen spillway at left end of dam at gage height 27.7 ft. The outlet structure is a 2.5-foot square concrete drop inlet connected to a 12-inch concrete outlet pipe. The top of the drop inlet is at gage height 18.0 ft; the 12-inch outlet pipe is at gage height 9.2 ft. There is a 10-inch auxiliary pipe opening into the upstream face of the drop inlet at gage height 16.0 ft. There is also an 8-inch controlled emergency outlet pipe opening into the upstream face of the drop inlet at gage height 9.2 ft. Pool capacity is 905 acre-ft at the spillway crest, 220 acre-ft at top of the drop inlet, 150 acre-ft at bottom of the 10-inch uncontrolled pipe, and 23.2 acre-ft at bottom of the 8-inch controlled outlet. The dam was built by the Soil Conservation Service for flood control. The capacity table is based on a survey made June 21, 1964. Sediment survey dated July 21, 1969, indicated insignificant changes. Rainfall records are collected from two recording rain gages, one located at station and one in the watershed above station.

REVISIONS (WATER YEARS).--WSP 1923: 1955-60.

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

	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
Inflow ^{1/}	4.9	2.3	9.5	34.4	0	25.1	0	206	107	0	0	0
Outflow	0	0	0	0	0	0	0	6.7	90.7	9.2	0	0
(††)	4.35	2.93	2.03	2.93	1.37	2.53	.30	9.36	4.54	.73	2.39	3.03
CAL YR 1969: Inflow	226			Outflow	0	††	28.84					
MTR YR 1970: Inflow	389			Outflow	107	††	36.49					

PEAK INFLOW (BASE, 100 CFS)

DATE	TIME	DISCHARGE	DATE	TIME	DISCHARGE
1-16	0530	*209	5-28	0640	*180
3-10	2010	*171	5-31	0155	*605
5-23	2145	*347	6-23	1925	*149
			6-24	1455	*148

^{1/} Inflow adjusted for rainfall on pool and pool losses.

†† Weighted mean rainfall, in inches, based on two rain gages.

* Average for 5-minute interval.

08187000

yearly weighted-mean rainfall
Monthly and annual discharge, in _____ inches, of _____ Escondido Creek
Subwatershed No. 1 River at _____ Kenedy, Texas
[Drainage area, 3.29 square miles]

12-00000-1 **B. S. SHERMAN FOUNDATION**

[illegible]

* Revised figures

08187000

yearly weighted-mean rainfall
Monthly and annual discharge, in _____ inches, of _____ Escondido Creek
Subwatershed No. 1 River at _____ Kenedy, Texas
[Drainage area, 3.29 square miles]

16-58866-5 U. S. GOVERNMENT PRINTING OFFICE

[illegible]

* Revised figures

08187000

net
yearly inflow
Monthly and annual discharge, in acre-feet, of Escondido Creek
[Drainage area, _____ square miles]
Subwatershed No. 1 River at Kenedy, Tex.

[illegible]

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Sheet 1 of 1 Sheets

08187000

yearly outflow
Monthly and annual discharge, in acre-feet, of Escondido Creek
Subwatershed No. 1 River near Kenedy, Tex.
[Drainage area, square miles]

10-5892-2 U. S. GOVERNMENT PRINTING OFFICE

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL	CAL. YR.
	Station established Oct. 11, 1954.													
1955	0	0	0	0	0	0	0	0	0	12.9	0	0	12.9	12.9
1956	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	.2	80.0	192	0	0	0	272	273
1958	0	1.0	0	77.0	112	36.0	0	194	0	0	0	0	420	419
1959	0	0	0	.3	1.0	1.9	0	0	0	0	0	.8	4.0	14.4
1960	10.4	0	0	0	0	0	0	0	0	10.5	0	0	20.9	1,120
1961	334	575	200	32.0	32.0	0	0	.7	0	0	0	0	1,170	64.7
1962	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	2.3	0	0	0	1.3	0	3.6	3.6
1964	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	41.3	.2	0	11.3	0	0	0	0	52.8	52.8
1966	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	898	898	1,280
1968	380	0	0	0	0	0	0	163	.2	0	0	0	543	163
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	6.7	90.7	9.2	0	0	107	

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOLS

ANNUAL SUMMARY

1970 WATER YEAR

08187000 Escondido Creek subwatershed No 1 near Kenedy, Tex Drainage Area 3.29 sq mi

Continuous water-stage recorder: ratio 10:12. Date of last sediment survey July 21, 1969.

Maxima: gage height, 18.20; outflow, 4.6 c.f.s.; surface area, 40.0 acres; contents, 228 acre-feet; on June 1.

Minima: gage height, 7.97; surface area, 5.9 acres; contents, 14.2 acre-feet; on Jan. 15.

Maximum inflow, 605 c.f.s. (averaged for 5-min. interval and adjusted for rainfall on pool surface) on May 31.

Averages: 16 water years, (1955-70); inflow, 469 acre-feet/year; outflow, 219 acre-feet/year; rainfall, 29.49 inches/year.

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

	Oct	Nov	Dec	Calendar year 1969	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Water year 1970
Total Inflow 1/	4.9	2.3	9.5	226	34.4	0	25.1	0	206	107	0	0	0	389
Total Outflow	0	0	0	0	0	0	0	0	6.7	90.7	9.2	0	0	107
Total Consumption	15.5	8.5	9.1	280	12.0	12.1	15.2	15.7	18.1	53.6	50.4	39.9	27.6	278
†	-7.2	-5.0	+1.2	-25.7	+23.8	-10.9	+11.6	-15.5	+190	-27.7	-38.5	-34.9	-24.7	42.2
†	10.0	6.8	7.4	14.2	10.5	11.9	13.2	11.8	12.5	35.7	31.1	25.1	20.0	16.4
††	4.35	2.93	2.03	28.84	2.93	1.37	2.53	0.30	9.36	4.54	0.73	2.39	3.03	36.49

1/ Inflow adjusted for rainfall on pool and pool losses.

† Change in contents, in acre-feet.

† Mean surface area, in acres.

†† Weighted mean rainfall, in inches.

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

Date	Time	Discharge	Date	Time	Discharge
1-16	0530	*209	6-23	1925	*149
3-10	2010	*171	6-24	1455	*148
5-23	2145	*347			
5-28	0640	*180			
5-31	0155	*605			

*Averaged for 5-min. interval.

GUADALUPE RIVER CASIN

08187500 Escondido Creek at Kenedy, Tex.

LOCATION.--Lat 28°49'11", long 97°51'32", Karnes County, near center of channel at downstream side of bridge on U.S. Highway 181 at northwest edge of Kenedy, 4.6 miles upstream from Dry Escondido Creek, and 9.6 miles upstream from mouth.

DRAINAGE AREA.--72.4 sq mi.

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

GAGE.--Water-stage recorder. Datum of gage is 246.40 ft above mean sea level.

AVERAGE DISCHARGE.--16 years, 14.0 cfs (2.63 inches per year, 10,140 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,520 cfs June 1 (gage height, 20.58 ft); no flow for many days.
Period of record: Maximum discharge, 37,000 cfs Sept. 22, 1967 (gage height, 25.48 ft, from floodmark), from rating curve extended above 4,400 cfs on basis of contracted-opening, flow-over-road, and flow-through-culverts; measurement of peak flow; no flow for many days in 1954-67, 1969-70.
Maximum stage since at least 1887, that of Sept. 22, 1967. Flood of Aug. 29, 1946, reached a stage of 24.2 ft (21,500 cfs), from information by local residents.

REMARKS.--Records good. At end of year, flow from 36.5 sq mi above this station was partly controlled by 10 floodwater-retarding structures with a total combined capacity of 14,080 acre-ft below flood-spillway crests, of which 11,880 acre-ft is floodwater-retarding capacity and 2,200 acre-ft is sediment-pool capacity. The capacity in these pools allocated to sediment storage will be used for conservation storage until eliminated by sedimentation. Eleven rain gages (8 standard and 3 recording) are located in the watershed above this station. Six standard rain gages discontinued Sept. 30, 1970. The station is part of the cooperative program between the Geological Survey and Soil Conservation Service to evaluate rainfall-runoff relation, soil conservation practices, and to assist the Soil Conservation Service in evaluating the effect of floodwater-retarding structures.

REVISIONS (WATER YEARS).--MSP 1923: 1959, 1960, Drainage area.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	.01	.03	.13	.32	.11	.05	1,030	3.6	.24	.07
2	0	0	.01	.02	.13	.28	.09	.05	193	3.1	.21	.15
3	0	0	.01	.03	.09	.28	.07	.05	117	2.5	.32	.07
4	.01	0	.02	.03	.07	.24	.04	.05	93	2.0	1.1	.04
5	24	0	9.2	.35	.09	.24	.05	.05	76	1.6	.24	.06
6	6.3	0	1.1	.06	.16	.21	.05	.05	61	1.3	.20	.05
7	.22	0	.07	.03	1.5	.91	.04	.04	42	1.1	.20	.05
8	.02	0	.04	.02	.56	.51	.04	.04	28	.96	.15	.04
9	.01	0	.03	.02	.21	.28	.09	.03	22	.01	.15	.04
10	0	0	.03	.02	.11	.69	.11	.03	19	.70	.10	.04
11	0	0	.03	.03	.11	39	.11	.03	16	.60	.10	.04
12	0	0	.03	.03	.11	2.3	.09	.02	13	.50	.09	.04
13	0	0	.03	.03	.11	.41	.06	.02	11	.4	.09	.20
14	0	0	.03	.04	.18	.24	.05	.02	8.8	.20	.07	.42
15	0	0	.03	.03	.11	.21	.06	.04	6.7	.25	.07	.06
16	0	0	.03	57	.11	.21	.09	.05	9.1	.24	.07	.05
17	0	0	.04	9.9	.11	4.7	.07	.03	4.2	.24	.06	.05
18	0	.14	.04	1.5	.11	1.9	.06	.02	3.5	.74	.06	.05
19	0	.06	.04	.62	.11	.56	.05	.02	2.8	.21	.05	.05
20	0	.02	.05	.46	.09	.28	.04	.02	2.6	.15	.05	.05
21	0	.01	.05	.28	.05	.24	.03	.02	2.0	.15	.05	.06
22	0	.01	.05	.24	.11	.24	.02	.09	3.2	.15	.05	.06
23	0	.01	.05	.21	.58	.18	.03	.37	150	.13	.90	.07
24	0	.02	.05	.21	3.1	.18	.03	39	70	.15	4.6	.09
25	0	.05	.04	.21	.88	.15	.03	4.1	19	.21	.28	.07
26	0	.05	.03	.21	.41	.11	.02	34	12	.32	.07	.07
27	0	.89	.04	.15	.28	.09	.02	190	9.1	.24	.05	.06
28	0	.05	.04	.13	.32	.11	.03	234	7.3	.36	.05	.06
29	0	.02	.08	.11	-----	.13	.04	26	9.9	.36	.04	.05
30	0	.01	.31	.07	-----	.11	.05	13	4.6	.32	.18	.04
31	0	-----	.05	.07	-----	.11	-----	715	-----	.28	.06	-----
TOTAL	30.56	1.34	11.66	68.14	9.97	55.42	1.73	1,256.31	2,037.8	23.47	9.97	2.27
MEAN	.99	.045	.38	2.20	.36	1.79	.058	40.5	67.9	.76	.32	.076
MAX	24	.89	9.2	57	3.1	39	.11	715	1,030	3.6	4.6	.42
MIN	0	0	.01	.02	.07	.09	.02	.02	2.0	.13	.05	.04
CFSM	.014	.0006	.005	.030	.005	.025	.0008	.36	.94	.011	.004	.001
IN.	.02	0	.005	.04	.005	.03	0	.65	1.05	.01	.005	.001
AC-FT	61	2.7	23	135	20	110	3.4	2,490	4,040	47	20	4.5
CAL YR 1969	TOTAL 4,410.86 MEAN 12.1 MAX 974 MIN 0 CFSM .17 IN 2.27 ACFT 8,750											
MAY YR 1970	TOTAL 3,508.64 MEAN 9.61 MAX 1,030 MIN 0 CFSM .13 IN 1.80 ACFT 6,940											

8-1875.00

yearly weighted-mean rainfall
Monthly and annual discharge, in _____ inches

, of Escondido Creek River ^{at} San
[Drainage area, 72.4 square miles]

Kenedy, Texas

16-52425-1 U. S. GOVERNMENT PRINTING OFFICE

[illegible]

8-1875.00

WATER RESOURCES DIVISION

Monthly and ~~annual~~ ^{yearly mean} discharge, in cfs, of Escondido Creek River ^{at} Kenedy, Texas
[Drainage area, 72.4^{sq} square miles]

14-00000-1 U. S. GOVERNMENT PRINTING OFFICE

[illegible]

GUADALUPE RIVER BASIN

08187900 Escondido Creek subwatershed No. 11 (Dry Escondido Creek) near Kenedy, Tex.

LOCATION.--Lat 28°51'39", long 97°50'39", Karnes County, near center of dam on Dry Escondido Creek, 0.5 mile upstream from bridge on Farm Road 792, 3 miles north of Kenedy, and 5.0 miles upstream from Escondido Creek.

DRAINAGE AREA.--8.43 sq mi.

PERIOD OF RECORD.--January to August 1958 (outflow, annual maximum only; inflow, peaks above base only), September 1958 to current year.

GAGE.--Water-stage recorder with concrete drop-inlet control. Datum of gage is 285.12 ft above mean sea level.

AVERAGE INFLOW.--12 years, 1,080 acre-ft per year.

AVERAGE OUTFLOW.--12 years, 942 acre-ft per year.

EXTREMES.--Current year: Maximum outflow, 86.2 cfs June 1 (gage height, 21.36 ft, from floodmark); no outflow most of year. Maximum inflow, 1,310 cfs (average for 5-minute interval) June 1, computed from change in reservoir contents and adjusted for outflow and rainfall on pool surface.

Period of record: Maximum outflow, 8,030 cfs Sept. 21, 1967 (gage height, 36.36 ft, from floodmark at gage; 36.3 ft, from floodmarks at spillways), from rating curve extended above 100 cfs on basis of flow-over-spillway measurement (includes two spillways) of 7,900 cfs plus flow through the drop inlet; no outflow for most of time each year. Maximum inflow, 18,000 cfs (average for 5-minute interval) Sept. 21, 1967. Maximum inflow was computed as explained above. No inflow at times.

REMARKS.--Records good. The dam was completed Jan. 31, 1958, but the lower drain valve in the drop-inlet structure remained open until Sept. 15, 1958. The first outflow occurred (since lower drain valve was closed) Sept. 22, 1958. The pool is formed by a rolled-fill earthen dam about 2,600 ft long with emergency spillways at both the left and right end of the dam. The outlet structure is a 3-foot square concrete drop inlet connected to a 28-inch concrete outlet pipe. Four 10-inch square portholes are set in the sides of the drop inlet, two on the upstream side and two on the downstream side. Bottom of portholes are at gage height 15.67 ft. The top of the drop inlet is at gage height 18.00 ft. The two emergency spillways (both left and right) are at gage height 32.8 ft. The lower drain valve is an 8-inch-diameter cleanout gate at the bottom of the drop-inlet structure at a gage height of 9.4 ft. The pool capacity is 2,670 acre-ft at the spillway crests, 236 acre-ft at top of the drop inlet, 140 acre-ft at the bottom of portholes, and 29.9 acre-ft at the 8-inch controlled outlet. The dam was built by the Soil Conservation Service for flood control. The capacity table is based on a survey made Sept. 11, 1965. Rainfall records are collected from two recording rain gages, one located at the station and the other in the watershed above station.

The following figures of weighted-mean rainfall have never been published:

Weighted-mean rainfall, in inches, 1955-58 water years												
Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955	0.20	2.19	0	0.90	2.05	0.08	0.37	5.02	1.37	1.81	5.20	1.25
Calendar year 1954:	-											
Water year 1954-55:	20.44											
1956	.32	1.69	0	.47	.38	.20	.85	2.53	.20	.82	3.20	1.48
Calendar year 1955:	20.06											
Water year 1955-56:	12.14											
1957	2.62	1.17	2.68	.18	1.62	4.67	7.07	4.98	1.00	0	3.95	12.26
Calendar year 1956:	16.60											
Water year 1956-57:	42.20											
1958	2.19	5.98	1.05	5.99	5.92	1.04	.20	6.35	2.97	.88	0	10.83
Calendar year 1957:	44.95											
Water year 1957-58:	43.40											

REVISIONS (WATER YEARS).--WSP 1923: 1958-60.

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

	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
Inflow 1/	4.0	0	0	15.4	2.3	6.5	0	333	312	0	0	0
Outflow	0	0	0	0	0	0	0	149	417	0	0	0
(††)	3.53	1.75	1.74	2.83	1.86	2.09	.39	9.35	4.37	.40	4.37	1.67
CAL YR 1969: Inflow	327			Outflow	194		†† 28.87					
WTR YR 1970: Inflow	673			Outflow	566		†† 34.35					

PEAK INFLOW (BASE, 100 CFS)

DATE	TIME	DISCHARGE	DATE	TIME	DISCHARGE
5-23	unknown	**100	5-28	0755	*††2
5-26	2000	*221	5-31	0155	*759
			6- 1	0845	*1,310

1/ Inflow adjusted for rainfall on pool and pool losses.
 †† Weighted mean rainfall, in inches, based on two rain gages.
 * Average for 5-minute interval.
 ** Stage record lost. 100 cfs estimated on basis of rainfall intensity and change in contents.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Sheet _____ of _____ Sheets

weighted-mean
yearly rainfall
Monthly and annual discharge, in _____ inches
8-1879. Escondido Creek
of Subwatershed No. 11 River at Kenedy, Tex.
[Drainage area, 8.43 square miles]

10-5890-1 U. S. GOVERNMENT PRINTING OFFICE

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL	CAL. YR.
	Weighted mean rainfall computations began January 1959.													
1955	0.20	2.19	0	0.90	2.05	0.08	0.37	5.02	1.37	1.81	5.20	1.25	20.44	20.06
1956	.32	1.69	0	.47	.38	.20	.85	2.53	.20	.82	3.20	1.48	12.14	16.60
1957	2.62	1.17	2.68	.18	1.62	4.67	7.07	4.98	1.00	0	3.95	12.26	42.20	44.95
1958	2.19	5.98	1.05	5.99	5.92	1.04	.20	6.35	2.97	.88	0	10.83	43.40	42.55
1959	*6.62	*.68	*1.07	*.22	*3.40	*.10	*3.78	*2.70	*3.52	*.40	*3.04	*2.38	*27.91	*26.61
1960	*4.38	*.91	*1.78	*1.56	*2.15	*1.40	*1.37	*2.11	3.88	*1.26	*3.72	*.36	*24.88	*34.67
1961	*9.07	*4.20	*3.59	*1.36	*2.05	.02	*1.99	*.46	*3.00	*.72	*1.12	*2.33	*29.91	*17.89
1962	1.44	3.11	.29	.51	1.01	1.32	3.85	1.72	4.01	0	.34	3.74	21.34	24.64
1963	.75	3.06	4.33	.32	1.99	.21	.99	.89	7.19	.76	.27	1.34	22.10	21.58
1964	.39	4.62	2.61	2.75	2.69	2.49	.91	2.05	3.17	2.72	4.54	.84	29.78	25.41
1965	.99	1.00	1.26	5.73	6.18	.49	.82	7.57	2.25	.20	1.04	2.48	30.01	36.66
1966	4.43	1.15	4.32	1.40	2.22	.57	3.26	3.84	2.67	.88	1.90	5.26	31.90	22.98
1967	.11	0	.87	.86	.85	1.16	2.32	4.40	0	1.84	5.79	22.05	40.25	46.04
1968	4.07	2.13	.57	4.97	2.04	.54	1.53	7.01	2.29	1.28	.45	4.84	31.72	30.14
1969	1.36	3.54	.29	.81	3.55	2.81	3.98	3.55	1.49	2.01	1.82	1.83	27.04	28.87
1970	3.53	1.75	1.74	2.83	1.86	2.09	.39	9.35	4.37	.40	4.37	1.67	34.35	

* Revised in 1966 for TWDB Report 39.

Monthly and annual discharge, in acre-feet, of 8-1879 Escondido Creek
[Drainage area, 8.43 square miles] Subwatershed No. 11 River at Kenedy, Tex.

[illegible]

yearly outflow
Monthly and annual discharge, in acre-feet

8-1879. Escondido Creek
of Subwatershed No. 11 River^{est} Kenedy, Tex.
[Drainage area, 8.43 square miles]

16-58885-5 U. S. GOVERNMENT PRINTING OFFICE

[illegible]

* Revised in 1966 for TWDB Report 39.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOLS

ANNUAL SUMMARY

1970 WATER YEAR

08187900. Escondido Creek subwatershed No. 11 near Kenedy, Tex. Drainage Area 6.43 sq. mi.

Continuous water-stage recorder, ratio 10:12 (floodmark). Date of last sediment survey Sept. 11, 1965

Maxima: gage height, 21.36 ft; outflow, 86.2 c.f.s.; surface area, 92.2 acres; contents, 470 acre-feet; on June 1.

Minima: gage height, 11.84 ft; surface area, 14.8 acres; contents, 58.4 acre-feet; on Dec. 29.

Maximum inflow, 1,310 c.f.s. (averaged for 5-min. interval and adjusted for rainfall on pool surface) on June 1.

Averages: 12 water years, (1959-70); inflow, 1,080 acre-feet/year; outflow, 942 acre-feet/year; rainfall, 29.34 inches/year. Average 16 water years (1955-1970).

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

	Oct.	Nov.	Dec.	Calendar year <u>1969</u>	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Water year <u>1970</u>
Total Inflow 1/	4.0	0	0	327	15.4	2.3	6.5	0	333	312	0	0	0	673
Total Outflow	0	0	0	194	0	0	0	0	149	417	0	0	0	566
Total Consumption	10.1	7.0	4.1	194	3.3	5.5	6.7	9.0	14.3	33.4	26.9	20.9	13.8	155
†	-1.6	-4.7	-1.8	-5.2	+15.4	-0.3	+2.1	-8.7	+188	-120	-25.7	-11.0	-11.0	+20.7
†	16.8	15.5	15.2	20.6	16.6	17.6	18.1	17.3	19.1	33.4	25.9	22.7	20.4	19.9
††	3.53	1.75	1.74	28.87	2.83	1.86	2.09	0.39	9.35	4.37	0.40	4.37	1.67	34.35

1/ Inflow adjusted for rainfall on pool and pool losses.

† Change in contents, in acre-feet.

† Mean surface area, in acres.

†† Weighted mean rainfall, in inches.

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

Date	Time	Discharge	Date	Time	Discharge
5-23	unknown	**100			
5-26	2000	*221			
5-28	0755	*117			
5-31	0155	*759			
6-1	0845	*1,310			

**Stage record lost. 100 c.f.s. estimated on basis of rainfall intensity and change in contents.

*Averaged for 5-minute interval.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOLS

ANNUAL SUMMARY

1970 WATER YEAR

- Escondido Creek subwatershed No. 2 near Kenedy, Tex Drainage Area 2.69 sq mi

Staff Gage

Continuous water-stage recorder: ratio - Date of last sediment survey July 14, 1967.

Maxima: gage height, 18.3; outflow, 14 c.f.s.; surface area, 49.0 acres; contents, 275 acre-feet; on June 1, 1970

Minima: gage height, 13.1; surface area, 22.2 acres; contents, 89 acre-feet; on Nov. 23, 1969.

Maximum inflow, - c.f.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 1969 to September 1970.

	Oct	Nov	Dec	Calendar year 1969	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Water year 1970
Total Inflow 1/	2.3	0.8	14.2	340	47.5	2.4	15.2	4.4	180	61.5	0	0	0	328
Total Outflow	0	0	0	145	0	0	0	0	11.9	91.6	1.6	0	0	105
Total Consumption	17.0	13.9	12.1	322	13.3	15.4	16.6	22.0	27.3	44.3	37.5	28.5	24.6	272
†	-6.0	-9.0	+5.0	-56.8	+39.0	-10.0	+3.0	-17.0	+159	-62.0	-38.0	-22.0	-20.0	+22.0
†	26.2	23.2	24.2	32.3	27.7	29.7	30.2	28.2	28.7	42.2	38.7	34.7	31.2	30.4
††	4.19	2.80	1.99	29.08	2.85	1.41	2.44	0.35	9.14	4.14	0.64	2.33	3.07	35.35

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, - c.f.s)

Date	Time	Discharge	Date	Time	Discharge

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOLS

ANNUAL SUMMARY

1970 WATER YEAR

- Escondido Creek subwatershed No. 3 near Kenedy, Tex. Drainage Area 4.78 sq mi
Staff Gage
~~Continuous water stage recorder~~ ratio -. Date of last sediment survey Nov. 10, 1955.
Maxima: gage height, 26.9; outflow, 30 c.f.s.; surface area, 78.5 acres; contents, 716 acre-feet; on June 1.
Minima: gage height, 20.7; surface area, 52.1 acres; contents, 319 acre-feet; on May 22.
Maximum inflow, - c.f.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 1969 to September 1970.

	Oct	Nov	Dec	Calendar year <u>1969</u>	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Water year <u>1970</u>
Total Inflow 1/	0	7.2	5.3	1,070	19.1	2.8	12.0	2.6	512	201	0	0	1.6	764
Total Outflow	0	0	0	925	0	0	0	0	163	421	0	0	0	584
Total Consumption	24.1	18.6	15.9	322	10.7	13.5	19.0	24.1	31.6	38.2	38.3	36.2	27.7	298
†	-9.0	-1.0	-2.0	-37.0	+20.0	-3.0	+3.0	-19.0	+358	-246	-37.0	-27.0	-9.0	+28.0
†	53.6	53.0	53.0	56.0	53.6	53.9	54.2	53.6	54.5	61.6	58.1	56.6	55.4	55.1
††	3.39	2.36	1.95	30.91	2.61	1.72	2.23	0.56	8.73	2.30	0.34	2.00	3.72	31.91

- 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, - c.f.s.)

Date	Time	Discharge	Date	Time	Discharge

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOLS

ANNUAL SUMMARY

1970 WATER YEAR

- Escondido Creek subwatershed No. 4 near Kenedy, Tex Drainage Area 6.24 sq mi
Staff Gage
~~Continuous water stage recorder~~ ratio -. Date of last sediment survey July 30, 1958.
Maxima: gage height, 19.6; outflow, 63 c.f.s.; surface area, 107 acres; contents, 691 acre-feet; on June 1
Minima: gage height, 15.3; surface area, 69.3 acres; contents, 310 acre-feet; on May 14
Maximum inflow, - c.f.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 1969 to September 1970.

	Oct	Nov	Dec.	Calendar year 1969	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept	Water year 1970
Total Inflow 1/	21.9	0.5	0	1,290	26.9	7.4	10.8	0	430	268	0	11.7	0	777
Total Outflow	0	0	0	1,070	0	0	0	0	79.3	374	0	0	0	453
Total Consumption	36.1	28.6	26.7	554	23.2	26.3	30.9	35.7	48.3	68.8	64.3	55.6	46.6	491
†	+12.0	-14.0	-14.0	-117	+22.0	-6.0	-7.0	-33.0	+353	-149	-59.0	-17.0	-26.0	+62.0
†	80.3	77.3	76.3	87.4	77.3	77.3	77.3	74.3	74.3	98.3	93.2	88.3	86.3	81.7
††	3.86	2.25	2.01	29.66	2.81	1.88	2.04	0.48	8.04	3.03	0.60	3.23	3.81	34.04

- 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, - c.f.s)

Date	Time	Discharge	Date	Time	Discharge

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOLS

ANNUAL SUMMARY

1970 WATER YEAR

- Escondido Creek subwatershed No. 5 near Kenedy, Tex. Drainage Area 1.48 sq mi
Staff Gage
~~Continuous water stage recorder~~ ratio -. Date of last sediment survey Nov. 10, 1955.
Maxima: gage height, 22.5; outflow, 21 c.f.s.; surface area, 38.3 acres; contents, 249 acre-feet; on May 31
Minima: gage height, 15.1; surface area, 15.5 acres; contents, 61.3 acre-feet; on May 14
Maximum inflow, - c.f.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 1969 to September 1970.

	Oct	Nov	Dec.	Calendar year <u>1969</u>	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Water year <u>1970</u>
Total Inflow 1/	0	0	0	438	2.5	1.0	1.0	0	216	45.2	0	0	0	266
Total Outflow	0	0	0	392	0	0	0	0	37.7	178	0	0	0	216
Total Consumption	7.2	4.2	3.9	111	3.7	4.2	5.1	6.4	9.3	14.3	13.9	12.2	10.0	94.2
†	-2.0	-1.4	-1.5	-10.1	+2.2	-0.5	-0.4	-5.8	+184	-140	-12.7	-8.9	-4.6	+8.4
†	17.1	16.7	16.5	19.3	16.7	16.7	16.9	16.3	16.9	23.5	20.5	19.1	18.3	17.9
††	3.47	2.26	1.88	31.62	2.56	2.10	2.36	0.52	9.19	2.56	0.48	2.04	3.67	33.09

- 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, - c.f.s.)

Date	Time	Discharge	Date	Time	Discharge

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOLS

ANNUAL SUMMARY

1970 WATER YEAR

- Escondido Creek subwatershed No. 6 near Kenedy, Tex Drainage Area 2.29 sq mi

Staff Gage
~~Continuous water stage recorder~~ ratio -. Date of last sediment survey Nov. 10, 1955.

Maxima: gage height, 20.9; outflow, 23 c.f.s.; surface area, 54.4 acres; contents, 349 acre-feet; on May 31

Minima: gage height, 15.0; surface area, 24.8 acres; contents, 110 acre-feet; on May 13, 20

Maximum inflow, - c.f.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 1969 to September 1970.

	Oct	Nov	Dec	Calendar year 1969	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Water year 1970
Total Inflow 1/	7.3	0	0.7	807	10.2	0.8	1.2	0	264	54.9	0	0	0	339
Total Outflow	0	0	0	697	0	0	0	0	41.7	197	0	0	0	239
Total Consumption	14.0	9.4	6.7	213	5.4	7.2	9.2	10.7	14.7	25.7	28.0	24.4	20.6	176
†	+1.6	-4.8	-2.1	-10.7	+10.2	-1.9	-1.9	-9.8	+232	-157	-26.0	-19.0	-12.0	+9.3
†	28.0	26.8	26.8	32.7	27.2	27.6	28.0	26.8	26.8	39.5	35.0	31.7	29.4	29.5
††	3.47	2.27	1.90	31.55	2.56	1.80	2.34	0.52	9.15	2.53	0.46	2.04	2.68	31.72

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, - c.f.s)

Date	Time	Discharge	Date	Time	Discharge

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOLS

ANNUAL SUMMARY

1970 WATER YEAR

- Escondido Creek subwatershed No. 7 near Kenedy, Tex. Drainage Area 2.12 sq mi

Staff Gage

~~Continuous water stage recorder~~: ratio -. Date of last sediment survey Nov. 10, 1955.

Maxima: gage height, 20.1; outflow, 19 c.f.s.; surface area, 51.9 acres; contents, 295 acre-feet; on May 31.

Minima: gage height, 15.0; surface area, 26.3 acres; contents, 103 acre-feet; on May 13, 20.

Maximum inflow, - c.f.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 1969 to September 1970.

	Oct	Nov	Dec.	Calendar year <u>1969</u>	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Water year <u>1970</u>
Total Inflow 1/	1.3	2.0	0	556	2.8	0.7	2.8	0	211	61.8	0	0.7	1.6	285
Total Outflow	0	0	0	459	0	0	0	0	33.7	147	0	0	0	181
Total Consumption	15.2	10.7	10.0	206	7.7	8.8	10.8	12.0	15.7	26.2	25.6	23.2	18.2	184
†	-4.2	-3.5	-5.6	-8.8	+1.1	-3.3	-1.7	-11.1	+185	-100	-23.5	-16.1	-6.6	+10.5
†	31.7	30.7	30.2	35.6	29.7	29.2	29.2	27.9	27.5	42.3	38.2	35.7	33.7	32.2
††	3.64	2.07	1.76	33.03	2.45	1.96	2.61	0.43	10.09	3.07	0.73	2.13	3.59	34.53

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, - c.f.s.)

Date	Time	Discharge	Date	Time	Discharge

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOLS

ANNUAL SUMMARY

1970 WATER YEAR

- Escondido Creek subwatershed No. 8 near Kenedy, Tex. Drainage Area 3.95 sq mi
Staff Gage
Continuous water-stage recorder: ratio -. Date of last sediment survey July 30, 1958.
Maxima: gage height, 22.9; outflow, 30 c.f.s.; surface area, 90.6 acres; contents, 769 acre-feet; on June 1.
Minima: gage height, 11.1; surface area, 27.4 acres; contents, 113 acre-feet; on Oct. 3.
Maximum inflow, - c.f.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 1969 to September 1970.

	Oct	Nov	Dec	Calendar year 1969	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Water year 1970
Total Inflow 1/	20.7	0	0	873	14.1	0.3	72.6	0	547	58.6	0	0	2.8	716
Total Outflow	0	0	0	789	0	0	5.6	0	116	442	1.2	0	0	565
Total Consumption	16.2	12.0	8.2	239	7.2	8.7	13.5	20.9	24.7	38.0	31.8	29.5	20.9	232
†	+14.4	-8.2	-4.5	-68.7	+13.9	-4.2	+61.3	-19.3	+434	-406	-30.4	-23.4	-11.4	+16.2
†	29.5	28.6	28.3	34.2	28.6	28.9	33.7	34.9	35.3	47.5	35.3	32.1	29.8	32.7
††	3.79	1.93	1.73	31.84	2.61	1.90	2.72	0.47	9.51	3.12	0.79	2.18	3.32	34.07

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, - c.f.s.)

Date	Time	Discharge	Date	Time	Discharge

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOLS

ANNUAL SUMMARY

1970 WATER YEAR

- Escondido Creek subwatershed No. 9 near Kenedy, Tex. Drainage Area 6.90 sq mi

Staff Gage
~~Continuous water-stage recorder~~: ratio -. Date of last sediment survey July 30, 1958.

Maxima: gage height, 17.5; outflow, 10* c.f.s.; surface area, 92.4 acres; contents, 551 acre-feet; on June 1

Minima: gage height, 11.8; surface area, 42.2 acres; contents, 180 acre-feet; on May 21

Maximum inflow, - c.f.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 1969 to September 1970

	Oct	Nov	Dec	Calendar year <u>1969</u>	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Water year <u>1970</u>
Total Inflow 1/	47.8	0.6	1.5	767	7.1	2.1	4.5	0	328	131	1.5	0	0	524
Total Outflow	0	0	0	550	0	0	0	0	19.8	280	5.0	0	0	305
Total Consumption	24.6	19.0	14.0	338	11.8	15.4	19.7	22.3	28.9	55.8	49.9	41.4	31.2	334
†	+40.0	-10.0	-6.0	+24.0	+6.0	-5.0	-5.0	-20.0	+309	-185	-44.0	-33.0	-22.0	+25.0
†	49.2	47.4	46.8	53.1	47.4	46.8	46.8	45.6	44.4	69.7	55.4	51.8	48.0	49.9
††	4.36	2.14	1.67	31.30	2.74	2.12	2.61	0.57	7.62	3.39	2.06	1.99	2.34	33.61

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.

* Estimated.

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

Date	Time	Discharge	Date	Time	Discharge

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

WATER BUDGET OF POOLS

ANNUAL SUMMARY

1970 WATER YEAR

- Escondido Creek subwatershed No. 10 near Kenedy, Tex. Drainage Area 2.75 sq mi

Staff Gage
~~Continuous water stage recorder~~ ratio -. Date of last sediment survey Nov. 10, 1955.

Maxima: gage height, 22.2; outflow, 24 cfs; surface area, 57.0 acres; contents, 379 acre-feet; on June 1

Minima: gage height, 11.6; surface area, 11.7 acres; contents, 42.6 acre-feet; on May 19-21

Maximum inflow, - cfs (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 1969 to September 1970.

	Oct	Nov	Dec	Calendar year <u>1969</u>	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Water year <u>1970</u>
Total Inflow 1/	6.0	0	0	514	0.8	2.0	3.3	0	360	82.4	0	0	0.2	455
Total Outflow	0	0	0	412	0	0	0	0	41.7	278	0	0	0	320
Total Consumption	12.0	8.3	5.3	200	5.2	6.4	7.0	7.7	10.0	32.2	27.8	26.1	21.2	169
†	-0.3	-6.0	-3.1	-33.0	-1.6	-2.0	-0.6	-7.2	+321	-215	-25.7	-20.7	-17.4	+21.4
†	17.2	15.7	14.8	22.8	14.5	14.2	13.9	13.1	13.3	35.8	27.8	24.4	21.2	18.8
††	3.91	1.76	1.84	30.01	2.46	2.04	2.56	0.47	8.89	4.05	0.80	2.92	2.00	33.70

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, - cfs)

Date	Time	Discharge	Date	Time	Discharge

TX-88
Rev. 10-69

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

RAINFALL DATA SUMMARY

STUDY AREA ESCONDIDO CREEK

1970 WATER YEAR

RAIN GAGES												
Date of storm	1-S	2-S	3-S	4-S	5-S	6-S	7-R	8-R	9-S	10-S	13-R	14-R
Weight factor	0.1108	0.1394	0.1558	0.1104	0.1324	0.1137	0.0596	0.0200	0.0716	0.0082	0.0631	
Oct. 4, 1969	0.77	0.61	0.57	0.51	0.69	0.67	0.67	0.68	0.65	0.61	(0.67)	0.47
5	3.06	2.39	2.33	2.26	2.66	2.73	2.98	2.42	2.60	2.71	(2.98)	2.50
12	.25	.80	.52	.50	.37	.45	.74	.44	.50	.70	.36	.30
27	.17	.10	.07	.08	.13	.09	.05	.07	.05	.06	0	0
29	.11	.22	.15	.04	.13	.03	0	0	.06	.09	0	0
October totals	4.36	4.12	3.64	3.39	3.98	3.97	4.44	3.61	3.86	4.17	4.01	3.27
October WMR = 3.92	.48	.57	.57	.43	.53	.45	.26	.07	.28	.03	.25	
Nov. 18, 1969	.48	.34	.61	.72	.39	.73	1.66	.41	.61	1.15	.92	.38
23-24	.68	.45	.62	.52	.50	.44	.38	.55	.59	.66	.22	.59
26-27	.92	.78	.78	.99	.84	.97	.95	.76	.89	.96	.90	.87
28	.06	.04	.06	.13	.04	.07	.12	0	.06	.12	.15	0
November totals	2.14	1.61	2.07	2.36	1.77	2.21	3.11	1.72	2.15	2.89	2.19	1.84
November WMR = 2.09	.24	.22	.32	.30	.23	.25	.19	.03	.15	.02	.14	
Dec. 4-5, 1969	.82	.85	.79	1.08	.81	1.12	1.30	.70	1.10	1.34	.85	.97
6	.05	.07	.05	.02	.07	.07	.03	.09	.07	.03	.05	.04
20	0	0	0	0	0	0	0	.07	0	0	0	.10
29-30	.80	.75	.92	.85	.98	.88	.83	.86	.82	1.00	.60	.70
December totals	1.67	1.67	1.76	1.95	1.86	2.07	2.16	1.72	1.99	2.37	1.50	1.81
December WMR = 1.83	.19	.23	.27	.24	.25	.24	.13	.03	.14	.02	.09	

Calendar Year WMR = 30.19

TX-88
Rev. 10-69

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

RAINFALL DATA SUMMARY

STUDY AREA ESCONDIDO CREEK

1970 WATER YEAR

RAIN GAGES												
Date of storm	1-S	2-S	3-S	4-S	5-S	6-S	7-R	8-R	9-S	10-S	13-R	14-R
Weight factor	0.1108	0.1394	0.1558	0.1254	0.1324	0.1137	0.0596	0.0200	0.0716	0.0082	0.0631	
Jan. 2, 1970	0.17	0.16	0.16	0.13	0.17	0.17	0.13	0.18	0.16	0.15	0.26	0.10
4-5	.84	.79	.84	.78	.81	.88	.80	.73	.79	.91	.63	.82
10	.15	.14	.12	.17	.16	.15	.14	.10	.14	.16	.08	.05
13	.03	.04	.02	0	.03	.02	0	.07	.03	0	0	0
15-16	1.47	1.75	1.21	1.47	1.12	1.61	1.95	1.71	1.49	1.60	1.49	1.64
18	.03	.04	.02	0	.03	.02	0	.07	.03	0	0	.10
23	.05	.07	.08	.06	.05	.04	.03	0	.04	.06	0	0
January totals	2.74	2.99	2.45	2.61	2.37	2.89	3.05	2.86	2.68	2.88	2.46	2.71
January WMR = 2.68	.30	.42	.38	.33	.31	.33	.18	.06	.19	.02	.16	
Feb. 1, 1970	0	0	.04	0	.06	0	0	.12	0	.10	0	.08
6	.72	.53	.75	.58	.86	.78	.28	.54	.69	.91	.45	.91
22	.34	.29	.28	.28	.28	.30	.28	.27	.28	.30	.18	.18
23	1.06	.93	.89	.86	.90	.92	.85	.88	.86	.90	.48	.84
24	0	0	0	0	0	0	0	0	0	0	.11	0
February totals	2.12	1.75	1.96	1.72	2.10	2.00	1.41	1.81	1.83	2.21	1.22	2.01
February WMR = 1.86	.23	.24	.31	.22	.28	.23	.08	.04	.13	.02	.08	
Mar. 2, 1970	.12	.20	.25	.26	.17	.13	.05	.08	.15	.19	0	0
4	.05	.11	.10	.04	.05	.04	.08	.08	.01	.06	.05	0
6	.31	.49	.51	.39	.24	.21	.74	.23	.08	.60	.31	.04
10	1.29	1.38	1.08	.96	1.38	.99	1.33	1.29	.92	1.38	.76	.97
16-17	.46	.49	.38	.32	.49	.35	.45	.48	.33	.47	.47	.50
19-20	.10	.09	.07	.06	.10	.07	0	.05	.03	.07	0	0
28	.28	.20	.22	.20	.20	.23	.07	.04	.12	.16	.16	.06
March totals	2.61	2.96	2.61	2.23	2.63	2.02	2.72	2.25	1.64	2.93	1.75	1.57
March WMR = 2.42	.29	.41	.41	.28	.35	.23	.16	.04	.12	.02	.11	

TX-88
Rev. 10-69

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

RAINFALL DATA SUMMARY

STUDY AREA ESCONDIDO CREEK

1970 WATER YEAR

RAIN GAGES												
Date of storm	1-S	2-S	3-S	4-S	5-S	6-S	7-R	8-R	9-S	10-S	13-R	14-R
Weight factor	0.1108	0.1394	0.1558	0.1254	0.1324	0.1137	0.0596	0.0200	0.0716	0.0082	0.0631	
Apr. 9, 1970	0.11	0.18	0.10	0.04	0.07	0.04	0	0	0	0.18	0	0
18	.46	.38	.33	.52	.40	.45	.32	.45	.45	.40	.26	.22
April totals	.57	.56	.43	.56	.47	.49	.32	.45	.45	.58	.26	.22
April WMR = 0.48	.06	.08	.07	.07	.06	.06	.02	.01	.03	0	.02	
May 14, 1970	.58	.45	.62	.48	.33	.38	.38	.62	.29	.33	.15	.08
15	1.18	.91	1.31	1.11	.64	.78	.89	1.12	.59	.77	.78	.62
19	.08	.08	.12	.16	.10	.14	.30	.09	.17	.26	.25	.15
21	.10	.13	.13	.06	.16	.15	.10	.35	.19	.09	.10	.54
22	.70	.87	1.01	.76	1.04	1.18	1.43	1.90	1.41	1.25	.70	3.00
23-24	.82	.84	1.23	1.46	1.03	1.44	2.74	1.18	1.66	2.40	1.85	1.67
26	1.25	1.52	1.61	1.14	1.70	1.10	.99	1.42	1.56	1.33	.95	1.44
28	1.13	1.30	1.62	1.52	1.47	1.10	1.32	.85	1.40	1.77	1.22	.92
30	0	0	0	0	0	0	0	0	0	0	0	.08
31	1.78	2.10	2.44	2.04	2.36	1.65	1.77	1.65	2.21	2.37	1.15	1.40
May totals	7.62	8.20	10.09	8.73	8.83	7.92	9.92	9.18	9.48	10.57	7.15	9.90
May WMR = 8.70	.84	1.14	1.57	1.09	1.17	.90	.59	.18	.68	.09	.45	
June 1, 1970	1.06	1.33	1.25	.60	1.51	.85	.52	1.53	1.32	.69	.63	2.96
21-22	.04	.05	.06	.07	.16	0	.02	.08	.02	0	0	0
23	1.55	1.22	1.19	1.15	1.54	1.56	3.00	1.72	2.50	3.45	2.43	1.00
24	.74	.62	.57	.48	.78	.73	1.25	.98	1.18	1.44	.50	.60
June totals	3.39	3.22	3.07	2.30	3.99	3.14	4.79	4.31	5.02	5.58	3.56	4.56
June WMR = 3.50	.38	.45	.48	.29	.53	.36	.29	.09	.36	.05	.22	

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

RAINFALL DATA SUMMARY

STUDY AREA ESCONDIDO CREEK

1970 WATER YEAR

RAIN GAGES												
Date of storm	1-S	2-S	3-S	4-S	5-S	6-S	7-R	8-R	9-S	10-S	13-R	14-R
Weight factor	0.1108	0.1394	0.1558	0.1254	0.1324	0.1137	0.0596	0.0200	0.0716	0.0082	0.0631	
July 15, 1970	0.68	0.43	0.39	0.25	0.28	0.40	0.53	0.05	0.22	0.36	0.18	0.18
16	.27	.36	.24	.07	.25	.24	.15	.08	.09	.10	.18	0
17	0	0	0	0	0	0	0	0	0	0	.06	0
24-25	1.11	.12	.10	.02	.37	.04	.12	.24	.05	.04	0	.32
July totals	2.06	.91	.73	.34	.90	.68	.80	.37	.36	.50	.42	.50
July WMR = 0.83	.23	.13	.11	.04	.12	.08	.05	.01	.03	0	.03	
Aug. 3-4, 1970	.83	1.01	.83	1.17	1.66	1.13	1.30	1.96	1.96	1.26	.68	3.20
4	.33	.17	.02	.02	0	0	.08	.09	0	0	.15	.08
23	.84	1.10	1.28	.81	.98	2.54	.77	1.53	2.19	1.33	1.50	1.66
24	0	0	0	0	0	0	.06	.22	0	0	.08	.04
29	0	0	0	0	0	0	.18	.29	0	0	0	.28
August totals	1.99	2.28	2.13	2.00	2.64	3.67	2.39	4.09	4.15	2.59	2.41	5.26
August WMR = 2.58	.22	.32	.33	.25	.35	.42	.14	.08	.30	.02	.15	
Sept. 1, 1970	.27	.05	.15	1.02	.20	1.64	.35	.14	.52	.26	.25	.28
12	.04	.04	.03	.05	.04	.05	.08	0	.07	.14	0	0
12-13	.23	.29	.20	.19	.30	.29	.28	.27	.52	.49	.10	.15
13	.26	.35	.21	.16	.35	.31	.25	.37	.58	.43	.08	.42
20	.37	.06	.50	.70	.02	.21	.25	.21	.06	.04	.08	.12
21	.06	.10	.13	.07	.06	.08	.10	.04	.05	.05	.10	0
22	.03	.03	.06	.06	.02	.03	.08	0	.03	.04	.06	0
23	.50	.82	1.06	.68	.50	.67	.90	.29	.39	.47	.51	.30
24	.05	.20	.18	0	.13	.11	0	.12	.04	0	0	.28
25	.51	.69	1.01	.79	.42	.63	1.05	.18	.40	.55	.53	.10
26	.02	.07	.06	0	.04	.04	0	.04	.01	0	.10	.05
September totals	2.34	2.70	3.59	3.72	2.08	4.06	3.34	1.66	2.67	2.47	1.81	1.70
September WMR = 2.96	.26	.38	.56	.47	.28	.46	.20	.03	.19	.02	.11	

Water Year WMR = 33.85

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICT

Sheet 1 of 1

INFLOW AND OUTFLOW COMPUTATIONS

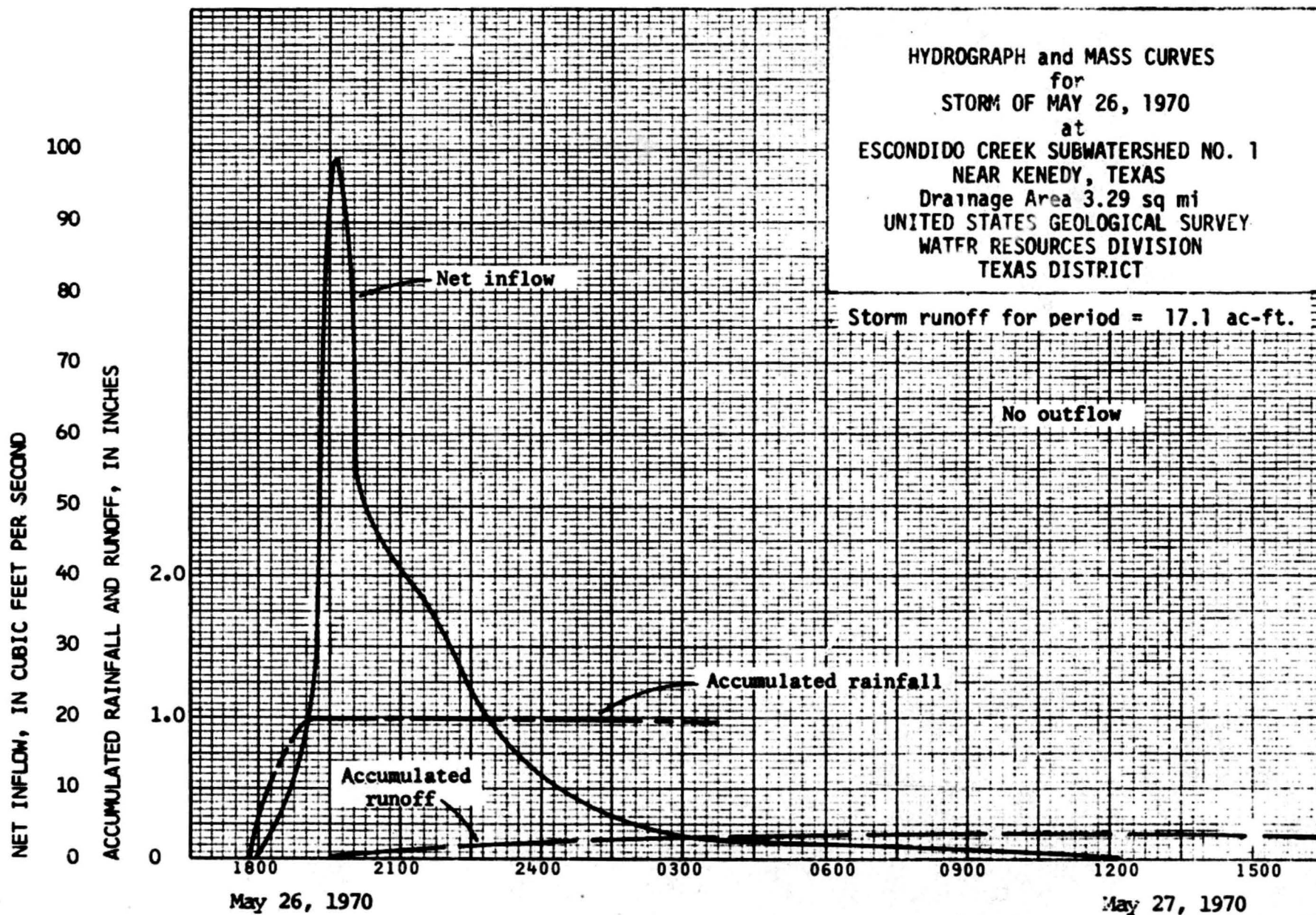
Storm period May 26, 1970

08187000 Escandido Creek subwatershed No. 1 near Kenedy, Tex. D.A. 3.29 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage		Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool				Net Inflow			
				ac-ft	cfs				in	area ac	Storage ac-ft	cfs	Rate cfs	in/hr	in	Acc in
<u>May 26</u>																
<u>00 00</u>	<u>13.054</u>															
<u>10 00</u>	<u>13.005</u>	<u>76.79</u>	<u>-</u>						<u>0</u>				<u>0</u>	<u>0</u>		
<u>19 00</u>	<u>13.104</u>	<u>78.71</u>	<u>1.0</u>	<u>+1.92</u>	<u>23.2</u>	<u>13.05</u>	<u>0</u>	<u>23.2</u>	<u>.90</u>	<u>12.4</u>	<u>1.46</u>	<u>17.7</u>	<u>5.5</u>	<u>.0026</u>	<u>0.0026</u>	<u>0.0026</u>
<u>30</u>	<u>13.180</u>	<u>80.21</u>	<u>.5</u>	<u>+1.50</u>	<u>36.3</u>	<u>13.14</u>		<u>36.3</u>	<u>.05</u>	<u>19.6</u>	<u>.08</u>	<u>1.9</u>	<u>34.4</u>	<u>.0162</u>	<u>.0081</u>	<u>.0167</u>
<u>35</u>	<u>13.213</u>	<u>80.86</u>	<u>.083</u>	<u>+ .65</u>	<u>24.4</u>			<u>24.4</u>					<u>24.4</u>	<u>.0445</u>	<u>.0027</u>	<u>.0144</u>
<u>40</u>	<u>13.247</u>	<u>81.54</u>	<u>.083</u>	<u>+ .68</u>	<u>28.7</u>			<u>28.7</u>					<u>28.7</u>	<u>.0465</u>	<u>.0022</u>	<u>.0183</u>
<u>45</u>	<u>13.280</u>	<u>82.20</u>	<u>.083</u>	<u>+ .66</u>	<u>25.8</u>			<u>25.8</u>					<u>25.8</u>	<u>.0451</u>	<u>.0028</u>	<u>.0221</u>
<u>20 00</u>	<u>13.362</u>	<u>83.86</u>	<u>.25</u>	<u>+1.66</u>	<u>80.3</u>			<u>80.3</u>					<u>80.3</u>	<u>.0378</u>	<u>.0024</u>	<u>.0315</u>
<u>21 00</u>	<u>13.540</u>	<u>87.54</u>	<u>1.0</u>	<u>+3.68</u>	<u>44.5</u>			<u>44.5</u>					<u>44.5</u>	<u>.0210</u>	<u>.0210</u>	<u>.0525</u>
<u>22 00</u>	<u>13.683</u>	<u>90.58</u>	<u>1.0</u>	<u>+3.04</u>	<u>36.8</u>			<u>36.8</u>					<u>36.8</u>	<u>.0173</u>	<u>.0173</u>	<u>.0698</u>
<u>23 00</u>	<u>13.776</u>	<u>92.59</u>	<u>1.0</u>	<u>+2.01</u>	<u>24.3</u>			<u>24.3</u>					<u>24.3</u>	<u>.0114</u>	<u>.0114</u>	<u>.0812</u>
<u>24 00</u>	<u>13.831</u>	<u>93.80</u>	<u>1.0</u>	<u>+1.21</u>	<u>14.6</u>		<u>0</u>	<u>14.6</u>					<u>14.6</u>	<u>.0069</u>	<u>.0069</u>	<u>.0881</u>
<u>May 27</u>																
<u>06 00</u>	<u>13.204</u>	<u>95.41</u>	<u>6.0</u>	<u>+1.61</u>	<u>3.3</u>		<u>0</u>	<u>3.3</u>					<u>3.3</u>	<u>.0016</u>	<u>.0026</u>	<u>.0977</u>
<u>12 00</u>	<u>13.206</u>	<u>95.45</u>	<u>6.0</u>	<u>+ .04</u>	<u>.8</u>		<u>0</u>	<u>.8</u>					<u>.8</u>	<u>0</u>		
<u>24 00</u>	<u>13.877</u>	<u>-</u>	<u>6.0</u>	<u>-</u>	<u>-</u>		<u>0</u>	<u>0</u>					<u>0</u>	<u>0</u>		

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-40-



TX-65
(Rev. 6-68)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Esccondido Creek at Kennedy Tex
Period of Record May 26 - 27, 1970 Drainage Area 72.4 sq. mi.

Time	G. Ht. Feet	Sh. Adj.	Discharge			Runoff	
			c.f.s.	Inc.	In/hr.	Inches	Acc. In.
May 26, 1970							
0000	8.13	0	1.6	24	0		
1200	8.05		88	36	0		
1800	8.02		48	13	0		
30	8.14		1.7	2	0		
1900	8.37		4.2	2	.0001	0.0000	0.0000
30	8.40		4.4	2	.0001	.0000	.0000
2000	8.80		10	2	.0002	.0001	.0001
30	9.12		16	2	.0003	.0002	.0003
2100	9.80		32	2	.0007	.0004	.0007
30	11.35		90	2	.0019	.0010	.0017
2200	12.50		170	2	.0036	.0018	.0035
30	13.40		260	2	.0056	.0028	.0063
2300	14.15		348	2	.0075	.0038	.0101
30	14.69		428	2	.0092	.0046	.0147
2400	15.12	0	504	1	.0108	.0027	.0174
			3311.92	96			
			34				
May 27							
0000	15.12	0	504	2	.0108	.0054	.0228
0100	15.50		580	4	.0124	.0124	.0352
0200	15.76		648	3	.0139	.0104	.0456
30	15.82		666	2	.0143	.0072	.0528
0300	15.81		663	3	.0142	.0106	.0634
0400	15.65		615	4	.0132	.0132	.0766
0500	15.16		512	4	.0110	.0110	.0876
0600	14.20		355	4	.0076	.0076	.0952
0700	13.16		236	4	.0051	.0051	.1003
0800	12.20		144	4	.0031	.0031	.1034
0900	11.30	0	88	4	.0019	.0019	.1053

Time	G. Ht. Feet	Sh. Adj.	Discharge			Runoff	
			c.f.s.	Inc.	In/hr.	Inches	Acc. In.
1000	10.82	0	67	4	0.0014	0.0014	0.1067
1100	10.50		54	6	.0012	.0018	.1085
1300	10.09		41	8	.0009	.0018	.1103
1500	9.81		32	8	.0007	.0014	.1117
1700	9.60		26	10	.0006	.0015	.1132
2000	9.34		20	14	.0004	.0014	.1146
2400	9.11	0	16	8	.0003	.0006	.1152
			12.237	96			
			120				

Computed by ARR Date 10/16/70 Checked by LEE Date 10/20/70

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

WEIGHTED-PRECIPIRATION RECORD

Sheet 1 of 1

Comp. by: ber

Date 4/1/71

Check by AEF

Date 4/8/71

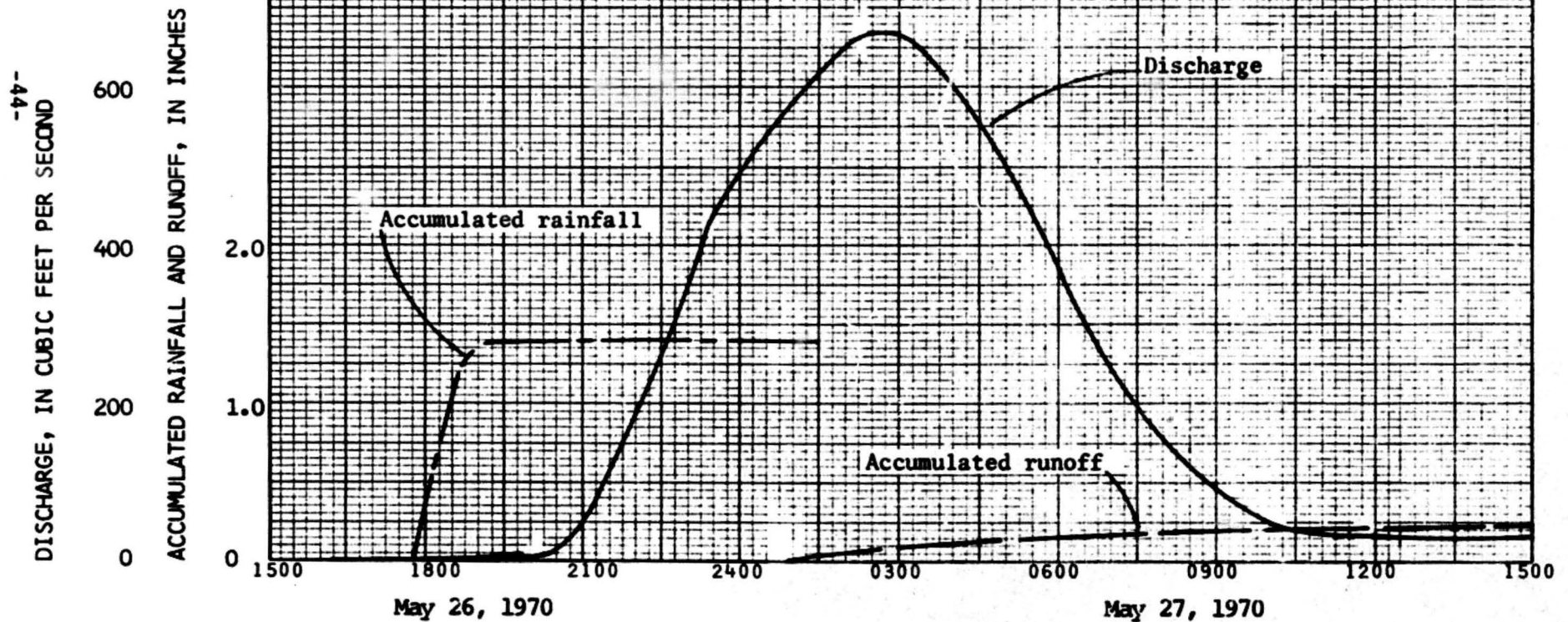
Study Area Escudido Creek at Harady, Tex Date of storm May 26, 1970

[illegible]

HYDROGRAPH and MASS CURVES
for
STORM OF MAY 26, 1970
at
ESCONDIDO CREEK AT KENEDY, TEXAS

Drainage Area 72.4 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT

Storm runoff for period = 445 ac-ft.



INFLOW AND OUTFLOW COMPUTATIONS

Storm period May 26, 1970

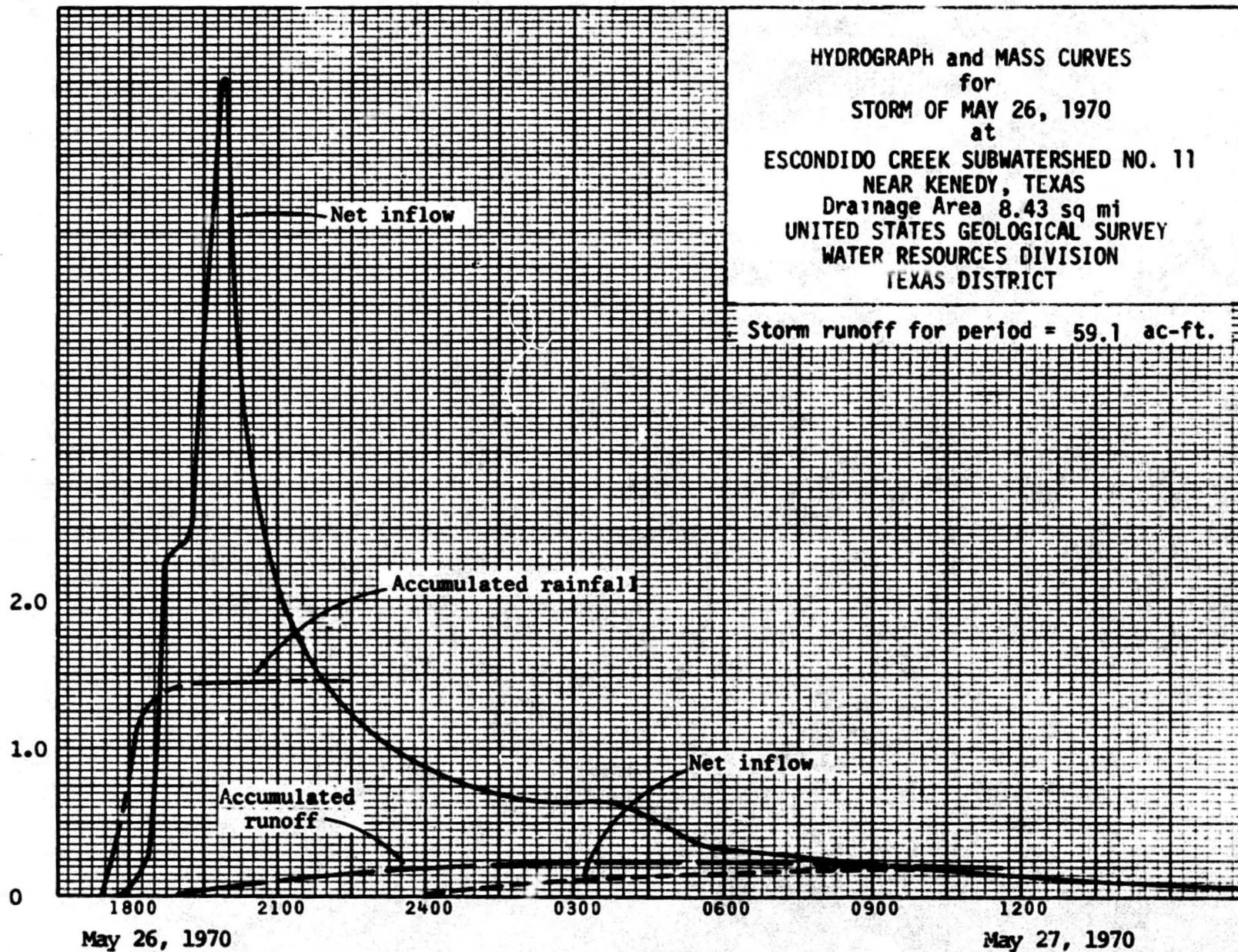
08187900 Escondido Creek subwatershed No. 11 near Kenedy, Tex. D.A. 8.43 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage		Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool				Net Inflow			Acc in
				ac-ft	cfs				in	ac	Storage ac-ft	cfs	Rate cfs	in/hr	in	
May 26, 1970																
0000 (14.200)																
1745	14.184	101.34	17.75	-	0			0	0				0	0		
1815	14.275	103.36	.50	2.02	48.9	14.23	0	48.9	1.05	22.2	1.94	46.9	2.0	.0004	0.0002	0.0002
30	14.304	104.01	.25	.65	31.5	14.22		31.5	.25	22.5	.47	22.7	8.8	.0016	.0004	.0006
1900	14.475	107.93	.30	3.92	94.9	14.39		94.9	.10	22.2	.19	4.6	90.3	.0166	.0083	.0089
30	14.650	112.08	.50	4.15	100	14.56		100	.04	22.7	.08	1.2	98.1	.0180	.0030	.0179
45	14.765	114.88	.25	2.80	136	14.71		136					148	.0272	.0048	.0247
50	14.815	116.12	.083	1.24	180	14.79		180					180	.0231	.0028	.0275
55	14.870	117.50	.083	1.38	200	14.84		200					200	.0268	.0031	.0306
2000	14.930	119.02	.083	1.52	221	14.90		221					221	.0266	.0034	.0340
05	14.985	120.43	.083	1.41	205	14.94		205					205	.0277	.0031	.0371
15	15.070	122.64	.167	2.21	160	15.02		160					160	.0234	.0049	.0420
30	15.180	125.57	.25	2.93	142	15.12		142					142	.0261	.0065	.0485
2100	15.328	129.72	.50	4.15	100	15.24		100					100	.0184	.0032	.0577
2200 (15.530)	135.32	135.32	1.0	5.60	67.8	15.43		67.8					67.8	.0125	.0125	.0702
2400 (15.770)	142.44	142.44	2.0	7.12	43.1	15.65	0	43.1					43.1	.0079	.0158	.0860
May 27																
0200	15.978	148.95	2.0	6.51	39.4	15.87	.72	40.1					40.2	.0074	.0148	.1008
0400	16.102	153.01	2.0	4.06	26.6	16.04	2.0	26.6					26.6	.0049	.0028	.1106
0800	16.200	156.33	4.0	3.32	10.0	16.15	3.0	13.0					13.0	.0024	.0036	.1202
1500	16.233	157.49	7.0	1.16	2.0	16.22	3.9	3.9					3.9	.0011	.0077	.1279
2400	16.196	156.19	9.0	-1.30	-1.7	16.21	3.7	2.0					2.0	.0004	.0034	.1315
24.78.04																
3.3																

Comp by LPF 12/14/70

checked by DRR 12/23/70

NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES



Storm period May 28, 1970

00187000 Escondido Creek subwatershed No. 1 near Kenedy, Tex. D.A. 3.29 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage		Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool				Net Inflow			
				ac-ft	cfs				area		Storage		Rate		in	Acc in
									in	ac	ac-ft	cfs	cfs	in/hr		
May 22																
0000	13.868	94.61											0	0		
0600	13.960	96.66	60	+2.05	4.1	13.91	0	4.1	1.00	22.3	1.06	2.8	30	.0001	0.0006	0.0006
30	14.125	100.42	5	+3.76	91.0	14.04		91.0	.05	22.8	.10	2.4	86.6	.0417	.0209	.0214
35	14.177	101.63	.083	+1.21	176	14.15		176	.01	23.1	.02	2.2	173	.0815	.0048	.0822
40	14.231	102.89	.083	+1.26	183	14.20		183	.01	23.4	.02	2.2	180	.0846	.0071	.0853
45	14.283	104.12	.083	+1.23	179	14.26		179	.01	23.6	.02	2.2	176	.0829	.0062	.0832
0700	14.420	107.41	25	+3.29	152	14.35		152	.02	24.0	.04	1.9	157	.0782	.0185	.0607
30	14.670	112.59	5	+6.18	150	14.54		150	.04	24.7	.08	1.9	148	.0637	.0248	.0255
0800	14.905	112.61	5	+6.02	146	14.79		146	.04	25.6	.08	1.9	144	.0678	.0220	.1234
30	15.100	124.76	5	+5.15	125	15.00		125	.04	26.4	.09	2.2	123	.0579	.0290	.1504
0900	15.215	127.27	5	+3.11	75.3			75.3					75.3	.0255	.0173	.1762
1000	15.278	132.37	10	+4.50	54.4			54.4					54.4	.0256	.0256	.2018
1200	15.520	136.02	2.0	+3.22	22.5			22.5					22.5	.0106	.0212	.2230
1400	15.559	137.46	2.0	+1.27	8.3			8.3					8.3	.0032	.0078	.2308
1800	15.583	138.17	4.0	+ .71	2.1			2.1					2.1	.0010	.0040	.2348
2400	15.586	138.36	6.0	+ .09	.19		0	.19					.19	.0001	.0006	.2394

104 222 12/30/70

-49-

NET INFLOW, IN CUBIC FEET PER SECOND

ACCUMULATED RAINFALL AND RUNOFF, IN INCHES

180
160
140
120
100
80
60
40
20
0

2.0
1.0
0

0 2400 0300 0600 0900 1200 1500 1800 2100 2400

May 28, 1970

HYDROGRAPH and MASS CURVES
for
STORM OF MAY 28, 1970
at
ESCONDIDO CREEK SUBWATERSHED NO. 1
NEAR KENEDY, TEXAS
Drainage Area 3.29 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT

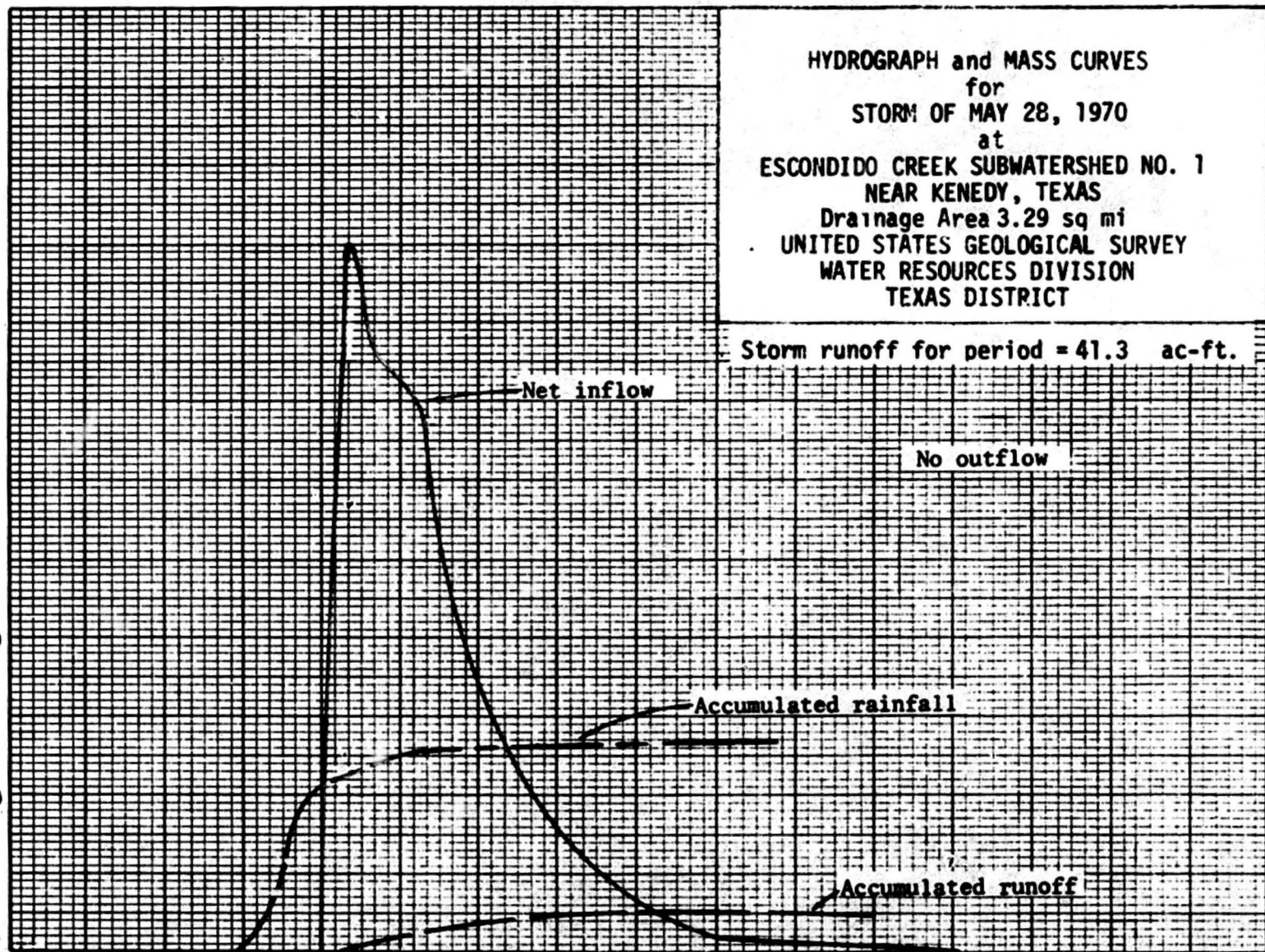
Storm runoff for period = 41.3 ac-ft.

Net inflow

No outflow

Accumulated rainfall

Accumulated runoff



UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY-TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Escondido Creek at Kenedy, Tex.

Period of Record May 28-29, 1970

Drainage Area 72.4 sq. mi.

Time	G. Ht. Feet	Sh. Adj.	Discharge			Runoff	
			c.f.s.	Inc.	In/hr.	Inches	Acc. In.
	May 28, 1970						
0000	9.11	0	16	11	0.0003	0.0008	0.0008
0530	8.91		12	12	.0003	.0009	.0017
0600	9.12		16	2	.0003	.0002	.0019
30	9.50		24	2	.0005	.0002	.0021
0700	9.92		36	2	.0008	.0004	.0025
30	10.60		58	2	.0012	.0006	.0031
0800	11.80		116	2	.0025	.0012	.0043
30	13.30		250	2	.0034	.0027	.0070
0900	14.16		349	2	.0075	.0038	.0108
30	14.75		438	2	.0094	.0047	.0155
1000	15.20		520	3	.0111	.0083	.0238
1100	15.62		606	3	.0130	.0098	.0336
30	15.66		618	2	.0132	.0086	.0402
1200	15.63		609	3	.0130	.0098	.0500
1300	15.46		572	6	.0122	.0183	.0683
1500	15.08		496	6	.0106	.0159	.0842
1600	14.75		438	4	.0094	.0094	.0936
1700	14.20		355	4	.0076	.0076	.1012
1800	13.52		272	4	.0058	.0058	.1070
1900	12.81		201	4	.0043	.0043	.1113
2000	12.10		136	4	.0029	.0029	.1142
2100	11.50		98	4	.0021	.0021	.1163
2200	11.10		78	4	.0017	.0017	.1180
2300	10.80		66	4	.0014	.0014	.1194
2400	10.56	0	57	2	.0012	.0006	.1200
			22,433	96			
			234				

Time	G. Ht. Feet	Sh. Adj.	Discharge			Runoff	
			c.f.s.	Inc.	In/hr.	Inches	Acc. In.
			May 29				
0000	10.56	0	57	1	0.0012	0.0018	0.1218
0300	10.06		40	2	.0009	.0027	.1245
0600	9.76		31	3	.0007	.0032	.1277
1200	9.40		22	4	.0005	.0030	.1307
1800	9.19		17	4	.0004	.0024	.1331
2400	9.05	0	15	2	.0003	.0009	.1340
			416	16			
			26				

Computed by ARR Date 10/16/70 Checked by LEF Date 10/27/70

HYDROGRAPH and MASS CURVES
for
STORM OF MAY 28, 1970
at
ESCONDIDO CREEK AT KENEDY, TEXAS

Drainage Area 72.4 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT

Storm runoff for period = 517 ac-ft.

DISCHARGE, IN CUBIC FEET PER SECOND
ACCUMULATED RAINFALL AND RUNOFF, IN INCHES

700

600

500

400

300

200

100

0

2.0

1.0

0

0600

0900

1200

1500

1800

2100

May 28, 1970

Accumulated rainfall

Accumulated runoff

Discharge

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICTSheet 1 of 1INFLOW AND OUTFLOW COMPUTATIONSStorm period May 28, 197008187900 Escondido Creek subwatershed No. 11 near Kenedy, Tex. D.A. 8.43 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage		Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool				Net Inflow			
				ac-ft	cfs				in	ac	Storage ac-ft	cfs	Rate cfs	in/hr	in	Acc in
May 28																
0000	16.196	156.19											0	0		
0530	16.160	154.97	5.5	-1.22	-2.7	16.18	3.4	70	.11	24.3	0.31	.68	.020			
0600	16.222	157.10	.50	2.13	51.3	16.19	3.5	55.0	.54	26.4	1.55	37.5	17.5	.0032	.0016	.0016
30	16.287	159.38	.50	2.28	55.2	16.23	4.2	59.4	.10	25.2	.29	7.0	52.5	.0027	.0042	.0044
0700	16.355	161.84	.50	2.46	59.5	16.32	5.1	64.6	.05	26.0	.15	3.6	61.0	.0112	.0056	.0120
15	16.392	163.18	.25	1.34	64.9	16.37	5.8	70.7	.01	26.6	.03	1.5	63.2	.0127	.0022	.0152
30	16.436	164.82	.25	1.64	79.4	16.41	6.3	85.7	.01	27.2	.03	1.5	84.2	.0135	.0022	.0191
35	16.454	165.50	.083	.68	38.7	16.44	6.8	106	.02	27.9	.06	8.7	97.3	.0173	.0015	.0206
40	16.473	166.21	.083	.71	103	16.46	7.0	110	.02	27.7	.06	8.7	101	.0186	.0016	.0222
45	16.493	166.97	.083	.76	110	16.48	7.4	117	.02	28.0	.06	8.7	108	.0199	.0017	.0239
50	16.513	167.73	.083	.76	110	16.50	7.6	118	.01	28.2	.03	4.4	114	.0210	.0018	.0257
55	16.533	168.51	.083	.78	113	16.52	8.0	121	.01	28.8	.03	4.4	117	.0215	.0018	.0275
0800	16.552	169.25	.083	.74	107	16.54	8.2	115	.01	28.7	.03	4.4	111	.0204	.0017	.0292
10	16.585	170.53	.167	1.28	92.9	16.57	8.7	102	.01	29.1	.03	2.2	99.8	.0184	.0021	.0323
20	16.615	171.71	.167	1.19	86.4	16.60	9.1	95.5					95.5	.0176	.0023	.0352
30	16.641	172.75	.167	1.04	75.5	16.63	9.5	85.0					85.0	.0156	.0026	.0378
0900	16.702	175.19	.50	2.44	59.0	16.67	10.0	69.0					69.0	.0127	.0044	.0442
30	16.748	177.08	.50	1.89	45.7	16.72	10.6	56.3					56.5	.0104	.0052	.0494
1000	16.780	178.80	.50	1.72	31.9	16.76	11.1	43.0					43.0	.0079	.0040	.0534
1200	16.848	181.25	2.0	2.45	17.2	16.81	11.6	28.8					28.8	.0053	.0064	.0600
1300	16.864	181.92	2.0	.67	4.1	16.86	12.1	16.2					16.2	.0020	.0060	.0660
1600	16.869	182.13	2.0	.21	1.3	16.87	12.2	13.5					13.5	.0025	.0050	.0710
1800	16.886	182.85	2.0	.72	4.4	16.88	12.3	16.7					16.7	.0021	.0042	.0752
2100	16.886	182.85	3.0	0	0	16.89	12.4	12.4					12.4	.0023	.0049	.0801
2400	16.871	182.22	3.0	-0.63	-2.5	16.88	12.3	9.8					9.8	.0018	.0045	.0846
							222.77									
							9.3									

Comp by ASR 12/17/70Checked by BAR 12/23/70

WEIGHTED-PRECIPIATION RECORD

Date 4/8/71

Accumulated Precipitation in Inches for Recording Rain Gages

[illegible]

WPM : Sum of Precipitation x Weight Factor

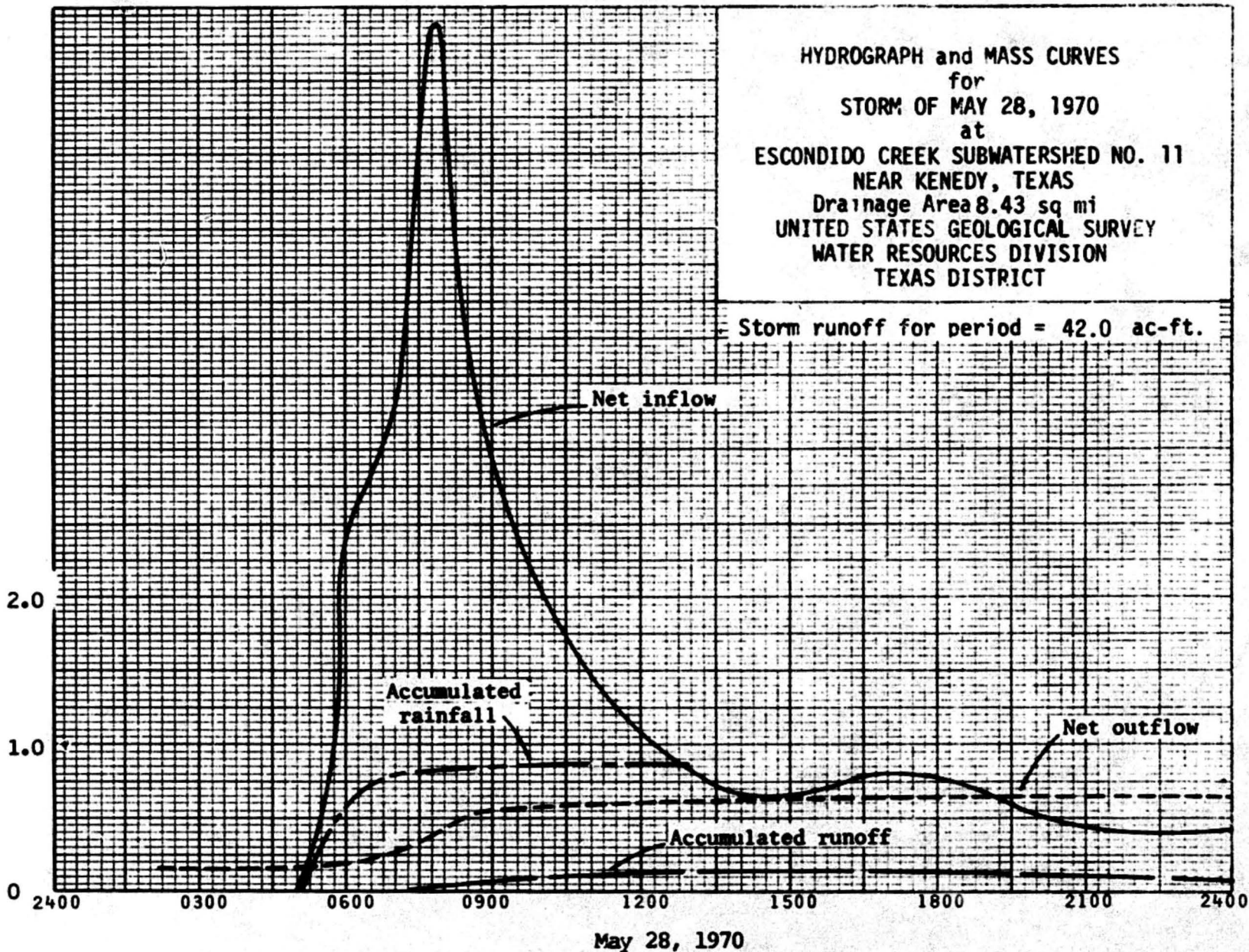
K : ~~WPH~~ Total Recording Gages Weighted Precipitation : 1.00

NET INFLOW AND OUTFLOW, IN CUBIC FEET PER SECOND

ACCUMULATED RAINFALL AND RUNOFF, IN INCHES

HYDROGRAPH and MASS CURVES
for
STORM OF MAY 28, 1970
at
ESCONDIDO CREEK SUBWATERSHED NO. 11
NEAR KENEDY, TEXAS
Drainage Area 8.43 sq mi
UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
TEXAS DISTRICT

Storm runoff for period = 42.0 ac-ft.



INFLOW AND OUTFLOW COMPUTATIONS

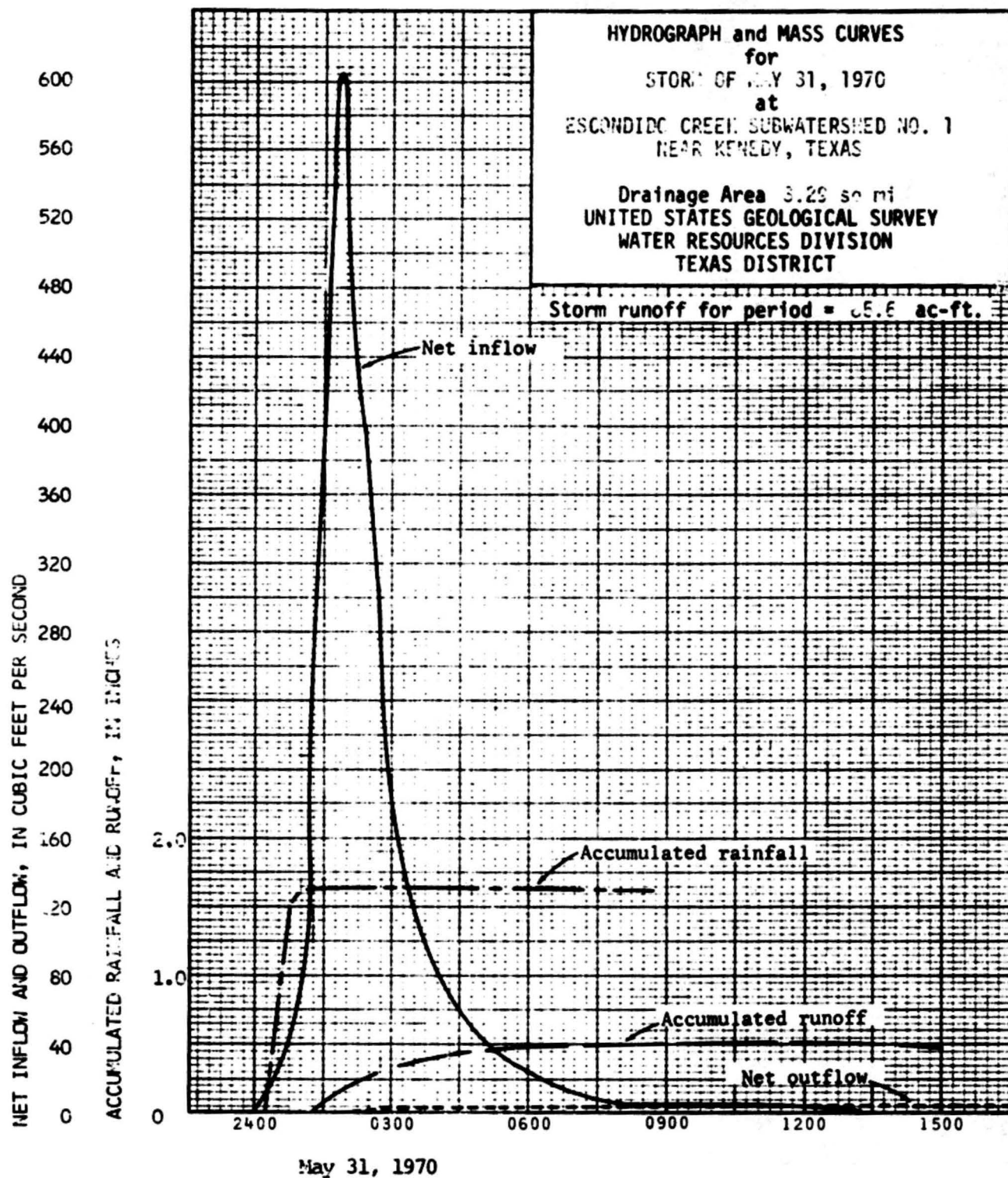
Storm period May 31, 1970

08187000 Escondido Creek subwatershed No. 1 near Kenedy, Tex. D.A. 3.29 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage		Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool				Net Inflow			
				ac-ft	cfs				in	area ac	Storage ac-ft	cfs	Rate cfs	in/hr	in	Acc in
<u>May 31</u>																
<u>0000</u>	<u>15.458</u>	<u>124.62</u>	<u>-</u>										<u>0</u>	<u>0</u>		
<u>0100</u>	<u>15.600</u>	<u>138.66</u>	<u>1.0</u>	<u>+4.04</u>	<u>50.4</u>	<u>15.53</u>	<u>0</u>	<u>50.4</u>	<u>1.05</u>	<u>28.5</u>	<u>2.49</u>	<u>30.1</u>	<u>20.3</u>	<u>.0096</u>	<u>0.0096</u>	<u>0.0096</u>
<u>30</u>	<u>15.830</u>	<u>147.18</u>	<u>.5</u>	<u>+8.52</u>	<u>206</u>	<u>15.74</u>	<u>0</u>	<u>206</u>	<u>.05</u>	<u>29.4</u>	<u>.12</u>	<u>2.9</u>	<u>203</u>	<u>.0956</u>	<u>.0478</u>	<u>.0574</u>
<u>45</u>	<u>16.210</u>	<u>157.00</u>	<u>.25</u>	<u>+9.82</u>	<u>475</u>	<u>16.05</u>	<u>0</u>	<u>475</u>					<u>475</u>	<u>.2237</u>	<u>.0539</u>	<u>.1133</u>
<u>50</u>	<u>16.325</u>	<u>160.63</u>	<u>.083</u>	<u>+3.63</u>	<u>527</u>	<u>16.26</u>	<u>0</u>	<u>527</u>					<u>527</u>	<u>.2482</u>	<u>.0827</u>	<u>.1340</u>
<u>55</u>	<u>16.455</u>	<u>164.80</u>	<u>.083</u>	<u>+4.17</u>	<u>605</u>	<u>16.39</u>	<u>0</u>	<u>605</u>					<u>605</u>	<u>.2830</u>	<u>.0230</u>	<u>.1578</u>
<u>0200</u>	<u>16.570</u>	<u>168.56</u>	<u>.083</u>	<u>+3.76</u>	<u>546</u>	<u>16.52</u>	<u>.32</u>	<u>546</u>					<u>546</u>	<u>.2572</u>	<u>.0214</u>	<u>.1792</u>
<u>15</u>	<u>16.870</u>	<u>178.62</u>	<u>.25</u>	<u>+10.06</u>	<u>487</u>	<u>16.72</u>	<u>.94</u>	<u>488</u>					<u>488</u>	<u>.2298</u>	<u>.0574</u>	<u>.2366</u>
<u>30</u>	<u>17.120</u>	<u>187.30</u>	<u>.25</u>	<u>+8.68</u>	<u>420</u>	<u>17.00</u>	<u>1.8</u>	<u>422</u>					<u>422</u>	<u>.1988</u>	<u>.0497</u>	<u>.2863</u>
<u>0300</u>	<u>17.430</u>	<u>199.16</u>	<u>.5</u>	<u>+11.86</u>	<u>287</u>	<u>17.28</u>	<u>2.7</u>	<u>290</u>					<u>290</u>	<u>.1366</u>	<u>.0688</u>	<u>.3551</u>
<u>30</u>	<u>17.640</u>	<u>206.21</u>	<u>.5</u>	<u>+7.05</u>	<u>171</u>	<u>17.54</u>	<u>3.1</u>	<u>174</u>					<u>174</u>	<u>.0820</u>	<u>.0410</u>	<u>.3961</u>
<u>0400</u>	<u>17.730</u>	<u>210.37</u>	<u>.3</u>	<u>+4.16</u>	<u>101</u>	<u>17.70</u>	<u>3.4</u>	<u>104</u>					<u>104</u>	<u>.0490</u>	<u>.0245</u>	<u>.4201</u>
<u>0500</u>	<u>17.810</u>	<u>214.26</u>	<u>1.0</u>	<u>+4.59</u>	<u>53.5</u>	<u>17.81</u>	<u>3.5</u>	<u>59.0</u>					<u>59.0</u>	<u>.0278</u>	<u>.0278</u>	<u>.4479</u>
<u>0600</u>	<u>17.920</u>	<u>217.28</u>	<u>1.0</u>	<u>+2.82</u>	<u>28.9</u>	<u>17.90</u>	<u>3.7</u>	<u>22.6</u>					<u>22.6</u>	<u>.0154</u>	<u>.0154</u>	<u>.4633</u>
<u>0800</u>	<u>17.968</u>	<u>218.75</u>	<u>2.0</u>	<u>+1.47</u>	<u>8.9</u>	<u>17.95</u>	<u>3.9</u>	<u>12.8</u>					<u>12.8</u>	<u>.0060</u>	<u>.0120</u>	<u>.4753</u>
<u>1000</u>	<u>17.977</u>	<u>219.10</u>	<u>2.0</u>	<u>+.85</u>	<u>2.1</u>	<u>17.97</u>	<u>3.9</u>	<u>6.0</u>					<u>6.0</u>	<u>.0028</u>	<u>.0028</u>	<u>.4809</u>
<u>1800</u>	<u>17.947</u>	<u>217.24</u>	<u>8.0</u>	<u>-1.16</u>	<u>-1.8</u>	<u>17.96</u>	<u>3.9</u>	<u>2.1</u>	<u>.05</u>	<u>38.9</u>	<u>.16</u>	<u>2.4</u>	<u>1.9</u>	<u>.0009</u>	<u>.0072</u>	<u>.4881</u>
<u>2400</u>	<u>17.826</u>	<u>215.26</u>	<u>6.0</u>	<u>-1.98</u>	<u>-4.0</u>	<u>17.92</u>	<u>3.7</u>	<u>0</u>					<u>0</u>	<u>0</u>		
							<u>20</u>	<u>81.52</u>								
							<u>2.4</u>									

Comp DER 12/4/70

red 2/22 12/4/70



UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

RUNOFF COMPUTATIONS

Station Escondido Creek near Kenedy, Tex

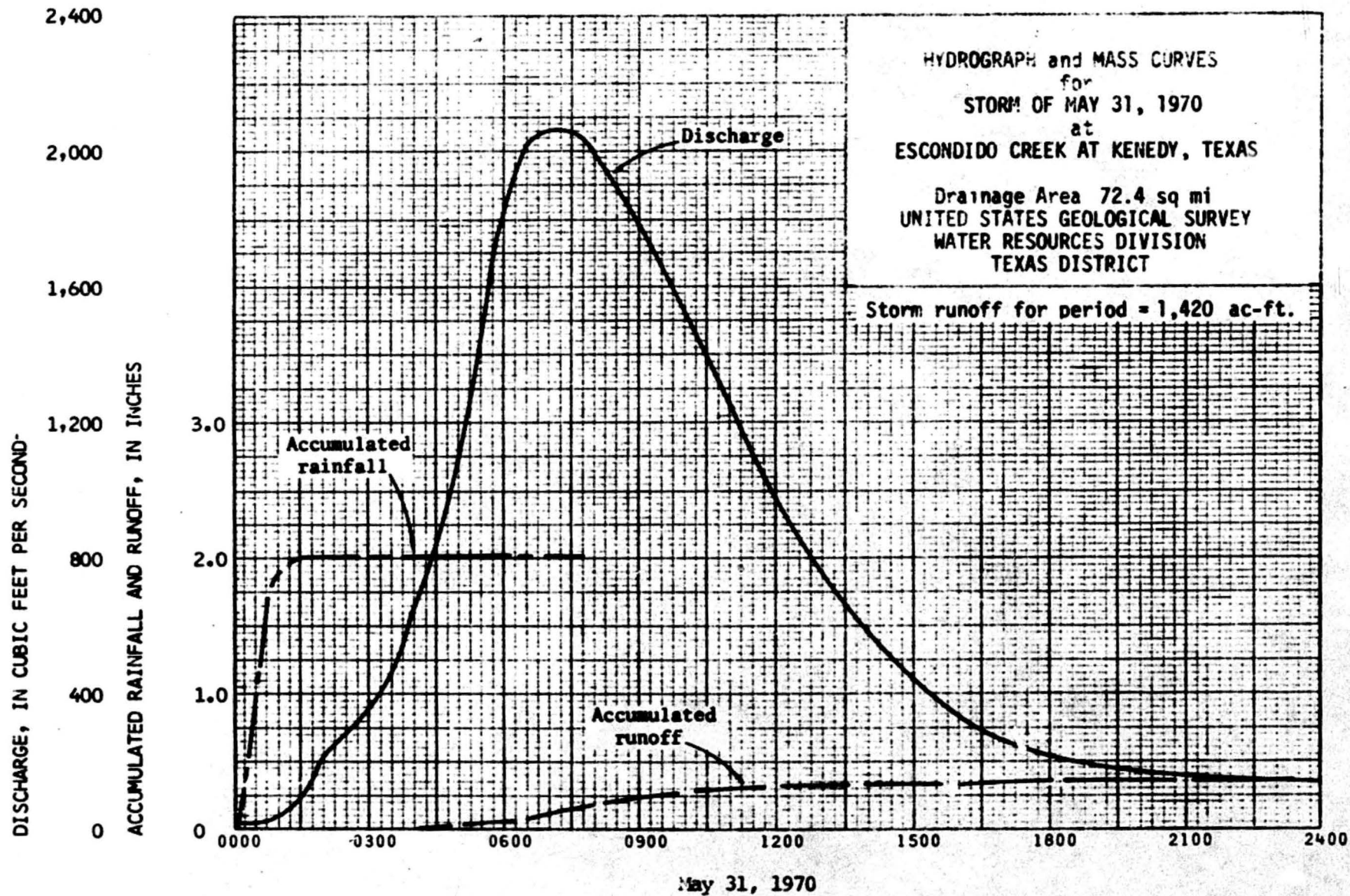
Period of Record May 31, 1970

Drainage Area 72.4 sq. mi.

Time	G. Mt. Feet	Sh. Adj.	Discharge			Runoff	
			c.f.s.	Inc.	In/hr.	Inches	Acc. In.
May 31, 1970							
0000	8.90	0	12	1	0.0003	0.0001	0.0001
30	9.05		15	2	.0003	.0002	.0003
0100	10.05		40	2	.0009	.0004	.0007
30	11.80		116	2	.0025	.0012	.0019
0200	12.90		210	2	.0045	.0022	.0041
30	13.40		260	2	.0056	.0028	.0069
0300	14.20		355	2	.0076	.0038	.0107
30	15.07		494	2	.0106	.0053	.0160
0400	15.72		636	2	.0136	.0068	.0228
30	16.25		795	2	.0170	.0085	.0313
0500	17.00		1080	2	.0231	.0116	.0429
30	17.70		1410	2	.0302	.0151	.0580
0600	18.35		1790	2	.0383	.0192	.0772
30	18.67		2080	2	.0428	.0214	.0986
0700	18.76		2060	2	.0441	.0220	.1206
30	18.74		2050	2	.0439	.0220	.1426
0800	18.64		1980	3	.0424	.0318	.1744
0900	18.30		1760	4	.0377	.0377	.2121
1000	17.85		1490	4	.0319	.0319	.2440
1100	17.33		1220	4	.0261	.0261	.2701
1200	16.80		1000	4	.0214	.0214	.2915
1300	16.27		801	4	.0171	.0171	.3086
1400	15.50		580	4	.0124	.0124	.3210
1500	14.70		430	4	.0092	.0092	.3302
1600	13.91		312	4	.0067	.0067	.3369
1700	13.40		260	4	.0056	.0056	.3425
1800	13.07		227	6	.0049	.0074	.3499
2000	12.64	0	184	8	.0039	.0078	.3577

Time	G. Mt. Feet	Sh. Adj.	Discharge			Runoff	
			c.f.s.	Inc.	In/hr.	Inches	Acc. In.
2200	12.36	0	157	8	0.0034	0.0068	0.3645
2400	12.19	0	143	4	.0021	.0031	.3676
			68	48	36		
			715				

Computed by RRR Date 10/16/70 Checked by RRR Date 10/28/70



UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY - TEXAS DISTRICTSheet 1 of 1INFLOW AND OUTFLOW COMPUTATIONSStorm period May 31, 197008187900 Escondido Creek subwatershed No. 11 near Kenedy, Tex. D.A.B. 43 sq mi

Date and time	Gage height ft	Storage ac-ft	Time int. hrs	Change in storage		Mean G. Ht. ft	Outflow cfs	Total inflow cfs	Rainfall on Pool				Net Inflow			
				ac-ft	cfs				in	ac	Storage ac-ft	cfs	Rate cfs	in/hr	in	Acc in
<u>May 31</u>																
<u>0000</u>	<u>16.180</u>	<u>155.65</u>														
<u>15</u>	<u>16.180</u>	<u>155.65</u>	<u>0.25</u>	<u>0</u>	<u>0</u>	<u>16.18</u>	<u>3.4</u>	<u>3.4</u>	<u>0</u>				<u>3.4</u>	<u>0.0006</u>	<u>0.0002</u>	<u>0.0002</u>
<u>45</u>	<u>16.200</u>	<u>159.49</u>	<u>.50</u>	<u>3.84</u>	<u>92.9</u>	<u>16.24</u>	<u>4.1</u>	<u>97.0</u>	<u>1.10</u>	<u>35.0</u>	<u>3.20</u>	<u>77.4</u>	<u>19.6</u>	<u>.0036</u>	<u>.0018</u>	<u>.0020</u>
<u>0100</u>	<u>16.420</u>	<u>165.35</u>	<u>.25</u>	<u>5.86</u>	<u>284</u>	<u>16.37</u>	<u>5.8</u>	<u>290</u>	<u>.25</u>	<u>36.6</u>	<u>.76</u>	<u>36.8</u>	<u>253</u>	<u>.0465</u>	<u>.0116</u>	<u>.0136</u>
<u>15</u>	<u>16.625</u>	<u>172.11</u>	<u>.25</u>	<u>6.76</u>	<u>327</u>	<u>16.54</u>	<u>8.2</u>	<u>335</u>	<u>.03</u>	<u>38.7</u>	<u>.10</u>	<u>4.8</u>	<u>330</u>	<u>.0607</u>	<u>.0152</u>	<u>.0288</u>
<u>30</u>	<u>16.850</u>	<u>181.33</u>	<u>.25</u>	<u>9.22</u>	<u>446</u>	<u>16.74</u>	<u>10.9</u>	<u>457</u>	<u>.02</u>	<u>41.0</u>	<u>.07</u>	<u>3.4</u>	<u>454</u>	<u>.0835</u>	<u>.0209</u>	<u>.0497</u>
<u>45</u>	<u>17.130</u>	<u>193.56</u>	<u>.25</u>	<u>12.23</u>	<u>592</u>	<u>16.99</u>	<u>13.4</u>	<u>605</u>					<u>605</u>	<u>.1113</u>	<u>.0278</u>	<u>.0775</u>
<u>50</u>	<u>17.340</u>	<u>198.88</u>	<u>.083</u>	<u>5.02</u>	<u>729</u>	<u>17.18</u>	<u>15.0</u>	<u>744</u>					<u>744</u>	<u>.1368</u>	<u>.0114</u>	<u>.0889</u>
<u>55</u>	<u>17.350</u>	<u>203.70</u>	<u>.083</u>	<u>5.12</u>	<u>743</u>	<u>17.30</u>	<u>16.0</u>	<u>759</u>					<u>759</u>	<u>.1396</u>	<u>.0116</u>	<u>.1005</u>
<u>0200</u>	<u>17.660</u>	<u>208.46</u>	<u>.083</u>	<u>4.76</u>	<u>691</u>	<u>17.40</u>	<u>16.8</u>	<u>708</u>					<u>708</u>	<u>.1302</u>	<u>.0108</u>	<u>.1113</u>
<u>15</u>	<u>17.870</u>	<u>219.21</u>	<u>.25</u>	<u>10.75</u>	<u>520</u>	<u>17.56</u>	<u>17.9</u>	<u>538</u>					<u>538</u>	<u>.0989</u>	<u>.0247</u>	<u>.1360</u>
<u>30</u>	<u>17.850</u>	<u>228.28</u>	<u>.25</u>	<u>9.07</u>	<u>429</u>	<u>17.76</u>	<u>19.0</u>	<u>458</u>					<u>458</u>	<u>.0842</u>	<u>.0210</u>	<u>.1570</u>
<u>0300</u>	<u>18.110</u>	<u>241.77</u>	<u>.50</u>	<u>13.49</u>	<u>326</u>	<u>17.98</u>	<u>20.2</u>	<u>346</u>					<u>346</u>	<u>.0636</u>	<u>.0318</u>	<u>.1888</u>
<u>0400</u>	<u>18.440</u>	<u>261.90</u>	<u>1.0</u>	<u>20.13</u>	<u>244</u>	<u>18.30</u>	<u>27.5</u>	<u>272</u>					<u>272</u>	<u>.0500</u>	<u>.0500</u>	<u>.2388</u>
<u>0600</u>	<u>19.018</u>	<u>293.43</u>	<u>2.0</u>	<u>32.53</u>	<u>197</u>	<u>18.75</u>	<u>50.6</u>	<u>248</u>					<u>248</u>	<u>.0456</u>	<u>.0912</u>	<u>.3300</u>
<u>0700</u>	<u>19.097</u>	<u>298.30</u>	<u>1.0</u>	<u>4.87</u>	<u>58.9</u>	<u>19.06</u>	<u>73.3</u>	<u>132</u>					<u>132</u>	<u>.0243</u>	<u>.0243</u>	<u>.3543</u>
<u>0830</u>	<u>19.122</u>	<u>299.86</u>	<u>1.5</u>	<u>1.56</u>	<u>12.6</u>	<u>19.10</u>	<u>75.0</u>	<u>87.6</u>					<u>87.6</u>	<u>.0161</u>	<u>.0242</u>	<u>.3705</u>
<u>1000</u>	<u>19.085</u>	<u>297.56</u>	<u>1.5</u>	<u>-2.30</u>	<u>-18.6</u>	<u>19.11</u>	<u>75.0</u>	<u>56.4</u>					<u>56.4</u>	<u>.0104</u>	<u>.0156</u>	<u>.3841</u>
<u>1200</u>	<u>18.980</u>	<u>291.11</u>	<u>2.0</u>	<u>-6.45</u>	<u>-39.0</u>	<u>19.03</u>	<u>72.6</u>	<u>33.6</u>					<u>33.6</u>	<u>.0062</u>	<u>.0124</u>	<u>.4065</u>
<u>1500</u>	<u>18.790</u>	<u>279.71</u>	<u>3.0</u>	<u>-11.40</u>	<u>-43.9</u>	<u>18.88</u>	<u>61.6</u>	<u>15.7</u>					<u>15.7</u>	<u>.0029</u>	<u>.0087</u>	<u>.4152</u>
<u>1800</u>	<u>18.625</u>	<u>270.12</u>	<u>3.0</u>	<u>-9.59</u>	<u>-38.6</u>	<u>18.71</u>	<u>48.2</u>	<u>9.6</u>					<u>9.6</u>	<u>.0018</u>	<u>.0054</u>	<u>.4206</u>
<u>2400</u>	<u>18.389</u>	<u>255.19</u>	<u>6.0</u>	<u>-14.93</u>	<u>-30.2</u>	<u>18.49</u>	<u>35.0</u>	<u>4.8</u>					<u>4.8</u>	<u>.0007</u>	<u>.0054</u>	<u>.4260</u>
							<u>24) 1147.37</u>									
							<u>47.8</u>									

Comp by DRR 1/12/70checked by DRR 1/13/71

