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# Water Resources Data Missouri Water Year 1988



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MO-88-1  
Prepared in cooperation with the Missouri Department of  
Natural Resources, Division of Geology and Land Survey and  
Division of Environmental Quality; Missouri State Highway  
Commission; and with other State and Federal agencies

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# Water Resources Data Missouri Water Year 1988

by L.A. Waite, J.V. Davis, H.L. Reed, D.O. Hatten, and T.J. Perkins



**U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MO-88-1**

Prepared in cooperation with the Missouri Department of Natural Resources, Division of Geology and Land Survey and Division of Environmental Quality; Missouri State Highway Commission; and with other State and Federal agencies

DEPARTMENT OF THE INTERIOR  
MANUEL LUJAN, JR, Secretary  
U.S. GEOLOGICAL SURVEY  
Dallas L. Peck, Director

For information on the water program in Missouri write to:  
District Chief, Water Resources Division  
U.S. Geological Survey  
1400 Independence Road - Mail Stop 200  
Rolla, Missouri 65401

#### PREFACE

This hydrologic-data report for Missouri is one of a series of annual reports that document hydrologic data collected from the U.S. Geological Survey's surface- and ground-water data collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by local, State, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report is the culmination of a concerted effort by personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data and who typed, edited, and assembled the report. In addition to the authors, who had primary responsibility for assuring that the information is accurate, complete, and adheres to Geological Survey policy and established guidelines, the following individuals contributed significantly to the collection, processing, and tabulation of the data:

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(Letter after station name designates type of data: (d) discharge, (c) chemical, (m) microbiological, (t) water temperature, (s) sediment, (r) radiochemical, and (e) elevation and contents)

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## WATER RESOURCES DATA FOR MISSOURI, 1988

### INTRODUCTION

The U.S. Geological Survey, in cooperation with local, State, and Federal agencies and organizations, obtains a large quantity of data pertaining to the water resources of Missouri each water year (October 1 to September 30). These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of Missouri. To make these data readily available to interested parties outside the U.S. Geological Survey, the data are published annually in this report series, entitled "WATER RESOURCES DATA FOR MISSOURI." This volume contains records for water discharge at 108 gaging stations; stage and contents at 10 lakes and reservoirs; water quality at 51 sampling stations (including 2 lakes); and data for 18 crest-stage stations.

Records of discharge and stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey Water-Supply Papers entitled, "Surface Water Supply of the United States." Through September 30, 1960, these Water-Supply Papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperature, and suspended sediment were published from 1941 to 1970 in an annual series of Water-Supply Papers entitled, "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of Water-Supply Papers entitled, "Ground-Water Levels in the United States." Water-Supply Papers are in the libraries of the principal cities in the United States or may be purchased from the U.S. Geological Survey, Books and Open-File Reports, Federal Center, Building 810, Box 25425, Denver, CO 80225.

For water years 1961 through 1974, streamflow data were released by the U.S. Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1974 similarly were released either in separate reports or in conjunction with streamflow records.

Beginning with water year 1975, water data for streamflow, water quality, and ground water are published in Survey reports on a State-boundary basis. These reports carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report MO-88-1." For archiving and general distribution, the reports for water years 1971-74 also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Building 810, Box 25425, Denver, CO 80225.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on back of the title page or by telephone (303) 236-7476.

### COOPERATION

The U.S. Geological Survey and organizations of the State of Missouri have had cooperative agreements for the systematic collection of streamflow records since 1921, and for water-quality records since 1964. Organizations that assisted in collecting data through cooperative agreements are:

Missouri Department of Conservation,  
Jerry J. Presley, Director.

Missouri Department of Health,  
Dr. John Bagby, Director.

Missouri Department of Natural Resources,  
G. Tracy Meahan, III, Director

Division of Geology and Land Survey,  
Dr. James H. Williams, Director.

Division of Environmental Quality,  
William C. Ford, Director.

Missouri State Highway and Transportation Commission,  
Wayne Muri, Chief Engineer.

City Utilities of Springfield,  
R. David Plank, Manager, Engineering Division.

City of Cape Girardeau,  
R. Ronald Fischer, City Manager

The following Federal and State agencies and organizations assisted in collection of records published in this report by providing funds or services:

U.S. Army Corps of Engineers, in collecting records for  
85 gaging stations, 3 water-quality stations, and 9 sediment stations.

U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service.

National Park Service, Midwest Region.

Little River Drainage District.

Union Electric Company of Missouri.

Missouri Park Board.

## WATER USE

Listed below are general water-use facts for the state of Missouri. Figures 1 and 2 show the major water uses and percentage of surface and ground water for 1985.

## MISSOURI WATER-USE FACT SHEET

1. Total offstream water use was 6,110 million gallons per day (Mgal/d).
2. Ground-water use was 640 Mgal/d, about 10 percent of total offstream use. The largest ground-water use was for irrigation in southeastern Missouri.
3. Offstream surface-water use was 5,470 Mgal/d, about 90 percent of total offstream use. The largest use was in the St. Louis and Kansas City metropolitan areas.
4. Consumptive use of freshwater was 498 Mgal/d, which was about 8 percent of total use. Irrigation consumptive use was about 44 percent of total consumptive use.
5. The largest use of water in Missouri was for onstream hydroelectric power generation, about 20,100 Mgal/d.
6. Total population was 5.03 million, an increase of 2.3 percent from 1980.
7. Per capita water use for all offstream uses was 1,210 gallons per day.
8. Public water supplied was 645 Mgal/d: 27 percent ground water and 73 percent surface water.
9. Domestic water use was 408 Mgal/d: 13 percent self-supplied and 87 percent public-supplied.
10. Commercial water use was 77.6 Mgal/d: 22 percent self-supplied and 78 percent public-supplied.
11. Industrial water use was 221 Mgal/d: 40 percent self-supplied and 60 percent public-supplied.
12. Mining water use was 27.6 Mgal/d, mostly from dewatering of active and inactive lead mines.
13. The largest offstream use of water was 4,930 Mgal/d (mostly surface water) to produce 48,500 gigawatt hours of electricity. This was 81 percent of the total offstream water use.
14. Non-irrigation agricultural water use was 40.8 Mgal/d for fish culture and livestock use.
15. The largest use of ground water was 283 Mgal/d for irrigation. Total irrigation water use was 306 Mgal/d.
16. About 2,230 municipal and other sewage-treatment facilities released 885 Mgal/d of effluent.

SURFACE WATER

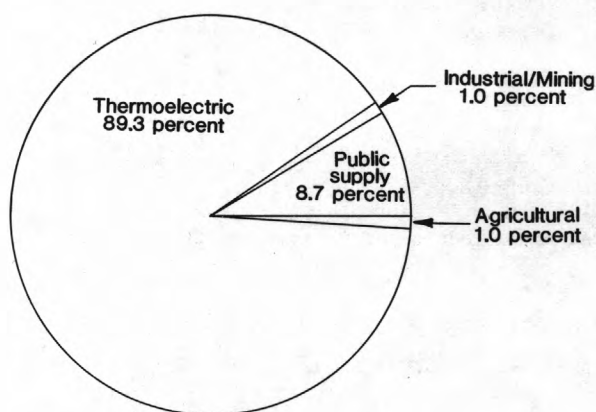


Figure 1.—Major water use categories and percentage of surface water used in Missouri during 1985.

GROUND WATER

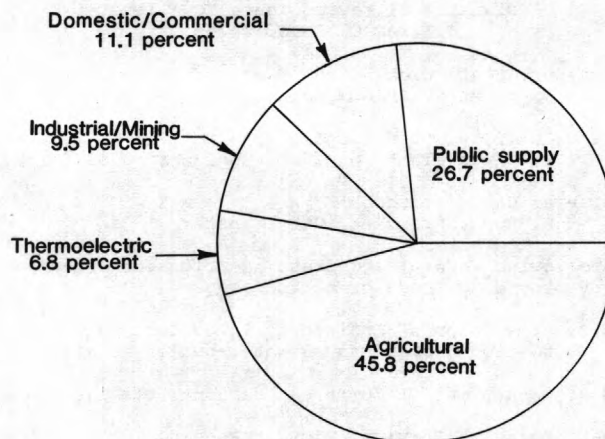


Figure 2.—Major water use categories and percentage of ground water used in Missouri during 1985.

## PHYSIOGRAPHY

Missouri has three distinct physiographic areas--the Central Lowland in the north and west, the Mississippi Alluvial Plain, and between them the Ozark Plateau (fig. 3).

The Central Lowland includes most of the area north of the Missouri River and a large part of the area south of the river in the western part of the State. Elevations range from about 450 to 1,000 feet above sea level. The area has numerous, wide, flat valleys incised by rivers.

The Ozark Plateau in the southern part of the State is wooded, rugged, and has deep, narrow valleys with sharp ridges separating the valleys. Elevations range from about 1,000 to 1,600 feet above sea level.

The Mississippi Alluvial Plain is a relatively flat area of about 3,000 square miles and is located in the extreme southeast part of the State. Elevations range from about 200 to 300 feet above sea level. The area is well drained and contains excellent farmland.

## HYDROLOGIC CONDITIONS

Precipitation was greater than normal in the West Central Plains, West Ozarks, East Ozarks, and Mississippi Alluvial Plain. Precipitation was less than normal in the rest of the State during the 1988 water year. The normal precipitation for the standard period 1951-80 was about 36 inches in the northwest to 47 inches in the southeast. Precipitation data for the six National Weather Service divisions in Missouri are listed in table 1.

Table 1.--Precipitation and departures from normal, in inches

National Weather Service Division (fig. 4)	October-March		April-September		Water Year 1988	
	Precipitation	Departure from normal	Precipitation	Departure from normal	Precipitation	Departure from normal
Northwest Prairie	10.19	-1.19	15.20	-9.50	25.39	-10.69
Northeast Prairie	19.05	+5.52	12.66	-9.93	31.71	-4.41
West Central Plains	17.46	+3.45	21.19	-3.28	38.65	+0.17
West Ozarks	26.05	+10.04	23.98	-0.21	50.03	+9.83
East Ozarks	25.31	+7.07	19.36	-3.87	44.67	+3.20
Bootheel	26.90	+4.18	22.65	-1.41	49.85	+2.77

## Streamflow

Streamflow varies in Missouri and generally reflects precipitation patterns unless a stream is regulated. Monthly mean discharges during water year 1988 and long-term monthly mean discharges at representative stations are shown in figure 4. The period of April to September had less than normal precipitation especially in the northwest and northeast (table 1) and resulted in deficient runoff over most of northern Missouri. Streamflow reflected precipitation patterns and generally was greater than long-term means from October through March and less than long-term means from April through September.

Peak discharges for water year 1988 are compared in table 2 to the peak discharges for the period of record at 17 selected gaging stations. The 7-day average low flow for water year 1988 is compared to the 7-day, 2-year low flow for selected stations in table 3. The 7-day, 2-year low flow is the 7-day average minimum flow with a recurrence interval of 2 years.

Figure 3.--Major drainage basins, physiographic areas, and areas of greater-than-average discharge during 1988.

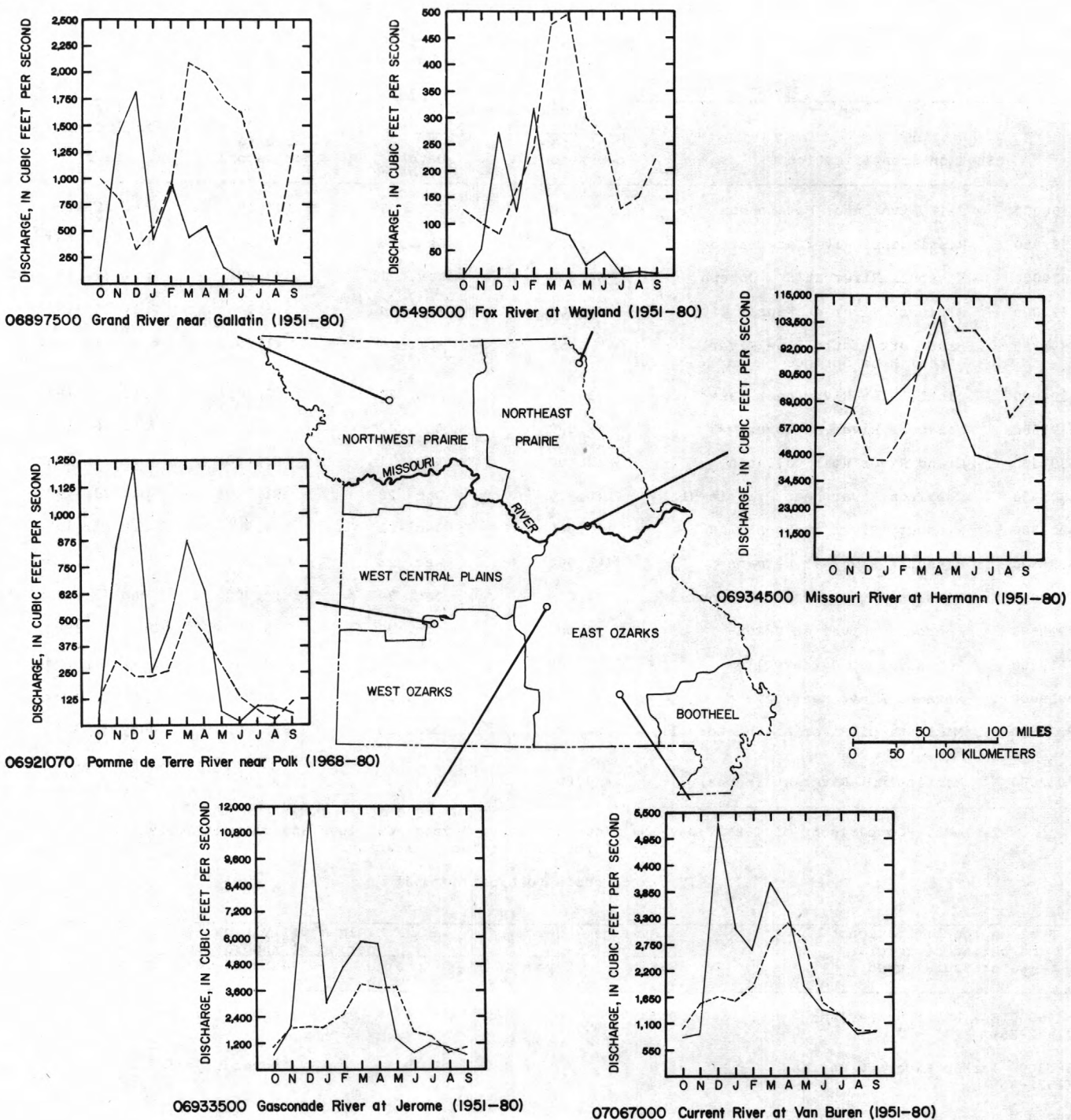
Table 2.--Comparisons of peak discharge for the 1988 water year with those for period of record for selected stations.

Station identification		Peak discharge during 1988 water year		Peak discharge for period of record	
		Cubic feet per second	Date	Cubic feet per second	Date
05508000	Salt River near New London	7,710	Feb. 5	107,000	Apr. 22, 1973
05587450	Mississippi River at Grafton, Il.	187,000	Dec. 29	535,000	Apr. 29, 1973
06818000	Missouri River at St. Joseph	64,000	Nov. 1	397,000	Apr. 22, 23, 1952
06893000	Missouri River at Kansas City	68,300	Apr. 4	573,000	July 14, 1951
06893890	East Fork Little Blue River near Blue Springs	155	Apr. 4	11,000	Aug. 13, 1982
06894000	Little Blue River near Lake City	3,300	Dec. 20	42,300	Aug. 13, 1982
06895500	Missouri River at Waverly	69,000	Apr. 2	549,000	July 16, 1951
06897500	Grand River near Gallatin	12,400	Nov. 1	69,100	June 24, 1947
06905500	Charlton River near Prairie Hill	10,700	Dec. 20	31,900	Apr. 23, 1973
06909000	Missouri River at Boonville	125,000	Dec. 21	550,000	July 17, 1951
06934500	Missouri River at Hermann	185,000	Dec. 28	676,000	June 6-7, 1903
07010000	Mississippi River at St. Louis	344,000	Dec. 29	1,019,000	June 10-11, 1903
07016500	Bourbeuse River at Union	16,000	Dec. 22	73,300	Dec. 5, 1982
07018500	Big River at Byrnesville	16,200	Dec. 27	43,000	Nov. 21, 1985
07019000	Meramec River near Eureka	46,600	Dec. 29	145,000	Dec. 6, 1982
07020500	Mississippi River at Chester, Il.	426,000	Dec. 29	886,000	July 3, 1947 Apr. 30, 1973
07022000	Mississippi River at Thebes, Il.	447,000	Dec. 30	893,000	May 27, 1943

Table 3.--Comparisons of 1988 7-day low flows to 7-day, 2-year low flows and minimum daily flows for the period of record at selected stations.

[Flows in cubic feet per second]

Station identification and period of record (water years) used	Average 7-day low flows		Minimum daily flows for period of record used	
	1988	2-year	Discharge	Years of occurrence
05495000 Fox River at Wayland (1922-85)	0.4	1.3	0	Several years
06813000 Tarkio River at Fairfax (1922-85)	1.5	9.0	0	Several years
06921070 Pomme de Terre River near Polk (1969-85)	5.6	3.0	0.3	1980
07016500 Bourbeuse River at Union (1921-85)	26	32	11	1956
07067000 Current River at Van Buren (1912-85)	727	700	473	1956
07187000 Shoal Creek above Joplin (1942-85)	74	92	12	1954



## EXPLANATION

## Monthly Mean Discharge

— 1988 Water Year

--- Long-Term

Figure 4.--Comparison of 1988 water-year streamflow to long-term means.

## Chemical Quality of Streamflow

Samples for determining the chemical quality of streamflow were collected at 51 stations in Missouri. Data collected at these stations, in addition to streamflow data, include some or all of the following properties or constituents: water temperature, specific conductance, dissolved oxygen, pH, carbonate, bicarbonate, alkalinity, inorganic constituents, nutrients, trace metals, indicator bacteria, and sediment. Water-quality data did not indicate unusual changes during the year.

Missouri streams, for the most part, are not contaminated by industrial wastes. Localized stream pollution does occur near urban areas, industrialized centers, agricultural-chemical-use areas, and waste-dump sites. Range of dissolved-solids concentrations in selected streams is given in the following table:

Station identification	Dissolved-solids concentration (milligrams per liter)	
	Minimum	Maximum
Des Moines River at St. Francisville	309	437
Missouri River at St. Joseph	430	551
Grand River near Sumner	166	337
Missouri River at Hermann	258	480
Center Creek near Carterville	159	275

Daily suspended-sediment samples and data on the particle-size of suspended sediment were collected at 9 stations in Missouri. The following table lists two selected stations in the Central Lowland and Mississippi River at Thebes and their respective daily mean suspended-sediment concentrations:

Station identification	Daily mean suspended-sediment concentration (milligrams per liter)	
	Minimum	Maximum
Middle Fork Salt River at Paris	3	617
Salt River near New London	1	978
Mississippi River at Thebes	60	1,020

## DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the mainstream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary on which a station is situated is indicated by an indentation in a list of stations in the front of the report. Each indentation represents one rank. The downstream order and system of indentation show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station such as 06909000, which appears just to the left of the station name, includes the 2-digit part number "06" plus the 6-digit downstream-order number "909000".

## NUMBERING SYSTEM FOR MISCELLANEOUS SITES

The 8-digit downstream-order station numbers are not assigned to miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the miscellaneous sites and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, and the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits (assigned sequentially) identify the sites within a 1-second grid. See figure 5 below.

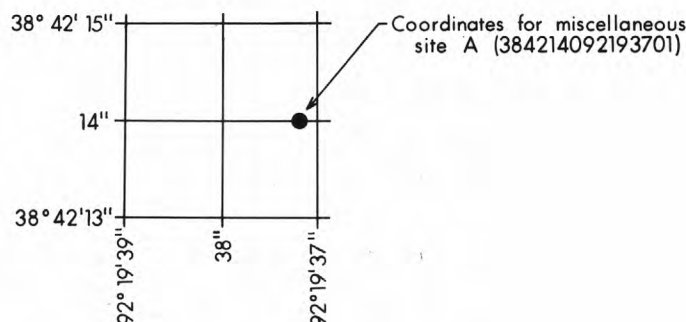


Figure 5.—System for numbering miscellaneous sites (latitude and longitude).

## SPECIAL NETWORKS AND PROGRAMS

National stream-quality accounting network (NASQAN) is a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated into the network design. Areal configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in streamflow and stream quality.

## EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

## Collection and Computation of Data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard textbooks, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharge are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

At some stream-gaging stations the stage-discharge relation is affected by ice in the winter and it becomes impossible to compute the discharge in the usual manner. Discharge for period of ice effect is computed on the basis of gage-height record and occasional winter discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulation of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the hydrologic-data station gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the U.S. Army Corps of Engineers or other agencies. Periods from which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964 to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use, the datum of the present gage referred to National Geodetic Vertical Datum; and a condensed history of the types, location, and datums of previous gages used during the period of record are given under "GAGE." National Geodetic Vertical Datum is explained in "DEFINITION OF TERMS" on page 14.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with "EXTREMES FOR THE CURRENT YEAR"; if they are, all independent peaks, including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar year and water years.

Footnotes to the table of daily discharges are introduced by the "NOTE". Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height records, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from a an unusual source, of indefinite stage-relation, or of any other source, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given.

Data collected at partial-record stations follow the information for continuous record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

#### Accuracy of Field Data and Computed Results

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretations of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good", within 10 percent; and "fair", within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharge of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

#### Other Data Available

Information of a more detailed nature than that published for cost of the gaging stations such as observations of water temperatures, discharge measurements, gage-height records, and rating tables is on file in the District Office. Also most gaging-station records are available in computer-usuable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the District Office.

### EXPLANATION OF WATER-QUALITY RECORDS

#### Collection and Examination of Data

Surface water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, pH, dissolved oxygen, water temperature, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

#### Water Analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on a following page.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogenous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the District Office.

#### Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperature are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once daily, the water temperatures are taken at about the same time each day. Large streams have a small daily temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, maximum, minimum, and mean temperatures for each day are published.

#### Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

The daily suspended-sediment concentrations at Mississippi River at St. Louis are derived from turbidity readings from the Howard Bend water treatment plant and the East St. Louis water treatment plant. Approximately once a week two depth-integrated verticals are taken to adjust the relation between suspended sediment and turbidity.

## DISCONTINUED STREAMFLOW STATIONS

The following continuous-record streamflow stations in Missouri have been discontinued or converted to partial-record stations. Daily streamflow or stage records were collected for the period of record shown for each station.

Station number	Station name	Drainage area (mi <sup>2</sup> )	Period of record
05500500	North River at Bethel	58.0	1930-73
05503000	Oak Dale Branch near Emden	2.64	1955-75
05506000	Youngs Creek near Mexico	67.4	1930-82
05506190	Middle Fork Salt River at Duncan's Bridge	200	1980-82
05507000	Elk Fork Salt River near Paris	262	1930-54, 1980-82
05507500	Salt River near Monroe City	2230	1939-81
05509700	Calumet Creek near Clarksville	15.7	1965-72
06816000	Mill Creek at Oregon	4.90	1950-76
06817500	Nodaway River near Burlington Junction	1240	1922-83
06818900	Platte River at Ravenwood	486	1921-25, 1928-32, 1958-71
06820000	White Cloud Creek near Maryville	6.06	1948-70
06821000	Jenkins Branch at Gower	2.72	1950-76
06821280	Line Creek at Riverside	19.2	1975-81
06893560	Brush Creek at Main Street in Kansas City	14.8	1970-79
06893590	Blue River at 12th Street at Kansas City	265	1981-83
06893600	Rock Creek at Independence	5.20	1967-74
06893670	Shoal Creek at Claycomo	29.8	1975-81
06894500	East Fork Fishing River at Excelsior Spring	20.0	1950-72
06894680	Sni-A-Bar Creek near Tarsney	29.1	1970-79
06895000	Crooked River near Richmond	159	1948-70
06896000	Wakenda Creek at Carrollton	248	1948-70
06896500	Thompson Branch near Albany	5.58	1955-72
06897000	East Fork Big Creek near Bethany	95.0	1934-72
06898100	Thompson River at Mount Moriah	891	1960-77
06899000	Weldon River at Mill Grove	494	1929-72
06899700	Shoal Creek near Braymer	391	1957-77
06901500	Locust Creek near Linneus	550	1928-72
06902200	West Yellow Creek near Brookfield	135	1959-77
06902500	Hamilton Branch near New Boston	2.51	1955-72
06906350	Thomas Hill Lake near Thomas Hill	147	1966-74
06906470	Middle Fork Chariton River below Salisbury	201	1964-70
06906600	Burge Branch near Arrow Rock	0.33	1959-73
06906700	Flat Creek near Sedalia	148	1958-67
06907000	Lamine River at Clifton City	598	1922-71
06907500	South Fork Blackwater near Elm	16.6	1954-79
06907700	Blackwater River at Valley City	547	1958-73
06908500	Shiloh Branch near Marshall	2.87	1952-65
06909500	Moniteau Creek near Fayette	81	1948-69
06910000	Petite Saline Creek near Boonville	182	1948-67
06910500	Moreau River near Jefferson City	561	1947-74
06918444	Chesapeake Spring at Chesapeake	--	1926, 1932, 1936, 1954, 1963-68
06918700	Oak Grove Branch near Brighton	1.30	1956-75
06918800	Little Sac River at Aldrich	304	1967-68
06920500	Osage River at Osceola	8220	1917-28, 1930-78
06921000	Pomme De Terre River near Bolivar	225	1950-69
06921500	Pomme De Terre River at Hermitage	655	1921-65
06921590	South Grand River at Archie	356	1969-86
06921600	South Grand River at Urich	670	1960-69
06921720	Big Creek at Blairstown	414	1960-74
06921740	Brushy Creek near Blairstown	1.15	1960-75
06922000	South Grand River near Brownington	1660	1921-71
06922800	Big Buffalo Creek near Stover	24.2	1965-77
06924000	Niangua River near Decaturville	627	1929-69
06925200	Starks Creek at Preston	4.18	1956-76
06926200	Van Cleve Branch near Meta	0.75	1956-72

## WATER RESOURCES DATA FOR MISSOURI, 1988

## DISCONTINUED STREAMFLOW STATIONS--Continued

Station number	Station name	Drainage area (mi <sup>2</sup> )	Period of record
06927000	Maries River at Westphalia	257	1947-70
06927200	Big Hollow near Fulton	4.05	1957-72
06927800	Osage Fork Gasconade River at Drynob	404	1962-81
06928000	Gasconade River near Hazlegreen	1250	1928-71
06928200	Laquey Branch near Hazlegreen	1.58	1958-72
06928500	Gasconade River near Waynesville	1680	1914-71
06928700	Beeler Branch near Cabool	7.78	1967-76
06930000	Big Piney River near Big Piney	560	1921-82
06931500	Little Beaver Creek near Rolla	6.45	1947-75
06935500	Loutre River at Mineola	202	1947-67
06936500	Coldwater Creek near St. Louis	43.6	1959-61, 1972-65
07010350	Meramec River at Cook Station	199	1965-81
07010500	Meramec Spring near St. James	--	1903-06, 1921-29, 1965-86
07011500	Green Acre Branch near Rolla	0.62	1947-75
07015000	Bourbeuse River near St. James	21.3	1947-81
07015500	Lanes Fork near Rolla	0.225	1952-71
07016000	Bourbeuse River near Spring Bluff	608	1943-81
07017500	Dry Branch near Bonne Terre	3.35	1955-75
07019690	Sandy Creek near Pevely	32.5	1966-72
07019790	Plattin Creek at Plattin	65.8	1965-72
07020270	Saline Creek near Minnith	82.6	1968-81
07033800	Brewers Creek near Ironton	2.19	1964-66
07035500	Barnes Creek near Fredericktown	3.35	1955-75
07037700	Clark Creek near Piedmont	4.39	1956-76
07041000	Little River Ditch 81 near Kennett	111	1926-79
07042000	Little River Ditch 1 near Kennett	235	1926-79
07043000	Castor River at Aquilla	175	1945-81
07044000	Little River Ditch 251 near Kennett	883	1926-79
07045000	Little River Ditch 66 near Kennett	--	1926-79
07045500	Little River Ditch 66-A near Kennett	--	1927-65
07046000	Little River Ditch 259 near Kennett	89.0	1926-79
07050150	Roaring River Spring near Cassville	--	1965-68
07050580	James River near Strafford	165	1973-86
07052100	Wilsons Creek near Springfield	31.4	1972-82
07052150	Wilsons Creek below Springfield	47.2	1967-72
07052160	Wilsons Creek near Battlefield	55.0	1968-70, 1972-82
07052250	James River near Boaz	462	1972-80
07057800	Hodgson Mill Spring at Sycamore	--	1965-68
07058000	Bryant Creek near Tecumseh	570	1944-85
07064300	Fudge Hollow near Licking	1.72	1956-76
07064400	Montauk Springs at Montauk	--	1964-68
07064500	Big Creek near Yukon	8.36	1949-75
07065000	Round Spring at Round Spring	--	1928-39, 1965-79
07065500	Alley Spring at Alley	--	1928-39, 1965-79
07066500	Current River near Eminence	1272	1921-75
07068250	Middle Fork Little Black River at Grandin	6.85	1980-84
07068300	North Prong Little Black River near Grandin	39.4	1980-84
07068380	Little Black River near Grandin	79.5	1980-84
07068510	Little Black River below Fairdealing	194	1980-86
07068540	Logan Creek at Oxly	37.5	1980-84
07068600	Little Black River at Success, AR	386	1980-86
07068863	Fourche River near Poynor	87.2	1976-83
07070500	Eleven Point River near Thomasville	361	1950-76
07185500	Stahl Creek near Miller	3.86	1950-76
07185700	Spring River at La Russell	306	1947-81
07185765	Spring River at Carthage	425	1966-80
07186600	Turkey Creek near Joplin	41.8	1963-72

## DISCONTINUED SURFACE-WATER QUALITY STATIONS

The following surface-water-quality stations in Missouri have been discontinued or converted to partial-record stations. Water-quality data (daily or periodic samples with collection frequency not less than quarterly) were collected and published for the period of record shown for each station. Discontinued project stations with less than three years of record are not included. Information regarding these stations may be obtained from the District Chief at the address given on the back of the title page of this report.

[Type of record: (B) biological, (C) chemical, (M) microbiological (S) sediment, (T) temperature]

Station number	Station name	Drainage area (mi <sup>2</sup> )	Period of record	Type of record
05495000	Fox River at Wayland	400	1967-72	C
05495150	Mississippi River at Canton	--	1969-75	C,T
05498000	Middle Fabius River near Monticello	393	1980-86	S
05501000	North River at Palmyra	373	1972-75	C
06821200	Platte River at Platte City	--	1967-75	C
06894100	Missouri River at Sibley	--	1972-75	C,T
06899620	Thompson River near Chillicothe	--	1968-75, 1983-87	C,M
06905500	Chariton River near Prairie Hill	1870	1962-63, 1967-75, 1978-86	B,C,M,T
06906200	East Fork Chariton River near Macon	112	1971-74	C
06906320	East Fork Chariton River near Clifton Hill	--	1963-73	C
06906470	Middle Fork Little Chariton River below Salisbury	201	1983-86	C,M
06906600	Burge Branch near Arrow Rock	0.33	1961-64	S
06908800	Lamine River near Blackwater	2610	1979-86	B,C,M,T
06909000	Missouri River at Boonville	505700	1953-64	T
06916650	Marais Des Cygnes River near Worland	3230	1962-63, 1972-75, 1977-81	C,M
06918440	Sac River near Dadeville	257	1974-78, 1980-82, 1983-87	C,M,T
06918600	Little Sac River near Walnut Grove	--	1983-86	C,M
06918990	Stockton Lake near Stockton	1160	1974-77	T
06921070	Pomme De Terre River near Polk	276	1970-74, 1983-86	C,M,T
06921350	Pomme De Terre River near Hermitage	615	1974-77	T
06921500	Pomme De Terre River at Hermitage	615	1970-78	T
06921600	South Grand River at Urich	670	1983-87	C,M
06922200	Tebo Creek at Leesville	--	1978-83	B,C,M,T
06922500	Osage River at Warsaw	11500	1969-78	T
06922800	Big Buffalo Creek near Stover	24.2	1965-77	T
06928600	Gasconade River near Hooker	--	1977-86	C,M
06935840	Missouri River near St. Louis	--	1969-74	C,T
07001000	Mississippi River at East St. Louis, IL	--	1969-73	C
07016400	Bourbeuse River above Union	808	1963-74, 1983-87	C,M
07018100	Big River near Richwoods (De Soto)	735	1963-75, 1983-87	C,M
07020850	Mississippi River at Cape Girardeau	--	1969-74	C,T
07021800	Headwater Diversion Channel near Allenville	--	1969-75	C
07040100	St. Francis River at St. Francis, AR	--	1969-75	C
07050750	James River near Nixa	273	1966-75, 1977-80	T
07051600	James River near Wilsons Creek	--	1967-82, 1983-87	C,M
07052100	Wilsons Creek near Springfield	31.4	1972-82	C,T
07052150	Wilsons Creek below Springfield	47.2	1967-70, 1970-72	C,T
07052160	Wilsons Creek near Battlefield	55.0	1972-82	C,T
07052200	James River west of Nixa	440	1962-63, 1965-67	C
07052250	James River near Boaz	462	1967-82, 1983-87	C,M,T
07052340	Finley Creek at Riverdale	--	1967-75	C
07057500	North Fork River near Tecumseh	561	1969-72, 1978-79, 1983-87	C,M
07061500	Black River near Annapolis	484	1969-72	C
07063000	Black River at Poplar Bluff	1245	1983-87	C,M
07063050	Black River below Poplar Bluff	--	1969-75	C

## WATER RESOURCES DATA FOR MISSOURI, 1988

## DISCONTINUED SURFACE-WATER-QUALITY STATIONS--Continued

Station number	Station name	Drainage area (mi <sup>2</sup> )	Period of record	Type of record
07063300	Main Ditch near Neelyville	--	1969-75	C
07068050	Current River near Doniphan	--	1969-75	C
07068250	Middle Fork Little Black River at Grandin	6.85	1980-84	T
07068300	North Prong Little Black River near Grandin	39.4	1980-84	C,M
07068380	Little Black River near Grandin	79.5	1980-84	C,M,S,T
07068510	Little Black River below Fairdealing	194	1980-86	C,M,S,T
07068540	Logan Creek at Oxly	37.5	1980-84	C,M,S,T
07068550	Little Black River near Naylor	--	1969-75	C
07068600	Little Black River at Success, AR	386	1980-86	C,M,S,T
07068863	Fourche River near Poynor	87.2	1976-83	T
07068867	Fourche River near Middlebrook, AR	--	1969-75	C
07069170	Spring River near Thayer	--	1969-75	C
07071500	Eleven Point River near Bardley	793	1983-87	C,M
07071900	Eleven Point River below Bardley	--	1969-75	C
07186000	Spring River near Waco	1164	1965-75, 1977-78, 1980-81	C
07186600	Turkey Creek near Joplin	41.8	1963-77	C,M
07187000	Shoal Creek above Joplin	427	1968-68, 1979-80, 1981-82	C,M
07187560	Shoal Creek near Galena, KS	--	1968-75	C
07188500	Lost Creek at Seneca	42	1967-75	C
07188820	Little Sugar Creek at Caverna	--	1967-75	C
07189100	Buffalo Creek at Tiff City	--	1967-75	C

The U.S. Geological Survey is the principal Federal water-data agency and, as such, collects and disseminates about 70 percent of the water data currently being used by numerous State, local, private, and other Federal agencies to develop and manage our water resources. As part of the U.S. Geological Survey's program of releasing water data to the public, a large-scale computerized system has been developed for the storage and retrieval of water data collected through its activities. The National Water Data Storage and Retrieval System (WATSTORE) was established in 1972 to provide an effective and efficient means for the processing and maintenance of water data collected through the activities of the U.S. Geological Survey and to facilitate release of the data to the public. A variety of useful products, ranging from data tables to complex statistical analyses such as Log Pearson Type III, can be produced using WATSTORE. The system resides on the central computer facilities of the U.S. Geological Survey at its National Center in Reston, Virginia, and consists of related files and data bases.

- \* Station Header File - Contains descriptive information on over 440,000 sites throughout the United States and its territories where the U.S. Geological Survey collects or has collected data.
- \* Daily Values File - Contains over 220 million daily values of streamflows, stages, reservoir contents, water temperatures, specific conductances, sediment concentrations, sediment discharges, and ground-water levels.
- \* Peak Flow File - Contains approximately 500,000 maximum (peak) streamflow and gage-height values at surface-water sites.
- \* Water-Quality Data - Contains approximately 2 million analyses of water samples that describe the chemical, physical, biological, and radio-chemical characteristics of both surface and ground water.
- \* Ground-Water Site Inventory Data Base - Contains inventory data for over 900,000 wells, springs, and other sources of ground water. The data includes site location, geohydrologic characteristics, well-construction history, and one-time field measurements such as water temperature.

In 1976, the U.S. Geological Survey opened WATSTORE to the public for direct access. The signing of a Memorandum of Agreement with the Survey is required to obtain direct access to WATSTORE. The system can be accessed either synchronously or asynchronously. The requestor will be expected to pay all computer costs he/she incurs. Direct access may be obtained by contacting:

U.S. Geological Survey  
National Water Data Exchange  
421 USGS National Center  
Reston, Virginia 22092

In addition to providing direct access to WATSTORE, data can be provided in various machine-readable formats on magnetic tape or 5-1/4 inch floppy disk. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division's District offices. (See address on the back of the title page.)

## DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also the table for converting Inch-Pound Units to International System of units (SI) on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Fecal coliform bacteria are bacteria that are present in the intestines or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C ± 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal streptococci bacteria are bacteria found also in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Bed material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons or 2,447 cubic meters.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream.

Cubic foot per second (FT<sup>3</sup>/s, ft<sup>3</sup>/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment), that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to the amount of substance present in true chemical solution. In practice, however, the term includes all forms of substance that will pass through a 0.45-micrometer membrane filter, and thus may include some very small (colloidal) suspended particles. Analysis are performed on filtered samples.

Drainage area of a stream at a specific location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontribution areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by drainage system, which consists of a surface stream or body of impounded surface water together with all tributary surface streams and bodies of impounded water.

Gage height (GH) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earth (principally calcium and magnesium) and is expressed as equivalent calcium carbonate (CaCO<sub>3</sub>).

Hydrologic unit is a geographic area representing part of all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-digit number.

Micrograms per gram (ug/g) is a unit expressing the concentration of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter (UG/L, ug/L) is a unit for expressing the concentration of chemical constituents in solution. Micrograms per liter represent the mass of solute per unit volume (liter) of water.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L, and is based on the mass of sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "mean sea level."

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle-size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawn tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology.

The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay.....	0.00024 - 0.004	Sedimentation.
Silt.....	.004 - .062	Sedimentation.
Sand.....	.062 - 2.0	Sedimentation or sieve.
Gravel.....	2.0 - 64.0	Sieve.

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native water analysis.

Recurrence interval as applied to floods, is the average number of years within which a given flood peak will be equaled or exceeded once. For example, a 100-year flood discharge will be exceeded on the average of once in 100 years. In terms of probability, there is a 1 percent chance that such a flood will occur in any year.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in stream are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge times mg/L times 0.0027.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bedload discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during the given time.

Mean concentration is the time weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Surface area of a lake is that area outlined on the latest USGS topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is that part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that automatically records water temperatures on paper tape.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the water year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

Total (as used in tables of chemical analyses) refers to the amount of a substance that is present both in solution and in suspension. Analyses are performed on representative samples of water-suspended sediment mixtures.

Total in bottom material is the total amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

Total recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1980, is called "1980 water year."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976).

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WRD is used as an abbreviation for "Water-Resources Data" in the "REVISED RECORDS" paragraph to refer to State annual basic-data reports published before 1975.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

- 1-D1. Water temperature--influential factors, field measurement, and data presentation, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. Guidelines for collection and field analysis of ground-water samples for selected unstable constituents, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
- 2-D1. Application of surface geophysics to ground-water investigations, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
- 2-E1. Application of borehole geophysics to water-resources investigations, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
- 3-A1. General field and office procedures for indirect discharge measurements, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
- 3-A2. Measurement of peak discharge by the slope-area method, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. Measurement of peak discharge at culverts by indirect methods, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. Measurement of peak discharge at width contractions by indirect methods, by H. J. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. Measurement of peak discharge at dams by indirect methods, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. General procedure for gaging streams, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. Stage measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
- 3-A8. Discharge measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
- 3-A9. Measurement of time of travel and dispersion in streams by dye tracing, by E. F. Hubbard, F. A. Kilpatrick, L. A. Martens, and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 pages.
- 3-A10. Discharge ratings at gaging stations, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. Measurement of discharge by moving-boat method, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A12. Fluorometric procedures for dye tracing, by J. F. Wilson, Jr., E. D. Cobb, and F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A12. 1986. 41 pages.
- 3-A13. Computation of continuous records of streamflow, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. Use of flumes in measuring discharge, by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. Computation of water-surface profiles in open channels, by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-A16. Measurement of discharge using tracers, by F. A. Kilpatrick and E. D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 pages.
- 3-A17. Acoustic velocity meter systems, by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 pages.
- 3-B1. Aquifer-test design, observation, and data analysis, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.

- 3-B2. Introduction to ground-water hydraulics, a programed test for self-instruction, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. Type curves for selected problems of flow to wells in confined aquifers, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-B5. Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems--An introduction, by O. L. Franke, T. E. Reilly, and G. D. Bennett: USGS--TWRI Book 3, Chapter B5. 1987. 15 pages.
- 3-B6. The principle of superposition and its application in ground-water hydraulics, by T. E. Reilly, O. L. Franke, and G. D. Bennett: USGS--TWRI Book 3, Chapter B6. 1987. 28 pages.
- 3-C1. Fluvial sediment concepts, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
- 3-C2. Field methods for measurement of fluvial sediment, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
- 3-C3. Computation of fluvial-sediment discharge, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.
- 4-A1. Some statistical tools in hydrology, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.
- 4-A2. Frequency curves, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.
- 4-B1. Low-flow investigations, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.
- 4-B2. Storage analyses for water supply, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.
- 4-B3. Regional analyses of streamflow characteristics, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.
- 4-D1. Computation of rate and volume of stream depletion by wells, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.
- 5-A1. Methods for determination of inorganic substances in water and fluvial sediments, by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979. 626 pages.
- 5-A2. Determination of minor elements in water by emission spectroscopy, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.
- 5-A3. Methods for analysis of organic substances in water, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.
- 5-A4. Methods for collection and analysis of aquatic biological and microbiological samples, edited by P. E. Greeson, T. A. Ehlke, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages.
- 5-A5. Methods for determination of radioactive substances in water and fluvial sediments, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.
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- 8-A1. Methods of measuring water levels in deep wells, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.
- 8-A2. Installation and service manual for U.S. Geological Survey manometers, by J. D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 pages.
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## DES MOINES RIVER BASIN

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05490600 DES MOINES RIVER AT ST. FRANCISVILLE, MO  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

LOCATION.--Lat 40°27'45", long 91°34'00", Clark County, in SW 1/4 NW 1/4 sec.4, T.65 N., R.6 W., Hydrologic Unit 07100009, at bridge on County Highway B at St. Francisville, and 8 mi upstream from Sugar Creek.

DRAINAGE AREA.--14,300 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1967 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1973 to September 1974, October 1975 to September 1981.

WATER TEMPERATURE: October 1973 to September 1974, October 1975 to September 1981.

SEDIMENT RECORDS: April 1978 to September 1982, April 1983 to current year.

REMARKS.--The number of missing days of record exceeds 20 percent of the year.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (water years 1976-80): Maximum daily, 1,080 microsiemens, Jan. 25, 1977; minimum daily, 214 microsiemens, Sept. 2, 1980.

WATER TEMPERATURE (water years 1976-80): Maximum daily, 35.0°C, July 6, 1977; minimum, 0.0°C on many days during winter periods.

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,010 mg/L, Apr. 13, 1981; minimum daily mean, 6 mg/L, Sept. 20, 1988.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 765,000 tons, Mar. 20, 1982; minimum daily, 17 tons, Sept. 20, 1988.

## EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 920 mg/L, June 10; minimum daily mean, 6 mg/L, Sept. 20.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 32,800 tons, Nov. 30; minimum daily, 17 tons, Sept. 20.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (FTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
NOV 03...	0845	3900	--	687	8.20	13.0	4.6	12.2	117	84
JAN 12...	0850	8400	--	700	7.80	0.0	2.8	13.3	94	K7
MAR 02...	0920	7140	517	--	8.10	2.0	54	13.5	99	K28
MAY 17...	0920	7940	570	--	8.70	19.0	34	11.3	124	K24
JUL 12...	0900	1150	520	--	8.90	26.5	4.7	7.7	98	280
SEP 13...	0920	942	590	--	8.60	21.0	4.5	7.0	79	100

DATE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FIELD (MG/L AS CACO3) (00904)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY DISSOLV FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
NOV 03...	K44	360	98	91	31	17	3.1	258	66
JAN 12...	K13	340	74	89	29	18	3.7	268	76
MAR 02...	80	230	53	61	19	14	4.9	178	51
MAY 17...	K4	270	98	52	33	17	2.5	168	85
JUL 12...	K120	210	100	30	32	28	3.6	104	100
SEP 13...	K52	230	100	39	33	35	4.7	133	91

K--Results based on colony count outside the acceptable range (non-ideal colony count).

## DES MOINES RIVER BASIN

05490600 DES MOINES RIVER AT ST. FRANCISVILLE, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
NOV 03...	23	0.20	14	420	422	0.57	4420	<0.010	4.80
JAN 12...	24	0.40	16	437	440	0.59	9910	0.010	5.00
MAR 02...	19	0.30	12	312	300	0.42	6010	0.040	2.60
MAY 17...	28	0.40	0.06	336	344	0.46	7200	0.010	3.30
JUL 12...	40	0.40	4.9	309	312	0.42	959	<0.010	<0.100
SEP 13...	49	0.40	1.1	353	339	0.48	898	<0.010	<0.100

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, DIS- SUS- PENDEED (MG/L) (80154)	SEDI- MENT, CHARGE, PENDEED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. & FINER THAN .062 MM (70331)
NOV 03...	0.040	0.030	0.80	0.160	0.150	0.140	99	1050	--
JAN 12...	0.270	0.280	1.0	0.170	0.140	0.120	52	1170	--
MAR 02...	0.480	0.470	1.2	0.240	0.200	0.180	151	2910	74
MAY 17...	0.010	<0.010	0.70	0.020	0.020	<0.010	194	4160	60
JUL 12...	0.040	<0.010	1.9	0.130	0.020	<0.010	47	146	39
SEP 13...	<0.010	<0.010	0.80	0.110	0.050	<0.010	211	537	78

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 03...	<10	3	100	<0.5	<1	<1	<3	2	<3	<5
JAN 12...	<10	1	94	<0.5	1	<1	<3	5	4	<5
MAY 17...	<10	1	81	<0.5	<1	<1	<3	8	<3	<5
JUL 12...	<10	2	93	<0.5	<1	<1	<3	4	9	<5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 03...	18	1	0.1	<10	2	1	<1.0	290	<6	4
JAN 12...	16	12	<0.1	<10	1	2	<1.0	280	<6	16
MAY 17...	25	2	<0.1	<10	2	3	<1.0	240	<6	<3
JUL 12...	27	2	<0.1	<10	2	1	<1.0	260	<6	11

## DES MOINES RIVER BASIN

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05490600 DES MOINES RIVER AT ST. FRANCISVILLE, MO--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	6260	166	2800	3650	14	141	12100	681	22200
2	5740	127	1970	3770	13	136	7900	344	7340
3	5260	83	1180	3900	24	253	5290	75	1070
4	4860	74	966	4050	19	210	6810	100	1840
5	4880	57	752	4180	26	293	9100	186	4570
6	4650	80	1000	4430	65	772	9100	135	3320
7	4100	86	947	4380	39	457	9020	107	2610
8	3610	86	835	4060	59	646	8950	105	2540
9	4260	109	1250	3620	52	511	8920	74	1790
10	4170	74	833	3360	55	501	8900	75	1810
11	3710	59	594	3420	52	484	8890	59	1420
12	3690	54	536	3470	32	301	9010	78	1900
13	3820	35	364	3470	10	91	9060	91	2230
14	4290	37	431	3460	9	82	9010	41	1000
15	3840	33	338	3440	7	64	9010	37	903
16	4120	39	436	2930	17	132	8260	68	1520
17	4090	54	599	2880	13	99	7670	115	2390
18	4160	37	410	3370	8	71	6420	121	2090
19	4130	31	345	3930	26	271	5070	121	1650
20	4080	31	341	4210	33	380	6600	156	2780
21	4000	24	254	5010	39	533	13600	889	32700
22	4010	22	235	5000	37	493	13100	730	25800
23	3980	43	466	4550	13	158	9220	430	10700
24	4010	38	409	3630	22	213	9070	267	6530
25	3830	30	313	3530	26	246	14600	272	10700
26	3800	19	194	3530	30	284	15900	448	19200
27	3540	65	626	4040	22	239	13400	372	13500
28	3500	39	368	4390	21	248	13500	337	12300
29	3480	39	367	10100	62	1690	10300	257	7140
30	3450	23	213	14300	849	32800	9090	267	6550
31	3470	13	125	---	---	---	7890	408	8690
TOTAL	128790	---	20497	132060	---	42799	294760	---	220783
JANUARY			FEBRUARY			MARCH			
1	6470	---	---	7500	---	---	7680	---	---
2	5450	---	---	6020	---	---	7140	---	---
3	5150	---	---	7370	---	---	6250	---	---
4	8130	---	---	8430	---	---	6400	118	2030
5	8300	---	---	8370	---	---	7410	87	1740
6	6080	---	---	7850	---	---	7250	70	1360
7	5970	---	---	6420	---	---	6770	91	1670
8	8140	---	---	5260	---	---	7480	83	1680
9	10500	---	---	5010	---	---	8000	154	3320
10	8740	---	---	5730	---	---	8100	130	2850
11	8060	---	---	4840	---	---	8620	149	3460
12	8400	---	---	5060	---	---	8530	133	3070
13	8190	---	---	6080	---	---	7780	108	2260
14	6370	---	---	5350	---	---	7680	95	1980
15	5990	---	---	4890	---	---	7640	66	1350
16	5980	---	---	4980	---	---	7380	53	1060
17	6200	---	---	5400	---	---	6420	52	907
18	5660	---	---	5760	---	---	6300	53	908
19	6030	---	---	6780	---	---	5760	41	639
20	7960	---	---	8320	---	---	4990	26	346
21	8650	---	---	10000	---	---	4760	23	291
22	7910	---	---	11000	---	---	5250	36	510
23	7310	---	---	11300	---	---	5780	48	754
24	8480	---	---	12600	---	---	5180	40	561
25	7600	---	---	10600	---	---	5510	85	1270
26	6670	---	---	9000	---	---	5780	116	1810
27	5630	---	---	9700	---	---	6200	113	1890
28	4880	---	---	10200	---	---	6500	116	2040
29	4750	---	---	10900	---	---	7130	350	6740
30	5230	---	---	---	---	---	5990	249	4030
31	6880	---	---	---	---	---	6270	---	---
TOTAL	215760	---	---	220720	---	---	207930	---	---

## DES MOINES RIVER BASIN

05490600 DES MOINES RIVER AT ST. FRANCISVILLE, MO--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	5970	25	399	4950	77	1020	4350	136	1600
2	5370	39	568	5660	136	2070	4240	136	1560
3	5960	128	2060	6060	139	2270	4150	188	2110
4	6650	177	3180	7260	156	3060	3780	180	1840
5	6920	95	1770	7880	153	3260	3940	152	1610
6	6910	119	2210	7920	147	3140	3810	132	1360
7	6840	147	2720	7430	143	2870	3610	77	750
8	6760	103	1880	7250	142	2780	3920	284	3000
9	6990	83	1560	6980	121	2280	5570	918	13800
10	8130	147	3240	6460	89	1550	4860	920	12100
11	8540	150	3450	7650	129	2670	3280	476	4220
12	8780	144	3420	6990	119	2250	3190	214	1840
13	8430	140	3190	6250	126	2130	4190	266	3010
14	7550	129	2630	7340	163	3220	4450	360	4330
15	7060	111	2120	7970	229	4930	4500	194	2360
16	6930	77	1450	7950	234	5030	4290	150	1740
17	6760	72	1320	7940	220	4710	4390	168	1990
18	6390	82	1410	6890	121	2260	4200	226	2560
19	5980	83	1330	6270	124	2110	3790	205	2100
20	6030	73	1190	5990	137	2210	3190	152	1310
21	5660	63	963	5770	191	2970	3060	88	727
22	5210	56	785	5720	187	2880	2710	81	591
23	5020	65	882	5950	149	2400	2860	77	591
24	4960	60	803	5270	241	3430	2580	72	505
25	4660	44	559	6050	292	4760	2350	69	440
26	4620	56	696	5760	201	3130	2330	39	247
27	4720	---	---	5030	178	2410	2240	18	106
28	4700	59	748	5040	180	2440	2100	19	105
29	4620	62	774	5200	188	2640	2040	63	347
30	4620	64	800	4760	153	1960	2010	62	336
31	---	---	---	4500	136	1650	---	---	---
TOTAL	187740	---	---	198140	---	86490	105980	---	69185
JULY			AUGUST			SEPTEMBER			
1	1660	21	93	2170	58	341	2100	46	263
2	1600	15	67	1960	71	378	1540	47	197
3	1650	17	74	2060	84	465	1130	55	166
4	1540	10	43	1940	63	331	1420	37	143
5	1230	13	45	1650	69	309	1320	24	86
6	1080	24	69	1530	60	248	1350	19	70
7	1020	61	167	1280	59	204	1310	19	68
8	1250	127	427	1160	50	156	1260	21	72
9	964	163	423	1170	58	183	1260	19	65
10	1170	174	549	1310	54	191	1260	23	79
11	1120	162	488	1220	70	231	1070	18	52
12	1150	117	364	1130	199	608	920	21	52
13	1070	---	---	1050	398	1130	942	30	77
14	1010	---	---	972	399	1050	923	27	68
15	1070	---	---	1010	424	1160	943	33	84
16	1080	---	---	1060	396	1130	977	7	19
17	1130	---	---	982	113	299	933	16	40
18	1150	---	---	997	---	---	988	39	104
19	1220	73	240	1080	---	---	1030	28	78
20	1360	73	267	1330	---	---	1020	6	17
21	949	91	234	1290	32	113	1130	20	61
22	1140	92	284	1280	24	84	1360	65	239
23	1760	94	448	1590	23	100	1340	32	116
24	2160	121	705	1250	48	161	1110	35	105
25	2560	92	637	2270	122	745	1030	24	67
26	2280	59	365	1610	177	770	943	8	20
27	2630	69	487	1060	166	475	934	19	48
28	2140	65	378	1670	68	306	1060	49	140
29	2040	57	315	1620	78	341	1080	57	166
30	2150	49	285	2050	74	408	1350	33	120
31	2200	50	297	2510	---	---	---	---	---
TOTAL	46533	---	---	45261	---	---	35033	---	2882

05495000 FOX RIVER AT WAYLAND, MO

LOCATION.--Lat 40°23'33", long 91°35'50", in NW 1/4 sec.31, T.65 N., R.6 W., Clark County, Hydrologic Unit 07110001, on left bank 30 ft downstream from bridge on U.S. Highway 136, 0.8 mi west of Wayland, and 5.0 mi downstream from Brush Creek, and at mile 15.2.

DRAINAGE AREA.--400 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--February 1922 to current year.

REVISED RECORDS.--WSP 785: 1934.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 501.52 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1929, nonrecording gage at bridge 2.8 mi upstream at different datum; Oct. 1, 1929, to June 11, 1936, nonrecording gage, at bridge 90 ft upstream, June 1936 to Aug. 1988 upstream 300 ft. at present datum.

REMARKS.--Estimated daily discharges: June 20 to July 26 and Aug. 23-26. Records good except for estimated daily discharges and period of ice effect, Dec. 16-20 and Jan. 2-20, which are fair. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	7.8	355	252	728	167	131	25	11	4.1	.67	3.7
2	3.7	26	178	166	523	155	116	24	10	4.1	.55	3.2
3	2.2	15	101	160	352	108	243	23	9.3	3.6	.49	2.9
4	2.9	7.9	66	117	246	80	416	21	8.8	3.0	.45	2.7
5	2.0	7.3	45	90	228	69	198	20	8.5	3.1	.38	2.4
6	1.9	8.2	34	69	187	62	128	20	7.9	2.7	.33	2.3
7	1.7	5.8	28	41	149	59	97	19	7.8	2.6	.29	2.5
8	1.6	5.3	26	26	112	65	78	19	18	2.3	.26	2.1
9	1.7	6.4	27	19	74	67	66	23	608	2.2	.39	1.8
10	1.8	6.5	25	15	59	64	58	25	314	2.4	1.2	1.6
11	1.8	6.5	23	13	65	59	58	27	107	2.6	.73	1.6
12	1.7	6.1	22	12	55	58	56	25	52	2.1	.73	1.4
13	1.6	5.2	20	14	52	54	51	21	32	1.9	2.8	1.5
14	1.6	4.9	18	10	51	46	47	18	24	1.9	3.2	2.6
15	1.6	4.4	21	9.5	51	38	41	16	19	2.1	2.7	3.3
16	2.5	4.5	17	10	49	35	37	15	17	1.6	2.2	3.4
17	1.6	6.1	19	16	56	33	36	14	14	1.6	1.8	2.1
18	1.1	6.1	15	18	119	33	45	13	12	2.3	1.4	.72
19	1.1	6.7	21	282	556	34	48	12	11	1.8	2.3	1.0
20	1.5	70	599	495	1390	34	36	12	10	1.6	7.8	.90
21	1.6	57	982	509	1140	34	32	11	8.3	1.7	3.8	.60
22	1.7	34	760	433	601	34	30	12	6.7	1.5	3.3	.47
23	1.6	21	518	238	555	34	30	16	6.1	2.1	8.9	.40
24	1.8	16	692	108	570	36	30	26	5.6	2.4	14	.39
25	1.7	15	800	83	400	46	28	34	5.9	2.4	10	.39
26	1.6	13	433	84	262	70	27	36	4.5	1.7	18	.39
27	1.6	12	249	54	206	67	27	27	3.8	1.7	15	.39
28	1.6	34	944	46	203	67	29	20	3.8	1.2	11	.39
29	1.6	387	795	35	193	338	28	16	3.4	1.0	7.4	.57
30	2.1	697	398	36	---	477	26	14	4.1	.96	5.2	.50
31	5.3	---	247	276	---	206	---	12	---	.81	4.2	---
MEAN	2.10	50.1	273	121	318	88.0	75.8	19.9	45.1	2.16	4.24	1.61
MAX	7.3	697	982	509	1390	477	416	36	608	4.1	18	3.7
MIN	1.1	4.4	15	9.5	49	33	26	11	3.4	.81	.26	.39
IN.	.01	.14	.79	.35	.86	.25	.21	.06	.13	.01	.01	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	182.9	177.1	144.2	157.8	327.2	453.4	462.7	306.8	383.8	205.7	116.1	185.3
MAX	1313	1375	1330	1133	1433	2264	2750	1868	2223	2789	1509	1999
(WY)	1987	1929	1983	1969	1982	1979	1973	1973	1947	1982	1970	1970
MIN	.000	.010	.019	.190	.421	8.56	2.35	1.39	.060	.210	.019	.167
(WY)	1957	1957	1957	1957	1957	1956	1956	1956	1956	1936	1936	1937

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	82.6	258.4
HIGHEST ANNUAL MEAN		677.4
LOWEST ANNUAL MEAN		17.6
HIGHEST DAILY MEAN	1390	19900
LOWEST DAILY MEAN	.26	0
INSTANTANEOUS PEAK FLOW	1860	26400
INSTANTANEOUS PEAK STAGE (FEET)	8.23	21.71
INSTANTANEOUS LOW FLOW	0.26	0
ANNUAL RUNOFF (INCHES)	2.80	8.77
10 PERCENTILE	245	546
50 PERCENTILE	17	39
95 PERCENTILE	.56	.62

## WYACONDA RIVER BASIN

05496000 WYACONDA RIVER ABOVE CANTON, MO

LOCATION.--Lat 40°08'32", long 91°33'55", in SW 1/4 SW 1/4 NE 1/4 sec.28, T.62 N., R.6 W., Lewis County, Hydrologic Unit 07110001, on left bank on downstream side of bridge on State Highway 16, 1.9 mi upstream from Sugar Creek, and 2.5 mi west of Canton, and at mile 16.7.

DRAINAGE AREA.--393 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1932 to September 1972, October 1979 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 517.41 ft above National Geodetic Vertical Datum of 1929. Prior to May 1, 1939, nonrecording gage 500 ft downstream at datum 2.00 ft lower. Sept. 25, 1975, to Sept. 17, 1979, nonrecording gage at present site and at datum 2.00 ft lower.

REMARKS.--No estimated daily discharges. Records fair. Several observations of water temperature and specific conductance made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.1	7.4	331	186	1230	143	126	22	6.3	4.0	.05	3.0
2	5.2	8.3	155	169	457	118	111	21	5.9	3.2	.03	2.3
3	4.6	12	83	221	229	102	172	20	5.6	2.8	.03	1.9
4	3.9	9.9	52	187	188	81	455	19	5.4	2.4	.08	1.5
5	3.3	8.0	37	123	220	61	212	18	5.1	2.3	.24	1.3
6	2.9	6.2	28	82	268	55	134	17	4.9	2.0	.17	1.1
7	2.9	5.4	29	47	222	57	105	17	4.8	1.4	.09	.82
8	2.8	5.0	27	30	155	59	86	17	24	1.1	.05	.63
9	2.6	5.2	24	21	93	61	63	18	596	.96	.07	.47
10	2.3	4.8	20	17	75	60	51	19	229	.97	.09	.36
11	2.1	4.0	17	16	73	56	58	21	89	1.4	.07	.33
12	2.7	3.9	17	17	62	52	63	22	46	1.2	.03	.30
13	2.7	3.8	15	18	61	46	54	17	28	1.1	.03	.24
14	2.8	3.8	14	16	58	39	46	14	20	1.0	.03	.20
15	3.0	4.0	17	15	57	29	39	12	16	.92	.04	.16
16	3.1	4.6	12	17	58	25	35	11	15	.70	.28	.24
17	3.2	5.4	13	39	74	25	33	11	11	.44	.54	.19
18	3.5	5.4	13	76	147	24	31	9.8	10	.59	.49	.32
19	4.0	5.4	54	642	665	25	42	9.5	8.9	.45	1.1	.60
20	4.2	5.2	1490	2090	1850	25	39	9.1	7.7	.89	.80	.38
21	3.8	12	1780	1430	1600	27	31	8.7	7.0	2.7	.51	.36
22	3.5	9.4	909	866	935	25	28	8.3	6.1	4.1	1.2	.81
23	3.4	7.4	748	646	1460	24	28	11	5.4	2.4	3.8	2.4
24	3.6	6.9	1070	514	1210	28	27	15	4.4	1.7	5.7	1.8
25	3.6	6.7	1200	379	725	45	25	17	4.2	1.4	11	1.2
26	3.9	6.4	510	419	419	75	25	15	3.7	.72	27	.82
27	4.3	6.6	373	343	234	68	24	13	3.0	.39	17	.57
28	4.0	30	1810	336	191	44	24	10	2.6	.22	9.9	.43
29	4.0	346	1370	276	156	75	26	9.1	2.6	.16	6.6	.44
30	4.0	664	461	306	---	486	24	7.8	3.6	.14	5.0	5.2
31	4.9	---	270	638	---	212	---	6.9	---	.10	3.9	---
MEAN	3.61	40.4	418	328	454	72.6	73.9	14.4	39.4	1.41	3.09	1.01
MAX	7.1	664	1810	2090	1850	486	455	22	596	4.1	27	5.2
MIN	2.1	3.8	12	15	57	24	24	6.9	2.6	.10	.03	.16
IN.	.01	.11	1.23	.96	1.25	.21	.21	.04	.11	.00	.01	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	152.1	162.9	161.0	155.7	352.1	422.0	418.0	335.7	363.2	255.1	126.6	172.2
MAX	1677	1463	1399	946.5	1389	1346	1809	1736	2594	2389	2242	2510
(WY)	1987	1986	1983	1946	1985	1985	1983	1986	1947	1982	1970	1986
MIN	.000	.000	.471	.103	2.57	7.53	3.38	1.69	.663	.016	.000	.017
(WY)	1954	1954	1954	1954	1934	1957	1956	1934	1956	1934	1934	1953

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	119.9	255.4
HIGHEST ANNUAL MEAN	751.5	1986
LOWEST ANNUAL MEAN	24.4	1934
HIGHEST DAILY MEAN	2090	Jan 20
LOWEST DAILY MEAN	.03	Aug 2
INSTANTANEOUS PEAK FLOW	2350	Jan 20
INSTANTANEOUS PEAK STAGE (FEET)	13.45	Jan 20
INSTANTANEOUS LOW FLOW	0.03	Aug 2-3, 12-14
ANNUAL RUNOFF (INCHES)	4.14	8.82
10 PERCENTILE	316	536
50 PERCENTILE	13	31
95 PERCENTILE	.16	.49

05497000 NORTH FABIUS RIVER AT MONTICELLO, MO

LOCATION.--Lat 40°06'30", long 91°42'51", in SW 1/4 SE 1/4 sec.6, T.61 N., R.7 W., Lewis County, Hydrologic Unit 07110002, on right bank upstream from bridge on State Highway 16, 1.0 mi south of Monticello, and 19.0 mi upstream from Middle Fabius River.

DRAINAGE AREA.--452 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1922 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 925: 1937-39(M). WSP 1308: 1922(M), 1924-26(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 540.73 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 22, 1930, nonrecording gage at site 400 ft downstream at datum 0.03 ft lower. Nov. 22, 1930, to Nov. 28, 1967, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good except for period with ice effect, Jan. 5-19 and Feb. 6-20, which are fair. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	18	370	323	1220	205	151	25	6.5	3.9	.16	6.3
2	16	16	199	280	373	170	133	23	7.1	3.6	.12	5.2
3	14	20	128	317	178	138	184	21	6.2	3.2	.10	4.5
4	12	22	95	383	201	104	293	21	5.9	2.7	.08	3.9
5	12	18	76	239	273	88	193	20	5.4	2.3	.06	3.6
6	11	14	61	163	306	78	150	19	4.7	2.0	.04	3.0
7	9.7	12	56	95	232	75	118	18	4.5	1.8	.04	3.0
8	9.2	11	53	55	165	78	95	17	18	1.5	.02	2.3
9	8.9	11	50	37	118	79	77	19	154	1.3	.06	2.3
10	8.9	9.2	46	25	108	78	67	28	121	1.5	.06	2.1
11	8.9	8.9	49	24	107	73	70	38	55	2.5	.16	2.1
12	8.9	8.7	45	26	93	67	65	26	32	1.9	2.8	1.7
13	8.9	8.4	42	26	92	60	59	20	22	1.2	2.3	1.7
14	8.9	8.4	41	24	93	52	52	17	17	1.0	1.7	1.3
15	8.9	8.4	60	23	97	39	45	15	14	1.0	1.5	1.0
16	8.6	8.8	55	34	101	43	41	14	11	1.1	.74	2.1
17	9.8	11	48	79	119	41	37	12	10	1.7	.48	2.3
18	10	12	49	126	173	40	36	12	8.7	2.0	.18	3.0
19	9.7	125	81	432	758	40	39	11	7.7	3.3	.20	4.8
20	9.2	64	1940	1160	1520	40	38	10	6.8	8.4	.14	5.5
21	8.7	37	1680	1050	940	39	34	10	6.0	8.4	.14	6.3
22	8.5	29	727	478	440	38	32	11	5.2	7.1	38	4.8
23	8.0	25	569	325	829	36	32	14	4.6	4.8	24	3.6
24	8.2	22	684	295	589	37	30	19	4.2	3.6	28	3.0
25	8.9	23	738	213	308	49	30	21	4.0	3.0	48	2.3
26	8.9	24	344	222	222	74	29	21	3.6	2.1	38	1.9
27	8.9	71	336	204	212	69	28	15	3.0	1.5	30	1.7
28	8.9	86	1620	193	248	53	38	12	2.6	1.0	19	1.5
29	8.9	1350	1210	172	216	101	38	10	3.0	.48	13	1.5
30	8.9	744	442	189	---	307	31	8.7	3.8	.32	9.9	3.9
31	11	---	273	470	---	223	---	7.4	---	.20	8.0	---
MEAN	9.88	94.2	392	248	356	84.3	75.5	17.3	18.6	2.59	8.61	3.07
MAX	16	1350	1940	1160	1520	307	293	38	154	8.4	48	6.3
MIN	8.0	8.4	41	23	92	36	28	7.4	2.6	.20	.02	1.0
IN.	.03	.23	1.00	.63	.85	.22	.19	.04	.05	.01	.02	.01

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	201.5	199.3	179.8	195.9	354.0	471.8	525.7	368.8	417.4	273.8	126.9	195.0
MAX	1496	1347	1521	1679	1346	2336	3171	2149	3148	3131	2149	1966	
(WY)	1987	1929	1983	1974	1937	1979	1973	1973	1947	1982	1970	1970	
MIN	.013	1.06	.732	.142	3.64	7.91	7.15	1.71	.070	.000	.000	.507	
(WY)	1957	1957	1957	1940	1934	1956	1956	1934	1934	1934	1934	1953	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	108.5	292.0
HIGHEST ANNUAL MEAN		829.7
LOWEST ANNUAL MEAN		21.9
HIGHEST DAILY MEAN	1940	17900
LOWEST DAILY MEAN	.02	0
INSTANTANEOUS PEAK FLOW	3740	20700
INSTANTANEOUS PEAK STAGE (FEET)	16.65	33.03
INSTANTANEOUS LOW FLOW	0.02	0
ANNUAL RUNOFF (INCHES)	3.26	8.77
10 PERCENTILE	282	571
50 PERCENTILE	22	46
95 PERCENTILE	.44	1.2

05498000 MIDDLE FABIUS RIVER NEAR MONTICELLO, MO

LOCATION.--Lat 40°05'37", long 91°44'08", in SE 1/4, sec.12, T.61 N., R.8 W., Lewis County, Hydrologic Unit 07110002, on left bank on downstream end of bridge pier on State Highway 16, 2.5 mi southwest of Monticello, 8 mi downstream from Radish Branch, and 17 miles upstream from mouth.

DRAINAGE AREA.--393 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 540.46 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 4, 1967, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Jan. 4-12. Records good. Several observations of water temperature and specific conductance were made during the year. \*U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 17, 1945, reached a stage of 23.3 ft, from floodmarks.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	9.7	244	115	888	137	153	23	5.8	1.3	.00	.56
2	3.8	9.3	140	71	496	120	118	21	5.4	1.3	.00	.51
3	3.5	8.8	81	99	145	107	157	20	4.5	1.0	.00	.50
4	3.1	7.6	51	78	76	87	266	20	4.1	.88	.00	.50
5	3.4	6.3	38	71	117	70	195	20	4.0	1.1	.00	.37
6	3.3	9.8	33	58	103	59	134	20	3.6	1.2	.00	.18
7	2.9	10	31	48	102	54	104	20	3.4	.92	.00	.05
8	3.8	8.2	27	40	85	54	79	20	12	.84	.00	.00
9	3.8	6.6	26	34	59	56	64	19	9.2	.76	.00	.00
10	3.7	4.8	24	29	49	56	53	18	8.8	.94	.00	.00
11	3.6	3.9	23	24	47	56	54	21	9.4	1.1	.00	.00
12	3.4	3.4	22	20	46	52	51	35	18	.79	.00	.00
13	3.5	2.9	24	18	46	46	44	25	14	.71	.00	.00
14	3.2	2.9	21	16	44	41	39	19	9.2	.70	.00	.00
15	3.4	2.6	16	16	44	37	35	16	7.3	.79	.00	.00
16	4.0	3.1	24	18	44	33	32	12	5.5	.75	.00	.00
17	4.3	3.7	21	30	55	29	30	11	4.4	.65	.00	.00
18	3.8	3.4	18	38	105	30	28	9.2	3.7	1.0	.00	.02
19	3.1	3.1	56	511	342	31	27	8.5	3.1	.85	.00	.14
20	3.1	15	1230	974	1380	31	27	6.8	2.9	1.8	.00	.01
21	3.4	15	1110	803	1730	31	29	6.9	2.6	1.3	.00	.00
22	3.4	6.6	767	726	1010	31	28	7.2	2.4	.83	1.6	.00
23	3.8	4.0	467	414	1160	31	27	9.5	2.0	.64	1.8	.00
24	4.6	2.7	584	307	708	32	26	10	1.8	.63	1.6	.00
25	5.0	2.4	472	217	289	46	24	10	1.7	.62	1.0	.00
26	5.7	2.0	308	168	182	55	25	6.6	1.5	.37	1.3	.00
27	5.8	2.1	464	148	182	84	24	8.1	1.4	.25	3.8	.00
28	5.8	29	1160	99	170	55	23	8.2	1.1	.11	2.7	.00
29	6.1	170	1200	78	170	85	22	8.9	1.3	.00	1.6	.00
30	6.5	589	404	82	---	228	22	7.6	1.4	.00	1.2	.06
31	8.1	---	196	242	---	303	---	6.5	---	.00	.80	---
MEAN	4.15	31.6	299	180	340	69.9	64.7	14.6	5.18	.78	.56	.097
MAX	8.1	589	1230	974	1730	303	266	35	18	1.8	3.8	.56
MIN	2.9	2.0	16	16	44	29	22	6.5	1.1	.00	.00	.00
IN.	.01	.09	.88	.53	.93	.21	.18	.04	.01	.00	.00	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	186.3	172.7	170.3	212.1	334.0	488.9	500.7	358.8	317.3	286.9	113.2	167.4
MEAN	186.3	172.7	170.3	212.1	334.0	488.9	500.7	358.8	317.3	286.9	113.2	167.4
MAX	1368	1481	1418	1179	1359	1521	2719	1679	2582	2149	1758	1815
(WY)	1987	1986	1983	1969	1969	1979	1973	1973	1947	1981	1970	1970
MIN	.000	.000	.106	.313	1.23	6.32	3.83	5.05	1.04	.778	.561	.087
(WY)	1954	1954	1957	1957	1957	1957	1956	1956	1956	1988	1988	1953

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	83.6	275.1
HIGHEST ANNUAL MEAN		748.7
LOWEST ANNUAL MEAN		30.2
HIGHEST DAILY MEAN	1730	15100
LOWEST DAILY MEAN	.00	0
INSTANTANEOUS PEAK FLOW	1910	17700
INSTANTANEOUS PEAK STAGE (FEET)	10.62	27.14
INSTANTANEOUS LOW FLOW	0*	0
ANNUAL RUNOFF (INCHES)	2.89	9.50
10 PERCENTILE	191	618
50 PERCENTILE	10	41
95 PERCENTILE	.00	1.1

1973

1956

Apr 23 1973

several years

Apr 23 1973

Apr 23 1973

several years

## FABIUS RIVER BASIN

05500000 SOUTH FABIUS RIVER NEAR TAYLOR, MO

LOCATION.--Lat 39°53'49", long 91°34'49", in SW 1/4 NW 1/4 sec.21, T.59 N., R.6 W., Marion County, Hydrologic Unit 07110003, on right bank at downstream side of county highway bridge, 4.5 mi southwest of Taylor, 5.0 mi downstream from Grassy Creek, and 5.3 mi upstream from confluence with North Fabius River.

DRAINAGE AREA.--620 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1934 to current year. Prior to December 1934 monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 825: 1936.

GAGE.--Water-stage recorder. Datum of gage is 482.91 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to May 14, 1936, nonrecording gage at bridge 4.0 mi downstream at datum 21.94 ft lower. May 14, 1936, to Dec. 2, 1940, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Jan. 6-17 and Feb. 6-18. Water-discharge records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1928 reached a stage of 18.49 ft, from floodmarks, at present site and datum.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	7.6	163	247	797	220	285	38	12	.93	.33	1.0
2	4.9	9.3	114	182	487	208	236	35	11	.98	.24	.88
3	4.1	13	97	200	342	194	368	33	9.6	1.2	.18	.78
4	4.0	16	71	215	739	168	396	32	8.7	.79	.31	.72
5	3.4	11	54	294	633	149	458	30	8.1	.72	.45	.71
6	3.0	8.5	44	200	350	129	707	29	7.5	.81	.33	.67
7	2.4	8.2	38	130	200	117	285	27	7.2	.85	.28	.64
8	2.3	11	34	95	100	108	186	26	9.9	1.1	.23	.63
9	2.0	9.9	40	65	80	102	143	25	27	.97	.27	.62
10	2.0	7.6	40	45	70	95	115	22	13	.88	.30	.62
11	2.1	6.5	35	38	60	89	107	20	11	.79	.24	.63
12	2.1	6.2	29	32	58	85	107	20	10	.76	.19	.62
13	1.9	6.0	24	28	56	78	97	17	9.2	.81	.17	.61
14	1.6	6.0	22	24	54	67	86	15	6.9	.70	.15	.60
15	1.7	6.0	29	22	54	59	76	14	6.7	.56	.14	.56
16	1.7	6.6	27	20	52	54	67	13	6.4	.46	.11	.72
17	1.9	8.3	22	20	100	51	62	11	5.4	.41	.09	.75
18	1.9	8.0	18	100	397	49	59	11	5.1	.54	.12	.84
19	2.4	7.1	81	1060	1280	47	56	11	4.9	.42	.10	1.0
20	3.0	6.6	2680	2090	2360	46	51	11	4.5	.58	.10	1.0
21	2.9	6.6	2730	752	1490	45	50	10	3.5	.53	.71	1.3
22	2.9	6.6	1550	361	1250	43	49	11	2.9	.45	1.1	1.2
23	2.6	6.4	1140	278	1410	41	49	23	2.9	.39	1.1	.87
24	2.8	6.9	1380	180	1300	43	48	42	3.1	.48	.71	.65
25	3.1	8.5	1350	163	754	82	47	64	2.9	.82	3.3	.54
26	3.7	8.9	692	205	394	113	46	35	2.1	.86	4.6	.46
27	4.1	9.2	1140	133	332	79	44	24	1.8	.80	3.2	.42
28	3.9	43	3710	91	276	73	44	19	1.8	.76	2.4	.40
29	3.9	102	2020	63	229	123	42	17	1.7	.62	1.7	.42
30	4.0	174	893	67	---	364	39	16	1.2	.56	1.4	.63
31	4.8	---	426	243	---	332	---	13	---	.44	1.2	---
MEAN	3.02	18.0	668	247	542	111	147	23.0	6.93	.71	.83	.72
MAX	6.6	174	3710	2090	2360	364	707	64	27	1.2	4.6	1.3
MIN	1.6	6.0	18	20	52	41	39	10	1.2	.39	.09	.40
IN.	.01	.03	1.24	.46	.94	.21	.26	.04	.01	.00	.00	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	289.6	280.6	256.3	291.3	519.0	729.2	757.4	603.7	506.8	359.9	170.9	203.7
MAX	2690	3103	2137	2000	2340	2659	3989	3437	3891	2877	2335	2841	
(WY)	1987	1986	1983	1965	1982	1973	1973	1935	1947	1969	1970	1970	
MIN	.000	.000	1.52	2.12	5.84	15.0	35.7	23.0	5.68	.709	.000	.387	
(WY)	1957	1957	1957	1954	1964	1956	1963	1988	1977	1988	1936	1953	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	146.2	404.5
HIGHEST ANNUAL MEAN	1105	1973
LOWEST ANNUAL MEAN	84.1	1956
HIGHEST DAILY MEAN	3710	18800
LOWEST DAILY MEAN	.09	0
INSTANTANEOUS PEAK FLOW	4340	19700
INSTANTANEOUS PEAK STAGE (FEET)	8.34	19.5
INSTANTANEOUS LOW FLOW	0.09	0
ANNUAL RUNOFF (INCHES)	3.20	8.86
10 PERCENTILE	322	964
50 PERCENTILE	13	60
95 PERCENTILE	.31	1.7

## FABIUS RIVER BASIN

05500000 SOUTH FABIUS RIVER NEAR TAYLOR, MO--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 1972 to August 1973, October 1979 to current year.

REMARKS.--Samples collected in even-numbered water years only.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)
OCT 07...	0900	2.7	352	8.50	11.0	10.5	96	36	84	180	18
NOV 03...	1200	14	507	7.80	15.0	8.8	89	41	70	--	--
DEC 09...	0745	40	369	7.70	5.0	11.9	95	28	130	--	--
JAN 12...	1055	30	--	7.50	0.0	13.3	92	29	K22	220	47
FEB 03...	0755	188	250	7.60	0.0	14.7	101	24	600	--	--
MAR 02...	1215	200	306	7.90	5.5	12.8	103	21	K10	--	--
APR 06...	0850	892	305	8.10	12.5	6.8	65	27	5000	130	31
MAY 17...	1235	16	610	8.30	21.5	8.3	95	260	K20	--	--
JUN 02...	1320	12	569	8.30	28.5	8.5	112	23	40	--	--
JUL 12...	1140	0.96	490	8.30	25.0	7.8	96	35	K950	220	65
AUG 03...	0815	0.25	469	8.00	27.5	5.6	72	23	480	--	--
SEP 13...	1115	0.50	500	8.10	21.0	5.2	59	27	92	--	--

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT WH TOT FET FIELD CACO3 (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 07...	54	10	11	4.9	158	0.7	39	8.9	0.30	229
NOV 03...	--	--	--	--	212	6.5	--	--	--	297
DEC 09...	--	--	--	--	151	5.9	--	--	--	267
JAN 12...	66	13	13	5.4	172	11	69	11	0.20	303
FEB 03...	--	--	--	--	81	4.0	--	--	--	181
MAR 02...	--	--	--	--	94	2.3	--	--	--	185
APR 06...	38	7.8	9.5	4.0	96	5.9	50	8.0	0.20	199
MAY 17...	--	--	--	--	226	2.2	--	--	--	378
JUN 02...	--	--	--	--	208	2.0	--	--	--	349
JUL 12...	57	18	23	5.5	152	1.5	66	16	0.20	297
AUG 03...	--	--	--	--	161	3.1	--	--	--	275
SEP 13...	--	--	--	--	172	2.7	--	--	--	295

K--Results based on colony count outside the acceptable range (non-ideal colony count).

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WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
OCT										
07...	8	1.20	0.010	0.050	--	--	<1	<1	4	3
NOV										
03...	<1	<0.100	0.040	0.010	--	--	--	--	--	--
DEC										
09...	14	1.90	0.070	0.060	--	--	--	--	--	--
JAN										
12...	21	1.60	0.180	0.090	--	--	1	<1	10	7
FEB										
03...	166	1.90	0.260	0.150	--	--	--	--	--	--
MAR										
02...	5	0.800	0.180	0.070	--	--	--	--	--	--
APR										
06...	385	0.700	0.160	0.150	--	--	<1	<1	20	5
MAY										
17...	18	<0.100	0.020	0.060	--	--	--	--	--	--
JUN										
02...	32	<0.100	0.020	0.050	600	<10	--	--	--	--
JUL										
12...	4	<0.100	0.040	0.130	370	10	<1	<1	4	3
AUG										
03...	13	<0.100	<0.010	0.110	330	10	--	--	--	--
SEP										
13...	33	0.100	0.020	0.070	540	<10	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## 05501000 NORTH RIVER AT PALMYRA, MO

LOCATION.--Lat 39°49'06", long 91°31'13", in SE 1/4 SW 1/4 sec.13, T.58 N., R.6 W., Marion County, Hydrologic Unit 07110004, on right bank 100 ft upstream from City Waterworks dam, 1,000 ft upstream from upstream bridge on dual U.S. Highways 24 and 61, 0.5 mi north of Palmyra, and 7.0 mi upstream from mouth.

DRAINAGE AREA.--373 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1934 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 464.81 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1945, nonrecording gage at bridge 1,000 ft downstream; Oct. 1, 1945, to June 22, 1951, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records fair. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage prior to 1934, about 28.0 ft, from floodmarks, date unknown, at site 1,000 ft downstream, present datum.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	14	171	133	754	129	162	26	12	5.5	1.0	2.2
2	4.8	22	118	106	298	123	185	25	11	4.7	.82	2.1
3	4.1	27	67	103	123	149	387	25	9.8	4.6	.50	1.9
4	3.4	20	43	75	101	138	301	25	9.1	3.9	.39	1.9
5	3.1	11	27	57	148	133	217	26	8.1	3.3	.34	1.2
6	2.7	7.4	21	61	137	157	609	25	7.9	2.7	.29	1.0
7	2.9	8.9	19	50	115	256	283	24	6.9	2.5	.25	1.0
8	2.8	12	18	42	71	195	178	22	20	1.9	.22	.81
9	2.5	11	20	37	67	141	133	23	23	1.7	.22	.61
10	3.0	8.8	22	31	58	110	110	22	13	1.7	.32	.48
11	2.9	7.7	21	32	54	96	115	21	12	1.9	.38	.37
12	2.8	7.1	18	38	63	87	116	19	9.9	1.7	.38	.38
13	2.5	6.4	18	34	51	76	98	17	7.7	1.5	.34	.62
14	2.8	6.7	18	34	52	67	85	16	6.6	1.4	.36	.92
15	3.0	7.7	20	33	57	60	74	16	6.4	1.3	.31	1.5
16	3.3	12	22	37	63	56	69	16	7.6	1.0	.26	2.7
17	3.6	11	20	65	96	55	65	14	7.6	.88	.25	2.8
18	3.4	7.4	19	167	182	55	63	14	6.3	1.4	.24	1.7
19	3.4	7.5	87	1760	570	56	57	14	5.6	2.2	.22	2.1
20	3.3	12	2500	1250	1480	52	54	13	5.3	6.9	.20	1.6
21	3.3	6.6	1260	393	625	50	49	12	4.8	19	.18	1.3
22	3.2	6.2	679	237	515	47	48	8.3	4.5	13	.40	1.4
23	3.1	8.0	558	151	807	47	47	33	4.1	7.4	4.1	1.3
24	3.9	5.9	847	103	418	51	44	145	3.8	5.3	5.9	1.2
25	4.6	9.1	660	82	204	73	41	63	3.7	4.2	5.2	1.3
26	4.7	9.9	298	63	161	109	39	33	3.3	3.3	5.6	1.3
27	4.9	15	1920	65	156	74	37	23	2.7	2.4	6.6	1.2
28	5.2	63	2900	54	141	65	34	18	2.4	1.7	5.8	1.0
29	6.1	180	770	55	129	163	30	15	2.8	1.4	4.8	1.2
30	6.7	194	321	66	---	499	29	14	3.6	1.4	4.0	2.0
31	8.7	---	207	496	---	231	---	13	---	1.6	2.7	---
MEAN	3.93	24.2	442	191	265	116	125	25.2	7.72	3.66	1.70	1.37
MAX	8.7	194	2900	1760	1480	499	609	145	23	19	6.6	2.8
MIN	2.5	5.9	18	31	51	47	29	8.3	2.4	.88	.18	.37
IN.	.01	.07	1.37	.59	.77	.36	.37	.08	.02	.01	.01	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	171.5	178.8	178.2	186.8	322.0	462.6	480.6	414.7	320.2	238.8	107.6	126.5
MAX	1742	2639	1832	991.5	1720	2783	2691	2249	2296	2045	1357	1351
(WY)	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MIN	.000	.000	.229	.661	.921	6.54	31.7	20.2	4.77	.516	.000	.167
(WY)	1957	1957	1957	1954	1954	1956	1936	1941	1936	1936	1936	1940

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	100.3	261.3
HIGHEST ANNUAL MEAN		748.1
LOWEST ANNUAL MEAN		45.5
HIGHEST DAILY MEAN	2900	32600
LOWEST DAILY MEAN	.18	0
INSTANTANEOUS PEAK FLOW	7080	57500
INSTANTANEOUS PEAK STAGE (FEET)	17.07	29.70
INSTANTANEOUS LOW FLOW	0.18	0
ANNUAL RUNOFF (INCHES)	3.65	9.51
10 PERCENTILE	188	467
50 PERCENTILE	17	38
95 PERCENTILE	.32	1.3

## MISSISSIPPI RIVER MAIN STEM

33

05501600 MISSISSIPPI RIVER AT HANNIBAL, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat 39°43'26", long 91°21'44", Marion County, Hydrologic Unit 07110004, at railroad bridge upstream from Highway 36 bridge at Hannibal, Mo.

PERIOD OF RECORD.--October 1981 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)
OCT											
07...	1130	--	487	8.90	14.0	10.2	100	46	K24	230	35
NOV											
02...	1425	462	--	8.30	11.0	9.1	83	35	K26	--	--
DEC											
09...	0915	411	--	8.10	4.0	11.1	86	20	120	--	--
JAN											
11...	1415	--	567	8.20	0.0	19.6	135	--	440	270	58
FEB											
03...	0945	445	--	7.80	0.0	14.5	99	12	K12	--	--
MAR											
01...	1420	490	--	7.90	1.0	14.0	100	<10	<80	--	--
APR											
06...	1215	452	--	8.50	12.0	10.7	101	<10	410	210	57
MAY											
16...	1540	411	--	8.50	20.5	7.7	87	47	370	--	--
JUN											
02...	1510	409	--	8.60	24.0	8.5	103	23	88	--	--
JUL											
12...	1400	452	--	8.80	28.0	9.6	125	25	K280	210	60
AUG											
03...	1045	458	--	8.70	28.5	5.0	65	17	140	--	--
SEP											
12...	1430	420	--	8.70	22.0	5.6	65	25	K64	--	--

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT WH TOT FET FIELD (MG/L AS CACO3) (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT										
07...	54	24	12	3.1	199	0.4	34	18	0.30	272
NOV										
02...	--	--	--	--	197	1.9	--	--	--	256
DEC										
09...	--	--	--	--	187	2.9	--	--	--	286
JAN										
11...	67	26	15	2.9	217	2.7	43	23	0.20	338
FEB										
03...	--	--	--	--	190	5.8	--	--	--	280
MAR										
01...	--	--	--	--	169	4.1	--	--	--	279
APR										
06...	53	18	13	2.9	150	0.9	41	17	0.20	266
MAY										
16...	--	--	--	--	140	0.9	--	--	--	234
JUN										
02...	--	--	--	--	150	0.7	--	--	--	232
JUL										
12...	42	26	16	2.9	152	0.3	41	22	0.20	260
AUG										
03...	--	--	--	--	174	0.6	--	--	--	272
SEP										
12...	--	--	--	--	156	0.6	--	--	--	243

K--Results based on colony count outside the acceptable range (non-ideal colony count).

05501600 MISSISSIPPI RIVER AT HANNIBAL, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	RESIDUE	NITRO-	NITRO-	PHOS-	ALUM-	ALUM-	CADMIUM	CADMIUM	COPPER,	COPPER,
	TOTAL	GEN,	GEN,	PHOROUS	INUM,	INUM,	TOTAL	DIS-	TOTAL	DIS-
	AT 105	NO2+NO3	AMMONIA	TOTAL	RECOV-	DIS-	RECOV-	SOLVED	RECOV-	SOLVED
	DEG. C, SUS- PENDE	TOTAL	TOTAL	TOTAL	ERABLE	SOLVED	ERABLE	SOLVED	ERABLE	SOLVED
	(MG/L) (00530)	(AS N) (00630)	(MG/L) (AS N) (00610)	(MG/L) (AS P) (00665)	(UG/L) (AS AL) (01105)	(UG/L) (AS AL) (01106)	(UG/L) (AS CD) (01027)	(UG/L) (AS CD) (01025)	(UG/L) (AS CU) (01042)	(UG/L) (AS CU) (01040)
OCT										
07...	22	<0.100	0.010	0.140	--	--	<1	1	9	4
NOV										
02...	13	0.900	0.090	0.080	--	--	--	--	--	--
DEC										
09...	<1	2.80	0.100	<0.010	--	--	--	--	--	--
JAN										
11...	6	4.40	0.020	0.120	--	--	1	<1	8	3
FEB										
03...	53	3.20	0.270	0.210	--	--	--	--	--	--
MAR										
01...	59	2.90	0.330	0.190	--	--	--	--	--	--
APR										
06...	132	2.10	0.030	0.220	--	--	<1	<1	11	2
MAY										
16...	126	1.20	0.060	0.020	--	--	--	--	--	--
JUN										
02...	28	0.800	0.050	0.100	440	<10	--	--	--	--
JUL										
12...	10	<0.100	0.040	0.220	260	10	1	<1	3	5
AUG										
03...	5	0.100	<0.010	0.170	110	<10	--	--	--	--
SEP										
12...	11	0.200	<0.010	0.190	200	<10	--	--	--	--

[illegible]

## BEAR CREEK BASIN

35

05502000 BEAR CREEK AT HANNIBAL, MO

LOCATION.--Lat 39°40'43", long 91°24'41", in SE 1/4 NW 1/4 sec. 1, T.56 N., R.5 W., Ralls County, Hydrologic Unit 07110004, at bridge on Industrial Drive over Bear Creek, on right downstream bank at Hannibal, and 4.65 mi upstream from mouth.

DRAINAGE AREA.--31.0 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1938 to September 1942, October 1947 to current year in reports of Geological Survey. Monthly discharge only for some periods, published in WSP 1308. October 1936 to November 1938 (gage heights and discharge measurements only) in reports of Missouri Geological Survey.

REVISED RECORDS.--WSP 1115: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 508.91 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 26, 1948, nonrecording gage, water-stage recorder Mar. 26, 1948, to Sept. 30, 1953, at datum 2.00 feet higher and Oct. 1, 1953, to Oct. 30 1961, at present datum. Oct. 31, 1961, to Sept. 5, 1972, water-stage recorder 400 ft downstream at present datum. Sept. 6, 1972, to July 2, 1986, water-stage recorder 525 ft upstream at present datum.

REMARKS.--Estimated daily discharges: Mar. 3-25. Records fair. High flow regulated by Bear Creek flood control reservoir, 1.0 mi upstream, since Aug. 7, 1961. Several observations of water temperature and specific conductance were made during the year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.72	2.3	3.0	17	76	8.6	19	3.4	1.6	2.5	.0	.0
2	.65	1.8	2.6	22	73	13	37	3.4	1.6	1.2	.00	.00
3	.52	1.8	2.6	12	17	20	70	3.4	1.3	.92	.00	.00
4	.60	1.8	2.6	19	25	35	38	3.4	1.2	.75	.00	.00
5	.68	1.8	2.1	30	41	56	24	3.4	.97	.73	.00	.00
6	.68	1.6	2.5	4.6	24	53	61	3.0	2.1	.58	.00	.00
7	.64	1.7	2.4	4.9	6.2	30	29	3.0	1.7	.49	.00	.00
8	.62	1.9	2.6	4.5	10	20	17	3.3	13	.39	.00	.00
9	.65	2.0	2.6	3.5	3.4	15	12	3.9	9.2	.33	.0	.00
10	.68	1.8	2.6	3.2	6.4	12	8.6	3.3	3.1	.39	1.8	.00
11	.68	1.8	2.6	3.9	9.9	34	8.9	2.9	1.6	.35	.76	.00
12	.73	1.8	2.4	11	3.6	25	7.9	2.6	.82	.25	.12	.00
13	.77	1.8	2.2	20	5.0	15	7.1	2.2	.68	.19	.05	.00
14	.96	1.8	2.3	4.1	6.3	11	6.4	2.2	.75	.16	.03	.00
15	.83	1.8	2.8	3.1	14	9.8	5.8	2.2	.63	.13	.02	.00
16	.84	2.2	2.6	4.0	27	9.0	5.8	2.2	.82	.09	.01	.15
17	.91	2.6	2.6	16	45	8.2	5.8	2.1	.75	1.6	.0	.00
18	.91	2.2	2.6	31	59	7.6	5.8	1.8	.82	3.1	.00	.01
19	1.1	2.2	47	68	82	7.2	5.8	2.1	.37	.82	.00	.03
20	1.2	1.9	77	107	94	6.8	5.8	1.8	.43	9.0	.0	.00
21	1.0	1.8	66	29	96	6.4	5.8	1.9	.34	5.1	.00	.00
22	1.0	1.8	66	13	77	6.2	5.8	2.0	.21	1.2	.53	.00
23	.91	1.8	64	9.3	83	6.0	5.3	4.6	.13	.73	2.6	.00
24	1.4	2.2	65	9.6	22	16	5.1	5.0	.10	.42	.75	.00
25	1.2	3.0	62	16	12	11	4.5	3.3	.12	.33	.13	.00
26	1.2	2.6	61	17	9.9	6.7	4.5	2.6	.10	.20	.05	.00
27	1.2	7.5	84	3.0	13	5.8	4.2	2.2	.04	.11	.04	.00
28	1.2	42	166	15	11	5.8	3.5	2.1	.04	.06	.03	.00
29	1.2	14	132	3.9	9.7	47	3.4	1.7	56	.03	.04	.00
30	1.2	4.9	34	6.2	---	64	3.4	1.5	30	.03	.03	.00
31	2.0	---	26	61	---	29	---	1.7	---	.02	.01	---
MEAN	.93	4.01	32.1	18.4	33.2	19.4	14.2	2.72	4.35	1.04	.23	.006
MAX	2.0	42	166	107	96	64	70	5.0	56	9.0	2.6	.15
MIN	.52	1.6	2.1	3.0	3.4	5.8	3.4	1.5	.04	.02	.00	.00
IN.	.03	.14	1.19	.69	1.15	.72	.51	.10	.16	.04	.01	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	13.2	15.0	15.7	13.6	26.8	31.3	34.5	24.6	23.5	24.2	14.2	12.1
MEAN	13.2	15.0	15.7	13.6	26.8	31.3	34.5	24.6	23.5	24.2	14.2	12.1
MAX	115.5	224.7	155.1	84.0	123.7	125.1	193.0	92.5	158.2	193.0	131.4	190.3
(WY)	1970	1986	1983	1969	1985	1973	1973	1970	1939	1981	1970	1970
MIN	.000	.000	.110	.266	.848	.881	1.16	1.51	.580	.000	.000	.010
(WY)	1957	1957	1964	1977	1964	1956	1956	1956	1963	1954	1953	1988

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	10.8	20.7
HIGHEST ANNUAL MEAN		57.5
LOWEST ANNUAL MEAN		2.47
HIGHEST DAILY MEAN	166	2010
LOWEST DAILY MEAN	.00	0
INSTANTANEOUS PEAK FLOW	241	6500
INSTANTANEOUS PEAK STAGE (FEET)	4.57	14.05
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	4.73	9.06
10 PERCENTILE	33	36
50 PERCENTILE	1.8	3.4
95 PERCENTILE	.00	.01

## SALT RIVER BASIN

05502300 NORTH FORK SALT RIVER AT HAGERS GROVE, MO

LOCATION.--Lat 39°49'40", long 92°14'10", in NE 1/4 SW 1/4 sec.15, T.58 N., R.12 W., Shelby County, Hydrologic Unit 07110005, at bridge on State Highway 151, 200 ft downstream from old channel carrying Bear Creek, 0.25 mi west of Hagers Grove, 2.5 mi upstream from Ten Mile Creek, and at mile 143.8.

DRAINAGE AREA.--365 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1974 to current year. (Prior to October 1983 published as "Salt River at Hagers Grove, Mo."). September 1939 to August 1974, gage height and miscellaneous measurements published by U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 702.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 1 to Feb. 24, Mar. 25-30, and Aug. 28 to Sept. 30. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1928 reached a stage of 19.1 ft, according to information furnished by U.S. Army Corps of Engineers.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	17	177	106	713	115	99	9.9	5.3	2.6	.72	2.6
2	4.5	11	83	74	150	108	84	9.8	4.9	2.3	.58	2.2
3	4.4	25	49	64	111	103	231	10	5.1	1.9	.50	2.4
4	4.9	24	31	36	75	88	189	11	4.6	1.8	.80	2.6
5	4.9	15	22	26	70	75	109	8.8	4.5	1.5	.83	2.4
6	4.8	9.7	19	20	60	67	86	7.9	4.5	1.3	.27	2.2
7	4.5	7.7	17	17	50	64	68	7.6	4.7	1.4	.18	2.2
8	4.5	7.3	15	15	40	63	56	7.9	5.1	1.7	.89	1.6
9	4.5	7.5	13	12	30	63	43	9.6	5.6	1.3	1.4	2.0
10	4.4	7.2	13	11	20	60	38	24	5.7	1.6	1.3	2.6
11	45	6.1	12	11	18	57	43	26	5.0	2.0	1.3	1.4
12	162	5.5	12	9.0	15	52	38	16	3.8	1.7	3.5	1.3
13	210	5.3	11	8.0	18	48	32	11	4.1	1.5	4.2	1.4
14	4.5	5.3	12	7.0	15	41	27	8.1	3.5	2.6	3.0	1.4
15	4.5	5.5	23	6.0	18	35	24	7.6	4.0	1.8	1.3	1.6
16	5.9	6.2	17	6.0	20	35	22	6.8	3.7	1.4	.83	6.6
17	4.7	7.7	17	10	45	33	21	5.3	3.1	1.0	.49	4.3
18	4.9	8.2	15	30	100	34	21	4.5	2.7	3.3	.37	2.6
19	4.9	32	140	125	1400	34	20	4.0	2.4	16	.76	5.5
20	4.7	32	2660	174	659	35	18	3.5	2.4	28	.76	11
21	4.5	18	1350	218	467	32	17	3.7	2.4	16	3.3	6.6
22	4.5	14	538	84	1070	33	17	11	2.5	9.5	81	5.1
23	4.5	11	422	62	368	33	16	72	2.3	4.7	42	7.8
24	4.5	9.8	477	50	312	36	16	79	2.3	5.5	13	4.7
25	4.6	10	357	40	187	47	15	43	2.1	3.4	13	3.5
26	6.5	9.7	159	28	141	72	15	25	1.9	2.4	8.0	3.2
27	6.3	10	417	25	177	60	14	19	1.8	1.7	7.6	2.4
28	5.8	110	1340	15	158	62	12	14	1.8	1.3	9.0	2.2
29	5.7	580	566	12	142	109	12	9.4	2.3	1.2	5.5	3.0
30	6.0	364	208	20	---	330	11	8.9	2.4	1.1	3.5	3.9
31	8.4	---	150	743	---	178	---	6.6	---	.92	2.6	---
MEAN	18.1	46.1	301	66.6	229	71.0	47.1	15.8	3.55	4.01	6.85	3.41
MAX	210	580	2660	743	1400	330	231	79	5.7	28	81	11
MIN	4.4	5.3	11	6.0	15	32	11	3.5	1.8	.92	.18	1.3
IN.	.06	.14	.95	.21	.68	.22	.14	.05	.01	.01	.02	.01

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	251.0	346.5	264.8	98.1	376.3	513.9	453.5	446.1	276.2	281.7	88.5	118.4
MAX	1201	1426	1319	405.7	1599	1177	2036	1316	1074	1688	440.5	588.5	
(WY)	1987	1986	1983	1982	1982	1979	1983	1981	1984	1981	1982	1986	
MIN	3.00	4.40	2.20	1.13	10.0	63.4	23.4	10.4	3.55	4.01	3.90	3.41	
(WY)	1976	1976	1977	1977	1978	1981	1977	1980	1988	1988	1984	1988	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	67.3	292.8
HIGHEST ANNUAL MEAN		553.1
LOWEST ANNUAL MEAN		67.3
HIGHEST DAILY MEAN	2660	18800
LOWEST DAILY MEAN	.18	.18
INSTANTANEOUS PEAK FLOW	3080	26900
INSTANTANEOUS PEAK STAGE (FEET)	9.37	19.7
INSTANTANEOUS LOW FLOW	0.18	.18
ANNUAL RUNOFF (INCHES)	2.50	10.9
10 PERCENTILE	133	554
50 PERCENTILE	11	33
95 PERCENTILE	1.2	2.1

## SALT RIVER BASIN

37

05502300 NORTH FORK SALT RIVER AT HAGERS GROVE, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	-.50	-.39	1.11	.41	3.90	.63	.51	-.33	-.40	-.50	-.62	-.51
2	-.53	-.42	.48	---	.96	.54	.36	-.33	-.44	-.51	-.63	-.53
3	-.54	-.25	.16	---	.38	.51	.87	-.35	-.43	-.53	-.64	-.52
4	-.53	-.20	-.02	---	.95	.42	1.13	-.32	-.43	-.54	-.65	-.51
5	-.53	-.34	-.13	---	---	.29	.67	-.35	-.45	-.55	-.60	-.52
6	-.53	-.43	-.15	---	---	.23	.46	-.35	-.41	-.57	-.67	---
7	-.54	-.47	-.17	---	---	.20	.31	-.37	-.44	-.56	-.68	-.53
8	-.54	-.48	-.19	---	---	.19	.23	-.37	-.43	-.53	-.63	-.56
9	-.54	-.47	-.22	---	---	.19	.09	-.37	-.40	-.56	-.56	-.54
10	-.54	-.48	-.22	---	---	.17	.01	-.21	-.42	-.57	-.57	-.51
11	-.20	-.50	-.24	---	---	.15	.08	-.07	-.41	-.52	-.57	-.57
12	.68	-.50	-.24	---	---	.09	.04	-.23	-.44	-.54	-.59	-.58
13	1.39	-.52	-.25	---	---	.05	-.03	-.29	-.42	-.55	-.44	-.57
14	-.54	-.52	-.25	---	---	-.08	-.08	-.36	-.46	-.58	-.43	-.57
15	-.54	-.52	.05	---	---	-.19	-.11	-.38	-.46	-.53	-.57	-.57
16	-.55	-.50	-.15	---	---	-.06	-.14	-.37	-.45	-.55	-.61	-.41
17	-.54	-.47	-.14	---	---	-.10	-.16	-.41	-.47	-.60	-.64	-.46
18	-.53	-.47	-.19	---	---	-.09	-.15	-.43	-.49	-.48	-.66	-.52
19	-.53	-.18	-.19	---	---	-.09	-.18	-.44	-.50	-.50	-.62	-.43
20	-.53	-.13	9.28	---	---	-.08	-.20	-.46	-.51	-.06	-.62	-.34
21	-.54	-.32	5.92	1.78	---	-.10	-.22	-.46	-.51	-.21	-.62	-.41
22	-.54	-.36	2.84	.90	---	-.10	-.22	-.40	-.50	-.33	.46	-.44
23	-.54	-.42	2.35	.60	---	-.10	-.24	.40	-.51	-.41	.13	-.39
24	-.54	-.44	2.49	---	---	-.10	-.24	.45	-.51	-.36	-.27	-.45
25	-.54	-.43	2.06	---	.90	---	-.25	.16	-.52	-.45	-.25	-.48
26	-.49	-.44	.99	---	.66	---	-.25	-.09	-.53	-.48	-.36	-.49
27	-.49	-.44	.51	---	.96	---	-.27	-.18	-.54	-.54	-.37	-.23
28	-.50	.01	5.54	---	.99	---	-.30	-.27	-.54	-.56	-.35	-.21
29	-.51	3.05	3.08	.04	.85	---	-.30	-.34	-.52	-.58	-.41	-.34
30	-.50	2.13	1.09	.14	---	---	-.31	-.37	-.52	-.59	-.46	-.52
31	-.50	---	.87	1.24	---	1.01	---	-.40	---	-.59	-.50	---

## SALT RIVER BASIN

05502500 NORTH FORK SALT RIVER NEAR SHELBYNA, MO

LOCATION.--Lat 39°44'29", long 92°02'26", in SW 1/4 NE 1/4 sec.17, T.57 N., R.10 W., Shelby County, Hydrologic Unit 0711005, on right bank near downstream end of bridge on State Highway 15, 3 mi north of Shelbyna, 15 mi upstream from Black Creek, and at mi 122.3.

DRAINAGE AREA.--481 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1930 to February 1934, March 1934 to September 1972 (discontinued). March 1988 to current year (prior to March 1988 published as "Salt River near Shelbyna, Mo."). Fragmentary record prior to October 1933 monthly discharge only for period October 1933 to February 1934 published in WSP 1308.

GAGE.--Water-stage recorder crest-stage with concrete control since Mar. 25, 1988. Datum of gage is 664.58 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 1, 1934, nonrecording gage at site 100 ft downstream and present datum. Mar. 1, 1934, to Nov. 2, 1962, water-stage recorder at site 175 ft downstream at present datum. Nov. 3, 1962, to Sept. 30 1972, water-stage recorder at site 100 ft upstream at present datum. Oct. 1972 to Sept. 30, 1979, gage-height records collected by St. Louis U.S. Army Corps of Engineers at site 100 ft downstream. Oct. 1979 to Sept. 1981 gage-height data collected by U.S. Geological Survey at site 100 ft downstream.

REMARKS.--Records poor. Several observations of water temperature and specific conductance were made during the year. Water diverted from river at the gage by city of Shelbyna.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1928 reached a stage of 23.54 ft, from floodmarks, discharge, 18,000 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	199	14	3.7	2.5	.00	.85
2	---	---	---	---	---	---	165	10	3.4	2.9	.00	.52
3	---	---	---	---	---	---	361	9.9	3.1	3.1	.00	.02
4	---	---	---	---	---	---	440	11	2.6	2.3	.00	.00
5	---	---	---	---	---	---	259	10	2.5	1.9	.00	.00
6	---	---	---	---	---	---	240	9.7	2.7	1.4	.00	.00
7	---	---	---	---	---	---	202	9.3	3.1	.76	.00	.00
8	---	---	---	---	---	---	160	11	3.5	.24	.00	.00
9	---	---	---	---	---	---	122	30	3.8	.00	.00	.00
10	---	---	---	---	---	---	89	33	3.7	.00	.00	.00
11	---	---	---	---	---	---	100	67	3.3	.00	.00	.00
12	---	---	---	---	---	---	94	26	3.7	.00	.00	.28
13	---	---	---	---	---	---	73	12	3.3	.00	.00	.16
14	---	---	---	---	---	---	58	8.6	3.3	.00	.00	.00
15	---	---	---	---	---	---	45	8.3	3.6	.00	.00	.00
16	---	---	---	---	---	---	38	9.0	4.0	.00	.00	.27
17	---	---	---	---	---	---	35	7.6	3.7	.00	.00	.95
18	---	---	---	---	---	---	34	6.8	3.8	.66	.00	2.7
19	---	---	---	---	---	---	29	6.7	3.2	3.2	.00	1.8
20	---	---	---	---	---	---	28	6.7	2.6	9.5	.00	.77
21	---	---	---	---	---	---	19	7.0	2.7	13	.00	1.7
22	---	---	---	---	---	---	17	12	2.6	6.7	.00	3.2
23	---	---	---	---	---	---	15	166	2.9	3.7	14	1.5
24	---	---	---	---	---	---	15	268	3.0	2.0	52	1.7
25	---	---	---	---	---	---	100	71	2.4	1.8	14	1.9
26	---	---	---	---	---	92	13	21	2.1	1.3	5.6	1.4
27	---	---	---	---	---	90	12	8.9	1.4	.81	6.5	1.4
28	---	---	---	---	---	62	12	6.1	1.3	.53	4.6	1.6
29	---	---	---	---	---	187	9.4	4.8	1.0	.02	2.8	2.8
30	---	---	---	---	---	477	8.9	4.1	1.8	.00	2.1	3.9
31	---	---	---	---	---	388	---	4.3	---	.00	1.4	---
MEAN	---	---	---	---	---	---	96.9	28.4	2.93	1.88	3.32	.98
MAX	---	---	---	---	---	---	440	268	4.0	13	52	3.9
MIN	---	---	---	---	---	---	8.9	4.1	1.0	.00	.00	.00
IN.	---	---	---	---	---	---	.22	.07	.01	.00	.01	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	154.4	140.3	141.1	216.4	369.8	473.1	513.3	385.7	479.6	259.5	124.0	149.9
MEAN	154.4	140.3	141.1	216.4	369.8	473.1	513.3	385.7	479.6	259.5	124.0	149.9
MAX	808.8	1212	835.4	1319	1395	1417	1944	2310	4171	2906	1214	1831
(WY)	1958	1962	1972	1965	1949	1948	1944	1935	1947	1969	1970	1970
MIN	.000	.000	.000	.013	3.41	6.41	20.6	14.7	6.38	.000	.000	.000
(WY)	1953	1954	1954	1954	1954	1956	1963	1941	1963	1936	1936	1953

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	*****	282.8
HIGHEST ANNUAL MEAN		655.5
LOWEST ANNUAL MEAN		62.5
HIGHEST DAILY MEAN	440	18600
LOWEST DAILY MEAN	0	.00
INSTANTANEOUS PEAK FLOW	588	23000
INSTANTANEOUS PEAK STAGE (FEET)	6.90	27.4
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	*****	7.98
10 PERCENTILE	*****	667
50 PERCENTILE	*****	31
95 PERCENTILE	*****	.30

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## SALT RIVER BASIN

39

05502500 NORTH FORK SALT RIVER NEAR SHELBYNA, MO--Continued

## WATER QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT: March 25, 1988 to current year.

REMARKS.--The number of missing days of record exceeds 20 percent of the year.

## SEDIMENT, SUSPENDED CONCENTRATION (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10000	---	---	---	---	---	185	72	32	153	114	21
2	---	---	---	---	---	---	76	70	51	115	121	23
3	---	---	---	---	---	---	86	73	73	95	138	48
4	---	---	---	---	---	---	173	72	44	136	116	57
5	---	---	---	---	---	---	116	73	56	102	117	56
6	---	---	---	---	---	---	68	85	42	169	131	27
7	---	---	---	---	---	---	54	73	88	127	95	25
8	---	---	---	---	---	---	48	80	123	142	87	18
9	---	---	---	---	---	---	28	74	84	118	86	22
10	---	---	---	---	---	---	40	64	67	144	73	28
11	---	---	---	---	---	---	17	57	122	95	77	30
12	---	---	---	---	---	---	32	54	247	94	109	28
13	---	---	---	---	---	---	33	43	205	136	122	26
14	---	---	---	---	---	---	33	38	121	101	78	29
15	---	---	---	---	---	---	20	35	194	107	77	38
16	---	---	---	---	---	---	26	37	369	83	89	47
17	---	---	---	---	---	---	28	48	263	79	97	46
18	---	---	---	---	---	---	29	56	205	71	53	43
19	---	---	---	---	---	---	24	51	126	77	56	36
20	---	---	---	---	---	---	29	57	122	105	68	37
21	---	---	---	---	---	---	39	62	136	95	74	50
22	---	---	---	---	---	---	44	68	117	86	78	49
23	---	---	---	---	---	---	71	340	132	92	125	67
24	---	---	---	---	---	---	75	413	126	90	69	75
25	---	---	---	---	---	50	74	117	137	78	88	23
26	---	---	---	---	---	99	73	108	152	158	58	34
27	---	---	---	---	---	37	84	60	214	115	48	49
28	---	---	---	---	---	27	82	48	124	77	45	54
29	---	---	---	---	---	62	71	56	153	86	46	48
30	---	---	---	---	---	306	78	41	128	100	59	44
31	---	---	---	---	---	297	---	42	---	108	33	---
TOTAL	---	---	---	---	---	---	1836	2567	4053	3334	2627	1178
MEAN	---	---	---	---	---	---	61	83	135	108	85	39
MAX	---	---	---	---	---	---	185	413	369	169	138	75
MIN	---	---	---	---	---	---	17	35	32	71	33	18

## SALT RIVER BASIN

05503500 NORTH FORK SALT RIVER NEAR HUNNEWELL, MO

LOCATION.--Lat 39°40'05", long 91°54'11", in SE 1/4 SE 1/4 NE 1/4 sec.9, T.56 N., R.9 W., Shelby County, Hydrologic Unit 07110005, on right bank near downstream end of bridge on U.S. Highway 36, 1.5 mi downstream from Black Creek and 2 mi west of Hunnewell, at mile 105.8.

DRAINAGE AREA.--626 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1931 to September 1940, October 1979 to current year. April 1930 to September 1931 (fragmentary), October 1931 to September 1940 (published as "Salt River near Hunnewell, Mo."), March 1966 to June 1967 (gage heights only), July 1967 to September 1979 (published by U.S. Army Corps of Engineers), and October 1979 to March 1988 (discontinued).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 615.64 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 10-17, 22-30, and Feb. 7-16. Water-discharge records good except for period of estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	42	381	347	1920	209	---	---	---	---	---	---
2	11	59	224	161	742	187	---	---	---	---	---	---
3	9.1	61	130	169	341	186	---	---	---	---	---	---
4	8.8	54	79	129	205	177	---	---	---	---	---	---
5	8.4	39	50	79	157	161	---	---	---	---	---	---
6	7.2	63	35	61	189	159	---	---	---	---	---	---
7	6.9	47	30	49	95	173	---	---	---	---	---	---
8	6.7	35	29	40	65	148	---	---	---	---	---	---
9	7.2	27	30	35	55	126	---	---	---	---	---	---
10	7.1	22	28	28	45	112	---	---	---	---	---	---
11	5.9	23	28	24	40	103	---	---	---	---	---	---
12	6.9	24	25	22	35	95	---	---	---	---	---	---
13	7.1	26	23	21	44	80	---	---	---	---	---	---
14	6.6	24	22	21	42	67	---	---	---	---	---	---
15	6.3	21	26	20	40	56	---	---	---	---	---	---
16	6.6	22	23	20	45	48	---	---	---	---	---	---
17	13	23	18	26	91	47	---	---	---	---	---	---
18	8.4	24	22	97	218	46	---	---	---	---	---	---
19	6.1	28	91	517	725	46	---	---	---	---	---	---
20	6.9	27	3240	937	2100	46	---	---	---	---	---	---
21	6.0	40	4090	474	1970	45	---	---	---	---	---	---
22	6.6	61	1910	280	1190	45	---	---	---	---	---	---
23	10	48	1010	171	2020	---	---	---	---	---	---	---
24	29	39	1020	114	1080	---	---	---	---	---	---	---
25	35	39	837	81	425	---	---	---	---	---	---	---
26	24	36	461	57	291	---	---	---	---	---	---	---
27	19	35	1210	48	252	---	---	---	---	---	---	---
28	15	112	3190	36	261	---	---	---	---	---	---	---
29	13	329	1960	32	238	---	---	---	---	---	---	---
30	13	641	621	38	---	---	---	---	---	---	---	---
31	13	---	353	393	---	---	---	---	---	---	---	---
MEAN	11.0	69.0	684	146	515	---	---	---	---	---	---	---
MAX	35	641	4090	937	2100	---	---	---	---	---	---	---
MIN	5.9	21	18	20	35	---	---	---	---	---	---	---
IN.	.02	.12	1.26	.27	.89	---	---	---	---	---	---	---

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	360.2	582.4	449.1	214.9	632.5	633.5	573.0	737.6	521.7	403.5	331.1	167.9
MEAN	360.2	582.4	449.1	214.9	632.5	633.5	573.0	737.6	521.7	403.5	331.1	167.9
MAX	2549	3254	2306	805.6	2376	1765	2810	3145	2032	2640	2176	823.9
(WY)	1987	1986	1983	1932	1985	1985	1983	1935	1935	1981	1932	1986
MIN	.345	1.91	3.78	2.30	2.55	12.1	29.7	17.5	1.86	.000	.000	.787
(WY)	1938	1938	1940	1940	1934	1934	1936	1980	1934	1934	1936	1940

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	*****	466.0
HIGHEST ANNUAL MEAN		879.2
LOWEST ANNUAL MEAN		78.4
HIGHEST DAILY MEAN	4090	18300
LOWEST DAILY MEAN	5.9	.00
INSTANTANEOUS PEAK FLOW	4560	22560
INSTANTANEOUS PEAK STAGE (FEET)	12.59	25.16
INSTANTANEOUS LOW FLOW	5.9	*****
ANNUAL RUNOFF (INCHES)	*****	10.1
10 PERCENTILE	*****	1110
50 PERCENTILE	*****	58
95 PERCENTILE	*****	.62

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

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GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.37	2.94	4.49	4.32	8.67	3.86	---	---	---	---	---	---
2	2.36	3.13	3.92	3.36	5.71	3.75	---	---	---	---	---	---
3	2.33	3.13	3.54	3.57	4.28	3.73	---	---	---	---	---	---
4	2.33	3.12	3.27	3.50	3.78	3.69	---	---	---	---	---	---
5	2.36	2.95	3.09	3.11	3.46	3.63	---	---	---	---	---	---
6	2.34	3.19	2.94	3.06	3.69	3.60	---	---	---	---	---	---
7	2.33	3.06	2.88	2.96	3.39	3.70	---	---	---	---	---	---
8	2.35	2.95	2.88	2.86	3.20	3.59	---	---	---	---	---	---
9	2.39	2.88	2.89	2.81	3.12	3.50	---	---	---	---	---	---
10	2.42	2.79	2.86	2.76	3.05	3.41	---	---	---	---	---	---
11	2.40	2.77	2.87	2.73	2.95	3.35	---	---	---	---	---	---
12	2.44	2.81	2.84	2.74	2.89	3.30	---	---	---	---	---	---
13	2.49	2.83	2.80	2.74	3.01	3.21	---	---	---	---	---	---
14	2.48	2.82	2.77	2.74	2.97	3.11	---	---	---	---	---	---
15	2.49	2.78	2.82	2.72	2.99	3.02	---	---	---	---	---	---
16	2.51	2.77	2.83	2.71	3.00	2.92	---	---	---	---	---	---
17	2.75	2.81	2.71	2.79	3.15	2.93	---	---	---	---	---	---
18	2.63	2.80	2.77	3.18	3.58	2.92	---	---	---	---	---	---
19	2.58	2.86	2.78	3.64	4.96	2.90	---	---	---	---	---	---
20	2.61	2.87	9.98	5.92	8.28	2.91	---	---	---	---	---	---
21	2.61	2.83	12.35	5.19	8.54	2.90	---	---	---	---	---	---
22	2.60	3.15	8.51	4.39	6.34	---	---	---	---	---	---	---
23	2.66	3.07	6.15	3.81	8.14	---	---	---	---	---	---	---
24	2.84	2.97	6.12	3.40	6.75	---	---	---	---	---	---	---
25	2.97	2.98	5.89	3.17	4.69	---	---	---	---	---	---	---
26	2.83	2.96	4.79	3.06	4.00	---	---	---	---	---	---	---
27	2.74	2.95	4.06	3.04	3.91	---	---	---	---	---	---	---
28	2.66	3.32	10.85	2.93	3.98	---	---	---	---	---	---	---
29	2.61	3.71	9.03	2.88	3.95	---	---	---	---	---	---	---
30	2.58	5.33	5.32	2.93	---	---	---	---	---	---	---	---
31	2.56	---	4.34	3.16	---	---	---	---	---	---	---	---

## SALT RIVER BASIN

05503500 NORTH FORK SALT RIVER NEAR HUNNEWELL, MO--Continued

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT: July 1980 to May 1988 (discontinued).

REMARKS.--The number of missing days of record exceeds 20 percent of year.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,460 mg/L, Sept. 30, 1986; minimum daily mean, 1 mg/L, Nov. 29, 30, Dec. 3, 1980.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 78,900 tons, Sept. 30, 1986; minimum daily, 0.03 tons, Nov. 29, 30 Dec. 3, 1980.

## SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	12	44	1.4	42	27	3.1	381	219	225
2	11	34	1.0	59	32	5.1	224	113	68
3	9.1	28	.69	61	33	5.4	130	90	32
4	8.8	27	.64	54	27	3.9	79	80	17
5	8.4	36	.82	39	23	2.4	50	61	8.2
6	7.2	40	.78	63	26	4.4	35	58	5.5
7	6.9	34	.63	47	30	3.8	30	58	4.7
8	6.7	30	.54	35	27	2.6	29	60	4.7
9	7.2	24	.47	27	22	1.6	30	56	4.5
10	7.1	30	.58	22	18	1.1	28	49	3.7
11	5.9	24	.38	23	21	1.3	28	43	3.3
12	6.9	18	.34	24	10	.65	25	37	2.5
13	7.1	24	.46	26	12	.84	23	32	2.0
14	6.6	37	.66	24	17	1.1	22	26	1.5
15	6.3	33	.56	21	22	1.2	26	25	1.8
16	6.6	34	.61	22	19	1.1	23	22	1.4
17	13	35	1.2	23	28	1.7	18	21	1.0
18	8.4	34	.77	24	22	1.4	22	9	.53
19	6.1	30	.49	28	6	.45	91	300	74
20	6.9	24	.45	27	6	.44	3240	1460	13800
21	6.0	16	.26	40	10	1.1	4090	1460	16100
22	6.6	20	.36	61	8	1.3	1910	592	3050
23	10	21	.57	48	6	.78	1010	200	545
24	29	22	1.7	39	10	1.1	1020	170	468
25	35	36	3.4	39	10	1.1	837	130	294
26	24	29	1.9	36	5	.49	461	115	143
27	19	21	1.1	35	20	1.9	1210	266	869
28	15	18	.73	112	65	20	3190	770	6630
29	13	16	.56	329	146	130	1960	435	2300
30	13	20	.70	641	324	561	621	218	366
31	13	25	.88	---	---	---	353	110	105
TOTAL	341.8	---	25.63	2071	---	762.35	21196	---	45131.33

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## SALT RIVER BASIN

05503800 CROOKED CREEK NEAR PARIS, MO

LOCATION.--Lat 39°35'06", long 91°59'36", near NW corner S 1/2 sec.2, T.55 N., R.10 W., Monroe County, Hydrologic Unit 07110005 on right bank downstream from county road bridge, 7 mi north of Paris, 1.4 mi north of State Route 15, and at mile 8.9.

DRAINAGE AREA.--80.0 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1979 to current year. March 1966 to October 1979 published by U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 650.00 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 8, 1967, wire-weight gage and Nov. 9, 1967, to Sept. 1979 recording gage at datum 50 ft lower.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	.00	33	12	55	15	18	.52	.11	.00	.00	.00
2	.16	.00	15	9.4	41	14	16	.37	.10	.00	.00	.00
3	.14	.00	8.1	6.7	35	19	53	.31	.10	.00	.00	.00
4	.13	.00	5.6	5.1	18	21	58	.31	.09	.00	.00	.00
5	.13	.00	3.9	2.2	12	18	45	.31	.07	.00	.00	.00
6	.12	.00	1.5	.70	7.4	26	66	.31	.07	.00	.00	.00
7	.11	.00	1.3	.44	6.1	72	22	.30	.06	.00	.00	.00
8	.10	.0	1.1	.40	5.7	55	14	.25	.04	.00	.00	.00
9	.09	.01	.61	.32	5.7	28	11	.28	.04	.00	.00	.00
10	.08	.01	.54	.24	5.7	18	8.5	.28	.04	.00	.00	.00
11	.07	.01	.54	.25	5.7	14	9.8	.28	.04	.00	.00	.00
12	.06	.01	.49	.37	5.2	12	11	.27	.03	.00	.00	.00
13	.05	.01	4.2	.34	5.2	9.1	11	.20	.03	.00	.00	.00
14	.04	.01	4.8	.24	5.3	6.9	8.5	.19	.02	.00	.00	.00
15	.03	.01	6.2	.22	5.7	5.8	6.1	.19	.02	.00	.00	.00
16	.02	.03	5.3	.28	6.4	5.3	5.5	.19	.03	.00	.00	.00
17	.02	.07	3.5	2.1	24	4.7	4.7	.19	.03	.00	.00	.00
18	.01	.07	2.1	6.4	53	4.7	4.5	.21	.01	.00	.00	.00
19	.00	.07	32	151	107	4.7	4.3	.22	.00	.00	.00	.00
20	.00	.07	683	369	176	4.7	3.4	.22	.00	.00	.00	.00
21	.00	.07	987	63	87	4.7	2.4	.22	.00	.00	.00	.00
22	.00	.07	170	22	73	4.7	2.4	.24	.00	.00	.00	.00
23	.00	.07	142	11	70	4.7	2.3	1.5	.00	.00	.00	.00
24	.00	.08	161	3.9	44	4.8	1.3	5.8	.00	.00	.00	.00
25	.00	.11	101	1.5	31	7.1	1.1	23	.00	.00	.00	.00
26	.00	.12	31	.42	22	12	.95	7.5	.00	.00	.00	.00
27	.00	.13	419	.29	20	13	.73	2.7	.00	.00	.00	.00
28	.00	5.4	921	.25	20	8.2	.64	.59	.00	.00	.00	.00
29	.00	91	179	.29	17	31	.54	.28	.00	.00	.00	.00
30	.00	96	34	.91	---	89	.54	.17	.00	.00	.00	.00
31	.00	---	20	9.1	---	36	---	.15	---	.00	.00	---
MEAN	.050	6.45	128	21.9	33.4	18.5	13.1	1.53	.031	.00	.00	.00
MAX	.18	96	987	369	176	89	66	23	.11	.00	.00	.00
MIN	.00	.00	.49	.22	5.2	4.7	.54	.15	.00	.00	.00	.00
IN.	.00	.09	1.85	.32	.45	.27	.18	.02	.00	.00	.00	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	47.7	90.9	88.9	24.9	90.3	86.5	73.2	79.5	70.4	58.7	17.6	26.4
MEAN	47.7	90.9	88.9	24.9	90.3	86.5	73.2	79.5	70.4	58.7	17.6	26.4
MAX	320.5	550.0	246.7	86.4	358.7	207.9	319.0	291.4	187.5	398.3	48.0	191.9
(WY)	1987	1986	1983	1982	1985	1984	1983	1981	1982	1981	1982	1986
MIN	.000	.000	.043	.050	4.26	1.13	6.19	1.53	.031	.000	.000	.000
(WY)	1980	1981	1980	1980	1980	1981	1986	1988	1988	1988	1988	1983

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	18.7	62.7
HIGHEST ANNUAL MEAN		99.7
LOWEST ANNUAL MEAN		13.4
HIGHEST DAILY MEAN	987	3870
LOWEST DAILY MEAN	.00	0
INSTANTANEOUS PEAK FLOW	1260	12100
INSTANTANEOUS PEAK STAGE (FEET)	6.53	15.53
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	3.17	10.6
10 PERCENTILE	31	92
50 PERCENTILE	.16	4.0
95 PERCENTILE	.00	.00

1986  
1980  
Oct 3 1986  
several years  
Apr 21 1973  
Apr 21 1973  
several years

## SALT RIVER BASIN

05503800 CROOKED CREEK NEAR PARIS, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.36	2.21	2.98	2.60	3.33	2.70	2.77	2.38	2.25	2.01	1.62	1.32
2	2.34	2.21	2.71	2.61	3.00	2.69	2.70	2.37	2.25	2.01	1.61	1.30
3	2.33	2.22	2.57	2.55	2.98	2.72	3.08	2.35	2.25	2.00	1.59	1.28
4	2.32	2.22	2.51	2.49	2.73	2.81	3.18	2.35	2.24	1.99	1.57	1.27
5	2.32	2.22	2.47	2.44	2.64	2.75	2.87	2.35	2.23	1.98	1.55	1.25
6	2.31	2.22	2.42	2.39	2.54	2.77	3.34	2.35	2.23	1.96	1.53	1.23
7	2.30	2.22	2.42	2.37	2.53	3.21	2.83	2.35	2.22	1.94	1.51	1.21
8	2.29	2.22	2.41	2.36	2.51	3.13	2.70	2.33	2.21	1.92	1.49	1.20
9	2.28	2.23	2.40	2.35	2.51	2.91	2.63	2.34	2.21	1.91	1.46	1.19
10	2.27	2.23	2.38	2.33	2.51	2.76	2.57	2.34	2.21	1.88	1.46	1.17
11	2.27	2.23	2.38	2.33	2.51	2.69	2.60	2.34	2.21	1.88	1.46	1.14
12	2.26	2.23	2.38	2.35	2.49	2.64	2.61	2.34	2.20	1.87	1.46	1.18
13	2.25	2.23	2.46	2.35	2.49	2.58	2.62	2.31	2.20	1.86	1.44	1.18
14	2.25	2.23	2.47	2.34	2.49	2.55	2.58	2.31	2.19	1.84	1.44	1.16
15	2.24	2.23	2.52	2.33	2.50	2.51	2.53	2.31	2.09	1.83	1.42	1.14
16	2.23	2.25	2.50	2.34	2.50	2.49	2.50	2.31	2.20	1.79	1.41	1.16
17	2.23	2.29	2.45	2.39	2.79	2.47	2.48	2.31	2.20	1.77	1.40	1.15
18	2.23	2.29	2.43	2.52	3.02	2.47	2.47	2.32	2.19	1.75	1.39	1.14
19	2.22	2.29	2.43	3.24	3.27	2.47	2.46	2.33	2.18	1.75	1.37	1.20
20	2.22	2.29	5.04	4.67	3.72	2.47	2.46	2.33	2.16	1.77	1.36	1.20
21	2.20	2.29	6.43	3.23	3.25	2.47	2.44	2.33	2.14	1.82	1.33	1.18
22	2.20	2.29	3.63	2.87	3.20	2.47	2.44	2.33	2.13	1.82	1.31	1.16
23	2.20	2.29	3.51	2.79	3.30	2.47	2.44	2.36	2.12	1.81	1.40	1.16
24	2.20	2.29	3.58	2.55	3.00	2.47	2.42	2.50	2.11	1.79	1.40	1.13
25	2.20	2.34	3.44	2.61	2.72	2.54	2.41	2.88	2.10	1.78	1.39	1.13
26	2.20	2.34	2.94	2.54	2.77	2.56	2.41	2.57	2.06	1.75	1.38	1.13
27	2.20	2.34	2.77	2.51	2.78	2.68	2.40	2.45	2.05	1.74	1.36	1.13
28	2.20	2.50	5.73	2.50	2.77	2.57	2.40	2.39	2.03	1.70	1.37	1.13
29	2.20	2.58	3.67	2.50	2.75	2.71	2.38	2.35	2.01	1.69	1.37	1.13
30	2.20	3.38	2.97	2.58	---	3.33	2.38	2.30	2.01	1.67	1.35	1.13
31	2.20	---	2.79	2.66	---	2.98	---	2.29	---	1.65	1.33	---

## SALT RIVER BASIN

05504800 SOUTH FORK SALT RIVER ABOVE SANTA FE, MO

LOCATION.--Lat 39°19'34", long 91°50'02", in SE 1/4 SE 1/4 sec.31, T.53 N., R.8 W., Audrain County, Hydrologic Unit 07110006, on left bank near downstream side of bridge on county road, 4.0 mi southwest of Santa Fe, 1.0 mi upstream from Littleby Creek, and at mile 104.2 above mouth of Salt River.

DRAINAGE AREA.--233 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year. Published as "near Santa Fe" October 1969 to September 1975 and as "at Santa Fe" February 1940 to September 1968 and October 1975 to September 1986.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 644.87 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 5, 1940, nonrecording gage; Feb. 5, 1940, to Sept. 30, 1968, and Oct. 1975 to Sept. 1986, water-stage recorder 8.0 mi downstream at datum 613.05; Oct. 1, 1968, to Sept. 30, 1975, water-stage recorder, 1.0 mi downstream at datum 639.09 ft higher.

REMARKS.--Estimated daily discharges: Nov. 18 to Dec. 5, Dec. 20-23, 27-29, and June 28 to July 28. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	4.1	16	65	1440	55	172	9.3	2.2	15	1.3	3.1
2	2.8	2.6	15	48	269	53	175	8.7	2.0	6.6	1.4	2.9
3	1.6	2.3	13	36	143	71	525	8.5	2.5	4.3	1.3	2.9
4	.87	2.6	9.3	27	105	193	420	8.7	1.9	2.9	1.1	2.6
5	.70	4.8	6.7	21	89	213	175	8.6	1.3	2.5	1.1	2.5
6	.68	5.1	5.0	17	70	286	338	8.2	6.4	2.2	.99	2.2
7	.68	4.9	4.5	14	49	404	298	8.1	4.1	1.6	10	2.2
8	.56	4.9	4.2	13	40	225	134	8.5	2.5	1.4	5.6	2.1
9	.53	4.9	3.6	11	38	142	89	7.7	1.8	1.4	2.3	2.2
10	.70	4.8	4.4	9.1	36	99	66	8.7	1.2	1.4	36	1.9
11	.74	4.6	3.3	10	34	78	62	7.2	1.1	1.4	61	2.5
12	1.2	4.7	2.9	11	34	145	62	5.8	1.0	2.2	23	2.1
13	1.7	4.9	3.1	11	30	162	59	6.0	1.0	2.2	21	2.5
14	1.6	5.0	3.4	9.9	31	84	47	5.1	.99	2.2	18	2.5
15	1.4	5.2	6.5	9.6	51	56	39	5.5	.89	2.3	9.0	2.4
16	1.2	5.6	6.6	9.8	86	44	32	5.6	1.4	2.3	12	2.3
17	1.1	8.1	5.9	11	232	38	28	5.3	1.5	2.2	8.4	3.3
18	.95	14	5.5	11	319	37	25	5.4	1.1	4.6	4.2	4.3
19	.88	13	32	108	731	37	24	4.1	.80	11	3.1	6.2
20	1.1	8.6	713	327	1420	37	23	3.8	.82	10	2.7	4.9
21	1.4	6.7	630	212	376	34	21	3.1	1.1	2.9	2.1	3.1
22	1.6	5.2	220	108	301	32	19	2.7	1.3	2.9	6.7	5.3
23	1.4	4.9	187	70	381	29	17	2.7	1.1	2.7	108	4.2
24	1.4	6.0	230	58	195	26	16	2.9	1.8	2.3	188	2.7
25	1.4	11	261	34	113	83	14	21	2.0	2.3	88	2.4
26	2.1	17	150	25	83	107	13	13	2.0	1.8	35	2.1
27	10	16	940	20	71	67	12	9.5	1.4	1.4	19	2.0
28	6.7	19	2370	18	66	50	11	8.0	.99	1.3	11	3.0
29	4.3	34	405	18	61	798	10	5.9	2.2	1.5	8.5	3.9
30	4.8	53	149	20	---	1210	9.3	3.5	48	1.6	5.9	3.9
31	5.1	---	92	372	---	315	---	2.7	---	1.4	4.7	---
MEAN	2.06	9.58	210	55.9	238	168	97.8	6.90	3.28	3.28	22.6	3.01
MAX	10	53	2370	372	1440	1210	525	21	48	15	188	6.2
MIN	.53	2.3	2.9	9.1	30	26	9.3	2.7	.80	1.3	.99	1.9
IN.	.01	.04	.81	.22	.86	.65	.37	.03	.01	.01	.09	.01

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	147.1	134.6	146.7	140.3	218.5	325.2	333.2	291.3	258.1	223.5	51.0	123.8
MAX	1646	1378	1447	791.8	1031	1715	1734	2238	1307	2415	544.2	1060
(WY)	1942	1986	1983	1974	1985	1973	1944	1943	1942	1969	1982	1970
MIN	.010	.357	.584	1.18	1.91	2.74	4.43	5.92	3.28	1.31	.465	.223
(WY)	1954	1954	1964	1963	1954	1954	1963	1980	1988	1944	1964	1960

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	67.8	199.1
HIGHEST ANNUAL MEAN		509.0
LOWEST ANNUAL MEAN		10.7
HIGHEST DAILY MEAN	2370	24000
LOWEST DAILY MEAN	.53	0
INSTANTANEOUS PEAK FLOW	(a)	28800
INSTANTANEOUS PEAK STAGE (FEET)	*****	28.24
INSTANTANEOUS LOW FLOW	0.53	0
ANNUAL RUNOFF (INCHES)	3.09	9.07
10 PERCENTILE	176	334
50 PERCENTILE	6.8	16
95 PERCENTILE	1.1	.33

(a) Probably occurred Dec. 28 and probably 65,000 cfs, from hydrologic comparison with records from nearby stations.  
\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## SALT RIVER BASIN

47

05504800 SOUTH FORK SALT RIVER ABOVE SANTA FE, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.97	4.06	---	5.04	11.36	4.86	5.92	4.13	3.87	---	3.79	3.89
2	4.07	4.03	---	4.84	6.62	4.83	5.63	4.10	3.84	---	3.79	3.88
3	4.00	3.98	---	4.73	5.67	4.90	7.65	4.09	3.89	---	3.80	3.88
4	3.95	3.99	---	4.59	5.27	6.07	7.57	4.09	3.85	---	3.78	3.87
5	3.94	4.09	4.16	4.45	5.24	6.08	5.97	4.09	3.82	3.87	3.76	3.86
6	3.92	4.10	4.10	4.40	5.08	6.28	5.86	4.09	4.07	3.85	3.78	3.84
7	3.93	4.09	4.08	4.34	4.77	7.21	6.85	4.08	3.97	3.82	4.20	3.84
8	3.92	4.09	4.07	4.28	4.67	6.30	5.62	4.08	3.89	3.81	4.02	3.84
9	3.91	4.09	4.04	4.25	4.65	5.70	5.21	4.06	3.86	3.81	3.82	3.85
10	3.97	4.09	4.09	4.20	4.63	5.29	4.98	4.07	3.82	3.81	4.06	3.81
11	3.98	4.08	4.05	4.20	4.49	5.08	4.92	4.06	3.80	3.85	4.85	3.83
12	4.02	4.08	4.00	4.23	4.62	5.55	4.91	4.01	3.79	3.85	4.41	3.84
13	4.08	4.09	4.02	4.26	4.54	5.92	4.90	4.02	3.79	3.85	4.31	3.84
14	4.10	4.09	4.02	4.22	4.55	5.18	4.78	4.00	3.79	3.85	4.38	3.86
15	4.10	4.10	4.14	4.19	4.68	4.88	4.68	4.00	3.78	3.83	4.07	3.85
16	4.11	4.11	4.14	4.21	5.01	4.75	4.59	4.01	3.81	3.84	4.12	3.86
17	4.11	4.17	4.13	4.27	6.16	4.67	4.52	3.99	3.83	---	4.15	3.95
18	4.12	4.19	4.11	4.45	7.00	4.64	4.47	4.04	3.80	---	3.96	3.97
19	4.12	4.36	4.11	4.55	7.14	4.65	4.45	3.98	3.77	---	3.90	4.04
20	4.14	4.20	7.68	6.99	10.98	4.64	4.43	3.95	3.77	---	3.87	3.99
21	4.14	4.16	9.29	6.31	7.20	4.62	4.40	3.94	3.80	---	3.85	3.89
22	4.17	4.10	7.48	5.42	6.60	4.59	4.35	3.90	3.81	3.88	3.81	4.00
23	4.16	4.09	6.01	5.04	7.25	4.54	4.31	3.90	3.80	3.87	5.02	3.98
24	4.16	4.09	6.19	4.86	6.14	4.48	4.28	3.89	3.86	3.85	6.31	3.87
25	4.16	---	6.53	4.58	5.42	5.09	4.25	4.48	3.83	3.84	5.14	3.86
26	4.16	---	5.87	4.42	5.13	5.42	4.20	4.22	3.84	3.82	4.62	3.84
27	4.26	---	5.53	4.39	5.03	5.00	4.21	4.12	3.82	3.80	4.36	3.83
28	4.19	---	12.75	4.33	4.97	4.81	4.16	4.06	---	3.81	4.13	3.86
29	4.08	---	12.75	4.32	4.93	7.44	4.15	4.04	---	3.80	4.06	3.92
30	4.06	---	5.85	4.37	---	10.46	4.11	3.94	---	3.81	3.98	3.93
31	4.10	---	5.33	4.56	---	6.88	---	3.91	---	3.80	3.94	---

## SALT RIVER BASIN

05506500 MIDDLE FORK SALT RIVER AT PARIS, MO

LOCATION.--Lat 39°29'01", long 92°00'49", in NE 1/4 NE 1/4 NE 1/4 sec.10, T.54 N., R.10 W., Monroe County, Hydrologic Unit 07110006, on left bank downstream side of bridge on State highway 24 at Paris, about 1 mile upstream from Wabash Railroad bridge, 14 mi upstream from Elk Fork Salt River, and at mi 106 above mouth of Salt River.

DRAINAGE AREA.--356 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1939 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 621.88 ft above National Geodetic Vertical Datum of 1929, 1961 adjustment. Prior to Jan. 22, 1940, nonrecording gage; Jan. 22, 1940, to Sept. 30, 1968, water-stage recorder, 1.4 mi downstream at present datum, Oct. 1, 1968, to Sept. 30, 1987, water-stage recorder, 1.5 mi downstream at present datum.

REMARKS.--No estimated daily discharges. Water-discharge records fair. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.68	7.2	436	132	855	99	225	24	5.5	2.2	2.2	2.2
2	.40	7.2	219	68	721	90	170	24	3.2	2.2	2.2	2.2
3	.40	5.6	111	87	158	105	400	22	2.2	2.2	2.2	2.2
4	.40	5.6	63	47	76	147	790	20	2.2	2.2	1.8	2.2
5	.40	17	43	33	115	135	402	20	2.2	2.2	1.6	2.2
6	.68	20	31	30	173	160	556	19	2.2	2.2	2.2	2.2
7	.58	9.0	25	22	167	301	257	17	2.2	2.2	2.2	2.2
8	.40	9.0	18	16	65	298	187	18	2.2	2.2	2.2	2.2
9	.40	5.6	16	15	36	206	126	18	2.2	2.2	2.6	2.2
10	.40	2.0	16	14	31	139	91	16	2.2	2.2	3.0	2.2
11	.40	1.0	21	13	26	100	91	15	2.2	2.2	2.2	2.2
12	.40	.58	24	13	39	78	105	14	2.2	2.2	2.2	2.2
13	.58	.58	23	11	30	61	103	14	2.2	4.0	2.2	2.2
14	.68	.40	19	11	24	48	76	11	2.2	21	2.2	2.0
15	.68	.58	23	11	24	37	60	11	2.2	10	2.2	.38
16	.58	5.6	18	11	34	33	52	11	2.2	5.9	2.2	.00
17	.58	5.6	15	12	86	29	44	8.9	2.2	4.3	2.2	.00
18	.58	5.6	12	31	273	28	41	7.1	2.2	5.5	2.2	.00
19	.40	1.4	60	177	543	28	38	5.1	2.2	2.7	2.2	.00
20	.58	1.0	1950	665	1210	30	35	4.4	2.2	6.9	2.2	.00
21	.58	1.0	2950	494	999	30	33	2.2	2.2	3.6	2.2	.00
22	.25	1.0	2450	248	744	30	30	2.4	2.2	2.2	2.8	.00
23	.25	1.0	909	131	836	29	30	6.1	2.2	2.2	5.3	.00
24	.40	1.0	517	67	663	32	30	23	2.2	2.6	2.2	.00
25	.40	4.0	488	55	279	71	30	174	1.4	2.2	2.2	.00
26	.58	5.6	315	37	173	72	30	100	2.0	2.2	2.2	.00
27	1.0	5.6	766	32	139	87	25	43	2.2	2.2	12	.00
28	1.0	33	2100	19	118	60	24	21	2.2	2.2	18	.00
29	1.0	465	1420	16	109	224	24	14	2.2	2.2	12	.00
30	1.0	791	517	17	---	805	24	11	2.2	2.2	5.7	.00
31	1.0	---	231	106	---	402	---	7.9	---	2.2	3.7	---
MEAN	.57	47.3	510	85.2	302	129	138	22.7	2.31	3.64	3.63	1.03
MAX	1.0	791	2950	665	1210	805	790	174	5.5	21	18	2.2
MIN	.25	.40	12	11	24	28	24	2.2	1.4	2.2	1.6	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	186.4	179.4	172.5	172.3	279.4	444.1	474.0	342.8	327.0	246.8	99.3	130.0
MAX	1815	2083	1255	828.6	1634	1837	3164	1396	1747	2100	1195	1427	
(WY)	1987	1986	1983	1946	1985	1973	1973	1981	1947	1981	1958	1961	
MIN	.000	.000	.374	1.08	2.69	3.26	26.9	12.6	2.31	.368	1.13	.180	
(WY)	1957	1954	1954	1954	1964	1956	1971	1941	1988	1954	1953	1953	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	103.2	254.0
HIGHEST ANNUAL MEAN		743.2
LOWEST ANNUAL MEAN		53.1
HIGHEST DAILY MEAN	2950	24800
LOWEST DAILY MEAN	.00	0
INSTANTANEOUS PEAK FLOW	3060	45000
INSTANTANEOUS PEAK STAGE (FEET)	8.84	33.5
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	3.94	9.69
10 PERCENTILE	240	592
50 PERCENTILE	9.7	32
95 PERCENTILE	.33*	.62

## SALT RIVER BASIN

49

05506500 MIDDLE FORK SALT RIVER AT PARIS, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.78	3.84	5.10	4.31	5.63	4.21	4.55	3.95	3.82	3.73	3.75	3.79
2	3.77	3.86	4.54	4.07	5.92	4.19	4.38	3.95	3.80	3.72	3.74	3.78
3	3.76	3.84	4.26	4.19	4.38	4.20	4.66	3.95	3.78	3.72	3.74	3.77
4	3.76	3.84	4.10	4.07	4.14	4.33	5.94	3.94	3.77	3.72	3.71	3.76
5	3.76	3.84	4.01	4.00	4.18	4.29	4.90	3.94	3.75	3.72	3.69	3.76
6	3.77	3.91	3.95	3.98	4.33	4.29	5.51	3.94	3.75	3.72	3.75	3.76
7	3.78	3.87	3.92	3.95	4.42	4.64	4.61	3.92	3.74	3.72	3.74	3.76
8	3.76	3.86	3.89	3.90	4.13	4.73	4.45	3.91	3.72	3.70	3.72	3.76
9	3.76	3.86	3.88	3.90	4.01	4.50	4.30	3.94	3.74	3.70	3.70	3.75
10	3.76	3.82	3.88	3.89	3.99	4.32	4.19	3.91	3.73	3.70	3.77	3.74
11	3.76	3.80	3.89	3.88	3.96	4.23	4.17	3.90	3.73	3.72	3.73	3.74
12	3.76	3.78	3.91	3.88	4.02	4.18	4.22	3.89	3.73	3.73	3.71	3.74
13	3.76	3.77	3.91	3.86	3.98	4.12	4.23	3.89	3.73	3.74	3.71	3.73
14	3.78	3.77	3.89	3.86	3.95	4.07	4.17	3.86	3.73	3.96	3.71	3.71
15	3.78	3.75	3.91	3.86	3.95	4.02	4.11	3.86	3.73	3.86	3.71	3.69
16	3.78	3.84	3.89	3.86	3.98	4.00	4.08	3.87	3.73	3.83	3.71	3.66
17	3.77	3.84	3.88	3.86	4.09	3.98	4.04	3.85	3.72	3.81	3.71	3.65
18	3.77	3.84	3.85	3.94	4.48	3.97	4.03	3.83	3.79	3.82	3.71	3.64
19	3.76	3.81	3.85	4.16	5.01	3.97	4.03	3.82	3.78	3.80	3.78	3.66
20	3.76	3.79	7.56	5.48	6.38	3.98	4.01	3.81	3.75	3.82	3.77	3.66
21	3.78	3.79	8.68	5.18	6.14	3.98	4.00	3.79	3.73	3.82	3.74	3.61
22	3.75	3.79	8.50	4.60	5.54	3.98	3.98	3.79	3.73	3.79	3.72	3.61
23	3.75	3.79	6.11	4.30	5.77	3.98	3.98	3.81	3.71	3.78	3.84	3.59
24	3.76	3.79	5.13	4.07	5.52	3.97	3.98	3.89	3.71	3.81	3.77	3.57
25	3.76	3.84	5.14	4.07	4.61	4.11	3.98	4.47	3.69	3.78	3.75	3.54
26	3.78	3.84	4.80	4.01	4.39	4.11	3.98	4.25	3.70	3.77	3.75	3.51
27	3.79	3.84	4.55	4.00	4.31	4.20	3.96	4.06	3.70	3.75	3.82	3.48
28	3.79	3.90	7.85	3.93	4.26	4.12	3.95	3.95	3.70	3.74	3.94	3.45
29	3.79	4.30	7.01	3.91	4.24	4.34	3.95	3.89	3.71	3.75	3.88	3.47
30	3.79	5.79	5.27	3.90	---	5.91	3.95	3.87	3.73	3.75	3.83	3.53
31	3.78	---	4.57	4.01	---	4.99	---	3.84	---	3.75	3.81	---

## SALT RIVER BASIN

05506500 MIDDLE FORK SALT RIVER AT PARIS, MO--Continued

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT: August 1980 to current year.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,170 mg/L, July 23, 1981; minimum daily mean, 3 mg/L, Nov. 4, 1987, May 16, 1988.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 40,200 tons, Mar. 5, 1985; minimum daily, 0.00 tons, Oct. 3, 8, 9, 10, 1983, Oct. 19, 1987, and on many days in Sept. 1988.

## EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 617 mg/L, Dec. 28; minimum daily mean, 3 mg/L, Nov. 4, May 16.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 4,470 tons, Dec. 21; minimum daily, 0.00 tons, Oct. 19, and on many days in Sept.

## SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	.68	34	.06	7.2	20	.39	436	208	245
2	.40	44	.05	7.2	7	.14	219	160	95
3	.40	29	.03	5.6	7	.11	111	78	23
4	.40	26	.03	5.6	3	.05	63	60	10
5	.40	23	.02	17	5	.23	43	65	7.5
6	.68	27	.05	20	7	.38	31	50	4.2
7	.58	37	.06	9.0	8	.19	25	50	3.4
8	.40	26	.03	9.0	5	.12	18	83	4.0
9	.40	37	.04	5.6	8	.12	16	61	2.6
10	.40	29	.03	2.0	8	.04	16	67	2.9
11	.40	27	.03	1.0	8	.02	21	48	2.7
12	.40	22	.02	.58	7	.01	24	60	3.9
13	.58	17	.03	.58	16	.03	23	95	5.9
14	.68	10	.02	.40	7	.01	19	133	6.8
15	.68	7	.01	.58	16	.03	23	169	10
16	.58	9	.01	5.6	20	.30	18	195	9.5
17	.58	11	.02	5.6	16	.24	15	73	3.0
18	.58	5	.01	5.6	15	.23	12	41	1.3
19	.40	4	.00	1.4	19	.07	60	167	27
20	.58	10	.02	1.0	30	.08	1950	615	3240
21	.58	16	.03	1.0	29	.08	2950	561	4470
22	.25	12	.01	1.0	8	.02	2450	260	1720
23	.25	15	.01	1.0	10	.03	909	119	292
24	.40	12	.01	1.0	27	.07	517	84	117
25	.40	8	.01	4.0	45	.49	488	80	105
26	.58	28	.04	5.6	50	.76	315	70	60
27	1.0	19	.05	5.6	50	.76	766	251	519
28	1.0	13	.04	33	50	4.5	2100	617	3500
29	1.0	13	.04	465	406	510	1420	511	1960
30	1.0	14	.04	791	358	765	517	416	581
31	1.0	16	.04	---	---	---	231	---	---
TOTAL	17.66	---	0.89	1418.74	---	1284.50	15806	---	---

## SALT RIVER BASIN

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05506500 MIDDLE FORK SALT RIVER AT PARIS, MO--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JANUARY			FEBRUARY			MARCH			
1	132	---	---	855	---	---	99	68	18
2	68	---	---	721	---	---	90	58	14
3	87	---	---	158	---	---	105	48	14
4	47	---	---	76	---	---	147	36	14
5	33	---	---	115	---	---	135	30	11
6	30	---	---	173	---	---	160	33	14
7	22	---	---	167	---	---	301	60	49
8	16	---	---	65	---	---	298	85	68
9	15	---	---	36	---	---	206	85	47
10	14	---	---	31	---	---	139	72	27
11	13	---	---	26	---	---	100	62	17
12	13	---	---	39	---	---	78	68	14
13	11	---	---	30	---	---	61	48	7.9
14	11	---	---	24	---	---	48	33	4.3
15	11	---	---	24	---	---	37	28	2.8
16	11	---	---	34	---	---	33	18	1.6
17	12	---	---	86	---	---	29	12	.94
18	31	---	---	273	---	---	28	16	1.2
19	177	---	---	543	---	---	28	12	.91
20	665	---	---	1210	---	---	30	17	1.4
21	494	---	---	999	---	---	30	22	1.8
22	248	---	---	744	260	522	30	22	1.8
23	131	---	---	836	376	849	29	28	2.2
24	67	---	---	663	356	637	32	36	3.1
25	55	---	---	279	291	219	71	44	8.4
26	37	---	---	173	205	96	72	56	11
27	32	---	---	139	133	50	87	57	13
28	19	---	---	118	88	28	60	40	6.5
29	16	---	---	109	78	23	224	67	41
30	17	---	---	---	---	---	805	530	1150
31	106	---	---	---	---	---	402	336	365
TOTAL	2641	---	---	8746	---	---	3994	---	1931.85
APRIL			MAY			JUNE			
1	225	170	103	24	---	---	5.5	15	.22
2	170	138	63	24	13	.84	3.2	11	.10
3	400	123	133	22	16	.95	2.2	10	.06
4	790	562	1200	20	21	1.1	2.2	9	.05
5	402	482	523	20	20	1.1	2.2	12	.07
6	556	244	366	19	18	.92	2.2	14	.08
7	257	144	100	17	15	.69	2.2	13	.08
8	187	198	100	18	16	.78	2.2	13	.08
9	126	139	47	18	17	.83	2.2	17	.10
10	91	120	29	16	16	.69	2.2	22	.13
11	91	138	34	15	13	.53	2.2	29	.17
12	105	94	27	14	11	.42	2.2	24	.14
13	103	117	33	14	8	.30	2.2	22	.13
14	76	94	19	11	7	.21	2.2	18	.11
15	60	51	8.3	11	5	.15	2.2	14	.08
16	52	53	7.4	11	3	.09	2.2	29	.17
17	44	71	8.4	8.9	5	.12	2.2	31	.18
18	41	56	6.2	7.1	7	.13	2.2	25	.15
19	38	21	2.2	5.1	6	.08	2.2	22	.13
20	35	20	1.9	4.4	7	.08	2.2	23	.14
21	33	26	2.3	2.2	16	.10	2.2	10	.06
22	30	31	2.5	2.4	15	.10	2.2	11	.07
23	30	27	2.2	6.1	17	.28	2.2	19	.11
24	30	30	2.4	23	18	1.1	2.2	23	.14
25	30	38	3.1	174	19	8.9	1.4	19	.07
26	30	51	4.1	100	20	5.4	2.0	15	.08
27	25	32	2.2	43	20	2.3	2.2	16	.10
28	24	23	1.5	21	20	1.1	2.2	19	.11
29	24	---	---	14	20	.76	2.2	22	.13
30	24	---	---	11	14	.42	2.2	27	.16
31	---	---	---	7.9	17	.36	---	---	---
TOTAL	4129	---	---	704.1	---	---	69.3	---	3.40

## SALT RIVER BASIN

05506500 MIDDLE FORK SALT RIVER AT PARIS, MO--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY				AUGUST			SEPTEMBER		
1	2.2	19	.11	2.2	8	.05	2.2	30	.18
2	2.2	14	.08	2.2	16	.10	2.2	26	.15
3	2.2	13	.08	2.2	14	.08	2.2	23	.14
4	2.2	12	.07	1.8	19	.09	2.2	33	.20
5	2.2	12	.07	1.6	28	.12	2.2	38	.23
6	2.2	12	.07	2.2	32	.19	2.2	38	.23
7	2.2	19	.11	2.2	28	.17	2.2	39	.23
8	2.2	26	.15	2.2	18	.11	2.2	37	.22
9	2.2	32	.19	2.6	11	.08	2.2	37	.22
10	2.2	31	.18	3.0	12	.10	2.2	39	.23
11	2.2	19	.11	2.2	8	.05	2.2	28	.17
12	2.2	13	.08	2.2	10	.06	2.2	18	.11
13	4.0	13	.14	2.2	13	.08	2.2	21	.12
14	21	18	1.0	2.2	13	.08	2.0	22	.12
15	10	52	1.4	2.2	9	.05	.38	22	.02
16	5.9	33	.53	2.2	8	.05	.00	22	.00
17	4.3	17	.20	2.2	13	.08	.00	20	.00
18	5.5	16	.24	2.2	13	.08	.00	17	.00
19	2.7	23	.17	2.2	14	.08	.00	24	.00
20	6.9	24	.45	2.2	20	.12	.00	24	.00
21	3.6	19	.18	2.2	20	.12	.00	23	.00
22	2.2	18	.11	2.8	19	.14	.00	22	.00
23	2.2	14	.08	5.3	45	.64	.00	28	.00
24	2.6	19	.13	2.2	26	.15	.00	18	.00
25	2.2	19	.11	2.2	26	.15	.00	18	.00
26	2.2	17	.10	2.2	23	.14	.00	19	.00
27	2.2	18	.11	12	24	.78	.00	20	.00
28	2.2	19	.11	18	19	.92	.00	14	.00
29	2.2	23	.14	12	25	.81	.00	12	.00
30	2.2	28	.17	5.7	24	.37	.00	10	.00
31	2.2	14	.08	3.7	26	.26	---	---	---
TOTAL	112.7	---	6.75	112.5	---	6.30	30.98	---	2.57

LOCATION.--Lat 39°26'05", long 92°10'04", in SE 1/4 NE 1/4 SW 1/4 sec.29, T.54 N., R.11 W., Monroe County, Hydrologic Unit 07110006, on downstream side of highway, 25 ft to the left of bridge on State Highway AA, 500 ft downstream from Allen Creek, 3.5 mi southeast of Madison, and at mile 29.8.

REVISED RECORDS.--WDR MO 1973: 1970(M) .

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 9 and Jan 4-20. Records good except for estimated daily discharges, which are fair. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

FOR PERIOD OF RECORD

AVERAGE FLOW	44.6		176.1	
HIGHEST ANNUAL MEAN			364.5	1973
LOWEST ANNUAL MEAN			23.6	1976
HIGHEST DAILY MEAN	1690	Dec 20	24100	Apr 21 1973
LOWEST DAILY MEAN	.17	Oct 10	0	Aug 4-10 1976
INSTANTANEOUS PEAK FLOW	2290	Dec 27	42300	Apr 21 1973
INSTANTANEOUS PEAK STAGE (FEET)	12.11	Dec 27	33.4	Apr 21 1973
INSTANTANEOUS LOW FLOW	0.17	Oct 10	0	Aug 4-10 1976
ANNUAL RUNOFF (INCHES)	3.03		12.0	
10 PERCENTILE	.81		298	
50 PERCENTILE	4.3		15	
95 PERCENTILE	.39		.48	

## SALT RIVER BASIN

05506800 ELK FORK SALT RIVER NEAR MADISON, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.26	3.38	---	4.11	6.94	4.06	4.80	3.58	3.32	3.04	2.98	3.03
2	3.22	3.69	---	4.01	4.85	4.02	4.61	3.53	3.28	3.03	2.97	3.02
3	3.20	3.57	---	3.88	4.66	4.08	5.68	3.52	3.28	3.22	2.97	3.01
4	3.21	3.39	3.55	3.79	4.13	4.16	5.83	3.50	3.28	3.25	2.96	3.00
5	3.21	3.36	---	---	3.90	4.34	4.91	3.51	3.26	3.17	2.96	2.97
6	3.22	3.30	3.45	3.56	3.75	4.60	6.89	3.53	3.27	3.12	2.96	2.95
7	3.20	3.27	3.45	3.56	3.68	5.16	5.44	3.48	3.22	3.09	2.96	2.92
8	3.18	3.33	3.44	3.57	3.67	5.13	4.75	3.46	3.21	3.06	2.95	2.91
9	3.16	3.37	3.46	---	3.66	4.72	4.43	3.48	3.21	3.04	2.96	2.90
10	3.14	3.36	3.48	---	3.68	4.37	4.21	3.46	3.20	3.02	2.98	2.92
11	3.13	3.36	3.47	---	3.65	4.16	4.32	3.46	3.18	3.01	2.99	2.89
12	3.13	3.39	3.49	---	1.86	4.05	4.54	3.45	3.16	3.00	2.98	2.88
13	3.18	3.40	3.45	3.57	3.64	3.94	4.35	3.45	3.17	2.99	3.13	2.88
14	3.20	3.39	3.43	3.53	3.67	3.83	4.15	3.45	3.16	3.01	3.07	2.88
15	3.20	3.39	3.53	---	3.72	3.77	4.02	3.43	3.16	3.00	3.04	2.88
16	3.22	3.38	3.50	3.56	3.82	3.74	3.93	3.43	3.14	3.00	3.02	2.94
17	3.22	3.40	3.49	---	4.51	3.71	3.87	3.43	3.13	2.98	3.01	2.94
18	3.23	3.40	3.48	3.81	6.25	3.71	3.85	3.40	3.12	2.98	2.98	2.92
19	3.24	3.45	3.48	---	6.16	3.73	3.82	3.39	3.14	2.99	2.99	2.96
20	3.27	3.48	10.79	---	10.48	3.73	3.77	3.37	3.17	2.98	2.97	2.96
21	3.30	3.46	7.64	4.99	6.47	3.74	3.75	3.34	3.15	2.98	2.97	3.01
22	3.27	3.42	5.53	4.42	5.91	3.71	3.72	3.41	3.13	2.99	2.94	2.98
23	3.27	3.39	5.13	4.19	6.18	3.69	3.71	4.23	3.10	3.27	3.14	2.95
24	3.27	3.39	5.32	3.98	5.00	3.68	3.68	5.11	3.09	3.22	3.02	2.97
25	3.26	---	5.34	3.89	4.53	4.48	3.66	4.19	3.06	3.18	3.47	3.01
26	3.32	---	4.69	3.72	4.29	4.78	3.66	3.77	3.05	3.11	3.25	2.98
27	3.33	---	4.56	3.63	4.23	4.30	3.63	3.57	3.04	3.03	3.23	2.97
28	3.33	---	11.76	3.62	4.17	4.06	3.63	3.49	3.02	3.01	3.18	2.97
29	3.35	---	5.70	3.62	4.12	5.16	3.61	3.43	3.01	3.00	3.13	3.07
30	3.35	---	4.76	3.73	---	7.72	3.59	3.38	3.05	2.99	3.09	3.02
31	3.36	---	4.39	3.87	---	5.39	---	3.33	---	2.99	3.04	---

## 05507600 LICK CREEK AT PERRY, MO

LOCATION.--Lat 39°25'53", long 91°40'34", near center of NW 1/4 SW 1/4 sec.27, T.54 N., R.7 W., Ralls County, Hydrologic Unit 07110007, on right bank and downstream side of State Highway 154 bridge, 0.1 mi west of Perry and at mile 11.9.

DRAINAGE AREA.--104 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1979 to current year. Prior to October 1979 gages were maintained and operated by U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 625.00 ft above National Geodetic Vertical Datum of 1929. Prior to November 1967 nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	.04	8.3	16	451	18	40	2.0	.23	.0	.00	.44
2	.05	.04	5.0	12	49	16	137	1.9	.18	.00	.00	.30
3	.04	.04	3.1	9.7	29	34	330	1.7	.13	.00	.00	.22
4	.03	.04	1.9	7.8	17	71	101	1.7	.08	.00	.0	.15
5	.03	.04	1.4	3.4	1.7	124	37	1.7	.05	.00	.88	.08
6	.02	.05	.94	2.0	2.9	166	272	1.5	.04	.00	.21	.05
7	.02	.12	.71	3.3	7.9	112	87	1.3	.03	.00	.05	.04
8	.02	.12	.70	1.8	7.6	47	29	1.4	.04	.00	.03	.03
9	.01	.12	.70	2.4	7.2	28	19	2.2	.05	.00	202	.03
10	.01	.12	.66	1.4	7.1	20	13	2.2	.04	.00	736	.02
11	.01	.12	.56	2.5	1.5	15	12	2.2	.04	.00	73	.02
12	.01	.12	.45	2.8	2.3	65	10	2.5	.03	.00	17	.01
13	.01	.12	.42	2.4	5.8	31	9.0	1.9	.02	.00	9.7	.0
14	.01	.10	.45	2.6	6.2	18	7.8	1.4	.02	.00	5.8	.00
15	.01	.09	1.3	2.6	9.3	12	7.0	1.1	.02	.00	5.6	.01
16	.0	.14	1.4	2.7	13	10	5.9	1.1	.01	.00	3.8	.02
17	.00	.38	1.1	21	45	9.5	5.4	.92	.01	.00	2.2	.01
18	.00	.42	.90	37	71	9.4	5.2	.83	.0	40	1.2	.02
19	.00	.42	32	576	759	9.4	4.8	.68	.00	24	.80	.01
20	.0	.39	453	466	702	9.4	4.3	.62	.00	8.9	.60	.0
21	.0	.27	331	74	200	8.9	3.9	.54	.00	4.9	.43	.00
22	.0	.24	141	30	249	7.9	3.7	.54	.00	2.6	90	.00
23	.02	.21	123	19	294	7.1	3.5	1.0	.00	2.0	95	.00
24	.03	.47	135	14	63	7.0	3.3	1.4	.00	1.3	21	.00
25	.03	1.4	110	7.7	32	26	3.1	1.4	.00	.87	9.1	.00
26	.03	1.2	38	3.8	23	20	3.0	1.1	.00	.41	4.5	.00
27	.03	1.0	1280	5.7	21	13	2.7	.78	.00	.14	3.4	.00
28	.03	3.0	1310	5.4	22	10	2.4	.62	.00	.04	2.4	.00
29	.03	11	106	5.3	21	707	2.2	.51	.02	.03	1.6	.00
30	.03	12	34	6.1	---	543	2.2	.40	.01	.02	1.0	.00
31	.03	---	24	748	---	92	---	.37	---	.0	.72	---
MEAN	.020	1.13	134	67.6	108	73.1	38.9	1.27	.035	2.75	41.5	.049
MAX	.08	12	1310	748	759	707	330	2.5	.23	40	736	.44
MIN	.00	.04	.42	1.4	1.5	7.0	2.2	.37	.00	.00	.00	.00
IN.	.00	.01	1.48	.75	1.12	.81	.42	.01	.00	.03	.46	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	21.1	127.2	132.0	42.3	113.0	84.9	84.2	55.8	64.6	84.8	32.1	19.4
MAX	95.9	651.7	441.9	151.4	388.9	340.2	302.1	221.4	221.0	481.5	143.0	120.0	
(WY)	1987	1986	1983	1982	1985	1984	1984	1983	1982	1981	1982	1982	
MIN	.000	.048	.047	.000	1.67	.409	2.49	1.27	.035	1.75	.000	.011	
(WY)	1980	1981	1980	1980	1981	1981	1981	1988	1988	1983	1984	1983	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

	38.9	71.4
AVERAGE FLOW		
HIGHEST ANNUAL MEAN	110.9	1984
LOWEST ANNUAL MEAN	15.1	1980
HIGHEST DAILY MEAN	1310	Dec 28
LOWEST DAILY MEAN	.00	Oct 16
INSTANTANEOUS PEAK FLOW	3240	Dec 27
INSTANTANEOUS PEAK STAGE (FEET)	14.38	Dec 27
INSTANTANEOUS LOW FLOW	0	many days
ANNUAL RUNOFF (INCHES)	5.08	9.33
10 PERCENTILE	63	87
50 PERCENTILE	1.0	3.8
95 PERCENTILE	.00.	.00

## SALT RIVER BASIN

05507600 LICK CREEK AT PERRY, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.92	4.92	5.56	5.73	8.13	5.72	6.07	5.18	4.93	4.77	4.83	5.00
2	4.89	4.92	5.41	5.61	6.18	5.68	6.38	5.17	4.92	4.75	4.80	4.97
3	4.89	4.93	5.33	5.52	5.95	5.80	8.06	5.14	4.90	4.73	4.78	4.96
4	4.87	4.93	5.23	5.46	5.26	6.31	6.61	5.14	4.89	4.73	4.76	4.94
5	4.86	4.93	5.19	5.10	4.98	6.68	6.05	5.14	4.87	4.73	5.21	4.92
6	4.85	4.93	5.14	4.93	4.88	6.98	7.36	5.12	4.85	4.73	5.00	4.90
7	4.84	4.98	5.10	5.26	5.45	6.73	6.51	5.11	4.84	4.73	4.94	4.88
8	4.83	4.98	5.10	4.90	5.44	6.17	5.93	5.09	4.83	4.73	4.90	4.86
9	4.83	4.98	5.10	5.21	5.42	5.92	5.75	5.16	4.86	4.73	4.87	4.85
10	4.82	4.98	5.10	4.86	5.42	5.75	5.62	5.19	4.85	4.72	9.31	4.84
11	4.82	4.98	5.09	5.20	4.86	5.66	5.59	5.17	4.84	4.72	6.37	4.83
12	4.82	4.98	5.06	5.20	4.79	6.39	5.55	5.20	4.82	4.72	5.73	4.82
13	4.82	4.98	5.06	5.04	5.37	5.97	5.50	5.15	4.81	4.72	5.54	4.81
14	4.82	4.98	5.06	5.21	5.37	5.72	5.46	5.11	4.80	4.72	5.40	4.79
15	4.82	4.98	5.17	5.21	5.49	5.59	5.43	5.07	4.80	4.72	5.39	4.78
16	4.82	4.99	5.18	5.21	5.55	5.53	5.39	5.07	4.79	4.72	5.30	4.83
17	4.82	5.04	5.16	5.27	6.09	5.50	5.38	5.05	4.78	4.72	5.21	4.81
18	4.82	5.05	5.13	5.97	6.15	5.50	5.37	5.04	4.77	4.73	5.11	4.85
19	4.82	5.05	5.12	6.21	7.49	5.50	5.35	5.02	4.75	5.87	5.05	4.83
20	4.82	5.05	7.87	8.25	9.10	5.50	5.33	5.01	4.74	5.51	5.02	4.81
21	4.83	5.03	7.61	6.33	6.96	5.49	5.31	5.00	4.72	5.35	5.00	4.79
22	4.83	5.03	6.76	5.91	6.53	5.46	5.29	4.98	4.69	5.23	5.00	4.78
23	4.86	5.02	6.74	5.78	7.64	5.42	5.29	5.02	4.69	5.22	6.62	4.77
24	4.88	5.02	6.70	5.68	6.32	5.41	5.26	5.09	4.69	5.14	5.82	4.76
25	4.90	5.17	6.69	5.15	5.97	5.96	5.25	5.09	4.69	5.10	5.52	4.75
26	4.90	5.16	6.07	5.00	5.82	5.79	5.25	5.06	4.69	5.04	5.33	4.75
27	4.90	5.13	6.00	5.37	5.77	5.62	5.23	5.02	4.69	4.98	5.27	4.75
28	4.90	5.30	11.64	5.35	5.78	5.53	5.21	5.00	4.69	4.93	5.20	4.73
29	4.90	5.39	6.64	5.35	5.78	8.79	5.19	4.99	4.69	4.90	5.13	4.75
30	4.90	5.67	6.02	5.37	---	8.64	5.19	4.97	4.77	4.88	5.08	4.76
31	4.90	---	5.85	5.58	---	6.55	---	4.96	---	4.85	5.04	---

05507800 SALT RIVER NEAR CENTER, MO

LOCATION.--Lat 39°34'26", long 91°34'15", near SE corner, sec.4, T.55 N., R.6 W., Ralls County, Hydrologic Unit 07110007, on left bank at left downstream end of bridge on Highway A, 0.5 mi downstream from Clarence Cannon Recharge Dam, 5 mi northwest of Center, at mile 53.1.

DRAINAGE AREA.--2,350 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1979 to current year. Prior to October 1979, gage heights only by U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 500.00 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1979 nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Feb. 7-9. Records good. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station. Flow regulated by Clarence Cannon Recharge Dam 0.5 mi upstream.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	117	136	194	3480	2900	3280	1240	172	125	129	91	112
2	116	116	342	4030	5180	1620	885	1700	129	119	89	109
3	115	98	158	3560	5620	2180	402	147	130	110	90	115
4	112	96	137	3950	3950	2930	898	957	130	113	94	115
5	225	94	134	4290	5940	1640	1080	171	129	113	94	114
6	363	90	132	2560	996	207	2380	153	130	111	94	106
7	1420	858	126	1650	205	2660	2180	143	129	106	92	100
8	1990	668	120	944	1600	3400	2240	149	132	262	89	106
9	876	1310	119	321	3280	3500	211	148	132	182	95	105
10	114	1390	123	178	3650	3660	212	149	128	139	96	106
11	111	3410	119	1020	3590	1770	2430	148	125	134	91	104
12	885	2500	116	162	3680	700	3560	146	123	124	88	104
13	434	135	116	146	2040	223	3130	141	121	132	87	104
14	108	151	349	137	191	3100	2400	140	120	128	80	104
15	105	148	299	135	104	2250	2100	140	108	126	79	102
16	106	145	148	129	303	1800	1940	141	146	120	77	93
17	109	139	187	131	124	2560	172	140	95	114	93	79
18	282	140	177	131	112	3570	2410	136	146	120	114	316
19	322	297	184	134	112	980	2890	132	122	122	117	215
20	557	203	193	130	116	196	725	133	92	121	114	52
21	446	132	185	1790	126	1160	2300	131	94	116	114	61
22	141	124	2040	3580	777	583	1240	129	93	112	114	57
23	184	120	1150	809	1660	201	3550	130	100	105	113	60
24	102	124	225	121	1840	667	1740	133	184	105	112	61
25	95	511	191	4160	1400	750	2750	130	140	102	111	60
26	154	313	186	2960	1620	173	1010	128	140	101	110	59
27	147	158	202	1240	276	127	734	125	139	102	118	58
28	137	150	3200	876	162	124	706	126	131	98	117	78
29	142	144	5430	886	2480	697	697	121	135	98	114	121
30	140	266	4090	163	---	2060	178	119	134	98	110	120
31	147	---	3760	171	---	1700	---	124	---	94	113	---
MEAN	332	472	778	1419	1863	1628	1613	216	126	121	100	103
MAX	1990	3410	5430	4290	5940	3660	3560	1700	184	262	118	316
MIN	95	90	116	121	104	124	172	119	92	94	77	52
IN.	.16	.22	.38	.70	.86	.80	.77	.11	.06	.06	.05	.05

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	848.0	2082	2893	1270	2060	3011	2849	1998	2594	2190	871.7	926.0
MAX	4355	6038	10360	3703	8098	10530	10310	6741	6240	10810	2396	3205	
(WY)	1987	1987	1983	1986	1982	1985	1983	1981	1982	1981	1982	1982	
MIN	4.62	14.8	31.4	30.5	108.7	142.1	309.0	215.5	126.1	75.2	13.9	25.3	
(WY)	1980	1981	1980	1980	1980	1981	1986	1988	1988	1983	1980	1983	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	726.5	1964	
HIGHEST ANNUAL MEAN		2703	1986
LOWEST ANNUAL MEAN		364.3	1980
HIGHEST DAILY MEAN	5940	65600	Jul 29 1981
LOWEST DAILY MEAN	52	.44	Oct 14 1979
INSTANTANEOUS PEAK FLOW	7890	72800	JUL 29 1981
INSTANTANEOUS PEAK STAGE (FEET)	12.15	33.00	Apr 22 1973
INSTANTANEOUS LOW FLOW	52	.44	OCT 14 1979
ANNUAL RUNOFF (INCHES)	4.20	11.4	
10 PERCENTILE	2620	5610	
50 PERCENTILE	143	326	
95 PERCENTILE	88	17	

## SALT RIVER BASIN

05507800 SALT RIVER NEAR CENTER, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.26	3.34	3.54	3.66	7.69	9.74	7.76	3.48	3.28	3.31	3.22	3.32
2	3.23	3.30	3.52	4.28	9.71	8.73	3.56	3.47	3.30	3.26	3.20	3.30
3	3.23	3.15	3.34	3.59	11.00	8.15	3.40	3.34	3.30	3.22	3.20	3.33
4	3.22	3.13	3.33	8.76	10.65	9.13	6.91	5.95	3.31	3.23	3.22	3.33
5	3.20	3.12	3.32	10.19	9.32	8.02	6.90	3.52	3.30	3.21	3.22	3.33
6	7.32	3.12	3.31	9.63	4.23	3.68	8.82	3.41	3.30	3.22	3.22	3.28
7	3.55	3.09	3.30	8.95	3.61	9.50	3.57	3.37	3.30	3.19	3.22	3.27
8	6.51	3.01	3.26	7.87	---	9.89	8.96	3.38	3.29	3.17	3.20	3.29
9	5.48	3.27	3.23	3.56	---	9.88	3.62	3.38	3.31	3.40	3.21	3.26
10	3.23	7.80	3.26	3.51	9.25	10.37	3.64	3.37	3.29	3.34	3.24	3.29
11	3.21	8.42	3.26	6.76	9.11	9.94	7.53	3.38	3.29	3.33	3.22	3.27
12	8.00	8.14	3.23	3.32	10.55	3.21	6.68	3.38	3.28	3.31	3.19	3.27
13	8.31	3.22	3.23	3.40	10.04	3.52	8.17	3.34	3.26	3.33	3.22	3.27
14	3.20	3.38	3.25	3.33	3.58	7.25	8.09	3.35	3.26	3.30	3.16	3.27
15	3.18	3.38	3.34	3.33	3.17	7.38	7.81	3.34	3.24	3.31	3.14	3.27
16	3.18	3.36	3.17	3.29	3.15	5.86	3.57	3.34	3.14	3.28	3.14	3.25
17	3.18	3.34	3.53	3.31	3.29	3.29	3.48	3.35	2.81	3.22	3.14	3.06
18	4.61	3.34	3.50	3.31	15.40	6.93	7.64	3.31	3.38	3.27	3.33	3.03
19	3.19	3.34	3.49	3.31	3.20	3.56	8.40	3.30	3.36	3.28	3.34	4.04
20	3.47	3.37	3.55	3.30	3.19	3.57	5.60	3.32	3.12	3.32	3.32	3.01
21	4.12	3.32	3.54	3.29	3.31	5.66	4.23	3.32	3.14	3.26	3.33	3.06
22	3.35	3.29	3.50	10.16	3.17	4.46	6.88	3.29	3.12	3.25	3.30	3.05
23	3.33	3.25	3.68	4.29	3.36	3.58	6.85	3.29	3.16	3.27	3.32	3.05
24	3.15	3.26	3.56	3.29	8.44	3.59	5.09	3.30	3.16	3.21	3.31	3.05
25	3.13	3.28	3.55	9.24	8.18	3.54	7.60	3.30	3.33	3.20	3.31	3.05
26	3.12	3.47	3.53	9.79	8.76	3.32	4.63	3.30	3.33	3.20	3.30	3.05
27	3.37	3.41	3.56	6.51	3.49	3.30	3.71	3.28	3.35	3.18	3.34	3.03
28	3.33	3.40	3.55	3.32	3.44	3.28	4.32	3.29	3.32	3.25	3.34	3.04
29	3.35	3.36	11.38	7.18	9.16	3.33	3.56	3.27	3.39	3.25	3.32	3.35
30	3.33	3.35	8.52	3.45	---	3.73	3.49	3.25	3.32	3.24	3.30	3.36
31	3.37	---	10.21	3.45	---	8.29	---	3.28	---	3.24	3.32	---

## SALT RIVER BASIN

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05508000 SALT RIVER NEAR NEW LONDON, MO

LOCATION.--Lat 39°36'44", long 91°24'30", in NE 1/4 NW 1/4 sec.36, T.56 N., R.5 W., Ralls County, Hydrologic Unit 07110007, on left bank near downstream end of bridge on north bound side of dual U.S. Highway 61, 9.9 miles downstream from Clarence Cannon Recharge Dam, 2.0 mi north of New London, 8.0 mi upstream from Spencer Creek and at mile 35.5.

DRAINAGE AREA.--2,480 mi<sup>2</sup>, approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1922 to current year.

GAGE.--Water-stage recorder. Datum of gage is 477.03 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 7, 1931, nonrecording gage 400 ft upstream at datum 0.03 ft higher; Apr. 7, 1931, to Jan. 17, 1935, nonrecording gage at site 180 ft upstream at datum 0.04 ft lower, Jan. 1935 to Apr. 1985 water stage records 400 ft upstream same datum.

REMARKS.--No estimated daily discharges. Water discharge records good. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station. Flow regulated by Clarence Cannon Recharge Dam 9.9 mi upstream since Sept. 1979.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 14, 1858, reached a stage of 27.6 ft, present site and datum, based on comparison of June 1928 flood crest at stone marker 1.0 mi downstream of gage.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135	140	269	3180	1680	3240	983	184	113	143	88	112
2	102	128	187	4190	4630	2470	1050	1190	112	133	85	112
3	97	101	318	3740	5890	1470	1100	649	117	120	85	112
4	97	86	136	3440	3880	3240	706	751	117	114	85	112
5	96	80	131	4400	5610	2510	1060	366	118	112	87	112
6	334	79	129	3760	2680	394	2150	166	118	112	88	112
7	209	205	127	1570	218	1520	2330	154	118	111	87	104
8	2920	731	124	732	1250	3650	2870	150	123	105	85	100
9	983	1500	121	745	2530	3140	617	156	129	305	85	104
10	318	1120	119	157	3720	3700	254	146	118	153	120	104
11	104	2840	122	676	3620	2960	1650	142	116	142	93	106
12	550	3230	116	920	4130	927	2990	139	114	136	86	105
13	614	507	112	117	2680	371	3670	137	110	127	84	103
14	146	136	113	116	421	1840	2690	131	108	133	83	102
15	92	138	434	119	178	2750	2080	129	108	133	79	102
16	88	135	186	119	120	2270	2270	127	139	130	77	108
17	88	132	176	136	328	1480	537	123	103	123	75	80
18	210	126	191	158	168	3480	1400	122	127	140	98	68
19	125	125	364	340	358	2080	3270	121	163	125	112	410
20	457	315	806	405	387	337	845	120	118	126	112	91
21	613	130	337	293	213	615	1970	120	100	126	112	55
22	160	118	695	4080	217	1090	1540	120	99	116	119	60
23	124	111	2150	1770	1630	221	2730	123	98	112	146	58
24	157	110	847	150	1990	277	2390	125	101	104	116	55
25	85	116	271	2400	1750	883	2550	119	201	102	113	57
26	78	622	230	3290	1320	479	1480	117	151	100	111	59
27	147	166	914	2100	951	150	826	115	148	99	114	59
28	130	209	2300	403	194	137	831	114	143	90	119	59
29	126	168	5870	1400	1040	324	386	113	233	91	115	92
30	126	144	3940	261	---	2030	503	111	172	92	113	129
31	137	---	4000	479	---	2500	---	109	---	91	112	---
MEAN	311	458	833	1472	1855	1695	1658	209	128	124	99.5	101
MAX	2920	3230	5870	4400	5890	3700	3670	1190	233	305	146	410
MIN	78	79	112	116	120	137	254	109	98	90	75	55
IN.	.14	.21	.39	.68	.81	.79	.75	.10	.06	.06	.05	.05

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1077	1148	1161	1266	1929	2861	3170	2350	2435	1493	832.4	985.7
MEAN	1077	1148	1161	1266	1929	2861	3170	2350	2435	1493	832.4	985.7
MAX	9124	6589	11100	6417	8787	13040	19110	12210	11490	14270	6689	9346
(WY)	1970	1929	1983	1974	1982	1973	1973	1943	1947	1969	1958	1970
MIN	1.94	2.82	3.85	12.5	9.79	33.7	185.3	73.4	45.8	2.49	.184	9.73
(WY)	1957	1954	1954	1954	1934	1956	1936	1934	1977	1936	1936	1976

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	741.0	1722
HIGHEST ANNUAL MEAN		4692
LOWEST ANNUAL MEAN		308.5
HIGHEST DAILY MEAN	5890	98200
LOWEST DAILY MEAN	55	0
INSTANTANEOUS PEAK FLOW	7710	107000
INSTANTANEOUS PEAK STAGE (FEET)	10.04	31.8
INSTANTANEOUS LOW FLOW	47	0
ANNUAL RUNOFF (INCHES)	4.06	9.43
10 PERCENTILE	2640	4590
50 PERCENTILE	144	268
95 PERCENTILE	85	16

## SALT RIVER BASIN

05508000 SALT RIVER NEAR NEW LONDON, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.65	2.67	3.45	6.32	3.31	5.82	3.41	2.75	2.46	2.64	2.44	2.54
2	2.50	2.62	2.80	7.20	5.73	5.83	5.46	2.71	2.46	2.61	2.41	2.54
3	2.47	2.50	3.83	6.32	7.02	4.71	5.63	3.93	2.49	2.55	2.41	2.54
4	2.47	2.42	2.60	4.86	6.46	5.80	3.06	2.62	2.49	2.52	2.41	2.54
5	2.47	2.39	2.58	6.84	6.94	6.24	4.61	3.26	2.50	2.51	2.42	2.54
6	3.33	2.37	2.57	6.41	6.99	3.32	5.72	2.69	2.50	2.51	2.43	2.54
7	2.91	2.37	2.56	3.55	2.83	3.27	7.35	2.65	2.50	2.51	2.43	2.51
8	7.74	4.74	2.54	4.53	2.73	6.07	5.41	2.62	2.50	2.49	2.41	2.48
9	3.58	4.59	2.54	4.98	3.38	4.95	3.80	2.66	2.59	3.77	2.41	2.50
10	3.25	3.40	2.52	2.66	5.82	6.09	2.97	2.61	2.50	2.69	2.57	2.50
11	2.52	5.66	2.54	2.50	5.80	5.95	2.96	2.59	2.49	2.66	2.47	2.51
12	2.49	5.43	2.52	4.45	5.53	3.95	6.19	2.58	2.49	2.64	2.42	2.51
13	4.22	3.52	2.50	2.54	4.69	3.29	7.25	2.57	2.47	2.57	2.40	2.50
14	2.71	2.63	2.50	2.44	3.37	2.99	6.33	2.54	2.45	2.62	2.41	2.49
15	2.46	2.66	3.73	2.48	2.88	5.32	5.51	2.53	2.45	2.62	2.38	2.49
16	2.44	2.64	2.84	2.57	2.55	5.61	5.94	2.53	2.45	2.62	2.36	2.52
17	2.44	2.64	2.73	2.57	3.83	3.46	3.56	2.51	2.50	2.59	2.35	2.42
18	2.44	2.59	2.83	2.79	2.72	6.13	2.77	2.51	2.52	2.70	2.45	2.24
19	2.62	2.59	2.79	2.76	2.97	5.10	7.36	2.51	2.70	2.59	2.54	3.68
20	4.47	3.90	4.33	3.57	3.49	3.21	4.06	2.50	2.54	2.59	2.54	2.45
21	4.52	2.60	3.34	2.87	2.88	2.84	5.60	2.50	2.42	2.62	2.54	2.20
22	2.76	2.55	3.05	6.33	2.77	5.25	5.40	2.50	2.42	2.56	2.54	2.24
23	2.61	2.52	6.38	6.30	4.79	2.88	5.81	2.50	2.42	2.54	2.74	2.24
24	2.95	2.49	4.62	2.69	5.28	2.83	6.30	2.53	2.44	2.50	2.57	2.20
25	2.42	2.53	3.13	2.52	4.59	5.40	5.65	2.50	3.10	2.50	2.55	2.22
26	2.38	4.95	2.98	6.14	4.31	4.31	5.97	2.49	2.66	2.48	2.54	2.23
27	2.78	2.72	2.95	5.47	4.94	2.65	5.55	2.48	2.65	2.48	2.53	2.23
28	2.65	2.86	4.29	3.64	2.83	2.58	5.40	2.47	2.65	2.44	2.58	2.23
29	2.62	2.75	8.05	4.95	2.76	3.05	2.87	2.47	2.73	2.44	2.56	2.34
30	2.62	2.65	5.16	3.05	---	5.78	3.64	2.46	2.76	2.45	2.55	2.63
31	2.62	---	5.90	2.76	---	5.58	---	2.45	---	2.45	2.54	---

## SALT RIVER BASIN

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05508000 SALT RIVER NEAR NEW LONDON, MO--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1967 to July 1975, July 1977 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1979 to September 1981.

WATER TEMPERATURE: March 1979 to September 1981.

SUSPENDED-SEDIMENT: July 1980 to current year.

REMARKS.--Discontinued as National stream-quality accounting network station Sept. 1986. Sediment record good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 733 microsiemens, Jan. 12, 1981; minimum daily, 86 microsiemens, Dec. 3, 1979.

WATER TEMPERATURE: Maximum daily, 36.0°C, July 18, 19, 21, Aug. 23, 24, 1980; minimum daily, 0.0°C, Mar. 1, 1980.

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,380 mg/L, Dec. 2, 1982; minimum daily mean, 1 mg/L, Dec. 17, 1987.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 143,000 tons, May 18, 1981; minimum daily, 0.24 tons, Dec. 11, 1984.

EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 978 mg/L, Feb. 1; minimum daily mean, 1 mg/L, Dec. 17.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 5,930 tons, Feb. 2; minimum daily, 0.57 tons, Dec. 17.

## SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	135	17	6.2	140	13	5.0	269	10	7.8
2	102	22	6.1	128	20	7.1	187	7	3.6
3	97	24	6.3	101	20	5.6	318	8	7.2
4	97	15	3.9	86	13	3.1	136	4	1.3
5	96	5	1.2	80	13	2.9	131	5	1.7
6	334	17	15	79	10	2.3	129	10	3.3
7	209	10	5.4	205	17	9.3	127	7	2.5
8	2920	197	1550	731	53	104	124	8	2.8
9	983	23	61	1500	98	399	121	10	3.1
10	318	12	10	1120	48	145	119	16	5.0
11	104	7	2.0	2840	49	377	122	13	4.3
12	550	41	61	3230	202	1760	116	5	1.5
13	614	29	48	507	41	56	112	5	1.5
14	146	10	3.8	136	16	5.7	113	4	1.1
15	92	8	2.1	138	10	4.0	434	5	5.6
16	88	10	2.3	135	14	5.2	186	5	2.4
17	88	10	2.6	132	12	4.3	176	1	.57
18	210	25	14	126	7	2.4	191	4	1.9
19	125	22	7.3	125	10	3.2	364	58	57
20	457	41	50	315	6	5.1	806	197	428
21	613	17	28	130	7	2.5	337	46	41
22	160	13	5.7	118	10	3.4	695	25	47
23	124	8	2.8	111	5	1.4	2150	49	286
24	157	12	5.1	110	7	2.1	847	26	60
25	85	10	2.2	116	6	1.9	271	14	11
26	78	17	3.5	622	28	46	230	31	19
27	147	17	6.7	166	20	9.1	914	84	207
28	130	10	3.4	209	30	17	2300	170	1060
29	126	7	2.4	168	17	7.6	5870	49	780
30	126	7	2.4	144	6	2.3	3940	30	319
31	137	10	3.6	---	---	---	4000	19	207
TOTAL	9648	---	1924.0	13748	---	2999.5	25835	---	3579.17

## SALT RIVER BASIN

05508000 SALT RIVER NEAR NEW LONDON, MO--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JANUARY			FEBRUARY			MARCH			
1	3180	22	185	1680	978	4940	3240	149	1300
2	4190	25	285	4630	474	5930	2470	60	400
3	3740	67	679	5890	152	2420	1470	26	105
4	3440	120	1070	3880	71	742	3240	130	1130
5	4400	53	627	5610	110	1640	2510	30	203
6	3760	34	341	2680	25	182	394	14	15
7	1570	48	203	218	12	7.1	1520	110	463
8	732	5	9.5	1250	110	369	3650	155	1530
9	745	4	7.2	2530	194	1330	3140	44	376
10	157	10	4.6	3720	146	1470	3700	100	1040
11	676	142	258	3620	110	1110	2960	41	326
12	920	168	417	4130	152	1700	927	28	69
13	117	13	4.2	2680	260	1880	371	16	16
14	116	20	6.4	421	42	48	1840	132	656
15	119	25	8.1	178	25	12	2750	96	713
16	119	10	3.5	120	22	7.0	2270	42	257
17	136	28	10	328	23	20	1480	12	48
18	158	17	7.2	168	24	11	3480	42	395
19	340	342	406	358	74	72	2080	12	67
20	405	582	636	387	78	82	337	13	12
21	293	143	113	213	73	42	615	42	70
22	4080	157	1730	217	41	24	1090	29	85
23	1770	24	115	1630	110	465	221	23	14
24	150	58	23	1990	110	567	277	18	13
25	2400	331	2150	1750	126	595	883	58	137
26	3290	98	874	1320	149	530	479	23	29
27	2100	42	238	951	30	77	150	26	11
28	403	10	12	194	17	8.8	137	19	7.1
29	1400	29	109	1040	90	253	324	42	37
30	261	10	7.6	---	---	---	2030	79	434
31	479	486	742	---	---	---	2500	24	162
TOTAL	45646	---	11281.3	53783	---	26533.9	52535	---	10120.1
APRIL			MAY			JUNE			
1	983	28	73	184	11	5.7	113	16	4.9
2	1050	45	129	1190	13	40	112	12	3.6
3	1100	74	220	649	25	44	117	16	5.1
4	706	77	148	751	48	97	117	9	2.7
5	1060	62	177	366	20	20	118	18	5.8
6	2150	202	1170	166	12	5.6	118	16	5.1
7	2330	110	709	154	14	5.6	118	16	5.1
8	2870	134	1040	150	9	3.6	123	19	6.4
9	617	21	35	156	9	3.8	129	18	6.3
10	254	28	19	146	13	5.3	118	20	6.4
11	1650	98	436	142	16	6.0	116	15	4.6
12	2990	100	817	139	12	4.6	114	15	4.6
13	3670	70	698	137	11	4.1	110	24	7.2
14	2690	56	409	131	13	4.7	108	24	7.1
15	2080	59	329	129	18	6.2	108	20	5.8
16	2270	20	122	127	14	5.0	139	23	8.7
17	537	15	22	123	6	1.8	103	19	5.2
18	1400	117	440	122	8	2.6	127	20	6.8
19	3270	95	842	121	8	2.5	163	21	9.2
20	845	35	79	120	3	1.1	118	16	5.0
21	1970	110	567	120	7	2.1	100	10	2.8
22	1540	60	250	120	3	1.1	99	7	1.9
23	2730	66	485	123	3	1.1	98	19	4.9
24	2390	27	171	125	11	3.7	101	17	4.5
25	2550	86	595	119	5	1.8	201	14	7.8
26	1480	36	142	117	4	1.4	151	22	8.8
27	826	48	107	115	14	4.4	148	19	7.4
28	831	49	111	114	8	2.3	143	22	8.3
29	386	19	20	113	11	3.3	233	352	221
30	503	10	14	111	10	2.9	172	205	95
31	---	---	---	109	13	3.8	---	---	---
TOTAL	49728	---	10376	6489	---	297.1	3835	---	478.0

05508000 SALT RIVER NEAR NEW LONDON, MO--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	JULY			AUGUST			SEPTEMBER		
1	143	67	26	88	28	6.6	112	21	6.5
2	133	68	25	85	22	5.1	112	16	4.8
3	120	71	23	85	30	6.8	112	18	5.3
4	114	49	15	85	22	5.0	112	18	5.3
5	112	21	6.4	87	23	5.4	112	18	5.3
6	112	24	7.3	88	13	3.2	112	19	5.6
7	111	31	9.4	87	21	4.9	104	22	6.3
8	105	41	12	85	17	3.9	100	20	5.5
9	305	31	26	85	23	5.2	104	20	5.5
10	153	41	17	120	25	8.3	104	17	4.7
11	142	24	9.2	93	28	7.1	106	17	4.8
12	136	29	11	86	28	6.5	105	18	5.0
13	127	20	6.8	84	22	4.9	103	17	4.7
14	133	19	6.8	83	23	5.2	102	29	7.9
15	133	25	8.9	79	25	5.4	102	19	5.1
16	130	14	4.9	77	20	4.1	108	21	6.2
17	123	20	6.6	75	19	3.8	80	14	3.0
18	140	23	8.6	98	20	5.4	68	42	7.7
19	125	35	12	112	19	5.6	410	25	28
20	126	32	11	112	11	3.4	91	11	2.7
21	126	15	5.0	112	36	11	55	21	3.2
22	116	26	8.3	119	41	13	60	20	3.2
23	112	33	10	146	39	15	58	19	2.9
24	104	43	12	116	28	8.7	55	16	2.3
25	102	26	7.2	113	36	11	57	17	2.6
26	100	32	8.7	111	27	8.1	59	18	2.8
27	99	22	6.0	114	37	11	59	26	4.1
28	90	32	7.8	119	37	12	59	10	1.6
29	91	25	6.2	115	29	9.0	92	12	3.0
30	92	28	7.0	113	27	8.2	129	23	8.1
31	91	26	6.4	112	17	5.1	---	---	---
TOTAL	3846	---	337.5	3084	---	217.9	3042	---	163.7
YEAR	271219		68314.60						

## SALT RIVER BASIN

05508805 SPENCER CREEK BELOW PLUM CREEK NEAR FRANKFORD, MO

LOCATION.--Lat 39°31'13", long 91°20'32", in NW 1/4 NW 1/4 NW 1/4 sec.27, T.55 N., R.4 W., Ralls County, Hydrologic Unit 07110007, on left bank 25 ft downstream from bridge on U.S. Highway 61, 0.75 mi downstream from Plum Creek, 2.5 mi northwest of Frankford, and at mile 4.5.

DRAINAGE AREA.--206 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1, 1979 to current year, March 27, 1930 to September 1978, fragmentary record.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 485.00 ft above National Geodetic Vertical Datum of 1929. Mar. 24, 1930, to Sept. 30, 1936, nonrecording gage at site 0.75 mi upstream at datum 3.63 ft higher; Oct. 7, 1961, to July 15, 1974, fragmentary record, at present site and datum unknown; July 26, 1974, to Apr. 15, 1975, from nonrecording gage present site and datum.

REMARKS.--Estimated daily discharges: Dec. 26-30 and Jan. 19 to Feb. 8. Records good except for estimated daily discharges, which are fair. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	1.4	28	63	2710	71	177	19	4.6	2.3	.31	.32
2	4.9	1.5	20	48	1000	71	279	17	4.6	1.7	.32	.28
3	3.9	1.1	16	45	250	120	335	16	4.0	1.3	.40	.27
4	4.1	.87	11	38	150	174	192	17	3.9	.82	.26	.26
5	4.0	.81	9.2	31	110	224	141	16	3.5	.86	.30	.28
6	3.5	.84	8.8	27	70	356	662	14	3.3	.70	.35	.21
7	2.7	1.1	9.1	26	50	308	232	13	3.0	.62	.28	.23
8	2.3	1.2	9.5	24	45	179	134	18	4.1	.38	.29	.17
9	2.0	1.1	9.6	23	39	128	104	79	4.0	.80	.38	.29
10	1.7	1.0	8.5	19	30	102	83	58	3.3	.90	4.7	.27
11	1.3	1.0	8.8	20	26	90	75	28	3.4	.86	25	.34
12	.94	.94	8.9	24	24	207	67	18	3.1	.59	18	.37
13	.65	1.1	8.2	19	25	114	60	14	2.2	.71	6.1	.20
14	.44	1.1	7.5	17	30	82	54	12	1.6	1.2	4.0	.23
15	.44	1.2	11	17	42	68	48	10	1.6	1.3	2.7	.18
16	.45	1.4	11	19	49	61	45	10	1.6	2.0	1.8	.33
17	.67	1.8	8.0	55	110	58	44	9.7	1.5	2.4	.88	.48
18	.60	2.5	7.7	127	147	57	40	8.6	1.5	1.7	.47	.30
19	.55	2.3	125	594	1250	55	42	7.8	1.5	1.0	.30	.63
20	.74	2.2	1580	1420	1160	53	41	7.2	1.2	.58	.17	.46
21	.66	2.1	438	1000	295	49	38	6.8	1.4	.47	.22	.43
22	.84	2.3	181	200	400	47	36	6.4	1.3	.42	.20	.48
23	.79	2.3	177	60	460	45	33	7.6	.86	.42	1.3	.40
24	.79	2.5	223	30	165	45	29	10	.71	.47	7.8	.39
25	.74	4.9	205	25	112	111	28	8.7	.91	.26	8.0	.34
26	.80	6.6	97	22	90	86	26	7.8	1.0	.17	3.6	.23
27	.73	10	2800	21	87	68	23	6.3	.74	.18	2.2	.32
28	.79	71	2700	21	82	62	22	6.1	.70	.13	1.6	.33
29	1.0	67	446	27	78	2110	22	5.5	.60	.22	1.1	.28
30	1.1	39	127	37	---	1240	21	5.0	1.2	.32	.55	.21
31	1.2	---	86	1110	---	292	---	4.9	---	.36	.37	---
MEAN	1.56	7.81	303	168	313	217	104	15.1	2.23	.84	3.03	.32
MAX	4.9	71	2800	1420	2710	2110	662	79	4.6	2.4	25	.63
MIN	.44	.81	7.5	17	24	45	21	4.9	.60	.13	.17	.17
IN.	.01	.04	1.69	.94	1.64	1.22	.57	.08	.01	.00	.02	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	69.8	292.0	322.4	98.8	242.1	227.9	249.1	170.7	131.7	251.9	35.5	41.6
MEAN	69.8	292.0	322.4	98.8	242.1	227.9	249.1	170.7	131.7	251.9	35.5	41.6
MAX	376.5	1310	984.5	274.3	765.8	737.6	777.2	519.7	451.1	1788	93.7	163.3
(WY)	1987	1986	1983	1982	1985	1984	1983	1983	1982	1981	1985	1986
MIN	.878	1.41	1.86	2.58	3.40	9.23	26.6	15.1	2.23	.843	1.17	.317
(WY)	1980	1980	1980	1980	1980	1981	1986	1988	1988	1988	1984	1988

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	94.2	177.3
HIGHEST ANNUAL MEAN		239.0
LOWEST ANNUAL MEAN		39.4
HIGHEST DAILY MEAN	2800	15600
LOWEST DAILY MEAN	.13	.11
INSTANTANEOUS PEAK FLOW	7620	16200
INSTANTANEOUS PEAK STAGE (FEET)	12.78	16.86
INSTANTANEOUS LOW FLOW	0.13	0.11
ANNUAL RUNOFF (INCHES)	6.21	11.7
10 PERCENTILE	161	242
50 PERCENTILE	6.9	25
95 PERCENTILE	.24	.44

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## SALT RIVER BASIN

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05508805 SPENCER CREEK BELOW PLUM CREEK NEAR FRANKFORD, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.49	2.78	2.98	3.28	5.60	3.20	3.78	2.85	2.60	2.53	2.36	2.35
2	2.60	2.79	2.89	3.05	---	3.19	3.78	2.86	2.60	2.49	2.30	2.34
3	2.55	2.77	2.84	3.12	---	3.32	4.22	2.83	2.60	2.46	2.38	2.37
4	2.57	2.73	2.77	3.06	---	3.77	3.86	2.84	2.61	2.42	2.33	2.37
5	2.58	2.73	2.73	2.93	---	3.99	3.55	2.82	2.60	2.40	2.33	2.38
6	2.62	2.73	2.73	2.95	---	4.20	5.36	2.80	2.57	2.39	2.35	2.35
7	2.60	2.75	2.73	2.94	---	4.29	4.05	2.79	2.56	2.37	2.27	2.36
8	2.60	2.77	2.72	2.91	---	3.80	3.56	2.79	2.55	2.34	2.28	2.36
9	2.63	2.77	2.74	2.91	2.99	3.52	3.39	3.25	2.60	2.41	2.29	2.35
10	2.65	2.75	2.71	2.87	2.94	3.38	3.29	3.15	2.57	2.42	2.40	2.36
11	2.65	2.74	2.70	2.87	2.81	3.31	3.23	2.93	2.57	2.42	2.66	2.37
12	2.64	2.74	2.73	2.89	2.87	4.10	3.18	2.87	2.57	2.38	2.96	2.41
13	2.65	2.75	2.69	2.85	2.90	3.46	3.14	2.80	2.54	2.38	2.73	2.35
14	2.65	2.75	2.68	2.84	2.92	3.28	3.10	2.77	2.47	2.44	2.61	2.39
15	2.67	2.77	2.76	2.84	2.99	3.19	3.07	2.76	2.47	2.46	2.54	2.37
16	2.68	2.80	2.77	2.86	3.03	3.15	3.04	2.75	2.47	2.50	2.45	2.40
17	2.68	2.82	2.70	2.92	3.36	3.12	3.02	2.75	2.47	2.52	2.42	2.41
18	2.70	2.87	2.70	3.59	3.49	3.11	2.99	2.71	2.48	2.49	2.38	2.42
19	2.67	2.84	2.70	3.59	4.46	3.11	3.00	2.70	2.48	2.43	2.34	2.49
20	2.72	2.85	7.30	---	6.27	3.09	2.99	2.67	2.47	2.38	2.32	2.45
21	2.71	2.83	4.81	---	4.20	3.06	2.98	2.67	2.47	2.39	2.31	2.43
22	2.73	2.83	3.97	---	3.87	3.04	2.96	2.67	2.46	2.36	2.30	2.46
23	2.72	2.86	4.00	---	4.97	3.03	2.95	2.68	2.39	2.36	2.44	2.44
24	2.73	2.83	4.05	---	3.73	3.02	2.92	2.73	2.40	2.35	2.37	2.44
25	2.72	2.95	4.09	---	3.43	3.52	2.92	2.73	2.39	2.36	2.80	2.42
26	2.73	3.02	3.53	---	3.32	3.31	2.90	2.73	2.44	2.31	2.62	2.41
27	2.71	2.98	3.34	---	3.29	3.18	2.89	2.67	2.42	2.31	2.53	2.43
28	2.70	3.18	---	---	3.26	3.15	2.87	2.66	2.42	2.31	2.49	2.44
29	2.74	3.35	---	2.91	3.23	9.20	2.87	2.65	2.38	2.26	2.45	2.44
30	2.73	3.08	---	2.97	---	6.69	2.88	2.63	2.45	2.31	2.40	2.45
31	2.75	---	3.44	3.03	---	4.28	---	2.63	---	2.37	2.37	---

## CUIVRE RIVER BASIN

05514500 CUIVRE RIVER NEAR TROY, MO

LOCATION.--Lat 39°00'59", long 90°59'00", in SE 1/4, sec.14, T.49 N., R.1 W., Lincoln County, Hydrologic Unit 07110008, on downstream side of right end of downstream bridge on dual U.S. Highway 61, 1.2 mi downstream from confluence of North and West Forks Cuivre River and 2 mi north of Troy.

DRAINAGE AREA.--903 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1922 to July 1972, May 1979 to current year.

REVISED RECORDS.--WSP 855: 1933(m), 1935(m), 1937(m). WSP 895: 1939. WSP 1005: 1942(m). WSP 1308: 1922-25(m).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 450.27 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1930, nonrecording gage at site 3 mi downstream at datum 4.31 ft lower. Oct. 1, 1930, to July 1939, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Oct. 1-26. Water-discharge records good. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1895 was 5 or 6 feet lower at Frenchmens Bluff, 3 mi downstream, than the October 1941 flood which is the highest flood since 1888.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.1	4.4	182	473	8110	304	1110	70	21	6.8	5.2	9.0
2	5.5	4.3	118	340	2560	301	939	67	21	6.0	4.5	7.3
3	4.9	4.3	84	318	911	1040	1310	64	19	5.3	4.0	5.9
4	4.9	4.5	60	266	591	1780	788	64	17	5.1	3.3	4.7
5	4.9	4.4	48	247	426	1210	612	61	16	4.6	3.4	3.9
6	4.9	4.2	42	218	380	2030	779	59	15	4.2	3.4	3.2
7	4.4	8.2	183	178	330	5830	1300	55	15	4.0	3.3	2.8
8	3.5	11	517	167	281	2400	678	58	29	3.7	3.9	2.6
9	4.4	5.4	313	152	261	1120	462	119	76	3.4	4.4	2.4
10	4.9	3.8	176	143	242	745	363	79	32	3.3	130	2.2
11	4.9	3.3	122	134	214	586	312	65	21	24	66	2.2
12	4.9	3.3	89	136	243	853	277	62	17	27	182	2.2
13	5.2	3.1	66	139	211	629	250	54	16	14	95	2.2
14	5.2	3.2	61	122	217	490	227	49	14	11	53	2.1
15	5.2	3.0	78	117	451	403	203	46	13	9.1	37	2.0
16	5.7	5.1	73	117	583	344	185	43	12	7.7	27	2.4
17	7.9	6.9	63	153	1090	311	174	37	12	7.5	20	2.4
18	8.7	6.2	56	278	1030	301	166	35	11	11	16	2.2
19	8.7	5.6	698	5580	5520	291	150	34	10	11	26	5.0
20	10	4.8	10700	7080	7680	281	140	32	9.8	8.7	27	12
21	12	4.7	4240	1530	2160	265	131	31	9.5	40	14	7.1
22	13	4.4	1490	739	1130	250	124	31	8.8	17	9.8	4.4
23	13	4.4	928	512	1480	238	115	35	8.0	11	27	3.1
24	14	42	878	402	924	228	105	39	6.8	9.7	62	2.7
25	13	288	1530	317	560	236	99	38	6.4	16	40	2.5
26	5.2	293	1170	289	437	272	94	36	5.6	14	28	2.3
27	4.2	196	6180	262	380	278	87	32	5.0	11	30	2.2
28	3.5	167	13900	217	349	262	82	30	4.5	9.0	22	2.2
29	3.5	198	3260	206	323	10200	77	28	6.3	7.2	16	2.1
30	5.2	264	1050	208	---	12800	74	26	6.9	6.8	13	4.4
31	4.6	---	617	4330	---	2310	---	24	---	6.2	11	---
MEAN	6.68	52.0	1580	818	1347	1567	380	48.5	15.5	10.5	31.8	3.72
MAX	14	293	13900	7080	8110	12800	1310	119	76	40	182	12
MIN	3.5	3.0	42	117	211	228	74	24	4.5	3.3	3.3	2.0
IN.	.01	.06	2.02	1.05	1.61	2.00	.47	.06	.02	.01	.04	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	468.2	515.6	541.7	495.5	852.1	1005	1170	925.9	711.6	527.3	284.5	389.0
MAX	6704	4503	5924	2465	4250	3596	5549	6311	4735	4366	1994	5509	
(WY)	1942	1986	1983	1949	1962	1922	1922	1929	1970	1981	1923	1926	
MIN	.103	1.30	1.11	1.63	1.80	2.51	25.8	17.1	11.0	.435	.229	.237	
(WY)	1965	1954	1964	1954	1954	1954	1954	1934	1936	1934	1936	1964	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	487.9	655.0
HIGHEST ANNUAL MEAN		1821
LOWEST ANNUAL MEAN		27.3
HIGHEST DAILY MEAN	13900	76400
LOWEST DAILY MEAN	2.0	0
INSTANTANEOUS PEAK FLOW	19400	120000
INSTANTANEOUS PEAK STAGE (FEET)	24.33	33.4
INSTANTANEOUS LOW FLOW	2.0	0
ANNUAL RUNOFF (INCHES)	7.34	9.85
10 PERCENTILE	958	1230
50 PERCENTILE	42	92
95 PERCENTILE	2.6	2.6

CUIVRE RIVER BASIN

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05514500 CUIVRE RIVER NEAR TROY, MO--Continued  
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to current year.

REMARKS.--National stream-quality accounting network station since October 1986.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS	SPE- CIFIC CON- DUCT- ANCE	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL AS CACO3)	HARD- NESS NONCARB DISSOLV FIELD AS CACO3)	
		(CFS) (00061)	(US/CM) (00095)	(00400)	(00010)	(00076)	(00300)	(00301)	(31625)	(31673)	(00900)	(00904)	
NOV 03...	1430	4.3	352	7.50	15.5	5.6	7.7	78	44	K34	200	6	
JAN 12...	1400	140	370	7.30	0.5	7.6	12.7	90	K22	42	200	38	
MAR 02...	1530	301	350	7.80	6.5	15	12.3	102	K28	K72	160	16	
APR 07...	1235	1410	271	8.00	13.5	110	9.7	94	6800	2100	110	11	
MAY 17...	1610	37	435	8.00	23.0	4.3	10.6	125	58	K22	210	27	
JUL 12...	1617	23	425	8.40	27.5	4.7	9.1	117	74	62	210	21	
AUG 03...	1330	3.7	420	8.00	31.0	1.9	7.7	105	K52	K12	190	2	
SEP 13...	1430	2.2	372	8.00	24.0	2.1	9.9	119	K52	140	170	4	
DATE		CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY DISSOLV FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV 03...	61	11	9.4	4.2	192	19	12	0.20	6.2	234	239	0.32	
JAN 12...	65	9.9	9.4	4.3	166	36	12	0.20	12	260	260	0.35	
MAR 02...	50	7.4	8.1	3.6	140	29	11	0.10	9.7	213	212	0.29	
APR 07...	35	6.3	8.6	4.2	103	33	9.9	0.20	11	177	175	0.24	
MAY 17...	65	11	11	3.5	181	40	11	0.30	4.1	248	256	0.34	
JUL 12...	66	11	9.8	3.7	190	20	11	0.20	8.9	241	245	0.33	
AUG 03...	57	11	10	3.8	186	21	11	0.20	11	249	237	0.34	
SEP 13...	51	10	9.7	4.0	165	15	11	0.20	8.3	209	208	0.28	

K--Results based on colony count outside the acceptable range (non-ideal colony count).

CUIVRE RIVER BASIN

05514500 CUIVRE RIVER NEAR TROY, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, DIS- SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 03...	2.72	<0.010	<0.100	0.040	0.040	0.70	0.050	0.010	<0.010	52	0.60	--
JAN 12...	98.3	<0.010	2.50	0.140	0.150	0.50	0.080	0.010	<0.010	55	21	--
MAR 02...	173	0.020	2.10	0.120	0.100	0.80	0.060	0.030	0.020	--	--	--
APR 07...	674	0.030	1.00	0.110	0.100	1.0	0.160	0.050	0.030	330	1260	91
MAY 17...	24.9	0.010	0.130	0.090	0.010	0.40	0.060	0.020	<0.010	59	5.9	83
JUL 12...	15.1	0.020	<0.100	0.040	<0.010	1.0	0.080	0.020	<0.010	49	3.1	53
AUG 03...	2.49	<0.010	0.100	0.010	0.020	0.50	0.030	0.010	<0.010	9	0.09	70
SEP 13...	1.24	<0.010	<0.100	<0.010	<0.010	1.1	0.050	0.040	<0.010	6	0.04	75

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 03...	<10	<1	130	<0.5	<1	<1	<3	2	7	<5
JAN 12...	<10	<1	110	<0.5	<1	<1	<3	4	130	<5
MAY 17...	<10	1	140	<0.5	<1	<1	<3	5	12	<5
JUL 12...	<10	2	130	<0.5	<1	<1	<3	3	9	<5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 03...	<4	800	0.2	<10	3	<1	<1.0	130	<6	10
JAN 12...	<4	500	<0.1	<10	2	<1	2.0	120	<6	10
MAY 17...	9	640	<0.1	<10	1	<1	1.0	140	<6	15
JUL 12...	13	230	<0.1	<10	2	<1	<1.0	130	<6	5

## MISSISSIPPI RIVER MAIN STEM

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05587450 MISSISSIPPI RIVER AT GRAFTON, IL

LOCATION.--Lat 38°58'05", long 90°25'42", in NE 1/4 sec. 15, T.6N., R.12W., Jersey County, Hydrologic Unit 07110009, on left bank two tenths of a mile downstream from the mouth of Illinois River and 15.3 miles above Lock and Dam 26, 23.0 miles above mouth of Missouri River and at mile 218.6 upstream of the mouth of Ohio River.

DRAINAGE AREA.--171,300 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--Gage height: August 1879 thru September 1892, 1929 to September 1986. October 1986 to current year. Stages also available from reports of National Weather Service. Discharge intermittently from 1880 to 1928, computed daily 1928 to 1932 by National Weather Service and or U.S. Army Corps of Engineers. Discharge previously published as "Mississippi River at Alton, Illinois" 1927 to September 1986.

GAGE.--Water-stage recorder. Datum of gage is 403.79 above National Geodetic Vertical Datum of 1929. Auxiliary water-stage recorder 15.3 miles downstream.

REMARKS.--Estimated daily discharges: Jan. 5-19, Feb. 6-18, and June 3 to July 11. Records fair. Natural flow of river affected by many navigation dams in upper Mississippi River basin. Flood water from Missouri River overtops or breaches the levees at extreme high stages.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1844 reached a stage of 435.89 ft, present datum.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69000	65600	79300	116000	120000	106000	131000	86800	47900	28800	37800	40000
2	62600	63200	82600	95000	133000	107000	139000	83900	53200	26700	39800	40000
3	59400	64800	77500	84700	128000	110000	141000	85000	50100	31700	32600	35200
4	59300	65800	77600	72200	115000	112000	140000	73700	47300	35200	38400	33700
5	59400	62800	81000	83500	117000	113000	145000	77200	52700	33300	31100	31300
6	51000	67100	86200	74200	114000	107000	150000	80600	49500	30000	31800	33200
7	49800	69900	87900	68100	93100	112000	164000	80800	44600	34200	41000	40900
8	60800	67000	86700	67500	95400	113000	168000	77700	35700	29500	38900	43200
9	63000	66300	76300	66700	95400	108000	170000	74100	33900	23900	31600	32800
10	60300	64300	76900	63100	95100	106000	172000	65200	37000	25600	35500	35700
11	58700	64600	80400	64700	89100	111000	170000	70700	37800	29800	39200	36800
12	59500	62400	78500	63600	73800	108000	167000	71300	33400	36000	44800	32600
13	63000	61200	79800	67800	80200	107000	158000	72700	28500	35600	41500	26500
14	64700	64500	85000	71800	85600	110000	147000	74500	25600	33100	36800	31500
15	65400	67300	76800	72900	81100	116000	138000	67800	25800	35300	37100	38100
16	61700	68400	81900	72100	82100	120000	137000	69300	26600	33000	36000	36000
17	58800	61600	84300	74600	85900	118000	135000	69800	32900	28000	33800	31500
18	60400	59800	82700	80100	95100	108000	133000	70100	34500	32400	33100	33900
19	57600	58300	82900	84300	96100	106000	132000	71300	37300	30300	39100	32500
20	62600	52600	90300	104000	103000	109000	125000	70100	32900	30200	34200	34400
21	65300	69500	101000	110000	108000	106000	121000	69700	31800	28500	32800	34800
22	66200	73300	101000	113000	103000	104000	110000	69000	30900	31200	39300	34900
23	66100	69800	104000	118000	112000	95700	98000	68000	31400	29400	37600	56400
24	65600	70600	114000	112000	105000	86400	98300	66300	30700	30500	31800	49200
25	69100	69900	111000	105000	112000	85500	96100	67600	31100	27800	32400	44000
26	64500	69500	113000	98400	107000	81800	91800	64800	31900	27200	34700	40100
27	58000	68900	125000	98600	103000	96500	87600	58000	33300	27200	44400	43400
28	62000	70300	129000	101000	102000	98200	93300	51200	33400	26200	40800	44800
29	63800	67100	177000	99700	102000	110000	89900	46800	34900	33800	39900	45100
30	62500	70200	162000	103000	---	125000	88400	45000	32800	30400	43500	43100
31	63800	---	135000	101000	---	127000	---	44300	---	28300	42800	---
MEAN	61740	65890	96990	87310	101100	107200	131200	69140	36310	30420	37230	37850
MAX	69100	73300	177000	118000	133000	127000	172000	86800	53200	36000	44800	56400
MIN	49800	52600	76300	63100	73800	81800	87600	44300	25600	23900	31100	26500
IN.	.42	.43	.65	.59	.64	.72	.85	.47	.24	.20	.25	.25

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	198300	118600	113500	88470	96890	107700	134800	79840	61660	51080	60020	58030
MAX	334900	171300	130100	89630	101100	108300	138500	90540	87020	71750	82820	78210
(WY)	1987	1987	1987	1987	1988	1987	1987	1987	1987	1987	1987	1987
MIN	61740	65890	96990	87310	92680	107200	131200	69140	36310	30420	37230	37850
(WY)	1988	1988	1988	1988	1987	1988	1988	1988	1988	1988	1988	1988

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	71750	97525
HIGHEST ANNUAL MEAN	123300	1987
LOWEST ANNUAL MEAN	71750	1988
HIGHEST DAILY MEAN	177000	Dec 29
LOWEST DAILY MEAN	23900	Jul 9
INSTANTANEOUS PEAK FLOW	187000	Dec 29
INSTANTANEOUS PEAK STAGE (FEET)	421.01	Feb 8
INSTANTANEOUS LOW FLOW	23900	Aug 9
ANNUAL RUNOFF (INCHES)	5.69	7.73
10 PERCENTILE	117000	154000
50 PERCENTILE	67500	85000
95 PERCENTILE	29400	31900

(a) Maximum from Mississippi River at Alton (05587500).

## MISSISSIPPI RIVER MAIN STEM

05587450 MISSISSIPPI RIVER AT GRAFTON, IL--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.54	15.35	15.62	14.62	15.89	15.66	15.64	15.51	15.31	15.03	15.25	15.34
2	15.49	15.43	15.56	14.81	15.82	15.72	15.59	15.43	15.42	15.12	15.35	15.18
3	15.35	15.53	15.46	15.07	15.81	15.84	15.43	15.48	15.32	15.02	15.18	15.23
4	15.48	15.51	15.37	15.27	15.53	15.72	15.34	15.24	15.43	15.26	15.31	15.38
5	15.59	15.37	15.44	15.14	15.72	15.73	15.34	15.32	15.24	15.24	15.29	15.32
6	15.51	15.58	15.66	15.94	15.66	15.64	15.46	15.41	15.33	15.24	15.29	15.34
7	15.44	15.27	15.53	16.86	16.44	15.84	15.34	15.33	15.46	15.42	15.08	15.35
8	15.57	15.17	15.55	16.58	16.81	15.98	15.21	15.52	15.32	15.62	15.17	15.45
9	15.57	15.41	15.46	16.88	16.25	15.81	15.12	15.47	15.24	15.34	15.14	15.25
10	15.05	15.34	15.48	16.46	16.14	15.75	15.07	15.23	15.06	15.23	15.17	15.23
11	15.27	15.10	15.49	16.55	16.05	15.83	14.93	15.48	15.16	15.34	15.30	15.34
12	15.12	15.28	15.42	16.53	15.49	15.81	14.96	15.53	15.23	15.26	15.35	15.24
13	15.30	15.33	15.51	16.59	15.87	15.64	15.11	15.37	15.33	15.37	15.19	15.15
14	15.49	15.21	15.54	16.67	16.11	15.58	15.26	15.45	15.21	15.24	15.09	15.11
15	15.56	15.47	15.44	16.91	15.74	15.67	15.40	15.46	15.28	15.27	15.03	15.22
16	15.23	15.60	15.44	16.77	15.79	15.63	15.43	15.37	15.22	15.41	15.21	15.26
17	15.41	15.27	15.50	16.69	15.82	15.57	15.49	15.42	15.30	15.22	15.11	15.08
18	15.15	15.31	15.42	16.53	15.71	15.59	15.51	15.31	15.24	15.38	15.16	15.17
19	15.30	15.34	15.63	15.75	15.74	15.61	15.45	15.39	15.32	15.28	15.15	15.41
20	15.57	15.50	15.55	16.31	15.94	15.74	15.49	15.41	15.25	15.34	15.20	15.12
21	15.28	15.53	15.83	15.71	15.96	15.67	15.39	15.34	15.27	15.23	15.14	15.32
22	15.34	15.53	15.61	15.97	15.93	15.67	15.53	15.33	15.33	15.28	15.24	15.29
23	15.42	15.53	15.39	15.84	16.34	15.59	15.44	15.39	15.32	15.23	15.20	15.54
24	15.43	15.14	15.43	15.81	15.83	15.44	15.43	15.36	15.19	15.22	14.94	15.10
25	15.35	15.44	15.18	15.92	15.63	15.67	15.60	15.59	15.41	15.44	15.31	15.16
26	15.27	15.33	15.22	15.52	15.66	15.54	15.40	15.46	15.40	15.31	15.16	15.37
27	15.14	15.49	15.25	15.62	15.63	15.67	15.63	15.50	15.37	15.23	15.28	15.20
28	15.20	15.32	15.92	15.67	15.72	15.80	15.60	15.39	15.11	15.22	15.38	15.46
29	15.20	15.55	15.29	15.68	15.57	16.00	15.19	15.56	15.21	15.34	15.29	15.30
30	15.28	15.52	14.83	15.66	---	16.34	15.37	15.44	15.35	15.08	15.23	15.22
31	15.41	---	14.50	15.60	---	16.08	---	15.40	---	15.44	15.32	---

## MISSISSIPPI RIVER MAIN STEM

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05587500 MISSISSIPPI RIVER AT ALTON, IL

## WATER-QUALITY RECORDS

LOCATION.--Lat 38°53'06", long 90°10'51", in NE 1/4 sec.14, T.5 N., R.10 W., Madison County, Hydrologic Unit 07110009, at Missouri and Illinois Bridge and Belt Railroad bridge, 7.7 mi upstream from Missouri River, and at mile 202.7 upstream from Ohio River.

DRAINAGE AREA.--171,500 mi<sup>2</sup>, approximately.

## PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT: October 1980 to October 1985, October 1986 to current year.

REMARKS.--Discharge records taken from Mississippi at Grafton, IL (055875450). Sediment discharge computed from streamflow discharge at Grafton, IL.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT CONCENTRATION: Maximum daily mean, 2,120 mg/L, May 13, 1981; minimum daily mean, 6 mg/L, Aug. 16, 1988.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 1,120,000 tons, July 7, 8, 1981; minimum daily, 622 tons, Aug. 16, 1988.

## EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 368 mg/L, Apr. 11; minimum daily mean, 6 mg/L, Aug. 16.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 169,000 tons, Apr. 11; minimum daily, 622 tons, Aug. 16.

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
FEB 22...	0955	102000	49	59	70	84	99
APR 07...	1030	162000	33	40	49	63	98

## MISSISSIPPI RIVER MAIN STEM

05587500 MISSISSIPPI RIVER AT ALTON, IL--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	---	88	16300	---	25	4510	---	21	4480
2	---	63	10700	---	17	2950	---	20	4440
3	---	113	18100	---	9	1600	---	15	3170
4	---	110	17600	---	10	1800	---	16	3360
5	---	149	23800	---	10	1710	---	23	4940
6	---	110	15100	---	8	1460	---	23	5460
7	---	87	11700	---	13	2470	---	22	5330
8	---	74	12100	---	27	4900	---	54	12700
9	---	111	18800	---	27	4840	---	75	15400
10	---	144	23400	---	16	2770	---	55	11400
11	---	110	17500	---	17	2950	---	81	17500
12	---	61	9820	---	15	2510	---	85	18000
13	---	58	9890	---	15	2460	---	86	18500
14	---	65	11300	---	19	3270	---	47	10800
15	---	65	11400	---	17	3050	---	91	18900
16	---	58	9670	---	17	3090	---	67	14800
17	---	33	5180	---	16	2610	---	111	25200
18	---	33	5310	---	20	3160	---	137	30500
19	---	41	6360	---	24	3850	---	47	10600
20	---	61	10300	---	29	4160	---	38	9290
21	---	60	10500	---	30	5660	---	52	14100
22	---	35	6330	---	31	6150	---	95	25800
23	---	29	5190	---	50	9490	---	132	37100
24	---	28	4960	---	28	5340	---	199	61300
25	---	31	5790	---	24	4550	---	76	22700
26	---	31	5390	---	32	5960	---	48	14600
27	---	27	4190	---	33	6070	---	37	12500
28	---	42	7060	---	15	2910	---	44	15400
29	---	31	5300	---	14	2590	---	180	85900
30	---	26	4320	---	16	3070	---	155	68000
31	---	27	4570	---	---	---	---	238	86700
TOTAL	---	---	327930	---	---	111910	---	---	688870
JANUARY			FEBRUARY			MARCH			
1	---	123	38500	---	74	24100	---	32	9210
2	---	106	27200	---	74	26400	---	30	8750
3	---	108	24600	---	110	37900	---	30	8980
4	---	102	20000	---	114	35500	---	30	9130
5	---	102	23100	---	112	35500	---	32	9760
6	---	103	20700	---	109	33500	---	33	9490
7	---	103	19000	---	105	26400	---	35	10500
8	---	104	19000	---	81	20900	---	32	9720
9	---	104	18800	---	63	16200	---	32	9270
10	---	105	17800	---	60	15400	---	30	8570
11	---	103	18000	---	64	15300	---	30	8960
12	---	104	17800	---	68	13500	---	30	8710
13	---	114	20800	---	69	15000	---	46	13300
14	---	107	20800	---	67	15400	---	49	14500
15	---	108	21200	---	39	8520	---	50	15500
16	---	109	21300	---	31	6780	---	48	15400
17	---	106	21300	---	26	6020	---	51	16300
18	---	86	18600	---	37	9530	---	53	15400
19	---	287	65300	---	31	7950	---	50	14300
20	---	194	54400	---	31	8530	---	46	13400
21	---	104	31000	---	40	11700	---	46	13000
22	---	91	27900	---	28	7760	---	47	13300
23	---	91	28900	---	24	7300	---	43	11000
24	---	92	27700	---	27	7620	---	45	10600
25	---	92	26000	---	25	7560	---	46	10700
26	---	94	24800	---	24	6950	---	43	9590
27	---	85	22700	---	56	15700	---	41	10600
28	---	84	23000	---	63	17300	---	67	17800
29	---	95	25500	---	65	18000	---	165	49000
30	---	97	27100	---	---	---	---	152	51400
31	---	131	35800	---	---	---	---	159	54600
TOTAL	---	---	808600	---	---	478220	---	---	480740

## MISSISSIPPI RIVER MAIN STEM

05587500 MISSISSIPPI RIVER AT ALTON, IL--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL				MAY			JUNE		
1	---	158	55900	---	117	27400	---	20	2540
2	---	160	59900	---	120	27300	---	14	2020
3	---	160	61000	---	120	27500	---	18	2410
4	---	161	60800	---	109	21700	---	15	1920
5	---	156	61200	---	108	22600	---	23	3210
6	---	159	64600	---	123	26800	---	22	2890
7	---	161	71300	---	120	26300	---	23	2720
8	---	161	73100	---	113	23800	---	20	1910
9	---	167	76900	---	109	21800	---	19	1730
10	---	268	125000	---	96	17000	---	18	1790
11	---	368	169000	---	56	10800	---	13	1350
12	---	307	138000	---	41	7890	---	16	1450
13	---	348	149000	---	32	6270	---	18	1390
14	---	330	131000	---	30	6060	---	17	1180
15	---	324	121000	---	56	10200	---	18	1260
16	---	189	70000	---	39	7370	---	16	1160
17	---	178	64900	---	36	6740	---	16	1440
18	---	173	62100	---	36	6780	---	12	1160
19	---	168	59900	---	39	7430	---	16	1640
20	---	167	56500	---	51	9580	---	17	1530
21	---	169	55300	---	38	7110	---	20	1730
22	---	151	44800	---	32	6020	---	16	1360
23	---	160	2300	---	33	6110	---	16	1380
24	---	181	47900	---	34	6130	---	19	1590
25	---	118	30500	---	41	7440	---	16	1380
26	---	120	29900	---	40	6980	---	15	1330
27	---	102	24100	---	27	4220	---	18	1650
28	---	101	25500	---	26	3600	---	16	1490
29	---	107	26100	---	26	3290	---	18	1740
30	---	108	25700	---	24	2940	---	20	1810
31	---	---	---	---	26	3130	---	---	---
TOTAL	---	---	2083200	---	---	378290	---	---	52160
JULY				AUGUST			SEPTEMBER		
1	---	20	1520	---	29	2960	---	48	5200
2	---	20	1410	---	41	4350	---	53	5760
3	---	17	1430	---	18	1560	---	32	3080
4	---	20	1870	---	17	1730	---	27	2470
5	---	17	1500	---	22	1840	---	39	3250
6	---	19	1520	---	27	2340	---	48	4280
7	---	21	1910	---	31	3480	---	55	6070
8	---	20	1580	---	35	3640	---	28	3260
9	---	22	1410	---	23	1980	---	13	1190
10	---	26	1790	---	18	1720	---	18	1690
11	---	22	1760	---	35	3690	---	16	1640
12	---	20	1940	---	49	5890	---	25	2170
13	---	21	2020	---	38	4280	---	46	3310
14	---	19	1700	---	30	2950	---	44	3750
15	---	16	1530	---	7	746	---	25	2530
16	---	14	1250	---	6	622	---	18	1790
17	---	23	1750	---	9	780	---	48	4080
18	---	36	3180	---	14	1240	---	54	4950
19	---	24	1990	---	15	1580	---	42	3660
20	---	49	3960	---	16	1480	---	23	2170
21	---	44	3360	---	16	1410	---	17	1620
22	---	18	1540	---	12	1240	---	24	2290
23	---	35	2750	---	10	970	---	25	3850
24	---	35	2860	---	8	728	---	27	3620
25	---	14	1070	---	14	1200	---	59	7070
26	---	25	1810	---	10	891	---	24	2620
27	---	50	3690	---	25	3040	---	27	3180
28	---	38	2690	---	22	2440	---	31	3760
29	---	33	3010	---	23	2490	---	23	2810
30	---	28	2290	---	25	2960	---	24	2790
31	---	34	2610	---	21	2420	---	---	---
TOTAL	---	---	64700	---	---	68647	---	---	99910

## MISSISSIPPI RIVER MAIN STEM

05587550 MISSISSIPPI RIVER BELOW ALTON, IL  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

LOCATION.--Lat 38°51'41", long 90°08'15", Madison County, Hydrologic Unit 07110009, 1.0 mi downstream from gaging station, 6.7 mi upstream from Missouri River and at mile 201.7 upstream from Ohio River.

DRAINAGE AREA.--171,500 mi<sup>2</sup>, approximately above gage.

PERIOD OF RECORD.--Water year 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1981.

WATER TEMPERATURE: October 1974 to September 1981.

REMARKS.--Records of discharge are given for gaging station 05587450 Mississippi River at Grafton, IL.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 704 microsiemens, Jan. 24, 1977; minimum, 286 microsiemens, July 5, 1978.

WATER TEMPERATURE: Maximum, 30.0°C on several days during July; minimum, 0.0°C on many days during winter periods.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (FTU) (00076)	OXYGEN, DIS- SOLVED SATUR- ATION (MG/L) (00300)	COLI- FORM, FECAL, UM-MF (COLS./ 100 ML) (00301)	COLI- FORM, FECAL, UM-MF (COLS./ 100 ML) (31625)
NOV										
04...	1045	69300	453	--	8.00	11.5	6.3	8.9	83	K4
JAN										
13...	0910	67800	--	533	7.70	0.0	8.1	17.1	118	K14
MAR										
03...	1020	110000	570	--	8.10	2.0	22	15.1	111	140
MAY										
18...	1020	63100	452	--	8.70	20.0	7.8	9.9	111	K4
JUL										
13...	1040	35600	530	--	8.60	28.0	5.1	5.2	68	K64
SEP										
14...	1030	31500	485	--	8.50	22.5	9.0	7.3	85	K24

DATE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FIELD (MG/L AS CACO3) (00904)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY DISSOLV FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
NOV									
04...	K2	230	45	49	25	18	3.1	181	41
JAN									
13...	K24	260	55	63	24	14	3.1	202	42
MAR									
03...	400	240	56	58	23	22	3.4	184	40
MAY									
18...	K8	210	56	44	24	16	2.6	153	50
JUL									
13...	K140	230	63	48	26	26	3.3	164	52
SEP									
14...	K8	200	37	41	24	25	3.1	164	40

K--Results based on colony count outside the acceptable range (non-ideal colony count).

## MISSISSIPPI RIVER MAIN STEM

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05587550 MISSISSIPPI RIVER BELOW ATLON, IL--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	
NOV 04...	25	0.40	0.70	286	276	0.39	53500	0.020	1.10	
JAN 13...	22	0.20	10	316	317	0.43	95600	0.010	4.00	
MAR 03...	36	0.20	9.7	320	316	0.44	95000	0.040	2.90	
MAY 18...	25	0.40	0.10	262	266	0.36	44600	0.040	1.40	
JUL 13...	36	0.20	0.91	307	323	0.42	29500	0.040	0.200	
SEP 14...	32	0.20	0.91	278	269	0.38	23600	<0.010	0.590	
DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, PENDEDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	
NOV 04...	0.190	0.210	0.90	0.090	0.080	0.070	16	2980	11	
JAN 13...	0.070	0.070	0.90	0.150	0.080	0.070	17	5020	47	
MAR 03...	0.320	0.310	1.3	0.150	0.120	0.110	--	--	--	
MAY 18...	0.010	<0.010	1.4	0.090	0.050	0.020	41	6990	65	
JUL 13...	0.140	0.170	1.4	0.210	0.130	0.070	69	6630	--	
SEP 14...	<0.010	<0.010	0.70	0.170	0.130	0.090	25	2130	59	
DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 04...	<10	2	53	<0.5	<1	<1	<3	6	5	<5
JAN 13...	<10	<1	64	<0.5	<1	30	<3	3	7	<5
MAY 18...	10	1	72	<0.5	<1	<1	<3	8	<3	<5
JUL 13...	<10	4	74	0.7	<1	<1	<3	8	<3	<5
DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 04...	6	3	<0.1	<10	1	2	<1.0	130	<6	<3
JAN 13...	5	34	<0.1	<10	2	<1	<1.0	130	<6	5
MAY 18...	10	7	<0.1	<10	<1	<1	<1.0	120	<6	7
JUL 13...	7	<1	<0.1	<10	2	<1	<1.0	150	<6	

## MISSOURI RIVER BASIN BELOW SIOUX CITY, IOWA

## TARKIO RIVER BASIN

06813000 TARKIO RIVER AT FAIRFAX, MO

LOCATION.--Lat 40°20'20", long 95°24'32", in NW 1/4 SW 1/4 SW 1/4 sec.22, T.64 N., R.40 W., Atchison County, Hydrologic Unit 10240005, on left bank 50 ft downstream from bridge on State Road J, 0.5 mi west of Fairfax, and 2 mi downstream from Cow Branch, and at mile 13.3.

DRAINAGE AREA.--508 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1922 to current year.

REVISED RECORDS.--WSP 856: 1937.

GAGE.--Water-stage recorder. Datum of gage is 867.66 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1931, nonrecording gage at site 50 ft downstream at datum 2.0 ft higher. Oct. 1, 1931 to Oct. 22, 1953, nonrecording gage at site 50 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Dec. 15 to Feb. 22. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	262	376	254	200	150	129	99	76	49	69	4.9	1.3
2	248	285	229	200	130	129	153	73	50	47	3.8	1.1
3	236	239	236	210	130	123	143	82	46	35	2.8	2.6
4	236	196	258	190	120	116	123	86	45	28	3.8	.77
5	234	181	247	170	100	119	111	77	43	24	6.7	.36
6	224	176	267	145	90	123	115	73	41	20	4.6	.37
7	222	179	348	130	85	124	110	74	40	18	3.9	1.8
8	220	183	328	120	90	128	103	77	39	15	2.7	.99
9	215	177	336	110	115	125	97	75	36	18	3.2	.70
10	212	171	352	100	110	118	107	69	34	29	5.2	.99
11	216	171	326	90	100	118	103	66	34	26	3.3	.32
12	213	171	307	95	90	116	98	64	34	22	2.6	.28
13	212	170	287	90	95	107	95	61	33	18	3.1	6.8
14	204	166	283	90	100	97	92	57	36	16	3.6	.29
15	204	163	255	95	100	106	87	56	34	13	2.5	21
16	240	165	236	100	110	110	85	51	35	11	1.4	69
17	223	171	220	120	130	116	87	49	34	12	.64	46
18	199	169	210	130	125	112	85	50	32	37	.43	20
19	191	162	230	135	120	111	82	49	29	55	3.6	16
20	188	156	339	150	150	109	82	48	27	80	14	19
21	187	157	271	140	170	106	80	62	26	36	5.7	18
22	188	158	252	130	205	102	81	86	25	23	8.1	11
23	192	157	240	140	167	99	82	77	24	19	36	6.7
24	212	154	234	150	136	101	81	89	23	16	21	5.9
25	214	169	227	140	135	103	80	75	21	13	8.2	5.0
26	230	167	212	110	149	100	86	62	19	10	3.6	5.7
27	218	164	236	90	152	94	102	57	17	9.1	2.7	6.0
28	212	233	240	90	139	94	92	58	17	7.9	3.1	17
29	206	261	228	100	132	95	83	56	17	7.8	2.1	57
30	204	244	225	150	---	93	79	51	31	6.6	2.5	43
31	226	---	220	220	---	90	---	49	---	5.4	1.8	---
MEAN	216	190	262	133	125	110	96.8	65.6	32.4	24.1	5.53	12.8
MAX	262	376	352	220	205	129	153	89	50	80	36	69
MIN	187	154	210	90	85	90	79	48	17	5.4	.43	.28
IN.	.49	.42	.60	.30	.27	.25	.21	.15	.07	.05	.01	.03

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	135.5	120.0	96.6	99.8	189.9	297.5	257.0	300.7	414.3	265.6	165.5	179.0
MEAN	135.5	120.0	96.6	99.8	189.9	297.5	257.0	300.7	414.3	265.6	165.5	179.0
MAX	1124	990.4	553.0	612.5	889.6	1717	1160	1595	1963	1478	1199	1303
(WY)	1974	1978	1974	1960	1973	1979	1984	1987	1947	1929	1982	1977
MIN	2.31	3.06	3.55	1.35	5.55	10.5	4.44	6.17	12.7	.984	.206	1.20
(WY)	1940	1940	1940	1940	1940	1938	1956	1956	1956	1934	1934	1939

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	106.3	210.6
HIGHEST ANNUAL MEAN		677.2
LOWEST ANNUAL MEAN		23.6
HIGHEST DAILY MEAN	376	11100
LOWEST DAILY MEAN	.28	0
INSTANTANEOUS PEAK FLOW	495	16300
INSTANTANEOUS PEAK STAGE (FEET)	7.97	25.48
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	2.84	5.63
10 PERCENTILE	231	442
50 PERCENTILE	94	66
95 PERCENTILE	2.4	4.8

## MISSOURI RIVER MAIN STEM

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## 06813500 MISSOURI RIVER AT RULO, NE

LOCATION.--Lat 40°03'13", long 95°25'19", in NW 1/4 NW 1/4 sec.17, T.1 N., R.18 E., Richardson County, Hydrologic Unit 10240005, on right bank at downstream side of bridge on U.S. Highway 159 at Rulo, 3.2 mi upstream from Big Nemaha River, and at mile 498.0.

DRAINAGE AREA.--414,900 mi<sup>2</sup>, approximately. The 3,959 mi<sup>2</sup> in Great Divide basin are not included.

PERIOD OF RECORD.--October 1949 to current year in reports of Geological Survey. Gage-height record collected at site 80 ft upstream January 1886 to December 1899 published in reports of Missouri River Commission September 1929 to September 1950 in files of Kansas City office of U.S. Army Corps of Engineers.

REVISED RECORDS.--WDR MO-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 837.23 ft above National Geodetic Vertical Datum of 1929. Oct. 1949 to Sept. 12, 1950, nonrecording gage at site 80 ft upstream and Sept. 13, 1950, to Apr. 19, 1983, recording gage on downstream end of middle pier, all at same datum.

REMARKS.--Estimated daily discharges: Aug. 15, 16. Records good except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. U.S. Army Corps of Engineers satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1881 reached a stage of 22.9 ft, from floodmark, discharge not determined.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42000	49000	37200	28200	35000	45900	44500	41400	42800	35900	36300	34800
2	40700	47200	35400	27100	31800	43500	44600	41000	42800	35800	36500	35100
3	40200	46000	34000	25600	28900	44200	44000	41900	42400	35800	35900	37000
4	40300	45700	33400	25000	28300	44700	43500	42200	42300	35400	35600	40200
5	39700	45400	32800	25900	28100	42300	42900	43100	42100	35300	35700	40400
6	40000	45600	32700	26700	28600	41700	43400	43300	41500	35900	36300	40200
7	40200	46000	32800	25000	28600	40600	43600	45200	41100	36500	36500	40400
8	39500	45300	32400	21100	28100	41100	43700	45200	40300	35600	34700	39900
9	40100	44800	32900	20500	27800	40500	44600	44900	41300	37000	34600	39400
10	40100	44600	33500	22700	28200	40500	44500	47000	45100	39400	35100	40100
11	40500	44300	34200	24000	29300	40200	44700	46100	42400	39000	35400	40400
12	40200	44200	33800	24500	28100	39300	44100	46400	39400	37900	35300	40700
13	39900	44900	33700	25100	27500	38800	44300	45400	38800	37600	35400	41300
14	40200	44400	32900	25400	27500	39000	43000	44200	37700	37400	36200	41500
15	40500	43700	32500	25900	28500	39300	42900	43000	36900	36900	35700	42000
16	41400	44300	31700	24900	28700	36800	42700	41700	36600	38100	36300	42900
17	42500	44600	30700	25000	29600	34100	42500	41200	37100	40000	35700	43600
18	43000	44900	31800	27900	29900	33400	41500	40800	36500	41600	35300	44000
19	43100	44900	31200	30300	31700	33100	41100	39900	36400	39700	35300	42400
20	43300	45400	30900	30700	34400	33100	40300	39600	36500	41400	36300	39200
21	43200	45100	32000	29900	37800	34000	39900	40700	36600	39300	37000	38000
22	42900	44100	32400	29100	39900	35800	40400	44200	36000	38200	36200	39000
23	42600	44100	32300	27400	41200	38400	40100	49500	35900	38100	36300	39500
24	42100	44200	32700	27800	39800	39200	40200	50700	36100	37300	40100	38800
25	41000	44800	33000	27800	40300	40800	40500	46700	35800	36800	42400	38900
26	40200	44200	32600	27600	39300	42200	40000	45400	35000	37700	38700	39000
27	40600	42100	32000	27100	39800	44500	39800	43400	34900	38600	36400	38900
28	40800	40900	31300	26700	41400	45300	40600	44900	35100	38200	35700	39700
29	41600	40300	30300	25800	45200	45300	41400	43700	34700	37300	35800	42100
30	41500	38900	29200	27100	---	45400	41700	42600	36000	37100	35500	46600
31	43300	---	28800	30900	---	44300	---	41600	---	36800	35100	---
MEAN	41200	44460	32490	26410	32870	40240	42370	43770	38540	37660	36240	40200
MAX	43300	49000	37200	30900	45200	45900	44700	50700	45100	41600	42400	46600
MIN	39500	38900	28800	20500	27500	33100	39800	39600	34700	35300	34600	34800
IN.	.11	.12	.09	.07	.09	.11	.11	.12	.10	.10	.10	.11

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	45500	43420	27680	22590	28770	43230	53640	51600	55060	47650	44530	45480
MAX	77770	69430	55240	42280	52560	79590	102900	94370	130600	77010	67800	69780
(WY)	1987	1976	1987	1973	1983	1979	1984	1984	1984	1984	1975	1975
MIN	25580	17000	11330	12430	14530	19380	34520	35130	38460	33860	34070	34200
(WY)	1962	1962	1964	1964	1964	1964	1963	1963	1977	1963	1961	1963

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	38030	42460
HIGHEST ANNUAL MEAN		65930
LOWEST ANNUAL MEAN		29670
HIGHEST DAILY MEAN	50700	216000
LOWEST DAILY MEAN	20500	5200
INSTANTANEOUS PEAK FLOW	52000	358000
INSTANTANEOUS PEAK STAGE (FEET)	12.02	25.60
INSTANTANEOUS LOW FLOW	20500	4420
ANNUAL RUNOFF (INCHES)	1.24	1.39

## NODAWAY RIVER BASIN

06817700 NODAWAY RIVER NEAR GRAHAM, MO

LOCATION.--Lat 40°12'08", long 95°04'07", NE 1/4 NE 1/4 NE 1/4 sec.9, T.62 N., R.37 W., Holt County, Hydrologic Unit 10240010, at right downstream end of bridge on Highway A, 0.15 mi east of Maitland and 1.5 mi west of Graham.

DRAINAGE AREA.--1,380 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 852.09 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 2 to Feb. 21. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	661	1740	1040	566	350	596	315	193	107	64	44	43
2	583	950	895	550	300	562	395	179	106	89	43	43
3	547	762	838	560	250	505	410	183	110	73	40	43
4	517	635	972	500	200	448	412	186	107	62	38	41
5	496	545	937	440	180	406	411	177	102	59	38	39
6	489	504	874	375	150	406	359	170	92	54	39	39
7	475	482	948	350	140	425	371	169	86	51	41	40
8	457	472	1010	330	150	440	398	239	77	46	39	39
9	450	471	1070	320	180	472	303	258	71	47	39	38
10	446	457	1230	300	160	444	317	179	74	58	39	38
11	445	436	1190	280	150	406	283	159	71	65	40	35
12	436	433	1030	290	145	380	274	150	68	62	38	36
13	436	433	941	280	150	364	261	138	69	61	37	36
14	433	431	853	270	175	304	246	136	68	55	38	36
15	438	431	749	280	175	295	244	132	77	47	39	43
16	477	452	659	300	200	288	236	129	72	47	38	57
17	505	496	600	325	250	326	229	131	63	47	38	66
18	518	626	643	350	400	356	222	114	57	96	37	78
19	479	592	829	375	700	349	215	101	55	164	36	103
20	434	547	1590	390	1000	337	210	99	53	235	48	82
21	414	492	1350	380	1700	334	204	109	51	235	46	65
22	408	477	1210	350	1170	345	202	133	51	124	51	52
23	405	473	1090	360	892	324	200	149	51	80	59	45
24	401	465	1020	375	745	326	205	172	50	63	71	45
25	396	484	989	350	683	322	205	187	48	56	64	49
26	404	475	913	300	689	327	199	175	46	50	70	53
27	406	462	864	275	698	351	233	156	45	50	76	51
28	400	689	990	275	672	332	237	146	44	49	60	47
29	399	921	1020	300	662	320	231	148	43	48	53	57
30	393	1120	901	350	---	308	213	131	42	46	49	65
31	502	---	834	400	---	338	---	119	---	45	43	---
MEAN	460	598	970	360	459	379	275	156	68.5	75.1	46.2	50.1
MAX	661	1740	1590	566	1700	596	412	258	110	235	76	103
MIN	393	431	600	270	140	288	199	99	42	45	36	35
IN.	.38	.48	.81	.30	.36	.32	.22	.13	.06	.06	.04	.04

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	805.8	595.3	774.4	464.4	962.5	1007	1869	1907	1466	1168	698.9	541.0
MAX	2313	1058	1758	1199	1839	1717	3614	3899	4936	2681	2758	1550	
(WY)	1987	1987	1983	1983	1983	1983	1984	1984	1984	1986	1987	1986	
MIN	89.2	204.3	133.4	131.2	459.2	378.6	274.7	156.4	68.5	75.1	46.2	50.1	
(WY)	1984	1985	1986	1985	1988	1988	1988	1988	1988	1988	1988	1988	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	324.8		966.1	
HIGHEST ANNUAL MEAN			1516	1987
LOWEST ANNUAL MEAN			320.5	1985
HIGHEST DAILY MEAN	1740	Nov 1	20200	Aug 27 1987
LOWEST DAILY MEAN	35	Sep 11	35	Sep 11 1988
INSTANTANEOUS PEAK FLOW	2350	Nov 1	21000	Jun 15 1984
INSTANTANEOUS PEAK STAGE (FEET)	6.27	Feb 21	20.4	Jun 15 1984
INSTANTANEOUS LOW FLOW	35	Aug 19	23	Sep 9 1985
ANNUAL RUNOFF (INCHES)	3.20		9.51	
10 PERCENTILE	753		2340	
50 PERCENTILE	254		421	
95 PERCENTILE	40		52	

## NODAWAY RIVER BASIN

79

06817800 NODAWAY RIVER NEAR OREGON, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat 39°58'19", long 94°59'46", in SE 1/4 sec.36, T.60 N., R.37 W., Holt County, Hydrologic Unit 10240010, at bridge on U.S. Highway I-29, 7 mi east of Oregon.

PERIOD OF RECORD.--November 1968 to July 1975, July 1977 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)
OCT											
06...	0940	130	468	8.00	13.0	10.4	98	15	K360	230	33
NOV											
04...	0930	880	380	8.00	14.5	10.3	101	86	K1500	--	--
DEC											
01...	1345	1150	405	7.80	3.5	11.2	87	26	K12000	--	--
JAN											
05...	1200	400	529	7.80	0.0	--	--	<10	K400	270	28
FEB											
02...	1315	500	390	7.50	0.0	11.8	80	<10	250	--	--
MAR											
01...	1130	620	375	7.80	5.5	12.2	97	19	K400	--	--
APR											
05...	1145	725	435	8.10	15.5	10.7	109	11	K100	210	47
MAY											
10...	1000	365	400	7.80	17.5	8.1	85	26	K15000	--	--
JUN											
07...	1105	370	510	8.30	25.0	9.6	117	73	K100	--	--
JUL											
12...	1045	74	445	7.90	26.5	8.5	106	25	K130	200	13
AUG											
17...	1100	74	480	7.70	27.5	8.0	102	12	500	--	--
SEP											
13...	1010	50	485	7.90	18.5	8.2	91	19	250	--	--

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT										
06...	64	17	11	3.4	197	3.8	31	11	0.30	275
NOV										
04...	--	--	--	--	172	3.3	--	--	--	257
DEC										
01...	--	--	--	--	163	5.6	--	--	--	236
JAN										
05...	76	19	14	2.6	240	7.4	36	12	0.30	336
FEB										
02...	--	--	--	--	221	14	--	--	--	248
MAR										
01...	--	--	--	--	164	5.0	--	--	--	246
APR										
05...	58	15	12	3.1	160	2.5	36	11	0.30	265
MAY										
10...	--	--	--	--	173	5.3	--	--	--	234
JUN										
07...	--	--	--	--	225	2.0	--	--	--	289
JUL										
12...	53	16	14	3.3	186	4.5	34	12	0.30	263
AUG										
17...	--	--	--	--	202	7.8	--	--	--	277
SEP										
13...	--	--	--	--	220	5.4	--	--	--	289

K--Results based on colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## MISSOURI RIVER MAIN STEM

81

06818000 MISSOURI RIVER AT ST. JOSEPH, MO

LOCATION.--Lat 39°45'12", long 94°51'28", in NW 1/4, SW 1/4, sec.17, T.57 N., R.35 W., Buchanan County, Hydrologic Unit 10240011, on left bank at left abutment of St. Joseph and Grand Island Railroad bridge in St. Joseph. River mile 448.2.

DRAINAGE AREA.--420,300 mi<sup>2</sup>, approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1928 to current year. Gage-height records collected in vicinity 1873-99 are contained in reports of Missouri River Commission; since 1900 in reports of National Weather Service.

REVISED RECORDS.--WDR MO-76-1: Drainage area

GAGE.--Water-stage recorder. Datum of gage is 788.19 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 21, 1931, nonrecording gage and Oct. 21, 1931, to Dec. 31, 1933, water-stage recorder at same site at datum 5.50ft higher.

REMARKS.--Estimated daily discharges: Jan. 6-8. Water-discharge records good. Discharge measurements made weekly except during ice-flow periods. Some regulation from many upstream reservoirs. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 29, 1881, reached a stage of 27.2 ft, present datum, discharge, about 370,000 ft<sup>3</sup>/s, computed by U.S. Army Corps of Engineers. Flood of June 1844 reached a stage of 24.5 ft, discharge, about 350,000 ft<sup>3</sup>/s, computed by U.S. Army Corps of Engineers.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46000	60300	45000	28500	36600	46900	46300	43400	43100	37100	36900	35200
2	45000	53300	43200	27100	37000	44100	47700	42400	44400	37200	36500	34800
3	44600	48500	41500	25500	31100	44400	48500	43800	43600	37300	36200	35800
4	44000	47400	40400	24400	29200	45500	47100	44600	43700	37200	35500	38700
5	43600	46900	39500	24000	28500	43200	47100	44800	43300	36700	35300	40400
6	43300	46900	38800	23000	28500	42700	47100	44800	42800	36500	35600	39700
7	43500	47500	38500	21000	29200	41400	48000	45700	42600	37500	36500	39400
8	42700	47800	38200	19500	28900	41900	47200	47000	42000	36900	36100	39300
9	42300	47600	38100	18200	28100	41900	48200	47000	41900	37100	35200	38600
10	43000	47800	38300	19400	27700	41000	48700	46400	45800	40000	35200	38500
11	43400	47100	39100	22300	28800	40700	48300	46700	46200	41200	35800	38900
12	43700	46700	38500	24200	28500	40400	47900	46100	42200	40200	35700	39000
13	43400	47000	37800	24800	27500	39600	47000	46500	41000	39200	35300	39300
14	43200	47000	36800	25600	27500	39200	46300	44700	40400	39100	35700	40000
15	43600	46500	35900	26700	28700	39500	45600	44300	39300	38600	35800	40500
16	44600	47100	34800	27100	29700	38600	45400	43400	38700	38100	34900	41500
17	45700	47800	33300	25900	30700	35400	44600	42400	38800	40700	34700	42000
18	46400	48400	33400	27000	31600	34100	44100	42300	38600	42300	35300	43000
19	46400	48800	33900	30300	32500	33900	43200	41900	38300	41800	35500	43100
20	46400	48700	34100	32200	35200	33800	42600	41500	38400	41700	35900	40700
21	45800	49000	33400	31300	38800	34300	41900	42300	38700	42100	37400	38700
22	45400	47500	32900	30300	41200	36000	42100	45700	38100	39900	37500	39300
23	45100	46900	32800	28800	42500	40000	42700	52200	38000	39300	36700	39300
24	45000	46900	33500	27400	39400	41400	42400	54200	37600	39300	38000	39000
25	44700	48200	33900	28300	39400	42900	42300	50800	37600	38500	42800	38500
26	44100	48400	33700	27500	39800	44100	42600	48700	36900	38900	41300	38400
27	44100	48000	33100	27200	39700	45800	42100	46500	35800	39800	38200	38300
28	44500	46800	32700	26700	41200	47000	42300	46800	35900	40100	36500	38100
29	45000	47500	31800	26100	43600	46800	42900	46200	35600	38900	36500	40000
30	44700	46800	30300	26700	---	46400	43200	45000	36000	38500	36500	43300
31	46400	---	29700	31200	---	46300	---	43500	---	37500	35700	---
MEAN	44500	48170	36030	26070	33490	41260	45180	45540	40180	39010	36470	39380
MAX	46400	60300	45000	32200	43600	47000	48700	54200	46200	42300	42800	43300
MIN	42300	46500	29700	18200	27500	33800	41900	41500	35600	36500	34700	34800
IN.	.12	.13	.10	.07	.09	.11	.12	.12	.11	.11	.10	.10

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	38570	35670	22390	19430	26610	45270	58150	52010	65510	54000	41110	40010
MAX	87650	70980	61820	45740	60570	96800	203000	104800	144700	101400	74110	75230
(WY)	1987	1976	1987	1973	1983	1979	1952	1984	1984	1944	1951	1951
MIN	11840	12510	7600	5026	8400	15650	22570	21910	34830	26250	11680	11040
(WY)	1940	1937	1938	1940	1940	1957	1957	1931	1956	1934	1934	1934

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	39600			41580		
HIGHEST ANNUAL MEAN				72080		1984
LOWEST ANNUAL MEAN				20490		1940
HIGHEST DAILY MEAN	60300	Nov	1	380000	Apr	22 1952
LOWEST DAILY MEAN	18200	Jan	9	2300	Jan	9 1937
INSTANTANEOUS PEAK FLOW	64000	Nov	1	397000	Apr	22 1952
INSTANTANEOUS PEAK STAGE (FEET)	13.80	Nov	1	26.82	Apr	22 1952
INSTANTANEOUS LOW FLOW	17900	Jan	9	2300	Jan	9 1937
ANNUAL RUNOFF (INCHES)	1.28			1.34		
10 PERCENTILE	47200			71000		
50 PERCENTILE	40100			37400		
95 PERCENTILE	27100			11500		

## MISSOURI RIVER MAIN STEM

06818000 MISSOURI RIVER AT ST. JOSEPH, MO--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1969 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May 1984 to December 1984, July 1985 through September 1985, and April 1986 to September 1986.

DISSOLVED OXYGEN: May 1984 to November 1984, July 1985 through September 1985, and April 1986 to September 1986.

INSTRUMENTATION.--Water-quality monitor May 1984 to Dec. 1984, July 1985 to Sept. 1985, and Apr. 1986 to Sept. 1986.

REMARKS.--Discontinued as National stream-quality accounting network station, Sept. 1986.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (FTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT										
06...	0800	43200	720	--	8.30	16.0	27	9.0	90	720
NOV										
04...	0730	47800	740	--	8.30	12.5	28	12.8	121	4400
DEC										
01...	0945	45000	--	759	8.00	5.0	20	11.2	90	5500
JAN										
05...	0745	23600	790	--	7.80	2.0	7.6	13.9	98	4100
FEB										
02...	0905	38000	720	--	8.00	0.0	76	12.2	83	4300
MAR										
01...	0815	47400	685	--	7.90	3.5	48	11.2	84	3800
APR										
05...	0815	46900	790	--	8.00	10.5	40	11.0	100	1100
MAY										
10...	0650	46000	740	--	8.30	17.5	41	8.5	90	600
JUN										
07...	0735	42800	715	--	8.20	24.0	41	7.5	90	K160
JUL										
12...	0745	40200	740	--	8.20	27.0	58	5.8	73	1000
AUG										
17...	0740	34300	735	--	8.00	29.0	20	7.0	91	K190
SEP										
13...	0745	39200	750	--	8.00	21.0	20	8.0	93	200

DATE	STREP- TOCOCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FIELD (MG/L AS CACO3) (00904)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY DISSOLV FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
OCT									
06...	K150	260	78	65	24	64	5.6	183	180
NOV									
04...	1000	260	72	66	23	63	6.2	188	180
DEC									
01...	8900	250	61	64	23	61	5.1	194	170
JAN									
05...	640	310	76	80	27	65	6.2	236	190
FEB									
02...	9000	260	74	67	22	59	6.1	184	160
MAR									
01...	4100	230	62	62	19	51	7.5	171	140
APR									
05...	1100	260	74	66	23	60	5.9	186	170
MAY									
10...	520	260	85	66	24	57	6.4	180	180
JUN									
07...	<20	240	62	59	22	57	6.6	176	180
JUL									
12...	520	230	66	57	20	52	6.0	160	180
AUG									
17...	K50	210	50	52	20	73	6.0	162	210
SEP									
13...	K90	230	69	56	23	74	5.6	166	200

K--Results based on colony count outside the acceptable range (non-ideal colony count).

## MISSOURI RIVER MAIN STEM

83

06818000 MISSOURI RIVER AT ST. JOSEPH, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
OCT 06...	18	0.50	12	492	484	0.67	57400	<0.010	0.960
NOV 04...	19	0.50	12	490	487	0.67	63200	<0.010	0.920
DEC 01...	21	0.50	13	488	479	0.66	59300	<0.010	1.10
JAN 05...	19	0.50	14	551	550	0.75	35100	0.020	1.40
FEB 02...	24	0.50	15	499	471	0.68	51200	0.020	1.50
MAR 01...	19	0.40	16	430	424	0.58	55000	0.030	1.40
APR 05...	21	0.40	13	490	476	0.67	62000	0.020	1.20
MAY 10...	17	0.60	11	474	475	0.64	58900	<0.010	0.880
JUN 07...	11	0.50	11	470	455	0.64	54300	0.010	0.520
JUL 12...	17	0.40	8.2	465	439	0.63	50500	0.010	0.360
AUG 17...	20	0.40	6.8	488	485	0.66	45200	<0.010	<0.100
SEP 13...	16	0.50	6.9	494	482	0.67	52300	<0.010	<0.100

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 06...	0.020	0.030	0.90	0.240	0.050	0.040	372	43400	21
NOV 04...	0.040	0.020	0.50	0.130	0.060	0.050	515	66500	23
DEC 01...	0.050	0.050	0.50	0.070	0.060	0.040	--	--	--
JAN 05...	0.140	0.140	0.60	0.110	0.060	0.040	839	53500	5
FEB 02...	0.140	0.150	0.70	0.180	0.080	0.060	--	--	--
MAR 01...	0.180	0.210	1.5	0.340	0.130	0.130	729	93300	35
APR 05...	0.030	0.030	0.80	0.190	0.080	0.080	--	--	--
MAY 10...	0.060	0.050	<0.20	0.090	0.060	0.030	407	50500	27
JUN 07...	0.030	0.040	0.50	0.090	0.060	0.030	--	--	--
JUL 12...	0.030	0.050	0.40	0.090	0.060	0.050	188	20400	93
AUG 17...	<0.010	<0.010	0.50	0.130	0.020	0.030	--	--	--
SEP 13...	<0.010	<0.010	0.30	0.110	0.030	0.020	--	--	--

## MISSOURI RIVER MAIN STEM

06818000 MISSOURI RIVER AT ST. JOSEPH, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 04...	30	2	97	<0.5	<1	1	<3	4	37	<5
JAN 05...	<10	2	95	<0.5	<1	<1	<3	4	16	<5
MAY 10...	10	<1	95	<0.5	<1	<1	<3	2	8	<5
JUL 12...	<10	3	90	<0.5	<1	2	<3	3	17	<5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 04...	45	4	<0.1	<10	4	3	<1.0	520	<6	11
JAN 05...	46	18	<0.1	<10	2	6	<1.0	610	<6	7
MAY 10...	44	2	<0.1	<10	4	2	<1.0	510	<6	18
JUL 12...	48	<1	<0.1	<10	3	2	1.0	500	<6	10

LOCATION.--Lat 40°20'45", long 94°49'56", in SW 1/4 SW 1/4 sec.15, T.64 N., R.35 W., Nodaway County, Hydrologic Unit 10240013, on right bank at intake for City Waterworks, just upstream from City Waterworks dam, 150 ft upstream from bridge on U.S. Highway 136, 0.3 mi downstream from Thill Branch, 1 mi east of Maryville and at mile 64.0.

PERIOD OF RECORD.--October 1932 to current year. April to June 1934 monthly discharge only, published in WSP 1310.  
June 1934 to October 1971, published as "near Maryville".

GAGE.--Water-stage recorder. Datum of gage is 964.65 ft above National Geodetic Vertical Datum of 1929. Nonrecording gage prior to Sept. 15, 1958. Prior to June 20, 1934, at present site and datum. June 20, 1934, to Oct. 31, 1971, at site 3 mi upstream at datum 5.68 ft higher.

REMARKS.--Estimated daily discharges: Oct. 11, Nov. 9-11, 17-21, 28-31, Dec. 1, 2, 20, 31, Jan. 2-7, Feb. 3-8, 11-14, Apr. 10-12, and May 31 to June 6. Records fair. Some regulation at low flow by City Waterworks. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of September 16, 1926, reached a stage of 15 ft, present site, from floodmark; discharge, 14,500 ft<sup>3</sup>/s.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	936	508	102	118	113	62	41	12	22	5.1	.00
2	45	443	336	100	80	103	135	33	12	28	.23	.00
3	41	196	387	110	75	89	255	31	12	18	.00	.00
4	41	134	792	115	65	68	169	30	17	15	.00	.00
5	42	100	452	105	60	67	130	28	11	7.8	.14	.00
6	41	77	456	100	55	71	109	25	9.5	9.0	.00	.00
7	39	69	689	95	50	76	95	29	12	7.6	.00	.00
8	37	71	491	87	52	94	82	297	4.6	5.6	.00	.00
9	38	65	883	82	55	110	73	309	3.4	15	.00	.00
10	37	58	574	75	53	89	70	109	2.5	15	.00	.00
11	37	50	416	67	50	84	70	70	1.7	11	.00	.00
12	41	55	354	70	45	84	58	52	1.6	15	.00	.00
13	42	62	280	73	45	66	48	45	.99	4.3	.00	.00
14	34	68	236	72	50	44	44	38	1.8	2.6	.00	.00
15	29	78	148	71	55	53	39	35	5.6	9.6	.00	.00
16	45	145	157	82	60	64	36	31	8.4	11	.00	.00
17	59	195	179	92	122	67	38	24	6.6	2.5	.00	.58
18	46	223	192	102	646	68	36	16	4.7	1.0	.00	.04
19	33	141	316	116	620	66	37	17	4.0	38	.00	.01
20	28	111	1700	131	467	74	41	17	3.5	34	.00	.00
21	27	99	853	206	299	75	38	19	3.4	18	.00	.00
22	32	98	602	123	314	73	38	27	4.9	7.3	.00	.00
23	33	99	511	93	237	73	37	29	2.8	7.9	.00	.00
24	32	86	532	88	147	81	39	48	4.2	11	.00	.00
25	36	85	438	74	125	106	40	58	1.7	7.7	.00	.00
26	38	134	254	75	124	122	43	39	.87	2.1	.00	.00
27	37	110	303	54	160	84	86	32	.14	7.7	.00	.00
28	38	194	369	43	144	75	81	31	.12	1.4	.00	.00
29	42	839	302	61	125	73	56	29	.01	2.4	.00	.00
30	38	755	235	115	---	76	47	29	2.3	1.2	.00	.14
31	58	---	225	213	---	64	---	15	---	2.1	.00	---
MEAN	39.2	193	457	96.5	155	79.1	71.1	52.7	5.18	11.0	.18	.026
MAX	59	936	1700	213	646	122	255	309	17	38	5.1	.58
MIN	27	50	148	43	45	44	36	15	.01	1.0	.00	.00
IN.	.09	.42	1.02	.22	.32	.18	.15	.12	.01	.02	.00	.00

MEAN	156.2	123.5	86.0	104.6	242.7	417.4	344.5	413.8	474.3	211.5	134.3	153.7
MAX	1897	945.3	818.2	1186	1240	1874	1655	2242	3187	1452	991.8	1312
(WY)	1974	1942	1983	1960	1973	1979	1984	1982	1947	1986	1982	1977
MIN	.290	1.31	1.54	.111	3.06	3.42	.737	.516	5.18	1.10	.176	.026
(WY)	1957	1956	1977	1977	1938	1954	1956	1956	1988	1977	1988	1988

FOR PERIOD OF RECORD

AVERAGE FLOW	96.6		238.1	
HIGHEST ANNUAL MEAN			658.2	1982
LOWEST ANNUAL MEAN			18.6	1934
HIGHEST DAILY MEAN	1700	Dec 20	25500	Oct 12 1973
LOWEST DAILY MEAN	.00	Aug 3	0	several years
INSTANTANEOUS PEAK FLOW	2130	Dec 20	28000	Oct 12 1973
INSTANTANEOUS PEAK STAGE (FEET)	7.31	Dec 20	19.25	Oct 12 1973
INSTANTANEOUS LOW FLOW	0	Aug 3	0	several years
ANNUAL RUNOFF (INCHES)	2.55		6.28	
10 PERCENTILE	252		492	
50 PERCENTILE	46		32	
95 PERCENTILE	.00		1.1	

## PLATTE RIVER BASIN

06820500 PLATTE RIVER NEAR AGENCY, MO

LOCATION.--Lat 39°41'19", long 94°42'15", in NE 1/4 NW 1/4 sec.10, T.56 N., R.34 W., Buchanan County, Hydrologic Unit 10240012, on left bank 10 ft downstream from bridge of U.S. Highway 169, 1.5 mi downstream from Third Fork, 3.5 mi northeast of Agency, and at mile 66.8.

DRAINAGE AREA.--1,760 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--May 1924 to August 1930 (published as "at Agency"), May 1932 to current year.

GAGE.--Water-stage recorder. Datum of gage is 807.38 ft above National Geodetic Vertical Datum of 1929. May 22, 1924 to Aug. 9, 1930, nonrecording gage at site 4 mi downstream at different datum. May 13, 1932 to Nov. 14, 1965, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Jan. 4-30 and Feb. 3-15. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage height and U.S. Army Corps of Engineers satellite telemeters at stations.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	238	6170	2390	713	403	499	292	185	85	99	14	12
2	246	6270	1670	559	307	455	540	161	81	78	11	11
3	224	2130	1300	457	300	422	599	169	79	58	9.3	9.6
4	214	1230	1250	425	275	380	661	175	77	57	9.5	8.5
5	204	820	1810	400	250	333	583	153	64	60	11	8.1
6	198	614	1420	375	275	294	444	137	59	50	15	7.7
7	187	495	1120	350	300	288	365	126	57	42	10	6.7
8	180	426	1360	330	350	292	318	129	56	36	10	5.9
9	175	375	1240	320	360	305	298	175	51	35	84	5.5
10	172	341	1520	320	370	331	292	690	48	36	38	5.1
11	170	316	1570	330	350	342	270	443	44	32	18	6.6
12	166	296	1120	325	340	308	260	279	40	30	14	6.5
13	164	286	964	320	350	276	254	202	38	33	15	6.5
14	156	274	812	330	350	250	232	163	33	44	15	13
15	152	287	664	350	400	226	211	137	32	32	11	56
16	192	443	490	400	442	205	197	119	32	26	9.0	139
17	189	634	380	450	654	215	193	106	30	24	8.3	82
18	183	893	517	500	950	237	196	97	28	49	7.7	42
19	190	855	853	520	1660	242	181	89	28	31	7.3	70
20	184	718	4180	550	2110	235	174	94	29	38	7.8	64
21	160	502	4680	600	1710	224	168	108	26	70	7.9	55
22	147	431	2690	570	1470	227	168	98	26	72	27	85
23	142	395	1980	550	1210	216	166	188	26	84	46	64
24	143	363	1780	560	832	217	161	154	24	61	50	45
25	143	353	1720	550	672	250	160	123	24	48	49	56
26	152	352	1500	500	641	255	158	118	25	34	70	45
27	155	397	1090	425	611	339	156	154	22	29	81	33
28	158	728	1170	400	529	331	151	132	21	30	51	21
29	152	1970	1250	370	546	264	207	112	22	31	33	26
30	149	3090	1090	420	---	238	222	97	45	54	24	13
31	173	---	935	520	---	220	---	86	---	22	17	---
MEAN	176	1082	1500	445	656	288	276	168	41.7	46.0	25.2	33.6
MAX	246	6270	4680	713	2110	499	661	690	85	99	84	139
MIN	142	274	380	320	250	205	151	86	21	22	7.3	5.1
IN.	.12	.69	.98	.29	.40	.19	.17	.11	.03	.03	.02	.02

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	706.4	542.6	352.5	395.7	834.6	1382	1398	1467	1987	884.1	460.1	871.6
MAX	8584	4620	3248	3714	4912	6345	6835	6815	13640	7553	2935	7853	
(WY)	1974	1962	1983	1974	1973	1979	1973	1982	1947	1965	1987	1926	
MIN	.016	6.14	5.59	2.72	14.0	12.7	9.89	26.9	41.7	10.2	2.62	6.76	
(WY)	1957	1956	1939	1940	1940	1938	1956	1956	1988	1936	1934	1955	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	393.7	940.0
HIGHEST ANNUAL MEAN		2671
LOWEST ANNUAL MEAN		67.4
HIGHEST DAILY MEAN	6270	50800
LOWEST DAILY MEAN	5.1	0
INSTANTANEOUS PEAK FLOW	9110	53000
INSTANTANEOUS PEAK STAGE (FEET)	19.14	35.05
INSTANTANEOUS LOW FLOW	4.5	0
ANNUAL RUNOFF (INCHES)	3.04	7.25
10 PERCENTILE	939	2040
50 PERCENTILE	193	181
95 PERCENTILE	8.7	9.9

## PLATTE RIVER BASIN

87

06821140 SMITHVILLE RESERVOIR NEAR SMITHVILLE, MO

LOCATION.--Lat 39°23'50", long 94°33'25", SW 1/4 sec.13, T.53 N., R.33 W., Clay County, Hydrologic Unit 10240012, in control tower at outlet works on the Little Platte River, and 1.0 mi northeast of Smithville and 5.0 mi north of Kansas City.

DRAINAGE AREA.--213 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1981 to current year. Records collected at same site since 1976 and are available from U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929.

REMARKS.--Lake is formed by a rolled earthfill type dam. Storage began on July 13, 1976. An uncontrolled limited service type spillway, 50 ft wide, is located at the right abutment. Capacity of surcharge pool (elevations 876.2 ft to 891.1 ft), 182,209 acre-ft; of flood control pool (elevations 864.2 to 876.2 ft), 101,800 acre-ft; and of multipurpose pool (elevations 799.0 ft to 864.2 ft), 144,600 acre-ft. Lake is used for flood control, water supply, water quality control, recreation, and fish and wildlife enhancement.

COOPERATION.--Records furnished by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 217,000 acre-ft, Nov. 15-17, 1985, maximum elevation, 873.17 ft, Nov. 16, 17, 1985; minimum, 2,360 acre-ft, Jan. 13, 1980, elevation, 819.0 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 151,000 acre-ft, Dec. 21-26, maximum elevation, 865.09 ft, Dec. 23; minimum contents, 135,000 acre-ft, Sept. 8-15, minimum elevation, 862.79 ft, Sept. 14.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150000	148000	148000	149000	148000	147000	145000	148000	148000	144000	140000	137000
2	150000	148000	148000	149000	148000	147000	147000	148000	148000	144000	140000	137000
3	149000	148000	148000	148000	148000	147000	148000	148000	148000	144000	140000	136000
4	149000	149000	148000	147000	148000	146000	149000	149000	148000	144000	140000	136000
5	149000	148000	148000	147000	148000	146000	149000	149000	148000	144000	140000	136000
6	149000	148000	148000	146000	148000	145000	149000	149000	148000	144000	140000	136000
7	148000	148000	148000	146000	148000	145000	149000	149000	148000	143000	140000	136000
8	148000	148000	148000	146000	148000	145000	149000	150000	147000	143000	139000	135000
9	148000	148000	148000	145000	148000	145000	150000	150000	147000	143000	140000	135000
10	148000	148000	148000	145000	148000	144000	149000	150000	147000	143000	139000	135000
11	148000	148000	148000	145000	148000	144000	149000	150000	147000	143000	139000	135000
12	148000	148000	148000	145000	148000	144000	149000	150000	147000	143000	139000	135000
13	147000	148000	148000	145000	148000	144000	149000	150000	146000	143000	139000	135000
14	147000	148000	148000	145000	148000	144000	149000	150000	146000	143000	139000	135000
15	147000	148000	148000	145000	148000	144000	149000	149000	146000	142000	139000	135000
16	149000	148000	148000	145000	148000	144000	149000	150000	146000	142000	139000	138000
17	149000	148000	148000	146000	148000	144000	149000	149000	146000	142000	139000	138000
18	149000	148000	148000	146000	149000	144000	149000	149000	146000	142000	138000	139000
19	149000	148000	148000	146000	149000	144000	149000	149000	146000	142000	138000	139000
20	149000	148000	150000	146000	150000	144000	149000	149000	145000	142000	138000	139000
21	148000	148000	151000	146000	150000	144000	149000	149000	145000	142000	138000	139000
22	148000	148000	151000	146000	150000	144000	149000	149000	145000	141000	138000	138000
23	148000	148000	151000	146000	149000	144000	149000	149000	145000	141000	138000	138000
24	148000	148000	151000	146000	149000	144000	148000	149000	145000	141000	138000	138000
25	148000	148000	151000	146000	149000	144000	149000	149000	145000	141000	138000	138000
26	148000	148000	151000	146000	148000	144000	148000	149000	145000	141000	138000	138000
27	148000	148000	150000	146000	148000	144000	148000	149000	144000	141000	137000	138000
28	148000	148000	150000	146000	148000	144000	148000	149000	144000	141000	137000	138000
29	148000	148000	150000	146000	148000	145000	148000	148000	144000	140000	137000	138000
30	148000	148000	149000	146000	---	145000	148000	148000	144000	140000	137000	138000
31	148000	---	149000	147000	---	145000	---	148000	---	140000	137000	---
(-)	864.72	864.65	864.82	864.48	864.63	864.21	864.71	864.72	864.16	863.63	863.09	863.28
(=)	-2000	0	+1000	-2000	+1000	-3000	+3000	0	-4000	-4000	-3000	+1000
MAX	150000	149000	151000	149000	150000	147000	150000	150000	148000	144000	140000	139000
MIN	147000	148000	148000	145000	148000	144000	145000	147000	144000	140000	137000	135000

CAL YR 1987.....- 2000

WTR YR 1988.....-12000

(-) Elevation, in feet NGVD, at end of month

(=) Change in contents, in acre-feet

LOCATION.--Lat 39°23'17", long 94°34'44", in NW 1/4 SW 1/4, sec.23, T.53 N., R.33 W., Clay County, Hydrologic Unit 10240012, on left bank behind city equipment shelter on old bridge abutment, 500 ft upstream from town bridge in Smithville, 1,500 ft upstream from bridge on U.S. Highway 169, 0.5 mi downstream from Wilkerson Creek, 2.4 mile downstream from Smithville Lake and at mile 11.1.

PERIOD OF RECORD.--June 1965 to current year. Occasional measurements 1942, 1943, 1946, 1962-65.

GAGE.--Water-stage recorder. Datum of gage is 778.18 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Mar. 23, 1966, nonrecording gage at site 1,500 ft downstream at same datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1947 reached a stage of 37.4 ft.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	12	11	205	19	208	285	12	10	14	12	9.9
2	8.5	14	11	206	17	206	227	12	22	13	12	9.9
3	8.8	12	10	206	14	207	40	19	39	13	12	9.9
4	8.8	12	10	205	14	208	25	22	12	13	12	9.9
5	8.9	11	10	203	14	208	20	14	12	13	12	9.9
6	9.1	11	10	203	14	208	18	12	12	13	12	9.7
7	9.3	11	10	230	14	209	16	12	12	12	12	9.7
8	9.4	14	10	164	14	209	15	14	12	12	12	9.7
9	9.3	9.6	10	66	13	109	14	13	12	12	12	9.7
10	9.8	9.5	10	66	15	16	14	11	12	12	12	9.7
11	9.9	9.4	10	37	16	16	13	11	12	12	12	9.7
12	9.9	8.3	10	15	16	16	13	11	12	13	11	9.5
13	10	7.0	10	18	16	16	13	9.4	12	13	11	9.4
14	10	7.1	10	12	16	14	12	9.4	12	12	11	9.4
15	10	7.8	10	11	16	11	12	9.5	12	12	11	29
16	12	8.3	10	11	17	11	12	9.4	12	12	10	369
17	11	9.4	10	11	29	11	12	9.4	12	12	10	14
18	11	8.6	11	11	19	11	12	9.5	12	12	10	11
19	11	8.5	69	14	118	11	12	9.9	12	12	10	11
20	11	8.6	99	14	242	11	12	10	12	12	10	11
21	11	8.6	17	12	222	11	12	10	12	12	10	10
22	12	8.8	86	12	228	11	12	12	12	12	12	10
23	11	8.8	221	12	219	10	11	11	12	12	11	9.8
24	12	9.1	223	12	211	16	11	11	12	12	11	9.7
25	12	9.9	222	12	210	13	11	11	12	12	11	9.7
26	12	9.9	219	12	209	12	12	10	12	12	10	9.7
27	12	10	245	12	209	12	12	9.9	12	12	10	10
28	12	11	224	12	208	12	12	9.8	12	12	10	13
29	12	12	209	12	207	17	12	9.8	13	12	10	44
30	11	11	206	12	---	15	12	10	16	12	10	12
31	12	---	207	129	---	13	---	10	---	12	9.9	---
MEAN	10.5	9.94	78.4	69.6	88.8	66.4	30.5	11.4	13.3	12.3	11.0	24.0
MAX	12	14	245	230	242	209	285	22	39	14	12	369
MIN	8.3	7.0	10	11	13	10	11	9.4	10	12	9.9	9.4
IN.	.05	.05	.39	.34	.41	.33	.15	.06	.06	.06	.05	.11

MEAN	172.7	130.4	75.9	86.2	105.2	172.7	238.8	297.4	245.8	232.2	92.0	212.5
MAX	1108	754.9	273.9	318.1	322.1	1261	639.6	1583	1289	2126	663.0	1006
(WY)	1974	1978	1986	1983	1973	1973	1978	1974	1967	1965	1981	1977
MIN	.348	.600	.052	.074	9.47	4.73	9.85	11.4	13.3	1.08	.195	.110
(WY)	1967	1967	1977	1977	1967	1981	1981	1988	1988	1976	1976	1976

FOR PERIOD OF RECORD

AVERAGE FLOW	35.4			162.3	
HIGHEST ANNUAL MEAN				402.8	1973
LOWEST ANNUAL MEAN				35.4	1988
HIGHEST DAILY MEAN	369	Sep 16		41000	Jul 20 1965
LOWEST DAILY MEAN	7.0	Nov 13		0	many years
INSTANTANEOUS PEAK FLOW	944	Sep 16		76600	Jul 20 1965
INSTANTANEOUS PEAK STAGE (FEET)	18.04	Sep 16		44.8	Jul 20 1965
INSTANTANEOUS LOW FLOW	5.4	Jun 2		0	many years
ANNUAL RUNOFF (INCHES)	2.05			9.42	
10 PERCENTILE	203			366	
50 PERCENTILE	13			29	
95 PERCENTILE	9.0			.78	

## 06821190 PLATTE RIVER AT SHARPS STATION, MO

LOCATION.--Lat 39°24'03", long 94°43'36", in NW 1/4 SE 1/4 SW 1/4 sec.16, T.53 N., R.34 W., Platte County, Hydrologic Unit 10240012, on downstream side of center pier at Sharps bridge, 0.2 mi upstream from Jowler Creek, 3.3 mi downstream from Little Platte River, 3.6 mi south of Camden Point, and at mile 25.1.

DRAINAGE AREA.--2,380 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 754.23 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Estimated daily discharges: Nov. 3, 4, Jan. 5-11, June 16, July 31, Aug. 23, and Sept. 1-3, 13, 17. Water-discharge records poor. Some regulation from Smithville Lake (station 06821140) 17.0 mi upstream. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	352	688	3440	1230	878	827	691	306	125	72	48	51
2	321	6390	2870	856	499	777	1390	271	113	72	45	28
3	335	6080	2010	736	358	740	1430	262	143	118	35	23
4	316	2570	1510	682	430	702	1190	410	137	98	36	30
5	296	1240	1520	670	481	671	1060	361	127	72	43	31
6	279	823	2100	660	532	641	936	283	116	63	45	35
7	261	644	1700	650	477	612	753	249	105	66	41	45
8	249	536	1330	650	477	601	638	230	93	52	36	37
9	228	488	1660	640	450	603	560	294	81	45	38	40
10	220	436	1530	600	404	488	530	263	77	41	46	39
11	215	411	1820	580	397	483	506	640	76	42	87	41
12	210	394	1840	559	362	481	476	570	73	44	70	23
13	211	381	1300	536	380	461	457	405	68	38	56	26
14	209	376	1090	490	371	430	443	318	67	35	45	22
15	214	371	882	470	392	403	417	266	64	39	44	28
16	238	402	675	461	395	381	390	226	63	52	44	506
17	332	498	550	490	457	364	367	188	63	56	36	400
18	317	664	469	511	611	360	363	167	61	35	32	200
19	274	892	671	532	881	376	363	153	56	29	28	98
20	263	863	2780	580	1550	384	333	140	50	35	29	61
21	271	751	5600	661	2390	379	314	141	47	34	25	40
22	249	576	5100	660	2470	374	286	182	51	36	33	52
23	206	510	3560	617	2040	364	267	172	48	46	48	36
24	195	481	2740	732	1570	359	262	241	50	62	35	50
25	193	454	2450	667	1140	391	253	278	53	70	56	49
26	194	449	2350	565	972	382	237	214	49	52	56	34
27	210	455	2040	456	908	390	235	168	47	62	57	34
28	226	510	1670	432	881	416	224	187	47	45	71	34
29	242	801	1750	426	817	464	222	190	48	37	90	270
30	236	2340	1780	452	---	438	248	157	57	37	69	192
31	244	---	1550	877	---	384	---	135	---	41	54	---
MEAN	252	1082	2011	617	827	488	528	260	75.2	52.5	47.7	85.2
MAX	352	6390	5600	1230	2470	827	1430	640	143	118	90	506
MIN	193	371	469	426	358	359	222	135	47	29	25	22
IN.	.12	.51	.97	.30	.37	.24	.25	.13	.04	.03	.02	.04

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1849	943.2	1358	707.4	1548	2581	2357	3186	2960	2376	1263	1377
MEAN	1849	943.2	1358	707.4	1548	2581	2357	3186	2960	2376	1263	1377
MAX	6847	2081	4555	2153	3980	8745	5259	7688	10790	8740	3535	4410
(WY)	1986	1986	1983	1983	1982	1979	1983	1982	1984	1986	1987	1982
MIN	92.5	64.3	280.7	134.7	224.2	131.9	473.2	260.2	75.2	52.5	47.7	75.9
(WY)	1981	1981	1985	1981	1981	1981	1981	1988	1988	1988	1988	1983

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	526.4	1881
HIGHEST ANNUAL MEAN		3376
LOWEST ANNUAL MEAN		526.4
HIGHEST DAILY MEAN	6390	28300
LOWEST DAILY MEAN	22	21
INSTANTANEOUS PEAK FLOW	7750	29000
INSTANTANEOUS PEAK STAGE (FEET)	23.92	34.55
INSTANTANEOUS LOW FLOW	16	16
ANNUAL RUNOFF (INCHES)	3.00	10.7
10 PERCENTILE	1250	4690
50 PERCENTILE	320	729
95 PERCENTILE	33	55

## PLATTE RIVER BASIN

06821190 PLATTE RIVER AT SHARPS STATION, MO--Continued  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1979 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1979 to September 1981.

WATER TEMPERATURE: April 1979 to September 1981.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS	SPE- CIFIC CON- DUCT- ANCE	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L CACO3)	HARD- NESS NONCARB DISSOLV FIELD (MG/L AS CACO3)	
		(CFS) (00061)	(US/CM) (00095)						(PER- CENT ITY (00300)	(COLS./ 100 ML) (31625)	(COLS. PER 100 ML) (31673)	(00900)	(00904)
NOV													
04...	1115	2440	240	7.80	15.5	280	8.4	84	5500	53000	120	11	
JAN													
07...	1000	650	465	7.90	1.0	8.8	10.4	72	2400	4800	220	16	
MAY													
10...	1245	243	500	7.80	19.5	48	7.9	86	K600	K900	230	26	
JUL													
12...	1345	47	510	7.70	28.0	26	6.5	83	K10	K100	210	23	
DATE		CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY DISSOLV FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV													
04...	35	7.5	6.9	8.0	108	21	9.7	0.30	12	177	172	0.24	
JAN													
07...	66	14	14	3.8	207	33	13	0.30	13	--	290	0.56	
MAY													
10...	69	15	17	3.8	209	37	13	0.40	6.5	291	288	0.40	
JUL													
12...	61	15	22	4.9	192	42	16	0.30	6.8	292	285	0.40	
DATE		SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN (70331)
NOV													
04...	1170	0.010	1.40	0.080	0.070	0.90	0.520	0.110	0.070	1380	9090	93	
JAN													
07...	718	0.020	1.90	0.100	0.100	0.50	0.100	0.040	0.020	106	186	63	
MAY													
10...	191	<0.010	<0.100	0.010	<0.010	0.30	0.060	0.010	0.030	--	--	--	
JUL													
12...	37.1	0.010	0.160	<0.010	0.020	0.80	0.120	0.060	0.040	79	10	89	

K--Results based on colony count outside the acceptable range (non-ideal colony count).

## PLATTE RIVER BASIN

91

06821190 PLATTE RIVER AT SHARPS STATION, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 04...	340	2	130	<0.5	<1	2	<3	6	370	<5
JAN 07...	<10	1	140	<0.5	<1	<1	<3	1	9	<5
MAY 10...	<10	2	180	<0.5	<1	<1	<3	<1	6	<5
JUL 12...	<10	3	200	<0.5	1	1	<3	1	29	<5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 04...	8	36	0.1	<10	6	<1	<1.0	150	<6	11
JAN 07...	<4	190	<0.1	<10	2	<1	<1.0	270	<6	<3
MAY 10...	11	250	0.1	<10	4	<1	<1.0	320	<6	15
JUL 12...	16	480	0.5	20	3	<1	1.0	320	<6	49

## KANSAS RIVER BASIN

06892350 KANSAS RIVER AT DESOTO, KS

LOCATION.--Lat 38°59'00", long 94°57'52", in SE 1/4 NE 1/4 NE 1/4 sec.27, T.12 S., R.22 E., Leavenworth County, Hydrologic Unit 10270104, on left bank at downstream side of bridge on county road, north edge of DeSoto, 0.4 mi upstream from Kill Creek and at mile 31.0.

DRAINAGE AREA.--59,756 mi<sup>2</sup>, of which a large area is noncontributing.

PERIOD OF RECORD.--July 1917 to current year. Monthly discharge only for some periods published in WSP 1310. Prior to October 1973, published as "at Bonner Springs."

REVISED RECORDS.--WSP 806: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 758.87 ft above National Geodetic Vertical Datum of 1929. July 9, 1917 to Apr. 23, 1934, nonrecording gage; Apr. 24, 1934, to Nov. 25, 1960, water-stage recorder at site 9.7 mi downstream at datum 11.81 ft lower; Nov. 26, 1960, to Feb. 9, 1961, nonrecording gage; Feb. 10, 1961, to Sept. 30, 1971, water-stage recorder at site 10.2 mi downstream at datum 17.81 ft lower; and Oct. 1, 1971, to Sept. 30, 1973, at site 10.2 mi downstream at datum 22.81 ft lower.

REMARKS.--Estimated daily discharges: Nov. 16-18, Jan. 7-18, and Feb. 7-18. Records good except those for estimated daily discharges, which are poor. Natural flow of stream affected by lake and reservoirs in Colorado, Nebraska, and Kansas, and by numerous diversions upstream from station. Diurnal fluctuations caused by hydroelectric plant 20.8 mi upstream; since storage capacity is small, daily flows are not affected appreciably. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1844, July 13, 1951.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5630	1930	2230	3440	5890	5020	4230	1760	1490	12600	2410	1160
2	5600	2250	2050	3320	4180	4890	6400	1830	1360	8120	2370	1160
3	5560	3270	2080	3140	3630	4170	3900	1370	1660	4290	2230	999
4	5420	2580	2670	3310	3280	3380	8960	1430	1850	3260	2220	1000
5	4550	2060	4070	3120	3000	2650	5530	1560	1920	2750	2350	1070
6	4620	1930	4630	2490	2700	3040	4410	1630	1950	2690	2250	1060
7	4640	1940	5380	3000	2300	3030	3540	1670	1970	2880	2220	1060
8	4530	1980	5890	3200	2490	2980	3570	1670	1410	2720	2110	882
9	4600	2010	5910	3000	2600	2930	3510	1660	1660	2900	2100	980
10	4550	1980	5950	2700	2900	2890	3470	1670	1620	2610	2150	1100
11	4390	1990	5960	2500	2800	2890	3300	1510	1550	2860	2190	1060
12	4320	1940	5930	2500	2900	3010	3440	1440	1580	3180	2250	982
13	4300	1980	5870	2400	3000	2970	3320	1420	1550	3050	2320	1080
14	4260	1980	5960	2500	3100	2910	3070	1410	1890	2850	2600	951
15	3830	2010	6110	2600	3300	2930	2720	1370	945	2650	2490	1260
16	4280	2280	6050	2700	3500	2910	2520	1400	1440	2820	2000	4100
17	4750	2630	6090	2800	3800	2870	2630	1680	1490	2560	1510	2010
18	4390	2280	6350	2900	4500	2760	2700	968	1460	2810	1160	1400
19	3980	2010	6850	3060	4470	2740	2900	1120	1360	2760	815	1150
20	3750	1870	9320	3700	5500	2730	2700	1350	1680	2600	918	1310
21	3590	1820	8560	3840	5680	2730	2670	1420	1890	2850	933	1310
22	3190	1790	7550	3480	5820	2510	2580	1580	1640	2850	1130	1260
23	2460	1770	5980	3420	6350	2620	2430	2780	1770	2790	1410	1250
24	2130	1770	5710	3870	6330	2370	2260	3980	1700	2790	1080	1240
25	1910	1860	4950	4930	6160	2000	2260	3400	1760	2700	1120	1040
26	1780	1820	4480	4040	5830	2020	2460	2700	1670	2620	958	1120
27	1870	1890	4190	3610	5740	1920	2280	2220	1590	2530	1050	1250
28	1860	2110	4260	3900	5620	1950	2240	1710	1620	2300	1210	1460
29	1800	2220	4230	4130	5340	2020	2020	1630	1640	2380	1120	2380
30	1740	2220	4110	5540	---	2060	1710	1630	4480	2350	1180	1430
31	1640	---	3910	4750	---	1910	---	1510	---	2460	1340	---
MEAN	3739	2072	5267	3351	4231	2833	3324	1757	1720	3277	1716	1317
MAX	5630	3270	9320	5540	6350	5020	8960	3980	4480	12600	2600	4100
MIN	1640	1770	2050	2400	2300	1910	1710	968	945	2300	815	882
IN.	.07	.04	.10	.06	.08	.05	.06	.03	.03	.06	.03	.02

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	5863	4303	3231	2824	4416	7111	9572	10610	14970	11220	5998	6453
MAX	51630	42320	21940	15990	20800	36560	43570	39040	78870	133200	23390	44660	
(WY)	1974	1974	1974	1973	1949	1973	1973	1945	1951	1951	1951	1951	
MIN	365.3	504.2	464.9	363.8	634.8	632.4	844.9	1028	1720	1106	454.5	524.9	
(WY)	1957	1957	1957	1957	1957	1967	1956	1956	1988	1936	1934	1956	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	2885	7224
HIGHEST ANNUAL MEAN		29350
LOWEST ANNUAL MEAN		1326
HIGHEST DAILY MEAN	12600	486000
LOWEST DAILY MEAN	815	160
INSTANTANEOUS PEAK FLOW	15800	510000
INSTANTANEOUS PEAK STAGE (FEET)	9.04	37.3
INSTANTANEOUS LOW FLOW	748	160
ANNUAL RUNOFF (INCHES)	.66	1.64

## MISSOURI RIVER MAIN STEM

93

06893000 MISSOURI RIVER AT KANSAS CITY, MO

LOCATION.--Lat 39°06'43", long 94°35'16", in sec.32, T.50 N., R.33 W., Jackson County, Hydrologic Unity 10300101, on downstream side of right pier of Chicago, Burlington and Quincy Railroad bridge at Kansas City, 1.4 mi downstream from Kansas River, and at mile 366.1.

DRAINAGE AREA.--485,200 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1897 to current year. Prior to August 1928 monthly discharge only, published in WSP 1310. Gage-height records collected at same site 1873-99 are contained in reports of Missouri River Commission; those since 1900 are contained in reports of National Weather Service.

REVISED RECORDS.--WDR MO-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 716.40 ft above National Geodetic Vertical Datum of 1929. Prior to May 4, 1931, nonrecording gage, and May 4, 1931, to Aug. 23, 1934, water-stage recorder, at present site and datum. Aug. 24, 1934, to May 15, 1947, water-stage recorder at site 200 ft upstream at same datum. May 16, 1947, to Feb. 28, 1948, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Jan. 7, 8, Feb. 13, Aug. 29-31, and Sept. 1. Records good. Discharge measurements made weekly except during ice-flow periods. Some regulation from many upstream reservoirs. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 16, 1844, reached a stage of 38.0 ft, discharge, about 625,000 ft<sup>3</sup>/s, computed by U.S. Army Corps of Engineers.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55000	54300	49800	35900	38800	51400	54900	45800	46100	44700	37800	36000
2	53500	61700	47300	33600	43000	53000	60300	45900	46400	47300	37300	35400
3	52200	57000	44400	32300	41200	50600	62900	45700	47100	41500	36800	35300
4	51900	54100	42900	30600	35800	50000	65200	46900	46400	39700	36600	36900
5	50900	52100	42900	29000	33600	49600	58500	47200	46700	38800	36400	39900
6	49600	51200	43600	28700	32200	46800	56000	47500	46100	38000	36100	41000
7	49500	51200	43800	28000	32400	46400	55100	47300	45400	38300	36100	39900
8	49400	52100	44400	27000	32900	44500	54800	48700	44600	38900	37400	39300
9	48200	51900	44700	26100	33100	44800	54000	50100	43700	38400	37300	39100
10	48000	51200	45400	23300	32800	44400	54700	49400	43900	39200	36400	38700
11	48100	50900	46200	23600	31800	43100	54400	49300	47000	41100	36000	38500
12	48300	50200	47500	26500	32700	42300	53300	48800	46100	42500	36300	38900
13	48200	49900	46700	27600	33700	41500	51900	48300	42600	41600	36500	39100
14	48100	50700	46500	28700	34000	40600	51000	47600	41700	40300	36400	39600
15	48300	50600	46000	29500	34000	40700	49700	46000	41100	39800	36700	43600
16	50000	50200	44800	30200	34700	41400	48600	45400	39800	39700	36500	51700
17	51200	51200	43500	30600	36300	40200	47900	44700	39100	39300	35300	46200
18	52200	51900	42200	30000	37400	37800	47800	44100	39000	41500	34800	43600
19	52600	52900	45100	32300	37900	36500	47400	43800	38300	43500	35000	44000
20	51900	53300	50400	35700	39100	36100	46600	43800	37800	42500	34800	42900
21	51200	53400	50400	37300	42700	36200	46000	43900	38400	42500	35300	40600
22	50200	52700	48900	36300	46400	36900	45400	45700	38600	43100	36900	39100
23	49500	51600	45300	35900	49300	38800	45400	50500	38200	41300	37200	39700
24	48900	51600	43400	34400	49300	42500	45600	57000	38000	40600	36600	39900
25	48600	51600	43000	34400	46400	43500	45300	57600	37800	40300	38000	39600
26	48500	51900	42500	34300	46600	44400	45500	52900	37700	39500	42200	39200
27	47900	51600	41900	33800	46200	45300	45500	51100	37000	39600	42500	39200
28	48400	50400	40300	33600	46600	47000	45300	49100	36200	40100	39900	40300
29	48700	49500	39700	33300	48300	49500	45400	49600	36400	40100	38000	45500
30	49300	50000	38600	32800	---	49200	45600	48400	38100	39300	37200	42300
31	49800	---	37200	35100	---	49200	---	47300	---	38600	36400	---
MEAN	49940	52100	44490	31300	38940	44010	51000	48050	41510	40700	36990	40500
MAX	55000	61700	50400	37300	49300	53000	65200	57600	47100	47300	42500	51700
MIN	47900	49500	37200	23300	31800	36100	45300	43800	36200	38000	34800	35300
IN.	.12	.12	.11	.07	.09	.10	.12	.11	.10	.10	.09	.09

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	46550	41830	27030	23040	32390	53930	69610	65250	82350	67710	48110	48720
MAX	135200	93340	75370	60980	77690	133700	215000	138500	193000	222900	99160	121300	
(WY)	1974	1974	1987	1973	1973	1979	1952	1984	1947	1951	1951	1951	
MIN	12360	13230	7906	5010	9308	16090	26030	26420	37280	28210	12480	13200	
(WY)	1940	1937	1938	1940	1940	1957	1957	1934	1956	1934	1934	1934	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	43280	55780
HIGHEST ANNUAL MEAN		102000
LOWEST ANNUAL MEAN		22300
HIGHEST DAILY MEAN	65200	558000
LOWEST DAILY MEAN	23300	1500
INSTANTANEOUS PEAK FLOW	68300	573000
INSTANTANEOUS PEAK STAGE (FEET)	6.94	36.2
INSTANTANEOUS LOW FLOW	23000	1500
ANNUAL RUNOFF (INCHES)	1.21	1.42
10 PERCENTILE	51900	92100
50 PERCENTILE	43700	42700
95 PERCENTILE	32200	13100

## BLUE RIVER BASIN

06893500 BLUE RIVER NEAR KANSAS CITY, MO

LOCATION.--Lat 38°57'26", long 94°33'31", in SE 1/4 NE 1/4 sec.28, T.48 N., R.33 W., Jackson County, Hydrologic Unit 10300101, on downstream side of right pier of bridge on Bannister Road, 0.4 mi downstream from Indian Creek, in Kansas City and at mile 23.2.

DRAINAGE AREA.--188 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1939 to current year.

REVISED RECORDS.--WSP 926: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 753.73 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to July 1, 1939, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Low flow regulated by commercial plants above station. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of November 17, 1928, reached a stage of about 39 ft, from information by City of Kansas City.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	72	52	99	89	73	3070	51	31	205	15	14
2	26	38	46	87	74	72	2500	51	36	83	16	16
3	25	30	41	85	65	127	531	68	32	50	17	15
4	26	29	36	80	62	112	326	67	29	39	27	15
5	28	28	37	72	59	101	241	53	27	31	55	14
6	29	27	33	61	57	119	201	49	29	28	30	18
7	26	27	33	60	55	127	157	46	24	24	21	16
8	25	28	31	59	60	114	135	47	25	23	19	16
9	26	28	31	58	64	102	118	51	28	28	16	15
10	25	26	29	58	61	94	146	44	27	171	17	15
11	26	26	31	60	60	89	108	37	25	61	16	17
12	27	26	30	63	60	86	94	40	26	65	20	18
13	24	26	29	61	63	83	88	38	29	53	38	17
14	25	26	32	56	131	80	85	37	29	39	30	16
15	25	77	36	58	115	76	81	38	119	38	20	2850
16	184	66	38	63	106	73	77	39	152	133	17	4830
17	48	100	38	68	102	77	82	35	53	76	15	206
18	33	43	39	66	94	85	191	35	44	64	11	102
19	31	35	1780	233	117	79	101	35	41	44	17	99
20	30	32	1410	158	129	76	84	174	41	32	14	63
21	29	31	306	96	104	73	77	67	36	27	17	50
22	29	26	192	80	103	71	73	81	36	24	18	46
23	30	29	153	77	97	67	67	107	35	21	19	40
24	26	152	155	72	87	77	63	61	34	20	18	35
25	30	121	130	64	81	79	63	44	34	21	16	33
26	61	55	113	62	78	68	61	41	32	18	15	31
27	34	92	256	59	75	63	58	38	33	19	17	24
28	29	145	246	61	69	97	57	33	26	18	19	117
29	28	87	146	65	73	271	53	31	19	16	17	623
30	26	64	122	71	---	133	52	29	1160	18	12	83
31	121	---	115	81	---	101	---	32	---	18	14	---
MEAN	37.4	53.1	186	77.2	82.4	95.0	301	51.6	76.4	48.6	19.8	315
MAX	184	152	1780	233	131	271	3070	174	1160	205	55	4830
MIN	24	26	29	56	55	63	52	29	19	16	11	14
IN.	.23	.32	1.14	.47	.47	.58	1.79	.32	.45	.30	.12	1.87

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	135.4	93.6	83.9	96.3	123.7	194.4	264.7	209.2	287.3	155.5	80.7	162.8
MEAN	135.4	93.6	83.9	96.3	123.7	194.4	264.7	209.2	287.3	155.5	80.7	162.8
MAX	789.9	771.0	472.2	445.1	739.8	1407	1279	701.9	1285	1616	431.3	1395
(WY)	1987	1962	1974	1941	1985	1973	1944	1974	1967	1951	1982	1986
MIN	.000	.000	.000	.000	2.66	4.36	6.41	17.8	7.44	1.72	.939	.047
(WY)	1940	1940	1940	1940	1940	1957	1954	1956	1953	1946	1947	1939

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	111.3	157.8
HIGHEST ANNUAL MEAN		365.3
LOWEST ANNUAL MEAN		12.8
HIGHEST DAILY MEAN	4830	20000
LOWEST DAILY MEAN	11	0
INSTANTANEOUS PEAK FLOW	9220	41000
INSTANTANEOUS PEAK STAGE (FEET)	24.00	44.46
INSTANTANEOUS LOW FLOW	6.0	0
ANNUAL RUNOFF (INCHES)	8.04	11.4
10 PERCENTILE	135	276
50 PERCENTILE	51	43
95 PERCENTILE	16	1.9

## LITTLE BLUE RIVER BASIN

95

## 06893791 LONGVIEW RESERVOIR AT KANSAS CITY, MO

LOCATION.--Lat 38°55'29", long 94°27'35", SE 1/4 NE 1/4 NW 1/4 sec.4, T.48 N., R.32 W., Jackson Country, Hydrologic Unit 10300101, in the U.S. Army Corps of Engineers Administration building at the right end of dam on Little Blue River at Kansas City and 3.1 miles upstream from Cedar Creek.

DRAINAGE AREA.--50.3 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Lake is formed by a rolled earthfill type dam. Closure began June 16, 1983. Storage began on Sept. 16, 1985. An uncontrolled limited service type spillway 200 ft wide is located at the left abutment. Capacity of surcharge pool (909.0 ft to 922.9 ft), 82,310 acre-ft; of flood control pool (elevation 891.0 ft to 909.0 ft), 24,800 acre-ft; and of multipurpose pool (elevation 816.0 ft to 891.0 ft), 22,100 acre-ft. Lake is used for flood control, water quality control, recreation and fish and wildlife enhancement.

COOPERATION.--Records furnished by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 28,700 acre-ft, Oct. 3, 1986, elevation, 897.17 ft; minimum, 2,680 acre-ft, Oct. 1, 1985, elevation, 849.40 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 24,500 acre-ft, Apr. 2, elevation, 893.38 ft; minimum, 19,600 acre-ft, Sept. 13-14, elevation, 888.12 ft, Sept. 14.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21100	20600	20700	22600	22400	22300	22600	21700	21100	21200	20600	20000
2	21100	20600	20700	22500	22400	22200	24500	21600	21100	21200	20600	20000
3	21000	20600	20600	22500	22400	22200	24000	21600	21100	21200	20600	19900
4	21000	20600	20600	22500	22400	22200	23500	21500	21000	21200	20500	19900
5	21000	20600	20600	22500	22400	22200	23200	21500	21000	21100	20600	19800
6	20900	20600	20600	22400	22400	22200	23000	21500	20900	21100	20500	19800
7	20900	20500	20600	22400	22400	22300	22800	21500	20900	21100	20500	19800
8	20900	20500	20600	22400	22400	22300	22700	21500	20900	21100	20500	19800
9	20800	20500	20500	22400	22400	22300	22600	21400	20900	21000	20400	19700
10	20800	20500	20500	22400	22300	22300	22600	21400	20800	21000	20400	19700
11	20800	20500	20500	22400	22400	22300	22500	21400	20800	21000	20400	19700
12	20700	20400	20500	22400	22400	22200	22400	21400	20700	21100	20300	19700
13	20700	20400	20500	22300	22400	22200	22400	21400	20700	21000	20300	19600
14	20700	20400	20400	22300	22400	22200	22300	21300	20700	21000	20400	19600
15	20700	20300	20500	22300	22500	22200	22300	21300	20700	21000	20400	19700
16	20700	20400	20500	22300	22500	22200	22300	21300	20900	21000	20400	21100
17	20700	20500	20500	22300	22500	22100	22200	21300	20900	21000	20300	21200
18	20700	20500	20500	22300	22500	22100	22300	21300	20900	21100	20300	21200
19	20700	20500	20500	22400	22500	22100	22300	21200	20900	21000	20300	21300
20	20700	20500	22000	22500	22600	22100	22300	21200	20800	21000	20300	21200
21	20700	20400	22200	22500	22600	22100	22300	21300	20800	21000	20300	21200
22	20600	20400	22200	22500	22600	22100	22200	21300	20800	20900	20300	21200
23	20600	20400	22300	22500	22600	22100	22200	21300	20700	20900	20300	21200
24	20600	20400	22300	22400	22600	22100	22200	21300	20700	20900	20300	21100
25	20600	20600	22400	22400	22600	22100	22200	21300	20700	20800	20200	21100
26	20600	20600	22400	22400	22600	22100	22100	21300	20600	20800	20200	21100
27	20600	20600	22400	22400	22500	22100	22100	21200	20600	20800	20200	21100
28	20600	20700	22600	22400	22500	22100	22000	21200	20600	20700	20100	21000
29	20500	20700	22600	22400	22500	22100	21900	21200	20500	20700	20100	21700
30	20500	20700	22600	22400	---	22200	21800	21200	20800	20700	20100	21800
31	20500	---	22600	22400	---	22200	---	21100	---	20700	20000	---
(-)	889.17	889.39	891.46	891.31	891.42	891.05	890.66	889.89	889.47	889.36	888.63	890.61
(=)	-600	+200	+1900	-200	+100	-300	-400	-700	-300	-100	-700	+1800
MAX	21100	20700	22600	22600	22600	22300	24500	21700	21100	21200	20600	21800
MIN	20500	20300	20400	22300	22300	22100	21800	21100	20500	20700	20000	19600

CAL YR 1987.....+100

WTR YR 1988.....+700

(-) Elevation, in feet NGVD, at end of month

(=) Change in contents, in acre-feet

## LITTLE BLUE RIVER BASIN

06893793 LITTLE BLUE RIVER BELOW LONGVIEW DAM AT KANSAS CITY, MO

LOCATION.--Lat 38°55'26", long 94°28'05", in NE 1/4 SW 1/4 NW 1/4 sec.4, T.47 N., R.32 W., Jackson County, Hydrologic Unit 10300101, on right bank 300 ft downstream from Longview Dam.

DRAINAGE AREA.--50.3 mi<sup>2</sup>.

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

REVISED RECORDS.--WDR MO-77-1: 1975-76. WDR MO-86-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 798.60 ft above National Geodetic Vertical Datum of 1929. Aug. 1, 1966, to Oct. 24, 1974, at site 0.7 mi upstream at datum 24.90 ft higher. Oct. 25, 1974, to Sept. 30, 1985, at site 0.5 mi downstream at present datum.

REMARKS.--Estimated daily discharges: Sept. 16-30. Records good. Construction of dam began Oct. 1982 and storage began Sept. 1985. Several observations of water temperature and specific conductance were made during the year. Complete regulation by Longview Reservoir (station 06893791) 300 ft upstream.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	8.5	7.8	17	9.5	12	119	47	9.1	8.1	7.9	7.1
2	8.3	8.3	7.5	16	9.0	11	373	48	9.1	7.9	7.9	7.1
3	8.3	8.3	7.7	15	8.7	13	238	49	5.6	7.9	7.9	7.1
4	8.3	8.5	7.9	13	8.7	15	171	21	5.2	7.9	7.9	7.3
5	8.3	8.7	7.9	12	8.3	15	130	.90	5.2	7.9	7.9	7.2
6	8.5	8.5	7.9	11	8.4	18	98	5.6	5.5	7.9	7.9	7.1
7	8.4	8.3	7.9	9.9	8.0	21	76	13	5.5	7.9	7.9	6.9
8	8.3	8.0	7.8	9.0	8.0	20	62	13	5.4	7.9	7.5	7.0
9	8.3	7.9	7.7	8.5	7.5	19	49	12	5.5	7.4	7.5	7.1
10	8.3	7.9	7.9	7.8	7.5	18	43	9.5	5.2	7.1	7.5	7.1
11	8.3	7.9	8.2	7.3	7.1	17	36	10	5.2	7.3	7.5	7.1
12	8.3	7.9	8.3	7.4	7.1	15	31	9.6	5.2	7.2	7.5	7.1
13	8.3	7.9	8.4	7.5	7.1	13	27	9.5	5.2	7.1	7.2	7.1
14	8.3	7.9	8.7	7.5	7.6	11	24	9.1	5.2	7.1	7.1	7.1
15	8.5	7.5	8.7	7.5	7.9	10	21	9.1	6.0	7.1	7.4	8.3
16	9.0	7.6	8.7	7.5	8.4	9.8	19	8.8	8.7	7.1	7.6	9.1
17	9.1	7.9	8.7	7.5	8.9	9.5	18	8.7	8.3	7.4	7.5	8.7
18	9.0	7.9	8.7	7.5	9.2	9.7	23	8.9	8.3	7.2	7.5	8.7
19	8.7	7.9	13	8.5	13	10	23	9.1	8.3	7.1	7.5	8.7
20	8.7	7.9	11	11	18	9.7	21	9.2	8.3	7.1	7.5	8.7
21	8.7	7.7	9.8	11	19	9.2	19	9.1	8.3	7.6	7.5	8.7
22	8.7	7.5	9.5	11	19	12	18	9.1	8.3	8.7	7.5	8.7
23	8.7	7.5	9.9	10	18	8.5	16	9.1	8.3	8.7	7.5	8.7
24	8.9	7.5	9.8	9.6	17	12	14	8.9	8.3	8.7	7.5	8.5
25	8.9	7.9	9.5	9.2	16	9.6	14	8.7	8.3	8.7	7.5	8.5
26	8.7	7.9	9.5	8.5	16	8.7	30	8.7	8.3	8.4	6.4	8.5
27	8.7	7.9	12	7.9	14	11	47	8.7	8.0	8.3	7.1	8.5
28	8.7	7.9	19	7.9	14	10	47	8.7	7.9	8.3	7.1	8.5
29	8.7	7.9	19	9.5	13	9.7	47	8.7	7.9	8.3	7.1	8.5
30	8.7	7.9	21	13	---	12	47	9.0	8.9	8.3	7.1	8.5
31	8.9	---	18	9.8	---	12	---	9.1	---	8.0	7.1	---
MEAN	8.57	7.96	10.2	9.86	11.2	12.6	63.4	13.2	7.08	7.79	7.47	7.91
MAX	9.1	8.7	21	17	19	21	373	49	9.1	8.7	7.9	9.1
MIN	8.3	7.5	7.5	7.3	7.1	8.5	14	.90	5.2	7.1	6.4	6.9
IN.	.20	.18	.23	.22	.24	.29	1.39	.30	.16	.18	.17	.17

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	46.5	26.5	25.6	27.6	34.0	58.4	60.8	57.6	87.3	14.6	15.9	35.7
MAX	283.4	87.2	108.2	112.8	245.1	479.6	232.1	184.2	365.6	57.3	119.4	225.4	
(WY)	1987	1985	1974	1974	1985	1973	1973	1982	1967	1981	1982	1986	
MIN	2.86	3.58	1.96	7.00	5.56	5.64	4.98	5.56	4.85	2.65	.239	2.13	
(WY)	1979	1967	1977	1977	1986	1986	1986	1986	1986	1975	1984	1978	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	13.9	40.9
HIGHEST ANNUAL MEAN		107.8
LOWEST ANNUAL MEAN		11.0
HIGHEST DAILY MEAN	373	3940
LOWEST DAILY MEAN	.90	0
INSTANTANEOUS PEAK FLOW	431	18700
INSTANTANEOUS PEAK STAGE (FEET)	5.96	21.24
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	3.72	11.0
10 PERCENTILE	19	59
50 PERCENTILE	8.5	9.8
95 PERCENTILE	6.8	1.4

## LITTLE BLUE RIVER BASIN

97

06893890 EAST FORK LITTLE BLUE RIVER NEAR BLUE SPRINGS, MO

LOCATION.--Lat 39°01'32", long 94°20'37", in NE 1/4 NE 1/4 NW 1/4 sec.33, T.49 N., R.31 W., Jackson County, Hydrologic Unit 10300101, on left downstream side of bridge on east bound lane of U.S. Highway 40, 2.6 mi west of Blue Springs and 1.5 miles upstream from mouth.

DRAINAGE AREA.--34.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 753.09 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Estimated daily discharges: Feb. 5 and Apr. 1-13. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. Flow impounded or detained in Jackson County Lake at times, and by Blue Springs Reservoir subsequent to July 1986.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	21	7.5	14	13	12	75	5.8	.50	1.8	.00	.00
2	.50	5.2	7.0	14	9.6	11	141	5.4	1.1	1.6	.00	.00
3	.50	1.7	7.0	14	8.8	12	150	7.1	1.2	1.0	.00	.00
4	.50	.94	5.9	14	8.6	15	152	11	.97	.70	.0	.00
5	.50	.73	5.4	15	8.0	15	140	7.4	.73	.48	.00	.00
6	.50	.60	5.3	15	7.0	16	118	6.2	.55	.37	.00	.00
7	.50	.51	5.0	15	6.4	19	92	5.7	.44	.25	.00	.00
8	.50	.51	5.0	15	5.4	19	73	5.9	.37	.18	.00	.00
9	.50	.47	5.4	15	5.1	17	59	5.8	.28	.14	.00	.00
10	.50	.44	4.8	15	5.1	16	49	4.6	.18	.13	.00	.00
11	.49	.41	4.4	14	6.4	16	42	3.6	.20	.12	.00	.00
12	.50	.40	3.9	13	6.4	15	36	2.9	.18	.11	.00	.00
13	.50	.34	3.3	12	5.9	12	32	2.5	.12	.09	.00	.00
14	.50	.29	3.5	11	8.9	10	27	2.3	.11	.07	.00	.00
15	.50	.94	6.3	10	12	8.8	23	2.5	.29	.04	.00	.09
16	.68	6.5	7.6	10	12	7.9	21	2.1	.55	.02	.00	5.4
17	1.1	8.4	7.6	9.8	14	7.5	19	1.5	.67	.03	.00	4.9
18	.94	4.8	7.7	8.7	12	8.0	22	1.1	.56	.02	.00	3.1
19	.77	2.0	13	11	17	7.8	20	.99	.33	.02	.00	1.3
20	.93	1.4	15	12	23	7.5	18	.85	.37	.01	.00	.71
21	.79	.86	15	11	21	6.7	17	.78	.27	.0	.00	.49
22	.56	.78	15	10	21	6.6	15	.71	.23	.00	.00	.32
23	.45	.78	15	10	20	6.8	13	.81	.23	.00	.00	.27
24	.45	6.7	14	9.1	18	7.6	11	.83	.23	.00	.00	.21
25	.43	14	14	8.4	16	13	10	.78	.14	.00	.00	.16
26	.60	8.2	15	7.5	15	9.3	9.5	.68	.11	.00	.00	.12
27	.59	5.5	14	6.8	15	7.2	8.6	.61	.18	.00	.00	.08
28	.60	12	14	6.5	13	7.2	7.6	.58	.13	.00	.00	1.7
29	.58	11	14	6.5	12	12	6.9	.53	.13	.00	.00	2.9
30	.54	8.4	14	7.1	---	15	6.1	.49	1.8	.03	.00	.09
31	6.1	---	14	12	---	13	---	.50	---	.0	.00	---
MEAN	.79	4.19	9.31	11.4	11.9	11.5	47.1	2.99	.44	.23	.00	.73
MAX	6.1	21	15	15	23	19	152	11	1.8	1.8	.00	5.4
MIN	.43	.29	3.3	6.5	5.1	6.6	6.1	.49	.11	.00	.00	.00
IN.	.03	.14	.31	.38	.37	.39	1.53	.10	.01	.01	.00	.02

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	32.1	17.0	14.6	12.7	17.4	36.4	48.4	37.1	49.9	16.4	27.1	28.0
MEAN	32.1	17.0	14.6	12.7	17.4	36.4	48.4	37.1	49.9	16.4	27.1	28.0
MAX	275.6	47.8	43.2	43.7	51.7	107.2	204.1	122.4	174.3	45.1	229.6	178.6
(WY)	1987	1986	1983	1985	1975	1978	1984	1982	1984	1981	1982	1977
MIN	.013	.124	.029	.000	1.03	1.72	1.55	2.99	.438	.233	.000	.000
(WY)	1977	1977	1977	1977	1981	1981	1977	1988	1988	1988	1988	1976

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	8.31	28.1
HIGHEST ANNUAL MEAN		58.3
LOWEST ANNUAL MEAN		7.48
HIGHEST DAILY MEAN	152	4850
LOWEST DAILY MEAN	.00	0
INSTANTANEOUS PEAK FLOW	155	11000
INSTANTANEOUS PEAK STAGE (FEET)	7.32	22.14
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	3.28	11.1
10 PERCENTILE	18	61
50 PERCENTILE	1.9	9.6
95 PERCENTILE	.00	.00

## LITTLE BLUE RIVER BASIN

06894000 LITTLE BLUE RIVER NEAR LAKE CITY, MO

LOCATION.--Lat 39°06'02", long 94°18'01", in SW 1/4 SE 1/4 sec.35 T.50 N., R.31 W., Jackson County, Hydrologic Unit 10300101, on right bank 50 ft downstream from bridge on west bound lane of State Highway 78, 3 mi southwest of Lake City, and 10.5 mi upstream from mouth.

DRAINAGE AREA.--184 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1948 to current year.

GAGE.--Water-stage recorder. Datum of gage is 719.15 ft above National Geodetic Vertical Datum of 1929. Prior to July 24, 1957, nonrecording gage at site 50 ft downstream at same datum. Water-stage recorder July 24, 1957, to Apr. 28, 1977. Nonrecording gage Apr. 29, 1977, to May 10, 1979. May 11, 1979, to Sept. 12, 1983, water-stage recorder at site 50 ft upstream at present datum.

REMARKS.--Estimated daily discharges: Jan. 2, 4, 5. Records good except for estimated daily discharges, which are fair. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	126	33	91	43	49	1010	63	12	104	11	7.3
2	8.8	33	28	85	31	48	2010	61	12	72	9.4	7.3
3	10	20	27	77	27	65	1020	107	15	21	9.0	7.9
4	10	17	24	70	29	81	742	97	14	15	9.6	7.9
5	11	15	22	60	29	74	574	47	9.8	13	85	7.6
6	12	14	22	54	27	81	422	25	8.6	12	15	7.7
7	11	15	21	55	28	90	306	20	8.6	11	13	8.0
8	10	15	21	52	28	86	230	23	8.1	9.9	10	8.1
9	10	14	20	54	28	74	180	30	7.8	9.7	12	7.9
10	10	14	20	52	24	68	168	26	7.9	21	11	7.9
11	11	13	20	54	29	64	131	22	7.6	19	9.7	7.7
12	11	13	19	50	27	60	112	20	6.5	16	8.6	7.6
13	11	13	18	44	28	54	98	20	6.0	11	10	7.4
14	27	13	19	45	44	47	85	19	6.2	16	12	7.0
15	11	20	23	43	94	45	76	17	7.1	11	19	67
16	40	53	28	44	85	43	68	18	41	17	12	877
17	35	68	25	43	101	43	64	17	17	19	9.3	65
18	18	40	25	37	74	46	97	16	11	19	8.3	27
19	14	21	1050	73	90	43	77	15	10	16	8.3	24
20	11	17	1270	64	125	41	65	14	9.5	11	14	19
21	12	16	306	46	90	39	61	15	9.5	9.9	15	15
22	12	15	212	38	88	36	55	18	9.3	9.3	9.3	13
23	11	15	167	38	81	35	50	23	9.3	9.3	10	12
24	12	64	152	34	71	43	45	26	9.1	9.3	13	11
25	12	129	126	32	65	62	42	20	8.9	9.3	9.8	11
26	17	56	105	27	100	48	41	17	8.6	9.3	7.7	10
27	20	38	190	27	63	38	51	15	8.2	9.9	7.6	10
28	14	91	193	27	56	37	68	15	7.9	10	7.4	10
29	13	58	131	27	52	106	67	13	8.1	13	7.4	485
30	13	42	112	28	---	97	65	13	155	18	7.6	56
31	126	---	107	38	---	65	---	12	---	14	7.3	---
MEAN	17.7	35.9	146	48.7	57.1	58.3	269	27.9	15.3	18.2	12.8	60.6
MAX	126	129	1270	91	125	106	2010	107	155	104	85	877
MIN	5.5	13	18	27	24	35	41	12	6.0	9.3	7.3	7.0
IN.	.11	.22	.92	.31	.34	.37	1.63	.17	.09	.11	.08	.37

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	146.0	97.9	83.3	90.1	125.3	201.9	222.1	205.1	266.7	128.1	97.8	154.0
MAX	983.5	854.2	368.1	346.8	576.0	1153	1069	834.0	1216	928.3	1455	1018
(WY)	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MIN	.129	.493	1.36	1.36	3.09	4.15	11.3	27.9	10.3	.261	.016	.203
(WY)	1954	1957	1956	1957	1957	1956	1954	1956	1953	1954	1953	1953

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	63.7	151.9
HIGHEST ANNUAL MEAN		369.5
LOWEST ANNUAL MEAN		11.5
HIGHEST DAILY MEAN	2010	27700
LOWEST DAILY MEAN	5.5	0
INSTANTANEOUS PEAK FLOW	3300	42300
INSTANTANEOUS PEAK STAGE (FEET)	11.10	27.94
INSTANTANEOUS LOW FLOW	4.4	0
ANNUAL RUNOFF (INCHES)	4.70	11.2
10 PERCENTILE	101	285
50 PERCENTILE	23	47
95 PERCENTILE	7.8	1.8

## MISSOURI RIVER MAIN STEM

99

06895500 MISSOURI RIVER AT WAVERLY, MO

LOCATION.--Lat 39°12'54", long 93°30'54", sec.14, T.51 N., R.23 W., Lafayette County, Hydrologic Unit 10300101 on downstream side of pier of bridge on State Highway 24, and U.S. Highway 65 at Waverly, and at mile 293.5

DRAINAGE AREA.--487,200 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1928 to current year. Gage-height records collected at same site 1878-79, 1883-99 are contained in reports of Missouri River Commission; since 1915 in reports of National Weather Service. Daily discharge not computed Apr. 1, 1977 to Mar. 31, 1978.

REVISED RECORDS.--WDR MO-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 646.00 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 1, 1934, at datum 5.00 ft lower; Mar. 30, 1929, to Apr. 4, 1934, nonrecording gage, Apr. 5, 1934, to June 13, 1943, water-stage recorder, June 14, 1943, to Sept. 15, 1944, nonrecording gage, Sept. 16, 1944, to May 28, 1969, water-stage recorder all at present site and datum; May 29, 1969, to Jan. 8, 1984, water-stage recorder at site 450 ft downstream, present datum. Jan. 9, 1984, to May 24, 1984, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Jan. 7-9, 14, and Feb. 7, 10, 11. Records good. Discharge measurements made weekly except during ice-flow periods. Some regulation from many upstream reservoirs. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56300	51300	47900	38500	38200	49000	49900	44800	46300	39800	38300	37600
2	56100	61500	47300	36700	41600	52200	63500	44900	44800	46500	37500	37200
3	54600	63400	44800	34800	44200	52400	65900	44900	45400	47400	37000	36600
4	54100	58000	42000	33500	40000	50100	64700	45600	45200	41500	36600	36300
5	53800	54500	41000	31800	35700	49800	60400	46400	44400	40000	37200	37200
6	53000	52300	41700	30400	34100	48700	56300	45800	44600	38900	36500	40000
7	52300	50900	42200	30000	33100	47500	53900	45800	44100	38000	35800	41300
8	52300	50600	42100	29500	33400	46900	52500	45900	43700	38200	36000	40400
9	52100	50700	42300	29000	33800	45400	51500	47900	42900	38700	37300	40200
10	50900	50100	42500	28600	33900	45600	51200	48700	42400	38200	36800	39700
11	51100	49200	43400	26100	33400	45300	51700	48200	43400	39200	36000	39200
12	51500	49300	44100	26500	32800	44100	50900	48800	47000	41200	36000	39300
13	51800	49100	44800	28400	33100	43400	50200	48200	45400	42300	36900	39600
14	51500	50100	44100	29900	33100	42900	49500	48100	42100	41100	37300	39700
15	50800	51000	43900	30700	33100	42300	49000	47300	42100	40000	37300	40700
16	51200	50600	42800	31700	33300	42100	47900	46400	41900	39700	37600	55500
17	52100	49400	41700	32400	34900	42300	47700	45700	40500	39600	37300	58200
18	52500	49500	40600	32400	36300	40900	47700	44800	39700	39200	36300	46800
19	52300	49700	40900	32000	37300	38500	47600	43900	39400	41500	35900	45500
20	52400	50500	54600	34100	38700	37700	47100	43800	38700	43600	36000	45800
21	51800	50400	54200	36700	40600	36900	46300	44200	38200	42400	36000	44000
22	51200	50500	50300	36700	44900	36900	45600	44300	38800	42800	36800	41200
23	50200	49500	47500	35100	49500	37800	44800	47000	39000	42500	38800	39800
24	49500	48600	44800	34400	51700	40300	45000	53300	38300	40200	38800	40400
25	48900	49000	43700	33100	50100	44300	45200	58400	37800	39800	38400	40600
26	49000	49300	43600	33500	48100	45100	45100	56400	37500	39700	39800	40200
27	47900	49300	43500	33600	47800	45700	45100	51800	37200	38900	44100	40200
28	47400	49200	43500	33700	47200	46800	44700	49800	36600	39300	42500	40200
29	47800	47800	42100	33800	47600	49300	44400	48400	36200	39900	39300	45800
30	48200	47700	41300	34000	---	51000	44600	48700	36600	41600	37700	47700
31	49100	---	40400	34900	---	49800	---	47500	---	39600	37500	---
MEAN	51410	51100	44180	32470	39360	44870	50330	47600	41340	40690	37590	41900
MAX	56300	63400	54600	38500	51700	52400	65900	58400	47000	47400	44100	58200
MIN	47400	47700	40400	26100	32800	36900	44400	43800	36200	38000	35800	36300
IN.	.12	.12	.10	.08	.09	.11	.12	.11	.09	.10	.09	.10

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	46300	42020	27730	23520	32940	54480	72580	66470	84910	69980	47890	47610
MAX	141900	96020	74470	65720	79780	133500	220600	136000	192100	246400	100400	126600
(WY)	1974	1974	1987	1973	1973	1979	1952	1984	1947	1951	1951	1951
MIN	12430	13290	7903	5023	9224	16850	25860	26160	35830	28840	12790	13430
(WY)	1940	1937	1938	1940	1940	1957	1957	1934	1956	1934	1934	1934

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	43560	51350
HIGHEST ANNUAL MEAN		94120
LOWEST ANNUAL MEAN		22410
HIGHEST DAILY MEAN	65900	538000
LOWEST DAILY MEAN	26100	1700
INSTANTANEOUS PEAK FLOW	69000	549000
INSTANTANEOUS PEAK STAGE (FEET)	14.72	29.22
INSTANTANEOUS LOW FLOW	25700	1700
ANNUAL RUNOFF (INCHES)	1.21	1.43
10 PERCENTILE	51700	94800
50 PERCENTILE	43700	42800
95 PERCENTILE	32900	13300

## GRAND RIVER BASIN

06897500 GRAND RIVER NEAR GALLATIN, MO

LOCATION.--Lat 39°55'37", long 93°56'33", in SW 1/4 NW 1/4 sec.16, T.59 N., R.27 W., Davies County, Hydrologic Unit 10280101, on left bank 100 ft upstream from bridge on State Highway 6, 50 ft downstream from Chicago, Rock Island and Pacific Railroad Co. Bridge, 1 mi northeast of Gallatin, 6 mi upstream from Honey Creek, and at mile 90.

DRAINAGE AREA.--2,250 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--June 1921 to current year.

REVISED RECORDS.--WSP 786: 1933-34. WSP 1280: 1922. WDR MO-81-1: 1981.

GAGE.--Water-stage recorder. Datum of gage is 717.56 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 31, 1922, nonrecording gage at site 100 ft upstream at datum 5.00 ft lower. Jan. 31, 1922, to Nov. 15, 1936, nonrecording gage, at site about 1,100 ft upstream at datum 4.83 ft lower. Nov. 16, 1936, to Nov. 14, 1937, nonrecording gage, and Nov. 15, 1937, to Sept. 21, 1961, water-stage recorder on center pier of highway bridge at datum 5.00 ft lower. Sept. 22-27, 1961, nonrecording gage at railroad bridge, 100 ft upstream at datum, 5.00 ft lower, Sept. 28, 1961, to Mar. 4, 1964, water-stage recorder on downstream side of left bank pier of highway bridge and wire-weight gage for stages below 7.2 ft at datum 5.00 ft lower. Mar. 5, 1964, to Mar. 5, 1982, at present site at datum 5.00 ft. lower.

REMARKS.--Estimated daily discharges: Dec. 15 to Jan. 14, Feb. 3 to Mar. 22, and June 13-21. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. National Weather Service and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, about 45 ft, July 8, 1909, from floodmarks.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	156	4270	4250	746	637	800	454	216	79	47	25	35
2	145	9250	2220	702	499	750	1700	202	76	49	25	33
3	137	3650	1360	627	400	700	2810	189	75	51	24	30
4	131	1680	1120	477	300	650	1810	187	83	50	23	27
5	128	1120	1000	404	250	600	1160	182	93	43	26	27
6	126	872	954	350	200	550	818	173	84	39	31	26
7	121	726	814	325	210	500	620	167	77	36	27	24
8	119	649	718	300	220	525	512	165	74	34	26	25
9	115	603	676	275	230	550	446	171	63	32	29	23
10	113	559	656	250	220	550	401	202	54	30	28	23
11	113	521	705	275	210	525	376	208	50	30	28	22
12	113	497	691	250	200	500	369	275	48	35	31	22
13	113	486	587	250	210	450	360	214	47	34	36	21
14	113	477	526	300	225	400	338	172	46	32	33	20
15	114	476	447	400	220	350	316	144	46	32	29	23
16	123	500	415	400	230	325	296	124	45	32	27	46
17	133	762	350	414	230	300	285	109	44	30	26	55
18	139	1170	227	437	350	300	279	100	42	33	26	96
19	139	1160	602	453	2000	310	279	92	40	33	24	75
20	128	835	8420	459	4000	320	268	87	39	40	24	49
21	120	654	6090	477	3500	300	257	85	38	45	24	39
22	117	566	3370	573	3000	278	249	92	37	129	27	34
23	123	537	3820	604	2500	260	242	112	36	75	29	31
24	125	512	2940	498	2000	256	240	150	36	52	38	30
25	123	471	2200	464	1500	267	233	162	35	41	52	27
26	117	451	1990	472	1000	361	227	139	35	34	55	26
27	113	441	2550	405	1010	448	221	125	32	32	49	23
28	115	495	2710	374	1000	375	216	123	32	29	73	21
29	119	2510	1630	363	900	346	216	105	32	29	61	22
30	116	6020	1280	386	---	346	220	90	38	28	49	21
31	121	---	949	544	---	335	---	82	---	26	41	---
MEAN	123	1431	1815	428	947	436	541	150	51.9	40.7	33.7	32.5
MAX	156	9250	8420	746	4000	800	2810	275	93	129	73	96
MIN	113	441	227	250	200	256	216	82	32	26	23	20
IN.	.06	.71	.93	.22	.45	.22	.27	.08	.03	.02	.02	.02

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	887.6	895.9	504.6	519.1	959.4	1729	1824	1682	2379	1197	546.3	1071
MAX	8965	8613	5463	4212	6196	8760	7906	7703	22670	7499	4136	11610	
(WY)	1974	1929	1983	1932	1962	1979	1927	1945	1947	1958	1987	1926	
MIN	3.09	8.18	6.15	3.94	5.61	18.7	12.0	15.4	51.9	13.3	7.05	10.2	
(WY)	1957	1939	1939	1940	1939	1938	1956	1956	1988	1936	1936	1955	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	499.9	1181
HIGHEST ANNUAL MEAN		3045
LOWEST ANNUAL MEAN		129.1
HIGHEST DAILY MEAN	9250	67000
LOWEST DAILY MEAN	20	2.0
INSTANTANEOUS PEAK FLOW	12400	69100
INSTANTANEOUS PEAK STAGE (FEET)	18.93	42.02
INSTANTANEOUS LOW FLOW	19	2.0
ANNUAL RUNOFF (INCHES)	3.02	7.12
10 PERCENTILE	1070	2430
50 PERCENTILE	204	212
95 PERCENTILE	25	15

## GRAND RIVER BASIN

101

06899500 THOMPSON RIVER AT TRENTON, MO

LOCATION.--Lat 40°04'46", long 93°38'39" in NE 1/4 SW 1/4 sec.18, T.61 N., R.24 W., Grundy County, Hydrologic Unit 10280102, at downstream side of center pier of bridge in Trenton, 1.8 mi downstream from Weldon River, and at mile 26.0.

DRAINAGE AREA.--1,670 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--June 1921 to September 1923 (published as "near Hickory"), August 1928 to current year. Monthly discharge only for some periods, published in WSP 1310. Gage-height records collected in vicinity 1910-14 and since 1925 are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 1116: 1945(M). WDR MO-83-1: 1981

GAGE.--Water-stage recorder and nonrecording gage. Datum of gage is 721.87 ft above National Geodetic Vertical Datum of 1929. June 25, 1921, to Aug. 26, 1923, nonrecording gage at two sites 12 mi downstream (by old channel route) at different datums. Aug. 1, 1928, to Sept. 15, 1930, nonrecording gage at present site and datum. Sept. 16, 1930, to May 31, 1945, nonrecording gage at site 1.5 mi downstream at datum 3.46 ft lower. June 1, 1945, to Dec. 7, 1959, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 15-19 and Jan. 2 to Feb. 19. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 30.7 ft, July 6, 1909, present site and datum, from information by local residents, discharge, 50,000 ft<sup>3</sup>/s, determination by U.S. Army Corps of Engineers, occurred before new channel was dredged.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	210	374	2650	1080	450	735	639	210	95	48	26	40
2	198	2830	1620	900	375	706	1850	197	94	52	21	34
3	194	1240	1190	700	300	687	1640	177	109	53	18	33
4	198	691	953	500	250	602	1220	166	107	50	19	36
5	200	520	815	375	200	512	911	156	94	39	33	28
6	197	400	730	325	150	459	731	143	89	38	32	22
7	189	320	673	300	150	439	597	147	84	28	25	26
8	167	283	625	270	160	455	500	158	78	30	28	28
9	157	247	603	240	160	463	432	187	70	28	45	20
10	151	221	713	225	160	484	384	210	72	31	44	21
11	152	230	760	225	150	472	345	343	61	29	67	25
12	149	227	722	220	145	433	323	319	60	29	39	14
13	142	206	643	220	150	409	310	230	55	27	38	19
14	151	207	599	225	180	358	291	182	49	37	35	18
15	144	240	500	230	180	311	278	145	52	45	30	30
16	161	308	400	230	190	296	265	117	55	50	27	106
17	177	828	350	240	200	288	261	105	47	43	25	78
18	174	1480	250	240	350	286	251	106	49	55	24	61
19	168	943	880	250	2500	287	232	83	49	54	26	67
20	162	590	6750	260	4260	299	220	79	47	84	30	60
21	159	481	4690	280	2620	290	199	75	42	61	28	54
22	162	425	3140	300	2530	276	197	87	44	42	32	61
23	150	395	2640	325	2030	261	203	131	47	40	59	49
24	169	370	3040	320	1310	281	212	139	45	33	95	37
25	165	345	4330	310	1010	369	211	126	37	34	251	33
26	188	336	2230	310	927	581	197	134	39	35	287	30
27	188	344	1410	300	966	648	197	143	37	31	174	28
28	153	2130	3030	275	851	498	230	145	39	32	101	34
29	155	7250	2570	250	793	454	243	109	37	31	71	37
30	127	4580	1620	350	---	493	232	105	44	31	55	29
31	154	---	1320	500	---	447	---	92	---	30	47	---
MEAN	168	968	1692	348	817	438	460	153	60.9	40.3	59.1	38.6
MAX	210	7250	6750	1080	4260	735	1850	343	109	84	287	106
MIN	127	206	250	220	145	261	197	75	37	27	18	14
IN.	.12	.65	1.17	.24	.53	.30	.31	.11	.04	.03	.04	.03

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	640.9	691.4	468.9	477.3	916.7	1617	1615	1530	1813	782.0	533.5	619.7
MAX	4678	6280	4209	3682	4377	5765	5580	5494	16460	4567	3990	3601	
(WY)	1974	1962	1983	1946	1962	1979	1973	1935	1947	1969	1959	1961	
MIN	11.1	9.53	6.48	4.74	13.0	17.6	10.7	10.2	13.9	6.00	9.32	12.9	
(WY)	1957	1956	1956	1956	1956	1938	1956	1956	1956	1934	1936	1955	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	435.4	967.0
HIGHEST ANNUAL MEAN		2315
LOWEST ANNUAL MEAN		116.7
HIGHEST DAILY MEAN	7250	73800
LOWEST DAILY MEAN	14	1.0
INSTANTANEOUS PEAK FLOW	8900	95000
INSTANTANEOUS PEAK STAGE (FEET)	10.89	25.7
INSTANTANEOUS LOW FLOW	8.5	1.0
ANNUAL RUNOFF (INCHES)	3.54	7.86
10 PERCENTILE	915	2280
50 PERCENTILE	195	207
95 PERCENTILE	27	18

## GRAND RIVER BASIN

06900000 MEDICINE CREEK NEAR GALT, MO

LOCATION.--Lat 40°17'45", long 93°21'45", in SW 1/4 NW 1/4, sec.34, T.62 N., R.22 W., Sullivan County, Hydrologic Unit 10280103, on left bank 15 ft upstream from bridge on State Highway 6, 1.2 mi east of Galt, 2 mi upstream from West Medicine Creek, and at mile 32.0.

DRAINAGE AREA.--225 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1921 to September 1975, October 1977 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 1340: 1926. WSP 1730: 1948(M).

GAGE.--Water-stage recorder. Datum of gage is 767.48 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 3, 1934, nonrecording gage at site 150 ft downstream at following datums: prior to Oct. 1, 1924, at datum 6.97 ft higher; Oct. 1, 1924, to Sept. 30, 1926, at datum 4.97 ft higher; Oct. 1, 1926, to Dec. 2, 1934, at datum 1.97 ft higher; Dec. 3, 1934, to Apr. 25, 1956, nonrecording gage, and Apr. 26 to Sept. 30, 1956; water-stage recorder at site 30 ft downstream at datum 2.00 ft higher; Oct. 1, 1956, to Apr. 5, 1969, water-stage recorder at site 30 ft downstream at present datum; Apr. 6, 1969, to July 24, 1975, water-stage recorder; July 25, 1975, to Aug. 21, 1978, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Jan. 3, 4 and Feb. 3-8, 12-19. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Discharge of 8,000 ft<sup>3</sup>/s was determined for flood of July 1909, by U.S. Army Corps of Engineers.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	74	288	125	241	76	50	29	5.6	8.1	.75	2.0
2	8.3	683	177	73	76	74	153	24	18	9.3	.41	1.6
3	8.8	146	136	65	60	65	232	20	11	7.8	.40	1.3
4	8.7	82	112	55	50	51	134	17	11	6.5	1.7	3.2
5	8.9	57	85	47	40	42	87	13	10	4.7	6.5	5.2
6	8.9	41	78	39	38	43	72	9.1	6.3	3.3	1.2	4.5
7	10	34	79	30	38	47	57	7.6	4.9	2.3	1.1	2.7
8	11	30	77	25	37	52	48	10	5.6	2.0	2.2	1.3
9	10	28	75	22	37	56	38	24	5.0	2.1	21	1.0
10	10	20	104	19	39	54	31	37	4.3	5.3	31	.80
11	10	20	83	21	37	51	28	24	3.4	7.2	15	.75
12	12	18	73	23	35	48	26	13	4.1	4.3	7.9	1.0
13	12	18	67	21	36	42	24	10	3.4	4.0	7.2	1.1
14	13	18	61	20	36	30	21	7.6	3.4	6.5	6.5	1.2
15	16	22	35	22	37	26	19	6.7	3.8	8.0	3.1	1.6
16	20	41	37	27	38	28	19	4.1	4.6	8.9	1.5	20
17	22	282	50	34	45	27	22	3.2	3.4	5.6	.77	20
18	26	601	60	40	350	31	27	4.0	4.0	11	.56	13
19	30	178	325	48	900	30	24	3.4	4.1	14	1.0	20
20	34	83	2730	54	651	33	25	3.4	4.9	22	2.0	17
21	26	71	1010	54	389	32	25	2.0	3.4	11	2.0	11
22	26	63	563	50	325	31	27	5.6	4.2	7.3	6.2	7.7
23	22	64	488	43	289	30	30	12	4.0	5.1	15	9.9
24	26	61	690	36	162	34	32	15	2.9	4.0	17	5.4
25	22	59	747	30	103	55	33	15	3.2	4.4	12	3.6
26	26	92	299	23	91	98	32	11	2.5	2.0	9.8	4.1
27	26	101	296	20	110	54	33	8.6	2.6	2.0	14	4.7
28	28	1500	808	19	99	44	43	6.3	2.0	2.3	12	2.8
29	28	2240	418	25	90	74	38	4.8	2.7	3.4	7.2	9.3
30	30	575	284	50	---	72	33	3.5	7.6	2.1	4.5	10
31	32	---	221	333	---	61	---	4.2	---	1.4	2.1	---
MEAN	18.6	243	341	48.2	154	48.1	48.8	11.6	5.20	6.06	6.89	6.26
MAX	34	2240	2730	333	900	98	232	37	18	22	31	20
MIN	6.3	18	35	19	35	26	19	2.0	2.0	1.4	.40	.75
IN.	.10	1.21	1.75	.25	.74	.25	.24	.06	.03	.03	.04	.03

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	106.5	100.4	72.9	72.3	146.2	240.9	255.1	198.0	261.2	135.8	70.9	98.0
MAX	688.5	1133	507.2	372.0	622.7	944.5	963.4	918.1	2555	942.0	1008	1067	
(WY)	1986	1962	1983	1960	1937	1982	1947	1935	1947	1969	1932	1926	
MIN	.906	1.32	1.01	.026	.525	2.43	1.98	2.44	3.21	.597	.216	.993	
(WY)	1954	1938	1939	1940	1939	1938	1956	1956	1956	1934	1936	1954	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	77.8	147.0
HIGHEST ANNUAL MEAN		369.2
LOWEST ANNUAL MEAN		9.25
HIGHEST DAILY MEAN	2730	17300
LOWEST DAILY MEAN	.40	0
INSTANTANEOUS PEAK FLOW	3340	24200
INSTANTANEOUS PEAK STAGE (FEET)	6.12	20.9
INSTANTANEOUS LOW FLOW	0.40	0
ANNUAL RUNOFF (INCHES)	4.69	8.87
10 PERCENTILE	124	265
50 PERCENTILE	24	24
95 PERCENTILE	1.5	1.2

## GRAND RIVER BASIN

103

06902000 GRAND RIVER NEAR SUMNER, MO

LOCATION.--Lat 39°38'25", long 93°16'25", in NE 1/4 sec.29, T.56 N., R.21 W., Livingston County, Hydrologic Unit 10280103, near right bank on downstream side of pier of bridge on State Highway 139, 240 ft downstream from Chicago, Burlington and Quincy Railroad bridge, 2 mi southwest of Sumner, 2.5 mi downstream from Locust Creek and at mile 41.0.

DRAINAGE AREA.--6,880 mi<sup>2</sup>, approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1923 to current year. Prior to April 1924 monthly discharge only, published in WSP 1310.

GAGE.--Water-stage recorder. Datum of gage is 631.18 ft above National Geodetic Vertical Datum of 1929. Prior to July 11, 1926, nonrecording gage at site 200 ft upstream at same datum. July 11, 1926, to July 9, 1939, nonrecording gage at same site and datum. July 10, 1939, to Aug. 8, 1952, water-stage recorder at site 200 ft upstream at same datum. Aug. 9, 1952, to Nov. 12, 1953, nonrecording gage at site 120 ft upstream and at same datum. Nov. 13, 1953, to July 6, 1964, water-stage recorder and nonrecording gage, for stages below 8.3 ft, at site 120 ft upstream and at same datum. July 7, 1964, to May 26, 1965, nonrecording gage at present site and datum. Auxiliary water-stage recorder at site 3.2 mi downstream from base gage at datum 631.30 ft above National Geodetic Vertical Datum of 1929. Mar. 15, 1939, to Aug. 4, 1942, auxiliary nonrecording gage at various sites. Aug. 5, 1942, to Dec. 14, 1956, auxiliary nonrecording gage at present site.

REMARKS.--Estimated daily discharges: Jan. 2-29, Feb 5-20, and Sept. 23-30. Water-discharge records fair except for estimated daily discharges, which are poor. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 9, 1909, reached a stage of 36.7 ft, from floodmark.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	693	384	12900	3440	5750	2570	1590	661	264	130	105	150
2	597	6880	7540	2290	2810	2320	2440	637	263	162	93	140
3	524	9530	4540	1700	1720	2210	8670	606	270	155	84	128
4	476	4350	3210	1500	1240	2050	7210	591	264	147	81	119
5	446	2390	2630	1300	1000	1810	4700	564	256	141	83	112
6	412	1710	2300	1100	800	1620	3430	549	256	134	88	106
7	388	1350	2140	950	600	1500	2720	534	260	119	89	100
8	372	1120	1970	900	500	1470	2210	517	243	111	91	92
9	357	991	1800	850	500	1460	1850	511	222	106	1260	89
10	346	900	1790	850	490	1460	1620	519	209	105	1990	88
11	345	848	1970	900	490	1460	1450	577	198	105	724	87
12	342	785	2080	860	480	1420	1340	626	179	120	381	82
13	342	748	2010	850	450	1400	1270	723	171	119	268	77
14	337	721	1730	900	500	1260	1190	662	160	109	210	72
15	329	711	1440	1000	500	1170	1120	528	158	103	176	65
16	346	768	1140	1000	550	1060	1030	453	150	97	149	102
17	370	1060	1010	1020	600	987	974	401	144	95	130	143
18	374	2260	980	1100	800	951	929	367	144	98	113	216
19	374	3200	1240	1200	2000	960	903	347	136	108	105	200
20	376	2550	20900	1300	11000	976	887	331	138	340	99	205
21	377	1800	31600	1500	12200	969	841	313	132	441	96	181
22	358	1420	20700	1600	10700	965	798	311	123	203	118	139
23	333	1220	11800	1700	11900	924	764	350	129	160	1010	130
24	317	1120	8940	1800	7610	922	746	467	127	181	882	128
25	314	1090	9720	1700	4650	989	733	446	125	165	371	128
26	314	1030	9540	1700	3480	1130	718	424	115	141	251	124
27	314	1020	5800	1600	3180	1360	690	406	108	124	270	124
28	301	1560	6070	1500	3150	1600	665	387	111	112	310	115
29	296	13600	9080	1400	2850	1460	669	362	115	107	252	109
30	296	17100	6620	1470	---	1870	673	330	116	104	210	124
31	308	---	4470	2830	---	1860	---	291	---	134	175	---
MEAN	377	2807	6441	1413	3190	1425	1828	477	176	144	331	122
MAX	693	17100	31600	3440	12200	2570	8670	723	270	441	1990	216
MIN	296	384	980	850	450	922	665	291	108	95	81	65
IN.	.06	.46	1.08	.24	.50	.24	.30	.08	.03	.02	.06	.02

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	2864	3021	1974	2051	3699	6086	6623	5375	7386	3462	1743	2993
MAX	20630	29030	15440	14750	19250	34220	26680	23750	67270	23000	9194	28090	
(WY)	1974	1932	1983	1932	1962	1979	1973	1935	1947	1958	1987	1926	
MIN	37.1	40.3	53.0	32.1	57.0	79.5	67.3	130.3	176.2	52.8	41.0	62.5	
(WY)	1957	1957	1956	1940	1939	1957	1956	1956	1988	1934	1936	1955	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1556	3920
HIGHEST ANNUAL MEAN		10020
LOWEST ANNUAL MEAN		367.5
HIGHEST DAILY MEAN	31600	166000
LOWEST DAILY MEAN	65	10
INSTANTANEOUS PEAK FLOW	34400	180000
INSTANTANEOUS PEAK STAGE (FEET)	30.85	39.5
INSTANTANEOUS LOW FLOW	64	10
ANNUAL RUNOFF (INCHES)	3.07	7.74
10 PERCENTILE	3080	10100
50 PERCENTILE	604	960
95 PERCENTILE	96	80

## GRAND RIVER BASIN

06902000 GRAND RIVER NEAR SUMNER, MO--Continued  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1962 to June 1963 and August 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1974 to September 1981.

WATER TEMPERATURE: January 1974 to September 1981.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (FTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FIELD (MG/L AS CACO3) (00904)
OCT												
05...	1330	441	481	8.10	16.0	14	11.7	117	420	K25	230	6
NOV												
03...	1215	9350	220	8.10	14.5	240	9.4	92	K12000	95000	110	12
DEC												
02...	1015	7740	265	7.80	5.0	220	11.7	92	12000	94000	110	14
JAN												
06...	0900	1100	540	7.80	1.0	6.3	13.9	96	740	2100	240	31
FEB												
03...	0915	1800	265	7.40	0.0	140	11.5	78	K1300	K16000	130	24
MAR												
02...	0800	2390	370	7.80	7.0	67	11.4	93	2100	760	170	10
APR												
06...	0830	3540	410	7.90	14.0	120	9.2	89	800	1700	180	51
MAY												
11...	0700	567	540	7.90	19.5	25	8.7	94	K100	K30	260	15
JUN												
08...	0700	250	540	8.00	24.5	17	7.0	85	K60	230	240	9
JUL												
13...	0900	121	475	7.70	26.5	12	6.4	80	170	160	210	13
AUG												
16...	1015	148	350	7.70	30.0	22	8.3	110	130	200	140	0
SEP												
14...	0930	74	490	7.80	18.0	18	6.9	76	K75	130	220	0

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY DISSOLV FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT												
05...	71	14	12	4.8	229	34	10	0.30	12	257	283	0.35
NOV												
03...	33	6.4	5.2	6.1	97	21	6.0	0.30	10	166	151	0.23
DEC												
02...	34	7.1	6.4	4.6	100	28	7.3	0.20	9.9	172	163	0.23
JAN												
06...	71	14	13	4.2	205	49	9.6	0.20	14	304	303	0.41
FEB												
03...	40	7.9	8.3	4.2	109	35	9.9	0.20	8.0	192	183	0.26
MAR												
02...	53	10	11	5.1	164	38	8.3	0.20	9.9	233	238	0.32
APR												
06...	54	11	12	3.8	129	50	10	0.30	9.4	260	232	0.35
MAY												
11...	78	16	18	3.5	246	51	11	0.40	8.0	337	334	0.46
JUN												
08...	73	15	19	4.3	235	44	11	0.40	11	324	319	0.44
JUL												
13...	60	14	18	3.8	195	33	12	0.30	9.2	273	268	0.37
AUG												
16...	41	9.1	14	4.6	157	27	10	0.20	10	207	210	0.28
SEP												
14...	64	14	20	3.1	220	36	13	0.20	11	297	293	0.40

K--Results based on colony count outside the acceptable range (non-ideal colony count).

## GRAND RIVER BASIN

105

06902000 GRAND RIVER NEAR SUMNER MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 05...	306	<0.010	<0.100	0.020	<0.010	1.1	0.150	0.030	0.010	44	53	66
NOV 03...	4190	<0.010	0.920	0.100	0.060	0.60	0.190	0.060	0.030	2930	74000	91
DEC 02...	3590	<0.010	1.20	0.120	0.090	1.2	0.180	0.050	0.020	--	--	--
JAN 06...	903	0.020	0.880	0.150	0.140	0.60	0.070	0.040	0.020	39	115	--
FEB 03...	933	0.020	1.00	0.340	0.090	1.3	0.140	0.060	0.010	--	--	--
MAR 02...	1500	0.030	0.730	0.150	0.210	1.0	0.220	0.070	0.070	--	--	--
APR 06...	2490	0.020	0.850	0.060	0.030	1.4	0.240	0.070	0.050	--	--	--
MAY 11...	516	--	--	--	--	--	--	--	--	385	589	18
JUN 08...	219	0.010	<0.100	0.040	0.180	0.50	0.120	0.050	0.020	--	--	--
JUL 13...	89.2	<0.010	<0.100	0.170	0.020	0.40	0.090	0.030	0.020	51	17	86
AUG 16...	82.7	<0.010	<0.100	0.040	0.040	2.2	0.250	0.050	0.020	--	--	--
SEP 14...	59.3	<0.010	<0.100	<0.010	<0.010	0.40	0.090	0.030	0.010	--	--	--

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 03...	340	1	100	<0.5	<1	2	<3	8	400	<5
JAN 06...	<10	<1	130	<0.5	<1	2	<3	3	22	<5
MAY 11...	<10	1	130	<0.5	1	<1	<3	3	12	<5
JUL 13...	<10	1	120	0.7	1	1	<3	1	32	<5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 03...	8	34	0.1	<10	6	<1	<1.0	120	<6	21
JAN 06...	<4	190	<0.1	<10	3	<1	<1.0	240	<6	3
MAY 11...	13	57	0.6	<10	5	<1	<1.0	310	<6	15
JUL 13...	10	370	<0.1	<10	3	<1	<1.0	280	<6	29

## CHARITON RIVER BASIN

06904050 CHARITON RIVER AT LIVONIA, MO

LOCATION.--Lat 40°29'00", long 92°41'10", in NW 1/4 SE 1/4 NW 1/4 sec.34, T.66 N., R.16 W., Schuyler County, Hydrologic Unit 10280201, on left bank 10 ft downstream from bridge on U.S. Highway 136, 1 mi upstream from Shoal Creek, and 0.5 mi east of Livonia, and at mile 90.9.

DRAINAGE AREA.--864 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1974 to current year. Occasional discharge measurements were made from October 1962 to May 1974.

REVISED RECORDS.--WDR MO-83-1: 1981.

GAGE.--Water-stage recorder. Datum of gage is 770.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 13 to Feb. 19. Records poor. Several observations of water temperature and specific conductance were made during the year. Considerable regulation by Rathbun Lake (station 06903880) 51 mi upstream. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	872	149	655	950	130	251	322	56	111	23	22	28
2	865	175	486	983	115	255	323	56	67	23	22	28
3	864	254	678	1040	110	361	331	50	37	23	22	28
4	868	246	781	719	110	345	333	44	33	24	24	28
5	871	287	937	566	100	331	310	45	31	24	25	28
6	868	287	1130	548	90	330	231	45	30	23	23	28
7	866	274	1140	753	90	329	221	44	28	22	24	28
8	866	274	1130	830	90	343	206	49	30	22	25	28
9	863	270	1220	784	100	342	196	62	52	22	29	28
10	860	264	1340	827	95	338	194	58	68	23	29	28
11	857	266	1330	1180	90	337	193	59	38	23	27	29
12	856	266	1320	1090	80	334	187	48	31	25	26	31
13	859	261	1310	300	80	319	176	47	30	25	26	31
14	859	253	1300	115	85	307	130	44	29	23	26	31
15	860	182	1300	115	85	303	114	40	28	23	25	31
16	863	170	1300	120	90	299	100	32	25	23	25	34
17	890	392	1280	120	100	388	108	30	25	25	25	36
18	894	447	1280	120	300	591	106	30	25	32	24	40
19	885	324	1020	115	900	616	99	30	25	25	24	40
20	887	245	2090	115	1570	604	78	30	26	26	31	52
21	670	207	1830	110	1280	600	66	30	27	25	29	47
22	232	195	986	100	812	596	63	31	24	24	63	42
23	182	194	796	90	670	594	63	37	24	24	125	36
24	151	204	1330	100	580	601	62	41	24	24	59	32
25	164	226	1850	90	392	598	61	45	24	23	45	32
26	163	231	1570	85	331	393	72	42	24	23	32	32
27	167	285	1430	80	305	343	89	36	23	22	29	32
28	164	1550	1800	90	292	324	76	65	23	22	28	32
29	164	2280	1380	100	266	347	67	338	23	22	29	32
30	170	1470	1130	125	---	366	60	211	23	22	29	35
31	177	---	1140	150	---	341	---	128	---	22	29	---
MEAN	638	404	1234	404	322	401	155	61.4	33.6	23.6	32.3	32.9
MAX	894	2280	2090	1180	1570	616	333	338	111	32	125	52
MIN	151	149	486	80	80	251	60	30	23	22	22	28
IN.	.85	.52	1.65	.54	.40	.54	.20	.08	.04	.03	.04	.04

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	469.8	573.9	756.4	349.7	527.1	957.6	928.8	789.6	812.3	1018	535.8	524.6
MAX		1219	1527	2005	1679	1956	1890	1898	1897	1839	3481	1765	1413
(WY)		1986	1978	1983	1983	1983	1982	1983	1978	1980	1982	1982	1982
MIN		27.2	29.7	19.9	13.6	93.3	177.1	154.6	52.1	33.6	23.6	32.3	29.6
(WY)		1977	1977	1977	1977	1987	1977	1988	1980	1988	1988	1988	1976

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	313.4	686.9
HIGHEST ANNUAL MEAN		1253
LOWEST ANNUAL MEAN		168.7
HIGHEST DAILY MEAN	2280	8960
LOWEST DAILY MEAN	22	13
INSTANTANEOUS PEAK FLOW	2410	8960
INSTANTANEOUS PEAK STAGE (FEET)	13.52	26.94
INSTANTANEOUS LOW FLOW	21	12
ANNUAL RUNOFF (INCHES)	4.93	10.8
10 PERCENTILE	910	1670
50 PERCENTILE	109	402
95 PERCENTILE	23	24

## CHARITON RIVER BASIN

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06904500 CHARITON RIVER AT NOVINGER, MO

LOCATION.--Lat 40°14'05", long 92°41'14", on south line of SE 1/4 NE 1/4 sec.28, T.63 N., R.16 W., Adair County, Hydrologic Unit 10280202, on downstream side of center pier on bridge on State Highway 6, 0.6 mi east of Novinger, 1 mi downstream from Rye Creek, 2 mi upstream from Spring Creek, and at mile 73.1.

DRAINAGE AREA.--1,370 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1930 to September 1952. October 1954 to current year. Prior to February 1931 monthly discharge only, published in WSP 1310.

REVISED RECORDS.--WSP 896: 1939. WSP 1116: 1932(M).

GAGE.--Water-stage recorder. Datum of gage is 737.65 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 20, 1939, nonrecording gage at bridge over old channel, 500 ft east, at the same datum. Dec. 20, 1939, to Sept. 30, 1952, and Oct. 1, 1954, to Aug. 1, 1956, water-stage recorder, supplemented by nonrecording gage, at same site and datum. Aug. 3, 1956, to May 16, 1957, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Jan. 6-10, 14-31, Feb. 1-20, May 15 and June 3-6, 9, 14-23. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. Some regulation by Rathbun Lake (station 06903880). U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 28.6 ft, June 1917.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1050	358	1270	1530	280	527	519	97	151	28	26	32
2	1020	349	758	1370	250	490	526	89	133	30	26	30
3	1020	412	825	1440	210	556	594	79	79	31	24	30
4	1020	353	944	1420	200	545	578	82	54	31	23	31
5	1020	328	954	1140	190	508	529	77	45	29	33	30
6	1020	338	1240	1050	180	500	439	69	45	30	30	29
7	1010	331	1270	1300	175	498	401	66	41	29	26	29
8	1010	325	1270	1500	175	524	358	124	48	29	28	29
9	1010	313	1310	1650	200	543	312	229	61	30	38	28
10	994	301	1490	1700	180	529	302	140	81	31	44	27
11	988	297	1520	2550	170	509	321	106	70	37	33	28
12	976	294	1510	2610	160	508	308	87	46	35	29	30
13	983	291	1490	1330	160	465	289	80	39	38	30	31
14	981	290	1460	500	170	423	247	72	35	40	31	32
15	982	263	1420	200	180	407	199	67	32	36	26	31
16	999	231	1440	200	190	407	175	58	30	34	23	40
17	1070	1200	1450	200	190	415	165	52	30	35	20	41
18	1090	853	1440	200	700	680	169	51	30	62	22	46
19	1090	510	1810	190	1500	719	159	48	30	52	22	54
20	1070	384	8370	190	3000	730	147	48	30	44	23	53
21	1010	311	4350	180	2350	733	114	49	30	43	34	68
22	522	295	2280	170	1990	733	106	65	28	39	46	72
23	348	293	1560	160	1510	733	102	78	27	37	250	67
24	314	299	1940	170	900	758	101	98	26	36	245	49
25	294	471	2830	160	646	824	98	81	26	36	126	41
26	294	389	2340	150	571	646	98	77	28	35	76	39
27	292	426	2330	140	652	491	126	70	27	34	52	38
28	285	5800	5130	160	589	460	135	64	27	28	45	39
29	284	5430	3180	180	588	952	112	265	27	28	41	42
30	275	3000	1730	230	---	826	98	334	27	28	37	43
31	288	---	1890	300	---	607	---	218	---	26	35	---
MEAN	794	824	2026	783	630	589	261	101	46.1	34.9	49.8	39.3
MAX	1090	5800	8370	2610	3000	952	594	334	151	62	250	72
MIN	275	231	758	140	160	407	98	48	26	26	20	27
IN.	.67	.67	1.71	.66	.50	.50	.21	.08	.04	.03	.04	.03

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	524.4	583.9	546.7	506.4	787.3	1441	1406	1197	1440	780.0	486.3	499.6
MAX	3352	5051	3318	3074	2889	4101	5302	4846	9687	5205	3614	3380
(WY)	1974	1932	1983	1946	1962	1979	1973	1973	1947	1982	1932	1965
MIN	1.04	3.09	3.85	3.43	6.99	8.97	6.06	7.91	24.9	3.32	1.29	4.56
(WY)	1957	1957	1957	1956	1957	1957	1956	1956	1934	1936	1936	1937

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	516.5	848.8
HIGHEST ANNUAL MEAN		2191
LOWEST ANNUAL MEAN		81.6
HIGHEST DAILY MEAN	8370	21700
LOWEST DAILY MEAN	20	.10
INSTANTANEOUS PEAK FLOW	10700	22900
INSTANTANEOUS PEAK STAGE (FEET)	14.06	28.50
INSTANTANEOUS LOW FLOW	20	0.1
ANNUAL RUNOFF (INCHES)	5.12	8.41
10 PERCENTILE	1380	2240
50 PERCENTILE	194	193
95 PERCENTILE	28	7.8

## CHARITON RIVER BASIN

06905500 CHARITON RIVER NEAR PRAIRIE HILL, MO

LOCATION.--Lat 39°32'25", long 92°47'23", in NW 1/4 SW 1/4 sec.26, T.55 N., R.17 W., Chariton County, Hydrologic Unit 10280202, on right bank on downstream side of road at bridge on State Highway 129, 3.2 mi northwest of Prairie Hill, 13.5 mi upstream from Puzzle Creek, and at mile 19.6.

DRAINAGE AREA.--1,870 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1928 to current year. Prior to Oct. 1, 1953, published as "near Keytesville". Prior to May 1929, monthly discharge only, published in WSP 1309.

GAGE.--Water--stage recorder. Datum of gage is 632.05 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1953, nonrecording gage at site 8.2 mi downstream at datum 13.68 ft lower. Oct. 1, 1953, to July 2, 1958, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Jan. 12 to Feb. 20, Apr. 21-30, May 1-5, 16-22, 28-30, and June 5-21. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. Some regulation by Rathbun Lake (station 06903880). National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1050	288	2900	1780	350	755	791	135	218	50	31	45
2	1020	326	1360	1450	300	703	756	125	164	54	30	44
3	1020	380	886	1360	250	689	851	115	129	45	29	43
4	1030	355	915	1380	240	681	880	115	113	48	30	43
5	1030	359	1020	1400	230	661	780	110	80	47	29	41
6	1040	300	1030	1250	220	617	694	104	65	44	29	40
7	1030	312	1260	1490	210	600	604	97	60	43	29	40
8	1030	311	1290	1700	210	602	526	97	60	40	32	38
9	1030	308	1290	1660	220	610	459	293	65	42	84	38
10	1030	296	1310	1750	220	628	413	424	75	43	52	37
11	1030	292	1440	2750	210	610	387	241	90	44	43	37
12	1030	292	1490	2800	200	584	386	164	80	40	42	37
13	1030	294	1430	1350	190	565	368	132	65	37	43	36
14	1030	295	1400	1000	200	533	332	109	50	39	43	36
15	1030	297	1410	400	200	486	301	97	45	36	40	36
16	1050	313	1380	300	200	459	251	90	43	38	37	109
17	1060	331	1390	250	250	477	223	80	42	36	35	71
18	1120	1270	1410	250	600	478	208	75	42	35	33	56
19	1150	1020	1910	240	1000	647	203	70	40	36	31	57
20	1140	622	8550	230	3200	756	201	65	40	51	30	60
21	1120	452	6120	220	2570	755	190	65	39	58	32	63
22	1050	354	4300	200	2070	752	170	80	36	48	48	55
23	572	313	2580	200	3410	744	150	121	35	40	173	67
24	351	305	1830	200	1910	746	140	228	35	39	137	70
25	297	321	2200	220	1110	841	130	159	35	35	118	76
26	274	462	2800	210	853	929	125	130	32	32	248	60
27	275	483	2600	200	812	737	150	105	28	32	145	52
28	273	1580	4280	200	888	566	200	92	30	32	102	53
29	269	7880	4550	230	790	615	175	90	35	31	70	59
30	266	5130	2990	300	---	1610	150	90	35	31	53	61
31	269	---	1850	400	---	1150	---	238	---	34	48	---
MEAN	839	851	2296	883	797	696	373	133	63.5	40.6	62.1	52.0
MAX	1150	7880	8550	2800	3410	1610	880	424	218	58	248	109
MIN	266	288	886	200	190	459	125	65	28	31	29	36
IN.	.52	.51	1.42	.54	.46	.43	.22	.08	.04	.03	.04	.03

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	758.4	828.8	751.7	733.2	1120	1954	2045	1838	2039	1212	648.3	697.4
MAX	5695	6574	5449	4516	4102	5724	8981	7800	14830	9206	4856	4615	
(WY)	1974	1962	1983	1946	1937	1973	1973	1973	1947	1981	1932	1965	
MIN	9.59	9.77	13.0	12.9	18.1	37.3	45.9	84.1	25.8	13.4	7.97	13.6	
(WY)	1957	1957	1957	1957	1957	1957	1956	1956	1934	1934	1936	1953	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	592.2	1238
HIGHEST ANNUAL MEAN		3353
LOWEST ANNUAL MEAN		167.2
HIGHEST DAILY MEAN	8550	30000
LOWEST DAILY MEAN	28	4.6
INSTANTANEOUS PEAK FLOW	10700	31900
INSTANTANEOUS PEAK STAGE (FEET)	12.77	21.96
INSTANTANEOUS LOW FLOW	27	4.6
ANNUAL RUNOFF (INCHES)	4.30	8.99
10 PERCENTILE	1390	3180
50 PERCENTILE	237	329
95 PERCENTILE	33	22

## 06906000 MUSSEL FORK NEAR MUSSELFORK, MO

LOCATION.--Lat 39°31'26", long 92°56'59", in SW 1/4 SW 1/4 SE 1/4 sec.32, T.55 N., R.18 W., Chariton County, Hydrologic Unit 10280202, on left bank at downstream side of pier of bridge on State Highway 5, 4.5 mi southwest of Musselfork, and 1.5 mi upstream from Long Branch.

DRAINAGE AREA.--267 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1948 to December 1951, October 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 639.25 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 1, 1952, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Jan. 3-15 and Feb. 1-16. Records poor. Several observations of water temperature and specific conductance were made during the year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.8	25	300	118	350	113	157	19	6.8	1.9	2.7	4.4
2	8.7	30	143	92	200	104	268	18	6.3	2.8	2.7	4.4
3	8.1	26	88	70	100	138	383	17	5.8	3.3	2.7	4.3
4	7.7	21	62	50	80	127	280	17	5.0	4.0	2.7	4.3
5	7.3	20	49	30	70	102	190	16	4.5	4.3	2.7	4.3
6	6.6	18	41	20	60	91	131	15	3.8	3.5	2.7	4.3
7	6.4	16	37	15	50	83	112	15	3.3	3.1	2.7	4.3
8	6.5	14	36	15	40	80	95	14	3.0	3.4	2.7	4.3
9	7.6	14	35	15	37	74	71	14	2.8	3.7	17	4.3
10	8.7	18	32	15	35	72	58	109	2.4	3.7	30	4.2
11	9.0	20	31	16	35	66	51	40	2.0	4.1	10	4.2
12	9.3	18	31	17	36	54	47	26	1.5	4.4	5.0	4.3
13	10	15	29	17	37	50	44	19	1.0	5.2	3.4	4.2
14	11	13	26	17	38	44	41	15	.57	6.2	2.8	4.2
15	12	12	26	18	39	38	36	13	.27	6.9	2.8	4.2
16	14	19	21	23	40	34	33	12	.53	8.3	2.7	5.9
17	15	356	26	29	139	31	30	10	1.3	9.3	2.7	12
18	17	205	23	31	258	30	29	10	2.3	9.6	2.7	6.6
19	19	88	352	76	501	30	28	10	2.7	9.8	2.7	7.4
20	19	54	3880	132	1160	31	27	10	3.0	2.5	2.7	5.3
21	19	31	3690	226	1180	31	27	9.1	2.8	2.8	2.7	4.3
22	18	23	1710	179	704	30	25	8.8	2.4	6.8	7.9	4.3
23	16	19	390	80	954	30	24	9.9	2.0	9.5	232	4.3
24	15	18	293	52	594	30	23	54	1.4	5.1	64	4.3
25	16	20	248	44	211	48	22	80	.86	2.9	28	4.3
26	17	22	196	39	141	137	22	33	.70	2.6	15	4.3
27	18	27	305	30	128	67	21	19	.60	2.8	8.9	4.3
28	19	514	702	26	163	47	21	14	.10	2.8	6.4	4.3
29	20	1810	745	26	132	153	20	11	.38	2.8	4.7	4.4
30	20	1060	310	34	---	483	19	8.9	.96	2.7	4.5	4.3
31	21	---	186	216	---	345	---	7.7	---	2.7	4.4	---
MEAN	13.2	152	453	57.0	259	90.1	77.8	21.8	2.37	4.63	15.6	4.82
MAX	21	1810	3880	226	1180	483	383	109	6.8	9.8	232	12
MIN	6.4	12	21	15	35	30	19	7.7	.10	1.9	2.7	4.2
IN.	.06	.63	1.96	.25	1.05	.39	.33	.09	.01	.02	.07	.02

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	173.8	168.5	179.8	152.4	257.3	329.0	478.6	343.7	323.1	253.0	73.3	160.8
MEAN	173.8	168.5	179.8	152.4	257.3	329.0	478.6	343.7	323.1	253.0	73.3	160.8
MAX	1246	976.3	1335	728.9	1453	1370	2585	1538	1225	3029	302.7	1295
(WY)	1986	1986	1983	1965	1982	1973	1973	1973	1981	1981	1987	1973
MIN	.042	1.05	.613	.439	.893	27.8	36.2	9.77	2.37	1.99	.739	.590
(WY)	1964	1977	1964	1964	1964	1964	1971	1980	1988	1977	1964	1976

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	95.4	241.1
HIGHEST ANNUAL MEAN	718.9	1973
LOWEST ANNUAL MEAN	44.8	1963
HIGHEST DAILY MEAN	3880	18300
LOWEST DAILY MEAN	.10	0
INSTANTANEOUS PEAK FLOW	5290	23100
INSTANTANEOUS PEAK STAGE (FEET)	19.46	22.11
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	4.85	12.3
10 PERCENTILE	187	538
50 PERCENTILE	19	30
95 PERCENTILE	2.4	.79

## LITTLE CHARITON RIVER BASIN

06906190 LONG BRANCH RESERVOIR NEAR MACON, MO

LOCATION.--Lat 39°45'05", long 92°30'20", NW 1/4 sec.10, T.57 N., R.14 W., Macon County, in Administration building at left end of dam on East Fork Little Chariton River, 2 mi west of junction U.S. Highway 63 and 36 in Macon and 2 mi below confluence with Long Branch.

DRAINAGE AREA.--109 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1978 to current year. Contents published 1982 to current year. Records collected at same site since 1978 and are available from U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Lake is formed by a rolled earthfill type dam. Closure began on Sept. 3, 1976. Storage began on Aug. 2, 1978. An uncontrolled limited service type spillway, 50 ft wide, is located at the right abutment. Capacity of surcharge pool (elevations 801.0 ft to 820.7 ft), 98,590 acre-ft; of flood control pool (elevations 791.0 ft to 801.0 ft), 30,600 acre-ft; and of multipurpose pool (elevations 751.1 ft to 791.0), 34,640 acre-ft. Lake is used for flood control, water supply, water quality control, and recreation.

COOPERATION.--Records furnished by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 59,800 acre-ft, July 28, 1981, elevation, 799.56 ft; minimum, 14,300 acre-ft, Dec. 5, 1980, elevation, 780.21 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 38,600 acre-ft, Feb. 24-25, elevation, 792.60 ft, Feb. 24; minimum, 28,000 acre-ft, Sept. 29, elevation, 788.10.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30400	29400	30000	35800	36700	38400	34900	33700	33300	31800	30200	29300
2	30200	29400	30000	35800	36800	38400	34900	33700	33300	31700	30200	29300
3	30100	29400	30000	35800	36800	38300	35000	33700	33300	31600	30100	29200
4	29900	29400	30000	35800	36900	38300	35000	33700	33200	31600	30000	29200
5	29900	29400	30000	35700	36900	38200	35000	33600	33100	31500	30000	29100
6	29900	29300	30000	35700	36800	38100	35100	33600	33100	31400	29900	29000
7	29800	29300	30000	35700	36800	38000	35000	33500	33000	31400	29900	29000
8	29800	29400	30000	35700	36700	37900	34900	33500	33000	31300	29700	28900
9	29800	29500	30000	35600	36700	37800	34800	33600	33000	31300	29900	28800
10	29700	29400	30000	35600	36700	37700	34700	33600	32900	31200	29800	28800
11	29600	29300	30000	35600	36700	37500	34700	33600	32800	31200	29800	28800
12	29600	29300	30000	35600	36700	37400	34600	33600	32800	31100	29700	28700
13	29600	29200	30000	35600	36700	37300	34400	33500	32700	31100	29600	28700
14	29600	29300	30000	35600	36600	37100	34300	33500	32700	31000	29600	28600
15	29600	29300	30000	35500	36600	36900	34300	33400	32600	30900	29500	28600
16	29600	29400	30200	35600	36600	36200	34200	33400	32700	30900	29500	28700
17	29600	29500	30100	35600	36600	36100	34200	33300	32700	30800	29400	28600
18	29500	29400	30100	35600	36600	36000	34200	33300	32500	30800	29400	28600
19	29500	29400	30100	35600	36700	35800	34200	33300	32500	30800	29300	28600
20	29500	28800	31900	35700	36900	35700	34100	33300	32400	30800	29300	28600
21	29500	28800	33400	35700	37400	35600	34100	33200	32400	30800	29300	28500
22	29400	28700	33700	35700	37800	35500	34100	33300	32300	30700	29100	28400
23	29400	28700	33900	35700	38300	35300	34000	33400	32300	30700	29800	28500
24	29400	28700	34000	35700	38600	35100	34000	33600	32200	30600	29700	28300
25	29400	28800	34200	35700	38600	35000	34000	33600	32200	30600	29700	28300
26	29300	28700	34200	35700	38500	35000	33900	33600	32200	30500	29600	28200
27	29300	28900	34300	35700	38500	34800	33900	33500	32100	30500	29600	28100
28	29200	29000	35100	35700	38400	34800	33800	33500	31900	30400	29600	28100
29	29200	29600	35600	35700	38400	34900	33800	33400	31900	30300	29500	28000
30	29200	29800	35600	35600	---	34900	33800	33400	31900	30300	29400	28100
31	29300	---	35800	35900	---	35000	---	33400	---	30300	29400	---
(-)	788.68	788.90	791.48	791.51	792.51	791.14	790.66	790.48	789.83	789.15	788.73	788.12
(=)	-1200	+500	+6000	+100	+2500	-3400	-1200	-400	-1500	-1600	-900	-1300
MAX	30400	29800	35800	35900	38600	38400	35100	33700	33300	31800	30200	29300
MIN	29200	28700	30000	35500	36600	36000	33800	33200	31900	30300	29100	28000

CAL YR 1987.....- 800

WTR YR 1988.....-2400

(-) Elevation, in feet NGVD, at end of month

(=) Change in contents, in acre-feet

## LITTLE CHARITON RIVER BASIN

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06906200 EAST FORK LITTLE CHARITON RIVER NEAR MACON, MO

LOCATION.--Lat 39°44'59", long 92°31'03", NW 1/4 NW 1/4 NW 1/4 sec.18, T.57 N., R.14 W., Macon County, Hydrologic Unit 10280203, on right bank 250 ft downstream from Long Branch Lake and 3 mi west of Macon.

DRAINAGE AREA.--112 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1971 to current year. Partial-record station May 1970 to August 1971.

GAGE.--Water-stage recorder. Datum of gage is 741.43 ft above National Geodetic Vertical Datum of 1929. Sept. 8, 1971, to Aug. 1, 1985, water-stage recorder at site 400 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records fair. Several observations of water temperature and specific conductance were made during the year. Complete regulation from Long Branch Reservoir (station 06906190) 250 ft upstream. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	4.6	4.5	11	30	77	61	7.8	6.8	6.8	8.6	7.3
2	53	4.6	4.6	11	33	77	61	7.6	6.8	6.8	8.6	7.3
3	52	4.7	4.6	11	34	75	64	7.6	6.8	6.8	8.2	7.3
4	24	4.8	4.6	11	34	71	62	7.5	6.8	6.8	8.3	7.3
5	7.8	4.8	4.7	10	33	67	63	7.7	6.6	6.9	7.8	7.3
6	7.8	4.8	4.6	10	32	62	63	7.5	6.6	7.0	7.8	7.3
7	7.8	4.8	4.6	9.9	31	60	61	7.5	5.0	7.0	7.8	7.1
8	7.9	4.8	4.6	9.4	29	109	60	7.6	4.3	7.0	7.8	7.1
9	8.0	4.8	4.7	9.1	27	148	59	7.5	4.3	7.0	7.8	7.3
10	7.8	4.8	4.6	8.9	28	135	59	7.5	4.8	7.0	7.8	7.3
11	8.0	4.8	4.5	8.6	30	121	58	7.3	4.9	7.0	7.8	7.3
12	3.0	4.8	4.5	8.0	30	114	56	7.3	5.1	7.3	7.8	7.3
13	.00	4.8	4.5	7.9	30	106	57	7.3	5.1	7.5	7.8	7.3
14	.00	4.8	4.4	7.6	26	98	26	7.4	5.2	7.5	7.8	7.3
15	1.1	4.8	4.5	7.4	25	91	6.3	7.4	5.1	7.7	7.5	7.3
16	4.3	4.8	4.5	7.5	25	84	6.1	7.3	5.0	7.8	7.5	7.5
17	4.4	4.8	4.4	8.0	25	80	6.3	7.2	5.0	7.8	7.5	7.5
18	4.5	4.8	4.3	8.1	26	77	6.5	7.3	5.0	7.8	7.5	7.3
19	4.5	4.8	14	8.8	29	74	6.3	7.3	5.0	7.8	7.5	7.0
20	4.5	4.7	7.1	9.2	41	70	6.3	7.0	5.0	7.8	7.5	7.0
21	4.4	4.6	4.8	9.1	54	68	6.4	7.0	4.5	7.8	7.5	6.9
22	4.7	4.7	4.8	9.0	60	65	6.3	7.2	4.6	7.8	7.7	6.8
23	4.5	4.8	4.8	8.8	84	63	6.2	6.8	4.7	7.8	7.5	6.8
24	4.5	4.7	4.7	8.8	97	62	6.1	6.6	4.8	7.8	7.5	6.8
25	4.5	4.7	4.5	8.5	95	62	6.1	6.6	4.8	7.8	7.5	6.8
26	4.5	4.7	4.5	8.2	92	61	6.1	6.8	4.6	8.0	7.4	6.8
27	4.5	4.6	5.3	8.3	89	60	6.1	6.8	5.7	8.1	7.3	6.8
28	4.5	5.0	5.8	8.3	85	60	6.1	6.8	6.8	8.1	7.3	7.2
29	4.6	4.5	8.6	8.3	81	62	7.7	6.8	7.0	8.2	7.3	7.3
30	4.6	4.5	9.3	8.3	---	61	7.8	6.8	6.8	8.3	7.3	7.2
31	4.6	---	10	18	---	61	---	6.8	---	8.3	7.3	---
MEAN	10.1	4.74	5.48	9.23	46.0	80.0	30.4	7.21	5.45	7.52	7.69	7.16
MAX	53	5.0	14	18	97	148	64	7.8	7.0	8.3	8.6	7.5
MIN	.00	4.5	4.3	7.4	25	60	6.1	6.6	4.3	6.8	7.3	6.8
IN.	.10	.05	.06	.09	.44	.82	.30	.07	.05	.08	.08	.07

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	83.3	80.8	99.1	67.6	67.0	169.3	216.7	181.6	95.2	74.0	63.8	90.8
MAX	425.2	354.2	297.9	298.7	204.6	688.3	938.6	510.5	348.9	339.6	401.2	726.6	
(WY)	1974	1986	1983	1974	1975	1973	1973	1973	1984	1981	1981	1973	
MIN	.000	.049	.000	.000	.000	7.53	30.4	7.21	.951	.097	.019	.000	
(WY)	1976	1976	1979	1979	1979	1980	1988	1988	1977	1977	1975	1976	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	18.3	107.6
HIGHEST ANNUAL MEAN		316.9
LOWEST ANNUAL MEAN		18.3
HIGHEST DAILY MEAN	148	5460
LOWEST DAILY MEAN	.00	0
INSTANTANEOUS PEAK FLOW	158	8700
INSTANTANEOUS PEAK STAGE (FEET)	8.65	20.60
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	2.22	13.0
10 PERCENTILE	62	301
50 PERCENTILE	7.5	28
95 PERCENTILE	4.1	.00

## LITTLE CHARITON RIVER BASIN

06906300 EAST FORK LITTLE CHARITON RIVER NEAR HUNTSVILLE, MO

LOCATION.--Lat 39°27'18", long 92°34'07", in NW 1/4 NW 1/4 NW 1/4 sec.26, T.54 N., R.15 W., Randolph County, Hydrologic Unit 10280203, on right bank downstream end of bridge on State Highway C, 1 mi downstream from Sugar Creek, and 1.5 mi northwest of Huntsville.

DRAINAGE AREA.--220 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1962 to current year. Occasional low-flow measurements, water years 1942-43, 1945-46.

GAGE.--Water-stage recorder. Datum of gage is 655.86 ft above National Geodetic Vertical Datum of 1929 (levels by Missouri State Highway and Transportation Commission). From July 18, 1972, to Sept. 23, 1974, at datum 0.63 ft higher and from Sept. 24, 1974, at present datum.

REMARKS.--Estimated daily discharges: Jan. 1-5, 22-26 and Feb. 2, 6, 11, 12. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. Some regulation by Long Branch Reservoir (station 06906190) 34 mi upstream since 1978. Low flow affected by operation of pump 7 mi upstream. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	20	53	57	182	96	93	13	4.9	2.2	3.8	7.2
2	50	17	36	49	88	106	145	13	6.4	5.3	5.0	7.6
3	49	11	29	43	79	120	425	13	6.2	5.8	6.4	2.8
4	51	9.5	24	37	75	110	182	13	5.7	4.8	6.7	1.4
5	29	8.8	22	31	71	104	120	13	5.1	3.4	3.8	1.9
6	5.5	7.9	20	28	49	114	109	12	4.5	2.5	4.2	3.0
7	3.8	9.4	23	26	47	130	92	10	4.0	2.4	4.5	3.2
8	4.3	10	25	26	42	111	79	12	3.6	2.1	2.7	3.9
9	4.2	16	23	26	41	129	71	13	3.5	2.0	8.3	3.7
10	4.2	12	19	24	37	127	71	9.7	3.3	3.1	6.5	2.6
11	5.3	10	20	25	37	118	79	8.6	1.8	5.2	6.2	3.2
12	6.0	9.1	21	29	40	109	73	9.6	1.1	153	3.6	3.0
13	5.6	10	20	25	48	99	64	10	2.3	9.5	5.3	2.2
14	4.4	11	15	20	50	92	61	9.8	2.1	6.2	10	1.7
15	2.1	12	16	21	55	89	40	11	3.2	5.9	5.5	2.7
16	5.9	17	24	25	85	85	23	9.6	4.9	4.7	4.9	3.3
17	12	18	21	43	164	83	20	7.4	1.5	6.3	4.3	3.4
18	13	17	19	58	137	83	17	5.7	.23	7.7	3.9	3.5
19	34	13	677	126	277	80	16	8.0	1.2	7.0	4.8	2.4
20	29	13	2210	145	411	79	20	5.6	2.6	11	4.3	1.5
21	42	11	331	69	209	74	14	7.3	1.1	11	4.4	1.8
22	48	11	176	45	232	71	14	14	1.3	4.1	7.1	1.7
23	36	12	134	39	233	69	19	30	.85	6.7	30	1.1
24	39	14	145	33	153	69	17	46	.78	7.6	16	.56
25	40	24	105	26	127	82	15	21	.66	7.6	6.9	1.1
26	37	18	70	22	118	72	15	11	.61	5.9	5.0	.83
27	31	31	539	20	116	68	11	8.9	.18	3.0	4.4	.44
28	17	306	488	21	108	69	11	9.1	.76	3.2	8.1	.78
29	6.2	336	177	25	104	350	18	8.7	.87	3.0	8.2	5.8
30	5.2	105	102	35	---	201	14	7.7	1.5	3.1	5.0	2.6
31	14	---	85	222	---	110	---	5.2	---	3.4	6.1	---
MEAN	22.1	37.3	183	45.8	118	106	64.9	12.1	2.56	9.96	6.64	2.70
MAX	51	336	2210	222	411	350	425	46	6.4	153	30	7.6
MIN	2.1	7.9	15	20	37	68	11	5.2	.18	2.0	2.7	.44
IN.	.12	.19	.96	.24	.58	.56	.33	.06	.01	.05	.03	.01

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
MEAN	150.2	139.6	135.7	136.0	161.7	282.8	362.3	246.9	222.0	168.4	73.6	143.0															
MAX	1019	756.5	666.2	526.8	732.5	1107	2079	704.9	1069	1191	399.6	782.6															
(WY)	1987	1986	1983	1965	1985	1973	1973	1973	1969	1969	1981	1973															
MIN	.223	1.65	.439	.461	.776	43.5	23.9	10.7	2.42	.045	.465	.037															
(WY)	1964	1964	1964	1964	1964	1968	1971	1965	1977	1977	1964	1976															

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	50.8	185.0
HIGHEST ANNUAL MEAN		510.3
LOWEST ANNUAL MEAN		33.7
HIGHEST DAILY MEAN		17000
LOWEST DAILY MEAN	.18	0
INSTANTANEOUS PEAK FLOW	3050	30000
INSTANTANEOUS PEAK STAGE (FEET)	15.31	20.78
INSTANTANEOUS LOW FLOW	0.05	0
ANNUAL RUNOFF (INCHES)	3.14	11.4
10 PERCENTILE	119	457
50 PERCENTILE	15	44
95 PERCENTILE	1.3	.63

06906800 LAMINE RIVER NEAR OTTERVILLE, MO

LOCATION.--Lat 38°42'09", long 92°58'42", in NE 1/4 NE 1/4 NW 1/4 sec.2, T.45 N., R.19 W., Cooper County, Hydrologic Unit 10300103, on left bank at downstream side of bridge on County Highway A, 7.2 mi downstream from confluence of Flat Creek and Richland Creek, 2.2 mi upstream from Otter Creek and 1.1 mi east of Otterville.

DRAINAGE AREA.--543 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1987 to current year.

GAGE.--Water-stage recorder. Datum of gage is 652.67 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	13	123	339	2420	170	735	98	12	11	17	7.9
2	12	13	107	249	783	159	19000	90	12	15	13	7.0
3	9.1	11	88	208	434	1370	8800	88	12	11	9.9	6.4
4	8.4	11	68	176	308	2060	1230	131	62	11	6.6	5.5
5	7.7	12	55	154	259	1190	731	108	31	9.0	4.5	5.0
6	6.7	12	47	128	222	1150	627	82	19	7.4	6.1	4.5
7	6.1	9.6	43	102	189	921	494	68	14	8.7	5.8	4.2
8	6.2	9.1	40	88	150	599	374	61	11	8.6	5.7	3.9
9	6.0	9.8	37	85	139	422	302	56	9.6	7.5	17	3.9
10	5.9	10	34	75	136	329	264	56	8.5	7.6	36	4.1
11	6.0	11	32	71	131	278	478	48	8.4	8.9	68	4.2
12	6.6	12	29	74	125	250	408	41	7.9	91	50	4.3
13	8.0	11	27	71	114	214	302	37	7.7	17	29	4.1
14	7.7	11	28	68	463	183	247	34	7.4	10	19	4.0
15	7.3	11	39	62	2830	166	210	32	7.1	8.0	14	4.2
16	8.2	15	42	63	1260	153	183	30	7.2	6.7	8.8	4.5
17	8.3	25	40	73	759	147	185	26	6.9	6.4	6.5	4.7
18	8.2	67	38	89	547	163	4850	24	6.5	7.9	5.4	6.1
19	8.2	42	410	120	2050	172	1450	23	6.2	7.8	5.2	8.1
20	8.9	31	11800	601	4760	161	575	21	6.0	7.7	134	7.4
21	9.1	25	2550	322	1010	149	374	20	6.0	7.1	74	8.6
22	8.9	22	906	209	731	137	284	23	5.7	7.2	23	10
23	9.1	20	684	154	581	127	226	26	5.6	6.0	449	8.2
24	11	39	639	134	410	113	185	28	5.5	5.3	441	7.1
25	11	515	677	113	315	205	164	28	5.2	5.8	172	6.2
26	15	478	448	100	267	191	151	26	5.0	5.1	80	5.5
27	18	218	2990	87	239	142	138	22	4.8	4.6	39	5.5
28	29	167	4390	75	211	139	124	19	4.6	4.7	23	5.5
29	24	156	979	74	188	6280	112	17	4.6	6.8	15	8.5
30	16	144	562	81	---	3690	105	15	5.5	7.5	12	11
31	13	---	429	1920	---	923	---	13	---	12	9.4	---
MEAN	10.5	71.0	916	199	760	721	1444	44.9	10.5	11.0	58.0	6.00
MAX	29	515	11800	1920	4760	6280	19000	131	62	91	449	11
MIN	5.9	9.1	27	62	114	113	105	13	4.6	4.6	4.5	3.9
IN.	.02	.15	1.94	.42	1.51	1.53	2.97	.10	.02	.02	.12	.01

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	10.5	71.0	915.5	198.9	759.7	721.1	1444	44.9	10.5	11.0	58.0	6.00
MAX	10.5	71.0	915.5	198.9	759.7	721.1	1444	44.9	10.5	11.0	58.0	6.00
(WY)	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988
MIN	10.5	71.0	915.5	198.9	759.7	721.1	1444	44.9	10.5	11.0	58.0	6.00
(WY)	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	351.7	*****	
HIGHEST ANNUAL MEAN		351.7	1988
LOWEST ANNUAL MEAN		351.7	1988
HIGHEST DAILY MEAN	19000	Apr 2	19000
LOWEST DAILY MEAN	3.9	Sep 8	3.9
INSTANTANEOUS PEAK FLOW	24400	Apr 2	24400
INSTANTANEOUS PEAK STAGE (FEET)	19.12	Apr 2	19.12
INSTANTANEOUS LOW FLOW	3.8	Sep 8,9	3.8
ANNUAL RUNOFF (INCHES)	8.79		
10 PERCENTILE	585	*****	
50 PERCENTILE	34	*****	
95 PERCENTILE	5.0	*****	

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## LAMINE RIVER BASIN

06908000 BLACKWATER RIVER AT BLUE LICK, MO

LOCATION.--Lat 38°59'32", long 93°11'48", in SW 1/4 SW 1/4 SW 1/4, sec.26, T.49 N., R.21 W., Saline County, Hydrologic Unit 10300104, on left bank at upstream side of bridge on northbound lane of U.S. Highway 65, 1.2 mi downstream from Finney Creek, 1.8 mi southeast of Blue Lick, and at mile 30.3.

DRAINAGE AREA.--1,120 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1922 to September 1933, May 1938 to current year.

REVISED RECORDS.--WSP 1006: 1929. WDR MO-83-1: 1982.

GAGE.--Water-stage recorder. Datum of gage is 593.79 ft above National Geodetic Vertical Datum of 1929. Prior to July 25, 1925, nonrecording gage at site 75 ft downstream at datum 0.10 ft lower. July 25 to Sept. 30, 1933, and May 23, 1938, to Dec. 3, 1956, nonrecording gage at site 25 ft downstream at same datum. Prior to Oct. 1, 1986, at site 0.5 mi upstream at present datum.

REMARKS.--Estimated daily discharges: Dec. 17, Jan. 8-10, 13, 15, and Feb. 4-8, 10-18, 20, 21, 25. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	14	169	383	570	192	489	86	11	31	324	12
2	13	43	114	227	510	170	4080	83	12	9.5	88	9.9
3	14	57	86	246	242	227	5370	84	113	8.2	38	8.2
4	11	35	63	200	139	822	5630	178	231	33	19	7.1
5	7.8	32	48	207	138	1020	6250	136	93	37	292	6.8
6	6.1	22	38	218	140	1040	5700	108	51	23	1070	6.5
7	5.0	15	30	198	109	1320	1340	90	29	16	277	6.1
8	4.3	12	25	157	88	963	558	77	18	13	98	5.7
9	3.7	9.3	22	104	76	597	391	72	13	11	78	6.1
10	3.5	7.9	20	71	81	417	322	68	9.3	10	53	6.3
11	3.8	6.5	19	55	79	327	386	68	7.1	9.7	208	6.1
12	3.6	5.9	17	54	77	274	421	55	6.4	9.4	156	5.5
13	3.7	5.7	15	60	93	220	307	45	6.2	8.3	72	5.1
14	3.6	5.3	14	74	95	167	241	38	6.1	7.4	42	4.9
15	3.6	5.7	17	70	809	137	198	35	6.9	7.7	27	5.2
16	3.8	7.6	18	63	1810	125	167	34	6.8	8.3	19	12
17	3.6	14	22	84	1750	123	149	32	6.3	7.9	16	204
18	3.5	64	29	143	1200	135	160	26	12	7.7	14	138
19	3.8	108	424	297	1940	159	619	22	15	7.2	11	85
20	4.8	70	4760	727	4180	160	405	20	10	7.5	9.8	123
21	6.2	47	5450	668	3830	143	239	19	8.4	7.0	22	82
22	6.2	32	5740	349	2470	130	183	18	7.7	5.6	125	40
23	6.9	22	5830	264	1100	127	155	23	7.7	5.1	1500	20
24	7.7	20	3460	189	630	118	134	24	7.5	5.7	1360	13
25	7.4	69	1250	132	428	251	118	36	7.2	6.7	360	9.8
26	9.7	336	670	104	313	436	111	47	6.8	6.6	129	8.0
27	13	216	1190	111	283	214	113	40	6.5	6.1	68	6.9
28	12	166	3200	79	259	146	108	27	6.3	5.9	39	6.1
29	32	200	2610	70	222	366	97	19	11	5.7	24	6.6
30	25	250	931	89	---	1290	91	14	28	10	18	6.6
31	18	---	516	175	---	955	---	12	---	841	14	---
MEAN	8.31	63.3	1187	189	816	412	1151	52.8	25.3	38.0	212	28.7
MAX	32	336	5830	727	4180	1320	6250	178	231	841	1500	204
MIN	3.5	5.3	14	54	76	118	91	12	6.1	5.1	9.8	4.9
IN.	.01	.06	1.22	.19	.79	.42	1.15	.05	.03	.04	.22	.03

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	601.4	590.5	435.5	465.6	694.2	1064	1405	985.5	1211	751.6	278.7	568.6
MAX	9500	6100	3359	2326	5206	4706	8473	5446	4416	8855	1668	5979
(WY)	1987	1929	1983	1974	1985	1973	1973	1943	1969	1951	1951	1961
MIN	.129	.320	1.66	1.55	5.54	9.50	29.6	9.93	18.4	1.78	1.61	.130
(WY)	1957	1957	1957	1957	1954	1956	1977	1932	1956	1933	1930	1956

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	346.4	756.3
HIGHEST ANNUAL MEAN		1959
LOWEST ANNUAL MEAN		95.8
HIGHEST DAILY MEAN	6250	48400
LOWEST DAILY MEAN	3.5	.00
INSTANTANEOUS PEAK FLOW	6470	54000
INSTANTANEOUS PEAK STAGE (FEET)	25.78	41.53
INSTANTANEOUS LOW FLOW	3.3	0.08
ANNUAL RUNOFF (INCHES)	4.20	9.17
10 PERCENTILE	752	2280
50 PERCENTILE	56	87
95 PERCENTILE	5.3	1.4

## MISSOURI RIVER MAIN STEM

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06909000 MISSOURI RIVER AT BOONVILLE, MO

LOCATION.--Lat 38°58'42", long 92°45'13", sec.35, T.49 N., R.17 W., Cooper County, Hydrologic Unit 10300102, on downstream side of second pier from right abutment of Missouri-Kansas-Texas Railroad Co. bridge at Boonville, and at mile 196.6.

DRAINAGE AREA.--501,700 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1925 to current year. Gage-height records collected at same site 1893-99 are contained in reports of Missouri River Commission; since 1900 in reports of National Weather Service.

REVISED RECORDS.--WDR MO-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 565.42 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1928, nonrecording gage at site 0.4 mi downstream at datum 3.14 ft lower. Oct. 1, 1928, to May 9, 1931, nonrecording gage at site 50 ft upstream from present site at present datum. May 10, 1931, to Apr. 12, 1934, water-stage recorder at site 0.4 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Jan. 9-11. Records good. Discharge measurements made weekly except during ice-flow periods. Some regulation from many upstream reservoirs. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1844, reached a stage of 32.7 ft, discharge, about 710,000 ft<sup>3</sup>/s, computed by U.S. Army Corps of Engineers. Flood of June 6, 1903, reached a stage of 30.5 ft, discharge, about 612,000 ft<sup>3</sup>/s, computed by U.S. Army Corps of Engineers.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57300	47900	69900	48200	45800	54300	54900	46700	47100	37100	42300	37100
2	57200	50300	64700	44300	54300	55700	63500	46600	45900	39000	39400	37300
3	56700	69800	57700	40700	49500	58800	94100	46600	44800	45200	38600	37200
4	55300	73600	51000	38000	48500	60400	99500	47200	45300	49900	38200	36500
5	54700	63000	46900	35600	43200	59500	83300	47600	45500	44000	38000	36100
6	54100	57800	45500	33300	38500	57800	72900	47900	44600	40600	38400	36500
7	53100	55200	45700	31600	36800	55900	65300	46800	44700	39700	38300	38700
8	52300	53700	46700	30800	36000	53500	58500	47000	44600	39000	36900	40800
9	52200	52700	46800	30500	36100	51400	55800	47200	43800	38800	38600	40500
10	51800	52200	46900	30000	36500	49600	53500	48900	43100	39500	40500	40000
11	50800	51700	47300	29000	36100	49500	52700	50100	42500	39400	41400	39700
12	50800	50700	48200	27900	35500	48600	53200	49400	43300	39500	38600	39400
13	51100	50000	49300	26600	34500	47000	52300	49700	46500	41600	37300	39400
14	51400	49400	50300	27800	35100	45900	51600	49100	46400	43500	37400	39700
15	51200	49500	49500	29400	36100	45100	50600	48500	43100	42500	37800	40000
16	50800	50600	48100	30400	38200	44500	49700	47400	42600	40900	37400	41600
17	51100	51100	46600	32000	38900	44500	49000	45900	42900	40600	37300	58700
18	52000	51500	45500	33000	40500	44800	50200	45300	40800	40800	37200	62300
19	52200	53600	45600	33900	43600	42900	55500	44500	39700	40300	36300	49200
20	52000	54200	75900	34900	57800	40900	52700	43600	39500	42300	35700	46400
21	51900	53700	121000	37800	71800	40100	50700	43200	39100	45200	35500	47100
22	51500	53200	108000	41400	67900	39300	49200	43700	38500	44600	35700	45500
23	50700	53400	89600	42400	69700	38800	48100	44300	38900	43900	41300	42500
24	49500	52500	75500	40000	74300	39000	47200	46600	39100	44100	43700	40700
25	48300	51600	64600	38200	69000	41800	47300	53400	38700	42000	41700	41100
26	48100	51900	61000	36300	61900	45800	47700	60200	38300	40700	38800	41600
27	47600	52300	62800	35700	57300	47200	47700	57100	37800	40600	38900	41300
28	46500	52300	69500	35600	55700	47300	47400	51900	37700	39900	42300	41000
29	45900	58900	69400	35200	54400	50400	46700	49700	37800	40100	43000	41500
30	46200	71800	62400	35400	---	62200	46500	48100	37200	40800	39700	45300
31	47000	---	54200	36800	---	61900	---	48400	---	42200	37600	---
MEAN	51330	54670	60200	34930	48400	49170	56580	48150	41990	41560	38830	42160
MAX	57300	73600	121000	48200	74300	62200	99500	60200	47100	49900	43700	62300
MIN	45900	47900	45500	26600	34500	38800	46500	43200	37200	37100	35500	36100
IN.	.12	.12	.14	.08	.10	.11	.13	.11	.09	.10	.09	.09

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	53730	49580	33350	28680	41600	66740	88770	79780	100500	80660	53120	55020
MAX	187800	124500	106200	90150	106300	183900	229200	169200	283700	299700	114400	141800
(WY)	1974	1929	1983	1973	1982	1973	1927	1927	1947	1951	1951	1951
MIN	12920	14270	8050	4919	9693	16550	29800	26950	36540	30220	14320	17440
(WY)	1940	1940	1938	1940	1940	1957	1957	1934	1956	1934	1934	1939

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	47310	60960
HIGHEST ANNUAL MEAN		107200
LOWEST ANNUAL MEAN		23730
HIGHEST DAILY MEAN		534000
LOWEST DAILY MEAN	121000	1800
INSTANTANEOUS PEAK FLOW	26600	550000
INSTANTANEOUS PEAK STAGE (FEET)	125000	32.82
INSTANTANEOUS LOW FLOW	16.06	1800
ANNUAL RUNOFF (INCHES)	26300	1.65
10 PERCENTILE	1.28	119000
50 PERCENTILE	59100	47400
95 PERCENTILE	46100	15100
	34800	

## PERCHECREEK BASIN

06910230 HINKSON CREEK NEAR COLUMBIA, MO

LOCATION.--Lat 38°55'42", long 92°20'26", in NE 1/4 NW 1/4 SW 1/4 sec.24, T.48 N., R.13 W., Boone County, Hyrdologic Unit 10300102, on left bank 400 ft downstream from bridge on State Highway 163, 2.7 mi south of junction of State Highway 163 and Business Route I-70 in Columbia, 1 mi upstream from Flat branch and at the south edge of Columbia.

DRAINAGE AREA.--70.2 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1966 to January 1982, 1987. Occasional low flow measurements, 1942, 1943, 1946, 1952, 1953, 1962, and 1963.

GAGE.--Water-stage recorder. Datum of gage is 583.52 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 21-29, July 5-7, 27 to Aug. 12 and Aug. 14 to Sept. 9. Water-dsicharge records fair except for days of no gage height record, which are poor. Gage is equipped with a U.S. Geological Survey temperature recorder.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	508	9.5	705	6.2	121	78	27	8.7	2.5	7.5	.10	.15
2	846	9.2	274	6.2	83	40	23	7.9	37	8.0	.10	.10
3	2580	8.8	128	5.8	61	25	18	20	48	77	.10	.10
4	659	12	65	5.5	47	18	16	22	9.2	25	.10	.10
5	147	17	44	4.9	40	16	13	13	3.4	6.0	.10	.10
6	71	15	36	5.0	33	14	12	8.6	1.6	15	.10	.10
7	46	13	434	4.9	24	13	12	6.6	.91	60	.10	1.3
8	34	16	283	4.9	22	12	10	5.4	.61	14	.10	1.1
9	31	13	242	5.9	18	12	9.6	4.9	60	6.2	.30	.97
10	28	11	112	9.8	15	11	9.8	4.0	106	3.2	.15	.82
11	21	11	62	8.9	15	9.3	11	3.5	17	1.4	.10	.78
12	20	9.9	44	9.8	15	8.7	9.2	3.5	7.0	271	.50	1.3
13	19	7.5	38	20	13	8.3	518	3.4	3.8	516	1.0	.77
14	17	7.0	33	109	12	8.8	452	11	2.0	8.8	.40	1.5
15	12	6.0	27	135	12	8.8	114	10	1.1	5.4	.10	5.5
16	8.9	5.5	25	46	12	8.8	58	4.0	.75	3.1	1.0	13
17	7.0	5.6	25	31	11	9.0	40	4.8	.50	1.8	.50	5.7
18	6.0	6.0	22	30	11	21	32	4.1	.30	1.1	10	2.9
19	5.5	6.5	18	32	10	34	26	30	.21	.79	4.0	2.0
20	5.1	10	15	37	9.7	24	21	11	.53	.51	1.5	1.4
21	5.8	9.0	13	30	9.3	17	18	7.5	.52	.37	1.0	1.7
22	6.5	13	12	25	8.8	15	15	6.7	4.2	.30	.70	2.3
23	7.0	6.1	11	22	8.8	14	14	4.5	31	.20	.45	2.3
24	6.7	5.0	11	20	8.8	39	12	4.7	.67	.10	.35	2.3
25	37	117	10	18	7.9	45	12	4.1	.16	.10	.40	2.5
26	110	769	9.6	17	7.9	29	11	4.5	.23	.10	.50	2.6
27	54	153	8.4	19	7.9	22	10	3.8	.22	3.0	.55	2.6
28	28	68	7.3	24	27	38	10	3.3	.21	1.2	.65	15
29	21	46	7.0	50	---	156	9.3	16	.21	.50	.25	42
30	12	36	7.0	143	---	52	8.8	5.2	.54	.30	.17	6.9
31	8.8	---	6.5	125	---	34	---	3.5	---	.20	.25	---
MEAN	173	47.4	88.2	32.6	24.0	27.1	51.7	8.07	11.3	33.5	.83	4.00
MAX	2580	769	705	143	121	156	518	30	106	516	10	42
MIN	5.1	5.0	6.5	4.9	7.9	8.3	8.8	3.3	.16	.10	.10	.10
IN.	2.84	.75	1.45	.54	.36	.45	.82	.13	.18	.55	.01	.06

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	44.4	26.7	32.9	43.0	46.2	83.2	87.5	85.5	71.5	58.7	11.5	21.0
MEAN	44.4	26.7	32.9	43.0	46.2	83.2	87.5	85.5	71.5	58.7	11.5	21.0
MAX	274.8	73.8	138.1	166.3	135.5	385.9	222.6	268.7	261.0	301.4	98.3	119.7
(WY)	1970	1969	1974	1969	1974	1973	1970	1974	1981	1981	1968	1970
MIN	.497	.581	.343	.301	3.20	1.81	4.77	7.64	3.12	.509	.000	.032
(WY)	1967	1981	1980	1977	1981	1981	1971	1980	1972	1976	1976	1976

## SUMMARY STATISTICS

## FOR 1987 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	42.1	51.3
HIGHEST ANNUAL MEAN		110.8
LOWEST ANNUAL MEAN		13.3
HIGHEST DAILY MEAN	2580	4610
LOWEST DAILY MEAN	.10	0
INSTANTANEOUS PEAK FLOW	3630	10000
INSTANTANEOUS PEAK STAGE (FEET)	14.02	19.62
INSTANTANEOUS LOW FLOW	.09	0
ANNUAL RUNOFF (INCHES)	8.14	9.93
10 PERCENTILE	60	89
50 PERCENTILE	9.9	6.5
95 PERCENTILE	.13	.07

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## MISSOURI RIVER BASIN

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06910230 HINKSON CREEK AT COLUMBIA, MO--Continued

## WATER-QUALITY RECORD

PERIOD OF DAILY RECORD:--September 1986 to present year.

INSTRUMENTATION.--Digital temperature recorder.

REMARKS.--The number of missing days of record exceeds 20 percent of the year.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	20.3	19.0	19.8	12.8	11.3	12.1	---	---	---	1.5	-.4	.6
2	20.6	18.9	19.8	11.8	8.8	9.7	---	---	---	1.1	-.8	.2
3	20.6	19.8	20.4	9.6	7.7	8.9	---	---	---	1.3	-.6	.3
4	20.6	17.5	19.8	9.7	8.8	9.3	---	---	---	1.4	-.2	.9
5	18.6	16.4	17.5	9.8	8.9	9.3	---	---	---	1.6	-.8	.5
6	17.3	14.1	15.9	9.5	7.8	8.7	---	---	---	4.4	1.1	2.6
7	16.7	13.5	15.3	11.9	8.9	10.3	---	---	---	4.2	2.5	3.1
8	17.4	14.8	16.3	12.1	8.8	10.4	---	---	---	3.1	.0	1.8
9	16.7	14.6	15.9	---	---	---	---	---	---	4.4	1.1	3.7
10	15.7	14.0	15.0	---	---	---	4.8	.3	1.8	4.3	4.2	4.2
11	16.3	14.8	15.7	---	---	---	2.0	.2	.9	4.2	4.2	4.2
12	15.1	11.7	13.5	---	---	---	3.0	.2	1.6	4.2	4.2	4.2
13	11.8	9.0	10.7	---	---	---	1.7	-.1	.5	4.2	4.1	4.1
14	11.2	8.6	9.9	---	---	---	3.7	-.2	1.4	4.6	4.0	4.1
15	11.4	8.2	10.0	---	---	---	4.1	1.7	2.8	4.4	2.9	3.6
16	11.6	8.5	10.5	---	---	---	5.7	3.7	4.8	3.5	1.9	2.2
17	12.1	10.1	11.3	---	---	---	6.6	4.7	5.6	2.0	.4	1.5
18	13.1	10.9	12.2	---	---	---	4.9	1.8	3.4	1.6	.0	.8
19	14.2	12.0	13.3	---	---	---	3.6	.7	2.1	1.5	.2	.8
20	15.1	12.4	14.1	---	---	---	3.3	-.2	1.5	.8	.0	.4
21	---	---	---	---	---	---	4.9	1.1	2.7	1.1	.1	.6
22	14.3	14.1	14.3	---	---	---	3.6	1.5	2.6	1.1	.1	.5
23	14.4	13.7	14.1	---	---	---	3.9	1.7	2.9	1.0	.2	.6
24	15.0	14.3	14.4	---	---	---	3.7	1.8	2.8	.7	.3	.5
25	14.3	13.0	13.9	---	---	---	3.2	.9	1.8	.9	.1	.5
26	13.1	10.8	12.1	---	---	---	2.3	1.2	1.6	1.0	.2	.5
27	12.5	9.7	11.3	---	---	---	2.5	1.2	1.6	1.1	.3	.6
28	12.7	10.1	11.5	---	---	---	1.5	-.5	.6	.8	.0	.4
29	12.8	10.9	12.0	---	---	---	3.0	-.4	1.2	.9	.1	.4
30	12.4	9.0	10.7	---	---	---	2.1	1.2	1.4	1.5	.1	.6
31	12.4	9.6	11.1	---	---	---	1.4	-.7	.4	2.0	.1	.8
MONTH	---	---	---	---	---	---	---	---	---	4.6	-.8	1.6

## MISSOURI RIVER BASIN

06910230 HINKSON CREEK AT COLUMBIA, MO--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	3.2	1.4	2.1	7.4	5.2	6.5	---	---	---	---	---	---
2	4.8	1.0	2.6	7.4	3.8	4.6	---	---	---	---	---	---
3	5.3	2.1	3.8	6.6	4.0	4.3	---	---	---	---	---	---
4	5.2	2.0	3.6	7.4	4.7	6.6	---	---	---	---	---	---
5	5.5	3.8	4.7	11.0	6.5	8.2	---	---	---	---	---	---
6	7.0	4.1	5.3	11.0	8.2	9.7	---	---	---	---	---	---
7	6.9	2.1	4.8	11.7	9.0	10.5	---	---	---	---	---	---
8	6.7	4.6	5.8	11.1	9.0	10.6	---	---	---	---	---	---
9	4.8	1.2	3.0	14.4	9.3	11.3	18.3	14.5	14.8	---	---	---
10	6.4	1.4	3.3	9.2	3.4	6.6	18.3	14.6	14.8	---	---	---
11	7.8	3.2	5.3	5.2	3.5	4.0	14.9	14.7	14.8	---	---	---
12	7.3	4.9	6.4	7.4	3.6	5.6	15.0	14.9	14.9	---	---	---
13	6.9	3.4	5.4	7.5	4.2	6.6	15.0	14.9	15.0	---	---	---
14	7.4	4.6	6.0	11.2	7.1	8.5	15.2	15.0	15.1	---	---	---
15	---	---	---	13.7	8.1	10.9	15.3	15.2	15.3	---	---	---
16	---	---	---	11.4	9.3	10.2	15.4	15.3	15.4	---	---	---
17	---	---	---	11.4	8.6	9.3	15.6	15.4	15.5	24.8	22.0	23.5
18	---	---	---	11.6	8.5	9.5	15.7	15.6	15.7	25.3	21.7	23.3
19	---	---	---	---	---	---	15.8	15.7	15.8	27.9	23.7	25.6
20	---	---	---	---	---	---	16.0	15.8	15.9	28.9	24.5	26.3
21	---	---	---	15.4	11.9	14.0	16.1	16.0	16.1	28.7	24.6	26.5
22	---	---	---	19.3	13.4	15.3	20.1	16.1	19.3	26.3	23.1	24.9
23	---	---	---	15.6	14.2	15.3	---	---	---	24.8	20.1	23.0
24	---	---	---	15.6	12.8	14.8	---	---	---	23.7	21.1	22.3
25	---	---	---	14.3	12.0	13.1	---	---	---	22.5	21.1	21.8
26	---	---	---	11.9	10.6	11.1	---	---	---	23.3	20.0	21.9
27	---	---	---	12.5	10.4	10.7	---	---	---	25.8	22.2	23.7
28	---	---	---	12.6	10.1	11.1	---	---	---	25.3	22.0	23.9
29	---	---	---	12.6	8.9	10.8	---	---	---	27.4	20.4	23.8
30	---	---	---	12.8	8.8	10.7	---	---	---	25.3	23.8	24.8
31	---	---	---	9.4	5.8	8.0	---	---	---	25.9	21.3	24.0
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
JUNE				JULY			AUGUST			SEPTEMBER		
1	26.6	21.3	24.3	---	---	---	---	---	---	23.6	17.5	21.0
2	27.4	22.6	24.9	---	---	---	---	---	---	23.0	18.2	20.7
3	---	---	---	---	---	---	---	---	---	22.7	17.1	20.2
4	---	---	---	---	---	---	---	---	---	24.0	18.6	21.5
5	---	---	---	---	---	---	---	---	---	23.2	18.0	20.5
6	---	---	---	---	---	---	---	---	---	24.5	19.5	21.5
7	---	---	---	---	---	---	---	---	---	24.4	20.3	21.7
8	---	---	---	---	---	---	---	---	---	22.5	18.5	20.5
9	---	---	---	---	---	---	---	---	---	24.2	19.0	21.2
10	---	---	---	---	---	---	---	---	---	21.5	18.0	19.9
11	---	---	---	---	---	---	---	---	---	21.0	16.8	18.7
12	---	---	---	---	---	---	---	---	---	20.7	16.8	19.1
13	---	---	---	---	---	---	---	---	---	22.0	16.3	19.1
14	---	---	---	---	---	---	29.4	24.0	26.9	22.5	18.6	20.5
15	---	---	---	---	---	---	28.9	24.8	26.3	20.5	17.4	19.1
16	---	---	---	---	---	---	29.3	26.0	28.3	24.3	17.5	20.7
17	---	---	---	---	---	---	29.3	25.2	27.5	23.5	18.1	20.5
18	---	---	---	---	---	---	26.8	20.9	25.0	20.4	17.4	18.4
19	---	---	---	---	---	---	24.6	21.4	23.3	20.8	15.4	18.1
20	---	---	---	---	---	---	24.4	20.8	23.1	20.8	15.9	18.9
21	---	---	---	---	---	---	26.9	24.0	25.1	18.6	14.9	16.7
22	---	---	---	---	---	---	26.7	24.2	25.9	18.6	13.1	16.1
23	---	---	---	---	---	---	25.2	21.5	22.9	18.8	12.9	16.3
24	---	---	---	---	---	---	22.9	19.8	21.5	19.4	13.4	16.7
25	---	---	---	---	---	---	22.1	18.0	20.4	21.1	15.4	18.4
26	---	---	---	---	---	---	24.2	20.5	22.7	21.4	16.5	19.7
27	---	---	---	---	---	---	23.7	19.0	21.2	22.0	16.1	19.3
28	---	---	---	---	---	---	21.0	18.5	19.7	21.0	16.3	17.7
29	---	---	---	---	---	---	23.8	18.3	21.0	21.4	15.2	17.7
30	---	---	---	---	---	---	22.7	18.5	20.7	19.7	13.0	15.4
31	---	---	---	---	---	---	23.9	19.4	22.1	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	24.5	12.9	19.2

## PERCHECREEK BASIN

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06910230 HINKSON CREEK NEAR COLUMBIA, MO

LOCATION.--Lat 38°55'42", long 92°20'26", in NE 1/4 NW 1/4 sec.24, T.48 N., R.13 W., Boone County, Hyrdologic Unit 10300102, on left bank 400 ft downstream from bridge on State Highway 163, 2.7 mi south of junction of State Highway 163 and Business Route I-70 in Columbia, 1 mi upstream from Flat branch and at the south edge of Columbia.

DRAINAGE AREA.--70.2 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1966 to January 1982, 1987 to current year. Occasional low flow measurements, 1942, 1943, 1946, 1952, 1953, 1962, and 1963.

GAGE.--Water-stage recorder. Datum of gage is 583.52 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 17, 18, Jan. 1-8, 9-15, 25-29, and Feb. 2, 3, 5-15. Water-discharge records fair except for days of no gage height record, which are poor. Gage is equipped with a U.S. Geological Survey temperature recorder.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	2.3	15	23	227	33	52	7.7	1.2	12	.62	.12
2	2.2	2.9	11	18	64	22	162	7.0	.84	4.1	.35	.10
3	2.0	2.6	7.6	14	45	84	291	14	.71	1.4	.28	.09
4	1.4	1.9	4.9	11	36	87	108	30	.49	.67	.18	.11
5	1.3	1.5	4.2	9.5	30	94	78	15	.35	.48	37	.08
6	.89	1.3	4.2	8.2	25	155	152	9.4	.36	.29	6.0	.08
7	.83	1.4	6.4	7.0	20	147	72	6.2	.43	.35	1.3	.08
8	.83	1.8	5.9	6.5	17	70	47	10	.44	.27	1.1	.08
9	.67	1.6	4.9	5.8	14	48	37	16	.56	.16	5.6	.09
10	1.1	1.2	4.2	5.2	12	38	34	7.9	.60	.29	23	.08
11	.60	.99	3.4	6.0	10	111	42	4.6	.47	.80	3.3	.08
12	.53	1.3	2.9	7.0	9.0	236	39	3.9	.43	.17	1.3	.08
13	.43	1.8	2.9	5.0	11	58	34	4.2	.49	.27	18	.08
14	.33	1.3	4.3	4.0	15	38	27	5.6	.49	.15	12	.09
15	.34	1.7	7.9	4.5	38	30	22	9.4	.51	.23	1.9	.09
16	.81	5.1	11	5.4	98	27	20	9.2	.46	.12	.42	2.0
17	.68	9.5	8.0	9.0	134	25	20	4.2	.43	.80	.16	.06
18	.92	5.1	7.0	15	85	27	21	3.0	.36	1.6	.11	.45
19	1.5	1.7	357	24	785	25	20	2.2	.30	1.4	.16	1.6
20	2.7	.66	461	25	297	23	18	2.4	.30	.82	.09	.55
21	1.7	.37	106	15	96	21	17	6.5	.35	.56	.09	.10
22	1.0	.32	49	10	89	19	15	33	.33	.41	9.7	.16
23	1.1	.30	40	6.0	114	16	15	26	.38	.24	60	.16
24	25	36	61	3.5	62	17	13	24	.43	2.8	7.1	.25
25	2.6	41	60	2.5	53	51	13	12	.31	1.4	1.4	.06
26	2.3	16	36	2.3	48	37	12	7.7	.19	.36	.39	.06
27	.86	25	775	2.1	41	24	11	5.5	.33	.10	.23	.06
28	.25	57	304	2.2	40	24	10	3.4	.51	.10	.17	.07
29	.23	35	72	2.4	37	709	9.2	1.3	3.1	2.1	.20	23
30	.15	23	41	18	---	289	7.6	.97	4.7	1.2	.14	13
31	1.8	---	33	727	---	83	---	.86	---	.68	.10	---
MEAN	1.91	9.39	81.0	32.4	88.0	86.1	47.3	9.46	.69	1.17	6.21	1.43
MAX	25	57	775	727	785	709	291	33	4.7	12	60	23
MIN	.15	.30	2.9	2.1	9.0	16	7.6	.86	.19	.10	.09	.06
IN.	.03	.15	1.33	.53	1.35	1.41	.75	.16	.01	.02	.10	.02

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1966	42.0	274.8	1970	.497	1967
1967	25.7	73.8	1969	.581	1981
1968	35.5	138.1	1974	.343	1980
1969	42.4	166.3	1969	.301	1977
1970	48.7	135.5	1974	3.20	1981
1971	83.4	385.9	1973	1.81	1981
1972	85.1	222.6	1970	4.77	1971
1973	81.1	268.7	1974	7.64	1980
1974	67.3	261.0	1981	.695	1988
1975	55.3	301.4	1981	.509	1976
1976	11.2	98.3	1968	.000	1976
1977	19.8	119.7	1970	.032	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	30.3	50.1
HIGHEST ANNUAL MEAN		110.8
LOWEST ANNUAL MEAN		13.3
HIGHEST DAILY MEAN	785	4610
LOWEST DAILY MEAN	.06	0
INSTANTANEOUS PEAK FLOW	1750	10000
INSTANTANEOUS PEAK STAGE (FEET)	9.89	19.62
INSTANTANEOUS LOW FLOW	.09	0
ANNUAL RUNOFF (INCHES)	5.86	9.69
10 PERCENTILE	62	87
50 PERCENTILE	4.3	6.4
95 PERCENTILE	.08	.07

## MISSOURI RIVER BASIN

06910230 HINKSON CREEK AT COLUMBIA, MO--Continued

## WATER-QUALITY RECORD

PERIOD OF DAILY RECORD.--September 1986 to current year.

INSTRUMENTATION.--Digital temperature recorder.

REMARKS.--The number of missing days of record exceeds 20 percent of the year.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	15.7	12.2	13.8	---	---	---	4.0	3.5	3.8	2.7	1.3	2.2
2	34.2	11.1	14.1	---	---	---	3.8	2.7	3.4	2.0	.9	1.6
3	---	---	---	16.2	13.2	14.7	6.5	3.1	4.5	1.8	1.0	1.3
4	---	---	---	16.8	13.4	15.3	6.8	5.6	6.2	1.3	.9	1.2
5	---	---	---	---	---	---	6.6	5.1	5.8	1.2	1.0	1.1
6	---	---	---	---	---	---	6.6	5.1	5.7	1.1	.8	.9
7	---	---	---	---	---	---	7.0	5.4	6.5	.9	.6	.8
8	14.4	9.4	11.4	---	---	---	7.8	6.1	6.8	.9	.3	.6
9	13.9	11.1	12.0	---	---	---	8.8	6.9	8.0	.8	.5	.7
10	15.4	10.6	12.1	---	---	---	8.7	7.0	8.0	.5	.0	.4
11	12.7	8.9	10.1	---	---	---	8.7	7.0	7.9	1.0	.0	.4
12	19.1	8.1	10.4	---	---	---	8.6	6.9	7.6	.9	.0	.5
13	14.6	4.3	9.8	---	---	---	7.1	5.7	6.6	.7	.0	.3
14	15.0	8.1	11.9	---	---	---	6.7	5.0	5.7	.6	.0	.1
15	15.4	8.1	11.9	---	---	---	5.5	4.2	4.9	.5	.0	.1
16	14.6	8.9	12.0	---	---	---	5.1	3.5	4.3	.6	.0	.2
17	14.9	11.1	13.3	---	---	---	4.2	3.4	3.7	.6	.0	.3
18	13.2	8.1	10.9	---	---	---	3.8	2.5	3.4	.4	.0	.1
19	13.4	10.0	10.9	---	---	---	3.6	.5	2.0	.6	.0	.3
20	12.8	7.2	9.9	---	---	---	2.0	1.0	1.6	.6	.0	.3
21	9.3	6.7	7.5	---	---	---	2.5	1.6	1.9	.7	.6	.6
22	8.3	5.5	6.7	---	---	---	3.1	1.8	2.3	1.2	.4	.7
23	9.0	7.0	7.8	---	---	---	3.5	2.0	2.8	1.2	.4	.7
24	---	---	---	---	---	---	5.1	3.3	4.2	---	---	---
25	---	---	---	---	---	---	5.3	4.1	4.7	---	---	---
26	---	---	---	5.9	5.0	5.4	5.0	3.5	4.3	---	---	---
27	---	---	---	6.0	4.7	5.2	4.0	1.7	2.7	---	---	---
28	---	---	---	6.0	5.0	5.3	3.3	2.2	2.8	---	---	---
29	---	---	---	5.4	4.3	4.9	3.5	2.5	3.0	---	---	---
30	---	---	---	5.1	3.8	4.4	3.2	2.1	2.8	---	---	---
31	---	---	---	---	---	---	3.2	2.1	2.7	---	---	---
MONTH	---	---	---	---	---	---	8.8	.5	4.5	---	---	---

06910230 HINKSON CREEK AT COLUMBIA, MO--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	---	---	---	7.1	4.9	5.7	---	---	---	---	---	---
2	---	---	---	7.4	6.5	6.9	---	---	---	---	---	---
3	---	---	---	6.9	6.8	6.9	---	---	---	---	---	---
4	---	---	---	6.9	4.4	5.7	---	---	---	---	---	---
5	.9	.0	.4	---	---	---	---	---	---	---	---	---
6	.5	.1	.3	---	---	---	---	---	---	---	---	---
7	.5	.3	.5	---	---	---	12.3	10.8	11.5	---	---	---
8	.6	.5	.6	9.1	7.1	8.0	13.0	11.2	11.9	---	---	---
9	.7	.6	.7	9.1	7.9	8.7	13.4	11.6	12.6	---	---	---
10	.7	.5	.7	8.9	7.5	8.1	13.0	10.7	12.1	---	---	---
11	.7	.5	.6	10.7	7.5	8.2	11.0	9.6	10.1	---	---	---
12	.8	.6	.7	10.5	9.3	9.8	11.6	9.9	10.4	---	---	---
13	.8	.7	.7	9.3	6.3	8.0	12.1	10.2	10.7	24.0	20.4	21.7
14	.8	.7	.7	6.3	4.2	5.4	12.9	11.1	12.1	23.7	19.2	20.9
15	.8	.7	.8	4.2	2.4	3.5	12.7	10.5	11.6	24.4	19.9	21.7
16	.9	.8	.8	2.4	1.4	2.0	12.2	10.2	11.1	24.0	17.8	21.1
17	.9	.9	.9	1.7	1.4	1.5	12.2	10.4	11.3	22.7	16.9	19.6
18	1.0	.9	1.0	2.5	1.6	2.0	12.9	11.2	12.1	21.9	17.0	19.4
19	1.1	1.0	1.0	3.0	2.3	2.6	12.4	10.8	11.4	21.1	17.8	19.9
20	1.4	1.1	1.2	5.1	3.0	3.8	13.4	10.9	11.6	22.0	18.5	20.3
21	2.0	1.2	1.5	6.2	5.1	5.5	---	---	---	23.8	20.6	21.7
22	4.9	2.0	3.1	8.7	6.2	7.0	---	---	---	21.8	18.9	20.4
23	4.9	3.4	4.0	9.5	8.8	9.1	---	---	---	20.3	17.6	19.0
24	3.4	3.0	3.1	---	---	---	---	---	---	23.4	16.8	19.5
25	3.0	1.8	2.5	---	---	---	---	---	---	24.0	17.0	20.2
26	3.2	2.4	2.7	---	---	---	---	---	---	22.7	15.4	18.7
27	6.2	3.1	3.8	---	---	---	---	---	---	22.1	16.2	19.0
28	5.2	3.6	4.0	---	---	---	---	---	---	21.7	17.1	19.6
29	7.0	4.2	4.9	---	---	---	---	---	---	23.3	19.9	21.7
30	---	---	---	---	---	---	---	---	---	24.1	20.8	22.6
31	---	---	---	---	---	---	---	---	---	24.4	21.2	22.9
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
JUNE				JULY			AUGUST			SEPTEMBER		
1	25.1	22.2	23.8	22.1	18.6	20.5	32.1	27.7	29.4	23.3	20.8	21.9
2	24.7	21.8	23.6	22.5	20.3	21.0	31.1	28.9	29.9	24.5	21.5	22.8
3	25.5	22.2	24.0	23.4	20.3	21.6	---	---	---	25.3	21.9	23.6
4	23.9	20.7	22.3	24.8	21.5	23.6	---	---	---	24.1	21.1	22.3
5	23.4	19.6	21.6	27.2	23.6	25.3	---	---	---	23.4	19.8	21.4
6	23.6	21.3	22.2	28.0	25.5	27.0	---	---	---	20.7	17.8	19.3
7	24.5	21.3	23.0	29.6	26.4	27.7	---	---	---	20.6	16.8	18.6
8	25.3	22.8	24.0	28.7	25.2	27.0	---	---	---	20.7	17.5	19.3
9	24.8	20.2	21.9	28.5	25.3	26.9	---	---	---	21.6	19.2	20.0
10	22.2	18.0	20.3	28.3	25.1	26.5	---	---	---	22.1	18.8	20.6
11	22.2	18.5	20.4	27.4	24.8	26.1	---	---	---	22.7	20.0	21.3
12	22.6	20.2	21.2	27.7	25.3	26.8	---	---	---	24.4	21.2	23.0
13	23.9	20.4	22.1	27.9	25.2	26.8	---	---	---	24.9	22.5	23.8
14	24.9	22.5	23.6	30.2	26.8	28.4	---	---	---	24.4	21.4	22.9
15	24.7	22.9	23.7	31.4	27.9	30.1	---	---	---	24.7	21.6	23.2
16	25.4	22.0	23.8	31.7	28.0	30.0	---	---	---	24.6	22.1	23.8
17	24.3	20.8	23.0	31.5	28.6	30.4	---	---	---	25.0	22.5	23.9
18	24.9	22.2	23.6	30.5	26.0	27.9	---	---	---	25.6	23.0	24.4
19	25.8	22.7	24.2	30.5	26.1	27.9	30.6	26.7	28.6	26.0	22.6	24.7
20	26.7	24.1	25.4	30.6	25.5	27.9	29.6	26.3	28.0	24.4	19.6	21.7
21	28.9	24.8	26.4	27.4	23.2	25.4	29.5	26.2	27.9	22.0	18.5	20.0
22	29.0	25.2	26.8	27.1	23.5	25.5	30.0	25.1	27.2	22.1	20.0	20.8
23	29.1	26.1	27.2	27.3	23.7	25.4	29.8	24.6	27.1	21.6	19.2	20.7
24	29.3	26.6	27.8	26.8	24.2	25.5	27.0	23.9	25.2	19.1	17.5	18.3
25	29.5	26.8	28.1	28.4	25.5	27.0	25.8	22.4	24.4	17.3	15.4	16.2
26	30.7	26.7	28.9	29.0	26.0	27.4	26.4	23.4	24.7	16.2	14.7	15.3
27	28.9	24.6	26.2	28.6	25.9	27.2	25.2	22.3	24.0	16.5	14.8	15.5
28	27.0	23.1	25.3	28.7	25.9	27.4	24.5	21.2	22.5	17.2	15.7	16.5
29	27.0	24.1	25.6	29.3	24.2	26.4	22.4	19.7	21.2	---	---	---
30	26.5	21.2	23.8	27.2	24.8	26.0	23.1	19.0	21.1	---	---	---
31	---	---	---	29.9	26.0	27.5	23.4	19.9	21.7	---	---	---
MONTH	30.7	18.0	24.1	31.7	18.6	26.5	---	---	---	---	---	---

06910410 CEDAR CREEK NEAR COLUMBIA, MO

LOCATION.--Lat 38°57'16", long 92°08'57", in NW 1/4 SW 1/4 sec. 10, T.48 N., R.11 W., Boone County, Hydrologic Unit 10300102, on road fill at left upstream end of Interstate 70 north outer road bridge, 1 mi downstream from Manacle Creek and 9.5 mi east of Columbia.

DRAINAGE AREA.--44.8 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1964 to Feb. 1976. April 1986 to current year.

GAGE.--Water stage recorder. Datum of gage is 776.45 ft above National Geodetic Vertical Datum of 1929. Water stage recorder June 1964 to Feb. 1976 at present site and datum.

REMARKS.--Estimated daily discharges: Jan. 6-9. Water-discharge records fair.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.56	.29	1.1	4.6	172	4.4	31	1.3	.48	.37	.07	.0
2	.34	.32	.64	2.8	36	4.3	51	1.6	.28	.28	.03	.00
3	.21	.24	.47	2.2	18	49	181	1.4	.32	.23	.01	.00
4	.19	.20	.35	1.7	9.8	59	64	4.4	.22	.19	.0	.00
5	.16	.16	.26	1.2	6.0	66	30	2.3	.23	.17	.16	.00
6	.13	.11	.19	1.1	3.9	115	52	1.7	.20	.15	.10	.0
7	.11	.11	.38	.96	3.6	108	35	1.1	.17	.12	.04	.0
8	.10	.11	.47	.96	3.4	40	18	.98	.15	.11	.02	.00
9	.09	.11	.35	.90	3.3	17	14	1.2	.14	.10	.02	.00
10	.10	.10	.26	.98	2.6	9.0	9.6	1.0	.15	.10	.06	.00
11	.13	.10	.16	1.1	2.7	7.0	16	.88	.19	.25	.03	.00
12	.12	.11	.13	1.6	2.6	107	14	.66	.19	.15	.01	.00
13	.10	.12	.10	1.2	2.8	25	11	.79	.23	.12	.23	.00
14	.09	.12	.16	1.1	8.8	7.9	9.0	.70	.21	.10	.10	.00
15	.06	.13	.39	1.3	24	5.5	8.2	.96	.24	.07	.05	.00
16	.06	.15	.34	1.7	67	4.1	3.9	1.2	.36	.04	.02	.07
17	.07	.14	.32	3.7	87	3.6	3.0	1.1	.28	.14	.00	.02
18	.04	.12	.37	4.6	64	4.1	3.0	1.0	.24	.28	.0	.02
19	.02	.11	.78	18	494	4.2	2.5	.74	.22	.11	.00	.05
20	.08	.11	206	25	238	4.3	2.3	.43	.23	.10	.00	.01
21	.03	.12	82	9.5	72	3.6	3.2	.96	.20	.13	.00	.0
22	.02	.13	30	4.8	85	2.8	2.3	1.3	.19	.10	.04	.00
23	.02	.13	33	3.1	81	2.2	2.1	1.7	.18	.08	9.0	.00
24	1.7	4.3	72	2.2	23	2.5	2.0	2.3	.21	.11	1.3	.00
25	.35	3.0	55	1.7	10	6.6	1.8	1.6	.22	.11	.34	.00
26	.25	.76	19	1.1	7.4	9.8	1.7	.90	.20	.09	.13	.00
27	.45	1.0	545	1.1	7.0	5.1	1.6	.73	.13	.06	.09	.00
28	.26	5.8	306	1.1	6.2	6.8	1.4	.56	.13	.04	.07	.00
29	.26	5.7	50	1.4	5.4	496	1.3	.59	.23	.15	.04	.12
30	.20	2.4	17	1.9	---	243	1.3	.54	.33	.15	.01	.08
31	.21	---	8.8	555	---	59	---	.45	---	.11	.00	---
MEAN	.21	.88	48.7	21.3	53.3	47.8	19.2	1.20	.22	.14	.39	.012
MAX	1.7	5.8	545	555	494	496	181	4.4	.48	.37	9.0	.12
MIN	.02	.10	.10	.90	2.6	2.2	1.3	.43	.13	.04	.00	.00
IN.	.01	.02	1.25	.55	1.28	1.23	.48	.03	.01	.00	.01	.00

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	39.0	14.9	31.4	41.5	33.0	58.0	66.2	52.5	41.6	29.7	11.1	25.8
MEAN	39.0	14.9	31.4	41.5	33.0	58.0	66.2	52.5	41.6	29.7	11.1	25.8
MAX	253.1	44.0	106.7	139.8	83.1	319.1	169.6	215.3	237.5	256.6	111.1	128.0
(WY)	1970	1974	1974	1974	1974	1973	1970	1974	1969	1969	1968	1970
MIN	.029	.130	.306	.942	1.45	2.49	2.29	1.20	.225	.022	.116	.012
(WY)	1965	1967	1965	1967	1967	1968	1971	1988	1988	1975	1964	1988

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	16.0	37.9
HIGHEST ANNUAL MEAN	86.8	1969
LOWEST ANNUAL MEAN	6.15	1967
HIGHEST DAILY MEAN	555	3620
LOWEST DAILY MEAN	.00	0
INSTANTANEOUS PEAK FLOW	1100	5140
INSTANTANEOUS PEAK STAGE (FEET)	10.03	16.13
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	4.85	11.5
10 PERCENTILE	31	48
50 PERCENTILE	.38	3.0
95 PERCENTILE	.00	.03

06910410 CEDAR CREEK NEAR COLUMBIA, MO--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1986 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1986 to current year.

pH: April 1986 to current year.

INSTRUMENTATION.--Water-quality monitor Apr. 1986 to current year.

REMARKS.--The number of missing days of specific conductance and pH record exceeds 20 percent of the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 2,160 microsiemens, Sept. 11, 1986; minimum, 120 microsiemens, June 28 and July 11, 1986.

pH: Maximum, 8.3 standard units, Mar. 29 and 30, 1987; minimum, 4.0 standard units, Sept. 23, 1986.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
OCT							
06...	1540	0.13	1560	6.60	13.5	9.9	94
NOV							
05...	0900	0.14	1760	6.70	12.5	9.6	89
DEC							
03...	1300	0.50	1140	6.20	4.5	13.9	109
JAN							
08...	1130	1.1	1300	6.60	0.5	11.5	79
FEB							
04...	1515	11	664	6.40	0.5	14.1	95
MAR							
07...	1645	73	312	7.40	7.0	12.1	99
APR							
07...	1400	35	420	7.50	14.5	9.7	95
MAY							
12...	1400	0.61	1400	6.10	19.0	9.8	109
JUN							
09...	1400	0.15	1780	7.00	21.0	8.7	98
JUL							
14...	1330	0.11	2160	6.90	25.5	5.5	70
AUG							
01...	1300	0.07	2100	7.40	27.5	9.2	117
SEP							
06...	1350	0.0	1370	6.90	18.0	9.2	100

DATE	ACIDITY (MG/L AS H) (71825)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)
OCT							
06...	0.1	23	940	1390	11	1700	7700
NOV							
05...	0.7	62	970	1570	27	6400	10000
DEC							
03...	0.1	20	660	1020	11	--	6700
JAN							
08...	0.1	64	680	1040	24	12000	4800
FEB							
04...	0.2	23	320	500	10	2300	3300
MAR							
07...	0.1	40	82	217	114	5100	490
APR							
07...	0.2	69	130	294	53	4000	910
MAY							
12...	0.1	50	750	1150	12	3200	4900
JUN							
09...	0.2	80	1100	1760	12	890	14000
JUL							
14...	0.2	88	1400	2100	3	240	8200
AUG							
01...	0.1	74	1400	1980	27	760	5200
SEP							
06...	0.2	22	840	1270	13	360	5100

## CEDAR CREEK BASIN

06910410 CEDAR CREEK NEAR COLUMBIA, MO--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	1130	1110	1120	1590	1510	1550	1270	1040	1120	1510	1470	1490
2	1120	1100	1110	1650	1530	1590	1090	1030	1070	1480	1450	1470
3	1120	1100	1110	1630	1570	1600	1170	1060	1130	1460	1410	1440
4	1110	1090	1100	1650	1600	1630	1250	1170	1200	1420	1380	1400
5	1100	1090	1090	1710	1610	1640	1320	1250	1290	1380	1340	1360
6	1100	1080	1090	1630	1560	1600	1400	1320	1360	1350	1320	1340
7	1090	1070	1080	1570	1530	1550	1480	1390	1430	1330	1300	1320
8	1090	1060	1080	1530	1480	1510	1570	1480	1530	1400	1280	1300
9	1090	1080	1080	1480	1290	1420	1590	1560	1580	1290	1240	1260
10	1120	1090	1100	1540	1430	1490	1610	1580	1600	1250	1200	1230
11	---	---	---	1530	1360	1450	1620	1590	1600	1210	1170	1190
12	---	---	---	1360	1290	1330	1600	1580	1590	1180	1140	1160
13	---	---	---	1310	1240	1270	1640	1590	1610	1150	1110	1130
14	---	---	---	1270	1240	1250	1700	1630	1660	1110	1080	1090
15	---	---	---	1250	1210	1230	1810	1700	1760	---	---	---
16	1300	1270	1280	---	---	---	1890	1810	1840	---	---	---
17	1300	1250	1280	---	---	---	1950	1890	1930	---	---	---
18	1340	1290	1320	---	---	---	1950	1900	1930	---	---	---
19	1340	1310	1320	---	---	---	1900	760	1580	---	---	---
20	1350	1320	1330	---	---	---	1130	808	962	---	---	---
21	1360	1330	1350	---	---	---	1220	1130	1180	---	---	---
22	1410	1350	1380	---	---	---	1260	1210	1240	---	---	---
23	1440	1370	1410	---	---	---	1290	1250	1270	---	---	---
24	1700	1390	1550	---	---	---	1310	1280	1290	---	---	---
25	1690	1610	1650	---	---	---	1340	1300	1320	---	---	---
26	1660	1610	1630	1220	1130	1200	1340	1330	1340	---	---	---
27	1650	1290	1560	1190	1080	1170	1530	1330	1400	---	---	---
28	1560	1480	1510	1200	973	1090	1570	1530	1560	---	---	---
29	1530	1420	1500	1240	961	1090	1570	1540	1550	---	---	---
30	1550	1470	1500	1280	1180	1240	1550	1520	1530	---	---	---
31	1590	1480	1520	---	---	---	1530	1490	1510	---	---	---
MONTH	---	---	---	---	---	---	1950	760	1450	---	---	---
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	530	440	478	1330	1290	1310
2	---	---	---	---	---	---	590	390	512	1350	1310	1330
3	---	---	---	---	---	---	480	290	331	1370	1330	1340
4	---	---	---	---	---	---	420	310	370	1410	1270	1340
5	660	630	649	---	---	---	500	420	465	1270	1210	1240
6	690	640	664	---	---	---	500	430	477	1260	1220	1240
7	680	650	669	---	---	---	476	410	438	1330	1250	1280
8	660	630	649	---	---	---	576	480	525	1380	1330	1350
9	640	610	622	---	---	---	640	580	607	1440	1370	1410
10	630	610	617	---	---	---	680	640	662	1410	1370	1390
11	620	600	612	---	---	---	680	600	643	1420	1390	1400
12	610	590	602	---	---	---	700	600	655	1440	1390	1420
13	600	570	590	---	---	---	680	650	661	1470	1400	1430
14	580	560	570	---	---	---	720	680	701	1500	1450	1460
15	560	540	552	---	---	---	753	680	714	1520	1490	1500
16	610	530	555	---	---	---	810	760	788	1570	1500	1530
17	610	539	577	---	---	---	973	800	870	1580	1560	1570
18	540	470	508	---	---	---	1030	940	992	1600	1570	1580
19	---	---	---	---	---	---	960	940	951	1610	1590	1600
20	---	---	---	---	---	---	1020	940	991	1630	1590	1600
21	---	---	---	---	---	---	1040	990	1020	1620	1590	1610
22	---	---	---	---	---	---	1060	1020	1040	1640	1610	1630
23	---	---	---	---	---	---	1090	1040	1070	1640	1570	1610
24	---	---	---	---	---	---	1090	1050	1070	1570	1370	1490
25	---	---	---	---	---	---	1130	1070	1090	1360	1260	1310
26	---	---	---	---	---	---	1170	1100	1140	1320	1290	1310
27	---	---	---	---	---	---	1180	1130	1160	1370	1230	1320
28	---	---	---	---	---	---	1200	1140	1160	1420	1360	1380
29	---	---	---	---	---	---	1270	1180	1220	1460	1410	1430
30	---	---	---	359	230	288	1310	1230	1270	1510	1460	1480
31	---	---	---	440	350	403	---	---	---	1550	1500	1520
MONTH	---	---	---	---	---	---	1310	290	802	1640	1210	1430

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	1620	1540	1570	2350	2270	2310	2100	2070	2080	1360	1330	1340
2	1650	1620	1630	2290	2270	2280	2100	2070	2090	1360	1340	1350
3	1680	1640	1660	2290	2250	2270	2100	2010	2080	1370	1350	1360
4	1700	1670	1690	2280	2240	2270	2100	2050	2080	1380	1360	1370
5	1720	1640	1710	2270	2210	2250	2090	1900	2030	1380	1300	1370
6	1780	1640	1740	2250	2210	2240	2040	2010	2020	1390	1300	1360
7	1780	1750	1770	2230	2220	2220	2050	1900	2030	1390	1300	1370
8	1790	1770	1780	2230	2200	2220	2060	2030	2040	1410	1380	1390
9	1820	1690	1780	2220	2200	2210	2060	2020	2040	1420	1400	1410
10	1860	1810	1830	2220	2200	2210	2030	2010	2020	1440	1410	1420
11	1890	1850	1870	2210	2160	2190	2020	2000	2010	1450	1420	1440
12	1930	1890	1910	2190	2160	2170	2020	2000	2010	1470	1440	1460
13	2040	1940	1970	2200	2170	2190	2020	1800	1930	1490	1460	1470
14	2070	2000	2030	2200	2160	2190	1860	1820	1840	1500	1400	1480
15	2080	2030	2060	2200	2170	2180	1890	1850	1860	1520	1490	1500
16	2100	2030	2070	2200	2180	2190	1890	1870	1880	1510	1440	1490
17	2120	2080	2100	2200	1950	2150	1900	1870	1880	1540	1500	1520
18	2170	2110	2130	2080	2040	2060	4880	1860	2270	1550	1520	1540
19	2180	2140	2150	2100	2070	2080	3370	1920	2140	1570	1530	1550
20	2220	2170	2190	2090	2070	2080	2430	1910	1960	1570	1550	1560
21	2240	2200	2220	2090	2050	2080	1950	1910	1920	1580	1560	1570
22	2280	2100	2250	2090	2070	2080	1930	1770	1900	1600	1570	1580
23	2300	2260	2280	2090	2050	2080	2290	1010	1420	1610	1510	1600
24	2320	2280	2300	2090	2050	2070	1410	1300	1380	1610	1590	1600
25	2340	2290	2320	2090	2070	2080	1370	1330	1340	1620	1590	1610
26	2360	2320	2340	2100	2080	2080	1340	1320	1330	1640	1600	1620
27	2350	2310	2330	2110	2080	2090	1330	1310	1320	1640	1600	1630
28	2360	2330	2340	2120	2050	2100	1330	1310	1320	1650	1620	1640
29	2360	2320	2340	2110	2020	2080	1330	1310	1320	1690	1500	1630
30	2350	2310	2340	2080	2020	2060	1340	1320	1330	1700	1640	1670
31	---	---	---	2090	2050	2070	1350	1330	1340	---	---	---
MONTH	2360	1540	2020	2350	1950	2160	4880	1010	1810	1700	1300	1500

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

06910410 CEDAR CREEK NEAR COLUMBIA, MO--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	6.2	6.1	6.2	---	---	---	7.2	7.1	7.2	6.3	6.1	6.2
2	6.1	6.1	6.1	---	---	---	---	---	---	6.3	6.1	6.2
3	6.1	6.1	6.1	---	---	---	---	---	---	6.2	6.1	6.1
4	6.5	6.1	6.3	---	---	---	---	---	---	6.2	6.0	6.1
5	6.5	6.3	6.4	---	---	---	---	---	---	6.2	6.0	6.1
6	6.6	6.4	6.5	---	---	---	---	---	---	---	---	---
7	6.8	6.4	6.5	---	---	---	---	---	---	---	---	---
8	6.7	6.5	6.5	---	---	---	7.6	7.4	7.5	---	---	---
9	6.6	6.5	6.5	---	---	---	7.5	7.4	7.5	---	---	---
10	6.5	6.5	6.5	---	---	---	7.4	7.3	7.3	---	---	---
11	6.7	6.5	6.6	---	---	---	7.3	7.1	7.2	---	---	---
12	6.6	6.5	6.6	---	---	---	7.1	7.0	7.1	---	---	---
13	7.0	6.5	6.7	---	---	---	7.0	6.9	6.9	6.4	5.8	6.2
14	6.8	6.7	6.7	---	---	---	6.9	6.8	6.9	6.5	6.4	6.5
15	---	---	---	---	---	---	6.9	6.8	6.8	6.5	6.3	6.4
16	---	---	---	---	---	---	6.8	6.8	6.8	---	---	---
17	---	---	---	---	---	---	6.8	6.7	6.8	---	---	---
18	---	---	---	---	---	---	6.7	6.6	6.7	---	---	---
19	---	---	---	---	---	---	6.7	6.6	6.7	---	---	---
20	---	---	---	---	---	---	6.7	6.5	6.6	---	---	---
21	---	---	---	---	---	---	6.6	6.5	6.6	6.4	6.3	6.3
22	---	---	---	---	---	---	6.7	6.6	6.7	6.3	6.2	6.2
23	---	---	---	---	---	---	6.7	6.6	6.7	---	---	---
24	---	---	---	---	---	---	6.7	6.6	6.6	---	---	---
25	---	---	---	---	---	---	6.6	6.5	6.6	---	---	---
26	---	---	---	---	---	---	6.6	6.5	6.6	---	---	---
27	---	---	---	---	---	---	6.6	6.5	6.6	---	6.1	---
28	---	---	---	---	---	---	6.6	6.5	6.5	6.3	5.8	6.0
29	---	---	---	---	---	---	6.5	6.4	6.5	6.2	5.9	6.0
30	---	---	---	7.2	7.1	7.1	6.4	6.2	6.3	6.0	5.9	6.0
31	---	---	---	7.2	7.0	7.1	---	---	---	6.4	5.9	6.1
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
JUNE				JULY			AUGUST			SEPTEMBER		
1	6.6	6.2	6.4	7.0	6.7	6.8	---	---	---	---	---	---
2	6.8	6.5	6.6	6.8	6.6	6.7	7.6	7.3	7.5	---	---	---
3	6.8	6.6	6.7	6.8	6.6	6.7	7.6	7.3	7.4	---	---	---
4	7.0	6.8	6.9	6.7	6.6	6.6	7.6	7.2	7.4	---	---	---
5	7.1	6.9	7.0	6.7	6.5	6.6	7.6	7.2	7.3	---	---	---
6	7.1	6.9	7.0	6.7	6.5	6.6	7.4	7.0	7.2	---	---	---
7	7.1	7.0	7.1	6.6	6.5	6.6	7.3	7.0	7.2	7.0	6.3	6.4
8	7.2	6.9	7.0	6.9	6.4	6.5	7.3	7.0	7.1	7.2	6.1	6.4
9	---	---	---	6.9	6.4	6.7	7.4	7.0	7.2	6.4	6.1	6.2
10	7.0	6.9	7.0	6.9	6.8	6.8	7.3	7.0	7.2	6.4	6.2	6.3
11	7.0	6.9	7.0	7.0	6.8	6.9	7.3	6.9	7.1	6.7	6.3	6.5
12	7.1	6.9	7.0	7.0	6.8	6.9	7.3	7.0	7.1	6.7	6.4	6.5
13	7.1	6.9	7.0	7.0	6.8	6.9	7.2	6.8	7.0	6.8	6.5	6.6
14	7.1	6.9	7.0	7.0	6.8	6.9	7.0	6.7	6.8	6.9	6.5	6.7
15	7.1	6.9	7.0	7.0	6.9	6.9	7.1	6.8	6.9	---	---	---
16	7.1	6.8	7.0	6.9	6.7	6.8	7.1	6.7	6.9	---	---	---
17	7.0	6.8	6.9	7.0	6.4	6.6	7.2	6.8	6.9	---	---	---
18	7.0	6.8	6.9	6.9	6.6	6.8	7.1	6.9	7.0	---	---	---
19	6.9	6.8	6.9	6.8	6.6	6.7	7.1	6.8	6.9	---	---	---
20	7.0	6.8	6.9	6.8	6.6	6.7	---	---	---	---	---	---
21	7.1	6.9	6.9	6.9	6.5	6.7	---	---	---	---	---	---
22	7.1	6.9	7.0	6.9	6.6	6.7	---	---	---	7.1	6.8	6.9
23	7.3	6.9	7.1	7.1	6.6	6.7	---	---	---	6.9	6.6	6.8
24	7.4	6.9	7.1	7.1	6.8	6.9	---	---	---	6.7	6.5	6.6
25	7.4	6.8	7.1	7.3	6.7	7.0	---	---	---	6.6	6.3	6.4
26	7.3	6.9	7.1	---	---	---	---	---	---	6.4	6.1	6.3
27	7.1	7.0	7.1	---	---	---	---	---	---	6.3	6.0	6.1
28	7.2	6.9	7.0	---	---	---	---	---	---	7.0	6.0	6.4
29	7.1	6.9	7.0	---	---	---	---	---	---	7.4	6.6	6.8
30	7.1	6.9	7.0	---	---	---	---	---	---	6.6	5.9	6.2
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

## CEDAR CREEK BASIN

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06910414 CEDAR CREEK NEAR ASHLAND, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat 38°45'29", long 92°10'28", in NW 1/4 NW 1/4, sec.21, T.46 N., R.11 W., Boone County, Hydrologic Unit 10300102, at bridge on County Highway Y, 5.0 mi east of Ashland.

PERIOD OF RECORD.--November 1983 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)
OCT											
07...	1140	0.34	461	7.90	13.5	8.2	77	<10	110	220	71
NOV											
05...	1400	0.47	422	7.80	13.0	6.8	65	35	72	--	--
DEC											
03...	1015	6.1	353	8.20	5.5	11.6	92	17	42	--	--
JAN											
14...	1045	25	555	8.00	0.5	13.6	91	99	K5	290	140
FEB											
05...	0845	45	330	8.00	0.5	13.8	92	16	860	--	--
MAR											
08...	1215	154	281	7.90	7.5	11.9	97	26	120	--	--
APR											
07...	0830	110	351	8.00	12.5	9.7	90	29	K110	160	68
MAY											
12...	0945	1.5	609	8.00	18.5	9.2	100	<10	K13	--	--
JUN											
09...	0830	0.66	612	8.00	21.5	6.8	76	16	110	--	--
JUL											
14...	1015	2.0	537	7.90	27.5	6.5	84	25	33	270	99
AUG											
01...	1130	0.20	515	8.10	29.0	7.3	94	13	51	--	--
SEP											
06...	1100	0.08	416	7.60	18.5	8.9	97	24	41	--	--

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT FET FIELD (MG/L AS CACO3) (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT										
07...	69	12	5.4	3.6	151	3.7	74	4.2	0.30	264
NOV										
05...	--	--	--	--	168	5.2	--	--	--	290
DEC										
03...	--	--	--	--	120	1.5	--	--	--	224
JAN										
14...	91	16	8.8	4.2	158	3.1	140	8.7	0.20	388
FEB										
05...	--	--	--	--	96	1.9	--	--	--	234
MAR										
08...	--	--	--	--	66	1.6	--	--	--	171
APR										
07...	50	8.9	7.7	3.4	94	1.8	85	7.8	0.30	232
MAY										
12...	--	--	--	--	149	2.9	--	--	--	385
JUN										
09...	--	--	--	--	168	3.3	--	--	--	378
JUL										
14...	84	15	9.3	3.7	173	4.2	96	8.9	0.30	331
AUG										
01...	--	--	--	--	188	2.9	--	--	--	333
SEP										
06...	--	--	--	--	157	7.7	--	--	--	261

K--Results based on colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## OSAGE RIVER BASIN

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06918070 OSAGE RIVER ABOVE SCHELL CITY, MO

LOCATION.--Lat 38°03'20", long 94°08'44", in SE 1/4 SW 1/4 NW 1/4, sec.20, T.38 N., R.29 W., Bates County, Hydrologic Unit 10290105, 0.8 mi downstream from Shaw Branch, 0.2 mi upstream from McKenzie Creek, and 3.0 mi northwest of Schell City.

DRAINAGE AREA.--5,410 mi<sup>2</sup>, by U.S. Army Corps of Engineers.

PERIOD OF RECORD.--October 1979 to current year.

GAGE.--Water-stage recorder and slope gage 1.7 miles downstream. Datum of gage is 700.00 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor. No estimated daily discharges. Periods of low flow could not be calculated using fall computations. Stage discharge relation affected by backwater from Truman Reservoir. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	721	---	3320	---	1780	1640	16400	2230	---	---	---	---
2	554	---	2440	---	---	1580	30600	2050	---	---	---	---
3	417	190	1890	---	---	5020	39100	1590	---	---	---	---
4	317	---	1560	---	---	10700	40500	1350	---	---	---	---
5	249	---	1510	---	---	10800	---	1320	---	---	---	---
6	---	---	1480	3880	---	11600	---	1200	---	---	---	---
7	---	---	1390	---	---	13200	36300	1070	---	---	---	---
8	---	---	1350	---	---	13000	33000	949	---	---	---	---
9	---	---	1310	---	1130	11400	23800	907	---	---	---	---
10	---	---	1190	---	1090	9370	16800	832	---	---	---	---
11	---	---	1130	---	1000	6790	13600	769	---	---	---	---
12	---	---	1200	---	950	4610	11300	694	---	---	---	---
13	---	---	1180	---	922	3540	8480	632	---	---	---	---
14	---	---	1140	---	1240	2880	6650	568	---	---	---	---
15	---	---	1150	---	1700	2380	5740	489	---	---	---	---
16	---	830	1140	---	2540	2100	4600	443	---	---	---	---
17	---	2160	1130	---	2450	1910	3700	429	---	---	---	---
18	---	2210	---	---	2140	1820	7470	397	---	---	---	---
19	---	1680	2800	---	4010	1950	15600	372	---	---	---	---
20	---	1340	15900	---	8510	2520	15100	344	---	---	---	---
21	---	1070	21800	6600	8960	2820	14000	321	---	---	---	---
22	---	845	27300	6300	7890	2610	13500	338	---	---	---	---
23	---	664	32200	4540	5410	2260	12100	582	---	---	---	---
24	---	1010	32300	3250	3820	1950	10100	1310	---	---	---	---
25	---	4920	23500	2820	2930	1830	8030	2370	---	---	---	---
26	---	7610	16600	2200	2410	1930	6600	---	---	---	---	---
27	---	8180	14100	1750	2120	1810	5650	---	---	---	---	---
28	---	6230	14000	1670	1950	1580	4460	---	---	---	---	---
29	---	4820	14000	1600	1790	5890	3080	---	---	---	---	---
30	---	4330	13300	1600	---	9040	2500	---	---	---	---	---
31	---	---	11500	1730	---	8830	---	---	---	---	---	---
MEAN	---	---	---	---	---	5141	---	---	---	---	---	---
MAX	---	---	---	---	---	13200	---	---	---	---	---	---
MIN	---	---	---	---	---	1580	---	---	---	---	---	---
IN.	---	---	---	---	---	1.10	---	---	---	---	---	---

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
MAX	133000	8244	5212	8040	8960	18920	40500	9013	19800	8716	2867	2918
(WY)	1987	1987	1987	1985	1987	1987	1988	1982	1981	1986	1982	1986
MIN	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
(WY)	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	*****	*****
HIGHEST ANNUAL MEAN	*****	*****
LOWEST ANNUAL MEAN	*****	*****
HIGHEST DAILY MEAN	40500	133000
LOWEST DAILY MEAN	Apr 4	Oct 5 1986
INSTANTANEOUS PEAK FLOW	*****	*****
INSTANTANEOUS PEAK STAGE (FEET)	*****	*****
INSTANTANEOUS LOW FLOW	*****	*****
ANNUAL RUNOFF (INCHES)	*****	*****
10 PERCENTILE	*****	*****
50 PERCENTILE	*****	*****
95 PERCENTILE	*****	*****

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## OSAGE RIVER BASIN

06918070 OSAGE RIVER ABOVE SCHELL CITY, MO--Continued  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1979 to current year, formerly published as 06918080 Osage River near Schell City, Mo.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1979 to September 1981.

WATER TEMPERATURE: March 1979 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD:--

SPECIFIC CONDUCTANCE: Maximum daily, 1,950 microsiemens, Oct. 11, 1980; minimum daily, 114 microsiemens, June 12, 1981.

WATER TEMPERATURE: Maximum daily, 32.0°C, July 11, 1980; minimum daily, 0.0°C, Feb. 5, 1980, Feb. 11-14, 1981.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS	SPE- CIFIC CON- DUCT- ANCE	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	COLI- FORM, FECAL, UM-MF (COLS./ 100 ML)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FIELD (MG/L AS CACO3)	
		(CFS) (00061)	(US/CM) (00095)	(00400)	(00010)	(00076)	(00300)	(00301)	(31625)	(31673)	(00900)	(00904)	
NOV													
04...	1715	200	493	7.90	16.0	32	7.5	75	K30	K15	230	73	
JAN													
06...	1400	3700	392	8.10	0.5	--	14.4	97	570	370	190	60	
MAR													
01...	1400	1600	490	8.20	7.5	19	11.3	94	K32	K28	230	55	
MAY													
10...	1430	830	554	8.30	21.0	32	8.6	96	K8	K60	270	84	
JUL													
12...	1400	1090	355	8.10	30.0	59	5.6	74	130	80	140	22	
SEP													
06...	1500	655	591	8.00	25.0	27	8.7	105	K24	K10	230	74	
DATE		CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY DISSOLV FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
		(00915)	(00925)	(00930)	(00935)	(39086)	(00945)	(00940)	(00950)	(00955)	(70300)	(70301)	(70303)
NOV													
04...	69	13	23	4.6	154	92	16	0.30	7.1	319	318	0.43	
JAN													
06...	60	10	12	3.2	132	62	7.7	0.20	7.0	254	244	0.35	
MAR													
01...	73	12	16	2.8	177	99	12	0.20	5.9	332	329	0.45	
MAY													
10...	81	16	18	3.0	185	110	9.5	0.30	2.4	351	352	0.48	
JUL													
12...	45	7.6	14	3.5	122	63	12	0.40	8.9	241	235	0.33	
SEP													
06...	64	16	37	4.0	152	130	26	0.40	6.7	390	375	0.53	

K--Results based on colony count outside the acceptable range (non-ideal colony count).

## OSAGE RIVER BASIN

06918070 OSAGE RIVER ABOVE SHELL CITY, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, DIS- SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 04...	172	<0.010	<0.100	0.050	0.030	0.40	0.040	0.020	<0.010	99	54	55
JAN 06...	2540	<0.010	0.550	0.050	0.030	0.70	0.120	0.040	0.010	27	270	90
MAR 01...	1430	0.010	0.380	0.040	0.030	0.70	0.050	0.020	0.020	--	--	--
MAY 10...	787	<0.010	<0.100	0.020	0.030	0.50	0.040	0.020	<0.010	--	--	--
JUL 12...	709	0.010	1.40	0.090	0.060	0.70	0.110	0.080	0.060	119	350	91
SEP 06...	690	<0.010	<0.100	<0.010	<0.010	0.50	0.100	0.030	0.020	48	85	88

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 04...	<10	1	110	<0.5	<1	<1	<3	3	10	<5
JAN 06...	20	<1	65	<0.5	<1	1	<3	2	32	<5
MAY 10...	<10	1	92	<0.5	<1	3	<3	2	10	6
JUL 12...	30	2	84	<0.5	<1	<1	<3	2	19	<5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 04...	12	160	0.1	<10	3	<1	<1.0	400	<6	10
JAN 06...	7	76	<0.1	<10	2	<1	<1.0	300	<6	7
MAY 10...	12	64	<0.1	<10	2	<1	1.0	450	<6	6
JUL 12...	4	10	0.1	<10	2	<1	<1.0	270	<6	6

## OSAGE RIVER BASIN

06918440 SAC RIVER NEAR DADEVILLE, MO

LOCATION.--Lat 37°26'35", long 93°41'05", in NE 1/4 NE 1/4 NW 1/4 sec.9, T.31 N., R.25 W., Dade County, Hydrologic Unit 10290106, on downstream side of bridge on State Highway 245, 2 mi upstream from Cave Spring Branch and 2 mi south of Dadeville.

DRAINAGE AREA.--257 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1966 to current year. Annual maximum, water years 1965-66.

GAGE.--Water-stage recorder. Datum of gage is 869.78 ft above National Geodetic Vertical Datum of 1929 (levels by Missouri State Highway and Transportation Commission). Prior to June 1966, crest-stage gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 24 to Dec. 3. Records good except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	59	480	838	261	345	1200	196	81	158	27	52
2	23	54	450	712	256	366	6230	190	81	128	29	47
3	21	50	386	638	250	1100	2820	186	79	91	26	45
4	21	46	386	576	249	1300	1660	181	74	75	24	41
5	21	43	358	516	244	1020	1230	174	70	64	23	38
6	20	40	336	476	238	866	1050	168	67	56	24	36
7	18	38	338	453	240	778	846	162	63	50	24	34
8	17	38	321	422	240	709	726	159	61	45	22	31
9	17	37	304	396	238	657	631	155	57	43	20	30
10	20	35	291	374	238	600	590	148	54	41	20	28
11	23	33	282	357	237	547	606	144	51	40	20	26
12	22	32	269	355	232	520	533	139	49	40	19	25
13	20	31	254	352	231	475	474	133	48	39	19	24
14	19	30	254	332	237	436	433	126	45	37	22	23
15	19	31	257	322	239	406	405	121	45	34	20	22
16	19	62	238	315	238	381	379	115	54	33	17	22
17	20	82	229	317	236	369	357	111	54	35	15	22
18	19	85	228	316	259	373	362	108	46	46	16	28
19	24	86	1080	320	754	357	333	103	43	56	20	110
20	49	86	4700	321	975	341	312	100	40	50	26	99
21	44	83	2050	312	808	328	298	99	38	44	25	76
22	38	77	1340	303	726	314	286	111	36	40	22	63
23	33	70	1010	299	650	303	269	179	35	38	1140	73
24	51	3000	904	295	569	297	253	159	34	40	360	111
25	80	6000	1580	286	511	297	247	134	33	36	163	111
26	85	1500	3310	278	465	284	238	117	31	34	123	93
27	86	1100	3030	271	427	274	227	109	31	33	100	80
28	87	800	2650	266	394	296	217	102	29	32	87	69
29	84	650	1640	261	367	2030	210	97	34	31	76	63
30	74	550	1240	256	---	2500	204	91	51	31	65	61
31	65	---	1030	253	---	1380	---	85	---	29	58	---
MEAN	37.5	494	1007	380	380	653	788	136	50.5	50.0	85.5	52.8
MAX	87	6000	4700	838	975	2500	6230	196	81	158	1140	111
MIN	17	30	228	253	231	274	204	85	29	29	15	22
IN.	.17	2.15	4.52	1.71	1.59	2.93	3.42	.61	.22	.22	.38	.23

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	138.1	305.9	334.7	225.0	299.1	443.2	406.8	245.8	193.3	98.7	61.9	73.8
MAX	780.1	1139	1007	650.2	917.7	1170	1232	705.2	713.9	328.5	205.1	186.1
(WY)	1987	1986	1988	1973	1985	1975	1973	1983	1974	1967	1968	1975
MIN	17.1	16.8	19.7	14.0	23.5	32.7	30.1	30.1	39.2	22.1	10.1	6.78
(WY)	1979	1981	1977	1981	1981	1981	1981	1977	1972	1980	1980	1980

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	342.6	235.3
HIGHEST ANNUAL MEAN		520.0
LOWEST ANNUAL MEAN		50.2
HIGHEST DAILY MEAN	6230	8000
LOWEST DAILY MEAN	15	4.5
INSTANTANEOUS PEAK FLOW	8260	13600
INSTANTANEOUS PEAK STAGE (FEET)	18.41	20.83
INSTANTANEOUS LOW FLOW	15	4.0
ANNUAL RUNOFF (INCHES)	18.1	12.4
10 PERCENTILE	770	515
50 PERCENTILE	124	112
95 PERCENTILE	21	18

06918460 TURNBACK CREEK ABOVE GREENFIELD, MO

LOCATION.--Lat 37°24'09", long 93°48'06", on line between secs.21 and 28, T.31 N., R.26 W., Dade County, Hydrologic Unit 10290106, on downstream side of left pier of bridge on State Highway O, 1.5 mi downstream from Limestone Creek, and 2 mi southeast of Greenfield.

DRAINAGE AREA.--252 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1965 to current year.

REVISED RECORDS.--WDR MO-84-1 1968, 1970, 1972-74, 1976, 1978-79, 1983 (p).

GAGE.--Water-stage recorder. Datum of gage is 870.34 ft above National Geodetic Vertical Datum of 1929 (levels by Missouri State Highway and Transportation Commission).

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	49	555	780	232	338	1200	208	85	88	35	50
2	27	47	482	683	231	369	7350	199	84	98	50	46
3	26	45	431	619	221	1650	2380	197	88	75	42	43
4	26	43	382	559	218	1370	1450	191	82	65	36	40
5	26	41	346	500	211	1080	1110	182	77	59	45	37
6	25	39	317	460	204	913	923	175	74	55	38	36
7	24	38	323	435	204	803	791	168	72	53	35	34
8	24	38	296	403	202	710	698	164	72	51	32	32
9	24	38	270	375	200	638	622	159	69	45	32	31
10	28	36	252	348	202	581	589	152	66	42	37	30
11	29	35	239	332	204	536	607	147	64	42	33	29
12	29	33	221	329	206	505	537	143	62	43	30	28
13	28	32	205	325	206	460	495	137	59	41	29	27
14	27	32	209	297	218	427	462	132	58	39	30	26
15	26	35	214	284	216	401	438	128	57	41	28	26
16	26	52	194	277	210	374	415	126	62	74	26	29
17	27	116	184	284	207	361	394	121	61	67	24	28
18	26	120	184	282	239	367	401	117	58	111	24	32
19	30	109	1740	300	985	353	369	113	55	237	25	121
20	37	97	5300	301	996	330	346	109	52	153	32	115
21	35	90	1720	288	829	315	331	106	50	102	28	70
22	34	84	1200	280	718	301	311	110	48	77	28	58
23	34	79	945	276	615	290	292	131	46	64	1050	75
24	43	5770	867	270	542	284	275	123	45	57	282	127
25	55	9100	1880	257	493	286	266	113	43	53	159	109
26	64	1780	2800	246	455	269	257	105	42	52	116	93
27	65	1130	3270	239	421	258	242	102	42	46	93	80
28	61	942	2080	232	390	266	232	98	38	43	81	71
29	57	763	1340	228	361	2430	223	93	43	41	72	67
30	56	647	1080	223	---	2120	217	90	54	39	64	64
31	53	---	920	217	---	1270	---	86	---	36	56	---
MEAN	35.5	715	982	353	367	666	807	136	60.3	67.4	86.8	55.1
MAX	65	9100	5300	780	996	2430	7350	208	88	237	1050	127
MIN	24	32	184	217	200	258	217	86	38	36	24	26
IN.	.16	3.17	4.49	1.61	1.57	3.05	3.58	.62	.27	.31	.40	.24

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	153.0	325.1	328.0	236.1	325.5	479.8	447.3	288.8	230.7	127.1	93.3	98.0
MAX	920.8	1385	982.1	765.4	1020	1377	1291	718.7	833.1	445.3	354.3	338.3
(WY)	1987	1986	1988	1973	1985	1973	1973	1983	1974	1976	1982	1986
MIN	23.4	21.7	27.6	19.9	27.5	39.5	39.3	93.9	44.3	24.2	14.4	11.6
(WY)	1979	1981	1981	1981	1981	1981	1981	1981	1972	1972	1980	1980

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	360.4	260.1
HIGHEST ANNUAL MEAN		563.6
LOWEST ANNUAL MEAN		84.1
HIGHEST DAILY MEAN	9100	14200
LOWEST DAILY MEAN	24	9.4
INSTANTANEOUS PEAK FLOW	21200	44000
INSTANTANEOUS PEAK STAGE (FEET)	21.51	23.74
INSTANTANEOUS LOW FLOW	22	9.4
ANNUAL RUNOFF (INCHES)	19.4	14.0
10 PERCENTILE	805	556
50 PERCENTILE	126	126
95 PERCENTILE	27	25

## OSAGE RIVER BASIN

06918740 LITTLE SAC RIVER NEAR MORRISVILLE, MO

LOCATION.--Lat 37°28'58", long 93°29'07", SW 1/4 SW 1/4 sec.20, T.32 N., R.23 W., Polk County, Hydrologic Unit 10290106, on downstream side of center pier of Hamilton Bridge of State Highway 215, 0.7 mi upstream from Slagle Creek and 3 mi west of Morrisville.

DRAINAGE AREA.--237 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1968 to current year.

REVISED RECORDS.--WDR MO-84-1 1969-70, 1972-75, 1977-79, 1981, 1983 (P).

GAGE.--Water-stage recorder. Elevation of gage is 881 ft (from topographic map).

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	105	444	630	187	232	1110	90	47	452	17	39
2	39	97	362	524	231	447	5900	85	47	271	16	35
3	38	89	311	460	196	2720	1920	81	43	129	15	31
4	39	83	264	393	192	1540	1140	83	41	94	15	28
5	37	78	229	335	179	1060	904	75	38	73	17	26
6	36	73	205	302	174	821	933	72	34	59	16	23
7	34	68	282	294	166	670	673	68	32	50	16	22
8	32	68	267	250	144	560	556	67	32	42	16	20
9	32	66	225	225	142	473	469	63	31	38	15	19
10	36	61	202	200	143	414	424	59	29	33	50	18
11	41	57	183	180	152	370	481	55	26	31	22	17
12	40	58	166	175	152	405	412	53	26	31	16	16
13	38	54	149	170	156	338	332	51	25	30	14	16
14	36	53	160	165	174	290	297	48	23	27	15	15
15	35	56	185	165	183	254	271	44	23	25	13	15
16	35	386	154	167	171	229	245	43	28	22	12	15
17	38	304	137	206	161	228	224	40	26	22	10	16
18	36	214	150	237	238	261	265	40	25	29	11	23
19	44	177	3960	290	1900	271	244	39	23	64	18	148
20	69	153	5710	298	1200	246	197	44	22	52	22	154
21	59	135	1720	246	855	219	183	49	20	42	16	80
22	65	124	1100	213	695	205	165	127	18	36	14	57
23	74	114	826	198	575	189	151	655	17	30	2850	246
24	164	8320	905	185	483	178	138	219	16	26	552	296
25	267	9080	2790	170	413	211	128	138	16	25	234	173
26	245	1710	2750	150	363	183	124	102	16	23	138	113
27	214	1110	3490	142	327	162	116	83	16	22	96	83
28	173	881	2080	134	290	194	109	72	16	21	74	67
29	147	680	1250	132	257	5450	105	62	18	19	61	60
30	129	544	949	125	---	3210	99	54	65	21	53	54
31	115	---	775	126	---	1380	---	48	---	19	46	---
MEAN	78.4	833	1045	242	362	755	610	90.6	28.0	59.9	145	64.2
MAX	267	9080	5710	630	1900	5450	5900	655	65	452	2850	296
MIN	32	53	137	125	142	162	99	39	16	19	10	15
IN.	.38	3.92	5.08	1.18	1.65	3.67	2.87	.44	.13	.29	.70	.30

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	144.6	345.5	330.8	217.8	293.8	482.7	415.9	222.9	187.4	73.0	34.7	92.8
MEAN	144.6	345.5	330.8	217.8	293.8	482.7	415.9	222.9	187.4	73.0	34.7	92.8
MAX	808.5	1256	1045	665.0	1139	1290	1263	658.2	656.4	342.4	144.5	291.2
(WY)	1987	1986	1988	1973	1985	1973	1973	1979	1981	1979	1988	1970
MIN	14.0	10.8	12.5	9.05	31.1	38.9	32.7	30.9	20.7	11.6	4.90	3.15
(WY)	1977	1981	1977	1981	1981	1972	1981	1977	1972	1980	1980	1980

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	359.1	236.1
HIGHEST ANNUAL MEAN		516.3
LOWEST ANNUAL MEAN		58.6
HIGHEST DAILY MEAN	9080	13200
LOWEST DAILY MEAN	10	.60
INSTANTANEOUS PEAK FLOW	22200	22300
INSTANTANEOUS PEAK STAGE (FEET)	21.91	21.95
INSTANTANEOUS LOW FLOW	9.9	0.3
ANNUAL RUNOFF (INCHES)	20.6	13.5
10 PERCENTILE	687	506
50 PERCENTILE	121	83
95 PERCENTILE	16	8.5

## OSAGE RIVER BASIN

135

06918990 STOCKTON LAKE NEAR STOCKTON, MO

LOCATION.--Lat 37°41'38", long 93°45'55", SW 1/4 SE 1/4 SW 1/4 sec.10, T.34 N., R.26 W., Cedar County, Hydrologic Unit 10290106, in power house at dam on Sac River, 2 mi east of Stockton.

DRAINAGE AREA.--1,160 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Non-recording gage prior to May 30, 1973. Datum of gage is at National Geodetic Vertical Datum of 1929 (level by U.S. Army Corps of Engineers).

REMARKS.--Lake is formed by a rock shell earthfill type dam. Spillway is equipped with 4 taintor gates, 40 ft by 30.5 ft, crest elevation, 861.5 ft. Embankment closed and river diverted on Sept. 23, 1968. Gates closed and storage began on Dec. 12, 1969; minimum power elevation 830.0 ft reached on May 1, 1970. Gross storage at top of flood control pool is 1,666,659 acre-ft at elevation 892 ft, of which 779,550 acre-ft between elevations 867 ft and 892 ft is used for flood control, and 887,109 acre-ft between elevations 760 ft and 867 ft is used for multipurpose and power. Sedimentation reserve is 25,000 acre-ft. Lake is used for flood control, hydroelectric power, and recreational purposes.

COOPERATION.--Records were provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,450,000 acre-ft, Apr. 28, 1973, elevation, 885.94 ft; minimum, since initial filling to minimum power pool level, 352,000 acre-ft, Aug. 27 to Sept. 4, 1970, elevation, 839.60 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,030,000 acre-ft, Apr. 4-11, elevation, 872.51 ft, Apr. 6-7; minimum, 740,000 acre-ft, Nov. 23, elevation, 860.74 ft.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	824000	802000	896000	1010000	905000	852000	947000	941000	858000	833000	830000	800000
2	822000	799000	895000	1010000	902000	852000	1000000	936000	859000	834000	830000	797000
3	822000	797000	891000	1000000	898000	870000	1020000	931000	859000	834000	827000	796000
4	822000	793000	888000	1000000	893000	883000	1030000	926000	859000	834000	827000	796000
5	817000	793000	885000	999000	888000	891000	1030000	921000	859000	834000	827000	795000
6	812000	793000	882000	997000	885000	899000	1030000	915000	859000	834000	828000	793000
7	808000	789000	879000	995000	885000	900000	1030000	910000	854000	834000	827000	790000
8	804000	786000	876000	991000	884000	899000	1030000	905000	851000	834000	824000	785000
9	799000	782000	872000	988000	885000	898000	1030000	899000	851000	833000	824000	781000
10	798000	778000	868000	986000	880000	896000	1030000	893000	851000	834000	823000	781000
11	798000	772000	864000	983000	875000	899000	1030000	888000	851000	834000	820000	781000
12	796000	768000	859000	979000	870000	900000	1020000	882000	850000	833000	817000	777000
13	796000	764000	856000	975000	867000	903000	1020000	875000	850000	833000	817000	774000
14	796000	765000	851000	972000	861000	900000	1020000	869000	850000	833000	816000	769000
15	796000	768000	848000	970000	859000	897000	1020000	864000	851000	831000	813000	766000
16	796000	767000	843000	965000	855000	894000	1010000	858000	851000	831000	808000	764000
17	796000	763000	840000	962000	850000	891000	1010000	853000	851000	833000	803000	763000
18	796000	759000	836000	958000	848000	888000	1010000	852000	851000	833000	804000	765000
19	797000	755000	860000	956000	857000	888000	1010000	852000	850000	835000	804000	761000
20	797000	749000	903000	953000	861000	890000	1000000	850000	848000	836000	804000	761000
21	798000	745000	918000	948000	864000	887000	1000000	851000	842000	836000	804000	757000
22	798000	746000	922000	945000	863000	885000	996000	855000	838000	835000	805000	754000
23	797000	740000	923000	941000	861000	880000	992000	857000	834000	835000	818000	753000
24	799000	791000	925000	937000	859000	876000	988000	858000	831000	835000	818000	754000
25	801000	871000	939000	932000	856000	874000	984000	858000	831000	836000	816000	755000
26	799000	885000	957000	927000	855000	876000	978000	859000	831000	833000	813000	755000
27	799000	896000	982000	924000	856000	878000	974000	859000	829000	833000	812000	755000
28	800000	901000	994000	920000	858000	878000	968000	859000	825000	833000	812000	756000
29	800000	900000	1000000	917000	855000	911000	963000	859000	827000	833000	810000	756000
30	800000	898000	1000000	913000	---	925000	959000	859000	828000	832000	807000	757000
31	801000	---	1010000	908000	---	931000	---	859000	---	832000	803000	---
(-)	863.44	867.46	871.59	867.85	865.71	868.74	869.82	866.36	865.06	865.24	864.02	862.00
(=)	-27000	+97000	+112000	-102000	-53000	+76000	+28000	-100000	-31000	+4000	-29000	-46000
MAX	824000	901000	1010000	1010000	905000	931000	1030000	941000	859000	836000	830000	800000
MIN	796000	740000	836000	908000	848000	852000	947000	850000	825000	831000	803000	753000

CAL YR 1987.....+123000  
WTR YR 1988.....- 71000

(-) Elevation, in feet NGVD, at end of month  
(=) Change in contents, in acre-feet

## OSAGE RIVER BASIN

06919000 SAC RIVER NEAR STOCKTON, MO

LOCATION.--Lat 37°41'51", long 93°45'43", in SE 1/4 NW 1/4 SE 1/4 sec.10, T.34 N., R.26 W., Cedar County, Hydrologic Unit 10290106, on left bank 0.5 mi upstream from bridge on State Highway 32, 0.5 mi downstream from Stockton Dam, 2.0 mi upstream from Bear Creek, 2.0 mi east of Stockton, and at mile 49.5

DRAINAGE AREA.--1,160 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--July 1921 to current year.

REVISED RECORDS.--WSP 926: 1940.

GAGE.--Water-stage recorder. Datum of gage is 758.12 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1973, all previous gages at site 0.5 mi downstream and at datum 6.00 ft higher. Prior to May 4, 1960, nonrecording gage. Datum lowered 6.00 ft Oct. 1, 1978.

REMARKS.--Estimated daily discharges: Nov. 24-27, Dec. 19-21, 25-31, Feb. 19-20, 28, Mar. 3-6, 11-13, 20, 26, 27, Mar. 29 to Apr. 7, May 21-24 due to backwater from Bear Creek. Records poor. Several observations of water temperature and specific conductance were made during the year. Flow completely regulated by Stockton Lake (station 06918990) 0.5 mi upstream since Dec. 12, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage prior to 1943, 29.3 ft in July 1909.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2360	67	3140	2700	2950	2920	2100	3030	324	56	930	1140
2	186	1580	2870	2970	3000	3090	100	3140	109	54	87	1170
3	63	679	3000	2680	2630	1250	65	3050	60	51	930	125
4	60	1640	2810	3120	2890	100	3000	3000	61	51	103	50
5	1100	490	2720	2690	3080	65	3100	3360	61	51	59	50
6	2320	76	2710	3040	2930	65	3000	3210	61	49	59	792
7	2140	1580	2970	2580	272	2920	3000	3270	1500	49	59	1240
8	1960	900	2820	2670	1510	3250	3010	3030	1530	49	875	1600
9	2010	2230	2990	2860	98	2930	2930	3410	91	49	1010	1250
10	530	1880	2810	2720	2840	3020	3270	3250	54	48	512	313
11	68	2740	2770	2790	3050	900	2590	3200	55	48	1060	50
12	975	2320	2840	2750	3100	70	3050	3300	56	55	1150	1200
13	52	1330	2260	2780	2550	65	3010	3360	55	61	242	1360
14	58	77	3160	2540	2830	2720	2900	3210	60	60	64	1600
15	65	55	3330	2610	2790	2690	2900	3140	61	656	975	1490
16	66	1020	2780	2780	2470	2810	2490	3100	60	62	1790	1200
17	66	2680	2610	2750	3030	3030	3110	3010	59	51	1760	560
18	68	2590	2840	2720	3050	2950	2610	512	58	52	232	61
19	70	2830	2300	2790	2500	935	2790	205	57	55	53	2390
20	72	2670	150	2930	2980	65	3330	738	836	76	53	584
21	69	2530	450	2770	2530	2880	3060	61	2460	53	53	1270
22	67	213	2810	2820	3120	2940	2780	61	2150	52	1020	1820
23	288	2610	3210	2960	3150	2930	3260	61	1790	52	1120	796
24	63	2200	2930	2970	2910	2750	2830	61	1160	51	1300	115
25	62	150	2700	3130	2840	1880	3040	62	71	52	1170	49
26	1000	65	2800	3040	3020	70	3230	62	52	1020	1380	48
27	85	65	2000	2660	284	65	3320	63	288	80	121	48
28	427	1460	2400	2620	65	2800	3250	66	1170	52	62	48
29	74	2850	2650	2280	2660	1100	3050	66	62	51	965	49
30	70	3320	3050	2710	---	2600	3160	67	52	52	1100	49
31	67	---	2160	2740	---	2800	---	66	---	52	1240	---
MEAN	534	1497	2614	2780	2453	1892	2778	1814	482	105	695	751
MAX	2360	3320	3330	3130	3150	3250	3330	3410	2460	1020	1790	2390
MIN	52	55	150	2280	65	65	65	61	52	48	53	48
IN.	.53	1.44	2.60	2.76	2.28	1.88	2.67	1.80	.46	.10	.69	.72

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	539.7	645.8	771.9	913.7	989.6	1256	1777	1681	1382	806.0	602.6	582.9
MAX	5254	4618	3867	3993	3098	4879	9843	11350	5661	5744	5560	2999
(WY)	1942	1973	1986	1950	1949	1945	1927	1943	1935	1958	1927	1945
MIN	4.72	6.20	13.2	15.3	13.9	3.36	22.1	24.4	13.7	11.1	6.62	2.19
(WY)	1957	1972	1971	1970	1970	1970	1970	1970	1971	1971	1954	1956

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1529	992.9
HIGHEST ANNUAL MEAN		2871
LOWEST ANNUAL MEAN		64.1
HIGHEST DAILY MEAN	3410	79800
LOWEST DAILY MEAN	48	.00
INSTANTANEOUS PEAK FLOW	3410	120000
INSTANTANEOUS PEAK STAGE (FEET)	12.92	31.8
INSTANTANEOUS LOW FLOW	48	0
ANNUAL RUNOFF (INCHES)	17.9	11.6
10 PERCENTILE	3140	2600
50 PERCENTILE	1410	364
95 PERCENTILE	51	30

## 06919020 SAC RIVER AT HIGHWAY J BELOW STOCKTON, MO

LOCATION.--Lat 37°44'07", long 93°46'47", NW 1/4 sec.4, T.34 N., R.26 W., Cedar County, Hydrologic Unit 10290106, on right bank on downstream side of bridge on State Highway J, 4.5 mi downstream from Bear Creek, 6.3 mi downstream from Stockton Lake, 3 mi north of Stockton and at mile 44.9.

DRAINAGE AREA.--1,292 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1973 to current year. Occasional discharge measurements in water year 1973.

GAGE.--Water-stage recorder. Datum of gage is 750.19 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 2, 4-8, 21-23, 25-27, Feb. 3, 7, 12, 16, 18, Mar. 23, 24, 29-31, Apr. 5, 7, and Aug. 9, 10. Records fair. Several observations of water temperature and specific conductance were made during the year. Considerable regulation by Stockton Lake (station 06918990) 6.3 mi upstream. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2430	71	3300	2590	3280	3160	3150	3020	212	95	820	1230
2	511	1390	3200	2900	3230	3200	5380	3150	281	96	284	1180
3	81	1070	3270	2740	2990	2890	1160	3010	76	81	846	594
4	74	1810	3010	3300	3030	717	3310	3000	76	73	328	71
5	897	647	2870	3000	3250	480	3300	3480	74	69	79	67
6	2760	209	2870	3100	3180	375	3260	3200	72	65	73	665
7	2110	1590	3190	3000	1030	2780	3200	3410	1290	62	74	1360
8	2080	961	3080	3000	1770	3510	3090	3050	1630	60	811	1800
9	2150	2460	3250	3010	197	3090	3100	3540	414	59	1100	1150
10	743	1990	2900	2910	2780	3190	3800	3300	72	59	662	743
11	157	2730	2950	2950	3330	1320	2880	3350	69	58	1110	66
12	1030	2720	3030	3090	3300	222	3010	3440	67	64	1130	1010
13	101	1400	2430	2910	3350	198	3010	3500	65	74	603	1460
14	66	223	3260	2730	3110	2560	2900	3660	68	77	76	1700
15	75	80	3570	2750	3040	2760	2890	3470	71	615	847	1600
16	78	1030	2640	2980	2900	2900	2510	3290	69	226	1700	1400
17	79	2930	2640	2950	3400	3150	3170	3350	67	66	1790	676
18	76	2670	3050	2840	3500	2990	2750	788	67	74	564	171
19	77	3120	3510	2960	3530	1440	2830	599	66	78	85	2190
20	75	2950	3820	3260	3130	200	3420	861	779	159	74	961
21	75	2560	1070	3100	2850	2720	3080	140	2260	83	71	1150
22	74	604	2790	3010	3490	3120	2770	146	2340	79	963	2290
23	266	2470	3570	3100	3470	3100	3260	246	1920	73	1290	822
24	89	3590	3180	3140	3160	3000	2840	154	1190	70	1360	345
25	64	3790	3200	3300	3020	2420	3040	109	275	67	1200	87
26	895	560	3580	3200	3260	187	3240	94	72	869	1280	72
27	446	348	4000	3200	730	146	3330	87	217	365	521	66
28	527	1410	3300	2830	217	2770	3260	84	1090	72	87	64
29	81	3130	3060	2550	2610	3500	3030	79	275	72	953	70
30	75	3620	3380	2790	---	3200	3190	81	73	70	1040	64
31	72	---	2800	2930	---	3200	---	79	---	67	1280	---
MEAN	591	1804	3089	2972	2763	2210	3105	1928	510	132	745	837
MAX	2760	3790	4000	3300	3530	3510	5380	3660	2340	869	1790	2290
MIN	64	71	1070	2550	197	146	1160	79	65	58	71	64
IN.	.53	1.56	2.76	2.65	2.31	1.97	2.68	1.72	.44	.12	.67	.72

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	479.5	620.6	1323	1413	1221	1701	2049	1600	1272	950.5	789.9	929.4
MAX	965.9	1933	3983	3051	2763	4230	4613	3263	3699	2302	1762	1567	
(WY)	1987	1986	1986	1974	1988	1975	1974	1983	1983	1979	1982	1982	
MIN	51.1	60.1	61.9	66.7	98.8	64.8	60.5	112.8	269.2	120.9	77.2	212.8	
(WY)	1974	1981	1981	1981	1981	1977	1981	1977	1977	1977	1977	1980	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1720	1195
HIGHEST ANNUAL MEAN		1827
LOWEST ANNUAL MEAN		255.7
HIGHEST DAILY MEAN	5380	10100
LOWEST DAILY MEAN	58	25
INSTANTANEOUS PEAK FLOW	5380	14800
INSTANTANEOUS PEAK STAGE (FEET)	16.71	24.91
INSTANTANEOUS LOW FLOW	58	24
ANNUAL RUNOFF (INCHES)	18.1	12.6
10 PERCENTILE	3380	3270
50 PERCENTILE	1630	574
95 PERCENTILE	68	59

## OSAGE RIVER BASIN

06919500 CEDAR CREEK NEAR PLEASANT VIEW, MO

LOCATION.--Lat 37°50'03", long 93°52'31", in NE 1/4 sec.2, T.35 N., R.27 W., Cedar County, Hydrologic Unit 10290106, on downstream side of right pier of bridge on State Highway 39, 1.5 mi north of Pleasant View, 1.8 mi downstream from Alder Creek, and 5.8 mi upstream from mouth.

DRAINAGE AREA.--420 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--April 1923 to September 1926, October 1948 to current year.

REVISED RECORDS.--WSP 1146: 1923-26, drainage area. WSP 1176: 1924(M).

GAGE.--Water-stage recorder. Datum of gage is 739.46 ft above National Geodetic Vertical Datum of 1929. Apr. 22, 1923, to Sept. 30, 1926, and Oct. 1, 1948, to May 10, 1950 nonrecording gage at site 50 ft downstream at same datum. May 11, 1950 to Dec. 17, 1952, nonrecording gage, at present site and datum.

REMARKS.--Estimated daily discharges: Jan. 28 to Feb. 5, Feb. 12-22. Records good except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 27.7 ft, July 20, 1909, from floodmark.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	27	396	882	132	191	1340	97	11	7.4	9.1	12
2	11	23	317	603	128	199	7190	86	10	11	7.0	9.4
3	8.9	19	265	490	124	3790	6950	78	27	36	5.6	8.1
4	8.1	17	225	430	124	5850	1620	76	58	46	4.7	6.4
5	7.8	16	195	357	122	2040	878	69	25	25	3.7	4.6
6	6.9	14	175	272	122	1140	709	61	16	15	2.9	3.7
7	5.4	13	261	270	123	902	556	56	12	9.4	2.5	3.3
8	4.5	13	441	237	115	694	467	52	9.9	6.6	2.3	3.4
9	3.6	11	350	256	113	556	388	50	8.1	4.7	2.2	2.5
10	4.0	10	253	236	118	469	398	44	6.7	3.4	4.2	1.9
11	4.4	12	211	211	115	401	513	39	5.7	2.6	5.8	2.1
12	5.1	14	186	195	110	343	450	35	4.9	2.1	87	2.4
13	5.7	15	161	229	105	288	355	32	4.3	1.7	54	2.6
14	4.6	14	151	230	110	250	296	30	3.7	1.5	32	2.2
15	5.4	14	166	200	115	225	255	27	3.5	1.4	20	1.9
16	6.4	18	165	193	110	206	226	25	3.7	1.2	13	2.8
17	6.0	232	155	225	110	201	207	23	3.6	1.0	11	3.4
18	4.6	530	158	280	150	244	759	21	3.3	4.3	9.5	4.7
19	3.6	291	1510	535	2000	292	1140	19	3.2	3.1	8.0	10
20	3.9	162	8650	746	3000	308	500	17	3.0	3.6	5.7	12
21	4.8	116	7470	531	1500	262	366	17	2.8	26	4.5	21
22	10	90	2890	361	900	224	297	19	3.4	116	7.7	48
23	10	76	837	289	514	200	242	40	5.0	49	208	34
24	12	391	712	259	400	192	200	41	4.4	28	1010	24
25	20	6160	1040	228	331	253	179	38	3.4	18	430	18
26	12	5670	1410	198	291	196	168	31	2.8	17	105	12
27	19	1360	3380	168	263	167	152	25	2.2	13	56	11
28	54	765	4880	155	235	191	133	20	1.8	11	35	16
29	37	738	1740	145	211	3400	119	17	1.9	12	24	26
30	29	528	1120	140	---	3840	108	15	2.9	14	19	27
31	29	---	1160	135	---	1370	---	13	---	13	15	---
MEAN	11.6	579	1324	312	407	932	905	39.1	8.44	16.3	71.1	11.2
MAX	54	6160	8650	882	3000	5850	7190	97	58	116	1010	48
MIN	3.6	10	151	135	105	167	108	13	1.8	1.0	2.2	1.9
IN.	.03	1.54	3.63	.86	1.04	2.56	2.41	.11	.02	.04	.20	.03

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	204.8	329.1	290.4	250.9	404.7	594.2	539.7	423.8	352.6	221.8	75.7	145.0
MAX	2994	1794	1327	1063	2307	2275	2458	2969	1753	2229	641.3	1663	
(WY)	1987	1986	1974	1949	1985	1973	1973	1961	1981	1958	1950	1951	
MIN	.000	.000	.058	.119	.136	.226	4.09	39.1	4.95	.029	.000	.000	
(WY)	1954	1954	1954	1954	1954	1954	1956	1988	1953	1954	1954	1953	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	384.6	318.4
HIGHEST ANNUAL MEAN		730.7
LOWEST ANNUAL MEAN		16.0
HIGHEST DAILY MEAN	8650	26200
LOWEST DAILY MEAN	1.0	0
INSTANTANEOUS PEAK FLOW	10400	37000
INSTANTANEOUS PEAK STAGE (FEET)	22.05	27.35
INSTANTANEOUS LOW FLOW	0.86	0
ANNUAL RUNOFF (INCHES)	12.4	10.3
10 PERCENTILE	794	662
50 PERCENTILE	52	68
95 PERCENTILE	2.2	.14

## OSAGE RIVER BASIN

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06919900 SAC RIVER NEAR CAPLINGER MILLS, MO

LOCATION.--Lat 37°52'12", long 93°48'11", in NW 1/4 NE 1/4 SW 1/4 sec.21, T.35 N., R.26 W., St. Clair County, Hydrologic Unit 10290106, on right downstream wingwall of bridge on State Highway W, 1.5 mi downstream from Cedar Creek and 5 mi north of Caplinger Mills.

DRAINAGE AREA.--1,810 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 720.82 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. Some regulation from Stockton Lake (station 06918990). U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2600	101	3770	3660	3530	3550	4890	3210	111	103	200	1550
2	1550	352	3620	4220	3460	3420	13000	3410	469	104	1170	1520
3	115	1640	3520	3330	3200	7490	12000	3260	124	103	200	1580
4	89	1920	3360	3840	3280	7970	5020	3410	160	131	1260	112
5	80	949	3150	3500	3470	3790	4680	3310	127	106	96	84
6	3150	708	3050	3560	3300	2140	4490	3210	113	89	80	71
7	1900	1020	3490	3220	2100	3080	3960	3390	213	77	70	1450
8	2330	890	3560	3100	1680	4360	3860	3220	1930	69	156	1970
9	2420	2500	3600	3390	615	3990	3450	3470	1600	63	1310	1450
10	1060	2290	3260	3260	1760	3830	4040	3460	120	60	1090	1870
11	633	2420	3230	3230	3330	3020	3800	3400	97	58	1020	107
12	840	3180	3300	3440	3550	823	3380	3360	90	57	1290	192
13	431	1770	2630	3110	3180	601	3700	3440	87	62	1740	1780
14	71	719	3430	3160	3200	1720	3420	3370	85	72	135	1920
15	69	90	3900	2990	3390	3480	3490	3470	85	116	195	1920
16	78	133	3210	3240	3360	3110	3370	3230	87	897	1660	1950
17	80	2990	3010	3210	3270	3370	2970	3260	85	84	2200	1370
18	72	3280	3190	3300	3580	3510	4300	1920	84	98	1950	646
19	76	3570	4860	3600	5040	2990	4380	693	81	82	133	1180
20	73	3270	13000	4050	6500	749	3930	838	281	159	87	1900
21	70	2660	10800	3650	4550	1890	3660	429	1840	107	77	763
22	68	1800	6050	3430	4120	3630	3380	197	2710	180	305	3010
23	82	1490	4560	3580	4080	3290	3530	318	2060	135	1800	1010
24	301	3840	4120	3390	3800	3160	3320	248	1570	104	2610	1220
25	74	9810	4440	3660	3510	3650	3340	200	1230	93	2170	142
26	84	7670	5250	3540	3620	910	3440	170	100	193	1510	107
27	1350	2600	7630	3160	2210	385	3600	152	78	1340	1770	96
28	547	1420	9200	3140	525	1810	3480	139	518	104	153	88
29	247	3820	5660	3070	1750	8030	3570	130	1210	95	324	115
30	109	4130	4610	2600	---	8180	3110	121	103	89	1240	111
31	104	---	4540	3270	---	5450	---	115	---	84	1580	---
MEAN	669	2434	4677	3384	3206	3464	4352	2018	582	165	954	1043
MAX	3150	9810	13000	4220	6500	8180	13000	3470	2710	1340	2610	3010
MIN	68	90	2630	2600	525	385	2970	115	78	57	70	71
IN.	.43	1.50	2.98	2.16	1.91	2.21	2.68	1.29	.36	.11	.61	.64

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	992.2	1221	1891	1626	1865	2502	2659	2008	1704	1055	832.9	1003
MAX	6105	4069	5838	3683	5202	5630	5394	3919	4023	2530	1726	1599
(WY)	1987	1986	1986	1985	1985	1985	1985	1983	1979	1979	1982	1978
MIN	61.1	66.7	56.6	53.5	101.4	82.7	76.3	277.9	465.5	165.0	84.8	223.4
(WY)	1981	1981	1981	1981	1981	1981	1981	1981	1978	1988	1977	1980

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	2242	1611
HIGHEST ANNUAL MEAN		2691
LOWEST ANNUAL MEAN		398.8
HIGHEST DAILY MEAN	13000	51200
LOWEST DAILY MEAN	57	44
INSTANTANEOUS PEAK FLOW	15200	60000
INSTANTANEOUS PEAK STAGE (FEET)	22.80	30.00
INSTANTANEOUS LOW FLOW	55	48
ANNUAL RUNOFF (INCHES)	16.8	12.1
10 PERCENTILE	4120	3990
50 PERCENTILE	1990	933
95 PERCENTILE	77	71

## OSAGE RIVER BASIN

06921070 POMME DE TERRE RIVER NEAR POLK, MO

LOCATION.--Lat 37°40'56", long 93°22'12", in NE 1/4, NW 1/4, NW 1/4, sec.17, T.34 N., R.22 W., Polk County, Hydrologic Unit 10290107, on right bank 150 ft upstream from Jefferson Bridge on State Highway D and 5 mi southwest of Polk.

DRAINAGE AREA.--276 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder. Datum of gage is 872.61 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. U.S. Army Corps of Engineers satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	52	358	513	626	209	927	91	30	1010	9.3	21
2	13	47	300	428	548	437	8340	87	28	529	8.2	22
3	12	43	261	379	399	3830	1340	81	25	192	6.9	17
4	10	39	221	339	364	1370	880	80	24	118	6.4	14
5	10	35	194	284	320	1010	696	80	29	84	7.0	13
6	9.9	33	178	236	245	793	886	72	29	64	7.6	12
7	8.7	30	448	212	239	651	570	69	24	50	7.5	10
8	8.6	29	453	215	226	535	470	66	20	41	7.7	10
9	7.7	28	341	218	217	459	394	64	17	32	10	9.5
10	9.6	27	275	179	214	403	350	58	16	29	402	8.3
11	12	26	240	191	222	357	443	56	13	28	52	7.9
12	12	25	206	194	212	412	403	52	13	24	24	7.3
13	11	25	176	253	226	359	329	49	13	19	16	6.6
14	13	24	173	198	425	299	286	47	11	19	12	6.0
15	12	25	213	174	359	267	254	43	11	19	9.1	5.4
16	11	240	210	171	295	243	230	40	13	18	7.4	5.6
17	12	271	194	202	263	234	209	38	12	16	6.0	5.8
18	11	189	193	292	310	284	286	36	12	25	5.7	9.6
19	12	138	5000	334	2610	321	259	34	17	110	7.9	216
20	26	109	9660	368	1290	298	214	34	19	98	4.4	163
21	53	90	1320	287	799	265	192	35	15	33	3.7	101
22	40	78	900	242	627	239	176	44	13	28	3.8	62
23	34	70	704	220	493	215	158	164	12	28	1360	50
24	32	5310	804	209	403	204	141	150	10	24	443	308
25	100	14500	3140	188	348	230	132	93	9.3	20	144	180
26	129	1200	3660	162	314	218	129	68	8.5	18	82	113
27	127	838	3780	148	284	187	119	56	7.5	15	57	82
28	103	673	1780	161	254	310	110	47	7.1	13	43	62
29	82	533	948	190	231	6930	102	41	7.6	13	35	55
30	67	432	751	189	---	4300	99	38	11	12	29	44
31	58	---	637	193	---	1040	---	33	---	11	26	---
MEAN	34.2	839	1217	244	461	868	637	62.8	15.9	88.4	91.7	54.2
MAX	129	14500	9660	513	2610	6930	8340	164	30	1010	1360	308
MIN	7.7	24	173	148	212	187	99	33	7.1	11	3.7	5.4
IN.	.14	3.39	5.08	1.02	1.80	3.63	2.58	.26	.06	.37	.38	.22

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	173.9	371.2	392.4	243.9	351.9	567.7	519.7	277.0	223.6	76.4	40.9	107.6
MEAN	173.9	371.2	392.4	243.9	351.9	567.7	519.7	277.0	223.6	76.4	40.9	107.6
MAX	1094	1408	1488	639.4	1496	1673	1491	938.0	1043	326.3	153.6	603.7
(WY)	1987	1986	1983	1975	1985	1973	1983	1979	1981	1976	1985	1977
MIN	8.88	15.4	14.2	10.8	42.5	61.6	26.8	41.5	15.9	4.16	2.72	1.70
(WY)	1979	1977	1977	1977	1981	1981	1981	1977	1988	1980	1980	1980

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	384.0	278.0
HIGHEST ANNUAL MEAN		532.5
LOWEST ANNUAL MEAN		124.1
HIGHEST DAILY MEAN	14500	18500
LOWEST DAILY MEAN	3.7	.30
INSTANTANEOUS PEAK FLOW	20900	23100
INSTANTANEOUS PEAK STAGE (FEET)	21.97	23.08
INSTANTANEOUS LOW FLOW	3.7	0.3
ANNUAL RUNOFF (INCHES)	18.9	13.7
10 PERCENTILE	625	572
50 PERCENTILE	99	85
95 PERCENTILE	7.6	7.0

## OSAGE RIVER BASIN

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06921200 LINDLEY CREEK NEAR POLK, MO

LOCATION.--Lat 37°45'02", long 93°15'58", in NE 1/4, SE 1/4, sec.29, T.35 N., R.21 W., Polk County, Hydrologic Unit 10290107, on left bank 30 ft upstream from county highway bridge, 0.5 mi downstream from Panther Creek, 2.5 mi northeast of Polk, and 11 mi upstream from Ingalls Creek.

DRAINAGE AREA.--112 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 884.08 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 25, 1957, nonrecording gage at site 30 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records fair. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of September 1914 reached a stage of about 25.2 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.8	16	94	149	434	69	428	19	1.4	21	3.9	1.1
2	8.4	14	79	119	223	90	4780	17	1.9	13	3.6	1.0
3	6.1	14	69	109	159	1700	411	16	2.5	3.1	4.4	.99
4	5.2	13	56	98	141	503	279	15	4.4	1.6	4.5	.93
5	4.6	12	49	78	116	355	225	15	2.1	1.1	6.5	1.0
6	3.3	12	49	66	89	264	224	15	1.4	.78	6.0	1.1
7	2.2	11	122	63	84	213	180	14	1.1	.75	5.0	1.2
8	1.6	11	104	62	79	170	162	15	.85	.60	4.8	1.2
9	1.1	11	79	59	81	145	142	11	.66	.43	316	1.2
10	2.5	9.4	64	50	80	126	131	9.7	.45	.33	798	1.1
11	2.0	8.5	57	50	75	114	195	8.7	.30	.35	45	1.0
12	2.9	8.0	48	64	63	148	156	8.1	.25	.47	13	.71
13	3.9	7.8	38	73	98	105	132	7.3	.26	.46	7.9	.39
14	3.4	7.0	44	49	210	92	118	6.8	.29	.35	5.1	.26
15	2.7	7.8	61	44	140	82	106	6.1	.27	.29	2.7	.24
16	2.2	86	49	48	107	75	94	5.3	.28	.24	1.7	.28
17	2.0	54	42	66	96	76	89	4.6	.24	.23	1.1	.38
18	1.6	23	48	79	138	106	111	4.2	.22	.54	.86	1.2
19	1.5	14	3490	115	1410	104	98	3.7	.22	40	.68	5.7
20	2.4	11	3010	114	445	87	80	3.3	.29	79	.32	9.6
21	5.3	9.6	399	85	247	76	70	3.2	.36	7.3	.25	5.1
22	9.4	8.1	251	69	200	67	64	4.1	.35	2.6	.25	3.5
23	7.9	7.0	187	66	149	60	53	12	.31	1.4	101	2.5
24	7.9	2840	343	62	125	58	44	9.7	.25	.93	34	8.1
25	10	2250	1180	53	113	56	42	6.2	.24	1.4	6.9	7.2
26	16	284	759	40	104	48	42	4.2	.22	3.4	2.6	3.9
27	14	245	2000	37	96	40	34	2.9	.21	3.0	1.4	3.5
28	15	188	607	38	85	140	28	2.4	.19	2.3	.85	3.3
29	16	140	279	41	76	5520	24	2.1	.19	3.8	.56	4.6
30	15	113	234	42	---	722	21	1.9	.27	4.9	.53	6.0
31	16	---	205	45	---	335	---	1.7	---	4.8	.87	---
MEAN	6.48	215	455	68.8	188	379	285	8.23	.73	6.47	44.5	2.61
MAX	16	2840	3490	149	1410	5520	4780	19	4.4	79	798	9.6
MIN	1.1	7.0	38	37	63	40	21	1.7	.19	.23	.25	.24
IN.	.07	2.14	4.68	.71	1.81	3.90	2.84	.08	.01	.07	.46	.03

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	89.0	96.9	121.9	90.5	129.9	199.0	172.6	134.7	79.6	35.9	13.9	35.8
MAX	812.4	565.9	526.1	357.5	763.9	855.0	650.4	843.5	421.2	533.9	100.4	257.9	
(WY)	1987	1986	1983	1973	1985	1973	1983	1961	1985	1958	1958	1958	
MIN	.000	.037	.377	.748	1.49	16.9	4.86	8.23	.732	.081	.000	.000	
(WY)	1977	1964	1964	1964	1964	1981	1981	1988	1988	1980	1976	1960	

## SUMMARY STATISTICS

FOR 1988 WATER YEAR

FOR PERIOD OF RECORD

AVERAGE FLOW	138.2	99.3
HIGHEST ANNUAL MEAN		231.9
LOWEST ANNUAL MEAN		25.9
HIGHEST DAILY MEAN	5520	12000
LOWEST DAILY MEAN	.19	0
INSTANTANEOUS PEAK FLOW	11300	31900
INSTANTANEOUS PEAK STAGE (FEET)	18.10	23.60
INSTANTANEOUS LOW FLOW	0.17	0
ANNUAL RUNOFF (INCHES)	16.8	12.0
10 PERCENTILE	212	177
50 PERCENTILE	15	25
95 PERCENTILE	.26	.00

## OSAGE RIVER BASIN

06921325 POMME DE TERRE LAKE NEAR HERMITAGE, MO

LOCATION.--Lat 37°54'06", long 93°19'05", in NE 1/4 sec.2, T.36 N., R.22 W., Hickory County, Hydrologic Unit 10290107, in intake tower at dam on Pomme de Terre River, and 3 mi southwest of Hermitage.

DRAINAGE AREA.--611 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1960 to current year.

GAGE.--Water-stage recorder. Non-recording gage prior to Nov. 9, 1961. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Lake is formed by earthfill embankment with a concrete gravity section-type dam. Closure operation began on June 28, 1960; conservation pool level reached June 15, 1963. Capacity at top of flood control pool, 648,700 acre-ft at elevation, 874 ft, crest of spillway, of which 407,200 acre-ft between elevations 839 ft and 874 ft is used for flood control, and 228,700 acre-ft between elevation 783 ft and 839 ft is used for conservation and 12,840 acre-ft below elevation 783 ft is sediment storage. Lake used for flood control and recreational purposes.

COOPERATION.--Records were provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 481,000 acre-ft, Apr. 30, 1973, elevation, 862.35 ft, minimum, since initial filling to conservation pool level, 216,000 acre-ft, Mar. 3, 1964, elevation, 835.61 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 349,000 acre-ft, Apr. 3-4, elevation, 850.98 ft, Apr. 4; minimum, 241,000 acre-ft, Oct. 15-25, Nov. 14-15, elevation, 838.94 ft, Oct. 23.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	245000	242000	310000	332000	244000	248000	303000	253000	250000	246000	246000	248000
2	244000	242000	306000	329000	246000	246000	325000	252000	250000	248000	245000	248000
3	244000	242000	301000	325000	247000	251000	349000	252000	251000	248000	245000	247000
4	244000	242000	297000	320000	247000	268000	349000	252000	250000	249000	245000	247000
5	244000	242000	293000	316000	247000	270000	348000	252000	250000	249000	245000	247000
6	243000	242000	288000	312000	247000	271000	346000	252000	250000	248000	244000	246000
7	243000	242000	284000	308000	246000	271000	343000	252000	250000	248000	244000	246000
8	243000	242000	281000	303000	246000	270000	339000	252000	250000	248000	244000	246000
9	242000	242000	277000	299000	245000	269000	334000	252000	249000	248000	244000	245000
10	242000	242000	273000	295000	245000	268000	329000	252000	249000	248000	246000	245000
11	242000	242000	269000	290000	245000	266000	325000	252000	249000	248000	247000	245000
12	242000	242000	265000	286000	244000	264000	320000	252000	248000	248000	247000	245000
13	242000	242000	260000	282000	243000	262000	315000	252000	248000	247000	247000	244000
14	242000	241000	256000	277000	243000	259000	310000	252000	248000	247000	247000	244000
15	241000	241000	252000	273000	244000	258000	305000	252000	247000	247000	247000	244000
16	241000	242000	248000	269000	244000	257000	299000	252000	247000	246000	247000	244000
17	241000	243000	244000	265000	244000	257000	294000	251000	247000	246000	246000	243000
18	241000	244000	242000	261000	243000	257000	290000	251000	247000	247000	246000	243000
19	241000	244000	243000	257000	248000	257000	285000	251000	246000	247000	246000	244000
20	241000	244000	277000	254000	261000	257000	280000	251000	246000	247000	246000	244000
21	241000	244000	302000	250000	263000	257000	275000	251000	246000	247000	245000	244000
22	241000	245000	305000	246000	263000	256000	270000	251000	246000	247000	245000	244000
23	241000	245000	307000	245000	262000	256000	265000	251000	245000	247000	246000	244000
24	241000	245000	307000	244000	260000	255000	260000	251000	245000	247000	249000	244000
25	241000	285000	307000	242000	259000	256000	254000	252000	245000	246000	249000	245000
26	242000	313000	318000	242000	257000	255000	254000	251000	245000	247000	249000	245000
27	242000	315000	327000	242000	254000	254000	254000	251000	244000	246000	249000	245000
28	242000	315000	338000	242000	253000	254000	254000	251000	244000	246000	249000	245000
29	242000	314000	338000	242000	250000	264000	253000	251000	244000	246000	249000	245000
30	242000	312000	337000	243000	---	297000	253000	251000	244000	246000	249000	245000
31	242000	---	334000	243000	---	303000	---	251000	---	246000	248000	---
(-)	839.06	847.22	849.49	839.17	840.10	846.19	840.44	840.12	839.29	839.53	839.84	839.44
(=)	-3000	+70000	+22000	-91000	+70000	+53000	-50000	-2000	-7000	+2000	+2000	-3000
MAX	245000	315000	338000	332000	263000	303000	349000	253000	251000	249000	249000	248000
MIN	241000	241000	242000	242000	243000	246000	253000	251000	244000	246000	244000	243000

CAL YR 1987.....+93000

WTR YR 1988.....+63000

(-) Elevation, in feet NGVD, at end of month

(=) Change in contents, in acre-feet

## 06921350 POMME DE TERRE RIVER NEAR HERMITAGE, MO

LOCATION.--Lat 37°54'20", long 93°19'45", in NW 1/4 NW 1/4 sec.2, T.36 N., R.22 W., Hickory County, Hydrologic Unit 10290107, on right bank 2,000 ft downstream from outlet of Pomme de Terre Lake, 2.5 mi southwest of Hermitage, 4.5 mi upstream from Green Branch, and at mile 43.4.

DRAINAGE AREA.--615 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1960 to current year.

GAGE.-- Water-stage recorder. Datum of gage is 749.33 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. Flow regulated by Pomme de Terre Lake (station 06921325) 0.5 mi upstream. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	44	2490	2590	122	1530	2090	286	89	68	92	91
2	90	44	2640	2580	364	890	1330	175	89	93	92	91
3	90	44	2620	2570	532	496	2070	92	89	93	92	91
4	90	44	2600	2570	532	1130	2070	94	89	93	91	91
5	89	44	2590	2570	532	1550	2330	95	89	93	92	91
6	89	44	2580	2560	532	1550	2370	96	88	93	91	91
7	90	44	2570	2560	532	1550	3090	97	89	93	91	91
8	90	45	2560	2550	532	1550	3070	99	89	93	91	91
9	90	45	2550	2540	532	1550	3070	99	89	93	93	92
10	91	45	2530	2530	532	1550	3070	100	89	93	93	92
11	90	45	2520	2520	532	1550	3060	101	89	93	92	91
12	90	45	2520	2510	532	1550	3050	102	89	93	92	91
13	64	45	2510	2510	532	1550	3040	102	89	93	92	91
14	43	45	2500	2500	533	1550	3030	101	89	92	91	91
15	43	46	2500	2490	532	939	3020	98	89	92	91	91
16	44	46	2480	2480	532	503	3010	95	89	92	92	90
17	44	46	1550	2470	532	503	2990	94	89	92	91	90
18	44	46	724	2460	537	503	2990	92	89	98	91	91
19	44	46	466	2450	287	503	2970	90	89	93	91	92
20	44	46	459	2450	730	504	2930	90	89	93	91	91
21	44	46	457	2440	1550	505	2870	89	90	93	91	91
22	44	45	457	1580	1550	505	2860	89	89	93	92	90
23	45	46	885	1010	1550	505	2850	89	74	92	94	91
24	45	81	2120	1010	1550	506	2830	89	45	92	91	91
25	45	308	2560	593	1550	509	1340	89	45	92	92	90
26	45	547	2580	282	1540	509	283	89	45	92	91	90
27	45	1100	2610	282	1540	508	283	89	45	92	92	89
28	45	1700	2600	221	1540	509	282	89	45	92	92	89
29	45	1690	2600	116	1540	682	283	89	46	92	91	90
30	44	1920	2600	116	---	1270	285	89	47	93	91	89
31	44	---	2590	118	---	1790	---	89	---	92	91	---
MEAN	61.9	279	2130	1878	825	994	2294	102	78.3	92.0	91.6	90.7
MAX	91	1920	2640	2590	1550	1790	3090	286	90	98	94	92
MIN	43	44	457	116	122	496	282	89	45	68	91	89
IN.	.12	.51	3.99	3.52	1.45	1.86	4.16	.19	.14	.17	.17	.16

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	249.5	552.8	702.1	472.7	610.4	880.6	879.5	852.9	480.6	336.8	97.0	113.1
MAX	1131	2872	2886	1878	2100	3487	2948	4799	2157	1635	480.3	612.6	
(WY)	1987	1987	1986	1988	1975	1985	1984	1961	1985	1981	1978	1970	
MIN	13.1	7.50	20.5	20.4	21.5	24.6	26.8	26.4	31.9	26.0	18.6	1.27	
(WY)	1969	1977	1963	1962	1963	1963	1963	1963	1969	1970	1961	1960	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	743.3	518.7
HIGHEST ANNUAL MEAN		1163
LOWEST ANNUAL MEAN		67.8
HIGHEST DAILY MEAN	3090	9000
LOWEST DAILY MEAN	43	0
INSTANTANEOUS PEAK FLOW	3120	9000
INSTANTANEOUS PEAK STAGE (FEET)	8.72	15.02
INSTANTANEOUS LOW FLOW	43	0
ANNUAL RUNOFF (INCHES)	16.4	11.5
10 PERCENTILE	2560	1800
50 PERCENTILE	97	106
95 PERCENTILE	45	24

## OSAGE RIVER BASIN

06921760 SOUTH GRAND RIVER NEAR CLINTON, MO

LOCATION.--Lat 38°22'16", long 93°51'23", in NW 1/4 SW 1/4 SE 1/4 sec. 1, T.41N., R.27W., Henry County, Hydrologic Unit 10290108 at right upstream end of bridge on State Highway 18, 4.4 mi west of Clinton and 5.4 mi downstream from Big Creek.

DRAINAGE AREA.--1,270 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 700.00 ft above National Geodetic Vertical Datum of 1929. Auxilliary water-stage recorder 3.3 mi upstream from base gage at same datum.

REMARKS.--No estimated daily discharges. Records poor. Many periods could not be calculated using fall computations. Stage discharge relation affected by backwater from Truman Reservoir and daily values are calculated using fall computations. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	---	260	1140	296	302	2180	284	49	280	37	38
2	19	---	226	784	597	270	14000	288	46	1010	37	43
3	19	20	167	591	411	587	27300	288	44	1140	35	41
4	20	25	132	489	265	2570	16200	254	51	535	35	41
5	18	32	108	383	200	2810	6770	231	63	315	34	42
6	18	32	90	347	197	2680	4670	200	47	216	61	41
7	18	27	75	342	193	2710	4180	173	41	147	73	42
8	18	22	72	327	159	2270	3610	158	35	112	59	40
9	18	20	62	339	125	1670	2810	135	31	91	56	38
10	18	20	59	322	114	1260	2480	130	30	81	47	35
11	17	19	58	266	107	1000	2300	125	29	73	36	37
12	17	22	49	238	100	837	2000	125	29	76	35	36
13	17	20	45	186	100	687	1800	106	28	84	38	33
14	17	20	48	175	106	553	1500	84	28	74	37	37
15	19	20	42	159	372	435	1340	69	26	67	38	36
16	---	20	43	171	1000	368	1020	61	26	52	39	209
17	---	30	46	209	792	313	775	57	25	48	36	943
18	---	86	48	263	539	269	2140	56	26	178	28	1500
19	---	129	93	304	861	259	5230	57	39	895	30	---
20	---	120	2460	843	3020	290	3780	54	37	682	27	---
21	---	99	10800	1120	4190	307	2210	48	33	274	25	---
22	---	82	8700	809	2950	276	1400	47	30	153	48	---
23	---	65	4170	533	1840	234	955	48	28	103	70	---
24	---	60	2480	352	1330	213	766	55	28	79	76	---
25	---	84	1800	221	941	183	640	68	26	59	64	---
26	---	338	1390	186	680	275	470	75	26	50	58	---
27	---	351	1440	174	516	244	412	73	26	43	53	---
28	---	295	3160	152	443	214	353	67	26	40	60	---
29	---	354	3690	153	373	491	341	63	27	42	61	---
30	---	324	2600	177	---	1240	306	59	34	40	49	---
31	---	---	1670	207	---	1420	---	53	---	37	35	---
MEAN	---	---	1487	386	787	879	3798	116	33.8	228	45.7	---
MAX	---	---	10800	1140	4190	2810	27300	288	63	1140	76	---
MIN	---	---	42	152	100	183	306	47	25	37	25	---
IN.	---	---	1.35	.35	.67	.80	3.34	.11	.03	.21	.04	---

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	MAX	MIN	(WY)	MEAN	MAX	MIN	(WY)	MEAN	MAX	MIN	(WY)
MEAN	62300	4990	10800	1520	4190	16700	27300	3680	1140	2890	1800	1500
MAX	1987	1987	1988	1987	1988	1987	1988	1987	1987	1987	1987	1988
MIN	1987	1987	1988	1987	1988	1987	1988	1987	1987	1987	1987	1988
(WY)	1987	1987	1988	1987	1988	1987	1988	1987	1987	1987	1987	1988

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	*****	*****
HIGHEST ANNUAL MEAN	*****	*****
LOWEST ANNUAL MEAN	*****	*****
HIGHEST DAILY MEAN	27300	66000
LOWEST DAILY MEAN	Apr 3	Oct 1 1986
INSTANTANEOUS PEAK FLOW	*****	*****
INSTANTANEOUS PEAK STAGE (FEET)	*****	*****
INSTANTANEOUS LOW FLOW	*****	*****
ANNUAL RUNOFF (INCHES)	*****	*****
10 PERCENTILE	*****	*****
50 PERCENTILE	*****	*****
95 PERCENTILE	*****	*****

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## OSAGE RIVER BASIN

145

06922190 WEST FORK TEBO CREEK NEAR LEWIS, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat 38°25'16", long 93°39'36", in NW 1/4 NW 1/4 NW 1/4 sec.23, T.42 N., R.25 W., Henry County, Hydrologic Unit 10290108, at bridge on county road, 2 miles southeast of Lewis.

PERIOD OF RECORD.--November 1983 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (000061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (000095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT									
05...	1400	0.15	--	2100	8.00	16.0	7.4	75	80
NOV									
05...	0930	1.0	2230	--	7.90	12.5	6.1	56	84
DEC									
08...	1400	1.5	2450	--	8.00	8.0	11.3	97	660
JAN									
06...	1430	3.0	2020	--	7.90	0.5	15.0	101	88
FEB									
02...	1300	2.3	1740	--	8.10	0.5	14.5	100	K68
MAR									
01...	1100	2.5	1860	--	8.10	5.5	14.6	116	K68
APR									
07...	0830	21	1560	--	7.90	10.5	10.4	92	200
MAY									
10...	1230	2.5	2110	--	8.10	18.5	9.5	102	K360
JUN									
14...	1515	0.50	1970	--	8.10	25.0	9.5	118	47
JUL									
12...	1100	0.20	2060	--	8.00	26.0	5.8	72	K130
AUG									
04...	1300	0.20	1840	--	7.80	29.0	7.1	95	49
SEP									
06...	1300	0.10	1520	--	8.00	17.0	7.5	77	130

DATE	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
OCT								
05...	1100	900	270	100	63	6.0	185	1200
NOV								
05...	1200	990	320	100	73	6.5	220	1300
DEC								
08...	1100	870	280	94	65	5.1	222	1200
JAN								
06...	1300	1100	330	110	66	6.0	214	1200
FEB								
02...	940	760	240	83	50	6.0	184	880
MAR								
01...	970	770	250	83	51	5.8	193	890
APR								
07...	930	750	240	80	47	5.3	176	830
MAY								
10...	970	750	240	90	66	6.3	222	1200
JUN								
14...	1400	1200	360	120	83	7.9	211	1300
JUL								
12...	1300	1100	330	120	70	8.0	176	1200
AUG								
04...	1100	950	280	95	66	8.7	140	1100
SEP								
06...	940	800	230	88	53	6.8	136	940

## OSAGE RIVER BASIN

06922190 WEST FORK TEBO CREEK NEAR LEWIS, MO--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
OCT								
05...	6.7	0.40	8.2	1870	1770	<0.100	0.50	0.050
NOV								
05...	7.1	0.20	11	2120	1950	<0.100	0.60	0.060
DEC								
08...	6.9	0.40	8.2	1950	1790	<0.100	0.30	0.030
JAN								
06...	26	0.40	10	1920	1880	0.400	0.60	0.030
FEB								
02...	6.5	0.30	7.6	1460	1380	0.200	1.1	0.050
MAR								
01...	7.4	0.30	5.7	1490	1410	<0.100	0.60	0.020
APR								
07...	4.4	0.40	8.2	1390	1320	0.300	0.50	0.040
MAY								
10...	6.4	0.40	5.3	1900	1750	<0.100	0.30	0.030
JUN								
14...	3.4	0.30	7.9	2050	2010	<0.100	0.20	0.030
JUL								
12...	5.4	0.40	8.8	1940	1850	<0.100	0.40	0.040
AUG								
04...	4.9	0.30	8.6	1770	1650	<0.100	0.70	0.030
SEP								
06...	5.1	0.40	7.5	1510	1410	<0.100	0.30	0.030
DATE	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ALUM- INUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01108)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD) (01028)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01029)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU) (01043)
OCT								
05...	60	4200	<1	1	<10	230	6	10
JAN								
06...	130	260	1	1	2	1	2	10
APR								
07...	--	--	<1	1	<1	20	2	20
JUL								
12...	40	7400	1	10	3	40	2	120
DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE) (01170)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB) (01052)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01053)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN) (01093)
OCT								
05...	140	23000	<5	40	140	4800	20	90
JAN								
06...	200	16000	<5	40	<10	2500	<10	120
APR								
07...	310	28000	<5	40	530	67000	10	90
JUL								
12...	90	56000	<5	10	200	4700	<10	180

## OSAGE RIVER BASIN

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06922440 HARRY S. TRUMAN RESERVOIR AT WARSAW, MO

LOCATION.-- Lat 38°15'30", long 93°23'40", in sec.7, T.40 N., R.22 W., Benton County, Hydrologic Unit 10290105, in control room near middle of dam on Osage River, and 1.5 mi northwest of Warsaw and at mile 175.

DRAINAGE AREA.--11,500 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1981 to current year. Records collected at same site since 1977 and are available from U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929.

REMARKS.--Lake is formed by a rolled earthfill type dam. Storage began on July 21, 1977. Spillway is equipped with 4 tainter gates 40 ft wide by 47.3 ft high. Capacity of surcharge pool (elevations 739.6 ft to 751.1 ft), 2,911,000 acre-ft; of flood control pool (elevations 706.0 ft to 739.6 ft, 4,006,000 acre-ft; and of multipurpose pool (elevations 635.0 ft to 706.0), 1,203,000 acre-ft. Lake is used for flood control, hydroelectric power, recreation, fish and wildlife conservation.

COOPERATION.--Records were provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 5,020,000 acre-ft, Oct. 11, 12, 1986, elevation, 738.69 ft, Oct. 11, 1986; minimum, 41,700 acre-ft, Nov. 14, 1978, elevation, 661.0 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,130,000 acre-ft, Apr. 11, elevation, 718.41 ft; minimum, 1,120,000 acre-ft, Feb. 12, elevation, 704.52 ft.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1200000	1210000	1230000	1730000	1240000	1210000	1410000	1530000	1200000	1230000	1240000	1240000
2	1210000	1210000	1240000	1710000	1210000	1190000	1580000	1470000	1210000	1230000	1240000	1230000
3	1210000	1200000	1230000	1680000	1220000	1230000	1710000	1410000	1210000	1250000	1240000	1240000
4	1210000	1200000	1230000	1640000	1220000	1270000	1820000	1350000	1210000	1260000	1240000	1240000
5	1210000	1200000	1220000	1600000	1220000	1310000	1890000	1290000	1210000	1270000	1240000	1240000
6	1200000	1210000	1220000	1550000	1220000	1340000	1930000	1260000	1210000	1270000	1240000	1230000
7	1210000	1210000	1240000	1500000	1230000	1350000	1990000	1260000	1200000	1270000	1240000	1230000
8	1210000	1210000	1220000	1450000	1200000	1360000	2030000	1260000	1190000	1270000	1230000	1220000
9	1210000	1200000	1210000	1400000	1180000	1360000	2080000	1260000	1190000	1270000	1240000	1220000
10	1220000	1200000	1200000	1350000	1150000	1360000	2120000	1260000	1190000	1270000	1240000	1220000
11	1220000	1190000	1210000	1300000	1130000	1360000	2130000	1260000	1190000	1270000	1230000	1220000
12	1220000	1190000	1220000	1240000	1120000	1370000	2110000	1250000	1190000	1270000	1230000	1210000
13	1210000	1190000	1240000	1230000	1140000	1320000	2070000	1230000	1190000	1270000	1230000	1210000
14	1210000	1200000	1210000	1220000	1150000	1290000	2000000	1210000	1190000	1270000	1240000	1210000
15	1210000	1200000	1210000	1220000	1170000	1270000	1960000	1200000	1190000	1250000	1230000	1220000
16	1220000	1210000	1200000	1240000	1180000	1240000	1920000	1190000	1190000	1250000	1220000	1220000
17	1220000	1210000	1200000	1260000	1170000	1220000	1890000	1190000	1190000	1250000	1210000	1230000
18	1220000	1220000	1210000	1250000	1160000	1200000	1950000	1190000	1190000	1260000	1220000	1250000
19	1210000	1230000	1270000	1260000	1190000	1200000	1960000	1180000	1190000	1260000	1220000	1250000
20	1210000	1230000	1360000	1250000	1230000	1210000	1960000	1180000	1180000	1260000	1220000	1250000
21	1210000	1240000	1430000	1250000	1250000	1210000	1940000	1180000	1180000	1250000	1220000	1250000
22	1210000	1250000	1480000	1240000	1260000	1210000	1920000	1180000	1190000	1240000	1220000	1230000
23	1210000	1240000	1500000	1230000	1260000	1200000	1890000	1190000	1190000	1240000	1220000	1230000
24	1210000	1220000	1530000	1220000	1250000	1190000	1870000	1190000	1200000	1240000	1230000	1230000
25	1210000	1250000	1560000	1190000	1230000	1200000	1840000	1190000	1200000	1240000	1230000	1230000
26	1210000	1270000	1590000	1180000	1220000	1200000	1800000	1200000	1190000	1240000	1230000	1240000
27	1210000	1270000	1660000	1200000	1220000	1200000	1750000	1200000	1190000	1240000	1230000	1240000
28	1210000	1260000	1710000	1210000	1220000	1220000	1700000	1200000	1190000	1240000	1230000	1240000
29	1210000	1240000	1740000	1220000	1200000	1280000	1640000	1200000	1200000	1240000	1230000	1240000
30	1210000	1230000	1750000	1230000	---	1320000	1590000	1200000	1200000	1240000	1230000	1250000
31	1210000	---	1740000	1250000	---	1360000	---	1200000	---	1240000	1240000	---
(-)	706.15	706.40	714.03	706.78	706.00	708.66	711.96	705.98	705.95	706.71	706.57	706.76
(=)	0	+20000	+510000	-490000	-50000	+160000	+230000	-390000	0	+40000	0	+10000
MAX	1220000	1270000	1750000	1730000	1260000	1370000	2130000	1530000	1210000	1270000	1240000	1250000
MIN	1200000	1190000	1200000	1180000	1120000	1190000	1410000	1180000	1180000	1230000	1210000	1210000

CAL YR 1987.....+510000

WTR YR 1988..... +40000

(-) Elevation, in feet NGVD, at end of month

(=) Change in contents, in acre-feet

## 06922450 OSAGE RIVER BELOW HARRY S. TRUMAN DAM AT WARSAW, MO

LOCATION.--Lat 38°15'41", long 93°24'16", NE 1/4 SW 1/4 sec.17, T.40 N., R.22 W., Benton County, Hydrologic Unit 10290109, on right bank 2,000 ft below Harry S. Truman Dam, and 1.5 mi northwest of Warsaw.

DRAINAGE AREA.--7,856 mi<sup>2</sup> uncontrolled area below other reservoirs.

PERIOD OF RECORD.--May 1978 to current year.

GAGE.--Acoustic flow monitor. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. Records are fair above 500 ft<sup>3</sup>/s and poor below 500 ft<sup>3</sup>/s. Records not published prior to 1982 water year due to test period of acoustic flow monitor which included periods of unreliable record. Flow completely regulated by Harry S. Truman Dam (station 06922440) 2,000 ft upstream.

COOPERATION.--Records for flows less than 500 ft<sup>3</sup>/s were provided by the U.S. Army Corps of Engineers.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3400	0	6560	29300	12700	5850	17800	33400	125	250	991	0
2	0	3210	7080	30600	16300	12200	18700	33100	109	250	250	3570
3	0	2190	8940	30200	6480	17400	17800	33700	171	250	2350	0
4	0	2440	9280	30400	2840	12500	19300	33500	125	250	250	0
5	0	0	6660	30500	10800	11700	28700	32200	125	1320	250	0
6	2030	0	8080	31200	0	9100	28700	20900	125	966	250	1910
7	1870	0	1480	31600	0	18000	30500	4500	710	250	250	2370
8	2180	0	14600	31700	17300	18200	30600	4420	45	250	2330	1880
9	0	6060	13000	31700	15000	18000	30300	5500	0	250	1320	5900
10	0	3120	11300	32100	17200	19200	30000	5740	87	250	1330	654
11	0	5490	0	31200	13800	17100	41300	5230	250	250	2620	0
12	867	4640	0	32600	8070	16300	42500	7270	250	250	1960	2360
13	1770	0	0	13400	0	14400	46100	13800	171	250	0	767
14	0	0	22300	10500	0	20700	49200	12600	171	1940	0	2490
15	0	0	6520	7530	203	18300	38800	11900	250	7840	2630	0
16	0	0	14100	1350	4720	20000	32500	5290	170	250	5470	0
17	0	0	4140	0	12400	17400	32000	8490	170	250	6350	0
18	0	911	0	9150	10800	18100	19900	2050	170	250	0	0
19	1750	2560	0	10100	9460	3880	21400	6100	170	3550	300	6830
20	2320	2480	0	14600	8620	0	29000	0	1940	4010	0	2570
21	850	0	9340	14400	12800	8040	32200	0	170	4520	522	3490
22	0	0	18800	15600	16600	9230	32300	0	170	4200	2090	10400
23	0	9450	21800	15300	16400	11500	32100	830	170	250	2900	2600
24	0	12800	21600	15000	15400	12200	32400	204	793	250	0	0
25	0	6970	22500	19600	14800	5270	32300	413	125	250	2270	0
26	2010	9720	22000	6440	14000	4410	32300	151	250	250	0	0
27	0	12600	21800	0	6820	4770	32300	205	250	250	0	0
28	0	17400	14600	0	7400	3520	33000	125	250	250	0	0
29	0	17300	20900	1420	12800	17800	33400	125	250	250	0	0
30	0	15900	25200	0	---	15200	33700	125	250	250	0	3110
31	0	---	28700	0	---	10300	---	125	---	250	0	---
MEAN	614	4508	11650	17020	9783	12600	31040	9097	585	1100	1183	1697
MAX	3400	17400	28700	32600	17300	20700	49200	33700	5710	7840	6350	10400
MIN	.00	.00	.00	.00	.00	.00	17800	.00	.00	250	.00	.00
IN.	.09	.64	1.71	2.50	1.34	1.85	4.41	1.34	.08	.16	.17	.24

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	11700	13440	16400	9563	11770	19230	21140	17520	14270	8557	3196	2784
MAX	52090	42250	36740	20340	20050	44920	32720	35940	31450	17550	9064	5800	
(WY)	1987	1987	1986	1985	1982	1985	1984	1983	1983	1982	1982	1986	
MIN	614.4	935.1	7216	4268	4961	4217	4581	9097	584.9	1100	549.6	621.4	
(WY)	1988	1983	1985	1982	1984	1986	1982	1988	1988	1988	1986	1983	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	8387	12460
HIGHEST ANNUAL MEAN		17280
LOWEST ANNUAL MEAN		8387
HIGHEST DAILY MEAN	49200	71100
LOWEST DAILY MEAN	.00	0
INSTANTANEOUS PEAK FLOW	49200	71100
INSTANTANEOUS PEAK STAGE (FEET)	*****	*****
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	14.5	21.5
10 PERCENTILE	28000	36000
50 PERCENTILE	2560	7000
95 PERCENTILE	20	1.9

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## 06923500 BENNETT, SPRING AT BENNETT SPRINGS, MO

LOCATION.--Lat 37°43'03", long 92°51'26", in NW 1/4 sec.1, T.34 N., R.18 W., Dallas County, Hydrologic Unit 10290110, on left bank 300 ft downstream from spring outlet, 1.5 mi upstream from Niangua River and at Bennett Springs.

PERIOD OF RECORD.--September 1916 to March 1920, October 1928 to September 1941, October 1965 to current year.

Prior to March 1920 and October 1939 to September 1941 monthly discharge only published in WSP 1310. Occasional discharge measurements 1923, 1964, 1965.

GAGE.--Water stage recorder. Prior to May 26, 1987, nonrecording stage. Datum of gage 864.71 ft above National Geodetic Vertical Datum of 1929. Sept. 1916 to Mar. 1920, in the vicinity, datum unknown; Oct. 17, 1928, to Apr. 11, 1934, at site 1,780 ft downstream at datum 2.30 ft lower; Apr. 12 to Dec. 13, 1934, nonrecording gage; Dec. 14, 1934, to Sept. 17, 1941, water-stage recorder at present site and datum; and Sept 18, 1941, to May 25, 1987, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: July 27 and Sept. 19-30. Records fair. Several observations of water temperature and specific conductance were made during the year. Occasional runoff from drainage area of 42.4 mi<sup>2</sup> included in records.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	115	288	438	285	248	462	210	153	181	151	131
2	118	115	265	400	333	244	1040	208	153	195	146	129
3	116	115	247	374	306	357	638	206	151	172	144	127
4	116	115	225	351	286	424	533	204	149	159	142	126
5	117	113	210	329	265	390	474	199	148	151	141	125
6	117	114	200	311	254	369	442	196	148	147	140	122
7	115	115	215	295	246	347	409	194	148	146	138	121
8	115	115	228	284	239	329	382	190	148	144	137	120
9	115	115	217	273	232	311	362	187	147	145	135	120
10	114	114	207	261	226	298	342	181	146	146	133	119
11	115	113	201	253	223	290	334	178	146	145	132	119
12	113	114	191	249	218	286	323	176	146	152	131	120
13	113	115	181	238	215	273	310	176	145	147	130	120
14	112	114	178	233	235	263	300	174	144	145	129	120
15	112	114	178	229	263	256	291	172	144	143	128	133
16	112	122	175	226	248	250	283	171	144	142	127	132
17	112	122	171	225	236	246	279	169	144	141	126	129
18	112	119	170	229	230	244	276	168	144	146	126	119
19	113	117	738	231	396	243	268	167	144	588	126	119
20	118	117	1100	233	488	243	260	166	143	414	126	119
21	116	117	673	225	421	239	256	165	142	266	125	119
22	113	117	547	217	383	235	253	169	142	229	125	118
23	113	117	472	215	346	232	249	181	142	202	177	118
24	118	1110	428	210	314	228	244	172	142	180	209	130
25	128	1120	593	202	297	225	240	166	140	166	178	128
26	128	579	716	196	284	221	235	163	140	153	158	124
27	128	468	769	191	274	217	228	161	140	153	148	122
28	123	403	738	187	262	215	223	160	139	151	141	120
29	121	355	593	185	253	718	216	159	138	157	138	120
30	119	320	526	185	---	691	213	158	142	166	135	120
31	117	---	478	187	---	532	---	156	---	159	134	---
MEAN	117	234	391	254	285	312	345	177	145	185	141	123
MAX	128	1120	1100	438	488	718	1040	210	153	588	209	133
MIN	112	113	170	185	215	215	213	156	138	141	125	118

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1987	1973	1983	1985	1985	1973	1973	1929	1935	1935	1940	1970
MEAN	133.6	152.7	165.9	157.7	182.8	228.7	252.9	236.6	189.3	143.1	124.9	117.3
MAX	577.7	507.7	435.8	295.5	446.6	712.4	504.2	487.5	704.1	262.2	192.9	224.4
(WY)	1987	1973	1983	1985	1985	1973	1973	1929	1935	1935	1940	1970
MIN	81.3	76.0	78.9	78.6	81.3	85.2	84.8	92.3	85.0	79.7	77.5	73.6
(WY)	1938	1938	1938	1940	1934	1936	1936	1934	1936	1934	1936	1937

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	225.5	169
HIGHEST ANNUAL MEAN		296.4
LOWEST ANNUAL MEAN		93.4
HIGHEST DAILY MEAN	1120	Nov 25
LOWEST DAILY MEAN	112	Oct 14-18
INSTANTANEOUS PEAK FLOW	1120	Nov 25
INSTANTANEOUS PEAK STAGE (FEET)	*****	11.1
INSTANTANEOUS LOW FLOW	112	Oct 14
ANNUAL RUNOFF (INCHES)	*****	*****
10 PERCENTILE	388	287
50 PERCENTILE	174	133
95 PERCENTILE	115	82

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## OSAGE RIVER BASIN

06923700 NIANGUA RIVER AT BENNETT SPRINGS, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat 37°44'17", long 92°51'37", in SE 1/4 SE 1/4 sec. 25, T.35 N., R.18 W., Dallas County, Hydrologic Unit 10290110, at bridge on Highway 64.

PERIOD OF RECORD.--October 1982 to current year.

REMARKS.--Samples collected in even-numbered water years only.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3 (00902)
OCT											
05...	1015	100	--	8.00	14.0	10.6	103	<10	20	220	0
NOV											
03...	0930	145	387	7.90	14.5	9.3	90	99	21	--	--
DEC											
08...	0830	1020	270	7.90	10.5	9.1	82	19	K1400	--	--
JAN											
05...	1130	800	258	7.60	5.0	11.8	89	100	34	140	18
FEB											
02...	0830	1360	220	7.90	8.0	11.3	95	<10	2100	--	--
MAR											
01...	0800	600	278	7.90	10.0	9.6	85	17	K17	--	--
APR											
05...	1015	1650	229	7.90	14.0	10.2	99	<10	330	120	13
MAY											
10...	0900	260	334	7.90	14.0	8.9	87	14	K13	--	--
JUN											
10...	1330	340	380	7.90	17.5	10.4	111	<10	120	--	--
JUL											
12...	0730	180	369	7.90	18.0	7.4	78	23	99	200	8
AUG											
02...	1030	160	341	7.80	18.0	9.2	100	<10	130	--	--
SEP											
06...	1030	135	339	7.90	14.5	9.4	92	<10	61	--	--

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT FET MG/L AS CACO3 (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT										
05...	45	25	3.0	1.4	219	4.2	7.1	4.4	0.20	210
NOV										
03...	--	--	--	--	190	4.6	--	--	--	220
DEC										
08...	--	--	--	--	158	3.8	--	--	--	153
JAN										
05...	28	16	2.9	1.8	118	5.7	14	5.6	0.10	143
FEB										
02...	--	--	--	--	152	3.7	--	--	--	173
MAR										
01...	--	--	--	--	143	3.5	--	--	--	163
APR										
05...	26	14	2.7	1.6	110	2.7	9.9	4.4	0.10	139
MAY										
10...	--	--	--	--	182	8.9	--	--	--	180
JUN										
10...	--	--	--	--	193	4.7	--	--	--	191
JUL										
12...	42	24	3.1	1.4	196	4.8	6.1	5.5	0.10	203
AUG										
02...	--	--	--	--	108	3.3	--	--	--	192
SEP										
06...	--	--	--	--	192	4.7	--	--	--	194

K--Results based on colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## OSAGE RIVER BASIN

06925500 LAKE OF THE OZARKS NEAR BAGNELL, MO

LOCATION.--Lat 38°12'19", long 92°37'21", in SE 1/4, sec.19, T.40 N., R.15 W., Miller County, Hydrologic Unit 10290111, at left end of powerhouse section near left end of Bagnell Dam on Osage River, 2 mi southwest of Bagnell, and at mile 81.7.

DRAINAGE AREA.--14,000 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1931 to current year. Gage-height records collected at same site since 1932 and are contained in reports of the National Weather Service, published as Osage River at Bagnell Dam, Lakeside.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum, adjustment of 1912. To obtain National Geodetic Vertical Datum of 1929 subtract 0.88 ft.

REMARKS.--Lake is formed by concrete gravity dam. Spillway is equipped with 12 taintor gates 34 ft wide by 22 ft high. Storage began in 1931. Usable capacity 1,218,000 acre-ft between elevations 630.00 ft (maximum draw-down) and 660.00 ft (top of gates). Dead storage, 708,800 acre-ft. Figures given herein are usable contents. Lake is used for flood control, power, and recreational purposes.

COOPERATION.--Records were provided by Union Electric Company of Missouri.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,527,000 acre-ft, May 22, 1943, elevation, 665.45 ft; minimum, 322,100 acre-ft, Feb. 13, 1948, elevation, 639.95 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,218,100 acre-ft, Dec. 20, elevation, 660.00 ft; minimum, 905,400 acre-ft, Mar. 25, elevation, 654.19 ft.

## MONTH END ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-ft)	Change in contents (acre-feet)
Sept. 30 . . . . .	659.04	1,163,000	-----
Oct. 31 . . . . .	658.52	1,133,300	-29700
Nov. 30 . . . . .	659.29	1,177,300	+44000
Dec. 31 . . . . .	659.31	1,178,400	+1100
CAL YR 1987 . . . . .	-----	-----	+22400
Jan. 31 . . . . .	658.15	1,112,800	-65600
Feb. 29 . . . . .	656.70	1,034,000	-78800
Mar. 31 . . . . .	656.22	1,008,700	-25300
Apr. 30 . . . . .	658.83	1,150,800	+142100
May 31 . . . . .	657.78	1,092,200	-58600
June 30 . . . . .	657.58	1,081,200	-11000
July 31 . . . . .	658.87	1,153,100	+71900
Aug. 31 . . . . .	658.29	1,120,500	-32600
Sept. 30 . . . . .	658.15	1,112,800	-7700
WTR YR 1988 . . . . .	-----	-----	-50200

## OSAGE RIVER BASIN

06926000 OSAGE RIVER NEAR BAGNELL, MO

LOCATION.--Lat 38°11'29", long 92°36'26", in NW 1/4 NE 1/4 SE 1/4 sec.29, T.40 N., R.15 W., Miller County, Hydrologic Unit 10290111, on center pier of U.S. Highway 54 bridge, 1.3 mi downstream from hydroelectric plant of Union Electric Company of Missouri, and at mile 80.5.

DRAINAGE AREA.--14,000 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1880 to current year. Monthly discharge only for some periods published in WSP 1310. Gage-height records collected in this vicinity 1880-1931 are contained in reports of Missouri River Commission or National Weather Service.

GAGE.--Water-stage recorder. Datum of gage is 549.13 ft above National Geodetic Vertical Datum of 1929 (levels by Missouri State Highway and Transportation Commission). Nonrecording gage from Oct. 1880 to Oct. 15, 1930 and recording gage from Oct. 15, 1930 to Sept. 30, 1979 at site 1.7 mi downstream at datum 0.56 ft lower.

REMARKS.--No estimated daily discharges. Records fair.\* Flow regulated by Lake of the Ozarks (station 06925500) 1.3 mi upstream. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximim stage prior to 1943, 43.1 ft in June 1844 (former site and datum), discharge, 164,000 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2710	723	11800	32600	8320	17800	28100	33900	917	750	2540	926
2	1200	905	10900	32500	15700	13800	31200	33600	732	744	1560	8000
3	1100	1090	13000	32600	16500	20900	32300	32300	738	735	1490	3690
4	793	804	12800	32500	14200	32300	32500	32300	732	728	2490	857
5	717	722	6620	32500	16200	26400	33100	25500	728	726	1060	817
6	2600	718	6460	32500	9460	25800	33800	23200	728	722	759	813
7	1450	727	8640	32500	1240	22800	33800	9940	723	727	1050	808
8	1740	729	15900	32400	12700	24400	33800	5090	723	1290	3700	807
9	1830	2020	15900	32400	18000	26400	33800	11800	721	772	2200	808
10	1160	2480	7680	32500	18500	24800	33700	12100	904	736	3760	817
11	731	1530	895	31900	15500	25800	33800	10900	852	2420	3320	811
12	2380	765	1190	32400	16000	22800	33800	9740	717	843	1160	8600
13	3060	1540	683	27000	2900	26300	33800	10200	708	2560	3110	2510
14	1490	1130	9040	12600	574	23100	33900	13300	707	2410	975	1820
15	730	839	14300	9940	2510	23100	34000	2520	712	1790	8140	980
16	813	821	12100	1590	8460	22100	33900	10100	715	837	8520	800
17	732	2540	9960	574	13600	20500	34000	7780	717	741	9980	806
18	727	2130	3800	10500	12900	18000	34200	7160	712	978	3760	821
19	870	1280	7860	13800	15600	12200	34100	8700	718	1370	3140	2060
20	1150	1620	29000	19700	12900	2160	34000	10400	5630	952	1240	981
21	831	1180	33000	17600	11800	8480	34000	2680	2010	744	841	798
22	979	735	32900	19000	18400	11700	34000	599	1780	736	828	6420
23	1440	6240	32800	19000	22300	11200	33900	2580	894	750	1390	2040
24	981	15800	32700	19900	32000	10000	33900	662	746	745	882	824
25	1330	33000	32800	17400	25300	15000	33900	500	737	743	835	793
26	3160	33000	32800	18500	20400	2260	33800	1100	824	744	827	790
27	1420	27700	33600	8380	19500	570	33800	947	736	741	840	2960
28	690	22500	33400	2800	8580	3390	33800	1230	715	734	845	3600
29	1180	19400	32800	4200	20800	15200	33900	1080	716	746	832	6400
30	849	19600	32700	757	---	32500	33900	791	724	746	826	7720
31	727	---	32700	587	---	24300	---	2270	---	1090	773	---
MEAN	1341	6809	18090	19780	14170	18260	33480	10480	991	1011	2377	2363
MAX	3160	33000	33600	32600	32000	32500	34200	33900	5630	2560	9980	8600
MIN	690	718	683	574	574	570	28100	500	707	722	759	790
IN.	.11	.54	1.49	1.63	1.09	1.50	2.67	.86	.08	.08	.20	.19

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	7718	8472	7693	7894	9921	13600	17130	15380	14270	8786	4884	5634
MEAN	7718	8472	7693	7894	9921	13600	17130	15380	14270	8786	4884	5634
MAX	67300	45270	41040	26750	34720	57300	81050	92260	78160	96780	38810	54540
(WY)	1987	1987	1986	1985	1949	1973	1927	1943	1935	1951	1927	1951
MIN	470.8	537.9	716.6	586.3	534.8	358.9	451.8	515.9	514.8	492.5	507.6	485.6
(WY)	1957	1957	1940	1940	1964	1931	1931	1956	1931	1931	1930	1954

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

	10740	9850
AVERAGE FLOW	10740	9850
HIGHEST ANNUAL MEAN	24640	1927
LOWEST ANNUAL MEAN	1046	1954
HIGHEST DAILY MEAN	34200	212000
LOWEST DAILY MEAN	500	220
INSTANTANEOUS PEAK FLOW	34400	220000
INSTANTANEOUS PEAK STAGE (FEET)	17.14	48.8
INSTANTANEOUS LOW FLOW	450	183
ANNUAL RUNOFF (INCHES)	10.4	9.55
10 PERCENTILE	31700	28400
50 PERCENTILE	3000	4050
95 PERCENTILE	676	443

## OSAGE RIVER BASIN

06926500 OSAGE RIVER NEAR ST. THOMAS, MO

LOCATION.--Lat 38°20'20", long 92°13'34", in SE 1/4 SW 1/4, sec.35, T.42 N., R.12 W., Cole County, Hydrologic Unit 10290111, on left bank 0.5 mi downstream from Sugar Creek, 2.5 mi south of St. Thomas, and at mile 43.1.

DRAINAGE AREA.--14,500 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--August 1931 to current year.

GAGE.--Water-stage recorder. Datum of gage is 528.06 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Feb. 6-8. 13, 14. Records fair except for periods of estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. Considerable regulation by Lake of the Ozarks (station 06925500) 38.6 mi upstream. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage prior to 1943, about 39.4 in June 1844.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	749	822	18500	33900	4440	21700	30200	35100	2310	947	1220	824
2	2720	808	10500	33700	14300	15400	35800	35000	1100	1060	2940	1030
3	1130	932	12600	33600	16400	22700	37000	33800	848	936	1830	12600
4	1040	1110	14200	33600	17400	36900	35300	33400	820	858	1610	2420
5	873	870	9880	33500	15200	30900	34800	27600	810	815	2830	1040
6	796	759	7460	33400	10000	29100	35600	24800	803	801	1400	909
7	2990	762	8310	33400	2000	24800	35600	20000	803	793	933	885
8	1290	798	14500	33200	12000	26000	35400	6430	809	771	1140	882
9	1620	827	15800	33200	17500	27400	35300	8910	791	1150	4340	886
10	1780	2050	15400	33200	18800	26300	35300	12700	784	870	2310	892
11	1160	3210	4110	32700	18600	26800	35300	13300	917	922	4840	895
12	903	1570	1170	32300	17000	25900	35300	10200	890	2630	3100	1610
13	2090	1090	1190	31500	5000	25600	35200	10900	780	1100	1710	9170
14	3620	1520	2730	16800	1200	24700	35200	12900	772	3080	2930	1900
15	1400	1290	14600	11800	1400	25900	35300	10900	778	2110	2060	1590
16	896	1110	10700	7690	2320	22400	35300	4830	776	1700	9830	1080
17	935	1040	13700	1500	14200	22100	35300	11300	777	1040	9320	857
18	854	2680	7620	3810	15000	21600	35700	8050	778	965	9590	868
19	845	2290	7740	13400	17200	16200	35900	8490	751	1190	2980	999
20	967	1470	33100	18200	20200	9840	35600	10600	807	1420	3160	1880
21	1170	1630	37100	18000	14200	3660	35500	8980	6780	1150	1230	1170
22	973	1260	35100	19100	15900	11000	35400	2570	1520	923	839	1080
23	1090	1580	34400	20100	22900	11800	35300	1110	1510	866	1170	7570
24	1430	10900	34200	20500	31500	11600	35300	2610	997	882	1350	1700
25	1080	36100	35300	17500	31800	12800	35200	909	821	911	1010	945
26	1410	35400	37900	18800	19200	13700	35200	674	809	929	874	857
27	3930	32100	40800	17700	19900	1920	35200	1110	849	913	858	844
28	1380	23500	41900	4840	11700	898	35100	1020	827	909	865	3180
29	829	20100	36200	4140	15200	19600	35100	1250	807	955	862	3690
30	1160	21600	34600	3860	---	41900	35100	1160	841	969	860	7950
31	956	---	34200	1070	---	30200	---	907	---	953	860	---
MEAN	1421	7039	20180	20970	14570	20690	35230	11660	1122	1146	2608	2407
MAX	3930	36100	41900	33900	31800	41900	37000	35100	6780	3080	9830	12600
MIN	749	759	1170	1070	1200	898	30200	674	751	771	839	824
IN.	.11	.54	1.60	1.67	1.08	1.65	2.71	.93	.09	.09	.21	.19

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	7456	8720	8037	8300	10460	14620	17010	15950	15030	9936	4710	5955
MAX	68630	45630	42600	27550	36660	60660	71820	92370	82990	103400	24850	57610
(WY)	1987	1987	1986	1985	1975	1973	1973	1943	1935	1951	1950	1951
MIN	549.8	628.1	780.9	640.3	683.6	797.6	626.5	715.1	924.2	706.3	619.6	563.7
(WY)	1961	1957	1940	1940	1964	1954	1956	1932	1956	1956	1956	1956

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	11570		10510
HIGHEST ANNUAL MEAN			24520
LOWEST ANNUAL MEAN			1237
HIGHEST DAILY MEAN	41900	Dec 28	215000
LOWEST DAILY MEAN	674	May 26	373
INSTANTANEOUS PEAK FLOW	45100	Dec 27	216000
INSTANTANEOUS PEAK STAGE (FEET)	17.44	Dec 27	43.8
INSTANTANEOUS LOW FLOW	646	May 26	346
ANNUAL RUNOFF (INCHES)	10.8		9.84
10 PERCENTILE	33900		29300
50 PERCENTILE	3310		4360
95 PERCENTILE	794		596

## OSAGE RIVER BASIN

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06926510 OSAGE RIVER BELOW ST. THOMAS, MO  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

LOCATION.--Lat 38°25'18", long 92°12'31", in NW 1/4, NW 1/4, sec.1, T.42 N., R.12 W., Cole County, Hydrologic Unit 10290111, at bridge on State Highway B, 3.8 mi north of St. Thomas, 8.6 mi downstream from gaging station, and at mile 34.5.

DRAINAGE AREA.--14,500 mi<sup>2</sup> approximately.

PERIOD OF RECORD.--October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1981.

WATER TEMPERATURE: October 1974 to September 1981.

REMARKS.--Records of discharge are given for gaging station 06926500 Osage River near St. Thomas.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 398 microsiemens, Jan. 1, 1981; minimum daily, 140 microsiemens, Sept. 3, 1981.

WATER TEMPERATURE: Maximum daily, 30.0°C, July 29, 1977, July 25, Aug. 11, 1980; minimum daily, 0.0°C, Jan. 21, 1978.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (FTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FIELD (MG/L AS CACO3) (00904)
NOV												
06...	0800	771	310	8.30	15.5	2.4	8.6	85	K4	30	150	16
JAN												
14...	1330	16800	272	8.10	2.5	2.4	13.0	92	K11	K18	140	20
MAR												
03...	0915	17900	243	7.80	3.5	19	13.5	100	540	2400	110	21
MAY												
09...	1030	9250	253	7.80	16.5	20	7.8	82	K10	120	120	27
JUL												
15...	0915	2390	244	7.90	25.5	7.5	6.4	80	K6	56	120	31
SEP												
07...	0915	890	256	7.70	20.0	2.7	6.7	75	K10	K15	130	38

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY DISSOLV FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV												
06...	40	12	6.4	2.7	134	30	5.4	0.10	2.5	180	180	0.24
JAN												
14...	38	10	5.7	3.0	116	29	6.3	0.20	4.6	162	169	0.22
MAR												
03...	30	8.7	5.8	3.0	90	28	2.1	0.20	4.3	153	138	0.21
MAY												
09...	33	8.7	4.8	2.6	92	29	4.7	0.30	4.9	145	146	0.20
JUL												
15...	34	8.7	4.9	2.6	90	28	5.1	0.20	5.2	148	145	0.20
SEP												
07...	35	9.7	5.8	4.1	90	34	5.1	0.10	4.8	154	154	0.21

K--Results based on colony count outside the acceptable range (non-ideal colony count).

## OSAGE RIVER BASIN

06926510 OSAGE RIVER BELOW ST. THOMAS, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 06...	375	<0.010	<0.100	0.020	0.020	0.40	0.030	0.030	0.020	60	125	--
JAN 14...	7350	<0.010	0.380	0.050	0.030	0.60	0.050	0.030	<0.010	23	1070	55
MAR 03...	7400	<0.010	0.500	0.010	0.050	0.40	0.030	0.030	<0.010	35	1680	69
MAY 09...	3620	<0.010	0.530	0.050	0.090	0.70	0.060	0.070	0.040	24	604	56
JUL 15...	954	<0.010	0.420	<0.010	<0.010	0.70	0.030	0.020	0.020	24	155	80
SEP 07...	370	0.010	0.180	0.020	0.020	0.40	0.040	0.040	0.030	7	17	95
DATE		ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	
NOV 06...		<10	1	61	<0.5	<1	<1	<3	2	7	<5	
JAN 14...		10	<1	54	<0.5	2	2	<3	<1	20	<5	
MAY 09...		50	1	57	<0.5	<1	<1	<3	3	41	10	
JUL 15...		20	1	55	<0.5	<1	20	<3	1	16	<5	
DATE		LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	
NOV 06...		<4	28	<0.1	<10	2	<1	<1.0	140	<6	<3	
JAN 14...		<4	27	<0.1	<10	3	2	<1.0	110	<6	3	
MAY 09...		5	50	<0.1	<10	2	<1	1.0	100	<6	31	
JUL 15...		5	22	0.2	<10	3	<1	<1.0	110	<6	12	

## GASCONADE RIVER BASIN

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06930450 BIG PINEY RIVER AT DEVIL'S ELBOW, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat 37°50'53", long 92°03'44" in SE 1/4 NE 1/4 sec.18, T.36 N., R.10 W., Pulaski County, Hydrologic Unit 10290202, at bridge on County Highway V at Devil's Elbow.

PERIOD OF RECORD.--July 1977 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)
OCT											
27...	1030	380	330	8.30	12.0	10.0	92	32	K12	190	4
NOV											
24...	0800	360	352	8.30	9.0	9.7	84	13	K10	--	--
DEC											
02...	1445	550	295	8.30	7.0	12.2	101	10	K18	--	--
JAN											
06...	1300	980	205	7.90	3.5	12.6	93	<10	1200	120	8
FEB											
01...	1130	1050	253	7.90	9.0	11.2	95	<10	1000	--	--
MAR											
03...	1315	1270	250	7.90	8.5	10.9	92	<10	64	--	--
APR											
08...	0800	1500	244	8.10	13.5	9.7	93	<10	K4	120	3
MAY											
09...	1430	467	325	8.10	19.5	10.8	121	<10	K8	--	--
JUN											
10...	0800	380	300	8.10	20.0	7.8	85	<10	K17	--	--
JUL											
11...	1045	360	314	8.20	25.0	8.6	107	21	43	170	14
AUG											
03...	1330	350	324	8.20	26.5	8.5	105	<10	43	--	--
SEP											
07...	1300	320	316	7.80	19.0	9.8	108	20	34	--	--

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT FET FIELD (MG/L AS CACO3) (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT										
27...	39	23	3.7	1.6	188	1.8	11	7.9	0.10	193
NOV										
24...	--	--	--	--	184	1.8	--	--	--	192
DEC										
02...	--	--	--	--	156	1.5	--	--	--	187
JAN										
06...	24	14	2.0	1.3	110	2.7	9.3	4.1	0.10	121
FEB										
01...	--	--	--	--	112	2.7	--	--	--	140
MAR										
03...	--	--	--	--	106	2.6	--	--	--	128
APR										
08...	24	14	2.0	1.3	115	1.8	8.3	3.3	0.10	124
MAY										
09...	--	--	--	--	149	2.3	--	--	--	150
JUN										
10...	--	--	--	--	160	2.5	--	--	--	172
JUL										
11...	35	20	3.1	1.4	156	1.9	12	4.1	0.10	168
AUG										
03...	--	--	--	--	172	2.1	--	--	--	167
SEP										
07...	--	--	--	--	188	5.8	--	--	--	169

K--Results based on colony count outside the acceptable range (non-ideal colony count).

06930450 BIG PINEY RIVER AT DEVIL'S ELBOW, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
OCT										
27...	2	0.400	0.010	0.010	--	--	<1	<1	3	1
NOV										
24...	2	0.200	0.030	0.010	--	--	--	--	--	--
DEC										
02...	10	0.500	<0.010	0.010	--	--	--	--	--	--
JAN										
06...	2	0.700	0.020	0.020	--	--	1	<1	9	2
FEB										
01...	23	0.700	0.060	0.120	--	--	--	--	--	--
MAR										
03...	11	0.400	0.030	0.030	--	--	--	--	--	--
APR										
08...	12	0.400	0.020	0.020	--	--	<1	<1	3	1
MAY										
09...	<1	0.100	<0.010	0.020	--	--	--	--	--	--
JUN										
10...	<1	0.300	<0.010	0.010	140	<10	--	--	--	--
JUL										
11...	18	1.00	<0.010	0.030	230	<10	1	<1	4	1
AUG										
03...	6	0.200	<0.010	0.030	160	<10	--	--	--	--
SEP										
07...	11	0.200	<0.010	0.020	20	<10	--	--	--	--

[illegible]

## GASCONADE RIVER BASIN

06930800 GASCONADE RIVER ABOVE JEROME, MO  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

LOCATION.--Lat 37°55'12", long 91°58'33", in NE 1/4 sec.24, T.37 N., R.10 W., Phelps County, Hydrologic Unit 10290203, at bridge on County Highway D at Jerome, 150 ft upstream from Little Piney Creek, 0.7 mi upstream from gaging station.

DRAINAGE AREA.--2,570 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1978 to September 1981.

WATER TEMPERATURE: March 1978 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 588 microsiemens, Sept. 23, 1981; minimum, 133 microsiemens, Sept. 1, 1981.

WATER TEMPERATURE: Maximum daily, 34.0°C, Aug. 11, 17, 1980; minimum, 0.0°C on many days during winter period.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (FTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FIELD (MG/L AS CACO4) (00902)	
OCT 27...	1415	655	380	8.20	12.5	1.6	10.1	94	K10	K30	190	0	
NOV 24...	1030	712	355	8.40	9.0	0.70	10.2	87	K8	96	200	0	
DEC 04...	0915	1840	281	8.10	7.0	5.0	10.8	88	94	360	160	10	
JAN 13...	1230	2060	270	8.20	2.5	2.0	14.2	101	K4	K3	140	17	
FEB 01...	1315	4270	249	8.00	8.0	39	11.9	99	680	4200	120	0	
MAR 03...	1145	4510	241	8.00	8.0	13	11.4	95	440	1100	120	0	
APR 08...	0900	6330	240	8.10	14.5	13	9.4	92	70	K40	120	3	
MAY 09...	1300	1250	311	7.90	20.5	12	9.5	109	K17	25	160	8	
JUN 10...	1000	973	320	8.10	22.0	1.5	7.0	79	21	K4	170	0	
JUL 11...	1340	803	317	8.20	25.0	3.0	7.2	90	K10	140	180	16	
AUG 03...	1240	1510	267	8.00	26.0	19	6.8	83	110	K80	130	5	
SEP 07...	1145	527	306	8.10	21.0	2.4	9.2	105	230	K7	180	27	
DATE		CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY DISSOLV FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTIT- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT 27...	38	24	3.1	1.4	196	8.0	4.7	0.10	7.8	222	206	0.30	
NOV 24...	40	24	3.2	1.4	202	6.9	10	0.10	6.3	212	213	0.29	
DEC 04...	32	19	2.6	1.9	148	22	4.5	0.20	8.7	185	184	0.25	
JAN 13...	30	17	2.3	1.6	128	8.9	5.2	0.10	8.5	148	155	0.20	
FEB 01...	24	14	2.5	1.7	118	11	6.2	0.20	6.4	130	139	0.18	
MAR 03...	24	14	2.4	1.5	122	10	5.2	0.10	5.7	136	138	0.18	
APR 08...	24	15	2.2	1.5	119	7.8	4.1	0.10	7.8	135	137	0.18	
MAY 09...	33	20	2.7	1.4	157	7.7	4.4	0.20	2.7	153	167	0.21	
JUN 10...	33	21	2.6	0.60	172	7.8	4.1	0.10	7.2	177	181	0.24	
JUL 11...	36	21	2.6	1.7	161	7.6	4.7	0.10	10	175	181	0.24	
AUG 03...	27	16	2.1	2.1	128	7.5	3.5	0.10	8.5	140	146	0.19	
SEP 07...	33	23	2.6	1.3	150	5.5	4.0	0.10	7.1	163	167	0.22	

K--Results based on colony count outside the acceptable range (non-ideal colony count).

## GASCONADE RIVER BASIN

06930800 GASCONADE RIVER ABOVE JEROME, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 27...	393	<0.010	0.250	0.020	0.030	<0.20	0.010	<0.010	<0.010	63	111	--
NOV 24...	408	<0.010	0.120	0.030	0.010	0.40	0.010	0.010	<0.010	34	66	--
DEC 04...	920	<0.010	0.890	0.020	0.030	0.30	0.030	0.010	0.010	27	136	--
JAN 13...	822	<0.010	0.990	0.010	<0.010	0.50	0.030	0.030	0.010	21	117	--
FEB 01...	1500	<0.010	0.580	0.060	0.040	0.60	<0.010	0.030	0.010	77	884	98
MAR 03...	1660	<0.010	0.470	0.030	0.030	0.60	0.060	0.030	0.020	35	430	78
APR 08...	2310	<0.010	0.610	0.030	0.020	0.20	0.040	0.020	0.020	28	487	69
MAY 09...	516	<0.010	<0.100	0.010	0.030	0.20	0.030	0.010	<0.010	7	23	33
JUN 10...	465	0.010	0.260	0.010	0.040	0.20	0.020	0.020	<0.010	--	--	--
JUL 11...	379	<0.010	0.250	<0.010	<0.010	0.50	<0.010	<0.010	0.020	15	33	52
AUG 03...	569	<0.010	0.470	0.030	0.020	0.50	0.090	0.070	0.050	79	321	61
SEP 07...	232	<0.010	<0.100	<0.010	<0.010	<0.20	0.020	0.020	<0.010	4	5.7	--

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 24...	<10	<1	49	<0.5	<1	<1	<3	1	10	<5
JAN 13...	10	<1	40	<0.5	2	<1	<3	19	10	<5
MAY 09...	<10	<1	49	<0.5	<1	<1	<3	2	7	6
JUL 11...	10	1	52	<0.5	<1	--	<3	1	<3	<5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 24...	<4	9	<0.1	<10	2	<1	<1.0	40	<6	8
JAN 13...	<4	10	<0.1	<10	<1	<1	<1.0	31	<6	4
MAY 09...	5	35	<0.1	<10	5	<1	1.0	39	<6	7
JUL 11...	<4	11	<0.1	<10	<1	<1	<1.0	41	<6	6

## 06932000 LITTLE PINEY CREEK AT NEWBURG, MO

LOCATION.--Lat 37°54'35", long 91°54'12", in SW 1/4 SE 1/4 sec.22, T.37 N., R.9 W., Phelps County, Hydrologic Unit 10290203, on left bank at downstream side of bridge on State Highway P and T at Newburg, and 2 mi upstream from Mill Creek.

DRAINAGE AREA.--200 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1928 to current year.

GAGE.--Water-stage recorder. Datum of gage is 693.40 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1951, all gages at datum 3.0 ft higher. Prior to Nov. 21, 1963, nonrecording gage at site 100 ft downstream. Nov. 21, 1963, to May 9, 1966, nonrecording gage at present site.

REMARKS.--No estimated daily discharges. Records fair. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 16.7 ft, Aug. 20, 1915, from floodmark, present datum; discharge, 30,000 ft<sup>3</sup>/s, from rating curve based on discharge measurements made in 1935 and extended above 25,000 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	66	122	333	1070	189	447	132	85	91	69	62
2	59	66	112	304	465	191	603	130	86	105	67	61
3	59	65	107	283	358	699	459	132	84	81	67	63
4	59	65	100	265	321	529	385	135	82	77	67	62
5	59	65	95	240	285	402	358	122	81	75	68	63
6	61	65	94	220	260	361	372	117	80	73	68	61
7	63	66	495	207	239	328	332	114	79	71	67	60
8	62	67	312	192	226	306	307	116	79	71	67	74
9	62	68	215	179	216	285	288	122	77	72	65	60
10	72	66	174	167	210	266	268	114	76	71	64	59
11	70	64	157	165	199	253	255	110	74	80	64	60
12	65	65	141	163	196	296	240	107	76	87	63	62
13	67	66	128	151	193	269	225	105	75	78	64	61
14	61	67	132	145	252	251	213	107	74	75	65	60
15	61	67	243	139	313	234	200	102	74	72	64	60
16	62	83	202	140	278	218	188	101	76	71	63	60
17	64	87	173	147	257	207	179	97	75	70	63	59
18	62	77	157	148	260	205	193	96	74	96	63	75
19	63	76	2050	204	807	202	180	95	73	95	64	82
20	68	74	3190	236	532	198	172	95	72	117	68	71
21	62	72	602	213	390	189	169	94	71	87	67	65
22	61	73	422	189	351	179	169	134	72	79	64	63
23	61	73	367	169	313	173	161	130	72	76	89	67
24	79	196	452	161	282	167	154	121	73	76	70	78
25	78	455	939	147	261	199	153	108	74	80	66	74
26	75	198	568	137	244	192	150	99	72	81	64	68
27	72	180	1570	133	225	197	145	96	70	74	63	66
28	67	172	862	131	215	209	140	93	70	71	64	65
29	68	153	583	129	200	982	137	90	72	72	63	65
30	67	135	488	128	---	928	134	88	79	74	62	77
31	67	---	387	250	---	586	---	86	---	71	61	---
MEAN	65.0	103	504	188	325	319	246	109	75.9	79.6	65.9	65.4
MAX	79	455	3190	333	1070	982	603	135	86	117	89	82
MIN	59	64	94	128	193	167	134	86	70	70	61	59
IN.	.37	.58	2.91	1.08	1.75	1.84	1.37	.63	.42	.46	.38	.37

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	100.1	123.0	151.2	141.9	177.2	226.9	246.6	248.2	211.6	100.2	81.4	78.3
MEAN	100.1	123.0	151.2	141.9	177.2	226.9	246.6	248.2	211.6	100.2	81.4	78.3
MAX	913.1	676.5	1300	770.1	677.9	821.9	1335	871.0	1545	524.5	492.8	363.9
(WY)	1950	1986	1983	1950	1985	1945	1945	1957	1935	1951	1946	1934
MIN	26.9	33.1	35.7	34.9	35.6	42.8	42.0	43.7	32.2	27.6	27.6	28.1
(WY)	1957	1957	1956	1956	1934	1956	1956	1932	1934	1934	1936	1954

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	178.7	159.0
HIGHEST ANNUAL MEAN		390.6
LOWEST ANNUAL MEAN		47.0
HIGHEST DAILY MEAN	3190	19600
LOWEST DAILY MEAN	59	24
INSTANTANEOUS PEAK FLOW	7160	32500
INSTANTANEOUS PEAK STAGE (FEET)	10.40	16.2
INSTANTANEOUS LOW FLOW	57	24
ANNUAL RUNOFF (INCHES)	12.1	10.8
10 PERCENTILE	332	274
50 PERCENTILE	97	83
95 PERCENTILE	61	37

## GASCONADE RIVER BASIN

06933500 GASCONADE RIVER AT JEROME, MO

LOCATION.--Lat 37°55'47", long 91°58'38", in NE 1/4 NE 1/4 SE 1/4 sec.13, T.37 N., R.10 W., Phelps County, Hydrologic Unit 10290203, on left bank at Jerome, 0.5 mi downstream from Little Piney Creek, and at mile 107.

DRAINAGE AREA.--2,840 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--April 1903 to July 1906 (published as "at Arlington") and January 1923 to current year. October to December 1922 monthly discharge only, published in WSP 1310. Gage-height records collected intermittently in the vicinity 1885-1926 and at same site since 1938 are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 172: 1904. WSP 566: Drainage area. WSP 1340: 1903-04, 1928(M).

GAGE.--Water-stage recorder. Datum of gage is 657.64 ft above National Geodetic Vertical Datum of 1929. Prior to July 26, 1904, nonrecording gage at site 0.8 mi downstream at different datum. July 26, 1904, to July 21, 1906, nonrecording gage at site 0.5 mi upstream from present site at datum about 0.85 ft higher than present gage. Jan. 3, 1923, to Sept. 29, 1928, nonrecording gage at site 400 ft downstream from present site at datum 0.14 ft lower than present datum. Sept. 30, 1928, to Jan. 17, 1939, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: June 6-27. Records good except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of January 6, 1897, reached a stage of about 29.0 ft, discharge, 120,000 ft<sup>3</sup>/s. A stage of 28.6 ft was reached on Aug. 20, 22, 1915, discharge, 114,000 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	486	714	2830	7930	4660	2730	19700	1640	1170	756	3230	679
2	487	700	2440	6360	5020	2580	12200	1590	1130	838	2010	645
3	480	683	2150	5280	4550	4860	17500	1550	1050	814	1590	628
4	464	666	1910	4580	4080	11100	20300	1520	1020	1580	1350	602
5	464	653	1690	4020	3680	15400	15300	1480	980	1640	1190	583
6	458	627	1570	3570	3340	12300	8850	1450	950	1400	1060	569
7	455	615	2490	3240	3150	8410	7330	1390	910	1230	966	598
8	452	612	6310	2950	2960	6750	6470	1370	880	1090	888	728
9	450	606	8840	2700	2790	5620	5490	1370	850	998	811	686
10	506	581	7260	2540	2640	4870	4770	1310	820	922	750	638
11	526	570	4800	2370	2570	4330	4270	1270	790	881	707	603
12	499	561	3710	2340	2430	4150	3880	1240	775	930	673	586
13	498	559	3040	2190	2350	4000	3640	1200	760	846	646	563
14	495	555	2710	2080	2470	4210	3420	1170	745	861	634	543
15	495	553	2820	1990	2920	4050	3160	1120	730	807	621	527
16	498	643	6110	1920	3250	3610	2930	1090	710	759	593	517
17	514	677	5670	1910	3310	3270	2740	1050	690	747	573	505
18	501	659	4800	1950	3150	3070	2690	1020	680	818	558	549
19	514	659	6750	2240	5470	2910	2570	989	670	906	552	666
20	552	696	24000	2590	12700	2850	2490	960	660	1080	570	685
21	539	694	35500	2910	14400	2840	2440	971	650	1270	561	647
22	525	698	34100	3220	10500	2790	2350	1150	640	3030	551	682
23	536	740	20100	3080	7520	2710	2260	1420	630	2020	725	712
24	608	1150	8820	2820	5850	2610	2160	1580	625	1670	692	762
25	673	6630	11600	2590	4770	2580	2090	1870	620	1470	1080	755
26	691	10900	23200	2400	4100	2560	2020	1750	610	1280	1240	745
27	718	12300	34900	2240	3620	2740	1930	1690	605	1120	1040	808
28	743	5890	37800	2090	3750	2720	1850	1570	596	1020	919	1100
29	739	4230	27300	1960	2970	5290	1760	1440	600	974	837	1130
30	750	3390	16900	1870	---	16200	1700	1320	644	1030	771	1090
31	733	---	10300	2010	---	23500	---	1230	---	2370	720	---
MEAN	550	1974	11690	2966	4637	5729	5675	1347	773	1199	939	684
MAX	750	12300	37800	7930	14400	23500	20300	1870	1170	3030	3230	1130
MIN	450	553	1570	1870	2350	2560	1700	960	596	747	551	505
IN.	.22	.78	4.75	1.20	1.76	2.33	2.23	.55	.30	.49	.38	.27

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	1444	2186	2497	2297	2908	3992	4511	4146	3147	1595	1237	1183
MAX	10390	10120	17740	10980	11540	13110	20450	15360	18500	10730	9244	7707
(WY)	1950	1984	1983	1950	1985	1945	1945	1943	1935	1951	1927	1905
MIN	288.6	368.4	392.2	367.7	491.2	597.0	503.8	668.1	517.5	338.7	324.0	292.7
(WY)	1957	1957	1956	1956	1964	1956	1956	1932	1934	1934	1936	1956

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	3182	2580
HIGHEST ANNUAL MEAN		6491
LOWEST ANNUAL MEAN		544.1
HIGHEST DAILY MEAN	37800	121000
LOWEST DAILY MEAN	450	259
INSTANTANEOUS PEAK FLOW	40000	136000
INSTANTANEOUS PEAK STAGE (FEET)	17.51	31.34
INSTANTANEOUS LOW FLOW	450	254
ANNUAL RUNOFF (INCHES)	15.2	12.3
10 PERCENTILE	6780	5420
50 PERCENTILE	1380	1230
95 PERCENTILE	518	434

## 06934000 GASCONADE RIVER NEAR RICH FOUNTAIN, MO

LOCATION.--Lat 38°23'20", long 91°49'15", in SE 1/4 sec. 16, T.41 N., R.8 W., Osage County, Hydrologic Unit 10290203, on downstream side of State Highway 89 bridge, 100 ft downstream from Brush Creek Slough, 800 ft upstream from Swan Creek and 4 miles east of Rich Fountain.

DRAINAGE AREA.--3,180 mi<sup>2</sup> (by U.S. Army Corps of Engineers).

PERIOD OF RECORD.--October 1921 to September 1959, October 31, 1986 to current year. From 1959 to 1986 annual peaks only.

GAGE.--Water-stage recorder. Datum of gage 553.70 ft above National Geodetic Vertical Datum of 1929. From Oct. 10, 1921, to Sept. 13, 1932, chain gage on former bridge, 50 ft downstream. Sept. 14, 1932, to Mar. 9, 1934, wire-weight gage on former bridge. Mar. 10, 1934, to Aug. 26, 1956, water-stage recorder on former bridge. Aug. 26, 1956, to May 11, 1966, gage readings were obtained by measuring from a reference point on present bridge. May 11, 1966, to Oct. 31, 1986, type A wire-weight gage on present bridge. All gages have been maintained at present datum.

REMARKS.--Estimated daily discharges: Dec. 10-15. Records fair. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	517	759	3060	9010	6710	3330	24300	1870	1340	761	2540	779
2	499	743	2610	6900	6720	3110	19800	1810	1270	863	2870	751
3	496	727	2260	5630	5870	7700	15800	1760	1210	932	2000	742
4	498	706	2000	4750	5010	10300	19700	1790	1160	870	1600	726
5	493	681	1790	4140	4370	15400	21300	1720	1110	1350	1350	713
6	491	668	1630	3720	3890	17100	13000	1670	1080	1640	1190	706
7	488	650	2100	3390	3620	11600	8590	1630	1040	1430	1080	708
8	489	647	4050	3090	3420	8360	7390	1610	1010	1260	1000	739
9	490	638	7150	2850	3240	6790	6430	1680	984	1140	983	864
10	550	631	8400	2670	3070	5800	5500	1590	958	1040	914	847
11	552	618	6000	2490	2940	5150	4880	1520	936	1020	836	816
12	576	604	4500	2380	2790	4940	4430	1480	918	1300	789	795
13	542	602	3500	2330	2710	4560	4090	1450	902	1010	774	766
14	539	612	3000	2190	3020	4510	3860	1410	884	914	742	739
15	535	600	2900	2110	3680	4550	3620	1370	867	893	715	717
16	555	669	3100	2040	3660	4190	3380	1320	852	848	701	701
17	565	712	6290	2030	3830	3820	3190	1280	851	797	672	679
18	551	726	5110	2060	3700	3570	3110	1240	817	874	650	675
19	548	704	7550	2660	6220	3360	3020	1210	799	976	631	753
20	550	675	21500	3330	10800	3250	2890	1180	779	1050	618	774
21	582	712	28100	3160	15800	3190	2800	1170	758	1130	625	769
22	593	737	35600	3430	14700	3170	2720	1300	736	1330	640	733
23	570	727	35900	3530	9570	3090	2600	1640	723	2800	1330	759
24	611	1290	18800	3270	7210	3010	2490	1910	717	2050	814	825
25	656	5350	10800	2990	5890	2980	2380	2000	702	1770	765	840
26	723	8710	20300	2750	4990	2890	2290	2120	689	1590	989	808
27	726	11200	28400	2570	4380	2930	2180	1910	678	1420	1180	796
28	726	9780	35100	2410	3940	3100	2090	1800	675	1270	1040	848
29	783	4940	36000	2280	3590	11000	2010	1680	681	1180	929	1080
30	766	3720	31200	2180	---	15600	1930	1550	688	1130	858	1160
31	795	---	16700	2920	---	21000	---	1430	---	1210	811	---
MEAN	582	2018	12750	3266	5494	6560	6726	1584	894	1221	1053	787
MAX	795	11200	36000	9010	15800	21000	24300	2120	1340	2800	2870	1160
MIN	488	600	1630	2030	2710	2890	1930	1170	675	761	618	675
IN.	.21	.71	4.63	1.18	1.86	2.38	2.36	.57	.31	.44	.38	.28

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1807	2147	2425	2607	3097	4420	5438	4891	4055	1867	1469	1213
MEAN	1807	2147	2425	2607	3097	4420	5438	4891	4055	1867	1469	1213
MAX	12060	9226	12750	12700	7637	14640	22720	17520	19810	12630	9365	3850
(WY)	1950	1952	1988	1950	1949	1945	1945	1943	1935	1951	1927	1945
MIN	288.3	394.5	402.7	374.1	558.2	620.4	530.8	717.4	646.9	384.8	334.1	295.3
(WY)	1957	1957	1956	1956	1954	1956	1956	1932	1934	1954	1936	1954

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	3578		2946
HIGHEST ANNUAL MEAN			6560
LOWEST ANNUAL MEAN			629.3
HIGHEST DAILY MEAN	36000	Dec 29	91100
LOWEST DAILY MEAN	488	Oct 7	275
INSTANTANEOUS PEAK FLOW	37400	Dec 22	134000
INSTANTANEOUS PEAK STAGE (FEET)	19.00	Dec 28	33.27
INSTANTANEOUS LOW FLOW	477	Oct 7	275
ANNUAL RUNOFF (INCHES)	15.3		12.6
10 PERCENTILE	7890		6340
50 PERCENTILE	1590		1430
95 PERCENTILE	558		468

## MISSOURI RIVER MAIN STEM

06934500 MISSOURI RIVER AT HERMANN, MO

LOCATION.--Lat 38°42'36", long 91°26'21", in SW 1/4 sec.25, T.46 N., R.5 W., Montgomery County, Hydrologic Unit 10300200, on downstream side of third pier from right abutment of bridge on State Highway 19 at Hermann. River mile 97.9.

DRAINAGE AREA.--524,200 mi<sup>2</sup>, approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1897 to current year. Prior to August 1928 monthly discharge only published in WSP 1310. Gage-height records 1873-99 collected at site 480 ft downstream are contained in reports of Missouri River Commission; since 1900 in reports of National Weather Service.

REVISED RECORDS.--WDR MO-76-1: Drainage area.

GAGE.--Water-stage recorder and nonrecording gage. Datum of gage is 481.56 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 26, 1930, nonrecording gage at site 480 ft downstream at datum 0.07 ft lower. Sept. 26, 1930, to Mar. 27, 1932, nonrecording gage, Mar. 28, 1932, to June 12, 1945, water-stage recorder, June 13, 1945, to Apr. 2, 1946, May 13 to Sept. 30, 1978, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Water-discharge records good. Discharge measurements made weekly except during period of no navigation in winter months. Some regulation from many upstream reservoirs. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1844 reached a stage of 35.5 ft, discharge, about 892,000 ft<sup>3</sup>/s, computed by U.S. Army Corps of Engineers.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62300	49800	102000	121000	64800	79300	122000	86600	53300	41000	43600	37400
2	60300	50400	96400	103000	74300	81400	123000	86700	53300	40500	45600	37000
3	61100	52800	85300	96500	80900	84500	145000	86600	52100	41200	45400	37900
4	60700	68700	78900	91100	80400	113000	161000	87300	50600	44500	44100	45200
5	58700	73000	72700	86500	78100	114000	155000	85900	50500	49500	43000	41600
6	57700	64700	63700	82500	72100	111000	142000	81200	51000	48200	43100	39400
7	56800	60200	60100	79300	64500	112000	127000	78600	50300	44100	43300	39400
8	56600	57700	62200	76700	54100	100000	113000	70300	49900	42800	43000	41000
9	55200	56400	67600	74500	51100	93200	106000	59800	49400	42200	41700	43100
10	54300	55800	70800	73700	61400	89300	103000	60400	48400	41800	44600	43900
11	53900	56400	68200	74600	63300	85800	101000	64000	47300	42400	46800	43200
12	52300	57300	57900	72900	61100	85700	101000	65200	46200	42800	47200	42700
13	51300	56100	54200	70000	57500	84000	100000	62500	45900	43600	44700	42700
14	50900	54600	53600	65300	53300	82800	98700	62600	47000	44400	41100	47700
15	52900	53900	56500	53100	48100	80900	97300	64400	47100	46200	40000	44900
16	52400	53800	64900	48700	49100	80400	96000	61000	44800	46600	39500	43800
17	51200	54500	63000	45800	52300	77900	94600	56100	43800	44600	44300	44200
18	51300	54600	64100	41700	61700	77400	96300	58900	44200	43900	45700	53300
19	52000	55800	61400	44500	72300	75300	98600	56200	43300	43600	46200	64000
20	52500	57800	103000	59400	95400	68700	98900	55900	42200	42800	42200	53900
21	52400	58300	145000	62400	103000	60000	95400	57300	42000	43400	40800	49300
22	52800	57700	161000	62200	108000	53600	92600	55600	45500	46000	39800	49800
23	52600	56900	156000	65200	106000	57900	90800	51900	43500	46900	39900	48800
24	52100	58100	149000	66700	108000	58100	89600	50700	42400	47000	42900	50600
25	51400	75100	136000	64900	113000	57700	88500	52500	42700	46600	44700	46500
26	50400	93100	125000	60300	103000	62400	88000	56900	42200	45400	43700	44700
27	50300	95800	142000	59100	90400	63500	87500	62900	41600	43300	40400	44700
28	51400	96200	180000	54700	84100	57100	87600	62400	41400	42500	38900	44600
29	50200	90600	167000	45800	75600	90200	87600	57700	41400	42100	39800	45300
30	48700	91800	153000	43400	---	145000	87100	55000	41200	41900	41200	47900
31	48900	---	141000	45400	---	135000	---	53700	---	42500	39400	---
MEAN	53730	63930	98760	67450	75410	84420	105800	64740	46150	44010	42790	45280
MAX	62300	96200	180000	121000	113000	145000	161000	87300	53300	49500	47200	64000
MIN	48700	49800	53600	41700	48100	53600	87100	50700	41200	40500	38900	37000
IN.	.12	.14	.22	.15	.16	.19	.23	.14	.10	.10	.09	.10

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1897	64990	286700	1987	15170	1940
1988	64640	152700	1988	16630	1940
1989	48240	178900	1989	12110	1938
1990	42610	129000	1990	6827	1940
1991	57750	136800	1991	12280	1940
1992	90440	267500	1992	22810	1964
1993	115800	333400	1993	36490	1956
1994	107400	231400	1994	31930	1934
1995	120900	320600	1995	38770	1934
1996	95910	445200	1996	33560	1936
1997	60340	130300	1997	18200	1936
1998	63210	208900	1998	21830	1937

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

	FOR 1988 WATER YEAR	FOR PERIOD OF RECORD
AVERAGE FLOW	66000	81567
HIGHEST ANNUAL MEAN		140500
LOWEST ANNUAL MEAN		29750
HIGHEST DAILY MEAN	180000	615000
LOWEST DAILY MEAN	37000	4200
INSTANTANEOUS PEAK FLOW	185000	676000
INSTANTANEOUS PEAK STAGE (FEET)	19.82	35.79
INSTANTANEOUS LOW FLOW	36700	4200
ANNUAL RUNOFF (INCHES)	1.71	2.11
10 PERCENTILE	102000	154000
50 PERCENTILE	56400	58800
95 PERCENTILE	41000	19800

## MISSOURI RIVER MAIN STEM

06934500 MISSOURI RIVER AT HERMANN, MO--Continued  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 1969 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to current year.

WATER TEMPERATURE: October 1974 to current year.

DISSOLVED OXYGEN: June 1984 to September 1984, April 1985 to September 1985, and April 1986 to September 1986.

INSTRUMENTATION.--Water-quality monitor June 1984 to Sept. 1984, Apr. 1985 to Sept. 1985, and Apr. 1986 to Sept. 1986.

REMARKS.--Water temperature and specific conductance samples collected daily by observer.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: (water years 1976-to current year): Maximum daily, 2,150 microsiemens, Dec. 9, 1978; minimum daily, 205 microsiemens, Apr. 16, 1979.

WATER TEMPERATURE: (water years 1976-to current year): Maximum daily, 32.5°C, July 31, 1987; minimum daily, 0.0°C on many days during winter period.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 817 microsiemens, Nov. 21; minimum daily, 420 microsiemens, Dec. 23.

WATER TEMPERATURE: Maximum daily, 29.5°C, July 21, 23, 25, 26, Aug. 1, 2, 4, 7; minimum daily, 0.0°C, Jan. 18.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (FTU) (00076)	OXYGEN, DIS- SOLVED CENT OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT										
06...	1045	57700	663	--	8.70	17.0	15	10.2	108	130
NOV										
02...	1015	50400	667	--	8.00	11.5	9.1	11.0	102	K130
DEC										
08...	1030	61400	486	--	8.00	5.5	17	14.4	117	1100
JAN										
11...	1000	74600	--	421	7.80	0.0	5.0	13.3	92	250
FEB										
02...	1130	73700	400	--	7.80	3.0	100	12.1	90	1100
MAR										
01...	0955	78000	552	--	8.00	4.0	42	11.9	92	150
APR										
05...	1135	156000	430	--	8.10	11.0	150	10.7	100	1700
MAY										
16...	1037	61700	642	--	8.10	20.0	22	8.5	95	K50
JUN										
08...	1315	50000	705	--	8.40	24.5	33	8.9	110	K170
JUL										
11...	1200	42500	750	--	8.50	26.5	26	7.3	93	K48
AUG										
02...	1137	45700	738	--	8.40	29.0	25	6.5	86	110
SEP										
12...	1100	42800	749	--	8.60	22.0	16	6.4	74	K68

## MISSOURI RIVER MAIN STEM

06934500 MISSOURI RIVER AT HERMANN, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	STREP- TOCOC FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FIELD (MG/L AS CACO3) (00904)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT WH DISSOLV FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
OCT									
06...	K20	250	57	63	22	54	5.8	191	150
NOV									
02...	K14	270	70	68	24	61	5.1	200	170
DEC									
08...	--	220	42	55	19	37	4.3	174	100
JAN									
11...	70	180	29	47	15	20	3.4	151	64
FEB									
02...	5300	170	42	44	15	27	4.5	130	73
MAR									
01...	540	200	44	53	16	36	5.4	155	88
APR									
05...	2400	160	39	42	13	24	4.1	120	72
MAY									
16...	K10	230	71	59	20	47	5.2	159	140
JUN									
08...	74	240	75	60	22	57	5.8	166	160
JUL									
11...	92	240	91	60	22	66	6.0	150	170
AUG									
02...	K56	220	64	54	21	65	5.7	158	180
SEP									
12...	K8	230	68	54	22	73	5.7	158	180

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
OCT									
06...	25	0.50	11	458	461	0.62	71400	--	--
NOV									
02...	22	0.10	11	480	486	0.65	65300	<0.010	0.930
DEC									
08...	21	0.30	11	350	357	0.48	58000	0.020	1.00
JAN									
11...	11	0.20	7.5	258	262	0.35	52000	<0.010	0.710
FEB									
02...	15	0.20	9.9	281	271	0.38	55900	<0.010	0.920
MAR									
01...	20	0.30	11	329	328	0.45	69300	0.020	1.10
APR									
05...	14	0.30	7.5	260	253	0.35	109000	<0.010	0.790
MAY									
16...	19	0.40	8.5	403	399	0.55	67200	<0.010	0.770
JUN									
08...	20	0.50	8.6	441	485	0.60	59500	<0.010	0.580
JUL									
11...	20	0.40	6.6	472	441	0.64	54100	0.010	0.230
AUG									
02...	19	0.40	7.2	460	458	0.63	56800	<0.010	0.960
SEP									
12...	20	0.40	4.8	473	473	0.64	54700	<0.010	<0.100

K--Results based on colony count outside the acceptable range (non-ideal colony count).

## MISSOURI RIVER MAIN STEM

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06934500 MISSOURI RIVER AT HERMANN, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 06...	0.010	--	0.80	0.190	0.120	--	252	39300	27
NOV 02...	0.040	0.030	0.40	0.080	0.080	0.070	22	2990	40
DEC 08...	0.030	0.030	0.30	0.130	0.060	0.100	49	8150	90
JAN 11...	0.060	0.060	0.40	0.090	0.050	0.030	6	1230	36
FEB 02...	0.140	0.120	0.60	0.120	0.060	0.050	--	--	--
MAR 01...	0.130	0.110	0.80	0.120	0.100	0.080	--	--	--
APR 05...	0.070	0.070	0.60	0.130	0.090	0.040	663	279000	79
MAY 16...	0.010	<0.010	0.40	0.090	0.080	0.050	99	16500	64
JUN 08...	0.020	<0.010	0.50	0.110	0.090	0.060	872	118000	97
JUL 11...	0.060	0.020	1.2	0.130	0.090	0.060	108	12400	62
AUG 02...	<0.010	<0.010	0.80	0.120	0.100	0.090	98	12100	81
SEP 12...	<0.010	<0.010	0.50	0.170	0.130	0.060	68	7870	72

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 02...	<10	2	110	<0.5	<1	<1	<3	3	3	<5
JAN 11...	10	<1	67	<0.5	2	<1	<3	4	15	<5
MAY 16...	10	2	96	<0.5	<1	<1	<3	10	7	<5
JUL 11...	<10	3	91	<0.5	<1	<1	<3	6	4	<5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 02...	41	3	<0.1	<10	3	2	<1.0	510	<6	5
JAN 11...	13	19	<0.1	<10	<1	<1	<1.0	230	<6	65
MAY 16...	35	4	<0.1	<10	<1	2	1.0	420	<6	13
JUL 11...	52	8	<0.1	<10	2	2	1.0	490	<6	15

## MISSOURI RIVER MAIN STEM

06934500 MISSOURI RIVER AT HERMANN, MO--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	692	790	579	555	603	563	533	620	655	750	748	774
2	700	788	567	578	613	569	554	664	707	736	732	770
3	716	789	614	538	568	546	495	656	717	736	712	764
4	715	798	622	550	578	524	501	660	731	738	713	732
5	711	797	628	538	610	524	481	649	725	733	745	724
6	731	649	660	532	637	534	505	674	749	732	748	750
7	743	655	672	528	641	537	539	681	748	692	735	760
8	741	654	679	526	644	546	554	735	745	686	733	761
9	751	724	659	564	663	538	542	740	744	706	714	762
10	750	635	682	576	617	537	521	736	747	711	717	756
11	767	748	672	574	611	549	589	736	745	718	748	758
12	775	758	709	589	647	545	597	736	751	720	751	735
13	780	778	684	599	626	576	607	749	749	715	746	747
14	784	780	676	614	680	559	609	753	748	714	744	716
15	780	784	707	607	688	576	612	716	764	714	712	709
16	777	788	700	728	703	577	614	731	765	715	706	737
17	787	781	562	699	702	604	613	730	742	699	695	740
18	787	793	543	793	581	590	614	729	742	697	693	692
19	782	792	420	779	630	609	588	735	748	690	686	685
20	783	785	434	707	641	629	593	731	752	692	687	662
21	780	817	470	689	579	652	592	731	764	694	733	655
22	781	742	480	683	555	685	615	744	763	693	734	693
23	780	761	420	670	495	650	618	742	773	691	733	700
24	783	763	428	688	505	648	619	762	774	690	735	706
25	784	762	436	677	503	647	623	764	772	685	683	707
26	784	644	436	678	507	635	622	769	772	683	680	720
27	785	626	430	673	538	634	632	769	786	684	720	721
28	774	629	432	697	565	671	635	744	788	681	725	714
29	780	633	435	748	546	464	636	738	784	700	747	699
30	786	646	440	755	---	452	627	704	783	704	748	698
31	790	---	445	755	---	527	---	692	---	708	741	---
MEAN	763	736	559	642	603	577	583	720	751	707	724	725
MAX	790	817	709	793	703	685	636	769	788	750	751	774
MIN	692	626	420	526	495	452	481	620	655	681	680	655
MED	780	762	567	670	611	569	602	735	749	704	733	722

WTR YR 1988 MEAN 674 MAX 817 MIN 420 MED 698

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.5	14.0	5.0	3.5	4.0	6.0	11.0	16.0	24.0	26.0	29.5	24.5
2	16.0	13.5	4.5	3.0	3.0	7.0	11.0	15.5	23.0	25.0	29.5	25.0
3	17.0	13.5	5.0	3.0	2.5	7.5	11.5	16.5	23.0	26.0	29.0	25.0
4	16.5	13.0	4.5	3.0	3.0	7.5	12.0	17.0	24.0	26.0	29.5	24.0
5	16.0	13.0	4.0	3.0	2.5	8.0	13.0	18.0	24.0	26.5	29.0	23.5
6	15.5	13.0	4.0	2.5	3.0	8.0	13.5	18.5	24.5	27.0	29.0	23.5
7	16.0	12.5	4.0	2.5	2.5	8.0	14.0	19.0	25.0	27.5	29.5	23.5
8	15.0	12.5	4.0	2.0	3.0	8.5	14.0	19.0	25.0	28.0	29.0	23.0
9	16.0	12.0	3.5	2.0	2.0	9.0	14.5	19.0	24.5	28.0	28.5	23.0
10	16.0	12.0	3.5	1.5	2.0	10.0	14.0	19.5	25.0	28.0	28.5	23.5
11	15.5	12.0	3.0	1.5	2.0	10.0	14.5	20.0	26.0	28.5	28.5	23.0
12	15.0	11.5	3.0	1.0	2.0	10.5	14.5	20.5	26.5	28.5	29.0	23.0
13	14.0	11.5	3.0	1.0	2.0	10.0	14.5	21.5	27.0	28.5	29.0	23.5
14	14.0	11.5	3.0	1.5	2.5	9.5	15.0	21.5	27.5	29.0	28.5	23.5
15	14.0	11.0	3.0	1.0	2.0	9.0	14.5	21.5	27.5	29.0	29.0	23.5
16	13.0	11.0	2.5	.5	2.0	9.5	15.0	21.0	28.0	29.0	28.5	23.0
17	13.0	10.5	2.5	.5	2.5	9.5	15.5	21.5	28.5	29.0	29.0	23.5
18	13.0	10.5	2.5	.0	3.0	9.0	15.5	22.0	29.0	29.0	29.0	23.0
19	12.5	10.5	2.0	1.0	3.0	8.5	15.0	22.0	29.0	29.0	28.5	23.0
20	12.0	10.0	2.5	1.0	2.5	9.0	15.0	22.5	29.0	28.5	28.5	23.5
21	12.0	10.0	3.0	1.0	2.5	9.5	15.0	22.5	29.5	28.0	28.0	23.0
22	12.5	9.5	3.0	2.0	3.0	10.0	15.0	22.5	29.0	28.0	28.0	23.0
23	12.0	9.5	4.0	2.0	3.5	10.0	15.0	21.0	29.5	28.0	29.0	22.5
24	12.5	9.0	4.5	2.5	3.5	11.0	15.0	22.0	29.0	27.5	28.5	22.0
25	12.0	9.0	4.5	2.5	3.5	11.5	15.0	21.0	29.5	27.0	27.5	22.0
26	12.5	9.0	4.0	3.0	4.0	11.5	15.5	22.0	29.5	27.0	27.0	22.5
27	12.0	9.0	4.0	3.0	4.5	12.0	15.0	22.0	29.0	27.0	26.0	22.5
28	12.5	8.5	4.0	3.0	5.0	14.0	15.0	22.0	28.5	27.0	25.5	21.5
29	13.0	8.0	4.0	3.5	6.0	12.0	16.0	22.0	27.5	28.5	24.5	21.5
30	13.0	7.5	4.0	4.0	---	12.0	16.0	23.5	26.0	29.0	24.5	21.5
31	13.0	---	4.0	5.0	---	11.0	---	24.0	---	29.0	24.5	---
MEAN	14.0	10.9	3.6	2.1	3.0	9.6	14.3	20.5	26.9	27.8	28.1	23.1
MAX	17.0	14.0	5.0	5.0	6.0	14.0	16.0	24.0	29.5	29.0	29.5	25.0
MIN	12.0	7.5	2.0	.0	2.0	6.0	11.0	15.5	23.0	25.0	24.5	21.5

WTR YR 1988 MEAN 15.4 MAX 29.5 MIN .0

## MISSISSIPPI RIVER MAIN STEM

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07010000 MISSISSIPPI RIVER AT ST. LOUIS, MO

LOCATION.--Lat 38°37'44", long 90°10'47", Hydrologic Unit 07140101, on downstream side of west pier of Eads Bridge at St. Louis, 15 mi downstream from Missouri River, 19.2 mi upstream from Meramec River, and at mile 180.0 above the Ohio River.

DRAINAGE AREA.--697,000 mi<sup>2</sup>, approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Discharge: January 1861 to current year. Monthly discharge only for some periods, published in WSP 1311.

Gage heights: March 1933 to current year in reports of Geological Survey. Since January 1861 in reports of Mississippi River commission. Since January 1890 in reports of National Weather Service.

REVISED RECORDS.--WDR MO-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 379.94 ft above National Geodetic Vertical Datum of 1929. Prior to May 5, 1934, nonrecording gage 0.4 mi downstream and May 5, 1934, to Dec. 9, 1952, water-stage recorder at site 20 ft downstream at present datum.

REMARKS.--Estimated daily discharges: June 15-16. Water-discharge records good. Natural flow of stream affected by many reservoirs and navigation dams in upper Mississippi River basin and by many reservoirs and diversions for irrigation in Missouri River basin. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 27, 1844, reached a stage of 41.32 ft, from floodmarks, discharge, 1,300,000 ft<sup>3</sup>/s, computed by U.S. Army Corps of Engineers. Flood in April 1785 may have reached a stage 42.0 ft.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120000	100000	171000	241000	196000	173000	283000	174000	89500	65100	60900	67800
2	119000	97200	183000	211000	225000	178000	274000	171000	96200	65600	62900	67200
3	102000	103000	183000	183000	219000	186000	274000	166000	100000	64200	67300	61300
4	94600	110000	166000	175000	210000	203000	288000	162000	100000	63700	62700	60800
5	101000	119000	157000	165000	204000	223000	306000	160000	93700	64500	65500	63600
6	95500	130000	155000	155000	181000	221000	311000	166000	91200	66100	65900	70400
7	92600	126000	160000	156000	167000	218000	304000	160000	84300	68100	63600	67200
8	81500	114000	156000	150000	161000	225000	288000	155000	76300	66800	60000	63000
9	97300	112000	151000	142000	163000	214000	275000	155000	87900	59800	60700	67000
10	97900	109000	146000	134000	153000	198000	267000	132000	78700	61700	60300	62500
11	91600	104000	161000	132000	159000	198000	256000	126000	77600	60400	65300	61600
12	91400	96300	167000	134000	149000	204000	251000	136000	76200	63200	72700	60300
13	90900	100000	152000	137000	144000	204000	247000	141000	72200	72400	77300	61500
14	96000	99100	151000	136000	147000	201000	243000	142000	68600	74400	78300	56100
15	99800	98100	165000	137000	152000	199000	237000	138000	70500	73800	70200	60600
16	98100	104000	160000	125000	142000	202000	234000	139000	72900	71800	67300	64200
17	101000	111000	161000	124000	144000	197000	232000	137000	76900	72800	67300	64700
18	89900	101000	158000	133000	144000	187000	230000	127000	73400	72700	69400	63100
19	87600	99500	154000	137000	160000	180000	230000	127000	71100	74100	75800	65800
20	100000	102000	181000	168000	192000	182000	229000	127000	72900	69200	74600	92500
21	117000	107000	238000	187000	214000	175000	220000	126000	68500	69900	70500	76100
22	106000	116000	278000	187000	216000	165000	211000	129000	68500	67200	64600	77800
23	106000	124000	284000	197000	231000	154000	206000	125000	68500	66700	71000	105000
24	108000	119000	274000	191000	216000	145000	197000	127000	67200	68900	66600	108000
25	108000	126000	262000	187000	217000	152000	192000	123000	68200	71700	67100	101000
26	102000	134000	248000	171000	217000	156000	187000	123000	69800	73000	73300	86600
27	97700	158000	248000	153000	202000	149000	190000	113000	68500	69500	73600	85500
28	95200	167000	314000	158000	188000	154000	186000	108000	68800	64500	83000	87200
29	99000	162000	336000	158000	180000	171000	179000	92700	67800	60600	74300	80700
30	93600	161000	298000	160000	---	249000	174000	97200	68300	62400	74200	80500
31	96000	---	267000	158000	---	302000	---	84500	---	60000	70000	---
MEAN	99230	117000	202700	160700	182500	192400	240000	135100	77140	67250	68910	72990
MAX	120000	167000	336000	241000	231000	302000	311000	174000	100000	74400	83000	108000
MIN	81500	96300	146000	124000	142000	145000	174000	84500	67200	59800	60000	56100
IN.	.16	.19	.34	.27	.28	.32	.38	.22	.12	.11	.11	.12

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	139000	140300	118500	111700	141500	229800	305600	276500	257200	208700	131300	130500
MAX	575300	359200	452400	307800	301400	521800	692500	584500	600600	653300	242000	306200
(WY)	1987	1986	1983	1973	1974	1973	1973	1973	1947	1951	1981	1951
MIN	44170	47920	42130	31340	41900	74550	110100	79500	70260	67130	43510	54640
(WY)	1940	1940	1938	1940	1940	1964	1934	1934	1934	1936	1936	1939

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	134500	180400
HIGHEST ANNUAL MEAN		331900
LOWEST ANNUAL MEAN		67700
HIGHEST DAILY MEAN	336000	851000
LOWEST DAILY MEAN	56100	27800
INSTANTANEOUS PEAK FLOW	344000	1019000
INSTANTANEOUS PEAK STAGE (FEET)	22.38	43.23
INSTANTANEOUS LOW FLOW	53800	18000
ANNUAL RUNOFF (INCHES)	2.62	3.51
10 PERCENTILE	226000	355000
50 PERCENTILE	125000	148000
95 PERCENTILE	62700	56400

## MISSISSIPPI RIVER MAIN STEM

07010000 MISSISSIPPI RIVER AT ST. LOUIS, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.76	3.20	9.19	15.60	10.62	9.77	17.76	10.42	3.21	-.15	-.72	-.30
2	5.51	2.66	10.35	13.07	13.43	10.34	16.99	10.40	3.12	-.08	-.74	.29
3	4.26	3.43	10.65	10.26	13.38	10.46	17.01	9.86	4.05	-.39	.57	-.98
4	3.19	3.98	9.28	9.49	12.38	12.18	17.68	9.86	4.01	-.41	-1.06	-1.19
5	3.51	4.66	8.41	9.21	12.13	14.00	18.73	9.41	3.65	-.51	-.16	-1.07
6	2.95	5.59	7.92	7.89	10.28	14.07	19.20	10.00	3.48	-.04	-.34	.50
7	3.03	5.66	8.61	7.99	8.90	13.61	18.93	9.58	2.47	-.27	-.33	.0
8	.88	4.68	8.31	7.61	8.38	14.20	18.18	9.03	1.35	-.37	-1.16	-1.28
9	2.59	4.30	7.81	6.67	8.80	13.59	17.32	9.23	3.12	-1.12	-1.09	-.19
10	3.30	4.11	6.92	6.12	7.69	12.22	17.06	7.23	1.81	-.75	-1.04	-.77
11	2.35	3.86	8.47	5.82	8.19	11.94	16.34	6.31	1.97	-1.10	-.43	-.82
12	2.24	2.78	9.21	6.01	7.41	12.36	15.96	6.98	1.66	-.51	.59	-1.10
13	2.33	3.25	7.86	6.33	7.15	12.43	15.80	7.84	.55	.21	1.40	-.78
14	2.65	3.33	7.66	6.18	7.15	12.26	15.47	8.10	.55	.68	1.76	-1.52
15	2.74	2.96	8.97	6.30	7.86	11.94	15.13	7.47	.45	.94	.72	-1.18
16	2.97	3.38	8.40	5.67	6.83	12.19	14.99	7.79	.96	.03	.03	-.66
17	3.18	4.51	8.40	4.98	6.94	11.84	14.84	7.59	1.39	.66	.19	-.25
18	2.22	3.40	8.34	5.51	6.87	11.07	14.77	6.69	1.15	.51	.22	-.65
19	1.81	3.26	7.84	6.31	7.73	10.29	14.78	6.62	.67	.80	1.22	-1.39
20	2.07	3.34	9.91	8.12	10.37	10.38	14.80	6.77	.95	-.04	1.05	3.42
21	4.90	3.91	14.35	10.57	12.61	10.02	14.13	6.64	.33	.29	.79	.94
22	3.71	4.69	17.44	10.04	12.78	9.23	13.41	6.80	.27	-.14	-.37	1.13
23	3.60	5.49	18.49	11.59	14.17	8.21	13.22	6.27	-.43	-.01	.67	3.35
24	3.77	5.05	17.80	10.87	13.07	7.27	12.32	6.84	.07	.51	.25	4.54
25	4.11	5.70	17.25	10.29	13.11	7.64	11.87	6.15	.48	.26	-.28	3.78
26	3.31	5.95	16.50	9.72	13.23	8.42	11.48	6.26	.68	.86	.90	2.05
27	2.98	8.08	15.96	7.50	12.36	7.75	11.66	5.23	.32	.70	.87	2.16
28	2.61	9.12	19.90	8.04	10.88	8.05	11.32	5.15	.68	.03	1.99	1.92
29	3.11	8.73	22.35	8.08	10.39	8.59	11.05	2.83	.40	-.53	.89	1.44
30	2.49	8.72	20.20	8.62	---	14.18	10.54	3.88	.52	.24	1.17	1.44
31	2.75	---	18.00	7.82	---	18.75	---	2.43	---	-.26	.04	---

WATER-QUALITY RECORDS

SEDIMENT RECORDS: April 1948 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT LOADS: Maximum daily, 9,830,000 tons, Feb. 24, 1985; minimum daily, 2,800 tons, Jan. 21, 1967.

SEDIMENT LOADS: Maximum daily, 525,000 tons, Apr. 6; minimum daily, 6,520 tons, Sept. 30.

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## MISSISSIPPI RIVER MAIN STEM

07010000 MISSISSIPPI RIVER AT ST. LOUIS, MO--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM (70346)
FEB 22...	1400	218000	24	28	35	45	58	61	93	100	--
APR 06...	0950	311000	26	30	36	47	74	77	94	99	100

## SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN * DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	120000	120	38900	100000	62	16600	171000	334	154000
2	119000	118	37900	97200	66	17300	183000	348	172000
3	102000	116	32000	103000	70	19600	183000	363	179000
4	94600	114	29200	110000	75	22200	166000	349	156000
5	101000	112	30600	119000	79	25400	157000	334	142000
6	95500	110	28500	130000	83	29200	155000	320	134000
7	92600	108	27100	126000	88	29800	160000	305	132000
8	81500	107	23500	114000	92	28300	156000	291	122000
9	97300	105	27500	112000	96	29100	151000	276	113000
10	97900	103	27200	109000	101	29600	146000	262	103000
11	91600	101	24900	104000	105	29500	161000	247	107000
12	91400	99	24400	96300	109	28400	167000	233	105000
13	90900	97	23800	100000	114	30700	152000	218	89600
14	96000	94	24500	99100	118	31600	151000	204	83100
15	99800	92	24700	98100	122	32400	165000	189	84400
16	98100	89	23600	104000	127	35600	160000	175	75600
17	101000	87	23600	111000	131	39300	161000	160	69800
18	89900	84	20400	101000	145	39700	158000	146	62300
19	87600	81	19300	99500	160	43000	154000	181	75300
20	100000	79	21300	102000	174	48100	181000	216	106000
21	117000	76	24100	107000	189	54600	238000	251	161000
22	106000	74	21100	116000	203	63700	278000	286	215000
23	106000	71	20400	124000	218	73000	284000	321	246000
24	108000	69	20000	119000	232	74700	274000	356	263000
25	108000	66	19200	126000	247	84000	262000	391	277000
26	102000	63	17400	134000	261	94600	248000	426	285000
27	97700	61	16000	158000	276	118000	248000	461	309000
28	95200	58	15000	167000	290	131000	314000	496	421000
29	99000	56	14900	162000	305	133000	336000	531	482000
30	93600	53	13400	161000	319	139000	298000	566	455000
31	96000	57	14900	---	---	---	267000	565	407000
TOTAL	3076200	---	729300	3509200	---	1571000	6285000	---	5786100

## MISSISSIPPI RIVER MAIN STEM

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07010000 MISSISSIPPI RIVER AT ST. LOUIS, MO--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JANUARY			FEBRUARY			MARCH			
1	241000	564	367000	196000	527	279000	173000	315	147000
2	211000	562	320000	225000	521	316000	178000	304	146000
3	183000	561	277000	219000	515	304000	186000	294	148000
4	175000	560	265000	210000	509	288000	203000	283	155000
5	165000	559	249000	204000	503	277000	223000	273	164000
6	155000	558	233000	181000	497	243000	221000	262	157000
7	156000	557	234000	167000	490	221000	218000	252	148000
8	150000	555	225000	161000	484	211000	225000	248	151000
9	142000	554	212000	163000	478	210000	214000	244	141000
10	134000	553	200000	153000	472	195000	198000	240	128000
11	132000	552	197000	159000	466	200000	198000	235	126000
12	134000	551	199000	149000	460	185000	204000	231	127000
13	137000	549	203000	144000	454	176000	204000	227	125000
14	136000	548	201000	147000	448	178000	201000	223	121000
15	137000	547	202000	152000	442	181000	199000	219	118000
16	125000	546	184000	142000	436	167000	202000	215	117000
17	124000	545	182000	144000	429	167000	197000	211	112000
18	133000	544	195000	144000	423	165000	187000	206	104000
19	137000	542	201000	160000	417	180000	180000	202	98300
20	168000	541	245000	192000	411	213000	182000	198	97400
21	187000	540	273000	214000	405	234000	175000	194	91700
22	187000	539	272000	216000	399	233000	165000	210	93500
23	197000	538	286000	231000	388	242000	154000	226	93900
24	191000	536	277000	216000	378	220000	145000	242	94600
25	187000	535	270000	217000	367	215000	152000	257	106000
26	171000	534	247000	217000	353	202000	156000	273	115000
27	153000	533	220000	202000	346	189000	149000	289	116000
28	158000	532	227000	188000	336	171000	154000	305	127000
29	158000	531	226000	180000	325	158000	171000	321	148000
30	160000	529	229000	---	---	---	249000	337	226000
31	158000	528	225000	---	---	---	302000	353	287000
TOTAL	4982000	---	7343000	5293000	---	6220000	5965000	---	4129400
APRIL			MAY			JUNE			
1	283000	368	282000	174000	146	68800	89500	127	30600
2	274000	384	284000	171000	140	64600	96200	128	33400
3	274000	400	296000	166000	133	59800	100000	130	35100
4	288000	416	323000	162000	127	55500	100000	132	35600
5	306000	520	430000	160000	120	52100	93700	133	33700
6	311000	625	525000	166000	114	51100	91200	135	33200
7	304000	592	486000	160000	107	46400	84300	140	31900
8	288000	559	435000	155000	101	42300	76300	146	30000
9	275000	526	391000	155000	94	39500	87900	151	35800
10	267000	494	356000	132000	88	31400	78700	156	33200
11	256000	461	319000	126000	90	30600	77600	161	33800
12	251000	428	290000	136000	92	33700	76200	167	34300
13	247000	395	264000	141000	94	35700	72200	172	33500
14	243000	362	238000	142000	96	36700	68600	177	32800
15	237000	329	211000	138000	97	36300	70500	183	34800
16	234000	297	187000	139000	99	37300	72900	188	37000
17	232000	264	165000	137000	101	37500	76900	193	40100
18	230000	231	143000	127000	103	35400	73400	198	39300
19	230000	224	139000	127000	105	36000	71100	204	39100
20	229000	218	135000	127000	107	36700	72900	209	41100
21	220000	211	126000	126000	109	37000	68500	191	35300
22	211000	205	117000	129000	110	38400	68500	173	32000
23	206000	198	110000	125000	112	37800	68500	155	28700
24	197000	192	102000	127000	114	38900	67200	137	24900
25	192000	185	96200	123000	115	38300	68200	120	22000
26	187000	179	90400	123000	117	38800	69800	102	19200
27	190000	172	88500	113000	119	36200	68500	84	15500
28	186000	166	83400	108000	120	35000	68800	66	12200
29	179000	159	77100	92700	122	30500	67800	48	8790
30	174000	153	71900	97200	123	32400	68300	49	9120
31	---	---	---	84500	125	28500	---	---	---
TOTAL	7201000	---	6861500	4189400	---	1259200	2314200	---	906010

## MISSISSIPPI RIVER MAIN STEM

07010000 MISSISSIPPI RIVER AT ST. LOUIS, MO--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	JULY			AUGUST			SEPTEMBER		
1	65100	51	8940	60900	81	13300	67800	48	8870
2	65600	52	9260	62900	80	13700	67200	49	8830
3	64200	54	9310	67300	80	14500	61300	49	8100
4	63700	55	9480	62700	79	13400	60800	49	8070
5	64500	57	9850	65500	79	13900	63600	49	8480
6	66100	58	10400	65900	78	13900	70400	50	9430
7	68100	59	10900	63600	78	13300	67200	50	9040
8	66800	61	11000	60000	77	12500	63000	50	8520
9	59800	62	10100	60700	74	12100	67000	50	9100
10	61700	64	10600	60300	71	11600	62500	51	8530
11	60400	65	10600	65300	68	12000	61600	51	8440
12	63200	67	11400	72700	65	12800	60300	51	8300
13	72400	68	13300	77300	62	12900	61500	52	8630
14	74400	69	13900	78300	59	12500	56100	53	8030
15	73800	71	14100	70200	56	10600	60600	54	8840
16	71800	72	14000	67300	55	10100	64200	55	9530
17	72800	74	14500	67300	55	9980	64700	56	9780
18	72700	75	14700	69400	54	10200	63100	57	9710
19	74100	78	15600	75800	54	11000	65800	58	10300
20	69200	81	15100	74600	53	10700	92500	55	13700
21	69900	84	15800	70500	53	10100	76100	52	10600
22	67200	87	15700	64600	52	9120	77800	49	10200
23	66700	90	16100	71000	52	9920	105000	45	12900
24	68900	92	17200	66600	51	9210	108000	42	12300
25	71700	95	18500	67100	51	9180	101000	39	10700
26	73000	98	19400	73300	50	9920	86600	36	8420
27	69500	101	19000	73600	50	9860	85500	34	7960
28	64500	104	18100	83000	49	11000	87200	33	7770
29	60600	107	17500	74300	49	9740	80700	31	6860
30	62400	98	16600	74200	48	9620	80500	30	6520
31	60000	90	14500	70000	48	9120	---	---	---
TOTAL	2084800	---	425440	2136200	---	351770	2189600	---	276460
YEAR	49225600		35865406						

## MERAMEC RIVER BASIN

175

07013000 MERAMEC RIVER NEAR STEELVILLE, MO

LOCATION.--Lat 37°59'58", long 91°21'39", in NE ¼ sec.21, T.38 N., R.4 W., Crawford County, Hydrologic Unit 07140102, on left bank 20 ft downstream from railroad bridge, 400 ft upstream from highway bridge, 0.8 mi upstream from Whittenburg Creek, 1.5 mi north of Steelville, and at mile 149.4.

DRAINAGE AREA.--781 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1922 to current year. Prior to January 1923 monthly discharges only, published in WSP 1311. Gage-height records for 1916-33 at site 1 mi upstream in reports of National Weather Service.

REVISED RECORDS.--WSP 897: 1939. WSP 1007: Drainage Area.

GAGE.--Water-stage recorder. Datum of gage is 681.68 ft above National Geodetic Vertical Datum of 1929. Prior to May 24, 1934, and July 20, 1966, to July 20, 1967, nonrecording gage, and May 24, 1934, to Oct. 10, 1942, water-stage recorder at site 400 ft downstream at present datum. July 21, 1967, to Feb. 13, 1973, at site 1,900 ft downstream and at datum 2.0 ft lower.

REMARKS.--Estimated daily discharges: Dec. 8 to Jan. 4. Records good except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of August 20, 1915, reached a stage of 26.5 ft, discharge, 60,000 ft<sup>3</sup>/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	161	191	530	1300	2940	555	1930	329	225	187	177	150
2	163	188	447	1100	3930	528	1920	322	218	252	174	149
3	158	185	390	950	2280	1310	2240	320	215	369	171	154
4	157	183	341	828	1620	3000	1610	338	207	240	171	154
5	159	180	307	734	1320	1940	1290	363	209	206	175	152
6	159	177	285	651	1070	1410	1250	358	210	193	168	152
7	161	177	844	605	914	1190	1210	335	204	184	165	152
8	158	175	3500	551	817	1030	1030	326	202	181	163	152
9	159	175	1500	534	754	929	920	336	196	179	161	152
10	164	175	1000	484	710	852	817	473	192	174	161	151
11	166	174	800	473	681	785	744	419	189	199	160	150
12	166	175	700	457	580	880	691	373	187	185	161	153
13	173	176	650	425	554	987	638	344	185	212	160	150
14	170	175	600	401	559	879	596	324	181	209	160	150
15	167	175	4500	385	956	776	555	305	182	195	161	152
16	168	186	3000	376	933	696	518	293	185	186	160	154
17	168	193	1500	386	849	636	494	280	182	181	156	152
18	167	211	1200	404	785	606	512	268	180	186	155	156
19	175	215	3000	478	2500	589	535	260	180	220	155	178
20	178	201	8500	955	4430	571	516	255	179	283	156	292
21	172	199	6000	1060	2410	538	486	248	177	351	155	298
22	175	195	3000	841	1630	509	474	264	176	259	155	228
23	177	191	2000	711	1280	480	447	296	176	225	166	205
24	199	202	1700	633	1050	460	417	361	171	210	167	202
25	250	1030	5000	566	895	497	404	360	172	195	172	214
26	240	1360	7500	492	791	600	388	325	171	190	161	224
27	230	845	8000	446	723	577	373	290	168	191	155	208
28	225	817	5000	422	657	541	356	268	168	187	154	192
29	222	835	2500	412	603	872	348	254	168	181	152	184
30	207	653	1800	403	---	6530	336	241	176	181	150	186
31	199	---	1500	416	---	3290	---	234	---	177	151	---
MEAN	180	334	2503	609	1352	1130	801	315	188	212	162	178
MAX	250	1360	8500	1300	4430	6530	2240	473	225	369	177	298
MIN	157	174	285	376	554	460	336	234	168	174	150	149
IN.	.27	.48	3.70	.90	1.87	1.67	1.15	.46	.27	.31	.24	.25

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	290.8	466.0	582.2	546.1	654.0	875.7	1033	934.7	755.8	349.6	258.6	256.4
MAX	2562	2684	4712	3155	2397	2842	4305	3665	4644	3287	1181	1755	
(WY)	1950	1986	1983	1950	1985	1945	1927	1957	1935	1951	1982	1934	
MIN	85.2	117.6	115.8	113.7	126.0	140.7	138.2	130.9	133.9	92.9	104.5	82.2	
(WY)	1957	1965	1965	1956	1934	1954	1954	1977	1932	1934	1936	1956	

## SUMMARY STATISTICS

FOR 1988 WATER YEAR

FOR PERIOD OF RECORD

AVERAGE FLOW	663.1	582.5
HIGHEST ANNUAL MEAN		1473
LOWEST ANNUAL MEAN		177.2
HIGHEST DAILY MEAN	8500	Dec 20
LOWEST DAILY MEAN	149	Sep 2
INSTANTANEOUS PEAK FLOW	9180	Dec 20
INSTANTANEOUS PEAK STAGE (FEET)	10.70	Dec 20
INSTANTANEOUS LOW FLOW	149	Sep 1
ANNUAL RUNOFF (INCHES)	11.5	10.1
10 PERCENTILE	1370	1070
50 PERCENTILE	280	261
95 PERCENTILE	155	116

## MERAMEC RIVER BASIN

07013000 MERAMEC RIVER NEAR STEELVILLE, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.00	2.14	2.85	---	5.26	2.77	4.43	2.39	2.14	1.99	1.94	1.84
2	2.09	2.13	2.70	---	6.82	2.72	4.03	2.37	2.12	2.08	1.94	1.83
3	2.05	2.11	2.60	---	4.80	2.86	4.65	2.35	2.11	2.48	1.92	1.87
4	2.04	2.10	2.50	---	4.08	5.43	4.11	2.40	2.09	2.18	1.91	1.86
5	2.04	2.09	2.43	3.12	3.76	4.47	3.73	2.42	2.09	2.09	1.98	1.85
6	2.04	2.08	2.38	3.00	3.49	3.88	3.59	2.44	2.10	2.04	1.92	1.84
7	2.07	2.08	2.47	2.93	3.28	3.61	3.64	2.40	2.08	2.00	1.90	1.84
8	2.02	2.07	---	2.84	3.15	3.43	3.45	2.36	2.07	1.98	1.89	1.83
9	2.03	2.07	---	2.79	3.06	3.29	3.29	2.39	2.06	1.97	1.88	1.83
10	2.06	2.07	---	2.72	2.99	3.19	3.15	2.67	2.04	1.96	1.88	1.83
11	2.08	2.07	---	2.68	2.95	3.10	3.05	2.55	2.03	2.00	1.88	1.82
12	2.07	2.06	---	2.66	---	3.12	2.97	2.46	2.02	1.99	1.88	1.84
13	2.11	2.07	---	2.61	2.75	3.37	2.89	2.40	2.02	2.10	1.88	1.82
14	2.09	2.07	---	2.56	2.75	3.24	2.83	2.36	2.00	2.07	1.87	1.82
15	2.08	2.07	---	2.52	3.42	3.09	2.77	2.33	2.00	2.03	1.89	1.82
16	2.07	2.11	---	2.51	3.29	2.98	2.71	2.30	2.01	1.99	1.89	1.83
17	2.08	2.14	---	2.51	3.19	2.89	2.67	2.28	2.00	1.96	1.87	1.82
18	2.07	2.20	---	2.55	3.08	2.84	2.70	2.25	2.00	1.96	1.85	1.82
19	2.09	2.21	---	2.67	3.62	2.82	2.71	2.23	1.99	2.04	1.86	1.93
20	2.11	---	---	3.22	7.77	2.79	2.71	2.22	1.99	2.16	1.87	2.27
21	2.08	2.16	---	3.57	4.95	2.74	2.65	2.20	1.98	2.39	1.86	2.30
22	2.08	2.15	---	3.29	4.12	2.70	2.64	2.22	1.97	2.19	1.86	2.14
23	2.09	2.14	---	3.08	3.74	2.65	2.61	2.26	1.99	2.11	1.95	2.05
24	2.14	2.12	---	2.97	3.45	2.62	2.55	2.41	1.96	2.10	1.93	2.04
25	2.21	2.47	---	2.87	3.26	2.65	2.53	2.41	1.96	2.02	1.99	2.05
26	2.29	4.09	---	2.74	3.11	2.85	2.50	2.36	1.97	1.99	1.92	2.10
27	2.27	3.34	---	2.65	3.02	2.81	2.48	2.28	1.95	1.97	1.88	2.05
28	2.24	3.24	---	2.60	2.92	2.74	2.44	2.24	1.94	1.98	1.87	2.00
29	2.24	3.35	---	2.58	2.85	2.75	2.42	2.21	1.94	1.94	1.86	1.97
30	2.19	3.05	---	2.56	---	8.94	2.40	2.18	1.96	1.96	1.85	1.94
31	2.17	---	---	2.54	---	5.84	---	2.16	---	1.94	1.85	---

## MERAMEC RIVER BASIN

07013050 CROOKED CREEK NEAR DILLARD, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat 37°42'42", long. 91°11'48", in NW 1/4 sec.31, T.35 N., R.2 W., Crawford County, Hydrologic Unit 07140102, at bridge on county road.

PERIOD OF RECORD.--October 1982 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)
OCT												
16...	1200	4.0	589	8.10	14.0	11.7	114	--	--	2	<1	4
NOV												
10...	1200	3.7	592	7.90	11.5	10.3	94	--	--	2	1	<1
DEC												
02...	1145	9.1	394	8.10	7.5	12.1	101	--	--	1	<1	<1
JAN												
06...	1030	5.0	277	7.70	2.5	13.3	96	--	--	1	<1	<1
FEB												
03...	1445	34	224	7.70	5.5	12.4	97	--	--	2	<1	2
MAR												
02...	1435	10	345	8.20	8.0	11.8	99	--	--	1	1	<1
APR												
06...	1430	22	281	8.20	15.0	9.7	97	--	--	<1	<1	<1
MAY												
11...	1450	5.9	443	7.50	19.5	8.8	99	--	--	1	2	<1
JUN												
08...	1130	3.4	461	7.80	21.5	6.1	70	20	<10	3	<1	<1
JUL												
13...	1500	3.6	430	7.90	24.5	6.4	79	<10	20	1	2	1
AUG												
03...	1030	1.8	522	7.80	25.5	5.8	71	10	30	1	1	2
SEP												
09...	1405	2.0	509	7.60	20.5	7.7	88	<10	<10	2	3	2

DATE	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
OCT											
16...	1	4	2	<10	5	<5	<5	<1	<1	10	12
NOV											
10...	1	2	1	<10	7	<5	<5	<1	3	<10	7
DEC											
02...	<1	4	2	20	5	<5	<5	1	<1	<10	9
JAN											
06...	2	3	1	40	11	<5	<5	<1	1	<10	9
FEB											
03...	<1	<1	3	70	16	<5	<5	2	<1	<10	4
MAR											
02...	<1	5	2	10	<3	<5	<5	6	<1	<10	4
APR											
06...	<1	3	2	60	14	<5	<5	3	2	20	10
MAY											
11...	1	3	5	20	11	<5	9	5	3	10	16
JUN											
08...	<1	2	1	60	<3	<5	<5	3	2	<10	14
JUL											
13...	3	2	4	20	12	<5	7	6	6	<10	14
AUG											
03...	2	2	1	80	6	<5	<5	<1	4	<10	13
SEP											
09...	<1	9	3	20	4	<5	<5	4	1	30	4

## MERAMEC RIVER BASIN

07014500 MERAMEC RIVER NEAR SULLIVAN, MO

LOCATION.--Lat 38°09'30", long 91°06'30", in SE ¼ NE ¼ sec.35, T.40 N., R.2 W., Crawford County, Hydrologic Unit 07140102, on right bank at upstream side of Sappington Bridge, 3.8 mi downstream from Brazil Creek, 4.0 mi southeast of Sullivan, and at mile 117.0.

DRAINAGE AREA.--1,475 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1921 to September 1933, October 1943 to current year. Monthly discharge only for October 1943, published in WSP 1311.

REVISED RECORDS.--WSP 1007: 1922, (M), 1924-30, 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 581.82 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 21, 1952, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Water-discharge records fair. Water diverted from river 0.5 mi above gage by mining company. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of August 1915 reached a stage of 33.5 ft, from information by local residents, discharge, 90,000 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	310	396	1070	2650	5510	1180	4220	806	549	415	360	281
2	320	384	905	2210	8940	1120	3290	794	540	451	349	281
3	309	371	789	1910	5200	1970	3580	789	529	606	334	279
4	298	364	703	1700	3280	4620	3160	940	509	633	328	291
5	295	356	637	1530	2590	4050	2560	918	495	522	324	304
6	295	343	596	1380	2130	3080	2370	888	489	464	331	296
7	292	342	1180	1310	1820	2590	2430	838	481	424	328	283
8	289	348	4960	1260	1640	2250	2160	807	481	398	319	277
9	290	351	4270	1230	1500	2050	1930	824	479	380	308	272
10	319	345	2240	1220	1400	1880	1750	868	467	373	304	270
11	339	343	1640	1100	1310	1720	1610	902	453	410	298	270
12	336	341	1310	956	1230	1820	1510	830	445	536	292	270
13	341	337	1080	918	1180	2010	1410	786	434	539	294	270
14	349	339	996	870	1140	1870	1310	756	421	520	295	270
15	341	335	4510	838	1400	1680	1240	734	412	479	292	264
16	335	376	7280	818	1700	1510	1170	711	419	438	295	261
17	336	421	3400	835	1580	1370	1120	687	410	403	287	258
18	328	472	2190	893	1470	1290	1230	667	422	398	280	265
19	328	499	3230	1140	2940	1230	1310	652	412	409	280	356
20	348	474	14200	2280	7460	1190	1240	641	402	517	282	530
21	347	438	18100	2450	5170	1130	1170	625	385	648	294	603
22	341	417	7650	1970	3360	1070	1120	644	378	652	300	543
23	343	400	3500	1640	2820	1020	1070	669	370	561	347	476
24	384	420	2840	1440	2280	972	1030	728	368	496	371	468
25	464	796	6890	1280	1940	1020	984	743	367	464	361	476
26	532	2460	15900	1130	1710	1210	944	708	366	431	351	505
27	518	1730	16100	1020	1550	1290	910	666	355	404	324	487
28	484	1460	14900	956	1400	1200	877	634	346	396	320	441
29	469	1490	10300	911	1280	2520	849	613	369	379	307	403
30	448	1320	4600	879	---	11100	824	593	385	377	295	391
31	418	---	3300	1060	---	9650	---	568	---	368	289	---
MEAN	360	616	5202	1348	2653	2344	1679	743	431	467	314	355
MAX	532	2460	18100	2650	8940	11100	4220	940	549	652	371	603
MIN	289	335	596	818	1140	972	824	568	346	368	280	258
IN.	.28	.47	4.07	1.05	1.94	1.83	1.27	.58	.33	.37	.25	.27

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	603.1	986.1	1249	1158	1430	1923	2290	1900	1336	725.5	519.1	482.3
MEAN	603.1	986.1	1249	1158	1430	1923	2290	1900	1336	725.5	519.1	482.3
MAX	4307	5692	8307	6304	5264	5786	8287	7022	8742	6142	2030	1549
(WY)	1950	1986	1983	1950	1982	1945	1927	1957	1945	1951	1982	1945
MIN	156.3	248.8	231.5	215.7	280.7	295.2	347.5	291.6	262.6	205.3	198.9	145.8
(WY)	1957	1957	1956	1956	1954	1954	1954	1932	1932	1954	1964	1956

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1376	1215
HIGHEST ANNUAL MEAN		3014
LOWEST ANNUAL MEAN		340.5
HIGHEST DAILY MEAN	18100	70600
LOWEST DAILY MEAN	258	131
INSTANTANEOUS PEAK FLOW	19200	77300
INSTANTANEOUS PEAK STAGE (FEET)	17.31	32.0
INSTANTANEOUS LOW FLOW	258	131
ANNUAL RUNOFF (INCHES)	12.7	11.2
10 PERCENTILE	2760	2360
50 PERCENTILE	652	577
95 PERCENTILE	285	234

## MERAMEC RIVER BASIN

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07014500 MERAMEC RIVER NEAR SULLIVAN, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.67	1.94	3.50	6.06	8.60	3.52	7.95	2.64	2.08	1.81	1.70	1.51
2	1.71	1.89	3.16	5.39	12.47	3.41	6.70	2.62	2.05	1.85	1.67	1.50
3	1.68	1.87	2.90	4.93	9.18	4.19	7.23	2.58	2.04	2.03	1.64	1.49
4	1.64	1.84	2.71	4.58	6.93	8.01	6.67	2.98	2.00	2.29	1.62	1.53
5	1.63	1.81	2.55	4.34	5.99	7.58	5.77	2.90	1.97	2.03	1.61	1.55
6	1.63	1.78	2.45	4.03	5.32	6.17	5.34	2.84	1.96	1.92	1.62	1.54
7	1.62	1.78	2.61	3.88	4.77	5.48	5.57	2.72	1.94	1.83	1.62	1.51
8	1.60	1.79	7.76	3.80	4.48	5.03	5.13	2.64	1.92	1.78	1.60	1.49
9	1.61	1.80	8.37	3.75	4.23	4.77	4.75	2.67	1.93	1.73	1.57	1.48
10	1.66	1.78	5.55	3.72	4.04	4.56	4.47	2.73	1.91	1.73	1.56	1.47
11	1.77	1.77	4.53	3.69	3.90	4.32	4.21	2.88	1.89	1.71	1.55	1.47
12	1.76	1.77	3.94	3.23	3.74	4.42	4.02	2.71	1.88	2.04	1.53	1.47
13	1.77	1.76	3.51	3.15	3.72	4.73	3.84	2.60	1.85	2.06	1.53	1.47
14	1.80	1.77	3.21	3.06	3.55	4.54	3.67	2.53	1.82	2.02	1.54	1.47
15	1.78	1.76	5.63	2.98	3.77	4.27	3.53	2.48	1.80	1.96	1.53	1.46
16	1.74	1.85	10.89	2.94	4.56	4.03	3.40	2.43	1.82	1.87	1.54	1.43
17	1.76	1.99	7.14	2.95	4.40	3.81	3.29	2.37	1.80	1.80	1.52	1.43
18	1.74	2.11	5.41	3.05	4.17	3.68	3.40	2.32	1.82	1.74	1.50	1.43
19	1.73	2.21	5.01	3.31	5.17	3.59	3.67	2.29	1.81	1.79	1.50	1.62
20	1.78	2.15	14.03	5.39	10.75	3.54	3.55	2.26	1.79	1.89	1.50	2.00
21	1.80	2.05	17.13	5.84	8.94	3.44	3.38	2.22	1.75	2.15	1.52	2.17
22	1.78	2.00	11.00	5.07	6.75	3.35	3.30	2.22	1.74	2.32	1.55	2.10
23	1.78	1.95	7.23	4.49	5.78	3.26	3.21	2.30	1.71	2.12	1.66	1.92
24	1.83	1.91	6.07	4.15	5.13	3.17	3.12	2.45	1.72	1.98	1.72	1.90
25	2.12	2.74	9.15	3.87	4.65	3.22	3.02	2.50	1.71	1.93	1.69	1.92
26	2.26	5.91	15.45	3.58	4.32	3.47	2.95	2.44	1.71	1.85	1.68	1.98
27	2.26	4.71	15.85	3.38	4.08	3.69	2.88	2.33	1.69	1.79	1.61	1.97
28	2.16	4.13	15.23	3.24	3.87	3.56	2.80	2.24	1.66	1.77	1.61	1.87
29	2.12	4.15	13.92	3.14	3.69	3.62	2.74	2.20	1.65	1.73	1.57	1.79
30	2.08	3.97	8.40	3.07	---	12.27	2.69	2.16	1.75	1.73	1.53	1.74
31	2.01	---	6.96	3.03	---	13.36	---	2.11	---	1.71	1.52	---

## MERAMEC RIVER BASIN

07014500 MERAMEC RIVER NEAR SULLIVAN, MO--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1963 to July 1975, July 1977 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
OCT											
08...	1000	286	368	--	8.40	11.5	9.1	84	22	K12	200
NOV											
05...	1120	357	367	--	8.10	14.0	9.3	91	63	K8	--
DEC											
09...	1325	3720	170	--	7.60	8.5	10.1	88	23	780	--
JAN											
14...	0915	872	--	263	8.00	0.5	14.3	99	<10	K6	140
FEB											
04...	0930	3350	190	--	7.90	3.5	12.1	91	<10	110	--
MAR											
04...	0900	5060	228	--	7.60	5.0	11.9	95	<10	400	--
APR											
08...	0950	2190	242	--	8.30	13.0	8.0	77	11	22	120
MAY											
19...	0855	651	339	--	8.20	19.0	7.5	82	37	K3	--
JUN											
03...	1030	531	339	--	8.30	22.5	6.1	72	20	37	--
JUL											
14...	1315	521	358	--	8.30	26.5	6.4	81	17	--	190
AUG											
05...	1020	323	350	--	8.30	26.5	6.6	84	18	220	--
SEP											
15...	0900	260	349	--	8.30	21.0	7.0	80	<10	200	--

DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT											
08...	0	39	24	3.2	1.2	196	0.9	8.6	4.2	0.20	196
NOV											
05...	--	--	--	--	--	209	3.2	--	--	--	206
DEC											
09...	--	--	--	--	--	102	4.9	--	--	--	119
JAN											
14...	0	29	16	2.2	1.2	138	2.7	11	3.5	0.10	147
FEB											
04...	--	--	--	--	--	111	2.7	--	--	--	117
MAR											
04...	--	--	--	--	--	97	4.7	--	--	--	128
APR											
08...	5	25	14	2.4	1.1	115	1.1	12	2.7	0.10	139
MAY											
19...	--	--	--	--	--	176	2.2	--	--	--	181
JUN											
03...	--	--	--	--	--	220	2.1	--	--	--	184
JUL											
14...	--	38	23	3.5	1.6	--	--	9.0	3.6	0.10	183
AUG											
05...	--	--	--	--	--	182	1.8	--	--	--	194
SEP											
15...	--	--	--	--	--	178	1.7	--	--	--	186

K--Results based on colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## MERAMEC RIVER BASIN

07015720 BOURBEUSE RIVER NEAR HIGH GATE, MO

LOCATION.--Lat 38°08'49", long 91°34'50", in SW 1/4 NE 1/4 sec.4, T.39 N., R.6 W., Phelps County, Hydrologic Unit 07140103, on downstream side of right bridge pier on State Highway B, 1.8 mi downstream from Lanes Fork, 5 mi east of High Gate, and 11 mi north of St. James.

DRAINAGE AREA.--135 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1965 to current year. Occasional low-flow measurements 1963, 1964.

REVISED RECORDS.--WDR MO-83-1: 1982.

GAGE.--Water-stage recorder. Datum of gage is 804.1 ft above National Geodetic Vertical Datum of 1929 (levels by Missouri State Highway and Transportation Commission). Prior to Aug. 17, 1966, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Jan. 5-14, 26-30, and Feb. 11-13. Records good except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1957 reached a stage of about 23 ft, from information by local resident.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.39	3.3	50	116	3670	187	232	11	2.8	1.6	2.2	.99
2	.35	3.1	36	99	611	191	984	9.8	2.7	1.4	2.2	.95
3	.28	3.0	28	81	305	4080	347	10	2.4	1.2	19	.89
4	.32	2.9	21	68	211	1300	187	13	2.2	1.1	14	.86
5	.29	2.8	18	60	130	819	228	12	2.0	1.2	13	.86
6	.32	2.7	18	50	100	752	623	9.2	1.9	1.5	12	.77
7	.43	2.7	657	46	88	527	220	7.7	1.8	1.4	10	.74
8	.47	2.7	333	42	80	415	135	7.5	1.7	1.2	9.1	.73
9	.54	2.9	146	40	74	363	97	11	1.5	1.2	116	.68
10	.83	2.7	87	40	70	312	74	9.2	1.4	1.1	168	.64
11	.97	2.7	65	50	66	281	64	7.0	1.4	4.7	13	.65
12	1.1	2.6	50	42	62	699	54	6.0	1.3	91	7.1	.68
13	.90	2.7	37	30	60	436	45	5.6	1.2	13	5.1	.70
14	.85	2.7	41	34	472	333	38	5.3	1.2	4.8	4.4	.70
15	.90	2.7	310	32	378	281	33	4.8	1.2	3.1	3.9	.50
16	1.1	4.5	240	30	182	251	29	4.6	1.2	2.3	3.1	.51
17	1.4	6.3	131	42	144	234	26	4.0	1.3	1.9	2.6	.54
18	1.1	10	104	56	127	238	41	3.5	1.3	109	2.2	.72
19	1.0	7.7	4350	469	1930	239	51	3.4	1.2	120	1.9	1.3
20	1.3	6.3	4190	476	616	226	38	4.2	1.2	198	1.8	1.3
21	1.2	5.5	576	227	253	211	32	3.3	1.1	43	1.7	1.9
22	1.1	5.1	299	144	181	199	28	7.4	1.1	17	3.5	1.4
23	1.0	4.7	205	112	123	189	24	22	1.1	8.6	6.6	1.3
24	1.3	79	703	93	90	186	20	18	1.0	7.3	12	2.5
25	6.7	544	3440	69	72	234	19	12	1.0	5.6	3.8	4.0
26	6.5	110	1290	53	63	231	17	7.4	1.0	4.0	2.2	3.6
27	4.5	100	3500	40	57	210	15	5.4	.95	4.0	1.7	2.1
28	4.5	227	973	35	49	194	13	4.4	.93	3.7	1.6	1.5
29	4.0	133	347	30	112	2680	13	3.9	.93	3.1	1.4	1.2
30	3.6	71	212	26	---	909	12	3.4	1.1	2.9	1.2	1.2
31	3.6	---	161	475	---	342	---	3.0	---	2.6	1.1	---
MEAN	1.70	45.2	730	104	358	573	125	7.71	1.44	21.4	14.4	1.21
MAX	6.7	544	4350	476	3670	4080	984	22	2.8	198	168	4.0
MIN	.28	2.6	18	26	49	186	12	3.0	.93	1.1	1.1	.50
IN.	.01	.37	6.23	.89	2.86	4.89	1.03	.07	.01	.18	.12	.01

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	59.0	160.8	223.0	125.4	197.1	240.5	228.3	144.2	112.2	25.8	29.2	32.7
MEAN	59.0	160.8	223.0	125.4	197.1	240.5	228.3	144.2	112.2	25.8	29.2	32.7
MAX	552.0	799.4	1213	548.9	634.4	746.6	567.9	637.1	962.5	93.8	373.3	368.6
(WY)	1987	1986	1983	1969	1985	1984	1979	1983	1985	1977	1982	1965
MIN	.342	.944	1.89	.652	12.4	1.32	1.57	3.88	.950	.252	.189	.141
(WY)	1967	1981	1977	1977	1981	1981	1981	1977	1972	1972	1971	1971

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	165.4	129.7
HIGHEST ANNUAL MEAN	314.9	1985
LOWEST ANNUAL MEAN	21.7	1981
HIGHEST DAILY MEAN	4350	Dec 3 1982
LOWEST DAILY MEAN	.28	Oct 3
INSTANTANEOUS PEAK FLOW	13900	Dec 19
INSTANTANEOUS PEAK STAGE (FEET)	17.85	Dec 19
INSTANTANEOUS LOW FLOW	0.25	Oct 3
ANNUAL RUNOFF (INCHES)	16.6	13.0
10 PERCENTILE	339	225
50 PERCENTILE	10	18
95 PERCENTILE	.67	.19

## MERAMEC RIVER BASIN

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07015720 BOURBEUSE RIVER NEAR HIGH GATE, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.75	1.91	2.61	3.09	14.69	3.48	3.75	2.00	1.64	1.50	1.65	1.56
2	1.74	1.90	2.47	2.96	5.24	3.48	8.43	1.98	1.63	1.52	1.62	1.55
3	1.72	1.89	2.38	2.89	4.04	12.36	4.30	1.95	1.62	1.48	2.27	1.54
4	1.74	1.88	2.28	2.71	3.93	6.72	3.54	2.03	1.59	1.48	2.04	1.53
5	1.73	1.88	2.24	---	3.77	5.50	3.17	2.02	1.58	1.47	2.01	1.54
6	1.73	1.87	2.21	---	3.76	5.54	5.39	1.95	1.56	1.52	2.01	1.52
7	1.75	1.87	2.60	---	3.67	4.87	3.72	1.91	1.55	1.51	1.97	1.51
8	1.76	1.87	4.30	---	3.13	4.44	3.22	1.88	1.54	1.49	1.95	1.51
9	1.78	1.87	3.37	---	2.83	4.28	2.94	1.99	1.52	1.48	1.91	1.50
10	1.81	1.87	2.94	---	2.72	4.07	2.75	1.95	1.51	1.48	3.09	1.49
11	1.83	1.87	2.76	---	---	3.92	2.66	1.88	1.50	1.60	2.11	1.48
12	1.87	1.86	2.61	---	---	6.01	2.56	1.84	1.50	4.73	1.96	1.50
13	1.84	1.87	2.47	---	---	4.57	2.48	1.82	1.49	2.03	1.88	1.50
14	1.83	1.87	2.40	---	3.04	4.17	2.40	1.81	1.48	1.78	1.84	1.51
15	1.84	1.87	3.99	---	4.49	3.95	2.34	1.79	1.48	1.67	1.84	1.46
16	1.85	1.94	4.01	2.30	3.51	3.81	2.30	1.77	1.48	1.61	1.77	1.47
17	1.91	2.01	3.30	2.39	3.29	3.72	2.26	1.74	1.50	1.57	1.73	1.47
18	1.88	2.11	3.06	2.61	3.08	3.73	2.34	1.71	1.47	1.78	1.70	1.48
19	1.86	2.04	5.45	3.51	9.56	3.75	2.55	1.69	1.49	2.81	1.68	1.64
20	1.91	1.99	10.12	4.77	5.23	3.68	2.40	1.78	1.48	3.94	1.66	1.62
21	1.87	1.96	5.15	3.76	3.85	3.61	2.33	1.68	1.48	2.48	1.65	1.70
22	1.87	1.94	4.13	3.28	3.49	3.55	2.27	1.76	1.47	2.11	1.87	1.63
23	1.86	1.93	3.67	3.05	3.13	3.49	2.23	2.09	1.46	1.94	1.91	1.57
24	1.89	1.92	3.47	2.92	2.90	3.46	2.17	2.07	1.46	1.89	2.10	1.63
25	1.91	5.26	5.45	2.77	2.74	3.69	2.15	1.99	1.46	1.85	1.83	1.85
26	2.08	3.13	6.53	---	2.65	3.72	2.13	1.87	1.45	1.77	1.71	1.81
27	1.98	2.84	9.18	---	2.60	3.61	2.10	1.80	1.44	1.74	1.66	1.69
28	1.97	3.60	6.07	---	2.52	3.53	2.06	1.75	1.44	1.75	1.65	1.63
29	1.95	3.31	4.26	---	2.47	3.83	2.04	1.71	1.43	1.70	1.62	1.59
30	1.92	2.80	3.64	---	---	5.97	2.02	1.69	1.44	1.69	1.60	1.58
31	1.93	---	3.38	---	---	4.17	---	1.66	---	1.68	1.58	---

## MERAMEC RIVER BASIN

07016500 BOURBEUSE RIVER AT UNION, MO

LOCATION.--Lat 38°26'45", long 90°59'30", in SE ¼ sec.26, T.43 N., R.1 W., Franklin County, Hydrologic Unit 07140103, on left bank upstream side of the bridge on U.S. Highway 50, 800 ft upstream from Flat Creek, 0.5 mi east of Union, 7.0 mi upstream from Birch Creek, and at mile 13.4.

DRAINAGE AREA.--808 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1921 to current year; Oct. 1916 to 1921 gage heights are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 957: 1941. WSP 1147: Drainage area. WSP 1281: 1924.

GAGE.--Water-stage recorder. Datum of gage is 488.58 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1948, datum of all gages 3.00 ft higher. Prior to Oct. 21, 1933, nonrecording gage, at site 30 ft upstream. Oct. 21, 1933, to June 11, 1944, nonrecording gage, at present site.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 22, 1915, reached a stage of 28.5 ft, present datum, from floodmarks, discharge, about 50,000 ft<sup>3</sup>/s, determined from extension of rating curve for main channel based on measurements made since 1921 and study of overflow areas in vicinity of gaging station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	45	597	1110	3620	358	3660	140	82	60	79	60
2	46	59	380	910	8800	319	1530	137	77	59	81	58
3	41	58	270	731	8770	1440	1770	147	73	54	80	58
4	39	59	206	598	1940	7260	2100	184	66	49	69	47
5	38	54	166	494	1350	10600	1210	212	63	46	53	40
6	39	49	144	399	1010	3390	1210	315	61	44	101	36
7	46	48	244	393	824	2530	2250	227	59	43	66	33
8	47	48	630	328	709	1920	1530	193	61	41	50	31
9	40	47	1890	323	617	1350	1000	179	62	39	42	30
10	57	44	1130	315	523	1090	785	157	55	37	39	28
11	49	43	725	276	481	929	630	145	54	46	37	27
12	46	43	493	244	418	950	526	139	53	94	36	28
13	44	44	362	269	414	1430	451	128	52	210	40	28
14	43	44	309	227	510	1410	388	124	50	68	258	27
15	40	44	537	197	912	965	340	118	49	43	258	26
16	43	55	708	189	2280	747	305	112	50	38	185	26
17	43	55	996	188	1340	601	278	104	50	67	128	25
18	40	52	843	185	1020	513	271	99	51	230	93	27
19	38	50	1150	314	1320	453	253	94	60	205	71	44
20	38	49	5980	992	4800	416	247	92	82	201	59	34
21	47	48	10700	2270	5350	380	249	88	71	175	55	29
22	46	51	14800	1310	1870	358	244	95	69	144	58	25
23	38	53	3700	893	1220	327	232	91	86	321	176	26
24	54	99	1530	671	968	308	211	91	69	343	129	28
25	50	163	2770	525	779	330	194	90	62	286	137	29
26	48	867	7910	420	637	335	181	96	55	233	103	28
27	49	1190	11900	335	543	404	168	102	47	181	172	25
28	47	615	14200	271	474	404	158	97	59	136	193	24
29	47	624	13500	246	415	1110	150	96	73	114	132	23
30	46	713	5880	227	---	5940	145	97	69	98	93	33
31	46	---	1500	633	---	10300	---	90	---	87	70	---
MEAN	44.6	180	3424	532	1859	1899	756	132	62.3	122	101	32.8
MAX	57	1190	14800	2270	8800	10600	3660	315	86	343	258	60
MIN	38	43	144	185	414	308	145	88	47	37	36	23
IN.	.06	.25	4.89	.76	2.48	2.71	1.04	.19	.09	.17	.14	.05

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	336.1	507.1	664.9	599.3	795.8	1133	1216	1088	870.1	312.2	172.0	214.0
MAX	4575	3320	6107	3518	3214	4207	4425	4123	4583	2554	1037	2069	
(WY)	1950	1986	1983	1950	1985	1984	1927	1957	1942	1951	1951	1934	
MIN	15.0	28.0	35.4	30.7	41.1	42.0	94.9	66.6	33.7	23.9	21.0	19.2	
(WY)	1957	1954	1954	1956	1963	1954	1956	1932	1936	1936	1936	1956	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	761.6	657.0
HIGHEST ANNUAL MEAN		1590
LOWEST ANNUAL MEAN		106.4
HIGHEST DAILY MEAN	14800	63000
LOWEST DAILY MEAN	23	12
INSTANTANEOUS PEAK FLOW	16000	73300
INSTANTANEOUS PEAK STAGE (FEET)	17.73	33.80
INSTANTANEOUS LOW FLOW	23	11
ANNUAL RUNOFF (INCHES)	12.8	11.0
10 PERCENTILE	1430	1310
50 PERCENTILE	146	167
95 PERCENTILE	32	33

## MERAMEC RIVER BASIN

185

07016500 BOURBEUSE RIVER AT UNION, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.45	1.41	3.04	3.98	6.41	2.50	7.26	1.82	1.58	.81	.85	.76
2	1.45	1.51	2.57	3.53	12.44	2.41	4.78	1.80	1.56	.81	.80	.73
3	1.40	1.50	2.30	3.22	14.58	3.60	4.36	1.79	1.54	.77	.84	.75
4	1.38	1.52	2.11	2.99	5.57	10.92	6.07	1.96	1.51	.74	.75	.70
5	1.37	1.49	1.98	2.81	4.42	14.27	4.21	1.95	1.48	.72	.72	.64
6	1.38	1.46	1.91	2.49	3.92	7.07	3.67	2.40	1.47	.71	.97	.61
7	1.41	1.45	2.12	2.62	3.42	6.39	5.96	2.12	1.46	.70	.80	.59
8	1.45	1.45	2.26	2.16	3.18	5.58	4.91	2.00	1.45	.68	.70	.57
9	1.39	1.44	5.69	2.48	3.05	4.46	3.78	1.97	1.50	.66	.65	.56
10	1.51	1.42	4.07	2.33	2.84	3.93	3.29	1.89	1.44	.66	.63	.54
11	1.46	1.42	3.25	2.35	2.76	3.55	3.00	1.84	1.42	.68	.62	.54
12	1.44	1.41	2.81	2.23	2.63	3.53	2.79	1.81	1.41	.71	.60	.55
13	1.41	1.42	2.52	2.43	2.54	4.41	2.65	1.78	1.41	1.43	.62	.54
14	1.42	1.41	2.34	2.28	2.66	4.69	2.52	1.76	1.40	.87	1.57	.53
15	1.39	1.42	2.92	2.07	3.00	3.68	2.41	1.73	1.40	.71	1.46	.53
16	1.38	1.48	.93	2.04	6.31	3.25	2.31	1.72	1.40	.66	1.25	.53
17	1.42	1.50	3.59	2.02	4.47	2.98	2.24	1.68	1.40	.66	1.06	.52
18	1.39	1.48	3.46	2.03	3.59	2.82	2.20	1.65	1.40	1.48	.92	.51
19	1.38	1.47	3.08	2.09	4.18	2.70	2.18	1.63	1.42	1.29	.82	.70
20	1.38	1.46	9.23	2.59	8.17	2.61	2.14	1.62	1.58	1.32	.76	.60
21	1.44	1.45	13.86	6.33	11.15	2.54	2.17	1.60	1.52	1.22	.73	.56
22	1.45	1.46	17.01	4.44	5.50	2.48	2.14	1.59	1.49	1.08	.75	.52
23	1.37	1.48	6.56	3.53	4.20	2.42	2.13	1.62	.93	1.58	1.18	.52
24	1.53	1.49	4.51	3.11	3.68	2.36	2.06	1.62	.86	1.77	.99	.54
25	1.47	1.95	5.21	2.86	3.30	2.44	2.01	1.61	.82	1.53	1.10	.55
26	1.45	3.07	11.73	2.65	3.04	2.42	1.97	1.61	.78	1.38	.92	.55
27	1.46	4.37	14.50	2.49	2.87	2.58	1.93	1.67	.73	1.23	1.12	.52
28	1.44	3.07	17.05	2.29	2.74	2.59	1.89	1.64	.78	1.08	1.28	.51
29	1.44	2.67	16.07	2.23	2.63	2.90	1.85	1.63	.82	.97	1.08	.51
30	1.42	3.16	11.66	2.16	---	9.26	1.84	1.65	.86	.93	.92	.52
31	1.44	---	4.80	2.12	---	13.76	---	1.61	---	.87	.82	---

## MERAMEC RIVER BASIN

07017200 BIG RIVER AT IRONDALE, MO

LOCATION.--Lat 37°49'48", long 90°41'27", in SE 1/4 SW 1/4 sec.15, T.36 N., R.3 E., Washington County, Hydrologic Unit 07140104, on right bank 50 ft upstream from bridge on State Highway U, 0.2 mi upstream from Mill Creek, and 0.8 mi west of Irondale.

DRAINAGE AREA.--175 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1965 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 753.28 ft above National Geodetic Vertical Datum of 1929 (Missouri State Highway and Transportation Commission bench mark).

REMARKS.--Estimated daily discharges: Jan. 4 to Feb. 22. Records good except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.4	20	44	265	1800	106	497	43	18	23	11	6.3
2	7.3	20	35	254	1140	103	539	41	18	33	9.7	6.6
3	7.4	20	30	281	640	887	444	43	17	35	8.9	16
4	7.8	19	26	136	460	754	352	226	16	24	8.4	16
5	8.2	18	24	100	300	426	296	131	16	18	8.0	12
6	8.4	17	26	96	250	309	369	85	14	16	7.8	9.1
7	8.3	17	414	94	210	252	304	68	14	13	7.8	7.9
8	8.7	21	394	90	170	220	252	59	17	12	7.0	7.2
9	9.9	27	165	87	150	212	215	62	29	12	6.3	6.4
10	16	20	96	85	130	188	180	51	21	12	6.0	7.1
11	20	19	71	82	125	170	154	46	17	50	5.5	7.6
12	18	19	57	93	116	521	139	43	16	54	6.0	8.6
13	15	18	47	80	106	353	126	38	15	30	6.0	7.3
14	14	18	86	64	140	247	113	37	13	22	7.8	6.7
15	14	19	1620	63	189	205	101	36	13	18	6.2	6.4
16	14	33	409	61	168	177	93	32	339	14	5.1	6.6
17	15	44	208	170	150	159	86	29	57	13	4.1	6.5
18	16	37	140	380	140	156	102	27	31	12	4.5	822
19	16	28	1460	860	720	155	101	25	24	14	5.7	263
20	19	23	1990	520	560	148	89	24	19	279	10	90
21	19	20	601	320	400	130	82	23	17	81	9.0	49
22	18	19	377	190	295	120	79	34	14	39	7.6	35
23	17	17	261	155	242	111	73	50	13	27	9.0	30
24	29	18	250	134	203	107	64	51	20	22	9.2	55
25	38	204	3000	120	179	554	62	41	17	20	7.3	85
26	29	105	1640	109	161	344	58	32	14	16	6.5	49
27	25	65	2130	99	146	232	52	29	11	14	6.7	35
28	26	88	1390	91	131	189	47	28	9.8	12	8.1	30
29	21	85	626	85	116	2740	45	27	33	12	8.0	28
30	20	57	435	81	---	1530	45	23	34	13	6.7	26
31	20	---	348	1500	---	686	---	19	---	13	6.3	---
MEAN	16.6	37.8	594	218	329	403	172	48.5	30.2	31.4	7.30	58.0
MAX	38	204	3000	1500	1800	2740	539	226	339	279	11	822
MIN	7.3	17	24	61	106	103	45	19	9.8	12	4.1	6.3
IN.	.11	.24	3.91	1.43	2.03	2.66	1.10	.32	.19	.21	.05	.37

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	70.0	228.5	306.7	192.1	255.1	340.7	349.5	196.6	103.5	54.9	63.5	55.9
MAX	338.6	1086	1027	733.7	694.9	866.5	921.0	692.7	872.1	262.3	392.9	238.3	
(WY)	1971	1986	1983	1969	1985	1978	1972	1983	1985	1981	1970	1982	
MIN	6.95	10.5	13.7	11.1	24.9	38.9	66.4	24.1	9.95	4.69	4.31	3.95	
(WY)	1981	1981	1977	1981	1977	1981	1977	1977	1980	1980	1980	1971	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	162.1*	184.3
HIGHEST ANNUAL MEAN		448.8
LOWEST ANNUAL MEAN		56.6
HIGHEST DAILY MEAN	3000	16500
LOWEST DAILY MEAN	4.1	2.5
INSTANTANEOUS PEAK FLOW	9390	43200
INSTANTANEOUS PEAK STAGE (FEET)	12.40	27.92
INSTANTANEOUS LOW FLOW	3.5	2.2
ANNUAL RUNOFF (INCHES)	12.6	14.3
10 PERCENTILE	370	365
50 PERCENTILE	40	58
95 PERCENTILE	6.6	7.5

## MERAMEC RIVER BASIN

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07017200 BIG RIVER AT IRONDALE, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.72	2.87	3.07	3.69	---	3.30	4.12	3.07	2.86	2.91	2.77	2.70
2	2.71	2.87	3.01	3.62	---	3.27	4.10	3.06	2.86	2.93	2.76	2.69
3	2.70	2.87	2.96	4.09	---	3.87	4.05	3.04	2.86	3.03	2.74	2.84
4	2.71	2.85	2.93	3.46	---	4.55	3.88	3.72	2.83	2.92	2.73	2.84
5	2.72	2.85	2.90	---	---	4.04	3.78	3.48	2.83	2.86	2.73	2.79
6	2.73	2.83	2.89	---	---	3.79	3.95	3.31	2.82	2.84	2.72	2.75
7	2.72	2.83	3.53	---	---	3.68	3.81	3.22	2.82	2.81	2.72	2.73
8	2.72	2.84	4.01	---	---	3.59	3.71	3.17	2.82	2.80	2.71	2.72
9	2.75	2.95	3.54	---	---	3.59	3.65	3.19	2.97	2.78	2.70	2.70
10	2.80	2.88	3.33	---	---	3.52	3.58	3.14	2.90	2.78	2.68	2.71
11	2.87	2.85	3.22	---	---	3.47	3.53	3.10	2.84	2.78	2.68	2.71
12	2.86	2.85	3.15	---	---	4.52	3.49	3.07	2.83	3.16	2.68	2.74
13	2.81	2.83	3.09	---	---	3.89	3.44	3.04	2.82	2.97	2.68	2.72
14	2.80	2.84	3.04	---	---	3.68	3.40	3.03	2.80	2.89	2.70	2.71
15	2.80	2.85	6.09	---	---	3.58	3.37	3.02	2.80	2.86	2.70	2.70
16	2.80	2.94	4.03	---	---	3.51	3.33	2.99	5.11	2.82	2.67	2.71
17	2.81	3.06	3.63	---	---	3.45	3.29	2.96	3.18	2.80	2.65	2.70
18	2.82	3.03	3.46	---	---	3.43	3.34	2.95	2.98	2.77	2.66	2.70
19	2.82	2.94	3.88	---	---	3.43	3.37	2.93	2.91	2.81	2.68	3.70
20	2.86	2.90	6.17	---	---	3.41	3.33	2.91	2.88	4.58	2.77	3.27
21	2.86	2.87	4.34	---	---	3.37	3.28	2.90	2.84	3.30	2.75	3.07
22	2.84	2.85	3.94	---	---	3.34	3.27	2.91	2.82	3.06	2.73	2.99
23	2.83	2.84	3.72	---	3.66	3.31	3.25	3.13	2.79	2.96	2.74	2.90
24	2.86	2.82	3.62	---	3.57	3.29	3.19	3.13	2.86	2.89	2.76	2.99
25	3.02	3.76	4.09	---	3.52	4.60	3.18	3.06	2.86	2.91	2.72	3.26
26	2.95	3.37	5.62	---	3.46	3.86	3.17	2.99	2.82	2.84	2.70	3.07
27	2.92	3.19	4.79	---	3.41	3.63	3.14	2.97	2.78	2.82	2.70	2.98
28	2.93	3.26	5.36	---	3.38	3.53	3.11	2.94	2.76	2.80	2.72	2.94
29	2.88	3.29	4.37	---	3.33	3.58	3.09	2.94	2.76	2.77	2.73	2.91
30	2.87	3.16	4.02	---	---	5.51	3.08	2.90	3.02	2.80	2.71	2.90
31	2.87	---	3.87	---	---	4.42	---	2.88	---	2.80	2.70	---

## MERAMEC RIVER BASIN

07018100 BIG RIVER NEAR RICHWOODS, MO

LOCATION.--Lat 38°09'34", long 90°42'22", in sec.33, T.40 N., R.3 E., Jefferson County, Hydrologic Unit 07140104, on left bank downstream side of bridge on State Highway H, 1.8 mi east of Fletcher, 6.8 mi east of Richwoods, and at mile 53.7.

DRAINAGE AREA.--735 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1942 to current year. Prior to May 1949 monthly discharge only, published in WSP 1311. Prior to 1984 published as "Big River near De Soto, Mo."

GAGE.--Water-stage recorder. Datum of gage is 523.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of August 1915 reached a stage of about 29.4 ft, (former datum) from floodmark, 1.0 mi downstream adjusted to gage site by comparison with recorded flood 5.5 ft lower; discharge, 70,500 ft<sup>3</sup>/s, from rating curve extended above 37,000 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	139	349	1190	6550	543	1990	296	192	158	116	91
2	110	135	294	977	7650	522	1730	295	187	177	111	98
3	102	132	257	845	2770	1590	1680	310	179	163	110	149
4	95	131	227	763	1980	3620	1270	1890	171	149	108	145
5	94	129	206	674	1670	1970	1040	1720	166	147	109	136
6	93	126	194	578	1230	1370	1010	798	161	137	113	117
7	92	125	814	543	1000	1120	1020	590	157	128	102	110
8	91	128	1620	510	915	981	892	487	161	120	101	103
9	91	132	1090	503	836	917	778	485	197	115	97	101
10	102	134	693	485	782	856	695	444	190	112	94	99
11	122	131	524	448	747	776	636	392	179	113	91	97
12	128	130	415	451	666	1010	594	355	167	132	88	98
13	122	130	347	415	647	1480	548	326	156	134	89	101
14	121	127	373	385	671	1040	508	308	150	171	92	100
15	117	126	5890	373	977	860	473	293	145	148	97	96
16	113	146	3520	362	1050	754	441	279	147	131	97	91
17	112	202	1310	392	888	687	420	265	471	118	91	88
18	112	214	882	663	832	659	483	253	317	116	89	90
19	112	204	2600	1350	1970	656	552	243	217	117	87	1560
20	121	188	12200	3850	3420	645	505	236	178	162	87	681
21	126	169	5100	2100	1880	604	453	227	158	200	111	350
22	127	157	1900	1330	1340	566	454	230	146	286	132	257
23	122	149	1260	1030	1100	534	430	263	136	207	115	210
24	132	150	1320	886	927	502	390	323	130	168	123	200
25	174	378	5330	767	812	824	369	325	125	148	115	204
26	181	608	14200	649	735	1410	355	284	120	135	102	205
27	171	543	7630	567	684	987	341	251	117	126	97	218
28	164	467	11100	534	635	807	325	230	116	119	96	196
29	152	461	3770	499	584	3270	312	215	122	116	98	178
30	143	421	2010	485	---	12700	303	207	146	118	96	170
31	139	---	1500	589	---	3840	---	200	---	124	92	---
MEAN	123	214	2869	813	1584	1552	700	420	173	145	101	211
MAX	181	608	14200	3850	7650	12700	1990	1890	471	286	132	1560
MIN	91	125	194	362	584	502	303	200	116	112	87	88
IN.	.19	.32	4.50	1.28	2.33	2.43	1.06	.66	.26	.23	.16	.32

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	286.8	628.4	869.8	683.6	920.1	1264	1234	959.7	517.7	410.4	260.7	264.5
MAX	1641	4223	4332	3845	2935	2838	4383	3840	3150	2492	1357	1492	
(WY)	1950	1986	1983	1950	1985	1985	1957	1983	1985	1951	1950	1950	
MIN	47.5	87.9	90.5	84.0	123.9	123.3	271.0	169.9	110.1	86.0	69.9	40.6	
(WY)	1957	1977	1956	1977	1954	1954	1981	1965	1980	1980	1955	1956	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	742.0	690.6	
HIGHEST ANNUAL MEAN		1766	1985
LOWEST ANNUAL MEAN		197.9	1954
HIGHEST DAILY MEAN	14200	38300	Jun 30 1957
LOWEST DAILY MEAN	87	22	Sep 19 1954
INSTANTANEOUS PEAK FLOW	15500	55800	Jun 30 1957
INSTANTANEOUS PEAK STAGE (FEET)	17.99	27.15	Jun 30 1957
INSTANTANEOUS LOW FLOW	87	20	Sep 19 1954
ANNUAL RUNOFF (INCHES)	13.7	12.8	
10 PERCENTILE	1490	1320	
50 PERCENTILE	259	273	
95 PERCENTILE	95	80	

## MERAMEC RIVER BASIN

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07018100 BIG RIVER NEAR RICHWOODS, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.39	2.49	3.42	5.54	8.91	3.92	6.94	3.31	2.83	2.63	2.38	2.20
2	2.32	2.47	3.20	5.11	13.88	3.86	6.34	3.29	2.79	2.76	2.34	2.20
3	2.27	2.45	3.07	4.81	8.16	4.54	6.49	3.26	2.76	2.67	2.34	2.67
4	2.23	2.44	2.93	4.62	6.80	9.72	5.78	6.29	2.72	2.58	2.33	2.47
5	2.22	2.43	2.82	4.39	6.31	6.91	5.34	6.74	2.68	2.57	2.34	2.53
6	2.21	2.41	2.75	4.04	5.55	5.73	5.21	4.88	2.65	2.51	2.39	2.39
7	2.20	2.41	3.12	4.03	4.94	5.26	5.29	4.33	2.63	2.46	2.28	2.34
8	2.20	2.43	6.13	3.94	4.81	4.96	5.04	4.00	2.61	2.41	2.27	2.29
9	2.20	2.45	5.44	3.89	4.65	4.81	4.79	3.95	2.80	2.37	2.24	2.27
10	2.24	2.46	4.49	3.90	4.54	4.71	4.60	3.85	2.84	2.35	2.22	2.25
11	2.38	2.45	3.99	3.67	4.46	4.52	4.43	3.68	2.77	2.35	2.20	2.24
12	2.43	2.44	3.65	3.73	4.25	4.47	4.31	3.54	2.68	2.50	2.17	2.24
13	2.39	2.44	3.40	3.62	4.22	6.15	4.17	3.43	2.63	2.48	2.17	2.26
14	2.39	2.42	3.24	3.54	4.24	5.12	4.05	3.35	2.59	2.74	2.18	2.26
15	2.36	2.41	12.12	3.47	4.67	4.72	3.94	3.29	2.56	2.60	2.24	2.23
16	2.34	2.47	9.67	3.43	5.19	4.48	3.84	3.23	2.54	2.49	2.25	2.20
17	2.33	2.74	5.83	3.46	4.78	4.32	3.74	3.17	3.16	2.41	2.20	2.18
18	2.33	2.86	4.90	4.37	4.62	4.22	3.87	3.12	3.46	2.37	2.18	2.15
19	2.33	2.81	5.14	4.62	5.10	4.21	4.16	3.08	2.98	2.38	2.17	6.98
20	2.37	2.73	16.66	9.54	9.39	4.20	4.04	3.04	2.76	2.61	2.16	4.40
21	2.40	2.65	11.03	7.15	6.74	4.10	3.88	2.99	2.64	2.90	2.30	3.29
22	2.43	2.58	6.85	5.68	5.66	3.99	3.80	2.98	2.57	3.38	2.55	2.89
23	2.39	2.53	5.70	5.09	5.22	3.90	3.82	3.10	2.51	2.93	2.37	2.65
24	2.39	2.50	5.12	4.78	4.86	3.82	3.66	3.35	2.47	2.71	2.40	2.59
25	2.64	3.19	9.03	4.52	4.60	4.15	3.58	3.42	2.44	2.59	2.39	2.61
26	2.71	4.14	17.97	4.25	4.42	6.03	3.53	3.26	2.41	2.51	2.29	2.61
27	2.64	4.05	10.67	4.04	4.31	5.01	3.47	3.12	2.39	2.45	2.24	2.69
28	2.61	3.77	16.28	3.91	4.18	4.61	3.42	3.01	2.38	2.40	2.23	2.57
29	2.55	3.77	9.42	3.80	4.04	4.58	3.36	2.95	2.35	2.36	2.24	2.48
30	2.50	3.67	7.01	3.77	---	17.16	3.33	2.91	2.53	2.38	2.23	2.43
31	2.49	---	6.09	3.74	---	9.29	---	2.88	---	2.45	2.21	---

## MERAMEC RIVER BASIN

07018500 BIG RIVER AT BYRNESVILLE, MO

LOCATION.--Lat 38°23'30", long 90°38'16", in SE 1/4 sec.12, T.42 N., R.3 E., Jefferson County, Hydrologic Unit 07140104, on right bank on downstream side of pier of privately owned bridge at Byrnesville, 4.0 mi upstream from Heads Creek, at mile 14.1.

DRAINAGE AREA.--917 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1921 to current year. Prior to June 1922 monthly discharge only, published WSP 1311.

REVISED RECORDS.--WSP 667: 1927. WSP 877: 1938. WSP 1007: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 433.69 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 9, 1940, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of August 21, 1915, reached a stage of 30.2 ft from floodmarks, discharge, 80,000 ft<sup>3</sup>/s, by slope-area measurement of peak flow.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	115	147	485	1690	6750	659	3240	412	238	160	133	101
2	124	146	419	1350	9970	635	2420	402	231	176	131	100
3	115	143	356	1120	5640	2060	2250	397	223	190	126	106
4	110	139	309	968	2770	3910	1930	716	211	184	126	116
5	106	136	273	851	2250	3300	1550	2400	202	170	121	133
6	103	132	252	730	1750	2050	1400	1370	197	163	117	138
7	101	131	690	652	1320	1570	1350	861	192	158	118	130
8	100	137	1530	625	1120	1300	1270	679	192	149	118	119
9	100	137	1650	589	1010	1160	1090	595	201	140	110	113
10	113	138	1050	555	925	1060	958	572	222	136	105	107
11	118	140	731	534	870	960	874	522	223	133	112	102
12	124	139	578	557	801	989	808	470	207	135	105	100
13	133	136	486	511	739	1440	755	427	198	144	102	99
14	130	137	457	488	759	1490	709	392	185	153	100	98
15	126	134	3370	477	943	1110	671	366	177	167	102	98
16	126	154	5450	475	1240	927	635	346	173	164	103	98
17	128	176	2320	475	1100	824	605	327	169	147	105	96
18	122	208	1360	522	969	767	600	310	405	140	102	95
19	122	232	2450	1510	1750	733	652	297	357	135	97	103
20	123	218	9100	3360	3650	724	685	287	263	153	98	1340
21	124	203	11400	3300	2910	702	640	276	218	164	97	627
22	128	186	3620	1880	1880	665	600	278	192	194	98	393
23	133	172	2010	1350	1460	634	594	288	177	263	138	299
24	148	180	1700	1090	1200	611	566	313	166	234	131	241
25	147	349	4760	920	1010	628	531	356	157	193	124	206
26	168	455	10400	786	886	1150	506	363	151	169	124	201
27	187	628	14800	680	809	1350	483	324	144	153	116	196
28	178	667	12600	625	750	992	461	293	139	142	109	206
29	174	581	9940	596	699	2420	444	271	142	137	106	192
30	163	531	3150	573	---	8240	427	257	143	138	103	170
31	152	---	2150	968	---	10800	---	247	---	131	102	---
MEAN	130	234	3543	994	1998	1802	990	497	203	162	112	204
MAX	187	667	14800	3360	9970	10800	3240	2400	405	263	138	1340
MIN	100	131	252	475	699	611	427	247	139	131	97	95
IN.	.16	.28	4.46	1.25	2.35	2.27	1.21	.63	.25	.20	.14	.25

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	343.6	667.2	887.4	883.5	1105	1461	1627	1365	815.2	501.0	290.9	289.1
MAX	2290	4709	5594	5064	3696	4539	6190	5138	4530	3895	1490	1696
(WY)	1950	1986	1983	1950	1982	1945	1927	1983	1928	1957	1950	1950
MIN	49.7	99.6	103.4	90.4	139.5	137.5	345.3	177.5	105.4	56.4	41.4	48.7
(WY)	1957	1977	1956	1977	1954	1954	1932	1932	1936	1936	1936	1956

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	905.3	852.4
HIGHEST ANNUAL MEAN		1934
LOWEST ANNUAL MEAN		227.5
HIGHEST DAILY MEAN	14800	40100
LOWEST DAILY MEAN	95	25
INSTANTANEOUS PEAK FLOW	16200	43000
INSTANTANEOUS PEAK STAGE (FEET)	19.90	26.47
INSTANTANEOUS LOW FLOW	95	25
ANNUAL RUNOFF (INCHES)	13.4	12.6
10 PERCENTILE	1910	1730
50 PERCENTILE	303	334
95 PERCENTILE	103	94

## MERAMEC RIVER BASIN

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07018500 BIG RIVER AT BYRNESVILLE, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.64	2.87	4.41	7.19	13.64	5.00	9.86	4.09	3.51	3.05	2.87	2.63
2	2.73	2.87	4.14	6.57	16.60	4.91	8.45	4.03	3.47	3.17	2.87	2.61
3	2.67	2.85	3.90	6.11	13.85	6.09	8.14	3.99	3.43	3.24	2.84	2.67
4	2.63	2.83	3.70	5.79	9.14	10.39	7.68	4.21	3.37	3.23	2.81	2.72
5	2.60	2.81	3.54	5.53	8.25	10.31	6.90	8.37	3.33	3.14	2.80	2.89
6	2.57	2.78	3.43	5.26	7.32	7.90	6.59	6.71	3.28	3.08	2.76	2.92
7	2.56	2.77	3.66	4.84	6.47	6.97	6.49	5.58	3.26	3.07	2.76	2.87
8	2.55	2.80	6.55	4.82	6.09	6.44	6.41	5.09	3.23	3.00	2.79	2.79
9	2.54	2.81	7.27	4.79	5.86	6.15	6.03	4.84	3.30	2.94	2.72	2.74
10	2.62	2.81	6.05	4.69	5.66	5.94	5.75	4.76	3.40	2.90	2.68	2.69
11	2.68	2.82	5.27	4.52	5.55	5.75	5.53	4.63	3.45	2.88	2.65	2.65
12	2.71	2.83	4.78	4.69	5.41	5.82	5.37	4.46	3.34	2.88	2.67	2.63
13	2.78	2.80	4.42	4.46	5.20	6.11	5.21	4.31	3.31	2.92	2.64	2.61
14	2.78	2.81	4.15	4.34	5.16	6.87	5.08	4.19	3.23	3.03	2.62	2.61
15	2.73	2.79	9.16	4.37	5.67	6.09	4.97	4.10	3.18	3.05	2.64	2.61
16	2.73	2.87	13.41	4.38	6.32	5.69	4.86	4.02	3.15	3.12	2.64	2.61
17	2.75	3.04	8.47	4.32	6.07	5.44	4.76	3.93	3.12	3.00	2.67	2.59
18	2.72	3.16	6.65	4.42	5.76	5.30	4.72	3.86	4.04	2.96	2.64	2.58
19	2.71	3.36	6.25	6.25	6.55	5.20	4.83	3.80	4.12	2.91	2.60	2.61
20	2.72	3.26	15.67	9.34	10.35	5.18	5.01	3.75	3.67	3.03	2.60	7.28
21	2.72	3.20	17.98	10.53	9.59	5.13	4.88	3.70	3.43	3.05	2.60	4.96
22	2.75	3.11	10.28	7.61	7.59	5.03	4.74	3.67	3.28	3.25	2.58	4.06
23	2.78	3.03	7.84	6.57	6.76	4.93	4.72	3.71	3.18	3.67	2.90	3.61
24	2.86	2.97	6.84	6.04	6.27	4.84	4.64	3.82	3.11	3.51	2.88	3.38
25	2.87	3.88	9.58	5.68	5.86	4.88	4.51	4.00	3.06	3.29	2.82	3.21
26	2.96	3.98	16.38	5.37	5.59	5.48	4.43	4.08	3.02	3.13	2.83	3.18
27	3.12	4.83	19.10	5.09	5.40	6.62	4.34	3.94	2.96	3.03	2.77	3.16
28	3.05	5.05	18.29	4.88	5.26	5.85	4.26	3.79	2.93	2.95	2.71	3.19
29	3.05	4.77	18.06	4.80	5.12	5.63	4.20	3.69	2.92	2.90	2.68	3.15
30	2.98	4.57	9.83	4.71	---	14.31	4.14	3.61	2.95	2.96	2.66	3.04
31	2.91	---	8.07	4.67	---	18.15	---	3.55	---	2.87	2.65	---

## MERAMEC RIVER BASIN

07019000 MERAMEC RIVER NEAR EUREKA, MO

LOCATION.--Lat 38°30'20", long 90°35'30", in SE 1/4 sec.32, T.44 N., R.4 E., St. Louis County, Hydrologic Unit 07140102, on right bank, 44 ft upstream from bridge on north access roadway of I-44, 2.0 mi east of Eureka, 3.0 mi downstream from Big River, and at mile 34.1.

DRAINAGE AREA.--3,788 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1903 to July 1906, October 1921 to current year. Monthly discharge only for January, February, and March 1904, published in WSP 1311.

REVISED RECORDS.--WSP 877: 1938(M). WSP 977: 1942. WSP 1007: Drainage area. WSP 1281: 1924-25.

GAGE.--Water-stage recorder. Datum of gage is 404.18 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 17, 1933, nonrecording gage at site 200 ft upstream at different datum. Jan. 17, 1933, to Sept. 22, 1937, nonrecording gage, and Sept. 23, 1937, to Sept. 30, 1971, water-stage recorder at present site at datum 2.00 ft higher.

REMARKS.--Estimated daily discharges: Oct. 1-11. Water-discharge records good except for estimated daily discharges, which are poor. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of August 22, 1915, reached a stage of 42.2 ft, from floodmarks, present datum, discharge, 175,000 ft<sup>3</sup>/s, by slope-area measurement of peak flow.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	551	745	2620	8560	12500	3000	26400	1630	1000	626	623	515
2	595	728	2230	6450	23100	2850	15100	1570	954	664	605	501
3	556	711	1830	5310	25800	5760	8980	1540	912	693	585	511
4	532	698	1540	4570	19900	13500	8980	1820	877	729	596	520
5	512	686	1340	4010	9770	17400	7780	4610	850	832	592	530
6	492	671	1210	3550	7010	17100	6510	3780	827	837	559	528
7	487	659	1570	3190	5570	9580	6390	2830	804	759	537	528
8	482	658	3050	2960	4640	7410	6860	2340	797	701	544	517
9	482	656	6010	2910	4190	6360	5720	2080	850	651	525	500
10	541	650	7970	2730	3820	5520	4910	1930	827	620	515	484
11	571	647	4710	2680	3580	4970	4380	1840	828	608	496	473
12	611	640	3250	2490	3300	5070	4010	1810	797	607	496	464
13	617	634	2530	2270	3090	5330	3720	1710	774	735	488	465
14	618	630	2170	2180	3060	6010	3390	1580	746	912	480	464
15	616	624	5450	2070	3580	5290	3110	1500	720	817	524	464
16	629	662	10600	1970	4470	4540	2880	1430	706	783	583	464
17	653	717	11100	1950	5550	4090	2680	1370	692	715	555	464
18	642	741	7560	1990	4530	3800	2590	1310	778	681	528	459
19	633	797	6370	3280	5580	3530	2630	1260	949	734	502	486
20	637	823	19200	6390	10400	3330	2880	1210	829	816	479	1320
21	634	831	27100	8330	16300	3180	2770	1180	779	796	472	1210
22	644	797	29300	7440	13800	3010	2590	1170	728	845	466	961
23	665	758	30200	5470	7900	2850	2460	1210	687	974	585	905
24	708	759	15500	4420	5940	2700	2330	1240	660	1060	652	835
25	711	1090	12000	3800	4920	2730	2180	1270	642	1010	617	766
26	711	1300	23900	3330	4240	3090	2050	1340	616	908	616	736
27	778	3050	33100	3000	3780	3790	1950	1300	597	812	597	723
28	808	3720	43500	2730	3450	3590	1860	1230	580	736	596	730
29	808	2810	46000	2500	3200	5530	1770	1140	579	686	600	735
30	780	2690	38000	2340	---	17200	1690	1080	604	702	574	698
31	763	---	21300	2850	---	25800	---	1040	---	659	538	---
MEAN	628	1053	13620	3797	7827	6707	5052	1689	766	765	552	632
MAX	808	3720	46000	8560	25800	25800	26400	4610	1000	1060	652	1320
MIN	482	624	1210	1950	3060	2700	1690	1040	579	607	466	459
IN.	.19	.31	4.15	1.16	2.23	2.04	1.49	.51	.23	.23	.17	.19

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1447	2392	3139	2986	3914	5065	6059	5101	3675	1846	1119	1147
MEAN	1447	2392	3139	2986	3914	5065	6059	5101	3675	1846	1119	1147
MAX	12120	15450	23620	17320	14730	13960	22580	17780	18070	12600	4286	5478
(WY)	1950	1986	1983	1950	1982	1978	1927	1983	1945	1951	1950	1934
MIN	235.5	464.1	425.8	374.3	537.6	513.5	945.3	707.7	503.0	317.7	255.5	243.8
(WY)	1957	1957	1956	1956	1954	1954	1954	1932	1936	1936	1936	1956

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	3586	3157
HIGHEST ANNUAL MEAN		7407
LOWEST ANNUAL MEAN		750.5
HIGHEST DAILY MEAN	46000	Dec 29
LOWEST DAILY MEAN	459	Sep 18
INSTANTANEOUS PEAK FLOW	46600	Dec 29
INSTANTANEOUS PEAK STAGE (FEET)	25.23	Dec 29
INSTANTANEOUS LOW FLOW	459	Sep 18
ANNUAL RUNOFF (INCHES)	12.9	11.3
10 PERCENTILE	7850	6640
50 PERCENTILE	1230	1370
95 PERCENTILE	498	433

## MERAMEC RIVER BASIN

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07019000 MERAMEC RIVER NEAR EUREKA, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	2.61	4.33	8.28	8.63	4.28	17.34	3.21	2.67	2.22	2.23	2.10
2	---	2.59	4.06	6.97	15.08	4.14	12.46	3.17	2.62	2.27	2.21	2.07
3	---	2.56	3.71	6.15	17.31	4.37	8.44	3.14	2.57	2.30	2.19	2.07
4	---	2.55	3.44	5.57	15.40	10.32	8.23	3.23	2.54	2.35	2.20	2.10
5	---	2.53	3.25	5.14	8.98	12.60	7.83	5.41	2.50	2.45	2.20	2.11
6	---	2.51	3.12	4.80	7.39	13.21	6.83	4.75	2.48	2.51	2.16	2.11
7	---	2.50	3.11	4.46	6.36	8.80	6.43	4.08	2.45	2.40	2.12	2.11
8	---	2.50	4.35	4.14	5.62	7.62	7.15	3.73	2.42	2.34	2.13	2.10
9	---	2.49	5.91	4.16	5.26	6.76	6.26	3.55	2.51	2.27	2.10	2.07
10	---	2.48	8.25	3.97	4.97	6.06	5.59	3.43	2.47	2.23	2.09	2.05
11	---	2.48	5.94	3.99	4.77	5.62	5.15	3.37	2.48	2.21	2.06	2.04
12	2.31	2.47	4.88	3.88	4.57	5.61	4.83	3.34	2.44	2.21	2.06	2.02
13	2.32	2.47	4.30	3.76	4.36	5.62	4.60	3.29	2.41	2.23	2.05	2.02
14	2.33	2.46	3.93	3.65	4.29	6.41	4.39	3.18	2.38	2.58	2.04	2.02
15	2.32	2.45	5.77	3.62	4.74	5.93	4.22	3.12	2.35	2.47	2.03	2.02
16	2.33	2.49	9.00	3.50	5.03	5.29	4.07	3.06	2.33	2.44	2.18	2.02
17	2.38	2.56	9.61	3.47	6.45	4.90	3.94	3.02	2.32	2.36	2.15	2.02
18	2.36	2.59	7.90	3.50	5.54	4.65	3.86	2.97	2.31	2.30	2.10	2.01
19	2.34	2.66	6.03	3.92	5.44	4.46	3.85	2.93	2.64	2.36	2.07	2.03
20	2.35	2.69	13.14	6.58	8.44	4.34	4.05	2.90	2.49	2.47	2.04	2.25
21	2.35	2.71	17.02	7.89	12.01	4.25	4.00	2.86	2.42	2.44	2.03	2.90
22	2.35	2.67	18.70	7.72	11.74	4.14	3.88	2.84	2.36	2.46	2.02	2.63
23	2.38	2.63	19.05	6.30	7.93	4.04	3.78	2.89	2.31	2.59	2.16	2.56
24	2.43	2.58	13.09	5.48	6.61	3.94	3.71	2.90	2.28	2.72	2.28	2.49
25	2.48	2.94	9.14	4.99	5.85	3.92	3.61	2.93	2.26	2.70	2.22	2.41
26	2.49	3.13	15.41	4.60	5.31	4.00	3.52	---	2.23	2.57	2.22	2.37
27	2.61	4.11	19.12	4.30	4.94	4.66	3.45	2.96	2.20	2.47	2.21	2.35
28	2.66	5.26	24.01	4.06	4.67	4.51	3.38	2.88	2.18	2.38	2.19	2.35
29	2.69	4.51	25.17	3.88	4.46	4.45	3.32	2.80	2.17	2.31	2.20	2.37
30	2.65	4.33	22.81	3.77	---	11.89	3.26	2.74	2.21	2.33	2.17	2.33
31	2.63	---	16.88	3.69	---	16.36	---	2.70	---	2.27	2.12	---

## MERAMEC RIVER BASIN

07019000 MERAMEC RIVER NEAR EUREKA, MO--Continued  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--January 1978 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1978 to September 1981.

WATER TEMPERATURE: January 1978 to September 1981.

SUSPENDED-SEDIMENT: February 1969 to September 1970, October 1980 to May 1981, November 1981 to September 1986 (discontinued).

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 660 microsiemens, June 11, 1980; minimum daily, 136 microsiemens, Mar. 27, 1978.

WATER TEMPERATURE: Maximum daily, 32.0°C, July 1, 9, 1978; minimum daily, 0.0°C many days during winter periods.

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,380 mg/L, Nov. 21, 1985; minimum daily mean, 2 mg/L, Dec. 10, 13, 16, 17, 20, 1980, Oct. 7, 8, 1985, Aug. 11, 15, 16, 1986.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 619,000 tons, Nov. 21, 1985; minimum daily, 3.2 tons, Dec. 20, 1980.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (FTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
NOV										
05...	0745	686	382	--	8.00	12.5	1.3	7.9	74	K6
JAN										
13...	1120	2370	--	318	7.80	0.0	3.1	15.3	104	31
MAR										
04...	1120	13200	265	--	7.70	4.0	53	12.2	94	K1700
MAY										
19...	1315	1250	370	--	8.20	22.0	2.1	8.7	101	K10
JUL										
14...	0955	925	388	--	8.40	27.5	3.2	6.3	81	--
SEP										
15...	1140	464	381	--	8.40	23.5	3.5	7.2	86	K15

DATE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FIELD (MG/L AS CACO3) (00904)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY DISSOLV FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
NOV									
05...	52	230	19	45	28	6.7	1.6	209	24
JAN									
13...	K14	160	11	34	18	3.9	1.4	148	22
MAR									
04...	7800	120	8	32	10	5.2	1.7	113	23
MAY									
19...	K6	200	19	41	24	4.5	1.3	182	23
JUL									
14...	--	210	28	40	26	5.9	1.4	--	21
SEP									
15...	K10	200	19	36	27	5.4	1.3	182	20

K--Results based on colony count outside the acceptable range (non-ideal colony count).

## 07019000 MERAMEC RIVER NEAR EUREKA, MO--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
NOV 05...	9.0	0.20	5.6	239	246	0.33	567	<0.010	<0.100
JAN 13...	5.7	0.10	9.0	176	187	0.24	1270	<0.010	0.730
MAR 04...	8.1	0.10	7.9	157	156	0.21	5600	--	--
MAY 19...	5.4	0.20	3.6	204	212	0.28	832	<0.010	<0.100
JUL 14...	7.6	0.10	8.4	205	218	0.28	512	<0.010	<0.100
SEP 15...	7.2	0.10	8.0	210	216	0.29	263	<0.010	<0.100

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, DIS- SUS- PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 05...	0.040	0.030	<0.20	0.020	0.020	0.010	37	87	--
JAN 13...	0.030	0.040	0.20	0.030	0.030	0.020	4	32	23
MAR 04...	0.090	--	0.50	0.080	0.050	--	128	4560	99
MAY 19...	<0.010	<0.010	<0.20	0.020	0.020	<0.010	24	98	68
JUL 14...	0.020	0.040	0.20	0.030	0.020	<0.010	34	85	58
SEP 15...	<0.010	<0.010	0.20	0.020	0.040	0.010	20	25	45

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 05...	<10	<1	170	<0.5	<1	<1	<3	1	5	<5
JAN 13...	<10	<1	110	<0.5	<1	<1	<3	3	15	<5
MAY 19...	20	<1	180	<0.5	<1	<1	<3	6	4	<5
JUL 14...	<10	1	160	<0.5	<1	<1	<3	3	10	<5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 05...	<4	14	<0.1	<10	2	<1	<1.0	59	<6	<3
JAN 13...	<4	53	<0.1	<10	1	<1	1.0	47	<6	10
MAY 19...	5	21	<0.1	<10	<1	<1	<1.0	57	<6	12
JUL 14...	<4	4	<0.1	<10	1	<1	<1.0	59	<6	28

MERAMEC RIVER BASIN  
07019280 MERAMEC RIVER AT PAULINA HILLS, MO  
WATER-QUALITY RECORDS

LOCATION.--Lat 38°27'46", long 90°24'53", Jefferson County, Hydrologic Unit 07140102, at bridge on State Highway 21 at Paulina Hills, 0.3 mi downstream from Saline Creek, and 10 mi upstream from mouth.

DRAINAGE AREA.--3,950 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--August 1963 to July 1975, October 1981 to current year.

REMARKS.--Records of discharge are given for gaging station near Eureka, Mo.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
OCT											
08...	0730	530	382	--	8.50	13.0	7.9	75	28	92	200
NOV											
04...	1445	976	412	--	8.10	17.0	10.5	110	42	78	--
DEC											
10...	0720	9860	274	--	7.80	7.0	10.4	87	19	660	--
JAN											
13...	1400	2940	--	329	7.50	0.0	15.1	102	<10	K28	160
FEB											
03...	1415	28700	145	--	7.60	4.0	12.2	94	12	1500	--
MAR											
03...	1400	6020	342	--	8.00	6.5	12.1	101	<10	980	--
APR											
08...	0725	8150	271	--	8.10	14.5	8.1	80	11	160	130
MAY											
20...	0800	1640	390	--	8.20	22.0	8.7	101	24	46	--
JUN											
03...	0730	1020	416	--	8.20	23.5	6.7	80	88	190	--
JUL											
14...	0800	1020	411	--	8.30	28.0	5.3	69	13	--	210
AUG											
05...	0730	660	395	--	8.30	29.0	4.8	63	<10	K2100	--
SEP											
15...	1330	510	412	--	8.50	25.0	6.7	82	12	K1700	--

DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT											
08...	8	40	25	11	2.0	195	0.7	26	12	0.20	230
NOV											
04...	--	--	--	--	--	204	3.1	--	--	--	246
DEC											
10...	--	--	--	--	--	159	4.9	--	--	--	185
JAN											
13...	18	35	18	6.7	1.6	144	8.7	24	9.1	0.10	187
FEB											
03...	--	--	--	--	--	76	3.7	--	--	--	112
MAR											
03...	--	--	--	--	--	135	2.6	--	--	--	189
APR											
08...	11	28	14	4.7	1.4	117	1.8	25	6.1	0.20	139
MAY											
20...	--	--	--	--	--	182	2.2	--	--	--	213
JUN											
03...	--	--	--	--	--	184	2.3	--	--	--	222
JUL											
14...	37	40	26	11	1.7	170	1.6	29	11	0.10	231
AUG											
05...	--	--	--	--	--	172	1.7	--	--	--	224
SEP											
15...	--	--	--	--	--	172	1.0	--	--	--	230

K--Results based on colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## 07020500 MISSISSIPPI RIVER AT CHESTER, IL

LOCATION.--Lat 37°54'10", long 89°51'10", in SW 1/4 sec.24, T.7 S., R.7 W., third principal meridian, Randolph County, Hydrologic Unit 07140105, on downstream side of left pier of main truss of highway bridge at Chester 8.1 mi downstream from Kaskaskia River, and at mile 109.9 above Ohio River.

DRAINAGE AREA.--708,600 mi<sup>2</sup>, approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Discharge: October 1927 to current year in reports of Geological Survey. Monthly discharge only for some periods, published in WSP 1311. Since August 1873, results of discharge measurements in reports of Mississippi River Commission.

Gage heights: July 1942 to current year in reports of U.S. Geological Survey. Since May 1891, in reports of Mississippi River Commission and National Weather Service.

REVISED RECORDS.--WDR MO-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 341.05 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 1, 1962, nonrecording gage 0.4 mi downstream at present datum.

REMARKS.--No estimated daily discharges. Water-discharge records good. Natural flow of stream affected by many reservoirs and navigation dams in upper Mississippi River basin and by many reservoirs and diversions for irrigation in Missouri River basin. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 30, 1844, reached a gage height of 39.8 ft, discharge, 1,350,000 ft<sup>3</sup>/s, computed by U.S. Army Corps of Engineers.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	124000	97100	167000	327000	199000	195000	324000	175000	91900	69100	63200	71500
2	119000	98800	180000	278000	257000	192000	309000	174000	94500	65900	63000	70200
3	117000	98300	188000	233000	276000	200000	298000	169000	101000	65600	64600	68600
4	104000	102000	183000	205000	264000	225000	300000	167000	104000	64600	66800	61600
5	98600	108000	167000	191000	256000	243000	315000	161000	103000	64000	65400	60500
6	101000	117000	160000	174000	237000	254000	323000	163000	99000	64100	66200	64300
7	98000	123000	161000	167000	210000	247000	322000	166000	95400	66700	66400	69500
8	92800	120000	168000	164000	197000	248000	311000	159000	90000	68100	62800	66900
9	88600	114000	163000	156000	190000	247000	297000	156000	86100	66000	59400	64700
10	98900	112000	157000	148000	181000	230000	286000	149000	90900	60800	59700	67000
11	98300	109000	160000	141000	171000	219000	278000	131000	85400	60500	60000	64400
12	94000	104000	170000	140000	167000	220000	268000	128000	82700	59600	65300	63500
13	93500	99500	168000	143000	158000	224000	264000	136000	80100	62500	73900	62900
14	93500	101000	156000	143000	154000	220000	259000	140000	77000	71800	78700	63200
15	96400	100000	174000	144000	159000	215000	253000	138000	72900	75200	78400	58400
16	99600	101000	185000	143000	160000	215000	247000	136000	74200	73200	71600	60900
17	98600	108000	178000	134000	155000	213000	245000	136000	76100	72600	68900	65000
18	98800	110000	177000	142000	157000	205000	244000	133000	79400	73200	68500	67300
19	92200	104000	173000	153000	163000	193000	240000	126000	76100	73800	71500	67600
20	90000	102000	199000	175000	192000	190000	240000	126000	74200	76800	76900	70900
21	102000	104000	243000	204000	228000	189000	234000	125000	74500	74000	76600	86300
22	110000	109000	303000	211000	246000	178000	225000	125000	69600	72800	71200	79800
23	105000	117000	332000	218000	253000	167000	217000	126000	67900	70100	67500	81600
24	105000	122000	331000	218000	253000	154000	208000	125000	66600	69600	71800	101000
25	106000	124000	327000	210000	240000	148000	199000	124000	68200	71600	67300	103000
26	105000	129000	334000	200000	241000	156000	194000	123000	69600	76200	68800	97700
27	102000	141000	326000	176000	235000	155000	189000	120000	70800	78500	73600	89100
28	97500	163000	374000	165000	216000	149000	191000	114000	69900	73700	76100	86200
29	96400	172000	419000	168000	205000	161000	188000	107000	70100	68800	81800	86900
30	97800	168000	414000	168000	---	227000	179000	99500	70100	65300	76900	82900
31	95300	---	374000	165000	---	309000	---	98700	---	65900	74200	---
MEAN	100600	115900	232600	180800	207600	206100	254900	137300	81040	69050	69580	73450
MAX	124000	172000	419000	327000	276000	309000	324000	175000	104000	78500	81800	103000
MIN	88600	97100	156000	134000	154000	148000	179000	98700	66600	59600	59400	58400
IN.	.16	.18	.38	.29	.32	.34	.40	.22	.13	.11	.11	.12

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	150300	153500	135700	128300	157000	250900	339100	305800	270300	231100	145300	140400
MAX	588300	380400	500100	323200	331000	528400	719100	625000	597200	676800	254400	316000
(WY)	1987	1986	1983	1973	1974	1973	1973	1973	1947	1951	1981	1951
MIN	59490	59320	51070	47810	52860	84200	137800	127500	81040	69050	69580	66030
(WY)	1957	1957	1964	1964	1964	1964	1977	1977	1988	1988	1988	1976

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	143900	192200
HIGHEST ANNUAL MEAN		347500
LOWEST ANNUAL MEAN		96770
HIGHEST DAILY MEAN		885000
LOWEST DAILY MEAN	419000	37600
INSTANTANEOUS PEAK FLOW	58400	Apr 30 1973
INSTANTANEOUS PEAK STAGE (FEET)	426000	Jan 1 1964
INSTANTANEOUS LOW FLOW	25.57	Jul 3 1947
ANNUAL RUNOFF (INCHES)	56700	43.32
10 PERCENTILE	2.76	Apr 30 1973
50 PERCENTILE	250000	30000
95 PERCENTILE	123000	Dec 12 1937
	63700	3.68
		386000
		163000
		66100

## MISSISSIPPI RIVER MAIN STEM

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07020500 MISSISSIPPI RIVER AT CHESTER, IL--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.99	4.23	11.10	21.32	12.22	12.96	21.85	12.25	3.61	.87	-.24	1.26
2	7.38	4.52	11.98	18.72	16.97	12.52	20.96	12.22	3.93	.47	.18	.99
3	7.26	4.30	12.72	15.93	18.48	13.05	20.38	11.89	4.57	.32	.11	1.05
4	5.70	4.82	12.59	13.90	17.74	15.19	20.18	11.65	5.05	.25	.72	-.01
5	4.81	5.51	11.24	12.89	17.29	16.50	21.07	11.27	5.09	.14	.28	-.28
6	5.20	6.42	10.60	11.67	16.33	17.66	21.66	11.26	4.48	.17	---	-.03
7	4.69	7.34	10.59	11.01	14.33	17.35	21.65	11.67	4.15	.46	.53	.85
8	4.31	7.11	11.24	10.81	13.33	17.21	21.06	11.13	3.48	.65	.27	.69
9	3.19	6.24	10.95	10.20	12.76	17.34	20.34	10.83	2.65	.53	-.34	.02
10	4.54	6.03	10.39	9.53	12.14	16.27	19.70	10.55	3.58	-.24	-.34	.56
11	4.70	5.68	10.40	8.91	11.36	15.28	19.21	8.65	2.77	-.28	-.35	.13
12	3.96	5.17	11.31	8.75	11.11	15.24	18.59	8.13	2.52	-.48	.25	.01
13	3.82	4.52	11.42	9.03	10.21	15.62	18.32	8.89	2.26	-.17	1.24	-.21
14	3.78	4.71	10.24	9.13	9.82	15.33	18.04	9.31	1.82	.95	2.02	.0
15	4.10	4.70	11.37	9.04	10.14	14.97	17.71	9.36	1.30	1.49	2.21	-.61
16	4.61	4.58	12.60	9.37	10.44	14.87	17.30	9.00	1.36	1.38	1.33	-.52
17	4.48	5.24	11.97	7.94	9.81	14.80	17.23	9.05	1.68	1.01	.83	.14
18	4.64	5.91	11.91	8.85	10.06	14.30	17.11	8.88	2.20	1.31	.87	.30
19	3.60	5.07	11.54	9.51	10.16	13.29	16.91	8.01	1.87	1.22	1.08	.77
20	3.36	4.74	13.11	11.22	12.28	12.94	16.79	8.05	1.52	1.78	1.92	.30
21	4.43	4.94	15.59	13.55	14.80	12.95	16.54	7.96	1.68	1.22	1.87	3.15
22	6.04	5.52	19.44	14.24	16.30	12.17	15.92	7.90	1.10	1.25	1.38	2.13
23	5.32	6.24	21.23	14.53	16.47	11.31	15.37	8.19	.89	.89	.59	1.99
24	5.24	7.19	21.25	14.75	17.00	10.29	14.79	7.95	.56	.74	1.29	4.57
25	5.41	7.07	20.82	14.26	15.91	9.54	14.10	7.93	.81	1.14	.84	5.21
26	5.45	7.82	21.45	13.74	16.02	10.31	13.77	7.72	.91	1.21	.73	4.63
27	5.01	8.64	20.48	11.96	15.80	10.56	13.29	7.50	1.16	1.98	1.51	3.36
28	4.43	10.64	22.50	10.76	14.50	9.97	13.52	6.61	.91	1.52	1.68	2.97
29	4.21	11.61	25.12	11.07	13.68	10.40	13.27	6.01	1.03	.83	2.68	3.11
30	4.46	11.28	25.36	11.03	---	14.88	12.60	4.68	1.03	.28	1.78	2.57
31	4.07	---	23.60	10.85	---	20.53	---	4.83	---	.54	1.77	---

## MISSISSIPPI RIVER MAIN STEM

07020500 MISSISSIPPI RIVER AT CHESTER, IL--Continued

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT: August 1980 to current year.

REMARKS.--Sediment record poor.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,380 mg/L, Apr. 12, 1987; minimum daily mean, 13 mg/L, Mar. 18, 1981.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 3,170,000 tons, June 6, 1982; minimum daily, 3,580 tons, Mar. 18, 1981.

## EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 799 mg/L, Dec. 24; minimum daily mean, 52 mg/L, Aug. 18.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 714,000 tons, Dec. 24; minimum daily, 9,140 tons, July 5.

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SED. SUSP. FALL DIAM.	SED. SUSP. FALL DIAM.	SED. SUSP. FALL DIAM.	SED. SUSP. FALL DIAM.	SED. SUSP. FALL DIAM.	SED. SUSP. FALL DIAM.	SED. SUSP. FALL DIAM.	SED. SUSP. FALL DIAM.	SED. SUSP. FALL DIAM.
			% FINER THAN .002 MM (70337)	% FINER THAN .004 MM (70338)	% FINER THAN .008 MM (70339)	% FINER THAN .016 MM (70340)	% FINER THAN .062 MM (70342)	% FINER THAN .125 MM (70343)	% FINER THAN .250 MM (70344)	% FINER THAN .500 MM (70345)	% FINER THAN 1.00 MM (70346)
DEC 22...	1110	304000	24	28	34	44	65	69	95	100	--
FEB 25...	1230	241000	26	31	37	44	58	61	86	93	100

## MISSISSIPPI RIVER MAIN STEM

07020500 MISSISSIPPI RIVER AT CHESTER, IL--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	124000	385	129000	97100	90	23700	167000	136	61200
2	119000	254	81700	98800	71	18900	180000	151	73500
3	117000	233	73800	98300	67	17700	188000	158	80000
4	104000	233	65500	102000	72	19900	183000	164	81000
5	98600	226	60300	108000	85	24900	167000	172	77500
6	101000	192	52300	117000	91	28900	160000	178	76700
7	98000	168	44500	123000	91	30300	161000	184	80000
8	92800	161	40400	120000	98	31700	168000	190	86100
9	88600	158	37800	114000	134	41400	163000	162	71200
10	98900	155	41300	112000	185	56000	157000	198	83700
11	98300	151	40000	109000	179	52800	160000	208	90000
12	94000	145	36800	104000	131	36900	170000	203	93100
13	93500	139	35000	99500	96	25800	168000	197	89500
14	93500	124	31200	101000	95	26000	156000	189	79700
15	96400	77	20000	100000	108	29100	174000	183	85800
16	99600	100	26900	101000	151	41200	185000	186	93000
17	98600	125	33300	108000	94	27400	178000	196	94400
18	98800	135	36000	110000	82	24500	177000	192	91900
19	92200	130	32400	104000	90	25300	173000	187	87500
20	90000	104	25300	102000	99	27200	199000	281	151000
21	102000	82	22600	104000	109	30500	243000	513	337000
22	110000	97	28700	109000	118	34800	303000	691	566000
23	105000	115	32600	117000	128	40300	332000	753	675000
24	105000	118	33300	122000	114	37400	331000	799	714000
25	106000	106	30300	124000	155	51700	327000	787	695000
26	105000	82	23200	129000	158	54900	334000	742	669000
27	102000	92	25500	141000	145	55200	326000	660	581000
28	97500	79	20700	163000	132	58100	374000	557	562000
29	96400	66	17300	172000	121	56000	419000	541	612000
30	97800	88	23200	168000	107	48700	414000	564	630000
31	95300	99	25400	---	---	---	374000	493	498000
TOTAL	3118800	---	1226300	3477700	---	1077200	7211000	---	8265800
JANUARY			FEBRUARY			MARCH			
1	327000	382	337000	199000	---	185000	195000	---	175000
2	278000	297	223000	257000	---	335000	192000	---	172000
3	233000	212	192000	276000	---	400000	200000	---	188000
4	205000	137	170000	264000	---	365000	225000	---	250000
5	191000	---	150000	256000	---	330000	243000	---	300000
6	174000	---	135000	237000	---	270000	254000	---	325000
7	167000	---	126000	210000	---	210000	247000	---	305000
8	164000	---	120000	197000	---	118000	248000	319	214000
9	156000	---	118000	190000	---	165000	247000	267	178000
10	148000	---	93000	181000	---	150000	230000	218	135000
11	141000	---	84000	171000	---	133000	219000	270	160000
12	140000	155	86000	167000	---	120000	220000	247	146000
13	143000	---	90000	158000	---	110000	224000	233	141000
14	143000	---	90000	154000	---	83000	220000	224	133000
15	144000	---	90500	159000	---	111000	215000	205	119000
16	143000	---	90000	160000	323	140000	215000	223	129000
17	134000	---	89500	155000	228	95600	213000	212	122000
18	142000	---	89000	157000	193	81800	205000	139	76700
19	153000	265	109000	163000	259	114000	193000	178	92700
20	175000	358	169000	192000	436	226000	190000	174	89400
21	204000	429	236000	228000	526	324000	189000	150	76600
22	211000	---	218000	246000	577	383000	178000	120	57500
23	218000	---	230000	253000	626	427000	167000	110	49500
24	218000	---	230000	253000	668	457000	154000	122	50800
25	210000	---	205000	240000	475	308000	148000	129	51700
26	200000	---	190000	241000	---	292000	156000	128	53900
27	176000	---	140000	235000	---	275000	155000	111	46500
28	165000	277	123000	216000	---	220000	149000	99	39900
29	168000	224	101000	205000	---	198000	161000	151	65600
30	168000	---	127000	---	---	---	227000	291	179000
31	165000	---	120000	---	---	---	309000	495	413000
TOTAL	5604000	---	4571000	6020000	---	6626400	6388000	---	4534800

## MISSISSIPPI RIVER MAIN STEM

07020500 MISSISSIPPI RIVER AT CHESTER, IL--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	324000	693	607000	175000	---	76000	91900	122	30300
2	309000	592	494000	174000	---	72000	94500	175	44800
3	298000	488	392000	169000	---	72000	101000	254	69400
4	300000	404	327000	167000	---	66000	104000	266	74600
5	315000	454	386000	161000	---	64000	103000	180	50100
6	323000	577	504000	163000	---	65000	99000	105	28000
7	322000	584	508000	166000	---	66000	95400	86	22100
8	311000	531	446000	159000	---	57000	90000	76	18500
9	297000	421	338000	156000	---	54000	86100	97	22600
10	286000	397	307000	149000	---	48000	90900	101	24700
11	278000	409	307000	131000	112	39600	85400	95	22000
12	268000	400	290000	128000	128	44400	82700	174	39000
13	264000	341	243000	136000	135	49400	80100	75	16200
14	259000	306	214000	140000	134	50500	77000	74	15400
15	253000	265	181000	138000	112	41600	72900	72	14200
16	247000	240	160000	136000	79	29000	74200	147	29500
17	245000	220	145000	136000	83	30600	76100	136	27900
18	244000	240	158000	133000	101	36400	79400	117	25200
19	240000	261	169000	126000	124	42100	76100	122	25200
20	240000	232	150000	126000	135	45800	74200	147	29400
21	234000	199	126000	125000	139	46900	74500	198	39900
22	225000	197	120000	125000	137	46200	69600	184	34600
23	217000	175	103000	126000	128	43500	67900	155	28400
24	208000	176	98900	125000	121	41000	66600	141	25300
25	199000	183	98500	124000	118	39400	68200	127	23400
26	194000	146	76600	123000	115	38100	69600	115	21600
27	189000	150	76400	120000	103	33400	70800	94	18000
28	191000	148	76200	114000	113	34700	69900	93	17500
29	188000	152	77300	107000	70	20200	70100	109	20500
30	179000	---	---	99500	79	21100	70100	96	18200
31	---	---	---	98700	111	29500	---	---	---
TOTAL	7647000	---	---	4256200	---	1443400	2431200	---	876500
JULY			AUGUST			SEPTEMBER			
1	69100	58	10800	63200	99	17000	71500	---	17500
2	65900	56	10000	63000	98	16600	70200	---	16800
3	65600	55	9660	64600	79	13900	68600	---	15800
4	64600	53	9220	66800	68	12200	61600	---	12200
5	64000	53	9140	65400	58	10200	60500	---	11800
6	64100	60	10400	66200	55	9830	64300	---	13900
7	66700	59	10700	66400	64	11500	69500	---	16000
8	68100	60	11100	62800	82	13900	66900	---	14800
9	66000	58	10400	59400	84	13400	64700	---	13000
10	60800	88	14400	59700	88	14100	67000	---	15000
11	60500	87	14200	60000	72	11700	64400	---	13900
12	59600	88	14200	65300	67	11900	63500	---	13800
13	62500	78	13200	73900	74	14800	62900	---	13000
14	71800	68	13100	78700	77	16300	63200	60	10300
15	75200	80	16300	78400	71	15100	58400	69	10900
16	73200	74	14700	71600	67	12900	60900	---	12100
17	72600	74	14600	68900	62	11600	65000	---	13000
18	73200	87	17200	68500	52	9630	67300	---	15000
19	73800	69	13800	71500	---	17000	67600	---	15600
20	76800	66	13800	76900	---	21000	70900	---	17100
21	74000	85	17100	76600	---	20500	86300	---	27500
22	72800	84	16500	71200	---	16500	79800	---	21800
23	70100	69	13100	67500	---	15000	81600	---	23500
24	69600	65	12200	71800	84	16200	101000	---	40000
25	71600	64	12400	67300	108	19600	103000	---	43000
26	76200	63	13000	68800	140	26100	97700	---	35500
27	78500	92	19600	73600	137	27200	89100	---	29000
28	73700	74	14800	76100	100	20400	86200	---	26200
29	68800	100	18600	81800	81	17900	86900	---	27000
30	65300	101	17800	76900	86	17800	82900	---	25000
31	65900	88	15700	74200	---	17600	---	---	---
TOTAL	2140600	---	421720	2157000	---	489360	2203400	---	580000

## HEADWATER DIVERSION CHANNEL BASIN

203

07021000 CASTOR RIVER AT ZALMA, MO

LOCATION.--Lat 37°08'48", long 90°04'32", in SE 1/4 sec.29, T.29 N., R.9 E., Bollinger County, Hydrologic Unit 07140107, on downstream side of left bridge pier on State Highway 51 in Zalma, and 2.5 mi downstream from Perkins Creek.

DRAINAGE AREA.--423 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1920 to current year. Prior to October 1921 monthly discharge only published in WSP 1931.

REVISED RECORDS.--WSP 1147: 1922-23(M). WSP 1281: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 350.38 ft above National Geodetic Vertical Datum of 1929. Jan. 1920 to Oct. 1, 1925, at site 500 ft upstream at datum 49.82 ft lower, Oct. 1, 1925 to Nov. 12, 1930, at site 500 ft upstream at datum 0.18 ft higher. Nov. 13, 1930 to June 8, 1953, nonrecording gage at present site and datum. Since Dec. 18, 1949, auxiliary nonrecording gage, 6.0 mi downstream.

REMARKS.--Estimated daily discharges: Jan. 3-10. Records good except for estimated daily discharges, which are fair. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1915 reached a stage of 28.0 ft, present datum, from floodmarks by local residents.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	87	244	937	371	353	2500	179	98	73	70	55
2	75	85	223	794	403	342	1410	172	95	75	69	85
3	71	84	207	680	421	714	1290	168	92	76	68	1780
4	68	84	191	600	449	1680	1180	179	88	75	66	1410
5	67	83	177	520	497	1300	903	180	85	72	64	484
6	66	82	182	460	495	912	747	169	83	71	65	265
7	64	82	231	391	472	759	653	160	81	68	67	202
8	63	82	352	360	454	680	590	154	80	65	65	165
9	63	84	548	325	436	650	535	166	79	62	65	142
10	64	88	497	300	414	619	485	164	76	60	63	127
11	67	90	418	270	402	573	443	162	74	126	61	118
12	76	89	359	251	386	1050	408	157	73	202	59	138
13	78	87	316	240	363	1800	377	168	71	129	57	148
14	77	85	315	227	343	1250	351	164	69	113	57	137
15	74	85	1060	214	340	899	328	152	68	101	55	124
16	72	95	2000	209	328	758	309	145	68	91	55	112
17	73	136	1080	1430	316	684	291	142	67	82	54	105
18	73	152	705	3780	321	649	298	135	66	77	54	103
19	74	147	640	2790	401	617	296	129	64	79	93	114
20	79	132	1310	3920	657	566	273	123	63	98	70	132
21	79	121	1620	2800	756	523	260	119	61	107	61	159
22	77	114	1000	1650	682	483	249	118	59	97	58	136
23	77	110	722	1190	624	451	241	129	58	88	59	122
24	77	108	620	876	567	425	230	147	57	81	61	122
25	77	122	1830	673	512	452	221	147	57	104	58	127
26	80	210	7800	573	470	496	215	136	55	84	57	136
27	85	259	9210	535	437	478	207	124	54	80	57	122
28	85	264	4700	486	406	467	199	116	53	76	59	110
29	87	273	3160	447	378	1380	192	110	56	76	57	103
30	88	266	1790	415	---	7700	185	107	65	74	56	102
31	88	---	1220	390	---	7400	---	102	---	75	56	---
MEAN	74.8	126	1443	927	452	1197	529	146	70.5	88.3	61.8	239
MAX	88	273	9210	3920	756	7700	2500	180	98	202	93	1780
MIN	63	82	177	209	316	342	185	102	53	60	54	55
IN.	.20	.33	3.93	2.53	1.15	3.26	1.40	.40	.19	.24	.17	.63

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	162.4	397.5	581.5	719.6	681.7	1044	1014	776.4	434.2	170.2	107.4	119.5
MAX	1576	2045	5507	3735	2278	3521	3645	2871	4082	1195	298.0	882.6	
(WY)	1985	1985	1983	1937	1950	1945	1927	1946	1928	1976	1982	1965	
MIN	37.0	59.1	72.1	60.7	95.4	98.0	141.9	90.2	43.9	33.4	22.5	31.5	
(WY)	1921	1921	1956	1956	1934	1941	1971	1932	1936	1936	1936	1953	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	448.4	515.0
HIGHEST ANNUAL MEAN		1088
LOWEST ANNUAL MEAN		149.3
HIGHEST DAILY MEAN	9210	42700
LOWEST DAILY MEAN	53	16
INSTANTANEOUS PEAK FLOW	11500	97100
INSTANTANEOUS PEAK STAGE (FEET)	23.47	29.92
INSTANTANEOUS LOW FLOW	53	16
ANNUAL RUNOFF (INCHES)	14.4	16.5
10 PERCENTILE	870	1050
50 PERCENTILE	148	182
95 PERCENTILE	58	48

## MISSISSIPPI RIVER MAIN STEM

07022000 MISSISSIPPI RIVER AT THEBES, IL

LOCATION.--Lat 37°13'00", long 89°27'50", in NW 1/4 sec.17, T.15 S., R.3 W., Alexander County, Hydrologic Unit 07140105, near center span on downstream side of railroad bridge at Thebes, 5.0 mi downstream from Headwater Diversion Channel, and at mile 43.7 above Ohio River.

DRAINAGE AREA.--713,200 mi<sup>2</sup>, approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Discharge: Oct. 1932 to current year. Monthly discharge only for some periods, published in WSP 1311. Prior to April 1941, published as "at Cape Girardeau, Mo.".

Gage heights: March 1933 to February 1938 and October 1939 to current year in reports of Geological Survey (prior to April 1941, published as "at Cape Girardeau, Mo."). Since November 1878, under name of "at Grays Point" in files of St. Louis District office of U.S. Army Corps of Engineers. January 1879 to May of 1896, published as "at Grays Point" and since May 1896, published as "at Cape Girardeau" in reports of Mississippi River Commission. February 1891 to February 1894 and since 1904, published as "at Cape Girardeau" in reports of National Weather Service.

REVISED RECORDS.--WSP 1341: 1844(M). WDR MO-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 300.00 ft above National Geodetic Vertical Datum of 1929. Mar. 17, 1933 to Dec. 21 1934, nonrecording gage and Dec. 22, 1934 to Apr. 4, 1941, water-stage recorder, at site 8.2 mi upstream at datum 4.65 ft higher. Apr. 5, 1941 to Sept. 30, 1941, nonrecording gage at present site and datum and Oct. 1, 1941 to Oct. 11, 1943, at datum 0.07 ft higher. Prior to Apr. 5, 1941, various auxiliary gages used. Since Oct. 1, 1943, former gage at Cape Girardeau used as auxiliary gage.

REMARKS.--Estimated daily discharges: Jan. 10-14 and Feb. 6-10. Water-discharge records good. Natural flow of stream affected by many reservoirs and navigation dams in upper Mississippi River basin and by many reservoirs and diversions for irrigation in Missouri River basin. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 4, 1844, reached an elevation of 345.14 ft, present datum, at Grays Point, from floodmarks, discharge, 1,375,000 ft<sup>3</sup>/s, computed by U.S. Army Corps of Engineers.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135000	101000	166000	371000	162000	197000	328000	177000	97800	73100	68600	76400
2	131000	102000	169000	329000	209000	186000	327000	174000	93600	71900	66500	75700
3	126000	103000	179000	283000	257000	189000	317000	173000	96000	70200	64900	78000
4	120000	104000	184000	240000	269000	208000	310000	169000	101000	69400	66400	73800
5	109000	108000	177000	211000	266000	229000	318000	167000	104000	69100	67500	68200
6	105000	113000	167000	191000	258000	248000	331000	163000	103000	68200	67600	66000
7	105000	121000	164000	175000	236000	253000	336000	165000	99100	68700	67800	68000
8	102000	126000	167000	167000	216000	252000	333000	164000	95300	70100	68100	70300
9	95600	122000	170000	160000	202000	257000	322000	160000	90300	70800	65600	68100
10	94700	116000	165000	153000	197000	253000	311000	158000	88500	68700	63400	67100
11	101000	114000	161000	140000	188000	240000	303000	147000	90300	65700	63400	67900
12	99300	112000	166000	134000	183000	235000	293000	133000	86500	65200	64100	67600
13	95700	107000	173000	135000	176000	240000	285000	132000	84100	65400	68400	66600
14	94600	104000	168000	136000	166000	236000	280000	139000	81700	68100	74900	64500
15	94800	105000	173000	134000	161000	229000	273000	141000	79400	74800	79200	63700
16	97300	104000	190000	134000	163000	224000	264000	139000	76500	77800	78800	60500
17	99900	107000	188000	132000	159000	223000	257000	137000	77500	76600	73900	62800
18	100000	112000	183000	135000	157000	218000	252000	136000	79000	77700	71700	66400
19	99100	112000	181000	143000	161000	208000	247000	131000	80800	78400	71500	69700
20	94500	107000	186000	163000	175000	197000	245000	126000	78400	80000	74800	70000
21	94500	106000	217000	183000	207000	194000	243000	126000	77100	81500	78300	75700
22	107000	108000	272000	213000	241000	189000	235000	125000	76400	79300	77800	83700
23	111000	113000	318000	228000	255000	180000	224000	126000	73000	78000	73700	81800
24	108000	119000	328000	238000	264000	169000	216000	127000	71500	76200	71500	86800
25	109000	123000	333000	234000	257000	159000	206000	126000	70800	76000	73700	102000
26	111000	127000	353000	224000	250000	156000	197000	123000	71600	77800	70900	104000
27	110000	133000	355000	204000	248000	161000	190000	122000	72600	81300	72100	98800
28	107000	148000	374000	181000	231000	158000	189000	118000	73100	81700	75900	92600
29	103000	166000	422000	170000	211000	161000	188000	113000	73300	77500	78800	89500
30	102000	169000	443000	167000	---	213000	183000	105000	73500	72500	81800	89600
31	102000	---	418000	163000	---	285000	---	100000	---	69900	79200	---
MEAN	105300	117100	235800	189400	211200	211200	266800	140100	83860	73600	71640	75860
MAX	135000	169000	443000	371000	269000	285000	336000	177000	104000	81700	81800	104000
MIN	94500	101000	161000	132000	157000	156000	183000	100000	70800	65200	63400	60500
IN.	.17	.18	.38	.31	.32	.34	.42	.23	.13	.12	.12	.12

## MISSISSIPPI RIVER MAIN STEM

07022000 MISSISSIPPI RIVER AT THEBES, IL--Continued

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	148500	152800	135900	130800	158700	249800	329900	304600	272600	226600	141200	136000
MAX	589600	389000	531700	333300	350400	542000	731000	655800	584100	687700	269200	325500
(WY)	1987	1986	1983	1973	1974	1985	1973	1973	1947	1951	1981	1951
MIN	45500	50080	53850	33650	46920	80260	115600	88170	72350	73290	45000	59890
(WY)	1940	1940	1956	1940	1940	1934	1934	1934	1934	1936	1936	1937

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	148300		197700
HIGHEST ANNUAL MEAN			359800
LOWEST ANNUAL MEAN			71730
HIGHEST DAILY MEAN	443000	Dec 30	886000
LOWEST DAILY MEAN	60500	Sep 16	24700
INSTANTANEOUS PEAK FLOW	447000	Dec 30	893000
INSTANTANEOUS PEAK STAGE (FEET)	31.19	Dec 30	340.33
INSTANTANEOUS LOW FLOW	60500*	Sep 16	23400
ANNUAL RUNOFF (INCHES)	2.82		3.77
10 PERCENTILE	260000		389000
50 PERCENTILE	126000		161000
95 PERCENTILE	66900		61300

## MISSISSIPPI RIVER MAIN STEM

07022000 MISSISSIPPI RIVER AT THEBES, IL-Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.48	8.80	15.40	28.19	15.59	18.08	25.95	16.95	9.37	5.77	5.17	6.20
2	12.31	8.98	15.46	26.18	18.87	17.31	26.10	16.67	8.60	5.67	4.86	5.94
3	11.81	9.18	16.40	23.75	22.29	17.34	25.52	16.62	8.82	5.30	4.85	6.43
4	11.47	9.13	16.93	21.12	23.34	18.69	25.03	16.29	9.44	5.23	4.87	5.97
5	10.20	9.54	16.43	19.30	23.14	20.05	25.35	16.09	9.74	5.16	5.18	5.08
6	9.61	10.13	15.43	18.11	22.91	21.39	---	15.74	9.53	5.04	4.87	4.63
7	9.78	11.06	15.10	16.66	---	22.03	26.46	15.95	9.19	5.02	5.12	4.93
8	9.42	11.73	15.29	16.00	---	21.99	26.34	15.93	8.70	5.22	5.18	5.44
9	8.73	11.34	15.63	15.55	---	22.40	25.82	15.56	8.10	5.39	4.84	5.25
10	8.32	10.77	15.25	---	---	22.29	25.18	15.36	7.63	5.19	4.39	4.94
11	9.40	10.53	14.73	---	18.73	21.38	24.78	14.68	8.12	4.63	4.43	5.19
12	9.26	10.23	15.04	---	18.18	20.86	24.23	13.30	7.63	4.55	4.01	5.07
13	8.76	9.66	15.68	---	17.47	21.11	23.75	13.09	7.30	4.52	4.91	5.16
14	8.61	9.19	15.44	---	16.50	20.79	23.46	13.73	6.95	4.76	5.98	4.70
15	8.65	9.27	15.37	---	15.74	20.25	23.04	13.91	6.67	5.73	6.56	4.65
16	8.83	9.29	16.96	13.40	15.80	19.86	22.57	13.84	6.19	6.20	6.60	4.09
17	9.29	9.55	17.04	13.23	15.40	19.72	22.07	13.57	6.30	6.02	5.98	4.35
18	9.19	10.20	16.51	13.51	15.01	19.40	21.82	13.55	6.52	6.01	5.51	4.81
19	9.20	10.36	16.43	13.74	15.06	18.55	21.53	13.20	6.90	6.08	5.44	5.14
20	8.44	9.73	16.57	15.67	15.76	17.69	21.36	12.64	6.57	6.21	5.80	5.33
21	8.25	9.54	18.48	17.05	17.90	17.46	21.35	12.60	6.36	6.69	6.41	5.56
22	9.67	9.71	21.68	19.39	20.03	17.17	20.89	12.42	6.21	6.15	6.44	7.12
23	10.41	10.22	24.72	20.38	20.83	16.35	20.20	12.58	5.89	6.12	5.88	6.68
24	9.93	11.08	25.49	21.14	21.33	15.52	19.71	12.81	5.67	5.78	5.32	6.86
25	9.96	11.63	25.34	21.01	21.08	14.63	19.12	12.64	5.50	5.62	5.68	9.01
26	10.03	11.77	26.71	20.40	20.59	14.44	18.45	12.35	5.58	5.92	5.40	9.22
27	10.02	12.41	26.95	---	20.78	15.01	18.10	12.29	5.73	6.37	5.43	8.70
28	9.51	13.52	27.58	17.78	19.97	15.00	17.86	11.91	5.80	6.46	5.85	7.76
29	9.12	15.16	29.86	16.59	18.75	14.74	17.87	11.24	5.76	6.13	6.30	7.30
30	8.86	15.66	31.13	16.34	---	18.47	17.53	10.29	5.90	5.56	6.95	7.36
31	9.05	---	30.35	16.13	---	22.95	---	9.57	---	5.15	6.53	---

## MISSISSIPPI RIVER MAIN STEM

07022000 MISSISSIPPI RIVER AT THEBES, IL--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--January 1973 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1981.

WATER TEMPERATURE: October 1974 to September 1981.

SUSPENDED-SEDIMENT: October 1980 to current year.

REMARKS.--Discontinued as National stream-quality accounting network station Sept. 1986.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 705 microsiemens, Aug. 5-7, 1980; minimum daily, 272 microsiemens, Apr. 6, 1979.

WATER TEMPERATURE: Maximum daily, 31.5°C, July 10, 11, 1975, July 17, 1977; minimum daily, 0.0°C on several days during winter periods.

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,890 mg/L, Dec. 22, 1986; minimum daily mean, 13 mg/L, Jan. 28, 1981.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 6,280,000 tons, Mar. 1, 1985; minimum daily, 2,530 tons, Jan. 28, 1981.

## EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,020 mg/L, Feb. 4; minimum daily mean, 60 mg/L, Sept. 15.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 889,000 tons, Dec. 30; minimum daily, 10,000 tons, Sept. 16.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (FTU) (00076)	OXYGEN, DIS- SOLVED OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DIS- DEMAND, (PER- CENT SATUR- ATION) (00301)	OXYGEN CHEM- ICAL (LOW LEVEL) (MG/L) (00335)
OCT											
15...	1325	1028	17002	94200	590	8.50	15.0	3.2	10.3	103	19
NOV											
19...	1215	1028	17002	113000	548	7.70	10.5	31	11.1	100	17
DEC											
16...	1415	1028	17002	192000	474	7.80	4.0	40	10.1	77	21
JAN											
27...	1510	1028	17002	201000	459	7.90	0.0	21	13.8	94	25
FEB											
10...	1500	1028	17002	196000	465	8.00	0.0	11	13.8	95	22
MAR											
09...	1210	1028	17002	258000	480	7.50	5.0	20	12.4	99	25
APR											
20...	1415	1028	17002	252000	539	8.30	14.5	14	9.5	95	20
MAY											
25...	1140	1028	17002	128000	555	8.40	21.5	17	8.3	95	21
JUN											
23...	1400	1028	17002	73000	670	8.20	28.0	56	6.6	87	26
JUL											
20...	1240	1028	17002	79700	670	8.30	29.5	3.7	6.0	80	21
AUG											
17...	1250	1028	17002	73900	670	8.40	31.0	5.2	6.8	93	18
SEP											
28...	1250	1028	17002	93400	605	8.30	22.0	11	7.2	83	14

## MISSISSIPPI RIVER MAIN STEM

07022000 MISSISSIPPI RIVER AT THEBES, IL--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS, TOTAL (MG/L AS CACO3) (00900)	HARD-NESS, NONCARB DISSOLV FIELD (MG/L AS CACO3) (00904)	CALCIUM, TOTAL RECOV-ERABLE (MG/L AS CA) (00916)	CALCIUM, DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS MG) (00927)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, TOTAL RECOV-ERABLE (MG/L AS K) (00937)
OCT 15...	4500	1100	230	34	61	58	22	21	38	38	3.7
NOV 19...	2600	1500	250	66	64	59	26	24	44	41	4.4
DEC 16...	1400	--	220	50	59	55	22	21	26	24	3.9
JAN 27...	400	560	230	56	60	58	21	20	24	23	4.1
FEB 10...	520	660	210	38	54	52	20	19	27	27	3.5
MAR 09...	640	1000	190	64	52	49	18	17	25	25	3.8
APR 20...	320	110	210	43	54	52	20	19	22	22	2.8
MAY 25...	4700	560	210	0	48	46	22	22	29	29	3.1
JUN 23...	K64	4300	210	41	54	49	22	21	40	39	4.8
JUL 20...	3200	1700	200	73	51	48	21	20	46	46	4.4
AUG 17...	2200	K10	230	44	55	53	24	24	52	51	5.1
SEP 28...	K16000	110	240	0	55	--	25	--	50	--	4.6

K--Results based on colony count outside the acceptable range (non-ideal colony count).

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY, DISSOLV FIELD (MG/L AS CACO3) (39086)	SULFATE, DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, TOTAL (MG/L AS F) (00951)	RESIDUE, TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE, VOLA-TILE, SUS-PENDED (MG/L) (00535)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	AMMONIA UN-IONIZED (MG/L AS N) (00619)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT 15...	3.3	198	110	26	0.3	51	8	1.20	--	--	--
NOV 19...	3.7	181	100	26	0.3	3	1	0.910	0.150	0.002	1.0
DEC 16...	3.0	174	68	25	0.2	2	1	2.00	0.200	0.002	1.3
JAN 27...	3.4	172	69	24	0.2	--	--	2.40	0.180	0.001	1.8
FEB 10...	3.0	171	70	26	0.2	18	2	2.60	0.300	0.003	1.3
MAR 09...	3.3	129	57	24	0.1	139	14	2.00	0.150	<0.001	1.9
APR 20...	2.5	166	67	22	0.2	79	8	2.80	<0.100	<0.005	<0.10
MAY 25...	2.8	--	90	23	0.2	75	9	1.10	0.150	0.016	1.4
JUN 23...	4.1	168	110	28	0.3	136	17	1.60	<0.100	<0.011	1.2
JUL 20...	4.0	130	140	27	0.4	88	9	0.340	<0.100	<0.014	0.70
AUG 17...	4.7	188	120	29	0.4	19	6	0.380	<0.100	<0.019	0.60
SEP 28...	--	160	120	--	0.4	51	7	0.610	<0.100	<0.009	0.70

## MISSISSIPPI RIVER MAIN STEM

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07022000 MISSISSIPPI RIVER AT THEBES, IL--Continued

WATER QUALITY DATA, WATER YEAR 1987 TO SEPTEMBER 1988

DATE	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	BORON, DIS- SOLVED (UG/L AS B) (01020)
OCT 15...	0.213	0.130	1000	<50	3	100	100	<0.5	<0.5	90	80
NOV 19...	0.190	0.110	1500	<50	2	100	110	<0.5	<0.5	70	70
DEC 16...	0.310	0.090	3900	<50	2	100	80	<0.5	<0.5	50	60
JAN 27...	0.330	0.110	3100	<50	2	100	82	<0.5	<0.5	60	60
FEB 10...	0.280	0.100	2500	<50	2	100	75	<0.5	<0.5	<50	<50
MAR 09...	0.350	0.100	2600	60	2	100	75	<0.5	<0.5	<50	<50
APR 20...	0.210	0.090	1100	<50	2	90	72	<0.5	<0.5	--	400
MAY 25...	0.220	--	1700	<50	3	100	78	<0.5	<0.5	60	60
JUN 23...	0.310	0.120	5900	540	4	200	100	<0.5	<0.5	100	90
JUL 20...	0.180	0.120	1000	50	4	100	92	<0.5	<0.5	100	100
AUG 17...	0.240	0.130	1300	110	4	100	90	<0.5	<0.5	110	110
SEP 28...	--	0.110	950	--	3	90	--	<0.5	--	110	--

DATE	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)
OCT 15...	<3	<3	<5	<5	<5	<5	7	<5	1500	<50	<50
NOV 19...	<3	<3	<5	<5	<5	<5	<5	<5	1800	<50	<50
DEC 16...	<3	<3	5	<5	<5	<5	10	<5	5300	<50	<50
JAN 27...	<3	<3	5	<5	<5	<5	9	<5	4700	<50	<50
FEB 10...	<3	<3	7	<5	<5	<5	10	<5	3300	<50	<100
MAR 09...	<3	<3	6	<5	<5	<5	5300	5	4100	<50	200
APR 20...	<3	<3	<5	<5	<5	<5	11	5	1600	<50	<50
MAY 25...	<3	<3	<5	<5	<5	<5	8	<5	2100	<50	<50
JUN 23...	<3	<3	<5	<5	<5	<5	18	<5	4500	<50	<100
JUL 20...	<3	<3	<5	<5	<5	<5	20	9	1400	<50	<5
AUG 17...	<3	<3	<5	<5	<5	<5	29	6	1500	<50	<5
SEP 28...	<3	--	<5	--	<5	--	16	--	1400	--	7

## MISSISSIPPI RIVER MAIN STEM

07022000 MISSISSIPPI RIVER AT THEBES, IL--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, TOTAL (UG/L AS V) (01087)
OCT 15...	<50	170	<5	<5	<5	<3	<3.0	330	300	<5
NOV 19...	<50	140	5	<5	<5	<10	<3.0	350	310	<5
DEC 16...	<50	240	6	<5	<5	<3	<3.0	250	220	8
JAN 27...	<50	190	7	6	<5	<3	<3.0	230	220	8
FEB 10...	<50	120	12	11	<5	<5	<3.0	210	200	8
MAR 09...	<50	180	<5	15	9	<5	<3.0	200	190	6
APR 20...	<50	140	<5	<5	<5	<3	<5.0	190	180	<5
MAY 25...	<50	170	<5	<5	<5	<3	<3.0	270	260	6
JUN 23...	<50	310	27	6	<5	<3	<3.0	380	350	11
JUL 20...	<5	180	10	<5	<5	<3	<3.0	360	340	7
AUG 17...	<5	200	8	6	<5	<3	<3.0	350	340	8
SEP 28...	6	210	--	<5	--	<3	--	310	--	<5

DATE	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CARBON, TOTAL ORGANIC (MG/L AS C) (00680)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS TOTAL (UG/L) (32730)	OIL AND GREASE, TOTAL RECOV. GRAVI- METRIC (MG/L) (00556)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 15...	<5	<50	<100	5.6	--	<5	1	66	16700	53
NOV 19...	<5	<100	<100	--	<0.005	<5	1	73	22300	27
DEC 16...	<5	<100	<50	10	<0.005	<5	1	303	157000	52
JAN 27...	<5	<50	<50	8.3	<0.005	<5	1	135	73300	89
FEB 10...	<5	<50	<50	11	<0.005	<5	1	165	87300	68
MAR 09...	<5	<100	<50	7.8	--	<5	1	107	74500	88
APR 20...	<5	160	130	12	<0.005	45	1	149	101000	49
MAY 25...	<5	<100	<50	6.3	<0.005	<5	1	131	45300	53
JUN 23...	<5	140	<100	7.8	<0.005	<5	2	201	39600	50
JUL 20...	7	<50	<50	6.0	<0.005	<5	3	117	25200	35
AUG 17...	6	<50	<50	5.6	<0.005	<5	2	--	--	--
SEP 28...	--	<50	--	6.1	<0.005	<5	1	--	--	--

## MISSISSIPPI RIVER MAIN STEM

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07022000 MISSISSIPPI RIVER AT THEBES, IL--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM (70346)
APR 20...	1345	244000	14	17	26	39	44	89	99	100
SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988										
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	
OCTOBER			NOVEMBER			DECEMBER				
1	135000	285	104000	101000	129	35200	166000	311	139000	
2	131000	298	105000	102000	140	38500	169000	286	131000	
3	126000	322	109000	103000	117	32400	179000	345	167000	
4	120000	266	86000	104000	146	41000	184000	470	233000	
5	109000	230	67800	108000	194	56500	177000	---	---	
6	105000	301	85400	113000	367	112000	167000	---	---	
7	105000	375	106000	121000	278	90800	164000	---	---	
8	102000	235	64800	126000	221	75300	167000	---	---	
9	95600	253	65200	122000	233	76600	170000	---	---	
10	94700	278	71000	116000	348	109000	165000	---	---	
11	101000	265	72200	114000	296	91200	161000	---	---	
12	99300	252	67700	112000	207	62600	166000	---	---	
13	95700	237	61200	107000	172	49800	173000	---	---	
14	94600	309	79000	104000	132	37100	168000	---	---	
15	94800	308	78800	105000	189	53600	173000	---	---	
16	97300	216	56700	104000	165	46300	190000	382	196000	
17	99900	164	44200	107000	128	36900	188000	332	169000	
18	100000	198	53500	112000	197	59500	183000	299	148000	
19	99100	256	68600	112000	157	47500	181000	---	---	
20	94500	195	49700	107000	145	41900	186000	---	---	
21	94500	180	46000	106000	180	51600	217000	---	---	
22	107000	212	61200	108000	133	38800	272000	---	---	
23	111000	244	73200	113000	147	44900	318000	---	---	
24	108000	223	65100	119000	163	52300	328000	---	---	
25	109000	215	63300	123000	182	60500	333000	---	---	
26	111000	210	63000	127000	187	64200	353000	---	---	
27	110000	210	62500	133000	183	65700	355000	---	---	
28	107000	215	62100	148000	228	91300	374000	---	---	
29	103000	156	43500	166000	349	156000	422000	608	693000	
30	102000	164	45300	169000	342	156000	443000	743	889000	
31	102000	164	45100	---	---	---	418000	713	805000	
TOTAL	3264000	---	2126100	3512000	---	1975000	7310000	---	---	

## MISSISSIPPI RIVER MAIN STEM

07022000 MISSISSIPPI RIVER AT THEBES, IL--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JANUARY			FEBRUARY			MARCH			
1	371000	536	537000	162000	374	164000	197000	399	212000
2	329000	438	389000	209000	757	427000	186000	319	160000
3	283000	486	371000	257000	951	660000	189000	383	196000
4	240000	366	237000	269000	1020	739000	208000	541	304000
5	211000	---	---	266000	833	598000	229000	574	355000
6	191000	---	---	258000	694	484000	248000	506	339000
7	175000	---	---	236000	562	358000	253000	372	254000
8	167000	---	---	216000	427	249000	252000	345	235000
9	160000	---	---	202000	305	166000	257000	311	216000
10	153000	---	---	197000	307	163000	253000	307	210000
11	140000	---	---	188000	301	153000	240000	271	175000
12	134000	---	---	183000	265	131000	235000	351	223000
13	135000	---	---	176000	205	97200	240000	408	264000
14	136000	677	249000	166000	185	82800	236000	206	132000
15	134000	611	221000	161000	536	233000	229000	301	186000
16	134000	382	138000	163000	853	375000	224000	421	255000
17	132000	267	95100	159000	337	145000	223000	386	233000
18	135000	354	129000	157000	244	103000	218000	340	200000
19	143000	347	134000	161000	219	95200	208000	281	158000
20	163000	577	254000	175000	207	97700	197000	257	137000
21	183000	590	291000	207000	334	187000	194000	265	139000
22	213000	781	449000	241000	553	360000	189000	296	151000
23	228000	551	339000	255000	506	348000	180000	248	121000
24	238000	545	350000	264000	392	280000	169000	173	79100
25	234000	---	---	257000	429	298000	159000	181	77500
26	224000	---	---	250000	559	377000	156000	185	77900
27	204000	320	176000	248000	442	296000	161000	256	111000
28	181000	381	186000	231000	445	277000	158000	258	110000
29	170000	424	194000	211000	430	245000	161000	394	171000
30	167000	498	224000	---	---	---	213000	956	550000
31	163000	277	122000	---	---	---	285000	860	662000
TOTAL	5871000	---	---	6125000	---	8188900	6547000	---	6693500
APRIL			MAY			JUNE			
1	328000	895	793000	177000	284	136000	97800	167	44200
2	327000	855	755000	174000	323	152000	93600	192	48600
3	317000	687	588000	173000	226	105000	96000	236	61100
4	310000	621	520000	169000	275	125000	101000	239	65300
5	318000	404	347000	167000	255	115000	104000	279	78300
6	331000	543	485000	163000	203	89200	103000	303	84200
7	336000	709	643000	165000	215	95900	99100	252	67400
8	333000	648	583000	164000	186	82600	95300	191	49100
9	322000	680	591000	160000	263	114000	90300	246	59900
10	311000	526	441000	158000	240	102000	88500	298	71200
11	303000	392	321000	147000	139	55200	90300	221	54000
12	293000	428	339000	133000	158	56900	86500	160	37300
13	285000	430	331000	132000	209	74300	84100	159	36100
14	280000	360	273000	139000	314	118000	81700	199	43900
15	273000	331	244000	141000	368	140000	79400	178	38200
16	264000	380	271000	139000	193	72300	76500	152	31400
17	257000	309	214000	137000	155	57500	77500	173	36100
18	252000	343	234000	136000	161	58900	79000	189	40400
19	247000	363	242000	131000	147	52100	80800	169	36900
20	245000	295	195000	126000	207	70400	78400	142	30000
21	243000	287	188000	126000	181	61600	77100	144	30000
22	235000	248	157000	125000	169	56900	76400	182	37500
23	224000	232	140000	126000	160	54500	73000	223	43900
24	216000	252	147000	127000	213	73200	71500	207	39900
25	206000	280	156000	126000	190	64800	70800	154	29400
26	197000	250	133000	123000	229	76100	71600	135	26100
27	190000	248	127000	122000	247	81500	72600	150	29500
28	189000	280	143000	118000	119	38100	73100	136	26800
29	188000	279	142000	113000	124	37700	73300	94	18600
30	183000	310	153000	105000	154	43600	73500	80	15800
31	---	---	---	100000	159	42900	---	---	---
TOTAL	8003000	---	9896000	4342000	---	2503200	2515700	---	1311100

## MISSISSIPPI RIVER MAIN STEM

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07022000 MISSISSIPPI RIVER AT THEBES, IL--Continued

SUSPENDED SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	73100	119	23400	68600	110	20500	76400	79	16200
2	71900	264	51300	66500	107	19300	75700	72	14700
3	70200	159	30100	64900	102	17900	78000	92	19300
4	69400	72	13500	66400	89	16000	73800	118	23600
5	69100	68	12700	67500	82	15000	68200	95	17500
6	68200	74	13600	67600	83	15100	66000	84	15100
7	68700	78	14500	67800	70	12800	68000	84	15500
8	70100	98	18500	68100	65	11900	70300	71	13500
9	70800	159	30400	65600	76	13400	68100	71	13000
10	68700	113	20900	63400	84	14300	67100	71	12800
11	65700	81	14300	63400	87	14800	67900	69	12700
12	65200	94	16600	64100	78	13400	67600	66	12000
13	65400	86	15200	68400	68	12500	66600	72	12900
14	68100	105	19300	74900	77	15700	64500	69	12000
15	74800	102	20600	79200	99	21200	63700	60	10400
16	77800	76	16100	78800	119	25300	60500	61	10000
17	76600	73	15200	73900	111	22100	62800	61	10400
18	77700	97	20300	71700	111	21400	66400	69	12400
19	78400	126	26700	71500	110	21300	69700	81	15300
20	80000	114	24600	74800	126	25400	70000	180	34100
21	81500	110	24100	78300	147	31100	75700	110	22500
22	79300	109	23400	77800	127	26800	83700	64	14500
23	78000	96	20300	73700	122	24300	81800	88	19400
24	76200	103	21200	71500	125	24100	86800	102	23900
25	76000	97	19900	73700	113	22500	102000	103	28300
26	77800	93	19500	70900	120	23100	104000	102	28600
27	81300	101	22200	72100	106	20600	98800	106	28300
28	81700	106	23400	75900	74	15100	92600	88	21900
29	77500	101	21100	78800	72	15400	89500	84	20300
30	72500	95	18500	81800	92	20400	89600	85	20700
31	69900	105	19700	79200	89	19100	---	---	---
TOTAL	2281600	---	651100	2220800	---	591800	2275800	---	531800

## ST. FRANCIS RIVER BASIN

07034000 ST. FRANCIS RIVER NEAR ROSELLE, MO

LOCATION.--Lat 37°35'45", long 90°29'50", in NE 1/4 sec.7, T.33 N., R.5 E., Madison County, Hydrologic Unit 08020202, on State Highway 72, 0.25 mi above Stouts Creek and 1.5 mi east of Roselle.

DRAINAGE AREA.--234 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 684.99 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records poor except for discharges above 100 ft<sup>3</sup>/s, which are good.

Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers gage-height and satellite telemeters at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	9.5	44	301	599	118	597	58	14	12	3.6	1.5
2	2.4	8.6	34	250	1520	111	550	55	13	13	3.2	1.8
3	2.2	7.5	29	220	673	1320	568	52	13	10	3.4	100
4	2.1	7.0	24	200	716	1510	373	69	12	7.6	3.8	48
5	2.0	6.4	20	165	513	644	300	173	12	6.4	3.7	19
6	2.0	6.0	47	145	304	416	292	132	11	5.6	3.3	12
7	2.0	5.7	447	132	247	322	305	96	11	5.0	3.3	8.5
8	2.1	5.7	628	120	216	276	252	79	11	4.4	3.3	6.4
9	2.7	6.7	353	115	193	271	212	76	10	3.7	3.1	5.2
10	3.9	7.9	248	104	181	248	184	72	9.0	3.2	2.9	4.6
11	5.4	9.5	189	99	176	211	164	59	9.3	3.8	2.8	4.7
12	15	11	152	98	145	541	148	49	10	5.0	2.3	4.6
13	12	11	123	95	159	599	131	44	8.5	10	2.1	3.9
14	8.6	9.7	162	85	166	353	120	41	6.4	13	1.9	3.2
15	8.1	11	2660	81	530	276	110	38	5.3	11	1.8	3.0
16	7.8	14	813	81	370	221	101	34	5.5	9.1	1.5	2.9
17	11	22	383	395	301	187	94	31	5.4	7.4	1.3	3.4
18	8.6	33	279	570	315	178	99	29	5.2	6.0	1.2	11
19	7.8	18	808	1720	1150	196	126	26	5.8	7.8	1.2	99
20	9.5	13	3000	2190	1060	197	121	23	6.6	132	1.4	67
21	8.2	11	857	789	518	174	111	21	6.1	77	1.8	36
22	7.0	9.5	454	468	361	154	105	21	5.7	32	2.1	24
23	6.3	8.7	313	345	299	142	96	25	5.4	15	2.2	19
24	5.7	8.1	275	293	239	131	91	39	5.2	9.7	2.2	20
25	7.8	17	3620	246	199	276	83	38	5.3	7.3	1.9	48
26	26	93	5690	196	174	352	79	34	4.6	6.3	1.8	41
27	24	58	2570	176	161	269	74	28	4.2	5.4	1.6	28
28	17	73	3410	158	144	210	68	22	3.8	4.7	1.6	19
29	14	86	951	151	131	3510	64	19	3.4	4.0	1.5	15
30	12	63	532	150	---	4010	60	17	3.3	3.8	1.5	14
31	11	---	385	157	---	984	---	16	---	3.8	1.5	---
MEAN	8.28	21.7	952	332	406	594	189	48.9	7.70	14.4	2.28	22.5
MAX	26	93	5690	2190	1520	4010	597	173	14	132	3.8	100
MIN	2.0	5.7	20	81	131	111	60	16	3.3	3.2	1.2	1.5
IN.	.04	.10	4.69	1.64	1.87	2.93	.90	.24	.04	.07	.01	.11

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
MEAN	152.6	905.1	590.9	223.3	477.0	651.0	341.9	318.9	370.0	29.0	66.2	33.9
MAX	549.6	2017	951.6	516.9	1165	1130	722.5	814.1	1617	73.0	340.8	117.8
(WY)	1985	1986	1988	1985	1985	1985	1984	1986	1985	1986	1985	1984
MIN	8.28	21.7	238.0	57.0	242.3	293.7	186.0	28.8	7.70	7.78	1.65	1.54
(WY)	1988	1988	1987	1986	1987	1986	1986	1987	1988	1983	1983	1983

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	217.2	346.9
HIGHEST ANNUAL MEAN		709.8
LOWEST ANNUAL MEAN		124.2
HIGHEST DAILY MEAN	5690	28000
LOWEST DAILY MEAN	1.2	.83
INSTANTANEOUS PEAK FLOW	11400	43000
INSTANTANEOUS PEAK STAGE (FEET)	12.17	20.40
INSTANTANEOUS LOW FLOW	1.2	0.76
ANNUAL RUNOFF (INCHES)	12.6	20.1
10 PERCENTILE	472	645
50 PERCENTILE	33	90
95 PERCENTILE	2.0	2.8

## ST. FRANCIS RIVER BASIN

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07034000 ST. FRANCIS RIVER NEAR ROSELLE, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.38	2.21	2.67	3.59	3.07	2.94	4.33	2.58	2.22	2.30	2.04	1.95
2	2.67	2.20	2.58	3.37	6.08	2.90	4.12	2.56	2.20	2.34	2.01	1.96
3	2.14	2.16	2.52	3.26	4.49	4.19	4.34	2.53	2.20	2.26	2.01	2.12
4	2.11	2.15	2.47	3.17	4.67	6.01	3.84	2.61	2.18	2.20	2.03	2.71
5	2.09	2.13	2.42	3.02	4.23	4.47	3.57	3.30	2.18	2.16	2.04	2.41
6	2.10	2.13	2.39	2.97	3.52	3.94	3.49	3.02	2.16	---	2.02	2.28
7	1.95	2.12	3.62	2.90	3.35	3.67	3.62	2.86	2.13	2.12	2.01	2.19
8	1.95	2.11	4.51	2.82	3.31	3.49	3.41	2.76	2.13	2.09	2.01	2.14
9	1.99	2.14	3.79	2.82	3.23	3.45	3.28	2.75	2.14	2.07	2.01	2.10
10	2.05	2.17	3.38	2.76	3.18	3.41	3.20	2.76	2.12	2.04	1.99	2.07
11	2.13	2.18	3.14	2.74	3.18	3.29	3.11	2.68	2.13	2.05	1.99	2.08
12	2.44	2.26	3.00	2.75	3.00	3.56	3.06	2.60	2.20	2.12	1.96	2.08
13	2.27	2.24	2.88	2.70	3.09	4.41	2.98	2.56	2.18	2.22	1.95	---
14	2.18	2.21	2.81	2.67	3.09	3.78	2.93	2.53	2.15	2.34	1.94	2.00
15	2.19	2.23	7.93	2.63	4.45	3.50	2.89	2.51	2.12	2.26	1.96	1.99
16	2.20	2.31	4.82	2.64	3.81	3.32	2.84	2.46	2.14	2.21	1.94	1.98
17	2.24	2.39	3.87	3.05	3.58	3.21	2.80	2.43	2.13	2.17	1.91	2.00
18	2.28	2.58	3.49	4.32	3.57	3.17	2.82	2.40	2.12	2.13	1.91	2.04
19	2.31	2.41	3.65	4.80	4.44	3.22	2.95	2.37	2.14	2.10	---	2.94
20	2.33	2.31	8.11	7.00	5.25	3.23	2.94	2.35	2.17	2.52	1.93	2.65
21	2.37	2.24	4.89	4.77	4.21	3.16	2.89	2.33	2.16	2.91	1.96	2.39
22	2.41	2.22	4.05	4.07	3.78	3.08	2.86	2.32	2.14	2.68	2.00	2.26
23	2.44	2.20	3.64	3.75	3.60	3.03	2.82	2.34	2.13	2.39	2.01	2.18
24	2.44	2.18	3.44	3.55	3.38	3.01	2.79	2.53	2.12	2.22	2.02	2.21
25	2.48	2.33	3.76	3.36	3.24	3.12	2.74	2.50	2.14	2.16	1.98	2.56
26	2.93	3.02	10.45	3.17	3.15	3.79	2.73	2.46	2.10	2.13	1.98	2.44
27	2.34	2.75	5.48	3.11	3.11	3.47	2.69	2.40	2.08	2.10	1.96	2.30
28	2.26	2.78	8.48	3.01	3.04	3.28	2.65	2.34	2.06	2.08	1.96	2.22
29	2.23	2.91	5.05	2.97	2.99	3.29	2.61	2.31	2.03	2.05	1.94	2.14
30	2.20	2.79	4.22	2.98	---	7.63	2.60	2.27	2.05	2.04	1.94	2.11
31	2.20	---	3.87	3.00	---	5.10	---	2.24	---	2.04	1.95	---

## ST. FRANCIS RIVER BASIN

07035000 LITTLE ST. FRANCIS RIVER AT FREDERICKTOWN, MO

LOCATION.--Lat 37°33'33", long 90°18'46", in NW 1/4 sec.7, T.33 N., R.7 E., Madison County, Hydrologic Unit 08020202, on right bank at downstream side of State Highway 72 bridge, 0.5 mi downstream from Village Creek, 1.3 mi below City Lake, and 1.0 mi west of courthouse in Fredericktown.

DRAINAGE AREA.--90.5 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 679.23 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers gage-height and satellite telemeters at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	2.2	22	148	115	54	283	18	8.1	2.4	1.3	1.2
2	1.2	2.4	18	117	160	56	299	18	7.1	2.2	1.3	1.5
3	1.1	2.4	16	101	151	562	253	20	6.7	2.0	1.2	6.2
4	1.1	2.5	12	89	210	448	186	37	4.7	1.9	1.1	1.4
5	1.2	2.4	10	71	164	242	150	40	4.2	1.9	1.2	1.1
6	1.2	2.3	63	61	113	179	135	34	4.1	1.9	1.1	1.0
7	1.3	2.4	276	57	98	139	107	28	3.4	1.9	1.0	1.0
8	1.3	3.2	307	53	90	117	91	27	3.5	1.9	1.0	1.0
9	1.4	3.2	146	49	83	119	79	37	5.0	1.8	.97	1.1
10	3.4	2.5	86	44	75	102	70	27	3.3	1.7	.95	1.1
11	2.0	2.3	61	43	75	87	62	22	2.8	4.6	.97	1.2
12	1.6	2.4	45	42	60	196	53	36	2.6	3.8	.96	1.9
13	1.4	2.5	36	39	63	171	48	43	2.5	3.0	.99	1.4
14	1.4	2.5	116	34	69	123	45	88	2.3	2.5	.99	1.2
15	1.4	2.5	1340	34	115	101	41	100	2.1	2.6	.98	1.2
16	1.6	11	333	39	95	86	38	47	2.1	2.5	.97	1.2
17	2.5	7.1	176	552	87	76	36	32	2.0	2.3	.95	1.1
18	1.9	2.5	119	370	116	79	44	25	1.9	2.3	.98	214
19	2.0	2.1	325	1260	378	78	42	21	1.8	3.6	1.0	133
20	2.3	1.9	704	720	317	72	37	18	1.9	235	1.1	27
21	1.9	1.8	270	338	193	64	35	15	1.8	38	1.0	13
22	2.0	1.8	176	220	159	57	33	28	1.7	16	1.1	7.7
23	2.3	1.9	123	177	127	53	32	58	1.7	8.3	1.3	9.6
24	2.4	3.6	122	143	102	49	27	54	1.7	4.9	1.3	17
25	2.7	70	1740	112	88	108	26	37	1.7	3.7	1.2	15
26	6.1	45	1590	90	80	98	24	26	1.6	3.3	1.1	9.9
27	3.1	39	1090	78	75	74	22	20	1.5	2.5	1.1	6.2
28	2.2	57	975	72	66	63	20	17	1.5	1.9	1.2	4.8
29	2.0	44	395	69	61	1900	19	14	11	1.6	1.3	4.8
30	1.9	30	243	67	---	1210	19	12	3.7	1.4	1.2	6.2
31	2.1	---	194	69	---	417	---	9.5	---	1.4	1.2	---
MEAN	1.97	11.9	359	173	124	232	78.5	32.5	3.33	11.8	1.10	16.5
MAX	6.1	70	1740	1260	378	1900	299	100	11	235	1.3	214
MIN	1.1	1.8	10	34	60	49	19	9.5	1.5	1.4	.95	1.0
IN.	.03	.15	4.57	2.20	1.47	2.95	.97	.41	.04	.15	.01	.20

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	67.5	288.0	229.2	89.6	147.9	225.4	128.5	146.1	128.1	16.6	66.2	24.6
MAX	273.1	591.1	359.0	172.8	290.2	351.8	228.8	356.4	521.3	23.4	282.5	65.0
(WY)	1985	1985	1988	1988	1985	1985	1984	1986	1985	1985	1985	1984
MIN	1.97	11.9	73.7	28.7	81.3	132.1	78.5	11.7	3.33	11.8	1.10	1.50
(WY)	1988	1988	1987	1986	1987	1987	1988	1987	1988	1988	1988	1983

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	87.5	129.9
HIGHEST ANNUAL MEAN		265.5
LOWEST ANNUAL MEAN		42.4
HIGHEST DAILY MEAN	1900	5290
LOWEST DAILY MEAN	.95	.76
INSTANTANEOUS PEAK FLOW	5020	11000
INSTANTANEOUS PEAK STAGE (FEET)	13.88	22.22
INSTANTANEOUS LOW FLOW	0.85	0.66
ANNUAL RUNOFF (INCHES)	13.1	19.5
10 PERCENTILE	187	266
50 PERCENTILE	19	40
95 PERCENTILE	.95	1.3

## ST. FRANCIS RIVER BASIN

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07035000 LITTLE ST. FRANCIS RIVER AT FREDERICKTOWN, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.60	1.73	2.10	2.96	2.70	2.41	3.56	2.06	1.89	1.75	1.67	1.70
2	1.60	1.73	2.03	2.79	3.05	2.40	3.63	2.05	1.88	1.74	1.68	1.71
3	1.58	1.73	2.00	2.71	2.90	4.24	3.45	2.05	1.87	1.73	1.67	2.02
4	1.58	1.74	1.93	2.64	3.33	4.23	3.14	2.34	1.81	1.71	1.66	1.73
5	1.60	1.74	1.91	2.52	3.05	3.41	2.97	2.32	1.80	1.71	1.67	1.69
6	1.61	1.73	1.89	2.43	2.67	3.12	2.91	2.24	1.81	1.71	1.68	1.68
7	1.62	1.73	3.26	2.42	2.60	2.94	2.76	2.19	1.79	1.71	1.68	1.67
8	1.61	1.74	3.76	2.36	2.63	2.82	2.67	2.14	1.79	1.70	1.67	1.67
9	1.63	1.79	2.97	2.35	2.60	2.85	2.60	2.30	1.85	1.71	1.67	1.67
10	1.63	1.75	2.63	2.30	2.55	2.76	2.56	2.18	1.78	1.70	1.67	1.69
11	1.70	1.73	2.48	2.31	2.56	2.67	2.50	2.12	1.76	1.69	1.67	1.68
12	1.65	1.73	2.34	2.30	2.37	3.20	2.45	2.08	1.74	1.78	1.67	1.77
13	1.63	1.73	2.25	2.26	2.46	3.10	2.40	2.34	1.74	1.78	1.68	1.72
14	1.63	1.74	2.21	2.21	2.46	2.88	2.37	2.23	1.73	1.75	1.67	1.70
15	1.63	1.74	8.72	2.22	2.85	2.75	2.33	2.77	1.72	1.74	1.67	1.71
16	1.64	1.86	3.82	2.22	2.66	2.66	2.30	2.40	1.73	1.75	1.68	1.69
17	1.72	1.91	3.10	4.10	2.62	2.60	2.27	2.23	1.72	1.74	1.67	1.69
18	1.68	1.75	2.81	3.92	2.73	2.61	2.38	2.15	1.72	1.74	1.67	1.69
19	1.68	1.72	3.19	6.43	3.57	2.60	2.34	2.10	1.71	1.73	1.68	2.94
20	1.71	1.71	5.17	5.12	3.73	2.57	2.29	2.04	1.71	4.46	1.68	2.24
21	1.69	1.70	3.53	3.79	3.18	2.52	2.27	2.01	1.71	2.31	1.69	2.03
22	1.70	1.69	3.10	3.31	3.00	2.47	2.25	2.02	1.69	2.02	1.68	1.95
23	1.71	1.70	2.84	3.08	2.86	2.44	2.23	2.43	1.69	1.89	1.71	1.88
24	1.72	1.70	2.77	2.93	2.72	2.41	2.17	2.45	1.70	1.82	1.70	2.08
25	1.75	2.46	3.33	2.79	2.63	2.61	2.16	2.30	1.70	1.79	1.70	2.07
26	1.75	2.36	6.92	2.62	2.57	2.75	2.15	2.17	1.70	1.77	1.69	1.98
27	1.77	2.26	4.47	2.57	2.55	2.59	2.12	2.09	1.68	1.74	1.69	1.90
28	1.71	2.45	5.84	2.52	2.49	2.52	2.09	2.04	1.68	1.73	1.70	1.87
29	1.71	2.35	4.03	2.51	2.45	2.68	2.08	1.99	1.68	1.69	1.71	1.86
30	1.71	2.19	3.41	2.51	---	6.14	2.06	1.96	1.81	1.68	1.70	1.86
31	1.71	---	3.19	2.50	---	4.08	---	1.92	---	1.69	1.70	---

## ST. FRANCIS RIVER BASIN

07035800 ST. FRANCIS RIVER NEAR MILL CREEK, MO

LOCATION.--Lat 37°30'09", long 90°27'28", in NE 1/4 sec. 36, T.33 N., R.5 E, Madison County, Hydrologic Unit 08020202, on downstream side of Highway E bridge, 8.7 mi southwest of Mill Creek and 2.9 mi downstream from Little St. Francis River.

DRAINAGE AREA.--505 mi<sup>2</sup>.

PERIOD OF RECORD.--February to September 1987.

GAGE.--Water-stage recorder. Datum of gage is 556.27 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. U.S. Army Corps of Engineers gage-height and satellite telemeters at station. Several observations of water temperature and specific conductance were made during the year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	4020	375	142	38	160	175	31
2	---	---	---	---	---	1680	359	133	34	140	115	23
3	---	---	---	---	---	1070	328	124	42	69	74	19
4	---	---	---	---	---	791	296	117	44	55	58	16
5	---	---	---	---	237	655	274	109	32	67	45	13
6	---	---	---	---	219	572	253	101	25	97	36	10
7	---	---	---	---	208	500	244	94	22	334	37	8.7
8	---	---	---	---	194	454	231	85	20	395	32	8.5
9	---	---	---	---	180	413	213	77	17	321	26	8.1
10	---	---	---	---	162	376	203	72	16	158	22	8.2
11	---	---	---	---	156	336	262	66	15	106	19	9.8
12	---	---	---	---	154	304	342	61	14	82	23	12
13	---	---	---	---	147	277	324	56	13	69	26	11
14	---	---	---	---	191	256	1950	53	13	57	28	9.6
15	---	---	---	---	310	241	1520	50	15	50	43	8.5
16	---	---	---	---	691	227	1060	47	17	43	48	9.3
17	---	---	---	---	645	219	819	45	25	39	32	14
18	---	---	---	---	541	2330	643	44	166	33	24	14
19	---	---	---	---	676	2370	532	42	93	28	20	18
20	---	---	---	---	759	1250	456	39	55	24	16	14
21	---	---	---	---	720	853	401	37	40	20	13	10
22	---	---	---	---	661	672	375	38	36	18	12	9.0
23	---	---	---	---	581	582	334	38	30	17	9.4	8.6
24	---	---	---	---	492	589	298	46	29	15	8.2	8.3
25	---	---	---	---	433	847	264	56	77	15	7.3	7.8
26	---	---	---	---	390	675	235	50	59	14	6.9	7.5
27	---	---	---	---	509	565	212	42	38	13	26	7.0
28	---	---	---	---	3060	500	187	35	27	16	53	5.7
29	---	---	---	---	---	457	169	31	21	28	47	7.4
30	---	---	---	---	---	442	153	34	22	49	74	7.4
31	---	---	---	---	---	409	---	37	---	57	46	---
MEAN	---	---	---	---	---	804	444	64.5	36.5	83.5	38.8	11.5
MAX	---	---	---	---	---	4020	1950	142	166	395	175	31
MIN	---	---	---	---	---	219	153	31	13	13	6.9	5.7
IN.	---	---	---	---	---	1.84	.98	.15	.08	.19	.09	.03

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
MAX	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
(WY)	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
MIN	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
(WY)	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****

## SUMMARY STATISTICS

## FOR 1987 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	*****	*****
HIGHEST ANNUAL MEAN	*****	*****
LOWEST ANNUAL MEAN	*****	*****
HIGHEST DAILY MEAN	4020	Mar 1
LOWEST DAILY MEAN	5.7	Sep 28
INSTANTANEOUS PEAK FLOW	6050	Feb 28
INSTANTANEOUS PEAK STAGE (FEET)	8.95	Feb 28
INSTANTANEOUS LOW FLOW	5.7	Sep 28
ANNUAL RUNOFF (INCHES)	*****	*****
10 PERCENTILE	*****	*****
50 PERCENTILE	*****	*****
95 PERCENTILE	*****	*****

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## ST. FRANCIS RIVER BASIN

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07035800 ST. FRANCIS RIVER NEAR MILL CREEK, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	7.97	2.57	1.82	1.14	1.21	2.17	1.04
2	---	---	---	---	---	5.23	2.51	1.79	1.09	1.91	1.71	.93
3	---	---	---	---	---	4.22	2.44	1.74	1.15	1.43	1.42	.86
4	---	---	---	---	---	3.67	2.35	1.71	1.23	1.30	1.30	.81
5	---	---	---	---	---	3.37	2.29	1.67	1.08	1.26	1.16	.75
6	---	---	---	---	2.27	3.15	2.23	1.62	1.00	1.57	1.05	.72
7	---	---	---	---	2.23	2.95	2.20	1.57	.94	2.79	1.06	.66
8	---	---	---	---	2.19	2.82	2.15	1.52	.92	2.71	1.02	.66
9	---	---	---	---	2.15	2.71	2.09	1.46	.87	2.56	.95	.64
10	---	---	---	---	2.06	2.58	2.04	1.42	.84	1.96	.88	.64
11	---	---	---	---	2.02	2.45	2.17	1.37	.84	1.68	.82	.68
12	---	---	---	---	2.02	2.37	2.48	1.33	.81	1.51	.85	.76
13	---	---	---	---	1.99	2.29	2.39	1.30	.80	1.40	.90	.74
14	---	---	---	---	2.10	2.22	5.04	1.27	.79	1.31	.96	.70
15	---	---	---	---	2.40	2.18	4.99	1.25	.80	1.24	.99	.67
16	---	---	---	---	3.50	2.14	4.16	1.23	.86	1.17	1.21	.68
17	---	---	---	---	3.41	2.10	3.73	1.20	.93	1.13	1.03	.78
18	---	---	---	---	3.12	5.41	3.34	1.19	2.11	1.07	.89	.81
19	---	---	---	---	3.37	6.19	3.05	1.16	1.66	1.01	.85	.87
20	---	---	---	---	3.62	4.55	2.83	1.14	1.34	.95	.80	.82
21	---	---	---	---	3.55	3.80	2.66	1.13	1.18	.89	.74	.74
22	---	---	---	---	3.41	3.40	2.56	1.13	1.13	.84	.70	.70
23	---	---	---	---	3.25	3.18	2.46	1.12	1.08	.81	.66	.68
24	---	---	---	---	3.03	3.05	2.37	1.13	.99	.80	.62	.67
25	---	---	---	---	2.87	3.88	2.27	1.33	1.53	.79	.60	.67
26	---	---	---	---	2.74	3.41	2.17	1.25	1.38	.76	.58	.65
27	---	---	---	---	2.91	3.13	2.10	1.18	1.17	.75	.90	.65
28	---	---	---	---	4.72	2.95	2.02	1.11	1.03	.75	1.26	.60
29	---	---	---	---	---	2.82	1.94	1.08	.95	.92	1.11	.65
30	---	---	---	---	---	2.78	1.88	1.07	.95	1.22	1.44	.65
31	---	---	---	---	---	2.69	---	1.14	---	1.33	1.21	---

## ST. FRANCIS RIVER BASIN

07035800 ST. FRANCIS RIVER NEAR MILL CREEK, MO

LOCATION.--Lat 37°30'09", long 90°27'28", in NE 1/4 sec. 36, T.33 N., R.5 E, Madison County, Hydrologic Unit 08020202, on downstream side of Highway E bridge, 8.7 mi southwest of Mill Creek and 2.9 mi downstream from Little St. Francis River.

DRAINAGE AREA.--505 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1987 to current year.

GAGE.--Water-stage recorder. Datum of gage is 556.27 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 15. Records good. U.S. Army Corps of Engineers gage-height and satellite telemeters at station. Several observations of water temperature and specific conductance were made during the year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	20	184	746	532	296	1470	134	42	21	9.4	2.6
2	7.1	18	149	585	2110	277	1400	127	36	17	8.3	2.9
3	7.6	18	126	495	1160	2670	1370	120	32	24	7.2	9.5
4	14	17	107	440	1300	3150	974	134	28	21	6.4	141
5	14	15	93	376	1040	1510	767	256	25	17	6.0	68
6	11	15	146	314	678	1030	709	266	23	14	5.7	37
7	9.6	14	1280	284	557	795	680	201	21	12	6.8	23
8	8.0	14	1760	250	492	664	589	168	20	10	7.0	17
9	6.9	15	968	229	447	641	521	179	20	8.9	5.7	13
10	7.0	15	624	202	418	587	470	173	18	7.9	4.9	11
11	11	16	468	190	413	516	430	148	17	7.3	4.2	9.6
12	15	17	380	183	356	1040	393	127	17	8.8	4.0	11
13	20	18	304	173	362	1300	359	138	18	12	3.7	10
14	26	19	440	152	373	850	324	131	18	15	3.3	9.3
15	20	20	5000	141	819	655	296	210	15	19	3.1	8.5
16	17	31	1850	142	727	547	265	157	14	18	2.8	8.0
17	17	69	1020	1930	589	480	243	111	12	14	2.4	7.4
18	15	101	706	1860	633	462	259	89	11	11	1.8	72
19	15	80	1470	4750	1930	469	296	78	10	9.9	1.8	437
20	17	58	5470	4770	2190	457	290	69	8.3	202	2.2	212
21	16	45	1900	1880	1210	418	264	63	9.8	347	2.4	88
22	14	38	1100	1180	878	381	254	61	9.7	126	2.1	55
23	13	35	773	880	704	352	234	91	9.7	65	3.7	41
24	12	33	678	704	568	330	217	152	8.9	41	4.0	41
25	11	129	7230	564	487	529	203	138	8.3	29	3.6	49
26	12	268	11300	450	435	718	195	108	8.3	22	3.0	79
27	45	255	4940	397	403	540	182	86	7.3	18	2.4	60
28	46	266	6860	361	369	454	169	73	6.4	15	2.8	42
29	31	304	2200	341	333	6220	155	62	7.2	13	3.2	33
30	25	239	1320	330	---	9540	143	54	12	12	3.0	27
31	22	---	985	324	---	2300	---	46	---	10	2.8	---
MEAN	16.5	73.4	1995	827	776	1296	471	127	16.4	37.7	4.18	54.2
MAX	46	304	11300	4770	2190	9540	1470	266	42	347	9.4	437
MIN	6.9	14	93	141	333	277	143	46	6.4	7.3	1.8	2.6
IN.	.04	.16	4.55	1.89	1.66	2.96	1.04	.29	.04	.09	.01	.12

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	16.5	73.4	1995	826.5	776.3	1050	457.2	95.9	26.5	60.6	21.5	32.8
MAX	16.5	73.4	1995	826.5	776.3	1296	470.7	127.4	36.5	83.5	38.8	54.2	
(WY)	1988	1988	1988	1988	1988	1988	1988	1988	1987	1987	1987	1988	
MIN	16.5	73.4	1995	826.5	776.3	804.3	443.7	64.5	16.4	37.7	4.18	11.5	
(WY)	1988	1988	1988	1988	1988	1987	1987	1987	1988	1988	1988	1988	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	476.4	*****
HIGHEST ANNUAL MEAN		476.4 1988
LOWEST ANNUAL MEAN		476.4 1988
HIGHEST DAILY MEAN	11300	Dec 26 1987
LOWEST DAILY MEAN	1.8	Aug 18 1988
INSTANTANEOUS PEAK FLOW	21800	Dec 25 1987
INSTANTANEOUS PEAK STAGE (FEET)	15.88	Dec 25 1987
INSTANTANEOUS LOW FLOW	1.7	Aug 18 1988
ANNUAL RUNOFF (INCHES)	12.8	*****
10 PERCENTILE	1090	1090
50 PERCENTILE	104	104
95 PERCENTILE	3.0	3.0

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## ST. FRANCIS RIVER BASIN

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07035800 ST. FRANCIS RIVER NEAR MILL CREEK, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.65	.94	2.08	3.61	2.59	2.41	4.82	1.72	1.14	.93	.69	.44
2	.64	.92	1.91	3.25	6.15	2.34	4.48	1.69	1.08	.85	.67	.44
3	.65	.90	1.81	3.01	4.34	4.60	4.77	1.65	1.05	.97	.63	.65
4	.81	.89	1.70	2.86	4.60	7.08	4.03	1.71	.99	.91	.61	2.00
5	.82	.86	1.61	2.66	4.17	4.96	3.61	1.91	.95	.84	.58	1.44
6	.77	.84	1.55	2.43	3.44	4.12	3.42	2.25	.92	.79	.57	1.14
7	.73	.84	3.72	2.38	3.15	3.69	3.40	2.03	.89	.74	.60	.96
8	.68	.82	5.41	2.18	3.01	3.39	3.15	1.91	.88	.70	.63	.85
9	.65	.85	4.07	2.14	2.87	3.34	2.96	1.91	.89	.68	.58	.79
10	.62	.85	3.33	2.02	2.78	3.22	2.80	1.91	.84	.65	.55	.72
11	.73	.86	2.89	2.04	2.77	3.04	2.67	1.81	.82	.63	.52	.68
12	.80	.87	2.63	2.08	2.51	3.46	2.57	1.71	.83	.66	.51	.74
13	.87	.88	2.41	1.96	2.52	4.67	2.45	1.68	.82	.72	.49	.72
14	1.03	.92	2.26	1.89	2.58	3.82	2.35	1.74	.84	.80	.48	.69
15	.94	.92	---	1.86	3.70	3.39	2.29	2.21	.80	.88	.47	.67
16	.88	1.02	---	1.88	3.56	3.11	2.20	1.89	.78	.87	.47	.65
17	.87	1.35	4.14	4.74	3.25	2.94	2.13	1.65	.74	.81	.44	.64
18	.84	1.62	3.49	5.46	3.24	2.87	2.15	1.51	.72	.74	.41	.61
19	.84	1.54	3.62	7.20	4.34	2.87	2.25	1.42	.70	.70	.41	3.10
20	.87	1.36	9.48	8.66	5.96	2.86	2.27	1.36	.62	1.62	.42	2.30
21	.86	1.23	5.54	5.52	4.48	2.76	2.19	1.32	.69	2.65	.44	1.68
22	.82	1.16	4.28	4.42	3.84	2.63	2.17	1.28	.68	1.81	.41	1.38
23	.80	1.13	3.64	3.86	3.53	2.53	2.11	1.39	.69	1.40	.49	1.21
24	.79	1.10	3.35	3.51	3.18	2.49	2.05	1.85	.67	1.17	.51	1.20
25	.76	1.55	3.98	3.21	2.97	2.81	2.01	1.81	.63	1.03	.48	1.23
26	.77	2.22	13.05	2.90	2.81	3.56	1.97	1.65	.65	.94	.47	1.53
27	1.27	2.29	6.61	2.71	2.72	3.11	1.94	1.51	.62	.87	.44	1.36
28	1.27	2.27	10.46	2.61	2.61	2.86	1.88	1.40	.59	.81	.45	1.19
29	1.10	2.45	5.93	2.54	2.51	2.79	1.82	1.31	.58	.77	.47	1.10
30	1.02	2.27	4.62	2.53	---	12.16	1.77	1.25	.73	.75	.46	1.02
31	.97	---	4.04	2.50	---	6.03	---	1.19	---	.72	.45	---

## ST. FRANCIS RIVER BASIN

07036100 ST. FRANCIS RIVER NEAR SACO, MO

LOCATION.--Lat 37°23'06", long 90°28'27", in NE 1/4 SE 1/4 NE 1/4 sec.10, T.31 N., R.5 E., Madison County, Hydrologic Unit 08020202, on right bank at downstream side of State Highway C bridge, 1.3 mi downstream from Twelvemile Creek, and 3.5 mi northwest of Saco.

DRAINAGE AREA.--664 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 472.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 26 and 27. Water-discharge records good. U.S. Army Corps of Engineers gage-height and satellite telemeters at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	39	288	1240	456	389	2530	179	65	20	35	6.6
2	17	36	232	938	2540	356	2170	170	59	21	24	8.5
3	14	32	196	755	1650	3130	2200	164	54	28	20	59
4	14	31	168	646	1670	5610	1620	169	48	27	17	95
5	14	29	144	537	1530	2650	1240	185	44	29	15	151
6	13	28	192	431	1080	1680	1060	326	40	27	15	101
7	14	27	2140	382	815	1300	995	252	37	24	14	74
8	17	30	3530	332	715	1060	861	207	33	21	12	58
9	18	36	1800	305	627	968	746	202	33	18	11	49
10	23	34	1110	272	572	894	659	197	32	15	10	42
11	28	32	762	256	552	760	597	176	30	19	9.6	37
12	24	32	574	244	467	1390	536	156	29	28	9.0	46
13	23	32	444	222	440	2240	470	143	28	30	8.4	45
14	24	33	461	207	454	1480	415	151	27	26	7.4	41
15	35	36	8110	193	848	1110	377	152	27	24	6.9	36
16	40	53	3050	190	1060	887	342	202	27	24	6.8	31
17	37	111	1540	4220	815	738	313	145	27	33	6.3	28
18	34	136	1100	3970	828	680	314	119	24	45	5.8	51
19	33	137	3520	6510	2150	662	339	104	23	41	6.4	356
20	31	109	7660	8410	3840	646	353	94	22	50	7.5	331
21	28	89	2870	3510	2000	583	333	84	23	295	7.2	194
22	28	74	1760	2000	1410	524	315	81	18	201	7.0	129
23	27	67	1270	1470	1130	469	302	87	17	122	7.8	100
24	25	62	1080	1170	884	428	279	129	17	85	8.7	101
25	23	199	8190	920	719	588	263	155	16	63	8.5	99
26	23	410	16300	718	626	1050	246	138	14	50	8.5	93
27	25	416	6900	586	554	812	235	117	12	41	7.6	108
28	35	398	11500	516	498	653	218	100	11	32	7.5	94
29	62	421	4120	464	437	7620	203	87	15	25	8.6	79
30	50	365	2200	431	---	15800	192	79	20	22	7.5	69
31	45	---	1600	416	---	4490	---	71	---	27	7.1	---
MEAN	27.1	118	3058	1370	1082	1989	691	149	29.1	48.8	10.7	90.4
MAX	62	421	16300	8410	3840	15800	2530	326	65	295	35	356
MIN	13	27	144	190	437	356	192	71	11	15	5.8	6.6
IN.	.05	.20	5.31	2.38	1.76	3.45	1.16	.26	.05	.08	.02	.15

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	597.2	2378	1845	761.4	1317	1927	1066	1006	1008	115.6	281.9	132.4
MAX	2404	4900	3058	1654	2846	2858	1951	2291	4250	170.2	1215	303.6	
(WY)	1985	1986	1988	1985	1985	1985	1984	1986	1985	1985	1985	1984	
MIN	27.1	117.8	606.0	178.9	655.9	1218	606.4	94.7	29.1	48.8	10.7	24.2	
(WY)	1988	1988	1987	1986	1987	1986	1987	1987	1988	1988	1988	1987	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	725.2	1033
HIGHEST ANNUAL MEAN		2084
LOWEST ANNUAL MEAN		355.7
HIGHEST DAILY MEAN	16300	38200
LOWEST DAILY MEAN	5.8	5.8
INSTANTANEOUS PEAK FLOW	33800	65800
INSTANTANEOUS PEAK STAGE (FEET)	19.45	25.80
INSTANTANEOUS LOW FLOW	5.3	4.0
ANNUAL RUNOFF (INCHES)	14.8	21.1
10 PERCENTILE	1700	2290
50 PERCENTILE	137	288
95 PERCENTILE	8.8	20

## ST. FRANCIS RIVER BASIN

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07036100 ST. FRANCIS RIVER NEAR SACO, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.91	1.21	2.53	4.73	2.92	2.84	6.59	1.97	1.36	1.03	1.17	.85
2	.91	1.19	2.30	4.17	7.31	2.73	5.92	1.92	1.33	1.03	1.07	.85
3	.87	1.16	2.15	3.79	5.45	3.52	6.23	1.89	1.29	1.10	1.03	1.33
4	.87	1.14	2.01	3.52	5.21	9.64	5.38	1.92	1.25	1.09	1.00	1.56
5	.87	1.13	1.88	3.27	5.21	6.83	4.74	1.91	1.22	1.11	.98	1.90
6	.87	1.12	1.79	2.98	4.47	5.49	4.39	2.59	1.20	1.10	.97	1.61
7	.84	1.11	5.07	2.79	3.88	4.82	4.29	2.29	1.18	1.07	.97	1.43
8	.90	1.10	7.86	2.63	3.66	4.35	4.02	2.11	1.15	1.04	.95	1.33
9	.92	1.20	5.74	2.50	3.46	4.11	3.71	2.07	1.14	1.02	.92	1.27
10	.90	1.18	4.53	2.40	3.33	4.06	3.47	2.04	1.14	.97	.91	1.22
11	1.07	1.16	3.83	2.35	3.27	3.78	3.29	1.97	1.12	.98	.90	1.19
12	.99	1.16	3.36	2.37	3.11	4.18	3.11	1.86	1.11	1.08	.89	1.24
13	.99	1.16	3.02	2.24	2.87	6.41	2.93	1.78	1.10	1.13	.88	1.23
14	.98	1.16	2.78	2.20	3.00	5.15	2.80	1.85	1.09	1.09	.87	1.21
15	1.06	1.17	12.19	2.14	3.26	4.48	2.68	1.78	1.09	1.07	.85	1.17
16	1.15	1.29	7.36	2.07	4.40	4.07	2.57	2.11	1.09	1.07	.85	1.13
17	1.13	1.56	5.31	6.47	3.90	3.75	2.47	1.83	1.09	1.08	.84	1.11
18	1.10	1.80	4.41	8.26	3.80	3.58	2.48	1.68	1.08	1.23	.83	1.07
19	1.10	1.85	5.05	8.29	4.64	3.52	2.54	1.59	1.06	1.21	.83	1.53
20	1.09	1.64	11.34	11.58	8.20	3.50	2.60	1.53	1.03	1.27	.87	2.59
21	1.06	1.56	7.13	7.75	6.02	3.38	2.55	1.47	1.07	2.74	.87	2.09
22	1.06	1.47	---	6.00	4.99	3.20	2.48	1.46	1.00	2.12	.86	1.75
23	1.06	1.42	4.79	5.12	4.51	3.07	2.44	1.46	.99	1.72	.86	1.58
24	1.04	1.38	4.30	4.59	4.05	2.97	2.36	1.64	1.00	1.50	.88	1.57
25	1.03	1.72	5.09	4.15	3.71	2.98	2.31	1.86	1.01	1.36	.88	1.57
26	1.03	2.92	---	3.72	3.47	4.51	2.24	1.78	1.01	1.27	.88	1.53
27	1.04	2.94	---	3.37	3.28	3.90	2.21	1.67	.94	1.21	.87	1.62
28	1.04	2.85	---	3.19	3.14	3.54	2.13	1.57	.92	1.16	.87	1.55
29	1.38	2.92	8.32	3.05	2.98	3.42	2.08	1.50	.92	1.08	.88	1.45
30	1.29	2.81	6.26	2.96	---	15.34	2.03	1.45	1.03	1.05	.87	1.39
31	1.25	---	5.35	2.91	---	8.62	---	1.40	---	1.03	.86	---

ST. FRANCIS RIVER BASIN  
07036940 BIG CREEK AT CHLORIDE, MO

WATER-QUALITY RECORDS

LOCATION.--Lat. 37°27'42", long. 90°41'10", in SW 1/4 NE 1/4 sec.14, T.32 N., R.3 E., Iron County, Hydrologic Unit 08020202, at bridge on county road.

PERIOD OF RECORD.--Partial-record station 1969 to 1975 water year; October 1982 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)
OCT												
16...	1030	2.1	355	8.30	13.5	10.6	101	--	--	11	9	2
NOV												
10...	0930	1.8	380	8.20	9.0	12.5	107	--	--	10	9	<1
DEC												
02...	1015	7.5	202	8.20	6.0	12.4	99	--	--	8	8	<1
JAN												
06...	0800	14	163	8.10	1.0	14.5	100	--	--	35	23	5
FEB												
03...	1230	26	134	7.70	4.5	12.6	96	--	--	6	4	<1
MAR												
02...	1215	13	192	7.90	8.5	12.0	101	--	--	7	9	<1
APR												
06...	1200	51	150	8.00	13.0	10.4	99	--	--	4	3	<1
MAY												
11...	1245	5.6	269	7.80	20.5	9.4	107	--	--	9	7	1
JUN												
08...	0900	2.1	348	8.00	19.5	7.2	79	<10	<10	12	9	<1
JUL												
13...	1250	2.3	345	8.20	24.5	8.1	99	20	10	13	10	<1
AUG												
03...	0830	0.60	382	8.00	24.0	6.8	80	30	10	10	7	2
SEP												
09...	1220	4.2	304	8.00	20.5	9.3	106	<10	<10	9	7	3

DATE	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
OCT											
16...	1	5	3	40	27	16	<5	<1	3	60	46
NOV											
10...	2	4	2	30	14	8	<5	<1	3	60	51
DEC											
02...	1	6	3	60	19	14	<5	2	3	60	63
JAN											
06...	4	4	2	80	34	6	5	8	4	190	170
FEB											
03...	<1	1	1	60	19	12	<5	<1	<1	50	<3
MAR											
02...	<1	4	2	50	11	<5	6	3	<1	50	43
APR											
06...	<1	3	1	90	21	9	<5	<1	<1	30	30
MAY											
11...	3	6	2	20	10	14	12	7	3	70	35
JUN											
08...	<1	3	2	70	19	22	<5	4	2	30	40
JUL											
13...	3	4	2	80	20	12	8	5	5	40	35
AUG											
03...	3	5	2	360	20	100	<5	<1	5	30	30
SEP											
09...	<1	11	4	60	13	18	<5	3	1	40	24

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LOCATION.--Lat 37°17'35", long 90°37'45", in SE 1/4, sec.8, T.30 N., R.4 E., Iron County, Hydrologic Unit 08020202, at bridge on State Highway 143 at north edge of Des Arc, 420 ft above Black Creek and 6 mi above Pond Creek.

PERIOD OF RECORD.--July 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 507.89 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers gage-height and satellite telemeters at station.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	21	123	253	87	80	377	38	20	31	14	11
2	15	21	106	209	94	76	401	37	19	34	14	26
3	15	20	95	182	101	381	399	35	19	27	16	175
4	18	19	81	155	111	588	304	34	18	22	17	129
5	19	18	70	134	113	372	250	33	16	20	17	79
6	20	17	238	120	104	279	223	32	15	16	16	57
7	20	17	1620	111	100	220	196	30	14	15	17	46
8	20	21	985	80	92	190	171	30	15	15	17	40
9	21	24	446	78	85	173	153	36	17	13	16	35
10	27	22	307	58	80	155	143	34	16	13	14	32
11	34	21	244	69	81	140	131	30	14	27	13	31
12	29	21	205	71	64	250	119	29	13	49	11	33
13	26	21	172	65	73	320	108	28	12	45	10	28
14	25	21	193	59	73	251	97	28	11	33	10	25
15	22	25	1540	57	86	204	88	33	12	25	9.6	27
16	21	47	513	58	106	173	77	32	12	19	9.5	23
17	21	97	331	510	101	150	70	29	11	17	9.2	22
18	20	88	262	598	113	141	74	27	9.8	15	9.0	24
19	21	75	521	1030	205	130	68	26	14	18	9.5	38
20	24	67	1460	1070	330	125	62	25	22	59	11	40
21	23	60	548	513	254	116	59	23	16	46	13	38
22	22	55	422	347	207	106	58	28	16	33	14	34
23	21	50	339	272	174	98	56	36	15	26	15	34
24	19	46	310	224	146	93	52	38	14	24	15	49
25	19	177	2600	182	129	126	51	33	13	21	14	49
26	20	255	2300	151	117	153	49	30	12	19	13	43
27	21	188	1000	132	108	148	45	28	12	17	12	38
28	24	193	1260	116	100	136	42	27	13	16	12	35
29	25	182	593	103	91	2110	39	27	14	15	13	33
30	23	147	401	96	---	1530	38	27	24	15	12	32
31	22	---	317	91	---	576	---	25	---	14	11	---
MEAN	21.7	67.9	632	232	122	309	133	30.6	15.0	24.5	13.0	43.5
MAX	34	255	2600	1070	330	2110	401	38	24	59	17	175
MIN	15	17	70	57	64	76	38	23	9.8	13	9.0	11
IN.	.25	.76	7.32	2.69	1.32	3.58	1.49	.35	.17	.28	.15	.4

MEAN	113.9	311.9	296.1	115.7	162.2	264.2	180.2	128.5	160.9	39.2	37.2	27.2
MAX	396.4	610.1	632.3	232.1	313.5	357.3	297.3	227.9	586.6	95.7	102.0	43.5
(WY)	1985	1986	1988	1988	1985	1985	1984	1986	1985	1987	1985	1988
MIN	21.7	55.5	79.2	37.0	93.6	154.4	106.0	28.9	15.0	14.2	7.67	6.50
(WY)	1988	1987	1987	1984	1987	1987	1987	1987	1988	1984	1983	1983

FOR PERIOD OF RECORD

AVERAGE FLOW	137.9		153.6	
HIGHEST ANNUAL MEAN			267.2	1985
LOWEST ANNUAL MEAN			71.8	1987
HIGHEST DAILY MEAN	2600	Dec 25	6350	Nov 19 1985
LOWEST DAILY MEAN	9.0	Aug 18	4.9	Sep 3 1983
INSTANTANEOUS PEAK FLOW	8040	Dec 25	16000	Nov 19 1985
INSTANTANEOUS PEAK STAGE (FEET)	9.98	Dec 25	12.92	Nov 19 1985
INSTANTANEOUS LOW FLOW	8.5	Aug 18	5.2	Aug 28 1983
ANNUAL RUNOFF (INCHES)	18.8		20.9	
10 PERCENTILE	309		320	
50 PERCENTILE	39		59	
95 PERCENTILE	12		14	

## ST. FRANCIS RIVER BASIN

07037000 BIG CREEK AT DES ARC, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.29	2.35	3.04	3.52	2.94	2.89	3.91	2.35	2.19	2.28	2.05	1.95
2	2.27	2.34	2.95	3.39	2.94	2.87	3.83	2.34	2.18	2.37	2.05	1.95
3	2.26	2.34	2.88	3.29	3.00	3.29	3.92	2.33	2.17	2.34	2.06	2.91
4	2.29	2.34	2.82	3.18	3.03	4.43	3.63	2.33	2.16	2.30	2.06	2.84
5	2.31	2.31	2.77	3.08	3.06	3.88	3.43	2.31	2.15	2.33	2.06	2.57
6	2.33	2.30	2.72	3.03	2.95	3.61	3.34	2.30	2.13	2.27	2.05	2.43
7	2.33	2.30	5.38	2.96	2.99	3.43	3.22	2.28	2.12	2.23	2.04	2.35
8	2.32	2.32	5.22	1.70	2.96	3.31	3.11	2.27	2.12	2.24	2.05	2.30
9	2.33	2.38	4.10	2.13	2.93	3.26	3.03	2.32	2.15	2.20	2.03	2.25
10	2.35	2.36	3.69	1.51	2.90	3.19	2.97	2.33	2.13	2.19	2.02	2.22
11	2.47	2.34	3.50	2.27	2.92	3.11	2.89	2.29	2.11	2.22	1.99	2.19
12	2.43	2.34	3.36	2.76	2.20	3.37	2.84	2.27	2.10	2.51	1.96	2.24
13	2.40	2.34	3.26	2.75	2.86	3.74	2.76	2.26	2.09	2.53	1.95	2.18
14	2.38	2.33	3.17	2.68	2.85	3.52	2.72	2.25	2.08	2.39	1.94	2.15
15	2.35	2.39	6.93	2.66	2.88	3.36	2.68	2.32	2.07	2.31	1.93	2.19
16	2.34	2.51	4.27	2.67	3.02	3.25	2.62	2.31	2.09	2.24	1.93	2.14
17	2.33	2.89	3.77	3.54	3.00	3.17	2.58	2.28	2.06	2.20	1.93	2.13
18	2.33	2.86	3.55	4.45	3.05	3.13	2.61	2.27	2.05	2.17	1.92	2.12
19	2.34	2.79	3.61	4.72	3.25	3.06	2.57	2.25	2.04	2.26	1.92	2.28
20	2.39	2.75	5.98	5.25	3.85	3.03	2.54	2.24	2.22	2.63	1.95	2.30
21	2.37	2.69	4.27	4.30	3.62	2.99	2.52	2.23	2.14	2.48	1.98	2.29
22	2.36	2.67	3.87	3.86	3.45	2.94	2.50	2.23	2.14	2.35	2.00	2.25
23	2.35	2.62	3.65	3.62	3.34	2.91	2.49	2.33	2.13	2.27	2.01	2.22
24	2.33	2.59	3.54	3.50	3.22	2.88	2.46	2.38	2.11	2.22	2.02	2.39
25	2.33	2.97	3.73	3.37	3.14	2.98	2.46	2.32	2.10	2.18	2.00	2.39
26	2.33	3.57	6.52	3.25	3.08	3.16	2.43	2.29	2.08	2.16	1.98	2.35
27	2.34	3.31	4.61	3.17	3.03	3.15	2.41	2.27	2.08	2.14	1.97	2.30
28	2.36	3.30	5.49	3.08	3.00	3.09	2.38	2.26	2.12	2.11	1.97	2.26
29	2.40	3.30	4.43	3.01	2.96	3.26	2.35	2.25	2.06	2.09	1.98	2.24
30	2.37	3.16	3.94	2.98	---	5.78	2.35	2.27	2.23	2.08	1.97	2.23
31	2.36	---	3.73	2.96	---	4.43	---	2.25	---	2.07	1.96	---

## ST. FRANCIS RIVER BASIN

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07037500 ST. FRANCIS RIVER NEAR PATTERSON, MO

LOCATION.--37°11'40", long 90°30'12", in NE 1/4 sec.16, T.29 N., R.5 E., Wayne County, Hydrologic Unit 08020202, near left bank on downstream side of pier of bridge on State Highway 34, 1 mi upstream from Clark Creek, and 3 mi east of Patterson.

DRAINAGE AREA.--956 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1920 to current year. Prior to June 1921, monthly discharge only, published in WSP 1311.

REVISED RECORDS.--WSP 732: 1922-23.

GAGE.--Water-stage recorder. Datum of gage is 370.45 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1938, nonrecording gage at site 50 ft upstream at datum 2.00 ft higher. Oct. 1, 1938, to Apr. 12, 1939, nonrecording gage and Apr. 13, 1939, to Sept. 5, 1956, water-stage recorder at site 50 ft upstream at present datum. Sept. 6, 1956, to Sept. 26, 1958, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Dec. 27. Records good. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers gage-height and satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of August 1915 reached a stage of 33.8 ft, present datum, from floodmarks, discharge, 100,000 ft<sup>3</sup>/s, from rating curve extended above 55,000 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	101	655	1800	659	609	3430	281	109	56	64	30
2	50	94	561	1410	1220	577	2700	265	101	68	63	39
3	47	88	488	1210	1930	1180	2670	258	92	68	67	755
4	46	84	426	1070	1490	5610	2270	261	84	63	62	469
5	48	80	371	920	1590	3830	1830	251	78	63	58	308
6	48	75	431	838	1270	2510	1550	265	74	64	57	278
7	47	74	2700	757	1020	1990	1390	347	70	61	58	226
8	48	75	4690	681	924	1670	1280	311	67	59	52	174
9	48	89	3040	621	846	1490	1140	299	67	57	49	140
10	52	90	1850	568	785	1390	1030	287	64	53	46	114
11	69	88	1300	529	756	1280	934	277	61	57	42	107
12	77	85	1030	506	716	1510	846	261	59	118	39	139
13	74	83	849	482	648	2600	771	242	55	149	36	107
14	70	81	795	443	646	2250	709	225	53	128	34	89
15	67	83	6060	416	673	1770	653	223	51	104	33	76
16	64	117	6960	403	1050	1470	606	217	49	87	31	68
17	70	216	2720	3220	969	1290	558	249	49	75	30	62
18	74	266	1760	5650	932	1200	547	211	48	69	29	64
19	73	299	1710	4870	1210	1140	535	182	46	125	30	125
20	75	290	7120	10200	3220	1110	532	162	44	193	33	322
21	75	259	5860	4950	2430	1060	526	146	42	182	34	372
22	72	225	3080	2640	1690	982	500	139	39	283	34	275
23	71	204	2190	1930	1330	913	474	152	38	301	36	215
24	69	187	1840	1530	1110	857	446	171	36	221	38	248
25	68	352	5470	1250	954	894	411	176	36	167	36	243
26	68	721	24800	1050	855	1200	378	199	34	132	34	207
27	69	835	9750	906	783	1290	358	186	32	110	32	181
28	68	833	12500	815	722	1130	339	166	30	94	33	175
29	70	811	6460	747	667	5360	319	147	32	82	34	164
30	80	756	3180	697	---	21000	301	130	42	74	32	146
31	110	---	2270	664	---	7230	---	119	---	67	31	---
MEAN	65.1	255	3965	1735	1141	2529	1001	220	56.1	111	41.5	197
MAX	110	835	24800	10200	3220	21000	3430	347	109	301	67	755
MIN	46	74	371	403	646	577	301	119	30	53	29	30
IN.	.08	.30	4.78	2.09	1.29	3.05	1.17	.26	.07	.13	.05	.23

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	380.1	922.5	1303	1411	1538	2202	2304	1686	947.3	341.9	224.7	244.5
MAX	3391	5638	12380	6725	4577	6981	9221	7145	8724	2513	1478	2103	
(WY)	1985	1985	1983	1950	1951	1945	1927	1943	1928	1957	1985	1965	
MIN	29.0	48.1	60.9	64.9	125.0	178.4	287.2	139.2	33.6	21.3	11.2	14.8	
(WY)	1954	1954	1954	1956	1963	1941	1981	1930	1936	1936	1936	1953	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	948.1	1123
HIGHEST ANNUAL MEAN		2731
LOWEST ANNUAL MEAN		343.4
HIGHEST DAILY MEAN	24800	107000
LOWEST DAILY MEAN	29	8.0
INSTANTANEOUS PEAK FLOW	28400	155000
INSTANTANEOUS PEAK STAGE (FEET)	20.93	35.77
INSTANTANEOUS LOW FLOW	29	8.0
ANNUAL RUNOFF (INCHES)	13.5	15.9
10 PERCENTILE	2120	2330
50 PERCENTILE	251	334
95 PERCENTILE	34	35

## ST. FRANCIS BASIN

07037500 ST. FRANCIS RIVER NEAR PATTERSON, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.36	3.74	5.74	8.01	5.93	5.84	9.81	4.68	3.97	3.37	3.39	2.99
2	3.36	3.70	5.47	6.93	6.11	5.74	8.93	4.62	3.92	3.48	3.36	3.01
3	3.32	3.66	5.25	7.14	8.29	6.53	8.93	4.57	3.87	3.51	3.42	6.35
4	3.31	3.63	5.07	6.88	7.46	12.02	8.49	4.61	3.81	3.45	3.37	5.29
5	3.32	3.61	4.89	6.15	7.77	9.94	7.86	4.56	3.76	3.42	3.33	4.70
6	3.33	3.58	4.76	6.42	---	8.41	7.46	4.56	3.72	3.45	3.30	4.59
7	3.33	3.57	8.18	---	6.79	7.69	7.22	4.97	3.68	3.42	3.34	4.38
8	3.32	3.55	10.95	---	6.60	7.23	7.07	4.83	3.64	3.40	3.26	4.16
9	3.33	3.67	9.45	---	6.43	6.99	6.83	4.78	3.65	3.37	3.24	4.00
10	3.34	3.68	7.88	---	6.28	6.84	6.62	4.74	3.61	3.34	3.20	3.87
11	3.50	3.66	7.08	---	6.21	6.67	6.43	4.70	3.58	3.30	3.16	3.78
12	3.58	3.64	6.59	5.53	---	6.88	6.24	4.64	3.55	3.66	3.12	4.01
13	3.57	3.63	6.21	5.47	5.91	8.39	6.07	4.57	3.51	3.95	3.08	3.83
14	3.53	3.61	5.95	5.35	5.90	8.11	5.93	4.49	3.48	3.83	3.06	3.72
15	3.51	3.61	9.65	5.26	5.95	7.41	5.78	4.49	3.45	3.71	3.04	3.65
16	3.48	3.75	13.21	5.19	6.91	6.98	5.66	4.45	3.43	3.61	3.01	3.59
17	3.52	4.24	9.03	8.15	6.69	6.69	5.53	4.63	3.43	3.52	3.00	3.53
18	3.56	4.41	7.74	12.06	6.58	6.53	5.50	4.47	3.41	3.46	2.98	3.50
19	3.55	4.60	7.36	9.73	6.87	6.43	5.46	4.35	3.38	3.66	2.98	3.95
20	3.57	4.59	11.40	14.97	9.75	6.37	5.45	4.25	3.35	4.11	3.03	4.34
21	3.58	4.47	12.09	11.75	8.91	6.29	5.45	4.18	3.31	4.09	3.03	4.98
22	3.55	4.33	8.99	9.15	7.89	6.15	5.38	4.14	3.28	4.04	3.05	4.62
23	3.54	4.24	7.89	8.19	7.35	6.01	5.31	4.15	3.25	4.59	3.07	4.31
24	3.52	4.15	7.33	7.64	6.97	5.87	5.22	4.29	3.22	4.25	3.11	4.42
25	3.52	4.71	7.55	7.22	6.66	5.95	5.13	4.29	3.21	4.02	3.08	4.47
26	3.52	5.71	20.53	6.86	6.45	6.42	5.02	4.43	3.19	3.84	3.06	4.31
27	3.53	6.11	---	6.56	6.29	6.72	4.95	4.38	3.15	3.71	3.03	4.20
28	3.51	6.12	---	6.35	6.13	6.43	4.89	4.28	3.13	3.62	3.03	4.15
29	3.53	6.09	12.51	6.19	6.00	6.30	4.82	4.19	3.11	3.53	3.05	4.13
30	3.55	5.99	9.73	6.06	---	19.40	4.75	4.09	3.23	3.48	3.04	4.04
31	3.80	---	8.68	5.97	---	12.86	---	4.03	---	3.43	3.01	---

## ST. FRANCIS BASIN

## 07039000 WAPPAPELLO LAKE AT WAPPAPELLO, MO

LOCATION.--Lat 36°55'42", long 90°17'04", in NW 1/4 SE 1/4 sec.3, T.26 N., R.7 E., Wayne County, Hydrologic Unit 08020202, at intake tower at dam on St. Francis River 0.8 mi southwest of Wappapello, and at mile 309.

DRAINAGE AREA.--1,310 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--April 1941 to current year.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929. Prior to June 19, 1941, nonrecording gage at same site and datum.

REMARKS.--Lake is formed by earthfill type dam. Closure of channel at dam began July 10, 1940; river began to flow through outlet structure July 24, 1940. Stop logs placed in outlet structure and storage began Apr. 1, 1941; conservation pool level reached Apr. 20, 1941. Capacity at bottom of outlet tunnels (gage height, -9.0 ft), 2,600 acre-ft; at conservation pool level (gage height, 7.0 ft), 30,900 acre-ft; at spillway crest (gage height, 47.0 ft), 613,000 acre-ft; at maximum pool level (gage height, 62.4 ft), uncontrollable above spillway crest, 1,022,000 acre-ft. Lake is used for flood control, power, and recreational purposes. U.S. Army Corps of Engineers satellite telemeter at station.

COOPERATION.--Records were provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 729,800 acre-ft, Apr. 16, 1945, gage height, 51.35 ft; minimum, since initial filling to conservation pool level, 23,340 acre-ft, Mar. 1, 2, 3, 1970; minimum gage height, 4.20 ft, Sept. 26, 27, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 242,000 acre-ft, Dec. 30, elevation, 375.44 ft, minimum, 31,000 acre-ft, Feb. 16, elevation, 355.02 ft.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63800	63900	68300	237000	66500	32600	124000	74100	63100	63800	64500	64300
2	63400	64100	66900	232000	61700	31500	128000	74000	63300	64300	64300	64600
3	63500	64100	65500	225000	59900	31800	130000	73800	63700	63800	64000	66800
4	63200	63900	64200	219000	59200	32600	131000	74000	63600	63200	63700	68900
5	63200	64000	62900	212000	55000	39400	129000	73000	63500	62600	63800	69500
6	63200	63800	61800	204000	53300	41200	129000	71800	63600	62600	63800	69300
7	63300	63500	62000	193000	50800	40200	126000	70900	63800	62600	64000	68000
8	63200	63500	66700	180000	48100	38100	123000	70200	63800	62700	64100	66900
9	63000	64000	74700	168000	45400	36400	120000	70800	64400	62700	64100	66000
10	63100	64400	78400	154000	43000	35000	118000	70100	63800	62600	64000	65200
11	63400	63700	78600	142000	41300	34200	115000	69200	63700	62600	64000	65200
12	63400	63400	77400	131000	38700	33800	111000	68500	63700	63700	63900	66200
13	63500	63400	75300	121000	36600	35200	106000	68300	63800	64200	63800	66000
14	63600	63500	75100	112000	34600	37700	101000	67600	63800	64100	63800	64400
15	63700	63700	75100	104000	33000	37600	96200	67300	63800	63900	63800	63500
16	63700	64100	87400	97700	31000	36200	91700	66900	63800	63800	63800	63400
17	64300	65500	87700	94000	31600	34900	87600	66500	63900	63600	63800	63600
18	64200	65700	87700	103000	32000	34500	86100	65900	63800	63600	63600	63700
19	64400	65200	87700	110000	32300	33900	83800	65500	63500	64500	63600	64300
20	64400	64500	87700	121000	33200	33100	81500	64900	63400	65100	64500	65000
21	63900	63800	87700	132000	35500	32200	80300	64500	63400	65100	64400	64300
22	63200	63600	87700	131000	35200	31800	79600	64200	63400	64500	64100	63600
23	63000	63100	87700	126000	34200	31400	79200	64300	63300	64300	63900	63400
24	63100	63200	87700	119000	32400	31800	78600	65000	63300	64000	63800	64000
25	63500	64100	87700	111000	31600	32300	78200	65000	63200	63900	63800	64000
26	63500	64800	87700	104000	31400	32800	78000	64700	63200	63800	63800	63800
27	64200	65800	87700	97600	32200	33900	77500	64400	63600	63700	63700	63700
28	64000	66900	87700	91100	32900	34900	76100	64200	63400	63800	64300	63500
29	63700	67800	233000	84800	33400	35800	75000	63800	63200	63800	64300	63800
30	63500	68500	242000	78100	---	59800	74400	63600	63600	63900	64300	64100
31	63700	---	241000	72300	---	110000	---	63200	---	64400	64300	---
(-)	360.11	360.66	375.37	361.10	355.49	364.98	361.33	360.05	360.09	360.19	360.18	360.15
(=)	-500	+4800	+172500	-168700	-38900	+76600	-35600	-11200	+400	+800	-100	-200
MAX	64400	68500	242000	237000	66500	110000	131000	74100	64400	65100	64500	69500
MIN	63000	63100	61800	72300	31000	31400	74400	63200	63100	62600	63600	63400

CAL YR 1987 .....+192900

WTR YR 1988 ..... -100

(-) Elevation, in feet NGVD, at end of month

(=) Change in contents, in acre-feet

## ST. FRANCIS RIVER BASIN

07039500 ST. FRANCIS RIVER AT WAPPAPELLO, MO

LOCATION.--Lat 36°55'41", long 90°15'55", in NW 1/4 SE 1/4 sec.2, T.26 N., R.7 E., Wayne County, Hydrologic Unit 08020202, on right bank at downstream side of highway bridge, 0.5 mi southeast of Wappapello and 1.25 mi downstream from Wappapello Dam.

DRAINAGE AREA.--1,311 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1940 to current year. Since January 1939 in reports of Mississippi River Commission. Gage-height records collected in this vicinity since April 1920 are contained in reports of the U.S. Army Corps of Engineers.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 315.15 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1984, at datum 10.00 ft higher at present site. Prior to Oct. 14, 1940, nonrecording gage at same site.

REMARKS.--No estimated daily discharges. Records good except days with considerable change in discharge, which are poor. Flow completely regulated by Wappapello Lake (station 07029000) 1.25 mi upstream. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers gage-height and satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1920, 30.7 ft (datum then in use), May 15, 1933, discharge 82,500 ft<sup>3</sup>/s, determined by U.S. Army Corps of Engineers. Maximum discharge, 85,000 ft<sup>3</sup>/s, determined by U.S. Army Corps of Engineers, Aug. 1915 (stage unknown).

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	247	58	1160	4650	3750	1350	2040	510	167	79	104	43
2	184	118	1230	4730	3540	1360	2380	429	80	256	240	59
3	79	219	1230	4730	2930	1470	2730	460	75	347	262	200
4	74	226	1160	4710	3080	2600	2970	613	72	356	222	212
5	74	225	989	4660	3590	3140	3080	835	70	265	85	278
6	74	176	971	5110	2930	3260	3100	836	70	76	77	618
7	74	65	989	6710	2750	3250	3030	729	70	66	77	894
8	73	58	1150	7070	2670	3090	2750	615	70	66	77	763
9	73	120	1390	7210	2510	2740	2640	604	96	64	78	669
10	73	282	1570	7110	2340	2340	2540	734	172	64	77	483
11	75	313	2030	6890	2210	2020	2710	730	73	65	76	105
12	75	82	2110	6380	2150	1990	3380	649	60	99	77	215
13	75	61	2100	6020	2020	1990	3510	636	59	205	76	609
14	73	59	2030	5450	1970	2140	3610	603	59	214	76	870
15	72	58	1730	4640	1940	2410	3560	518	59	216	76	494
16	71	61	1080	3920	1660	2490	3120	504	59	217	75	113
17	71	86	1880	3770	1230	2260	2620	498	79	190	73	71
18	71	415	2760	3770	1250	1960	2120	497	178	75	71	69
19	195	710	3440	3900	1400	1820	1950	496	167	162	67	70
20	379	685	3620	4540	1730	1780	1630	471	67	363	109	362
21	391	423	3760	6000	2660	1650	1240	379	60	417	197	793
22	306	384	3840	6330	2930	1420	948	331	59	457	204	608
23	87	324	3820	6380	2800	1180	877	244	59	406	205	419
24	70	237	4300	6320	2520	932	749	237	58	369	172	397
25	68	299	5080	6060	1950	895	678	294	58	263	50	389
26	67	482	4010	5460	1380	827	709	365	58	253	44	385
27	134	505	1770	4960	836	820	847	371	54	165	44	361
28	240	508	1080	4570	827	809	950	370	56	73	44	219
29	206	555	1280	4300	981	1060	844	367	58	70	43	75
30	71	739	2440	4000	---	1690	639	366	58	74	43	66
31	60	---	4270	3850	---	1650	---	306	---	74	43	---
MEAN	125	284	2267	5297	2225	1884	2132	503	79.3	196	102	364
MAX	391	739	5080	7210	3750	3260	3610	836	178	457	262	894
MIN	60	58	971	3770	827	809	639	237	54	64	43	43
IN.	.11	.24	1.99	4.66	1.83	1.66	1.81	.44	.07	.17	.09	.31

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	409.8	895.1	1865	2259	2256	2767	2987	2432	1312	770.9	412.0	422.3
MAX	3239	4959	8897	8867	7796	7072	11920	9243	5860	4866	3385	2239	
(WY)	1950	1952	1983	1950	1949	1979	1945	1983	1957	1945	1945	1982	
MIN	33.9	43.8	199.3	188.4	286.4	307.9	63.5	62.3	6.00	87.1	40.0	34.0	
(WY)	1949	1954	1945	1981	1963	1941	1981	1987	1978	1980	1965	1955	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1289	1562
HIGHEST ANNUAL MEAN		3534
LOWEST ANNUAL MEAN		405.6
HIGHEST DAILY MEAN	7210	21800
LOWEST DAILY MEAN	43	0
INSTANTANEOUS PEAK FLOW	7240	22300
INSTANTANEOUS PEAK STAGE (FEET)	29.41	25.60
INSTANTANEOUS LOW FLOW	43	0
ANNUAL RUNOFF (INCHES)	13.4	16.2
10 PERCENTILE	3720	4190
50 PERCENTILE	472	651
95 PERCENTILE	59	39

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## ST. FRANCIS RIVER BASIN

07039500 ST. FRANCIS RIVER AT WAPPAPELLO, MO--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATIONS AT 8:00 AM

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.64	3.98	11.46	23.95	21.73	12.39	15.17	7.99	5.70	3.94	3.97	3.30
2	5.64	3.98	11.86	24.17	21.51	12.65	16.79	7.17	4.32	5.41	5.42	3.30
3	4.04	5.66	11.85	24.21	19.38	11.63	18.22	7.11	4.25	6.48	5.51	5.11
4	3.96	5.72	11.81	24.14	18.79	17.40	19.27	7.87	4.21	6.55	5.60	5.19
5	3.96	5.71	10.64	24.03	21.72	19.95	19.75	9.69	4.18	6.52	4.09	5.19
6	3.98	5.71	10.53	23.92	19.38	20.30	19.82	9.86	4.18	4.15	4.01	6.99
7	3.98	4.16	10.51	28.33	18.67	20.29	19.77	9.30	4.17	3.95	3.99	9.72
8	3.96	4.02	11.15	28.93	18.44	20.07	18.67	8.63	4.18	3.94	3.98	8.98
9	3.94	3.98	12.53	29.35	17.99	18.82	18.35	7.93	4.17	3.94	3.99	8.31
10	3.96	5.69	12.94	29.19	17.17	17.45	17.84	9.13	5.28	3.92	3.99	8.23
11	3.98	6.85	15.40	28.95	16.36	15.49	17.71	9.21	4.23	3.93	3.94	4.29
12	4.00	4.45	15.83	27.93	16.12	15.27	19.21	8.64	4.00	3.96	3.94	3.93
13	3.98	4.08	15.81	27.18	15.44	15.27	19.28	8.55	3.98	5.34	3.94	6.50
14	3.96	4.03	15.87	26.42	15.18	15.32	19.56	8.53	3.98	5.41	3.94	9.85
15	3.94	4.02	14.69	24.29	15.07	17.05	19.69	7.80	3.98	5.43	3.94	7.68
16	3.92	4.03	11.65	22.25	14.92	17.82	18.65	7.70	3.98	5.44	3.94	4.41
17	3.92	4.07	14.27	21.70	11.92	17.17	17.49	7.66	3.98	5.42	3.94	3.88
18	3.92	5.67	18.25	21.71	11.63	15.45	15.11	7.64	5.26	4.11	3.88	3.84
19	3.92	9.00	20.76	21.98	12.52	14.54	14.68	7.64	5.37	4.00	3.86	3.84
20	6.66	9.21	21.30	22.32	13.03	14.39	13.68	7.62	4.13	6.49	3.39	3.85
21	6.76	7.23	21.57	26.90	17.97	14.31	11.96	6.81	3.98	6.59	5.07	9.19
22	6.76	6.89	21.91	27.66	19.34	12.84	10.36	6.71	3.97	7.34	5.12	8.27
23	4.24	6.86	21.92	27.79	18.88	12.24	10.15	5.81	3.97	6.63	5.13	6.72
24	4.00	5.82	21.81	27.70	18.27	10.34	9.47	5.76	3.96	6.56	5.09	6.57
25	3.98	5.86	25.02	27.49	15.62	10.20	8.82	5.73	3.96	5.57	3.48	6.52
26	3.98	7.57	22.97	26.25	13.50	9.75	8.75	6.67	3.97	5.50	3.32	6.50
27	3.98	7.75	15.09	24.94	9.67	9.68	9.31	6.72	3.95	5.48	3.31	6.50
28	5.70	7.81	11.24	23.93	9.72	9.71	10.46	6.72	3.90	3.99	3.32	5.57
29	5.76	7.77	10.54	23.25	9.71	9.33	10.04	6.70	3.94	3.92	3.30	4.01
30	4.18	8.54	14.46	22.42	---	14.61	8.81	6.70	3.96	3.99	3.30	3.84
31	3.98	---	22.84	22.03	---	13.49	---	6.68	---	3.97	3.30	---

## ST. FRANCIS RIVER BASIN

07042500 LITTLE RIVER DITCH 251 NEAR LILBOURN, MO

LOCATION.--Lat 36°33'20", long 89°40'12", SW 1/4 SE 1/4 sec.8, T.22 N., R.13 E., New Madrid County, Hydrologic Unit 08020204, on right bank 150 ft upstream from bridge on U.S. Highway 62, 3.7 mi southwest of Lilbourn, and 4.0 mi northwest of Marston.

DRAINAGE AREA.--235 mi<sup>2</sup>

PERIOD OF RECORD.--October 1945 to current year. Prior to January 1946 monthly discharge only, published in WSP 1311.

REVISED RECORDS.--WDR MO80-1: 1980, (M).

GAGE.--Water-stage recorder, nonrecording gage and crest-stage gage. Datum of gage is 263.46 ft above National Geodetic Vertical Datum of 1929 (Missouri State Highway and Transportation Commission). Prior to Oct. 27, 1967, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1945 reached a stage of 15.6 ft, from floodmark, discharge, 3,200 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	42	142	723	299	239	752	166	122	86	104	55
2	38	42	114	505	3930	236	481	161	122	81	88	131
3	36	42	104	442	3670	251	444	161	123	78	82	1040
4	36	42	98	406	1830	251	394	180	115	63	80	1540
5	36	42	94	362	843	249	350	176	115	58	88	744
6	38	41	198	333	556	245	335	163	111	58	98	335
7	38	41	357	320	474	240	305	157	112	57	79	188
8	38	41	178	312	442	272	286	153	112	57	75	136
9	38	50	132	294	401	410	272	167	109	59	74	112
10	38	46	118	278	371	649	262	154	107	64	72	102
11	40	43	111	265	352	317	261	149	106	68	69	101
12	40	42	106	263	331	270	258	144	102	69	68	679
13	40	42	102	255	321	250	243	146	96	82	67	1030
14	40	42	215	237	312	234	227	140	94	66	68	493
15	40	42	663	233	355	231	220	139	95	58	67	264
16	39	69	315	230	306	224	220	137	93	55	66	197
17	39	245	201	304	290	223	212	137	87	54	65	172
18	39	92	160	450	276	490	272	133	88	54	64	158
19	39	63	149	1300	473	374	253	131	86	518	70	154
20	41	57	177	2100	458	271	220	129	88	1400	244	141
21	41	54	155	969	368	247	216	130	84	660	107	131
22	41	53	150	555	329	228	211	141	82	245	75	127
23	40	53	147	435	320	223	207	182	81	151	66	123
24	40	56	225	390	285	222	193	194	81	112	61	297
25	41	271	3040	336	273	248	190	148	80	304	57	282
26	46	494	4600	299	265	238	191	140	80	470	57	191
27	49	835	4120	271	264	218	182	138	81	257	55	159
28	45	964	3430	258	251	210	181	133	73	169	57	142
29	42	520	1970	247	246	240	178	131	73	131	58	135
30	42	220	925	241	---	863	171	127	89	161	56	132
31	42	---	863	239	---	961	---	124	---	124	56	---
MEAN	40.0	156	754	447	651	317	273	149	96.2	189	77.2	316
MAX	49	964	4600	2100	3930	961	752	194	123	1400	244	1540
MIN	36	41	94	230	246	210	171	124	73	54	55	55
IN.	.20	.74	3.70	2.19	2.99	1.56	1.30	.73	.46	.93	.38	1.50

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	136.5	250.8	383.3	442.2	496.6	531.7	459.9	460.3	287.5	211.5	141.2	124.6				
MAX	578.0	1552	1416	2051	1646	1442	1752	1264	804.1	642.0	468.2	377.9				
(WY)	1985	1958	1979	1950	1950	1975	1979	1986	1957	1957	1957	1965				
MIN	36.7	41.6	49.5	55.2	83.6	86.4	97.8	145.6	96.2	74.4	54.7	33.2				
(WY)	1954	1954	1956	1981	1977	1981	1954	1977	1988	1954	1980	1980				

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	287.7	326.4
HIGHEST ANNUAL MEAN	773.8	1979
LOWEST ANNUAL MEAN	94.7	1954
HIGHEST DAILY MEAN	4600	6490
LOWEST DAILY MEAN	36	29
INSTANTANEOUS PEAK FLOW	4660	6580
INSTANTANEOUS PEAK STAGE (FEET)	13.18	15.16
INSTANTANEOUS LOW FLOW	36	29
ANNUAL RUNOFF (INCHES)	16.6	18.9
10 PERCENTILE	493	624
50 PERCENTILE	155	193
95 PERCENTILE	40	58

## 07043500 LITTLE RIVER DITCH 1 NEAR MOREHOUSE, MO

LOCATION.--Lat 36°50'03", long 89°43'48", in SW 1/4 SE 1/4 sec.2, T.25 N., R.12 E., Stoddard County, Hydrologic Unit 08020204, on downstream side of second pier right of left abutment of bridge on State Highway 114, 1.5 mi downstream from Little River Ditch 39, and 2.0 mi west of Morehouse.

DRAINAGE AREA.--450 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1945 to current year. Prior to January 1946 monthly discharge only, published in WSP 1311.

GAGE.--Water-stage recorder. Datum of gage is 280.76 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 17, 1949, June 11, 1951, to Feb. 22, 1962, nonrecording gage at same datum. Nov. 17, 1949, to June 10, 1951, nonrecording gage at site 50 ft downstream at present datum.

REMARKS.--Estimated daily discharges: Feb. 6 to Mar. 9. Records good except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1945 reached a stage of 19.85 ft, from floodmark, discharge, 5,830 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	79	210	1660	311	310	1250	177	133	81	149	59
2	71	80	188	1230	1010	300	900	173	133	78	130	123
3	68	79	177	866	1440	500	817	181	125	76	113	2430
4	69	79	161	644	1140	600	596	211	119	71	103	2730
5	71	75	150	495	846	550	447	194	116	66	100	1860
6	72	74	164	391	700	500	373	181	111	62	114	1410
7	71	77	207	363	600	475	327	174	109	57	95	940
8	69	81	233	356	550	430	294	181	105	53	88	675
9	71	82	234	321	500	400	272	189	103	55	91	538
10	71	76	215	297	450	365	261	172	97	58	83	431
11	72	74	203	288	430	339	259	166	95	61	79	350
12	72	76	187	287	390	340	248	164	89	94	72	752
13	73	79	174	263	370	371	235	161	88	172	70	546
14	73	79	199	253	350	386	222	157	85	205	69	406
15	74	80	1660	253	400	343	227	155	84	166	65	356
16	75	99	1320	251	350	307	223	151	78	120	65	267
17	77	159	641	618	320	291	218	147	83	94	66	212
18	78	132	452	1610	300	303	266	145	79	87	62	182
19	79	99	362	2920	500	308	352	142	78	797	61	172
20	84	93	631	4820	1000	302	341	139	75	829	60	157
21	79	91	546	2220	700	287	295	137	71	491	62	143
22	80	91	417	1440	600	274	269	144	67	340	62	136
23	80	90	341	961	550	265	241	156	67	205	59	132
24	80	95	337	647	450	259	218	195	69	130	57	157
25	79	121	3850	491	420	254	210	236	66	928	51	170
26	87	167	8980	407	380	237	208	183	66	560	48	156
27	85	265	7740	348	360	227	197	166	61	301	50	146
28	82	440	6180	314	340	232	192	157	60	320	58	138
29	83	399	3720	300	330	556	186	149	60	293	61	134
30	82	258	2560	298	---	2340	181	143	90	232	60	132
31	81	---	2050	286	---	1800	---	136	---	177	59	---
MEAN	76.1	126	1435	835	555	466	344	167	88.7	234	76.2	535
MAX	87	440	8980	4820	1440	2340	1250	236	133	928	149	2730
MIN	68	74	150	251	300	227	181	136	60	53	48	59
IN.	.20	.31	3.68	2.14	1.33	1.19	.85	.43	.22	.60	.20	1.33

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	174.7	423.0	644.0	743.4	815.9	963.0	858.3	733.8	358.7	273.8	185.2	183.9
MAX	943.9	2615	2875	4286	2526	2800	2851	2633	1324	816.8	657.7	703.2
(WY)	1985	1958	1983	1950	1950	1979	1979	1961	1973	1957	1985	1975
MIN	30.6	50.2	73.5	72.3	115.0	106.2	146.3	154.8	88.7	70.9	49.6	35.0
(WY)	1954	1954	1954	1981	1963	1981	1971	1949	1988	1954	1953	1953

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	412.2	528.4
HIGHEST ANNUAL MEAN		1261
LOWEST ANNUAL MEAN		133.7
HIGHEST DAILY MEAN	8980	10800
LOWEST DAILY MEAN	48	21
INSTANTANEOUS PEAK FLOW	9260	11200
INSTANTANEOUS PEAK STAGE (FEET)	16.72	18.42
INSTANTANEOUS LOW FLOW	48	21
ANNUAL RUNOFF (INCHES)	12.4	15.9
10 PERCENTILE	751	1250
50 PERCENTILE	186	204
95 PERCENTILE	62	65

## ST. FRANCIS RIVER BASIN

07046001 LITTLE RIVER DITCHES NEAR KENNETT, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat 36°14'11", long 89°58'06", in NW 1/4 sec.3, T.18 N., R.10 E., Dunklin County, at bridges on State Highway 84, 4 mi east of Kennett.

PERIOD OF RECORD.--November 1969 to June 1970, August 1972 to September 1973, July 1977 to current year.

REMARKS.--Analyses represent a composite of water from five ditches.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
OCT											
15...	0900	160	411	--	8.30	13.0	13.6	126	<10	K32	200
NOV											
09...	1600	260	404	--	8.20	12.5	10.5	96	<10	K24	--
DEC											
01...	1545	1490	155	--	7.60	7.0	12.2	98	38	620	--
JAN											
05...	1500	2350	--	232	7.80	2.5	12.5	87	11	100	96
FEB											
02...	1425	12800	80	--	7.80	8.0	10.7	87	14	1000	--
MAR											
01...	1330	1030	377	--	7.90	12.0	12.1	108	15	K10	--
APR											
06...	0730	2100	309	--	7.80	19.5	7.5	80	16	160	130
MAY											
10...	1400	516	432	--	8.30	24.0	9.4	113	160	K25	--
JUN											
07...	1500	376	454	--	8.20	29.0	7.8	100	18	54	--
JUL											
12...	1350	297	305	--	8.10	26.5	7.2	90	25	1000	140
AUG											
02...	1430	365	286	--	8.30	32.0	7.3	98	12	K36	--
SEP											
08...	1410	1950	175	--	7.70	21.5	6.9	79	19	410	--

DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT											
15...	0	57	14	18	2.4	201	2.0	30	14	0.30	256
NOV											
09...	--	--	--	--	--	176	2.2	--	--	--	250
DEC											
01...	--	--	--	--	--	52	2.5	--	--	--	107
JAN											
05...	8	27	7.0	6.4	2.7	88	2.7	19	8.6	0.20	145
FEB											
02...	--	--	--	--	--	38	1.2	--	--	--	59
MAR											
01...	--	--	--	--	--	148	3.6	--	--	--	227
APR											
06...	16	36	9.4	9.4	2.7	113	3.5	20	11	0.20	175
MAY											
10...	--	--	--	--	--	174	1.7	--	--	--	240
JUN											
07...	--	--	--	--	--	177	2.2	--	--	--	260
JUL											
12...	23	38	10	11	2.6	113	1.7	21	12	0.20	178
AUG											
02...	--	--	--	--	--	130	1.3	--	--	--	175
SEP											
08...	--	--	--	--	--	70	2.7	--	--	--	119

K--Results based on colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## WHITE RIVER BASIN

07050700 JAMES RIVER NEAR SPRINGFIELD, MO

LOCATION.--Lat 37°09'00", long 93°12'12", in SW 1/4, SE 1/4, SW 1/4 sec.2, T.28 N., R.21 W., Greene County, Hydrologic Unit 11010002, on right bank on county road at Kinser bridge, 1.1 mi downstream from Pearson Creek, and 2.5 mi southeast of Springfield.

DRAINAGE AREA.--246 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is 1,143.27 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Dec. 19, 1955, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Apr. 20-22. Records good. Flows are affected by pumping for Blackman Water Treatment Plant 1.0 mi upstream. Several observations of water temperature and specific conductance were made during the year. Springfield City Utilities gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1909 reached a stage of about 22 ft, from information by local resident, discharge not determined.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	15	258	598	98	203	999	92	53	2880	33	34
2	11	12	199	506	120	219	5970	89	49	1050	29	53
3	10	14	157	446	158	2110	1760	87	48	520	27	292
4	10	13	129	383	165	1460	1100	88	44	333	25	219
5	9.9	9.8	109	325	170	1000	847	83	41	221	28	119
6	10	14	100	289	166	796	713	79	38	146	28	83
7	9.9	18	469	256	159	663	592	77	36	100	25	63
8	10	19	588	215	152	561	517	75	34	74	23	50
9	11	18	393	190	140	488	455	72	32	69	22	41
10	10	17	284	162	135	432	405	70	30	70	21	35
11	11	16	218	150	137	389	424	67	28	69	20	31
12	12	16	165	136	125	465	415	66	26	67	18	29
13	12	16	131	132	133	463	363	63	26	65	18	27
14	12	16	123	121	154	397	324	61	25	58	18	25
15	12	16	187	110	179	344	299	59	30	51	18	24
16	12	48	238	105	176	301	269	57	52	45	17	27
17	13	65	216	110	165	274	241	54	36	41	16	25
18	13	74	197	115	208	283	236	52	30	88	15	60
19	17	63	3500	124	2070	298	216	50	26	119	16	133
20	20	48	8090	154	1370	316	198	49	24	561	17	88
21	20	38	1620	162	884	308	177	50	22	265	18	62
22	21	33	1010	147	697	278	174	139	21	120	17	43
23	22	24	745	136	562	245	159	352	20	82	588	102
24	27	1050	821	131	470	253	144	217	19	71	317	459
25	30	7920	4490	113	403	380	133	155	18	68	132	458
26	48	1180	4660	112	353	366	124	122	17	63	74	284
27	40	737	3700	111	314	323	114	99	16	54	55	169
28	30	565	2620	106	272	292	106	85	15	48	52	114
29	18	451	1240	103	218	4380	101	74	23	42	55	94
30	15	344	910	99	---	4270	97	66	1040	38	46	85
31	14	---	732	97	---	1380	---	59	---	36	39	---
MEAN	16.9	429	1235	192	357	772	589	90.6	64.0	242	58.9	111
MAX	48	7920	8090	598	2070	4380	5970	352	1040	2880	588	459
MIN	9.9	9.8	100	97	98	203	97	49	15	36	15	24
IN.	.08	1.95	5.79	.90	1.57	3.62	2.67	.42	.29	1.14	.28	.50

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	112.5	230.9	312.3	189.4	251.0	419.3	404.3	351.7	194.1	124.6	43.1	95.6
MAX	587.2	1327	1370	729.9	972.4	1041	1193	1672	873.1	1148	261.9	881.2	
(WY)	1971	1973	1983	1969	1985	1978	1965	1961	1985	1958	1958	1977	
MIN	2.74	9.39	8.26	5.56	8.35	16.4	16.3	38.3	28.1	12.2	3.22	1.05	
(WY)	1957	1964	1956	1981	1981	1981	1981	1977	1972	1962	1962	1956	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	347.0	227.2
HIGHEST ANNUAL MEAN		464.6
LOWEST ANNUAL MEAN		52.8
HIGHEST DAILY MEAN	8090	13900
LOWEST DAILY MEAN	9.8	.30
INSTANTANEOUS PEAK FLOW	15600	24800
INSTANTANEOUS PEAK STAGE (FEET)	16.08	18.20
INSTANTANEOUS LOW FLOW	6.7	0.1
ANNUAL RUNOFF (INCHES)	19.2	12.5
10 PERCENTILE	702	501
50 PERCENTILE	101	75
95 PERCENTILE	14	8.2

07052500 JAMES RIVER AT GALENA, MO

LOCATION.--Lat 36°48'19", long 93°27'41", in SW 1/4 SE 1/4 SW 1/4 sec.6, T.24 N., R.23 W., Stone County, Hydrologic Unit 11010002, on downstream side of right pier of first arch span from left end of bridge on State Highways 13 and 248 in Galena, 0.7 mi upstream from Railey Creek, and 42.3 mi above mouth.

DRAINAGE AREA.--987 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1921 to current year (October 1921, monthly discharge only published in WSP 1311).

REVISED RECORDS.--WSP 977: 1935(M), 1941(M).

GAGE.--Water-stage recorder. Datum of gage is 921.37 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 11, 1927, nonrecording gage at site 500 ft downstream at datum 1.48 ft higher. Dec. 11, 1927, to July 22, 1939, nonrecording gage, and July 23, 1939, to Sept. 30, 1953, water-stage recorder at present site and at datum 2.00 ft higher.

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 2, 31, and Jan. 1-5. Records fair. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	129	170	1350	2300	661	965	3790	653	379	1750	173	220
2	126	157	900	2050	667	927	11300	621	355	4510	169	210
3	123	151	782	1900	677	2240	13100	601	340	1940	169	233
4	118	149	681	1750	728	6020	4940	653	326	1300	156	301
5	114	141	603	1600	758	3640	3580	613	306	947	153	365
6	111	139	549	1510	781	2810	2990	551	287	714	159	278
7	111	141	550	1430	794	2390	2550	525	278	565	167	244
8	110	141	831	1350	787	2090	2250	512	271	458	146	226
9	109	140	1120	1280	761	1840	2020	494	272	377	141	208
10	113	139	957	1220	740	1650	1850	475	265	330	141	190
11	117	141	809	1130	725	1500	1780	467	253	314	135	171
12	123	137	695	1090	707	1450	1700	456	239	318	130	160
13	119	134	603	1060	697	1410	1600	445	222	305	132	152
14	117	133	582	1010	670	1340	1490	427	219	282	127	147
15	116	136	656	966	676	1240	1410	408	212	263	121	164
16	115	272	772	933	686	1150	1340	390	218	248	116	187
17	115	542	877	906	698	1100	1260	379	271	270	114	163
18	114	444	848	895	750	1090	1260	362	245	278	117	172
19	160	389	997	886	1980	1080	1210	353	226	383	130	350
20	200	346	22600	887	4420	1100	1150	330	208	380	137	769
21	187	302	11700	887	2980	1120	1110	324	196	643	146	489
22	161	268	3320	893	2360	1110	1080	335	189	541	130	347
23	152	234	1660	874	1980	1070	1020	1130	183	391	378	313
24	174	235	1850	854	1670	1030	953	1360	170	314	1880	849
25	238	3310	4780	827	1460	1050	908	983	162	269	980	996
26	269	6370	8970	781	1320	1060	866	758	158	258	612	888
27	261	3430	10200	747	1210	1020	810	631	156	245	411	707
28	239	2970	10000	727	1120	975	745	542	148	226	343	553
29	218	2240	14900	700	1040	4220	716	475	163	213	301	462
30	203	1800	7990	683	---	16200	684	437	269	209	269	409
31	183	---	3000	669	---	6510	---	405	---	188	245	---
MEAN	153	843	3746	1122	1190	2335	2382	551	240	627	275	364
MAX	269	6370	22600	2300	4420	16200	13100	1360	379	4510	1880	996
MIN	109	133	549	669	661	927	684	324	148	188	114	147
IN.	.18	.95	4.38	1.31	1.30	2.73	2.69	.64	.27	.73	.32	.41

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	512.2	807.1	951.7	862.1	1072	1467	1742	1548	1174	603.9	417.0	364.3
MAX	2494	4407	5435	3443	3485	5372	8376	9549	6383	4010	5159	2004	
(WY)	1942	1973	1983	1937	1966	1945	1927	1943	1935	1951	1927	1977	
MIN	58.0	65.3	79.2	68.8	87.4	129.4	144.7	179.4	87.6	46.0	22.6	45.8	
(WY)	1954	1954	1956	1956	1954	1954	1954	1936	1936	1954	1954	1953	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1154	958.5
HIGHEST ANNUAL MEAN		2499
LOWEST ANNUAL MEAN		118.6
HIGHEST DAILY MEAN	22600	46900
LOWEST DAILY MEAN	109	11
INSTANTANEOUS PEAK FLOW	26400	52700
INSTANTANEOUS PEAK STAGE (FEET)	17.8	29.82
INSTANTANEOUS LOW FLOW	109	10
ANNUAL RUNOFF (INCHES)	15.9	13.2
10 PERCENTILE	2130	2090
50 PERCENTILE	561	423
95 PERCENTILE	125	90

## 07053400 TABLE ROCK LAKE NEAR BRANSON, MO

LOCATION.--Lat 36°35'46", long 93°18'35", in NW 1/4 sec.22, T.22 N., R.22 W., Taney County, Hydrologic Unit 11010001, at dam on White River, 3 mi upstream from Fall Creek, and 6.1 mi southwest of Branson.

DRAINAGE AREA.--4,020 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to July 18, 1958, non-recording gage at same site and datum.

REMARKS.--Lake is formed by combination concrete-gravity and embankment type dam. Storage began on Sept. 9, 1956. Storage for purpose of filling to power pool level at elevation 881 ft and capacity 1,520,500 acre-ft began Nov. 24, 1958, and was reached Dec. 19, 1959. Capacity is 3,567,500 acre-ft at top of spillway gates, elevation 933 ft. Capacity is 3,462,000 acre-ft at top of flood control pool, elevation 931 ft. Capacity between elevations 915 ft and 931 ft is reserved for flood control, 760,000 acre-ft. The capacity at the lowest outlet, elevation 721.96 ft., is 3,530 acre-ft. Lake is used for flood control, power, and recreational purposes.

COOPERATION.--Records were provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 3,542,000 acre-ft, May 10, 1961, elevation, 932.52 ft; minimum, since initial filling to bottom of power pool level, 1,536,000 acre-ft, Feb. 8, 1965, elevation, 881.54 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 3,000,000 acre-ft, Apr. 5, elevation, 921.58 ft; minimum, 2,240,000 acre-ft, Dec. 12-15, elevation, 903.46 ft, Dec. 13.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2340000	2330000	2300000	2920000	2670000	2630000	2850000	2680000	2610000	2550000	2510000	2370000
2	2340000	2330000	2300000	2920000	2660000	2620000	2930000	2680000	2610000	2560000	2500000	2360000
3	2340000	2330000	2290000	2920000	2660000	2650000	2970000	2680000	2610000	2560000	2490000	2370000
4	2340000	2330000	2290000	2910000	2650000	2690000	2990000	2680000	2610000	2560000	2470000	2370000
5	2330000	2330000	2280000	2890000	2640000	2710000	3000000	2670000	2610000	2560000	2470000	2360000
6	2330000	2320000	2280000	2870000	2630000	2730000	2990000	2670000	2600000	2560000	2470000	2360000
7	2330000	2320000	2280000	2850000	2630000	2740000	2970000	2670000	2600000	2560000	2470000	2360000
8	2330000	2310000	2280000	2830000	2620000	2740000	2960000	2670000	2590000	2560000	2470000	2360000
9	2330000	2300000	2270000	2810000	2610000	2740000	2940000	2670000	2590000	2560000	2450000	2350000
10	2330000	2290000	2260000	2780000	2600000	2730000	2930000	2660000	2590000	2560000	2440000	2350000
11	2330000	2290000	2250000	2760000	2580000	2730000	2910000	2660000	2590000	2560000	2430000	2350000
12	2330000	2280000	2240000	2750000	2580000	2720000	2890000	2670000	2590000	2570000	2430000	2350000
13	2330000	2280000	2240000	2740000	2570000	2710000	2890000	2670000	2580000	2570000	2430000	2340000
14	2320000	2280000	2240000	2730000	2570000	2700000	2870000	2660000	2570000	2560000	2420000	2340000
15	2320000	2280000	2240000	2720000	2560000	2680000	2860000	2650000	2570000	2550000	2410000	2330000
16	2320000	2290000	2250000	2710000	2560000	2670000	2840000	2640000	2570000	2550000	2410000	2330000
17	2320000	2290000	2250000	2710000	2560000	2670000	2820000	2630000	2570000	2550000	2400000	2320000
18	2320000	2280000	2260000	2700000	2560000	2670000	2820000	2620000	2570000	2550000	2390000	2320000
19	2330000	2270000	2320000	2690000	2580000	2660000	2810000	2610000	2570000	2550000	2390000	2320000
20	2320000	2270000	2410000	2680000	2600000	2670000	2790000	2610000	2560000	2550000	2380000	2320000
21	2320000	2270000	2450000	2670000	2620000	2670000	2770000	2610000	2560000	2550000	2380000	2320000
22	2320000	2270000	2470000	2670000	2640000	2670000	2750000	2620000	2560000	2550000	2370000	2310000
23	2320000	2260000	2490000	2660000	2650000	2660000	2750000	2620000	2550000	2550000	2370000	2310000
24	2320000	2260000	2510000	2650000	2640000	2660000	2730000	2620000	2550000	2550000	2370000	2310000
25	2330000	2280000	2600000	2650000	2640000	2660000	2720000	2630000	2550000	2540000	2370000	2310000
26	2320000	2300000	2730000	2640000	2640000	2660000	2720000	2630000	2550000	2540000	2370000	2310000
27	2320000	2300000	2820000	2630000	2640000	2660000	2710000	2630000	2550000	2540000	2370000	2300000
28	2330000	2300000	2870000	2630000	2640000	2660000	2700000	2630000	2540000	2540000	2370000	2300000
29	2330000	2300000	2900000	2630000	2640000	2740000	2690000	2630000	2540000	2540000	2370000	2300000
30	2330000	2300000	2910000	2650000	---	2820000	2680000	2630000	2540000	2530000	2370000	2300000
31	2330000	---	2920000	2660000	---	2830000	---	2620000	---	2520000	2370000	---
(-)	905.78	905.08	919.84	914.13	913.43	918.00	914.50	913.02	911.20	910.61	906.86	905.06
(=)	-20000	+30000	+62000	-260000	-20000	+190000	-150000	-60000	-80000	-20000	-150000	-70000
MAX	2340000	2330000	2920000	2920000	2670000	2830000	3000000	2680000	2610000	2570000	2510000	2370000
MIN	2320000	2260000	2240000	2630000	2560000	2620000	2680000	2610000	2540000	2520000	2370000	2300000

CAL YR 1987.....+162000

WTR YR 1988.....-548000

(-) Elevation, in feet NGVD, at end of month

(=) Change in contents, in acre-feet

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1987 to current year.

DISSOLVED OXYGEN: June 1987 to current year

INSTRUMENTATION.--Water quality monitor since June 1987.

REMARKS.--The number of missing days of dissolved oxygen and water temperature record exceeds 20 percent of the year. The monitor was not operated from Jan. 13 to June 8, 1988.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

07053450 WHITE RIVER BELOW TABLE ROCK DAM NEAR BRANSON, MO--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
JUNE				JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	10.9	9.7	10.1	11.8	10.3	11.0
2	---	---	---	---	---	---	10.8	9.8	10.1	10.8	10.4	10.7
3	---	---	---	---	---	---	10.3	9.6	9.8	12.4	10.5	11.0
4	---	---	---	---	---	---	10.1	9.5	9.8	11.6	10.5	10.9
5	---	---	---	---	---	---	10.7	9.6	10.0	12.6	10.3	10.9
6	---	---	---	---	---	---	12.7	9.6	10.1	12.0	10.1	10.8
7	---	---	---	11.1	8.9	9.4	10.7	9.5	9.8	11.7	10.2	10.9
8	---	---	---	10.7	9.0	9.3	10.4	9.4	9.7	10.8	10.3	10.7
9	---	---	---	11.7	8.9	9.5	10.4	9.5	9.7	11.7	10.7	10.8
10	11.1	8.7	9.4	11.4	8.9	9.4	10.4	9.6	9.9	11.4	10.6	10.9
11	10.5	8.2	9.0	11.0	8.9	9.3	10.8	9.6	9.9	11.3	10.5	10.8
12	10.7	8.4	9.0	10.3	8.9	9.2	10.6	9.7	10.0	12.8	10.5	10.9
13	10.0	8.4	9.0	10.8	8.9	9.4	11.2	9.8	10.2	12.4	11.3	11.8
14	9.6	8.7	9.2	10.1	8.9	9.4	10.9	9.9	10.1	12.1	11.3	11.7
15	10.0	8.8	9.3	10.5	9.1	9.5	10.5	9.9	10.1	11.8	11.2	11.4
16	10.1	8.7	9.2	10.9	9.0	9.6	10.4	9.8	10.0	---	---	---
17	10.2	8.6	9.2	11.0	9.1	9.6	10.3	9.9	10.0	12.3	12.1	11.7
18	10.4	8.6	9.2	10.2	9.0	9.4	---	---	---	12.7	11.8	12.0
19	10.0	8.6	9.2	10.1	9.1	9.4	---	---	---	12.1	10.8	11.5
20	10.0	8.7	9.2	10.7	9.1	9.7	---	---	---	12.4	11.0	11.4
21	10.2	8.8	9.2	11.8	9.3	10.0	---	---	---	11.7	10.4	11.3
22	9.9	8.8	9.2	10.4	9.2	9.8	---	---	---	11.6	11.0	11.4
23	9.8	8.9	9.3	11.0	9.3	9.7	---	---	---	12.2	11.4	11.7
24	9.9	8.9	9.3	10.4	9.3	9.8	---	---	---	---	---	---
25	10.4	9.0	9.5	11.7	9.8	10.1	---	---	---	---	---	---
26	10.4	8.9	9.5	11.0	9.6	10.0	12.3	10.4	10.9	---	---	---
27	10.5	8.9	9.3	10.4	9.5	9.9	12.6	10.4	10.8	---	---	---
28	9.9	8.7	9.3	12.1	9.5	10.0	12.4	10.4	10.7	10.9	9.9	10.3
29	---	---	---	10.9	9.5	9.9	13.3	10.3	10.9	11.4	9.7	10.7
30	---	---	---	10.6	9.5	9.9	12.4	10.2	10.9	11.2	10.6	10.9
31	---	---	---	10.9	9.7	10.0	12.2	10.3	10.9	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## WHITE RIVER BASIN

07053450 WHITE RIVER BELOW TABLE ROCK DAM NEAR BRANSON, MO--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	9.3	5.9	7.2	---	---	---	10.0	3.3	6.5
2	---	---	---	10.8	5.9	7.6	---	---	---	6.5	3.1	4.7
3	---	---	---	12.0	5.9	8.2	---	---	---	9.3	3.6	6.1
4	---	---	---	11.0	5.8	7.9	9.3	4.7	6.3	10.0	3.2	5.7
5	---	---	---	8.4	5.4	6.3	11.8	5.6	8.8	10.3	2.8	5.1
6	---	---	---	10.1	6.0	7.6	12.6	5.0	7.9	9.1	2.6	5.4
7	---	---	---	11.1	6.4	8.2	12.0	4.9	6.7	8.8	3.2	5.7
8	---	---	---	11.3	6.3	8.2	9.1	4.3	6.1	7.0	3.0	4.6
9	---	---	---	12.1	6.2	8.5	8.4	4.0	5.4	8.3	2.7	5.0
10	13.6	6.8	9.9	11.9	6.1	8.3	9.2	3.7	5.5	7.4	3.3	4.9
11	13.0	7.3	9.6	10.1	6.1	7.6	8.8	3.7	5.4	6.7	3.0	4.6
12	12.4	6.9	8.8	10.6	6.0	7.7	9.9	4.5	6.6	5.2	2.8	3.4
13	---	---	---	11.5	6.0	7.4	10.7	3.9	7.2	7.1	3.0	4.4
14	11.2	6.7	8.1	8.7	5.4	6.7	11.0	3.5	5.9	6.3	2.8	3.8
15	12.1	7.2	9.1	9.4	5.2	6.8	8.0	3.3	4.8	6.0	2.8	4.1
16	9.1	6.8	7.6	11.0	5.3	7.0	8.3	3.8	4.9	8.4	2.9	4.6
17	12.6	6.7	8.9	11.1	5.4	7.7	8.4	3.3	5.0	6.7	2.8	4.1
18	12.4	6.4	8.6	8.8	4.5	5.7	7.5	3.6	5.3	7.3	3.7	5.4
19	11.8	6.5	8.8	9.4	5.1	6.8	9.7	3.4	6.3	7.2	3.4	4.9
20	9.9	6.0	7.2	9.9	5.7	7.4	7.5	4.3	5.8	8.3	3.5	5.4
21	10.8	6.5	7.7	11.4	5.6	8.0	7.8	3.5	5.2	7.2	3.6	4.7
22	10.7	6.2	7.1	10.3	5.5	7.0	7.5	3.3	4.7	6.6	3.8	4.6
23	10.5	6.3	7.4	10.7	5.7	7.5	10.8	4.3	6.3	10.9	4.2	6.4
24	9.9	6.4	7.4	11.3	5.5	7.1	---	---	---	7.2	3.6	5.0
25	12.0	6.6	9.1	8.9	5.3	6.9	---	---	---	9.0	3.3	5.5
26	12.9	6.2	8.7	10.1	5.2	6.8	11.6	4.5	6.6	6.1	3.5	4.8
27	11.3	6.2	7.7	11.0	6.0	8.2	11.2	3.9	6.4	7.0	4.1	5.0
28	10.6	5.8	7.1	11.0	5.8	8.1	7.3	4.1	5.2	8.1	3.4	4.7
29	11.2	6.1	7.8	9.6	6.0	7.0	10.5	4.1	6.3	6.2	3.4	5.2
30	11.4	6.1	8.0	---	---	---	9.4	3.7	6.4	7.9	3.2	4.9
31	---	---	---	---	---	---	9.6	4.0	6.4	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	10.9	2.6	5.0

## WHITE RIVER BASIN

243

07053500 WHITE RIVER NEAR BRANSON, MO

LOCATION.--Lat 36°35'51", long 93°17'42", in SE 1/4 NE 1/4 sec.22, T.22 N., R.22 W., Taney County, Hydrologic Unit 11010003, on left bank 0.9 mi downstream from Table Rock Dam, 2.1 mi upstream from Fall Creek, 5 mi southwest of Branson, 7.4 mi upstream from Missouri Pacific bridge, and at mile 527.8.

DRAINAGE AREA.--4,022 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1909 to December 1910 (gage heights and discharge measurements only), October 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 696.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). July 19, 1909, to Dec. 31, 1910, nonrecording gage at site 7.4 mi downstream at different datum. Oct. 1, 1951, to Mar. 6, 1952, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Table Rock Lake (station 07053400) since Sept. 9, 1956. Several observations of water temperature and specific conductance were made during the year.

COOPERATION.--Records were provided by the U.S. Army Corps of Engineers.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 16, 1945, reached a stage of 52.8 ft, from floodmark, discharge, 203,000 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3500	130	3450	12800	6350	8710	13800	1120	2680	150	7110	680
2	770	940	2890	12600	7720	8680	10400	6410	4510	140	5820	2520
3	1260	170	2920	13000	9240	9060	13700	5010	700	140	6740	130
4	160	530	4180	12600	9430	8370	14400	9270	140	210	6100	130
5	750	310	3800	14600	11800	9220	14700	5960	140	4420	180	130
6	1240	750	1830	14600	7650	4370	14000	6360	2140	450	95	340
7	700	3160	3160	14700	4450	9670	14000	9310	4400	210	1370	520
8	170	2670	4720	14800	8070	10300	14000	1360	6380	140	3210	2650
9	260	6600	5840	14800	8040	10800	13800	6360	60	135	6650	2970
10	970	3740	5920	14900	7930	11700	14800	8410	320	145	6360	2060
11	160	3600	5470	12600	7560	10600	14900	6330	170	320	5100	160
12	140	3250	6130	7560	5310	10700	14900	1750	170	180	1430	3670
13	250	890	1340	8370	5370	8910	14900	7120	4210	1150	1150	3020
14	140	160	7710	8690	40	12100	14900	6820	4730	4300	3780	3410
15	140	340	8830	8260	8310	12300	14900	3570	580	4200	5660	2110
16	380	1500	9180	6020	1650	12300	14900	4320	1370	1500	5300	2270
17	450	4560	7090	7510	3920	7960	15000	6920	210	170	5400	4000
18	240	3840	5510	7480	4550	6920	14200	5490	630	3340	4860	1190
19	1330	4740	3710	5800	4160	8850	15000	5510	350	740	3210	3200
20	1580	3280	40	7280	3850	6620	15000	3070	4140	170	2210	510
21	1270	1300	5710	7770	40	8520	15100	130	2720	140	3640	2730
22	1170	40	7930	8600	1210	8860	15100	140	5480	1260	6090	5710
23	360	3740	7770	6360	5540	9920	7620	140	3540	240	960	260
24	140	4630	4710	6630	8280	9100	11200	240	3400	2470	740	160
25	310	2310	3590	7070	7860	6860	8710	160	340	3570	2780	160
26	1670	3910	40	8450	5300	8450	7580	690	450	3880	270	3030
27	160	3870	40	7420	4320	7110	7810	260	1330	40	270	3140
28	180	4140	6650	5610	3310	7770	10100	210	3230	280	140	2660
29	170	4120	12700	6870	6570	6490	8220	490	130	930	140	1820
30	170	1330	12700	3000	---	7420	11100	610	170	4950	160	140
31	140	---	13600	1320	---	13900	---	7720	---	5480	330	---
MEAN	656	2485	5457	9293	5787	9114	12960	3912	1961	1466	3137	1849
MAX	3500	6600	13600	14900	11800	13900	15100	9310	6380	5480	7110	5710
MIN	140	40	40	1320	40	4370	7580	130	60	40	95	130
IN.	.19	.69	1.56	2.66	1.55	2.61	3.60	1.12	.54	.42	.90	.51

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
MEAN	1573	2894	3902	3498	3712	5086	5798	5774	3797	3301	2720	1942
MAX	5437	13110	15210	16070	11970	14800	14800	22650	19950	11660	11390	8988
(WY)	1971	1975	1986	1985	1969	1985	1985	1961	1957	1957	1957	1957
MIN	127.6	189.0	267.0	227.8	420.3	419.0	341.2	415.1	518.8	140.3	51.3	135.9
(WY)	1957	1954	1956	1956	1964	1964	1981	1981	1954	1954	1954	1953

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	4835	3667
HIGHEST ANNUAL MEAN	7797	1957
LOWEST ANNUAL MEAN	729.4	1954
HIGHEST DAILY MEAN	15100	72000
LOWEST DAILY MEAN	40	0
INSTANTANEOUS PEAK FLOW	15100	89100
INSTANTANEOUS PEAK STAGE (FEET)	****	36.9
INSTANTANEOUS LOW FLOW	40	0
ANNUAL RUNOFF (INCHES)	16.3	12.4

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## WHITE RIVER BASIN

07053600 LAKE TANEYCOMO AT THE SCHOOL OF THE OZARKS, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat 36°36'33", long 93°14'04", in sec.4, T.22 N., R.21 W., Taney County, Hydrologic Unit 11010003, on the right bank in the School of the Ozarks water intake pump house, and 4.75 miles below Table Rock Dam.

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May 1984 to current year. (See remarks).

DISSOLVED OXYGEN: May 1984 to current year. (See remarks).

INSTRUMENTATION.--Water-quality monitor since May 1984.

REMARKS.--Monitor was removed Feb. 16, 1988 and reinstalled on June 9, 1988. Therefore, the number of missing days of record exceeds 20 percent.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

TEMPERATURE: Maximum, 21.1°C, July 15, 1987; minimum, 3.0°C, Feb. 11, 12, 1986.

DISSOLVED OXYGEN: Maximum, 14.4 mg/L, July 22, 1988; minimum, 2.8 mg/L, Oct. 11, 1986.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	10.8	9.8	10.2	13.7	12.0	12.8	11.3	10.6	11.1	9.7	9.4	9.6
2	11.0	9.9	10.4	13.4	10.4	12.5	11.5	10.0	10.9	9.7	9.2	9.5
3	11.3	9.9	10.6	12.5	10.2	10.8	11.7	10.7	11.2	9.5	9.4	9.4
4	12.7	10.3	11.2	12.0	11.1	11.4	11.5	10.4	11.1	9.4	9.1	9.3
5	11.6	10.6	11.1	12.5	11.2	11.7	11.5	10.4	11.0	9.2	9.0	9.1
6	11.0	9.8	10.7	11.6	10.3	11.1	11.1	10.8	11.0	9.0	8.8	8.9
7	11.5	10.3	10.8	10.9	10.0	10.5	11.3	10.8	11.1	8.9	8.6	8.8
8	12.0	10.2	10.9	11.0	10.6	10.8	11.4	11.0	11.2	8.8	8.5	8.6
9	13.3	11.5	11.9	10.8	10.6	10.7	11.6	10.8	11.2	8.7	8.3	8.5
10	11.6	9.8	11.0	11.1	10.0	10.6	11.4	10.7	11.1	8.5	8.2	8.3
11	10.1	9.5	9.8	11.2	9.6	10.5	11.5	10.6	11.2	8.4	8.2	8.3
12	11.2	9.4	9.9	11.2	9.9	10.6	11.5	10.5	11.1	8.6	8.0	8.3
13	12.4	9.5	10.5	11.5	9.9	10.8	11.0	10.5	10.8	8.2	7.4	7.9
14	12.8	10.6	11.3	11.8	10.5	11.0	10.8	9.8	10.6	8.0	7.3	7.8
15	12.4	10.2	11.0	11.8	11.0	11.3	11.1	9.5	10.6	8.1	7.2	7.7
16	12.1	11.1	11.5	11.4	10.8	11.2	10.9	10.5	10.7	7.8	7.3	7.6
17	13.1	11.0	11.6	11.1	10.6	10.8	10.9	10.4	10.7	7.7	7.5	7.6
18	12.7	10.5	11.1	11.1	10.3	10.8	10.6	9.9	10.5	7.5	7.2	7.4
19	12.5	10.6	11.3	11.3	10.5	10.9	10.6	9.9	10.4	7.6	7.3	7.4
20	12.0	11.0	11.4	11.3	10.2	10.8	10.4	9.7	10.2	7.3	7.1	7.2
21	12.0	10.4	11.3	11.4	9.8	10.7	10.7	9.3	10.1	7.3	6.8	7.1
22	11.4	10.9	11.3	11.1	10.5	10.8	10.7	9.9	10.4	7.2	6.7	7.0
23	11.4	10.9	11.2	11.4	10.2	10.9	10.6	9.9	10.3	7.2	6.5	6.9
24	11.3	11.0	11.1	11.4	10.9	11.1	10.6	10.4	10.5	7.2	6.5	6.9
25	11.6	11.1	11.3	11.5	10.9	11.1	10.4	9.7	10.0	7.0	6.2	6.7
26	11.4	10.7	11.1	11.0	10.7	10.9	9.6	8.8	9.2	6.9	6.2	6.6
27	11.1	10.3	10.6	11.0	10.6	10.9	8.8	8.2	8.6	7.0	6.3	6.6
28	11.9	9.2	10.6	11.1	10.4	10.9	10.0	8.0	8.9	7.3	6.2	6.7
29	11.5	10.3	10.8	11.4	10.7	11.2	10.1	9.8	9.9	6.9	6.2	6.6
30	12.4	10.9	11.6	11.2	10.3	11.0	9.9	9.7	9.8	7.1	6.6	6.9
31	13.5	11.9	12.4	---	---	---	9.9	9.6	9.8	7.6	6.8	7.2
MONTH	13.5	9.2	11.0	13.7	9.6	11.0	11.7	8.0	10.5	9.7	6.2	7.8

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	7.2	6.7	6.9	---	---	---	---	---	---	---	---	---
2	6.6	6.2	6.6	---	---	---	---	---	---	---	---	---
3	6.7	6.4	6.6	---	---	---	---	---	---	---	---	---
4	6.6	6.3	6.5	---	---	---	---	---	---	---	---	---
5	6.5	6.0	6.3	---	---	---	---	---	---	---	---	---
6	6.4	5.8	6.1	---	---	---	---	---	---	---	---	---
7	6.1	5.5	5.8	---	---	---	---	---	---	---	---	---
8	5.9	5.6	5.8	---	---	---	---	---	---	---	---	---
9	6.0	5.6	5.8	---	---	---	---	---	---	---	---	---
10	6.1	5.6	5.9	---	---	---	---	---	---	---	---	---
11	6.3	5.3	5.9	---	---	---	---	---	---	---	---	---
12	6.4	5.3	6.0	---	---	---	---	---	---	---	---	---
13	6.9	5.6	6.4	---	---	---	---	---	---	---	---	---
14	7.3	6.4	6.9	---	---	---	---	---	---	---	---	---
15	7.3	6.7	7.0	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	11.1	9.8	10.2	17.4	12.2	14.9
2	---	---	---	---	---	---	11.2	9.9	10.2	12.0	10.9	11.5
3	---	---	---	---	---	---	---	---	---	12.5	10.9	11.6
4	---	---	---	---	---	---	---	---	---	15.2	12.5	13.9
5	---	---	---	---	---	---	---	---	---	16.0	14.5	15.2
6	---	---	---	---	---	---	---	---	---	17.7	15.0	15.9
7	---	---	---	16.1	12.6	13.8	---	---	---	15.3	12.2	13.9
8	---	---	---	15.1	13.1	14.2	---	---	---	13.6	10.7	12.1
9	---	---	---	16.7	13.3	14.4	---	---	---	12.7	10.6	11.2
10	16.2	11.9	13.6	18.4	13.9	15.1	11.9	10.3	10.7	13.4	10.8	11.3
11	16.6	13.1	14.5	16.6	12.7	15.1	11.6	10.3	10.6	12.6	10.8	11.5
12	17.5	13.4	14.6	16.0	12.8	14.2	13.5	10.3	11.2	13.6	10.8	12.0
13	15.3	9.4	12.6	16.9	9.9	13.5	13.0	10.7	11.5	12.9	10.8	11.3
14	12.0	9.4	10.0	11.8	9.5	10.1	13.5	10.5	11.3	12.5	10.8	11.2
15	13.5	9.5	11.1	11.4	9.4	9.9	11.6	10.4	10.8	12.6	10.8	11.3
16	12.8	10.8	11.7	12.9	9.5	10.4	11.7	10.4	10.8	14.6	10.9	11.6
17	16.8	10.6	12.6	12.7	9.8	11.0	---	---	---	12.1	10.9	11.2
18	18.1	10.5	14.1	14.3	9.6	12.0	---	---	---	12.9	10.9	11.6
19	14.9	10.4	12.2	12.5	9.6	10.8	---	---	---	12.4	11.1	11.8
20	14.4	9.6	12.1	12.5	10.7	11.4	---	---	---	12.2	11.9	12.1
21	12.3	9.6	10.1	18.1	11.5	13.9	---	---	---	12.0	11.6	11.8
22	11.5	9.6	10.0	19.8	10.4	14.8	---	---	---	---	---	---
23	11.9	9.7	10.1	13.1	10.3	11.4	---	---	---	---	---	---
24	12.3	9.6	10.2	15.9	10.2	13.2	---	---	---	---	---	---
25	14.4	9.6	11.5	11.7	10.1	10.6	13.8	10.8	12.0	---	---	---
26	19.4	13.5	15.2	---	---	---	14.8	10.8	11.9	---	---	---
27	16.4	10.0	13.4	16.7	10.1	12.4	16.2	13.0	14.3	---	---	---
28	12.4	9.8	10.4	19.5	14.0	15.7	14.3	13.2	13.9	---	---	---
29	---	---	---	15.3	11.7	13.6	15.9	13.0	14.0	---	---	---
30	---	---	---	13.2	9.9	11.7	16.9	13.6	14.8	---	---	---
31	---	---	---	12.9	9.9	10.4	17.3	14.4	15.4	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

07053600 LAKE TANEYCOMO AT THE SCHOOL OF THE OZARKS, MO--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

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OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## WHITE RIVER BASIN

07053700 LAKE TANEYCOMO AT BRANSON, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat 36°38'09", long 93°12'52", in SE 1/4 NW 1/4 sec.4, T.22 N., R.21 W., Taney County, Hydrologic Unit 11010003, 1000 ft downstream from Turkey Creek, at bridge on Business Route 65 in Branson.

PERIOD OF RECORD.--July 1977 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DEMAND, CHEMICAL (PER-CENT SATURATION) (00301)	OXYGEN, DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	HARDNESS TOTAL (MG/L AS CaCO3) (00900)	HARDNESS NONCARBON (MG/L AS CaCO3) (00902)
OCT 07...	0900	233	8.00	9.5	7.6	66	<10	K10	120	4
NOV 03...	1630	234	7.80	13.0	7.6	71	85	34	--	--
DEC 10...	0800	200	8.00	9.0	8.0	69	10	73	--	--
JAN 06...	0800	215	8.20	7.5	8.9	72	43	K6	110	4
FEB 04...	0830	210	7.80	6.0	10.9	86	<10	K8	--	--
MAR 03...	0830	221	8.00	6.0	10.8	88	<10	K20	--	--
APR 05...	1600	214	8.20	8.5	11.6	99	<10	K14	110	15
MAY 12...	1030	241	8.10	11.0	9.2	83	<10	K10	--	--
JUN 09...	1630	218	7.80	11.5	11.7	110	<10	20	--	--
JUL 14...	1200	234	7.90	17.5	6.9	72	22	68	110	9
AUG 02...	1430	216	7.70	12.0	6.3	60	24	37	--	--
SEP 08...	0800	206	7.90	15.0	8.5	84	14	30	--	--

DATE	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY WAT TOT FIELD (MG/L AS CaCO3) (00410)	CARBON DIOXIDE, DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE, DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS Cl) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT 07...	36	6.4	3.4	1.7	112	2.2	10	5.3	0.20	127
NOV 03...	--	--	--	--	104	3.2	--	--	--	136
DEC 10...	--	--	--	--	108	2.1	--	--	--	120
JAN 06...	33	6.2	3.2	1.7	104	1.3	9.0	5.0	0.10	126
FEB 04...	--	--	--	--	110	3.4	--	--	--	129
MAR 03...	--	--	--	--	107	2.1	--	--	--	132
APR 05...	33	6.0	3.5	1.7	92	1.1	13	5.5	0.10	130
MAY 12...	--	--	--	--	100	1.6	--	--	--	119
JUN 09...	--	--	--	--	100	3.1	--	--	--	118
JUL 14...	35	6.1	3.6	1.6	104	2.5	9.3	6.1	0.10	126
AUG 02...	--	--	--	--	92	3.6	--	--	--	121
SEP 08...	--	--	--	--	102	2.5	--	--	--	126

K--Results based on colonyb count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## WHITE RIVER BASIN

07057500 NORTH FORK RIVER NEAR TECUMSEH, MO

LOCATION.--Lat 36°37'22", long 92°14'53", in NE 1/4 SE 1/4 sec.35, T.23 N., R.12 W., Ozark County, Hydrologic Unit 11010006, on right bank 3.2 mi downstream from Spring Creek, and 3.5 mi northeast of Tecumseh.

DRAINAGE AREA.--561 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 584.67 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to May 12, 1945, nonrecording gage at same site and datum 0.22 ft lower.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	297	295	391	1290	587	655	2280	737	532	618	436	357
2	293	292	379	1120	582	661	3650	721	525	1000	431	382
3	288	291	369	1020	573	1220	3380	716	520	735	425	1120
4	287	289	359	945	577	2010	2450	730	508	603	423	546
5	287	287	351	865	576	1510	2010	717	497	544	422	485
6	288	283	358	809	572	1280	1770	692	491	501	418	445
7	286	282	524	776	572	1130	1580	682	487	475	407	419
8	283	286	1160	744	576	1050	1450	679	485	459	399	402
9	284	290	861	715	574	985	1340	680	486	446	393	389
10	282	284	687	687	570	929	1250	673	473	436	387	379
11	287	282	598	662	570	884	1210	649	465	432	380	380
12	287	279	546	652	560	885	1160	637	461	442	375	377
13	286	279	502	634	554	877	1100	625	457	454	372	368
14	285	278	583	607	565	847	1050	614	454	439	370	359
15	285	282	3930	594	570	816	1010	604	449	422	368	352
16	287	360	1880	589	562	783	979	592	452	413	363	348
17	287	412	1200	635	554	782	952	582	452	414	358	344
18	286	393	932	700	567	808	1010	573	446	412	355	344
19	302	368	951	825	814	873	1080	567	440	469	363	348
20	306	351	4020	894	1510	996	1080	559	434	1360	384	349
21	302	336	2020	866	1260	1040	1050	552	429	1010	375	345
22	297	327	1430	805	1100	1000	1030	596	425	713	364	343
23	298	322	1140	769	994	955	986	752	421	595	391	340
24	299	319	984	746	879	915	920	790	418	538	398	371
25	304	371	2330	706	808	921	877	710	414	507	395	393
26	331	407	7560	668	766	981	851	650	410	499	372	379
27	339	456	3230	637	739	941	821	613	407	477	375	366
28	330	439	3300	617	709	900	789	589	402	456	404	360
29	314	421	2290	603	682	2750	765	572	415	440	403	370
30	307	405	1770	595	---	7020	750	558	460	441	380	424
31	300	---	1510	594	---	3040	---	544	---	438	365	---
MEAN	297	332	1553	754	708	1305	1354	644	457	554	389	406
MAX	339	456	7560	1290	1510	7020	3650	790	532	1360	436	1120
MIN	282	278	351	589	554	655	750	544	402	412	355	340
IN.	.61	.66	3.19	1.55	1.36	2.68	2.69	1.32	.91	1.14	.80	.81

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	403.3	614.4	708.0	703.6	832.9	1051	1232	1092	761.2	554.3	414.7	394.3
MEAN	403.3	614.4	708.0	703.6	832.9	1051	1232	1092	761.2	554.3	414.7	394.3
MAX	1040	2751	2842	2322	2872	2473	3623	2775	2515	1632	888.9	1015
(WY)	1985	1986	1983	1950	1985	1945	1945	1957	1945	1951	1958	1975
MIN	214.3	224.3	223.0	201.3	261.4	289.8	370.0	352.4	275.7	239.2	203.8	193.2
(WY)	1957	1955	1956	1956	1964	1981	1963	1977	1954	1954	1954	1954

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	730.5	729.1
HIGHEST ANNUAL MEAN		1555
LOWEST ANNUAL MEAN		298.6
HIGHEST DAILY MEAN	7560	45100
LOWEST DAILY MEAN	278	187
INSTANTANEOUS PEAK FLOW	11800	133000
INSTANTANEOUS PEAK STAGE (FEET)	10.52	28.10
INSTANTANEOUS LOW FLOW	275	187
ANNUAL RUNOFF (INCHES)	17.7	17.6
10 PERCENTILE	1180	1310
50 PERCENTILE	547	492
95 PERCENTILE	291	256

## 07061300 EAST FORK BLACK RIVER AT LESTERVILLE, MO

LOCATION.--Lat 37°27'03", long 90°49'38", in NE 1/4 SE 1/4 sec.16, T.32 N., R.2 E., Reynolds County, Hydrologic Unit 11010007, at bridge on State Highway 21, 49, and 72 at Lesterville, and 0.8 mi upstream from Black River.

DRAINAGE AREA.--94.5 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 655.34 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Mar. 15 to Apr. 10. Records good except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. Low flow regulated by Union Electric Company Taum Sauk pumped-storage power plant lower reservoir, 4 mi upstream, since Feb. 19, 1963, capacity 6,350 acre-ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 1935 reached a stage of about 13.8 ft, from information by local resident.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.98	13	62	284	85	59	350	39	2.0	6.2	2.2	.00
2	.89	10	61	214	156	54	400	36	1.8	14	1.7	.00
3	7.1	3.8	38	165	182	181	350	31	6.4	12	1.4	130
4	5.3	2.3	34	85	191	443	275	24	10	11	1.1	87
5	2.2	8.8	34	22	207	681	225	23	11	10	1.1	9.4
6	1.5	14	48	47	236	484	200	28	5.4	4.1	1.0	6.0
7	1.2	14	122	98	117	461	170	31	2.4	1.8	.90	6.4
8	1.0	15	167	98	108	32	150	34	1.6	1.4	.82	4.7
9	.93	15	238	87	108	24	130	36	2.5	1.1	.69	7.6
10	1.1	14	164	75	105	79	150	37	5.7	.99	.56	8.2
11	1.1	13	263	58	122	134	117	37	9.1	.89	.38	8.2
12	6.8	4.4	234	36	163	318	68	33	9.6	1.1	.19	8.4
13	13	2.5	144	34	130	295	97	33	4.5	3.3	.08	7.9
14	3.8	1.8	134	34	73	164	67	26	2.1	7.4	.01	7.6
15	2.2	7.1	671	33	86	100	66	15	1.4	12	.00	7.6
16	1.7	33	738	33	110	80	67	14	1.2	11	.00	7.8
17	3.7	70	326	43	122	70	54	13	1.0	3.3	.00	8.1
18	15	51	241	44	129	65	43	14	.93	1.9	.00	12
19	17	50	498	276	198	60	58	20	8.0	1.7	.00	42
20	15	43	1880	807	388	55	77	22	14	13	.00	40
21	4.4	39	926	702	356	52	67	11	12	37	.00	23
22	2.7	27	658	538	198	50	44	9.2	3.3	35	.00	9.0
23	2.0	18	438	338	167	48	52	16	1.6	8.1	.00	7.6
24	5.1	18	297	240	246	46	52	21	1.2	4.6	.00	11
25	16	75	1880	211	411	100	40	10	.97	10	.00	12
26	20	119	2330	176	225	125	38	15	.82	6.7	.00	12
27	30	84	2140	149	52	100	31	17	.70	5.5	.00	12
28	23	121	1630	105	48	80	31	18	.61	8.8	.00	12
29	14	109	878	56	47	500	38	19	.53	11	.00	15
30	14	68	679	54	---	2000	41	8.8	.55	8.7	.00	39
31	13	---	428	53	---	800	---	3.3	---	3.8	.00	---
MEAN	7.93	35.5	593	168	164	250	118	22.4	4.10	8.30	.39	18.7
MAX	30	121	2330	807	411	2000	400	39	14	37	2.2	130
MIN	.89	1.8	34	22	47	24	31	3.3	.53	.89	.00	.00
IN.	.10	.42	7.24	2.05	1.88	3.05	1.40	.27	.05	.10	.00	.22

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	35.1	162.4	194.3	103.5	148.1	237.9	234.6	138.1	69.4	20.0	30.7	36.1
MEAN	35.1	162.4	194.3	103.5	148.1	237.9	234.6	138.1	69.4	20.0	30.7	36.1
MAX	251.7	1179	896.1	313.1	454.7	578.2	657.0	412.1	704.8	212.1	304.7	284.6
(WY)	1985	1986	1983	1969	1985	1977	1983	1961	1985	1981	1982	1970
MIN	.539	2.65	5.20	4.53	9.62	32.6	73.3	14.3	3.38	.435	.391	.259
(WY)	1964	1966	1981	1977	1963	1981	1980	1965	1978	1964	1988	1983

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	116.4	118.3
HIGHEST ANNUAL MEAN		333.7
LOWEST ANNUAL MEAN		25.8
HIGHEST DAILY MEAN	2330	13200
LOWEST DAILY MEAN	.00	0
INSTANTANEOUS PEAK FLOW	6310	35800
INSTANTANEOUS PEAK STAGE (FEET)	8.65	12.53
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	16.7	17.0
10 PERCENTILE	292	229
50 PERCENTILE	25	27
95 PERCENTILE	.00	.86

## 07061500 BLACK RIVER NEAR ANNAPOLIS, MO

LOCATION.--Lat 37°20'10", long 90°47'19", in SW 1/4 NW 1/4 sec.25, T.31 N., R.2 E., Reynolds County, Hydrologic Unit 11010007, on right bank 0.4 mi downstream from Mayberry Branch, 7 mi southwest of Annapolis, 11 mi downstream from East Fork, and at mile 278.5.

DRAINAGE AREA.--484 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1939 to current year.

GAGE.--Water-stage recorder. Datum of gage is 569.72 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Aug. 21, 1942, at site 415 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. Small regulation from upstream reservoir since Feb. 1963. U.S. Army Corps of Engineers gage-height and satellite telemeters at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	158	225	525	1400	528	507	2130	271	169	154	152	125
2	153	216	474	1160	876	507	1920	265	165	186	148	128
3	149	205	417	997	937	815	1920	262	164	181	144	208
4	152	197	371	861	903	1980	1600	283	163	171	142	303
5	149	192	343	671	875	1930	1370	279	162	162	139	197
6	147	192	380	624	847	1590	1270	271	158	154	137	169
7	146	190	892	647	726	1300	1120	265	153	147	136	157
8	144	194	1900	624	664	862	991	264	152	141	133	151
9	144	198	1430	584	635	770	868	278	162	138	130	147
10	158	195	949	543	608	730	778	274	167	135	127	145
11	181	193	885	510	599	743	713	262	164	142	125	144
12	194	185	790	475	575	963	620	252	158	153	123	152
13	191	178	632	456	511	1220	580	247	151	182	121	153
14	180	175	599	438	511	1010	514	239	146	190	118	155
15	171	174	2370	423	539	895	480	224	143	177	118	153
16	167	236	2340	417	584	805	450	217	143	167	116	149
17	177	397	1430	531	596	729	413	211	145	155	116	147
18	186	444	999	862	614	683	412	206	143	147	115	154
19	202	390	1190	1270	773	659	429	208	142	149	117	224
20	208	344	6400	3070	1820	624	419	208	144	340	119	300
21	196	312	3270	2270	1610	594	394	197	143	519	119	264
22	185	289	2060	1730	1240	557	351	199	137	349	121	223
23	181	260	1520	1390	1000	536	352	213	134	260	128	206
24	182	249	1190	1100	940	516	340	237	135	221	130	215
25	199	370	2730	943	1010	617	317	222	134	203	130	244
26	256	643	10500	823	885	815	292	209	133	191	127	243
27	306	596	4090	728	630	736	282	202	128	178	124	224
28	309	632	5930	654	573	698	282	195	124	171	128	209
29	274	686	3090	562	536	2040	287	189	127	165	131	201
30	252	617	2250	530	---	8060	283	180	134	161	130	208
31	237	---	1780	514	---	3290	---	173	---	158	128	---
MEAN	191	312	2056	897	798	1219	739	232	147	192	128	190
MAX	309	686	10500	3070	1820	8060	2130	283	169	519	152	303
MIN	144	174	343	417	511	507	282	173	124	135	115	125
IN.	.46	.72	4.90	2.14	1.78	2.90	1.70	.55	.34	.46	.31	.44

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	270.5	605.3	685.7	580.5	715.1	1016	1129	839.6	525.9	276.7	209.7	219.6
MAX	1151	3619	3913	2509	2091	2903	3467	2928	4263	1800	1289	1005
(WY)	1942	1986	1983	1950	1985	1945	1957	1957	1945	1951	1982	1965
MIN	84.8	111.5	119.2	107.8	146.7	161.4	371.5	232.3	139.9	88.5	76.7	72.4
(WY)	1957	1965	1956	1956	1963	1941	1956	1988	1972	1954	1965	1955

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	593.4	589.4
HIGHEST ANNUAL MEAN		1420
LOWEST ANNUAL MEAN		243.8
HIGHEST DAILY MEAN	10500	44600
LOWEST DAILY MEAN	115	66
INSTANTANEOUS PEAK FLOW	16500	98500
INSTANTANEOUS PEAK STAGE (FEET)	12.51	25.81
INSTANTANEOUS LOW FLOW	115	65
ANNUAL RUNOFF (INCHES)	16.6	16.5
10 PERCENTILE	1270	1150
50 PERCENTILE	261	269
95 PERCENTILE	126	100

## WHITE RIVER BASIN

253

## 07062000 CLEARWATER LAKE NEAR PIEDMONT, MO

LOCATION.--Lat 37°08'00", long 90°46'31", NW 1/4 sec.6, T.28 N., R.3 E., Wayne County, Hydrologic Unit 11010007, in intake tower at dam on Black River, 2.3 mi upstream from Brewer Bay, 4.5 mi west of Piedmont, and at mile 257.4.

DRAINAGE AREA.--898 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1948 to current year.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Lake is formed by earthfill type dam. Storage began June 3, 1948; conservation pool level reached July 4, 1948. Capacity at crest of spillway 413,700 acre-ft at elevation 567 ft, of which 391,800 acre-ft is available for flood-control storage, and 21,920 acre-ft is permanent storage which under normal operating conditions will be maintained for purposes of conservation and recreation at elevation 494 ft. Lake used for flood control and recreational purposes.

COOPERATION.--Records were provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 399,400 acre-ft, May 28, 1957, elevation, 565.59 ft; minimum, since initial filling to conservation pool level, 15,800 acre-ft, Jan. 20, 23, 1972, elevation, 490.00 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 101,000 acre-ft, Dec. 29-30, elevation, 522.23 ft, Dec. 30; minimum, 21,600 acre-ft, Feb. 27-28, Apr. 16-17, 25, elevation, 493.79 ft, Apr. 17.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26100	22500	22900	97200	22300	22300	60000	22400	28800	28900	26600	26100
2	26100	22500	22300	94400	22800	22300	61100	22800	28800	29100	26800	26600
3	26200	22400	22100	91200	23300	23700	62800	23100	28700	29200	27000	27300
4	26200	22300	22000	87200	23400	25500	61700	23500	28600	29300	27100	27600
5	26200	22100	22000	82200	23500	26300	58700	23900	28600	29400	27100	27400
6	26200	22000	22300	77100	23500	26400	55100	24200	28500	29300	27000	27200
7	26200	22100	23700	72000	23300	24600	51600	24600	28500	29000	27000	26800
8	26200	22300	26400	67000	22600	22600	47800	25000	28500	28600	26800	26300
9	26300	22300	27900	62100	22000	22200	43700	25400	28400	28400	26400	26000
10	26400	22200	27700	57200	22100	22200	39500	25700	28300	28100	26100	25900
11	26400	22200	26900	52000	22000	22300	35200	26100	28300	28100	26000	25900
12	26600	22200	26200	46400	21900	23400	30500	26400	28300	28500	26100	25900
13	26700	22300	25200	41000	21800	23700	26300	26800	28100	28500	26200	26000
14	26800	22300	24700	35700	21900	23100	23100	27100	28200	28200	26400	26100
15	27000	22300	29000	32000	22000	22200	21900	27400	28300	27900	26500	25000
16	27200	22800	32900	29900	22300	22000	21600	27700	28400	27700	26600	23500
17	27300	22800	32100	31000	22300	22100	21600	27900	28400	27500	26700	23600
18	27500	22700	29600	32900	22200	22100	21700	28100	28500	27500	26600	23700
19	26900	22400	28100	35300	22300	22000	21800	28300	28500	28000	26700	23800
20	25500	22200	36100	40700	24200	22000	21800	28500	28500	28600	26700	24100
21	24100	22100	40000	42800	24300	22000	21900	28700	28600	28600	26700	24500
22	22700	22100	39100	42400	22400	22100	21800	29000	28600	28200	26700	24600
23	22100	22100	36600	41000	21900	22200	21800	29200	28600	28000	26800	24500
24	22000	22100	34300	39000	22100	22400	21700	29200	28600	27700	26800	24500
25	22000	22300	40600	35600	22000	22500	21600	29200	28600	27200	26800	24300
26	22200	23000	70800	31300	22000	22900	21700	29100	28600	27000	26600	24100
27	22200	23500	82800	26900	21600	23300	21800	29000	28600	26900	26400	23900
28	22300	23800	97200	24200	21600	23200	22000	29000	28600	26700	26300	23700
29	22300	24300	101000	23500	22100	30800	22100	28900	28600	26600	26200	23500
30	22400	24000	101000	23000	---	51100	22200	28900	28700	26600	26100	23400
31	22400	---	99500	22600	---	58900	---	28900	---	26600	26100	---
(-)	494.32	495.26	521.93	494.41	494.09	510.55	494.15	497.99	497.90	496.79	496.49	494.89
(=)	-3700	+1600	+75500	-76900	-500	+36800	-36700	+6700	-200	-2100	-500	-2700
MAX	27500	24300	101000	97200	24300	58900	62800	29200	28800	29400	27100	27600
MIN	22000	22000	22000	22600	21600	22000	21600	22400	28100	26600	26000	23400

CAL YR 1987.....+77500

WTR YR 1988.....- 2700

(-) Elevation, in feet NGVD, at end of month

(=) Change in contents, in acre-feet

## WHITE RIVER BASIN

## 07062500 BLACK RIVER AT LEEPER, MO

LOCATION.--Lat 37°03'32", long 90°41'12", in NE 1/4 SE 1/4 NE 1/4 sec.35, T.28 N., R.3 E., Wayne County, Hydrologic Unit 11010007, on downstream side of center pier of bridge on State Highway 49, 1 mi south of Leeper, 4 mi downstream from McKenzie Creek, 8 mi downstream from Clearwater Dam, and at mile 249.

DRAINAGE AREA.--987 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1921 to current year.

REVISED RECORDS.--WSP 762: 1933(M). WSP 1007: 1943. WSP 1281: 1922-23, 1927-29(M).

GAGE.--Water-stage recorder. Datum of gage is 416.54 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 22, 1937, nonrecording gage; Oct. 22, 1937, to Jan. 21, 1942, water-stage recorder; and Jan. 22 to Apr. 6, 1942, nonrecording gage; all at site 1,900 ft downstream from Highway 34 at datum 3.85 ft lower. From Apr. 7, 1942, to Jan. 28, 1981, records were obtained from water-stage recorder attached to downstream pier on Highway 34 bridge.

REMARKS.--Estimated daily discharges: Aug. 3-10. Records good except for estimated daily discharges, which are fair. Flow regulated by Clearwater Lake (station 07062000) 8 mi upstream since June 3, 1948. Several observations of water temperature and specific conductance were made during the year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	232	332	1250	3180	1010	579	2390	488	401	308	345	253
2	238	339	1130	3130	820	749	2460	411	393	303	320	263
3	238	362	678	3090	876	597	1840	403	387	299	270	390
4	235	365	631	3130	1050	962	2310	398	385	296	240	337
5	234	361	567	3700	1040	1980	3620	392	385	295	350	461
6	232	354	563	3650	1040	2030	3590	385	383	309	370	465
7	233	289	619	3580	1040	2270	3520	380	377	444	360	461
8	233	290	808	3510	1120	2830	3470	379	377	454	400	473
9	235	314	1330	3430	1270	1540	3540	380	376	413	450	506
10	235	350	1480	3350	854	1130	3450	376	368	409	450	359
11	237	307	1770	3320	838	1060	3390	372	363	395	404	344
12	238	299	1530	3660	810	872	3510	354	363	313	235	327
13	238	298	1510	3550	770	1270	3360	352	402	337	206	259
14	238	297	1520	3430	728	1710	2530	351	322	487	200	247
15	221	298	1030	2940	646	1800	1940	349	297	485	195	404
16	204	327	937	1840	638	1450	995	350	308	427	192	1100
17	220	356	2620	1630	698	1090	862	347	302	422	201	374
18	217	612	2990	695	876	1080	777	348	301	396	264	288
19	324	634	2890	918	892	1030	749	347	301	246	283	273
20	889	616	2620	1560	845	961	741	346	301	226	275	262
21	942	532	2800	1770	1440	914	736	345	303	374	270	259
22	933	428	3570	2720	2460	785	730	349	301	778	268	271
23	753	423	3650	2710	1980	770	708	368	300	590	271	384
24	380	424	3430	2670	1140	774	696	461	300	588	266	434
25	336	467	4340	2920	1230	818	682	440	300	586	264	438
26	316	439	1800	3540	1220	810	619	476	297	547	276	438
27	324	470	834	3430	1140	807	543	470	291	426	341	435
28	368	632	916	2860	907	885	530	415	286	413	353	435
29	371	646	2450	1470	674	2550	527	406	297	396	333	441
30	369	754	3240	1090	---	1300	523	403	300	351	264	438
31	336	---	3230	1060	---	984	---	403	---	347	255	---
MEAN	348	420	1895	2695	1036	1238	1845	389	336	408	296	394
MAX	942	754	4340	3700	2460	2830	3620	488	402	778	450	1100
MIN	204	289	563	695	638	579	523	345	286	226	192	247
IN.	.42	.49	2.28	3.25	1.17	1.49	2.15	.47	.39	.49	.36	.46

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	475.8	670.9	996.9	1118	1208	1514	1687	1453	1107	559.2	468.7	447.9
MAX	1748	2030	3227	3607	4172	4755	7365	4962	6910	2506	3162	2000	
(WY)	1950	1973	1983	1937	1949	1945	1927	1946	1945	1957	1957	1985	
MIN	177.3	218.2	224.4	209.0	273.9	313.9	410.4	280.1	210.2	170.3	166.5	182.9	
(WY)	1956	1965	1965	1956	1963	1941	1932	1932	1936	1934	1936	1954	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	943.2	973.9
HIGHEST ANNUAL MEAN		2219
LOWEST ANNUAL MEAN		430.6
HIGHEST DAILY MEAN	4340	52900
LOWEST DAILY MEAN	192	62
INSTANTANEOUS PEAK FLOW	8540	78400
INSTANTANEOUS PEAK STAGE (FEET)	9.61	20.01
INSTANTANEOUS LOW FLOW	174	62
ANNUAL RUNOFF (INCHES)	13.4	13.8
10 PERCENTILE	2850	2410
50 PERCENTILE	455	518
95 PERCENTILE	240	214

## WHITE RIVER BASIN

255

## 07063000 BLACK RIVER AT POPLAR BLUFF, MO

LOCATION.--Lat 36°45'34", long 90°23'17", in SW 1/4 NW 1/4 sec.2, T.24 N., R.6 E., Butler County, Hydrologic Unit 11010007, on right bank at City Light and Water Plant in Poplar Bluff, 1,500 ft upstream from bridge on Business Route Highway 60, 4.8 mi downstream from Indian Creek, and at mile 211.2.

DRAINAGE AREA.--1,245 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1936 to September 1937, October 1939 to current year. Gage-height records collected at site 1,800 ft downstream September 1923 to July 1935, and since July 1935 at site 1,500 ft downstream are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 927: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 317.48 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1940, nonrecording gage at site 1,500 ft downstream at datum 2.00 ft higher; Oct. 1, 1940, to June 7, 1955, at site 1,500 ft downstream at present datum. Prior to July 12, 1985, at datum .10 lower.

REMARKS.--Estimated daily discharges: Aug. 22. Water-discharge records good. Considerable regulation by Clearwater Lake (station 07062000) 46 mi upstream since June 3, 1948. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 1904 reached a maximum discharge of 100,000 ft<sup>3</sup>/s, and flood on Mar. 12, 1935, reached a stage of 21.1 ft, present datum (affected by levees constructed since 1904).

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	333	459	963	3610	1550	1040	2730	787	567	433	482	328
2	331	441	1300	3510	1550	965	3220	746	561	489	447	334
3	332	438	1240	3430	1430	1380	3230	673	550	455	426	540
4	334	464	948	3370	1460	1720	2670	667	536	422	351	635
5	333	468	869	3390	1530	1900	2970	638	530	414	337	487
6	330	464	819	3670	1480	2420	3720	616	528	409	407	585
7	329	457	951	3720	1460	2480	3820	601	525	418	488	603
8	327	391	1180	3670	1450	2740	3770	591	517	543	449	605
9	328	376	1320	3610	1550	2900	3730	623	522	576	438	620
10	331	395	1580	3540	1550	2080	3730	595	510	548	497	647
11	337	435	1720	3480	1300	1660	3670	580	500	593	509	516
12	337	406	1890	3480	1250	1820	3600	569	496	622	486	509
13	334	391	1770	3640	1190	1830	3640	553	494	492	349	470
14	332	387	1770	3600	1160	1960	3520	543	518	467	297	403
15	332	386	2280	3510	1110	2190	2990	537	468	606	280	380
16	323	425	2070	3080	1020	2210	2290	530	425	622	266	523
17	311	467	1770	2940	992	1890	1570	520	426	568	257	1060
18	319	465	2690	3730	1070	1660	1480	513	424	557	257	610
19	319	698	3060	2540	1300	1660	1350	509	421	570	313	533
20	419	775	3190	3100	1360	1570	1230	505	416	1140	363	459
21	884	775	3140	2880	1290	1480	1170	502	410	559	352	411
22	1000	691	3180	2750	1870	1370	1140	512	406	529	345	394
23	1030	613	3550	3200	2570	1250	1110	530	403	868	333	400
24	906	596	3690	3200	2170	1200	1060	569	401	757	333	522
25	604	649	4270	3120	1600	1240	1030	640	400	753	326	583
26	505	678	7240	3280	1590	1260	1000	628	401	739	322	586
27	460	663	6640	3620	1570	1220	930	654	397	694	339	586
28	446	677	4260	3610	1480	1200	847	653	389	575	437	584
29	479	819	2970	3110	1260	1730	822	602	388	539	428	586
30	491	851	3210	2060	---	5290	803	582	410	526	411	602
31	489	---	3610	1650	---	4310	---	572	---	469	347	---
MEAN	450	540	2553	3261	1454	1923	2295	592	465	579	377	537
MAX	1030	851	7240	3730	2570	5290	3820	787	567	1140	509	1060
MIN	311	376	819	1650	992	965	803	502	388	409	257	328
IN.	.42	.48	2.36	3.02	1.26	1.78	2.06	.55	.42	.54	.35	.48

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	635.8	939.9	1377	1589	1656	2091	2244	1965	1293	787.0	648.1	605.2
MAX		1913	2962	5501	5637	4938	5465	7499	5894	7741	3153	3232	2071
(WY)		1983	1973	1983	1937	1949	1945	1945	1946	1945	1957	1957	1985
MIN		259.4	314.9	334.9	308.6	375.9	430.2	709.5	555.6	414.7	292.7	270.1	268.1
(WY)		1957	1954	1954	1956	1963	1941	1956	1987	1941	1944	1944	1954

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1254	1317
HIGHEST ANNUAL MEAN	2858	1985
LOWEST ANNUAL MEAN	564.4	1954
HIGHEST DAILY MEAN	7240	43400
LOWEST DAILY MEAN	257	186
INSTANTANEOUS PEAK FLOW	8060	65600
INSTANTANEOUS PEAK STAGE (FEET)	17.17	21.68
INSTANTANEOUS LOW FLOW	252	180
ANNUAL RUNOFF (INCHES)	13.7	14.4
10 PERCENTILE	3320	3200
50 PERCENTILE	629	766
95 PERCENTILE	328	319

## WHITE RIVER BASIN

07066000 JACKS FORK AT EMINENCE, MO

LOCATION.--Lat 37°09'18", long 91°21'31", in SW 1/4 NW 1/4 sec.26, T.29 N., R.4 W., Shannon County, Hydrologic Unit 11010008, on left bank 50 ft upstream from bridge on State Highway 19, at Eminence, 1.5 mi downstream from Mahans Creek, and 8.0 mi upstream from mouth.

DRAINAGE AREA.--398 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1921 to current year. Monthly discharge only for October 1921, published in WSP 1311.

REVISED RECORDS.--WSP 787: 1928(M), 1934. WSP 877: 1938. WSP 927: Drainage area. WSP 1281: 1929.

GAGE.--Water-stage recorder. Datum of gage is 617.87 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 27, 1934, nonrecording gage at site 1,350 ft upstream at datum 2.11 ft higher. Jan. 27, 1934, to Jan. 10, 1935, nonrecording gage at site 75 ft downstream at datum 0.04 ft lower. Jan. 11, 1935, to July 9, 1964, nonrecording gage at site 50 ft downstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. National Weather Service gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of 1895 and March 1904 reached a stage of about 25 ft, present site and datum, from information by local residents.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	133	180	212	1060	300	406	1660	261	312	226	174	158
2	132	172	201	873	293	385	2200	251	289	285	173	165
3	119	164	188	743	288	1250	2420	252	287	326	167	425
4	127	162	177	654	285	2270	1610	288	287	262	177	456
5	128	154	169	573	323	1490	1350	309	269	228	181	300
6	121	157	188	541	408	1160	1210	287	250	210	184	229
7	116	156	366	522	395	937	1100	266	239	196	177	194
8	127	157	1740	453	389	757	969	260	234	190	169	177
9	133	156	928	410	374	648	828	276	232	187	163	165
10	133	148	562	393	369	563	712	354	219	187	161	158
11	133	144	407	365	369	510	635	320	208	188	159	168
12	124	144	330	354	360	605	595	288	201	240	155	197
13	119	144	282	332	347	632	545	268	196	258	151	179
14	120	144	299	323	364	559	504	252	191	254	148	167
15	115	142	4330	309	370	501	456	247	192	225	148	157
16	119	179	1900	301	400	454	426	245	193	202	145	150
17	129	194	1040	369	400	420	398	240	192	192	141	148
18	130	216	627	506	435	434	430	239	198	186	141	150
19	130	230	720	743	982	431	447	231	190	229	153	151
20	144	205	3630	1130	1910	425	432	222	182	422	176	148
21	143	186	2020	1010	1410	418	418	220	182	483	209	146
22	147	177	1310	790	1120	393	408	255	179	369	183	144
23	147	166	959	653	933	368	389	1760	176	284	185	148
24	144	162	710	561	781	364	359	1720	173	245	190	163
25	141	224	2040	494	698	375	341	1150	170	224	214	163
26	159	246	7500	429	600	499	324	781	165	214	192	169
27	198	300	2830	379	554	497	318	583	163	202	174	167
28	260	268	3140	359	502	443	302	482	161	191	164	159
29	228	243	2130	331	450	1230	287	424	172	184	159	154
30	202	226	1570	316	---	6520	274	381	189	182	155	156
31	190	---	1280	308	---	2300	---	344	---	179	156	---
MEAN	145	185	1412	535	566	911	745	434	210	240	169	187
MAX	260	300	7500	1130	1910	6520	2420	1760	312	483	214	456
MIN	115	142	169	301	285	364	274	220	161	179	141	144
IN.	.42	.52	4.09	1.55	1.53	2.64	2.09	1.26	.59	.70	.49	.52

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	223.3	388.6	452.6	463.2	541.3	703.8	829.1	721.1	473.7	257.4	206.6	187.8
MAX	1092	1786	2462	2065	1906	1944	2920	2168	2745	1682	984.1	465.7	
(WY)	1985	1974	1983	1949	1985	1945	1927	1950	1928	1951	1927	1975	
MIN	76.5	98.1	96.9	89.8	119.7	139.1	203.2	129.3	108.9	84.8	82.6	73.1	
(WY)	1957	1955	1956	1956	1934	1956	1954	1936	1936	1934	1954	1956	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	479.3	452.4	
HIGHEST ANNUAL MEAN		1072	1985
LOWEST ANNUAL MEAN		154.0	1954
HIGHEST DAILY MEAN	7500	24100	Feb 23 1985
LOWEST DAILY MEAN	115	67	Sep 16 1956
INSTANTANEOUS PEAK FLOW	14300	55800	Nov 19 1985
INSTANTANEOUS PEAK STAGE (FEET)	10.74	17.58	Nov 19 1985
INSTANTANEOUS LOW FLOW	115	64	Aug 28 1936
ANNUAL RUNOFF (INCHES)	16.4	15.4	
10 PERCENTILE	1030	886	
50 PERCENTILE	261	236	
95 PERCENTILE	135	108	

## WHITE RIVER BASIN

07067000 CURRENT RIVER AT VAN BUREN, MO

LOCATION.--Lat 36°59'29", long 91°00'53", in NE 1/4 NW 1/4 sec.25, T.27 N., R.1 W., Carter County, Hydrologic Unit 11010008, near right bank on downstream side of pier of bridge on U.S. Highway 60 in Van Buren, 0.4 mi downstream from Pike Creek, 4.7 mi upstream from Big Creek, and at mile 90.4.

DRAINAGE AREA.--1,667 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1912 to current year. Prior to July 1921 monthly discharge only, published in WSP 1311.

REVISED RECORDS.--WSP 877: 1938. WSP 897: 1939. WSP 927: Drainage area. WSP 1281: 1929.

GAGE.--Water-stage recorder. Datum of gage is 442.78 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1926, nonrecording gage at site 100 ft downstream at different datum; Sept. 1, 1926, to Oct. 19, 1934, nonrecording gage and Oct. 20, 1934, to Sept. 30, 1939, water-stage recorder, at present site and datum 3.00 ft higher, set to read same as gage 100 ft downstream.

REMARKS.--Estimated daily discharges: Apr. 1. Records fair. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 26, 1904, reached a stage of 29.0 ft, present datum, from floodmarks.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	759	803	1160	5170	2140	2280	7350	1690	1860	1320	984	776
2	746	780	1060	4550	2140	2230	6470	1660	1800	1490	955	797
3	733	757	988	4120	2270	3440	8150	1660	1750	1440	935	1800
4	724	750	927	3800	2300	6580	6560	1750	1720	1380	905	1490
5	729	738	884	3490	2250	5980	5590	1730	1670	1290	929	1280
6	731	727	918	3210	2190	4910	5100	1680	1620	1230	919	1080
7	728	723	1380	2990	2150	4280	4660	1630	1580	1190	929	971
8	724	745	3510	2790	2130	3860	4260	1600	1550	1170	904	909
9	723	775	4020	2630	2100	3590	3900	1650	1520	1150	874	876
10	730	748	3040	2500	2070	3350	3600	1670	1490	1140	854	852
11	775	728	2420	2370	2080	3150	3340	1670	1450	1150	839	849
12	774	722	2010	2300	2000	3440	3150	1610	1410	1350	829	978
13	755	720	1730	2230	1970	3590	2970	1560	1380	1480	825	960
14	741	720	1640	2130	1970	3400	2790	1510	1350	1330	813	882
15	734	718	4930	2060	2010	3180	2630	1470	1330	1270	804	843
16	735	866	11000	2030	2080	2980	2500	1430	1310	1210	797	820
17	790	1010	5210	2840	2120	2800	2380	1400	1320	1170	791	809
18	778	985	3840	3210	2200	2710	2440	1360	1310	1200	783	811
19	768	937	3590	3750	2680	2630	2390	1340	1280	1220	880	832
20	814	878	9200	5080	5080	2560	2290	1320	1260	1790	890	850
21	799	829	10700	4820	5250	2510	2230	1310	1240	1930	896	830
22	775	795	6250	4090	4450	2430	2190	1450	1220	1640	899	809
23	773	773	4830	3620	3940	2350	2130	2250	1210	1410	898	803
24	771	768	4060	3310	3480	2290	2060	3770	1200	1290	916	928
25	780	946	6700	3030	3090	2550	1980	3450	1190	1230	870	926
26	845	1250	19400	2760	2830	2630	1930	2780	1180	1160	865	873
27	945	1490	14800	2550	2670	2670	1880	2430	1160	1110	839	844
28	973	1530	11400	2390	2530	2580	1820	2220	1140	1070	836	827
29	950	1430	9070	2290	2390	6930	1770	2100	1170	1030	832	817
30	881	1290	6890	2220	---	1000	1730	2020	1230	1040	805	828
31	835	---	5930	2170	---	11800	---	1930	---	1020	786	---
MEAN	784	898	5274	3113	2640	4054	3408	1842	1397	1287	867	932
MAX	973	1530	19400	5170	5250	16000	8150	3770	1860	1930	984	1800
MIN	723	718	884	2030	1970	2230	1730	1310	1140	1020	783	776
IN.	.54	.60	3.65	2.15	1.71	2.80	2.28	1.27	.94	.89	.60	.62

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	1075	1623	1896	1952	2170	2780	3339	2967	2121	1306	1086	983.4
MAX	4087	6473	10740	7357	6764	7148	11730	8256	9761	6465	3581	1958
(WY)	1985	1986	1983	1950	1985	1945	1927	1957	1928	1951	1927	1951
MIN	491.7	572.6	535.0	537.7	657.8	777.5	804.8	679.1	628.3	575.0	531.7	495.1
(WY)	1957	1955	1956	1956	1934	1941	1956	1936	1936	1936	1954	1956

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	2212	1918
HIGHEST ANNUAL MEAN		4811
LOWEST ANNUAL MEAN		799.1
HIGHEST DAILY MEAN	19400	63000
LOWEST DAILY MEAN	718	476
INSTANTANEOUS PEAK FLOW	24200	125000
INSTANTANEOUS PEAK STAGE (FEET)	13.49	25.9
INSTANTANEOUS LOW FLOW	715	473
ANNUAL RUNOFF (INCHES)	18.0	15.6
10 PERCENTILE	4160	3670
50 PERCENTILE	1500	1210
95 PERCENTILE	750	627

## WHITE RIVER BASIN

07067500 BIG SPRING NEAR VAN BUREN, MO

LOCATION.--Lat 36°57'05", long 90°59'36", in SW 1/4 NE 1/4 sec. 6, T.26 N., R.1 E., Carter County, Hydrologic Unit 11010008, on right bank 400 feet downstream from spring outlet, 0.4 mi upstream from Current River, and 3.5 mi southeast of Van Buren.

PERIOD OF RECORD.--October 1921 to current year. Prior to Oct. 1, 1923, published as "near Chicopee". Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1311: 1922-23, 1928(M), 1929.

GAGE.--Nonrecording gage. Datum of gage is 429.08 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 19, 1971, nonrecording gage; prior to Oct. 1, 1934, at datum 1.0 ft higher. Water-stage recorder Feb. 19, 1971, to Mar. 15, 1978, at present datum.

REMARKS.--Estimated daily discharges: Dec. 8-11, Dec. 14 to Jan. 6, Jan. 17-24, Feb. 20-24, Mar. 2-16, Mar. 29 to Apr. 12, and May 22-26 due to backwater from Current River. Records fair except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	290	276	303	680	498	434	750	459	444	382	329	320
2	290	276	300	660	487	434	740	455	439	377	325	322
3	287	276	299	640	485	540	730	455	436	374	325	415
4	286	277	297	630	478	560	720	454	430	370	326	441
5	287	278	293	620	468	580	710	449	428	365	328	423
6	287	278	316	610	461	570	700	439	424	359	331	410
7	285	278	384	598	456	560	700	439	422	358	330	398
8	285	279	400	581	447	555	690	439	416	355	329	390
9	285	280	390	552	442	540	680	441	411	353	329	383
10	285	280	380	541	440	540	670	438	408	351	325	373
11	283	280	360	526	436	550	660	435	409	350	323	362
12	281	278	343	517	435	570	650	432	404	346	323	367
13	283	278	336	503	429	570	634	429	405	347	323	361
14	283	278	350	482	429	560	614	425	405	342	323	354
15	283	280	440	462	425	550	595	420	404	341	320	353
16	283	285	460	463	422	540	576	420	402	337	318	353
17	279	285	440	500	420	535	557	421	405	335	315	353
18	280	285	430	540	425	523	548	417	404	335	318	348
19	280	283	420	590	435	523	550	416	394	340	343	343
20	280	285	510	640	500	518	538	416	396	345	360	341
21	280	285	520	630	550	512	529	419	395	347	352	337
22	280	285	510	620	540	505	519	440	395	345	347	335
23	280	285	500	610	530	496	511	480	397	344	345	335
24	280	288	490	600	515	489	504	500	395	342	357	331
25	280	307	600	590	503	508	497	490	393	337	340	329
26	280	311	750	580	481	510	491	480	391	335	329	329
27	278	315	740	560	466	513	484	472	389	335	329	325
28	279	323	730	552	452	520	474	458	388	335	325	323
29	278	318	720	540	441	650	470	455	386	333	324	323
30	276	307	710	530	---	760	465	452	387	332	327	320
31	275	---	700	510	---	760	---	444	---	330	325	---
MEAN	282	287	465	570	465	548	599	445	407	348	330	357
MAX	290	323	750	680	550	760	750	500	444	382	360	441
MIN	275	276	293	462	420	434	465	416	386	330	315	320

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	360.8	498.6	665.6	536.1	506.7	564.5	670.0	589.9	502.4	414.2	370.0	357.5
MAX	490.9	769.3	1070	720.7	747.7	704.9	800.5	887.9	673.3	538.3	468.5	417.1	
(WY)	1985	1986	1983	1985	1985	1985	1984	1983	1986	1986	1986	1986	
MIN	282.2	287.3	315.9	295.5	345.9	440.3	499.7	375.7	324.8	319.7	293.1	292.2	
(WY)	1988	1988	1987	1987	1987	1983	1987	1987	1987	1987	1987	1987	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	425.1	503.0
HIGHEST ANNUAL MEAN		620.4
LOWEST ANNUAL MEAN		361.5
HIGHEST DAILY MEAN	760	2000
LOWEST DAILY MEAN	275	275
INSTANTANEOUS PEAK FLOW	760	2000
INSTANTANEOUS PEAK STAGE (FEET)	*****	*****
INSTANTANEOUS LOW FLOW	275	236
***** Indicates not enough data, therefore statistic is not computed		

## WHITE RIVER BASIN

07068000 CURRENT RIVER AT DONIPHAN, MO

LOCATION.--Lat 36°37'19", long 90°50'51", in NW ¼ NW ¼ sec.27, T.23 N., R.2 E., Ripley County, Hydrologic Unit 11010008, on right bank 0.5 mi upstream from U.S. Highway 160, 1 mi west of Doniphan, 2.5 mi upstream from Briar Creek, and at mile 51.3.

DRAINAGE AREA.--2,038 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1918 to current year. Prior to July 1921 monthly discharge only, published in WSP 1311.

REVISED RECORDS.--WSP 877: 1937-38(M). WSP 927: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 321.21 ft above National Geodetic Vertical Datum of 1929. July 1936 to Sept. 30, 1971, datum was 1.00 ft higher. Prior to July 3, 1936, nonrecording gages at several sites 0.5 mi downstream at various datum.

REMARKS.--Estimated daily discharges: Dec. 3 and Aug. 28. Water-discharge records good. National Weather Service gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 1904 reached a stage of 25.9 ft, from floodmarks, present site and datum, discharge, 130,000 ft<sup>3</sup>/s, from rating curve extended above 60,000 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1180	1240	1490	6330	2700	2680	10600	2080	2200	1670	1460	1310
2	1160	1210	1490	5600	2680	2610	8130	2040	2130	1790	1440	1310
3	1120	1180	1480	5050	2680	3260	8200	2040	2060	1830	1440	1950
4	1120	1150	1480	4700	2760	5630	8410	2060	2000	1790	1420	2460
5	1120	1130	1420	4420	2740	7080	6830	2080	1960	1710	1460	2080
6	1110	1120	1510	3910	2670	5820	6080	2040	1910	1630	1460	1960
7	1100	1100	2100	3620	2610	5080	5580	1980	1880	1580	1420	1810
8	1100	1100	2720	3460	2570	4590	5140	1950	1860	1540	1420	1660
9	1100	1150	4320	3250	2530	4270	4750	1970	1830	1520	1420	1570
10	1100	1150	3780	3010	2500	3990	4410	1960	1800	1510	1430	1500
11	1130	1120	3170	2860	2470	3760	4140	1970	1770	1490	1400	1470
12	1160	1100	2690	2670	2430	3910	3910	1930	1730	1560	1390	1500
13	1160	1090	2380	2540	2350	4230	3710	1880	1710	1770	1370	1570
14	1130	1090	2240	2400	2320	4120	3510	1820	1690	1770	1370	1510
15	1120	1080	3060	2220	2310	3880	3330	1770	1680	1650	1370	1420
16	1110	1330	8910	2200	2340	3650	3160	1720	1660	1580	1360	1370
17	1150	1420	7180	3800	2390	3480	3020	1670	1670	1630	1340	1340
18	1180	1460	4570	4700	2440	3380	3020	1640	1650	1540	1320	1340
19	1170	1420	3840	4850	2600	3290	2980	1600	1630	1770	1360	1360
20	1220	1370	5050	5890	3740	3290	2890	1570	1610	3920	1540	1350
21	1220	1310	11500	5880	5530	3250	2800	1570	1600	2420	1510	1340
22	1190	1260	7880	5230	4940	3150	2730	1650	1580	2200	1500	1300
23	1160	1220	5560	4790	4420	3030	2650	1980	1560	1950	1530	1280
24	1160	1200	4730	4260	4000	2930	2560	3320	1550	1790	1520	1320
25	1170	1400	6060	3810	3600	3010	2470	4040	1540	1690	1460	1400
26	1250	1600	17200	3580	3300	3210	2380	3520	1530	1640	1420	1370
27	1290	1900	24000	3360	3090	3240	2310	3040	1520	1580	1400	1310
28	1370	2000	15000	3140	2950	3190	2240	2730	1490	1530	1420	1290
29	1400	1900	12400	2980	2810	4690	2180	2530	1510	1500	1440	1250
30	1400	1700	9030	2860	---	14700	2130	2380	1590	1470	1360	1260
31	1300	---	7330	2770	---	18800	---	2270	---	1470	1330	---
MEAN	1182	1317	5986	3875	2982	4684	4208	2155	1730	1758	1422	1499
MAX	1400	2000	24000	6330	5530	18800	10600	4040	2200	3920	1540	2460
MIN	1100	1080	1420	2200	2310	2610	2130	1570	1490	1470	1320	1250
IN.	.67	.72	3.39	2.19	1.58	2.65	2.30	1.22	.95	.99	.80	.82

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	1632	2289	2706	2834	3053	3840	4549	4063	2994	1968	1681	1539
MAX	4596	7343	16210	9054	7971	9260	16140	10430	12610	7676	5001	2765
(WY)	1985	1986	1983	1949	1985	1935	1927	1957	1928	1951	1927	1982
MIN	872.0	927.1	949.6	917.3	1122	1218	1476	1183	1075	959.4	950.6	902.6
(WY)	1957	1955	1956	1956	1934	1941	1956	1936	1936	1934	1936	1954

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	2738	2764
HIGHEST ANNUAL MEAN		5856
LOWEST ANNUAL MEAN		1326
HIGHEST DAILY MEAN	24000	90000
LOWEST DAILY MEAN	1080	852
INSTANTANEOUS PEAK FLOW	26500	122000
INSTANTANEOUS PEAK STAGE (FEET)	11.24	25.49
INSTANTANEOUS LOW FLOW	1080	852
ANNUAL RUNOFF (INCHES)	18.2	18.4
10 PERCENTILE	4840	4980
50 PERCENTILE	1880	1890
95 PERCENTILE	1140	1080

## WHITE RIVER BASIN

07068000 CURRENT RIVER AT DONIPHAN, MO--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 1969 to July 1975, October 1979 to September 1980, October 1981 to September 1982, October 1983 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: March 1965 to September 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 27.0°C several days during summer months in 1967, 1968, 1969; minimum, 2.5°C, Jan. 9, 10, 1970.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)
OCT 15...	1200	1120	329	8.50	13.5	12.5	117	<10	K3	190	0
NOV 09...	1330	1180	330	8.50	13.0	10.9	101	<10	K6	--	--
DEC 01...	1300	1490	325	8.30	9.0	12.3	105	<10	K13	--	--
JAN 05...	1200	4280	180	8.10	6.5	11.7	91	190	48	--	--
FEB 03...	0845	2650	242	8.30	9.0	11.0	92	<10	K5	--	--
MAR 02...	0845	2610	271	8.20	11.0	10.0	88	<10	K2	--	--
APR 05...	1400	6740	235	8.00	19.0	9.6	102	<10	54	110	0
MAY 11...	0845	1970	301	--	18.0	8.6	91	<10	K7	--	--
JUN 07...	1100	1880	327	8.30	21.0	8.3	92	21	K5	--	--
JUL 13...	0930	1750	310	8.10	22.0	8.0	93	18	230	180	12
AUG 02...	1130	1450	302	8.40	25.5	8.0	96	<10	K4	--	--
SEP 09...	0945	1570	315	8.10	18.5	8.7	94	<10	K11	--	--

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 15...	39	23	2.4	0.90	200	0.6	3.1	2.7	0.20	180
NOV 09...	--	--	--	--	176	1.0	--	--	--	192
DEC 01...	--	--	--	--	188	1.8	--	--	--	183
JAN 05...	--	--	--	--	105	1.6	6.4	2.0	0.10	163
FEB 03...	--	--	--	--	138	1.3	--	--	--	134
MAR 02...	--	--	--	--	154	1.9	--	--	--	140
APR 05...	24	13	1.5	0.90	116	2.2	6.0	1.6	0.20	117
MAY 11...	--	--	--	--	154	--	--	--	--	154
JUN 07...	--	--	--	--	164	1.6	--	--	--	165
JUL 13...	36	21	2.0	0.90	165	2.5	3.9	2.4	0.10	163
AUG 02...	--	--	--	--	190	1.5	--	--	--	304
SEP 09...	--	--	--	--	161	2.5	--	--	--	167

K--Results based on colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## 07071000 GREER SPRING AT GREER, MO

LOCATION.--Lat 36°47'11", long 91°20'53", in SE 1/4 SW 1/4, sec.36, T.25 N., R.4 W., Oregon County, Hydrologic Unit 11010011, on right bank 300 ft downstream from lower outlet of spring, 1 mi north of Greer, and 1 mi upstream from Eleven Point River.

PERIOD OF RECORD.--August to December 1904 (gage heights and discharge measurements only), October 1921 to current year. October to December 1921 monthly discharge only, published in WSP 1311.

GAGE.--Water-stage recorder. Datum of gage is 564.00 ft above National Geodetic Vertical Datum of 1929. Aug. 10 to Dec. 31, 1904, nonrecording gage at site 250 ft downstream at different datum. Nov. 17, 1921, to June 25, 1934, nonrecording gage at site 250 ft downstream at datum 0.74 ft lower than present datum.

REMARKS.--No estimated daily discharges. Records fair. Occasional runoff from drainage area of 2.97 mi<sup>2</sup> included in records.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	166	153	154	548	381	355	625	406	346	281	251	222
2	166	150	151	530	377	350	624	400	345	284	250	225
3	165	150	151	510	372	409	623	399	341	285	248	245
4	163	150	151	495	368	446	618	395	337	284	247	256
5	162	150	150	483	364	457	611	390	333	281	246	254
6	162	150	151	473	363	453	601	383	329	280	243	251
7	162	150	189	465	360	448	593	380	329	277	240	247
8	162	150	217	450	358	444	582	377	328	277	240	244
9	160	150	213	442	355	442	572	376	325	274	240	240
10	159	147	208	432	351	438	564	372	321	273	237	236
11	159	147	208	419	350	434	554	367	316	273	236	233
12	159	147	202	409	350	438	538	364	313	273	235	233
13	159	147	198	400	350	442	526	363	312	270	230	232
14	159	149	212	395	350	438	515	360	312	269	229	230
15	159	150	290	386	350	429	503	357	309	263	229	229
16	156	150	310	386	346	419	478	351	308	261	229	226
17	156	150	300	412	342	414	474	350	304	258	229	226
18	156	147	290	429	344	409	474	350	301	260	229	226
19	156	147	298	447	365	406	479	346	300	273	230	225
20	156	147	375	459	396	413	476	344	297	286	232	222
21	156	144	390	453	404	418	471	339	296	288	232	222
22	156	144	386	443	407	418	463	351	296	282	230	219
23	156	144	374	434	400	414	458	369	293	277	229	216
24	153	145	363	427	390	410	452	392	292	273	229	215
25	153	157	424	416	382	414	444	395	289	270	229	215
26	153	159	577	412	377	422	437	386	288	269	229	215
27	156	159	588	404	372	419	432	380	285	266	229	215
28	156	159	598	400	368	419	427	373	285	265	229	212
29	153	159	593	395	363	548	419	368	284	259	226	212
30	153	156	582	390	---	661	414	360	281	258	226	216
31	153	---	565	386	---	637	---	351	---	254	225	---
MEAN	158	150	318	436	367	441	515	371	310	272	234	229
MAX	166	159	598	548	407	661	625	406	346	288	251	256
MIN	153	144	150	386	342	350	414	339	281	254	225	212

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	254.2	277.8	299.9	323.6	339.6	388.3	440.1	440.4	399.9	332.6	291.4	262.8
MEAN	254.2	277.8	299.9	323.6	339.6	388.3	440.1	440.4	399.9	332.6	291.4	262.8
MAX	447.5	585.8	749.6	648.5	652.1	674.5	723.9	776.0	861.3	610.6	563.1	503.0
(WY)	1985	1985	1928	1928	1949	1975	1927	1927	1927	1945	1927	1928
MIN	111.2	110.9	113.2	108.3	143.6	152.4	179.9	142.5	139.8	127.3	122.3	119.7
(WY)	1957	1955	1956	1956	1981	1981	1936	1936	1936	1936	1936	1955

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	316.7	337.4
HIGHEST ANNUAL MEAN		565.8
LOWEST ANNUAL MEAN		173.6
HIGHEST DAILY MEAN	661 Mar 30	1010 Dec 3 1982
LOWEST DAILY MEAN	144 Nov 21	104 Nov 16 1956
INSTANTANEOUS PEAK FLOW	661* Mar 30	1770 Dec 3 1982
INSTANTANEOUS PEAK STAGE (FEET)	*****	2.97 Dec 3 1982
INSTANTANEOUS LOW FLOW	144 Nov 21	104 Nov 16 1956
ANNUAL RUNOFF (INCHES)	*****	*****
10 PERCENTILE	466	549
50 PERCENTILE	304	315
95 PERCENTILE	149	145

\*\*\*\*\* Indicates not enough data, therefore statistic is not computed

## WHITE RIVER BASIN

263

07071500 ELEVEN POINT RIVER NEAR BARDLEY, MO

LOCATION.--Lat 36°38'55", long 91°12'03", in NE 1/4 SE 1/4 sec.17, T.23 N., R.2 W., Oregon County, Hydrologic Unit 11010011, on downstream side of right pier of main truss of bridge on U.S. Highway 160, 7 mi southwest of Bardley, 7.5 mi upstream from Fredericks Fork, and at mile 53.7.

DRAINAGE AREA.--793 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1921 to current year. October 1921 monthly discharge only, published in WSP 1311.

REVISED RECORDS.--WSP 827: 1927-28, 1935. WSP 927: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 410.84 ft above National Geodetic Vertical Datum of 1929. Prior to June 26, 1934, nonrecording gage at site 100 ft upstream at datum 0.06 ft higher. June 26, 1934, to Oct. 19, 1939, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 19.7 ft, August 1915, from floodmarks, discharge, 44,000 ft<sup>3</sup>/s, from rating curve extended above 25,000 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	241	233	266	1270	730	593	2280	850	685	533	450	355
2	241	232	256	1160	715	621	2080	837	669	552	441	353
3	237	232	252	1080	689	1020	2080	838	658	522	435	566
4	236	232	243	1010	677	1310	1870	835	638	503	430	627
5	241	229	237	944	660	1220	1720	810	623	491	427	529
6	242	225	285	896	641	1170	1620	793	612	482	429	483
7	240	226	430	865	633	1130	1510	783	603	475	420	455
8	236	235	510	825	629	1090	1440	786	599	471	415	438
9	238	239	480	790	619	1050	1380	790	604	468	410	426
10	238	228	429	754	609	1020	1330	767	585	467	400	415
11	240	225	395	723	606	992	1290	750	571	463	393	418
12	238	225	369	705	588	1060	1250	741	565	472	388	420
13	238	226	347	678	581	1100	1200	750	559	470	386	404
14	236	225	353	649	586	1070	1160	754	551	461	382	390
15	235	226	685	630	585	1040	1130	734	546	452	380	381
16	237	287	719	626	570	996	1100	722	543	447	388	375
17	245	276	638	1500	562	975	1060	707	541	444	372	370
18	235	255	576	1620	560	964	1090	697	534	445	369	372
19	243	240	570	1640	608	954	1090	687	527	589	394	376
20	253	233	894	1910	748	1040	1070	679	525	909	401	366
21	238	227	906	1510	764	1100	1060	675	518	686	395	354
22	236	227	795	1290	758	1080	1050	713	513	598	388	348
23	239	229	714	1170	744	1050	1040	912	507	553	401	348
24	240	231	680	1090	712	1020	995	1170	500	532	387	359
25	237	329	1590	1000	684	1040	970	1020	499	517	379	351
26	263	326	4470	930	664	1060	952	913	499	503	368	341
27	251	307	2540	875	650	1040	926	847	493	492	372	335
28	245	300	2300	834	630	1020	902	799	487	481	407	332
29	242	290	1880	800	612	2590	882	759	495	471	397	332
30	241	277	1560	773	---	6710	866	730	507	466	370	338
31	236	---	1410	753	---	3150	---	705	---	460	359	---
MEAN	241	249	896	1010	649	1331	1280	792	559	512	398	399
MAX	263	329	4470	1910	764	6710	2280	1170	685	909	450	627
MIN	235	225	237	626	560	593	866	675	487	444	359	332
IN.	.35	.35	1.30	1.47	.88	1.94	1.80	1.15	.79	.74	.58	.56

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	417.5	558.6	709.7	784.3	819.9	1058	1291	1146	894.1	607.2	482.8	422.0
MAX	1291	2003	4048	3007	2223	3556	5037	2952	3107	1559	1354	1183	
(WY)	1985	1985	1983	1985	1949	1945	1927	1973	1928	1951	1927	1975	
MIN	167.8	176.1	169.6	159.3	224.2	263.9	339.5	265.8	245.1	213.1	199.2	181.4	
(WY)	1957	1957	1956	1956	1963	1981	1981	1936	1936	1936	1936	1956	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	693.9	765.1
HIGHEST ANNUAL MEAN		1782
LOWEST ANNUAL MEAN		309.9
HIGHEST DAILY MEAN	6710	26800
LOWEST DAILY MEAN	225	155
INSTANTANEOUS PEAK FLOW	8760	49800
INSTANTANEOUS PEAK STAGE (FEET)	9.95	21.64
INSTANTANEOUS LOW FLOW	222	152
ANNUAL RUNOFF (INCHES)	11.9	13.1
10 PERCENTILE	1160	1420
50 PERCENTILE	569	537
95 PERCENTILE	233	224

ARKANSAS RIVER BASIN  
07186000 SPRING RIVER NEAR WACO, MO

LOCATION.--Lat 37°14'44", long 94°33'58", on line between SE 1/4 sec.7 and NE 1/4 sec.18, T.29 N., R.33 W., Jasper County, Hydrologic Unit 11070207, on left bank on downstream side of left pier of county highway bridge, 0.8 mi downstream from Blackberry Creek, 1.5 mi east of Waco, and 47.6 mi upstream from mouth.

DRAINAGE AREA.--1,164 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1924 to current year.

REVISED RECORDS.--WSP 1117: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 833.23 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 23, 1935, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Oct. 6-12. Records good except for estimated daily discharges, which are fair. Several observations of water temperature and specific conductance were made during the year. U. S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	99	1240	2540	554	655	4630	483	209	3620	119	137
2	78	88	1050	1880	561	642	12600	461	210	2620	114	128
3	73	82	935	1570	546	4490	14200	441	379	1080	113	116
4	70	77	832	1400	534	6500	8360	429	326	449	108	100
5	69	73	752	1210	507	5250	3050	423	234	311	116	96
6	69	71	703	1070	469	3110	2220	402	206	257	111	89
7	69	68	734	1000	441	2150	1840	388	191	228	105	85
8	68	67	986	945	438	1700	1570	381	175	252	101	81
9	68	66	829	909	427	1350	1340	365	171	251	108	79
10	68	65	669	846	427	1160	1350	351	167	187	110	79
11	67	63	591	815	427	1050	1510	335	161	170	209	81
12	67	63	539	809	408	952	1350	324	157	159	329	77
13	66	61	492	845	402	880	1150	315	153	150	171	73
14	63	61	482	803	420	807	1020	307	148	149	128	73
15	61	64	506	750	528	749	948	294	148	142	107	112
16	60	90	493	733	592	709	903	288	164	132	106	213
17	59	202	458	754	526	693	867	278	174	136	93	160
18	57	601	449	819	482	749	1280	270	172	177	101	1110
19	67	499	3310	935	2180	793	2000	263	161	959	114	1950
20	78	244	17600	1400	4330	757	1140	256	155	2680	104	1490
21	69	171	19800	1180	3230	707	849	252	148	1180	145	732
22	66	145	10300	874	1720	662	764	254	137	548	137	411
23	65	130	4040	756	1230	624	698	278	131	280	1610	725
24	74	2120	2140	707	1020	602	650	326	130	214	2730	1040
25	97	23700	3480	673	898	600	619	306	128	229	1860	753
26	139	22200	7420	638	829	574	598	271	126	300	648	542
27	166	7070	13000	599	780	542	571	254	122	378	316	385
28	154	4840	12500	577	729	525	542	241	120	271	241	294
29	126	2230	6900	570	687	5660	520	232	184	186	194	365
30	116	1600	3920	567	---	7320	506	223	640	157	168	475
31	105	---	3060	562	---	5110	---	214	---	137	150	---
MEAN	81.8	2230	3878	959	908	1873	2321	320	191	580	347	402
MAX	166	23700	19800	2540	4330	7320	14200	483	640	3620	2730	1950
MIN	57	61	449	562	402	525	506	214	120	132	93	73
IN.	.08	2.14	3.84	.95	.84	1.86	2.23	.32	.18	.57	.34	.39

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	687.3	859.3	675.5	666.0	912.6	1170	1449	1391	1384	659.0	460.5	450.2
MAX	6997	6726	3878	3222	6372	5809	7542	11640	5521	4323	7812	3236
(WY)	1942	1986	1988	1973	1985	1973	1927	1943	1928	1976	1927	1945
MIN	21.0	30.5	33.3	29.7	31.0	33.6	38.2	120.0	73.4	15.2	7.71	22.0
(WY)	1957	1954	1964	1964	1964	1954	1956	1932	1954	1954	1954	1956

SUMMARY STATISTICS

FOR 1988 WATER YEAR

FOR PERIOD OF RECORD

AVERAGE FLOW	1175	888.5
HIGHEST ANNUAL MEAN		2705
LOWEST ANNUAL MEAN		61.4
HIGHEST DAILY MEAN	23700	81800
LOWEST DAILY MEAN	57	4.5
INSTANTANEOUS PEAK FLOW	37200	103000
INSTANTANEOUS PEAK STAGE (FEET)	25.03	30.94
INSTANTANEOUS LOW FLOW	57	4.2
ANNUAL RUNOFF (INCHES)	13.7	10.4
10 PERCENTILE	2430	1770
50 PERCENTILE	428	286
95 PERCENTILE	68	45

## 07186400 CENTER CREEK NEAR CARTERVILLE, MO

LOCATION.--Lat 37°08'26", long 94°22'57", in NW 1/4 NW 1/4 NW 1/4 sec.24, T.28 N., R.32 W., Jasper County, Hydrologic Unit 11070207, on downstream side of right pier of bridge on State Highway HH, 1.5 mi downstream from Grove Creek, 3 mi east of Carterville, and 17 mi above mouth.

DRAINAGE AREA.--232 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 913.21 ft above National Geodetic Vertical Datum of 1929 (Missouri State Highway and Transportation Commission).

REMARKS.--No estimated daily discharges. Water-discharge records good.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of October 2, 1959, reached a stage of 18.57 ft, from floodmark.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	42	420	589	178	207	796	149	84	105	44	41
2	31	40	369	523	172	211	2700	145	85	148	44	40
3	30	38	336	483	167	1110	1100	143	92	111	43	39
4	30	38	307	443	164	789	780	142	86	96	43	37
5	30	37	286	401	158	567	633	137	82	83	59	36
6	29	36	276	374	153	506	537	133	80	75	46	35
7	30	36	261	352	152	462	473	131	77	69	43	35
8	30	37	247	329	150	421	428	129	76	65	44	34
9	30	37	236	309	146	381	386	126	74	63	45	33
10	31	44	223	292	146	350	367	123	73	61	53	33
11	30	37	217	276	144	325	347	120	71	61	45	33
12	30	37	207	269	142	300	315	118	70	58	43	32
13	30	36	197	261	141	277	291	116	69	57	43	32
14	30	35	203	250	138	258	274	114	67	55	41	32
15	29	41	199	242	138	244	259	112	66	51	40	33
16	30	58	184	237	137	232	246	112	80	51	39	54
17	31	62	178	237	135	228	237	109	70	54	39	45
18	30	59	176	234	141	225	232	106	66	57	45	47
19	44	56	1690	246	545	214	220	105	64	56	45	69
20	42	52	4290	252	524	207	211	103	63	69	48	90
21	36	48	1040	245	421	201	204	102	62	63	46	79
22	36	46	743	236	375	195	198	105	60	56	43	66
23	37	44	599	231	334	188	190	114	59	53	104	64
24	44	5270	558	224	298	186	183	110	58	51	102	75
25	49	9350	1580	215	273	184	179	102	57	50	73	73
26	48	1190	2970	205	256	175	174	97	57	50	60	67
27	44	790	3830	198	242	170	168	95	55	48	53	60
28	42	644	1610	193	229	180	162	93	55	49	50	56
29	40	542	991	188	217	1440	159	91	61	50	48	60
30	40	475	806	182	---	1240	154	88	75	47	45	58
31	44	---	691	179	---	690	---	86	---	44	44	---
MEAN	35.1	642	836	287	221	399	420	115	69.8	64.7	50.3	49.6
MAX	49	9350	4290	589	545	1440	2700	149	92	148	104	90
MIN	29	35	176	179	135	170	154	86	55	44	39	32
IN.	.17	3.09	4.16	1.43	1.03	1.98	2.02	.57	.34	.32	.25	.24

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	MEAN	119.1	278.9	235.2	170.0	216.5	343.8	347.1	234.3	235.1	126.5	61.6	107.0
MAX	506.8	1318	991.9	578.8	781.6	1189	1154	668.9	849.5	860.7	130.5	388.1	
(WY)	1987	1986	1974	1973	1985	1975	1973	1983	1974	1976	1985	1986	
MIN	19.1	23.6	21.4	18.6	21.6	34.4	59.3	71.0	35.2	25.7	19.2	17.8	
(WY)	1965	1964	1964	1964	1964	1964	1981	1963	1972	1972	1972	1980	

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	265.7	205.5
HIGHEST ANNUAL MEAN		491.0
LOWEST ANNUAL MEAN		51.4
HIGHEST DAILY MEAN	9350	10000
LOWEST DAILY MEAN	29	9.7
INSTANTANEOUS PEAK FLOW	22500	36300
INSTANTANEOUS PEAK STAGE (FEET)	15.90	17.68
INSTANTANEOUS LOW FLOW	29	9.4
ANNUAL RUNOFF (INCHES)	15.6	12.0
10 PERCENTILE	488	408
50 PERCENTILE	108	97
95 PERCENTILE	33	26

## ARKANSAS RIVER BASIN

07186400 CENTER CREEK NEAR CARTERVILLE, MO--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1962 to September 1975, October 1979 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)
OCT											
06...	1530	30	432	8.10	14.0	9.4	91	<10	37	180	34
NOV											
04...	1315	38	441	7.80	17.5	8.1	84	26	39	--	--
DEC											
09...	0830	236	300	8.00	10.5	9.6	87	10	1100	--	--
JAN											
11...	1500	276	297	7.90	5.0	9.8	76	59	K2	150	33
FEB											
03...	0900	166	290	8.10	5.0	11.6	91	<10	K30	--	--
MAR											
02...	0845	202	288	8.00	11.0	8.9	82	<10	K60	--	--
APR											
06...	1330	532	267	7.80	15.0	10.1	99	<10	220	130	27
MAY											
11...	0830	120	347	8.00	17.5	7.7	80	15	54	--	--
JUN											
13...	1710	69	302	7.90	24.0	7.1	86	<10	35	--	--
JUL											
13...	0800	57	344	8.00	24.0	5.2	62	23	200	160	19
AUG											
04...	0815	43	338	7.90	25.5	6.2	78	22	110	--	--
SEP											
07...	0845	35	364	7.90	18.0	7.1	75	10	120	--	--

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT WH TOT FET FIELD (MG/L AS CACO3) (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT										
06...	66	4.3	15	2.0	149	2.3	29	13	0.30	246
NOV										
04...	--	--	--	--	146	4.5	--	--	--	275
DEC										
09...	--	--	--	--	128	2.5	--	--	--	197
JAN										
11...	54	3.3	5.3	1.6	116	2.8	27	7.5	0.30	197
FEB										
03...	--	--	--	--	121	1.9	--	--	--	201
MAR										
02...	--	--	--	--	126	2.4	--	--	--	173
APR										
06...	47	2.3	4.3	1.6	100	3.1	12	6.6	0.20	159
MAY										
11...	--	--	--	--	140	2.7	--	--	--	190
JUN										
13...	--	--	--	--	134	3.3	--	--	--	189
JUL										
13...	57	3.1	9.7	1.6	136	2.6	13	11	0.30	220
AUG										
04...	--	--	--	--	129	3.2	--	--	--	217
SEP										
07...	--	--	--	--	136	3.3	--	--	--	220

K--Results based on colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## ARKANSAS RIVER BASIN

07186480 CENTER CREEK NEAR SMITHFIELD, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat 37°09'20", long 94°36'10", NE 1/4 sec.14, T.28 N., R.34 W., Jasper County, Hydrologic Unit 11070207, at bridge on county road, 1 mi south of Smithfield.

PERIOD OF RECORD.--October 1968 to July 1975, July 1977 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)
OCT 06...	50	429	8.10	14.5	5.6	55	<10	K36	230	86
NOV 04...	70	559	8.20	18.0	11.4	120	72	190	--	--
DEC 09...	270	348	7.90	10.0	9.6	85	18	880	--	--
JAN 11...	385	329	8.00	4.0	13.8	105	20	K4	160	44
FEB 03...	290	320	8.00	5.0	11.8	92	21	K18	--	--
MAR 02...	400	345	8.00	10.5	9.6	86	<10	K28	--	--
APR 06...	840	281	7.90	15.5	9.4	93	<10	200	140	37
MAY 11...	200	394	8.10	18.5	9.3	99	<10	42	--	--
JUN 14...	84	380	8.10	23.5	8.8	106	<10	120	--	--
JUL 13...	100	385	8.10	25.0	7.6	92	25	120	190	54
AUG 03...	58	413	8.30	30.5	9.1	125	44	110	--	--
SEP 07...	460	445	7.90	18.5	8.2	88	16	K48	--	--

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 06...	85	4.7	20	2.1	146	2.2	76	12	0.30	328
NOV 04...	--	--	--	--	140	1.7	--	--	--	377
DEC 09...	--	--	--	--	131	3.2	--	--	--	225
JAN 11...	61	2.8	5.2	1.6	120	2.3	34	7.7	0.20	205
FEB 03...	--	--	--	--	133	2.6	--	--	--	221
MAR 02...	--	--	--	--	126	2.4	--	--	--	209
APR 06...	54	2.4	4.9	1.6	108	2.6	33	8.7	0.20	215
MAY 11...	--	--	--	--	143	2.2	--	--	--	219
JUN 14...	--	--	--	--	142	2.2	--	--	--	230
JUL 13...	70	3.6	12	1.6	136	2.1	49	11	0.30	268
AUG 03...	--	--	--	--	128	1.2	--	--	--	266
SEP 07...	--	--	--	--	144	3.5	--	--	--	307

K--Results based on the colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## ARKANSAS RIVER BASIN

07187000 SHOAL CREEK ABOVE JOPLIN, MO

LOCATION.--Lat 37°01'23", long 94°30'58", in SE 1/4, NE 1/4, NE 1/4, sec.34, T.27 N., R.33 W., Newton County, Hydrologic Unit 11070207, on right bank 250 ft upstream from mouth of Spring Creek, 1,400 ft downstream from bridge on State Highway 86, 0.5 mi south of city limits of Joplin and 13.2 mi above mouth.

DRAINAGE AREA.--427 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1941 to current year.

REVISED RECORDS.--WSP 1117: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 886.87 ft above National Geodetic Vertical Datum of 1929. Prior to July 21, 1966, water-stage recorder at site 1.8 mi upstream, at datum 15.5 ft higher.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	96	622	1260	387	471	1510	379	255	329	110	102
2	84	90	519	1140	379	477	2620	370	260	340	108	100
3	81	86	463	1040	374	1210	2960	365	264	251	114	100
4	82	82	420	942	366	1610	1880	361	300	217	112	99
5	81	80	383	881	358	1340	1610	350	260	198	110	97
6	78	78	358	870	349	1210	1400	347	249	190	131	93
7	76	76	335	830	344	1120	1240	343	241	179	122	89
8	74	82	314	760	345	1040	1120	343	236	175	115	87
9	74	82	297	705	342	945	1030	340	231	169	113	88
10	74	86	279	655	341	872	977	333	229	166	139	88
11	78	79	267	607	339	815	945	333	219	169	121	90
12	79	76	260	579	329	758	873	333	216	166	118	88
13	77	73	249	565	331	701	808	331	213	164	117	87
14	73	74	262	541	331	627	751	325	207	160	115	86
15	72	87	265	519	331	579	698	321	203	148	109	90
16	72	137	251	496	324	544	658	317	210	142	101	139
17	72	172	242	503	324	537	624	311	208	140	96	114
18	74	173	247	501	341	534	609	307	202	145	96	126
19	96	160	2960	501	608	507	565	305	200	142	118	239
20	97	149	4550	520	1050	491	525	302	195	157	174	275
21	105	134	1940	518	990	479	504	299	189	189	147	212
22	89	124	1540	502	897	463	488	309	183	153	148	159
23	86	120	1290	490	811	449	465	346	179	142	148	153
24	105	3560	1260	485	730	445	451	338	174	137	136	198
25	130	5580	3380	461	662	445	440	309	170	136	124	247
26	140	2140	4350	445	609	426	431	293	168	126	114	198
27	123	1380	3670	431	569	409	416	285	163	128	110	168
28	112	1120	2360	425	530	418	404	278	159	128	112	153
29	104	919	1900	412	502	971	396	275	165	126	115	158
30	100	766	1660	399	---	2080	388	269	189	118	112	156
31	99	---	1440	396	---	1610	---	262	---	114	105	---
MEAN	89.6	595	1237	625	489	793	926	322	211	169	120	136
MAX	140	5580	4550	1260	1050	2080	2960	379	300	340	174	275
MIN	72	73	242	396	324	409	388	262	159	114	96	86
IN.	.24	1.56	3.34	1.69	1.24	2.14	2.42	.87	.55	.46	.32	.36

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

	303.9	394.7	336.5	299.2	372.0	533.8	660.3	687.6	534.8	325.2	218.8	230.4
MEAN	303.9	394.7	336.5	299.2	372.0	533.8	660.3	687.6	534.8	325.2	218.8	230.4
MAX	1709	2034	1570	1145	1233	1961	3281	4691	1969	1550	2337	1043
(WY)	1960	1986	1974	1973	1968	1973	1945	1943	1957	1976	1950	1945
MIN	48.3	55.4	57.3	54.9	61.7	57.9	56.0	120.5	81.4	47.0	37.1	47.0
(WY)	1957	1964	1964	1964	1964	1954	1954	1963	1954	1954	1954	1953

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	476.1	407.9
HIGHEST ANNUAL MEAN		1008
LOWEST ANNUAL MEAN		77.8
HIGHEST DAILY MEAN	5580	36700
LOWEST DAILY MEAN	72	15
INSTANTANEOUS PEAK FLOW	10800	62100
INSTANTANEOUS PEAK STAGE (FEET)	13.91	16.8
INSTANTANEOUS LOW FLOW	72	12
ANNUAL RUNOFF (INCHES)	15.1	13.0
10 PERCENTILE	1050	819
50 PERCENTILE	278	227
95 PERCENTILE	80	66

## ARKANSAS RIVER BASIN

271

07189000 ELK RIVER NEAR TIFF CITY, MO

LOCATION.--Lat 36°37'50", long 94°35'12", in NE 1/4 sec.22, T.22 N., R.34 W., McDonald County, Hydrologic Unit 11070208, on downstream side of second pier from right bank of bridge on State Highway 43, 0.8 mi downstream from Blackfoot Branch, 2.8 mi upstream from Buffalo Creek, 3.0 mi southeast of Tiff City, and at mile 15.8.

DRAINAGE AREA.--872 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1939 to current year.

REVISED RECORDS.--WSP 927: 1940. WSP 1117: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 750.61 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Sept. 6, 1960, to Aug. 25, 1961, at site 100 ft downstream.

REMARKS.--No estimated daily discharges. Water-discharge records good. Several observations of water temperature, specific conductance, and pH were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	96	255	927	2400	652	942	4040	692	249	143	83	74
2	90	231	830	2000	649	920	7190	655	246	167	80	69
3	85	212	747	1770	632	1420	7100	630	246	170	79	78
4	81	198	669	1590	625	2850	4160	616	239	158	78	88
5	78	186	601	1390	616	2650	3170	589	228	147	76	97
6	75	176	549	1300	597	2360	2610	555	218	134	75	115
7	74	166	499	1230	588	2120	2170	536	210	127	100	100
8	72	161	460	1130	580	1940	1830	522	201	118	97	88
9	71	160	420	1030	576	1770	1650	503	192	114	90	82
10	72	154	387	953	571	1620	1520	475	193	114	109	77
11	75	149	358	890	571	1510	1520	454	188	127	101	72
12	78	144	333	850	561	1440	1500	435	179	132	91	68
13	79	138	313	856	554	1390	1450	417	171	129	88	63
14	80	135	326	850	554	1320	1360	400	167	125	84	60
15	78	151	475	828	552	1240	1270	386	160	115	76	58
16	75	389	715	813	544	1180	1180	375	158	108	68	69
17	73	1040	736	827	540	1150	1110	358	165	106	63	80
18	74	1010	711	858	566	1260	1220	341	167	115	61	105
19	104	856	4090	914	1340	1400	2000	326	159	126	71	209
20	134	707	20900	1060	3370	1550	1910	315	152	135	95	378
21	169	593	8020	1170	2640	1600	1600	320	143	176	112	345
22	167	508	4040	1130	2130	1560	1390	351	137	172	99	245
23	160	445	2770	1080	1790	1460	1240	390	133	155	104	228
24	223	451	2100	1030	1540	1360	1120	409	119	140	97	323
25	361	3090	4490	962	1370	1310	1020	387	108	126	87	381
26	473	3280	16400	895	1250	1230	948	348	106	117	77	351
27	543	1910	12000	833	1150	1160	882	318	109	109	70	294
28	495	1450	9500	780	1070	1110	819	303	105	110	77	251
29	395	1220	5260	741	999	5430	766	288	106	104	80	227
30	331	1070	3750	707	---	1600	728	275	133	96	78	210
31	289	---	2960	679	---	6250	---	260	---	88	79	---
MEAN	169	688	3430	1082	1006	1810	2016	427	170	129	84.7	163
MAX	543	3280	20900	2400	3370	6250	7190	692	249	176	112	381
MIN	71	135	313	679	540	920	728	260	105	88	61	58
IN.	.22	.88	4.54	1.43	1.24	2.39	2.58	.56	.22	.17	.11	.21

## STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	616.4	887.9	1452	773.5	1034	1429	1683	871.2	635.0	220.9	173.5	179.0
MAX	2888	3581	3430	2509	2537	2707	3411	1797	1573	342.6	558.6	712.2
(WY)	1987	1986	1988	1985	1985	1985	1986	1985	1985	1982	1985	1986
MIN	84.6	77.1	106.3	64.6	100.5	160.9	203.7	403.2	169.6	129.1	84.7	50.3
(WY)	1983	1981	1981	1981	1981	1981	1981	1981	1988	1988	1988	1980

## SUMMARY STATISTICS

## FOR 1988 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	932.6	827.7
HIGHEST ANNUAL MEAN		1648
LOWEST ANNUAL MEAN		185.5
HIGHEST DAILY MEAN	20900	33700
LOWEST DAILY MEAN	58	38
INSTANTANEOUS PEAK FLOW	27100	137000
INSTANTANEOUS PEAK STAGE (FEET)	19.21	28.4
INSTANTANEOUS LOW FLOW	58	5.1
ANNUAL RUNOFF (INCHES)	14.5	12.9

## ARKANSAS RIVER BASIN

07189000 ELK RIVER NEAR TIFF CITY, MO--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1962 to June 1963; November 1965 to July 1975; October 1980 to September 1981; October 1982 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
OCT											
06...	0915	74	--	297	8.20	15.0	9.4	93	<10	27	140
NOV											
04...	1115	198	275	--	8.40	17.5	13.3	137	24	K10	--
DEC											
09...	1330	420	260	--	8.20	13.0	11.0	104	<10	40	--
JAN											
12...	0845	850	251	--	8.20	5.0	12.0	93	24	27	130
FEB											
03...	1400	630	230	--	8.30	6.0	13.1	104	<10	26	--
MAR											
02...	1400	912	270	--	8.00	10.5	10.0	90	<10	K28	--
APR											
06...	1020	2610	209	--	8.10	13.5	9.7	91	<10	74	110
MAY											
11...	1200	454	282	--	8.20	18.5	9.7	103	<10	20	--
JUN											
14...	0840	169	243	--	7.80	23.0	7.8	93	<10	44	--
JUL											
13...	1400	129	270	--	8.10	26.5	8.2	102	19	25	130
AUG											
03...	1400	79	246	--	8.20	30.5	10.6	145	10	29	--
SEP											
07...	1300	100	246	--	8.20	21.5	9.2	104	12	39	--

DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT											
06...	1	51	3.2	5.7	2.3	140	1.7	20	9.1	0.20	179
NOV											
04...	--	--	--	--	--	134	1.0	--	--	--	169
DEC											
09...	--	--	--	--	--	136	1.7	--	--	--	161
JAN											
12...	12	47	2.5	3.3	1.6	116	1.4	7.8	5.0	0.10	148
FEB											
03...	--	--	--	--	--	122	1.2	--	--	--	152
MAR											
02...	--	--	--	--	--	122	2.4	--	--	--	148
APR											
06...	15	41	2.1	2.7	1.3	96	1.5	7.2	3.8	0.10	135
MAY											
11...	--	--	--	--	--	118	1.4	--	--	--	145
JUN											
14...	--	--	--	--	--	126	3.9	--	--	--	155
JUL											
13...	7	47	2.7	5.0	1.9	122	1.9	6.9	7.4	0.10	149
AUG											
03...	--	--	--	--	--	108	1.3	--	--	--	147
SEP											
07...	--	--	--	--	--	122	1.5	--	--	--	157

K--Results based on colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## DISCHARGE AT PARTIAL-RECORD STATIONS

## Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations, water year 1988

Station no.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis- charge (ft <sup>3</sup> /s)
Kings Lake basin							
05513600	Camp Creek near Elsberry	Lat 39°06'54", long 90°46'26", in SW portion survey 1724, T.50 N., R.2 E., Hydrologic Unit 07110004, Lincoln County, at downstream end of double 12 ft. box culvert (right side of right barrel) on State Highway 79 about one mile upstream from C.B. & Q. railroad crossing and 3.6 mi south of Elsberry.	1.50	1954-88	2-1-88	3.12	250
Platte River basin							
06818900	Platte River at Ravenwood	Lat 40°20'42", long 94°41'09", in SE 1/4 SE 1/4 sec.14, T.64 N., R.34 W., Hydrologic Unit 10240012, Nodaway County, on downstream side of left pier of U.S. Highway 136 bridge, 0.8 mi west of Ravenwood.	486	1922-71+ 1972-88	11-1-87	6.90	1,890
06820300	Big Slough near Wilcox	Lat 40°23'23", long 94°55'32", on south line of SW 1/4 sec.35, T.65 N., R.36 W., Hydrologic Unit 10240010, Nodaway County, at culvert on U.S. Highway 71, 3 mi southeast of Wilcox.	1.30	1949-88	11-1-87	1.98	120
Shoal Creek basin							
06895000	Crooked River near Richmond	Lat 39°20'00", long 93°58'45", in NW 1/4 NW 1/4 sec.7, T.52 N., R.27 W., Hydrologic Unit 10300101, Ray County, on downstream side of third pier from left end of bridge on State Highway 13, 4.0 mi upstream from West Fork Crooked River, and 24.5 mi upstream from mouth.	159	1948-70+ 1971-88	4-2-88	14.87	1,040
Wakenda Creek basin							
06896000	Wakenda Creek at Carrollton	Lat 39°20'48", long 93°29'44", in NE 1/4 SE 1/4 sec.5, T.52 N., R.23 W., Hydrologic Unit 10300101, Carroll County, on U.S. Highway 65 bridge in Carrollton.	248	1948-70+ 1972-88	4-2-88	14.97	1,270
Grand River basin							
06897000	East Fork Big Creek near Bethany	Lat 40°17'50", long 94°01'36", in SE 1/4 sec.34, T.64 N., R.28 W., Hydrologic Unit 10280101, Harrison County on right bank 50 ft downstream from bridge on old U.S. Highway 69, 2 mi north of Bethany and 4 mi upstream from confluence with West Fork.	95	1934-72+ 1973-88	+	+	+
06901100	Locust Creek near Reger	Lat 40°08'31", long 93°11'07", in NE 1/4 SW 1/4 SE 1/4 sec.30, T.62 N., R.20W., Hydrologic Unit 10280201, Sullivan County, on downstream side of State Highway 6 and 0.3 mile east of Reger.	232	1987-88	12-20-87	8.53	1,900
Chariton River basin							
06904300	Shoal Creek near Hartford	Lat 40°29'00", long 92°46'20", in NE 1/4 NE 1/4 sec.35, T.66 N., R.17 W., Hydrologic Unit 10280201, Putnam County, at bridge on U.S. Highway 136, 3 mi northeast of Hartford.	155	1963-88	+	+	+

## DISCHARGE AT PARTIAL-RECORD STATIONS

275

Annual maximum discharge at crest-stage partial-record stations, water year 1988--Continued

Station no.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum Date	Gage height (feet)	Dis- charge (ft <sup>3</sup> /s)
Chariton River basin--Continued							
06905000	Chariton River at Elmer	Lat 39°56'58", long 92°39'43", in E 1/2 sec.3, T.59 N., R.16 W., Hydrologic Unit 10280202, Macon County, at bridge on County Road J, 0.8 mi southwest of Elmer.	1,660	1921-30+ 1961-88	2-20-88	15.13	6,400
06906400	Middle Fork Chariton River at Thomas Hill	Lat 39°30'51", long 92°39'53", in NE 1/4 NE 1/4 sec.2, T.54 N., R.16 W., Hydrologic Unit 10280203, Randolph County, at bridge on State Highway 3, 0.5 mi SW of Thomas Hill.	150	1962-88	+	+	+
Lamine River basin							
06907000	Lamine River at Clifton City	Lat 38°45'26", long 93°01'20", in NW 1/4 sec.16, T.46 N., R.19 W., Hydrologic Unit 10300103 Cooper County, on downstream side of highway bridge, 0.8 mi east of Clifton City.	598	1922-71+ 1972-88	4-2-88	25.19	13,800
06908500	Shiloh Branch near Marshall	Lat 39°06'59", long 93°05'48", in NW 1/4 sec.15 T.50 N., R.20 W., Hydrologic Unit 10300104, Saline County, at culvert on State Highway 41, in front of Shiloh Church, 5.5 mi east of Marshall.	2.87	1952-65+ 1966-88	+	+	+
Moniteau Creek basin							
06909500	Moniteau Creek near Fayette	Lat 39°07'15", long 92°33'40", in SE 1/4 SE 1/4 sec.14, T.50 N., R.15 W., Hydrologic Unit 10300102, Howard County, at "Buoy" bridge, 1 mi downstream from Hungry Mother Creek, 7 mi east of Fayette and 15 mi upstream from mouth.	81	1948-60 1962-69+ 1979-88	+	+	+
Moreau River basin							
06910500	Moreau River near Jefferson City	Lat 38°31'44", long 92°11'31", in SE 1/4 NW 1/4 SE 1/4 sec.25, T.44 N., R.12 W., Hydrologic Unit 10300102, Cole County, on downstream side of bridge on Tanner Bridge Road, 3 mi south of Jefferson City.	561	1947-74+ 1975-88	1-31-88	19.80	7,880
Osage River basin							
06921720	Big Creek at Blairstown	Lat 38°33'17", long 93°57'54", in NE 1/4 SW 1/4 sec.36, T.44 N., R.28 W., Hydrologic Unit 10290108, Henry County, on downstream side of right bridge pier on County Highway N, 0.3 mi west of Blairstown, 0.8 mi downstream from Bear Creek and 1.5 mi upstream from Brushy Creek.	414	1960-74+ 1975-88	4-23-88	18.43	+
06925200	Starks Creek at Preston	Lat 37°56'30", long 93°11'30", in NW 1/4 SW 1/4 sec.24, T.37 N., R.21 W., Hydrologic Unit 10290107, Hickory County, attached to right downstream wingwall of U.S. Highway 54 bridge, 0.6 mi east of Preston.	4.18	1956-76+ 1977-88	+	+	+
06927000	Maries River at Westphalia	Lat 38°25'55", long 91°59'23", in NE 1/4 sec.35, T.43 N., R.10 W., Hydrologic Unit 10290111, Osage County, at bridge on U.S. Highway 63, 0.8 mi southeast of Westphalia, 1.2 mi downstream from Little Maries Creek, and at mile 9.9.	257	1947-70+ 1971-88	1-31-88	14.60	12,900

## DISCHARGE AT PARTIAL-RECORD STATIONS

Annual maximum discharge at crest-stage partial-record stations, water year 1988--Continued

Station no.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		Dis- charge (ft <sup>3</sup> /s)
					Date	Gage height (feet)	
Meramec River basin							
07011200	Love Creek near Salem	Lat 37°38'10", long 91°33'35", in W 1/4, NE 1/4 sec.23, T.34 N., R.6 W., Hydrologic Unit 07140102, Dent County, at culvert under State Highways 32 and 72, 0.5 mi west of Salem.	0.89	1955-59 1960-63f 1964-88	12-26-87	4.39	84
White River basin							
07066800	Sycamore Creek near Winona	Lat 37°02'49", long 91°19'30", in SW 1/4, SW 1/4 sec.31, T.28 N., R.3 W., Hydrologic Unit 11010008, Shannon County, on left bank just upstream from culvert under State Highway 19, about 3 mi north of Winona.	0.86	1954-88	12-26-87	5.29	210

+ Not determined.

# Operated as continuous-record gaging station.

f Discharge measurements, daily gage-height, and rainfall records available.

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## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

Water-quality partial-record stations are sites where chemical-quality, biological, and or sediment data are collected systematically over a period of years for use in hydrologic analysis. The data are collected usually less than quarterly.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	. PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)
07064400 MONTAUK SPRINGS AT MONTAUK, MO (LAT 37 27 36N LONG 091 40 59W)										
OCT 1987										
13...	1100	61	292	7.70	13.0	8.9	84	K1	K9	168
MAY 1988										
17...	0845	93	275	7.50	13.5	8.8	85	K13	K6	128
07064440 CURRENT RIVER BELOW MONTAUK STATE PARK (LAT 37 27 01N LONG 091 29 41W)										
OCT 1987										
13...	1210	77	301	8.10	12.5	10.7	100	K6	39	160
MAY 1988										
17...	1000	116	256	7.80	13.5	11.1	107	K15	32	129
07064530 WELCH SPRING NEAR AKERS, MO (LAT 37 23 38N LONG 091 34 25W)										
OCT 1987										
13...	1355	97	325	7.60	13.5	8.0	76	K1	K1	169
MAY 1988										
17...	1145	240	333	7.40	13.5	9.4	90	<1	K1	172
07064555 PULLTITE SPRING NEAR ROUND SPRING, MO (LAT 37 20 03N LONG 091 29 24W)										
OCT 1987										
13...	1540	23	308	7.80	14.0	9.2	88	42	K9	162
MAY 1988										
17...	1430	75	285	7.50	13.5	10.3	98	<1	K1	136
07065000 ROUND SPRING AT ROUND SPRING, MO (LAT 37 16 57N LONG 091 24 27W)										
OCT 1987										
13...	1615	20	322	7.70	14.0	8.7	84	<2	K6	178
MAY 1988										
17...	1645	38	316	7.50	13.5	10.1	96	K3	K14	157
07065500 ALLEY SPRING AT ALLEY, MO (LAT 37 09 14N LONG 091 26 29W)										
OCT 1987										
14...	1105	89	305	8.00	14.0	6.9	66	<1	K1	183
MAY 1988										
18...	0700	129	280	7.60	13.5	9.3	89	K10	K2	142
07066110 JACKS FORK ABOVE TWO RIVERS (LAT 37 10 53N LONG 091 17 36W)										
OCT 1987										
14...	1000	145	332	8.30	11.5	8.8	80	K15	K14	189
MAY 1988										
18...	0830	282	335	8.10	18.5	8.3	88	37	K14	175
07066510 CURRENT RIVER ABOVE POWDER MILL (LAT 37 10 32N LONG 091 12 48W)										
OCT 1987										
14...	0900	580	330	8.10	11.5	8.3	75	K20	K16	198
MAY 1988										
18...	1115	932	329	8.20	18.5	9.3	98	K6	K1	176
07066550 BLUE SPRING NEAR EMINENCE, MO (LAT 37 09 58N LONG 091 09 47W)										
OCT 1987										
14...	0745	88	297	7.70	13.0	8.8	82	K1	K1	146
MAY 1988										
18...	1230	118	279	7.70	13.0	9.6	90	K6	<1	133
07067500 BIG SPRING NEAR VAN BUREN, MO (LAT 36 57 05N LONG 090 59 36W)										
OCT 1987										
14...	1400	321	324	7.60	15.0	8.0	78	<1	<1	194
MAY 1988										
18...	1400	420	338	7.50	14.0	9.3	89	<1	K1	177

K--Results based on colony count outside the acceptable range (non-ideal colony count).

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
07064400	MONTAUK SPRINGS AT MONTAUK, MO (LAT 37 27 36N LONG 091 40 59W)								
OCT 1987 13...	<0.010	0.900	<0.010	0.80	0.020	<1	<5	<1	<10
MAY 1988 17...	<0.010	0.800	<0.010	<0.20	0.020	<1	<5	<1	<10
07064440	CURRENT RIVER BELOW MONTAUK STATE PARK (LAT 37 27 01N LONG 091 29 41W)								
OCT 1987 13...	<0.010	0.800	0.020	<0.20	0.030	<1	<5	<1	<10
MAY 1988 17...	<0.010	0.700	0.020	<0.20	0.020	<1	<5	<1	<10
07064530	WELCH SPRING NEAR AKERS, MO (LAT 37 23 38N LONG 091 34 25W)								
OCT 1987 13...	<0.010	0.600	<0.010	0.30	0.010	<1	<5	<1	<10
MAY 1988 17...	<0.010	0.700	<0.010	<0.20	0.020	<1	<5	<1	<10
07064555	PULLTITE SPRING NEAR ROUND SPRING, MO (LAT 37 20 03N LONG 091 29 24W)								
OCT 1987 13...	<0.010	0.600	<0.010	<0.20	0.010	<1	<5	<1	<10
MAY 1988 17...	<0.010	0.500	<0.010	<0.20	0.020	<1	<5	<1	<10
07065000	ROUND SPRING AT ROUND SPRING, MO (LAT 37 16 57N LONG 091 24 27W)								
OCT 1987 13...	<0.010	0.300	<0.010	<0.20	<0.010	1	<5	<1	<10
MAY 1988 17...	<0.010	0.300	<0.010	<0.20	0.020	1	<5	<1	30
07065500	ALLEY SPRING AT ALLEY, MO (LAT 37 09 14N LONG 091 26 29W)								
OCT 1987 14...	<0.010	0.600	<0.010	<0.20	<0.010	1	<5	1	<10
MAY 1988 18...	<0.010	0.700	<0.010	<0.20	0.020	<1	<5	1	<10
07066110	JACKS FORK ABOVE TWO RIVERS (LAT 37 10 53N LONG 091 17 36W)								
OCT 1987 14...	<0.010	0.300	<0.010	0.20	<0.010	1	<5	1	<10
MAY 1988 18...	<0.010	0.400	<0.010	0.20	0.020	1	5	<1	<10
07066510	CURRENT RIVER ABOVE POWDER MILL (LAT 37 10 32N LONG 091 12 48W)								
OCT 1987 14...	<0.010	0.300	<0.010	<0.20	<0.010	1	<5	<1	<10
MAY 1988 18...	<0.010	0.400	0.020	<0.20	0.020	2	<5	<1	<10
07066550	BLUE SPRING NEAR EMINENCE, MO (LAT 37 09 58N LONG 091 09 47W)								
OCT 1987 14...	<0.010	0.400	<0.010	<0.20	<0.010	<1	<5	<1	<10
MAY 1988 18...	<0.010	0.400	<0.010	<0.20	0.020	1	<5	1	<10
07067500	BIG SPRING NEAR VAN BUREN, MO (LAT 36 57 05N LONG 090 59 36W)								
OCT 1987 14...	<0.010	0.300	<0.010	<0.20	<0.010	1	<5	<1	<10
MAY 1988 18...	<0.010	0.400	<0.010	<0.20	0.020	1	5	<1	<10

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)
07067800 CURRENT RIVER BELOW HAWES CAMPGROUND (LAT 36 49 08N LONG 090 56 48W)										
OCT 1987										
14...	1500	1060	325	8.20	14.0	8.6	82	K1	<1	189
MAY 1988										
18...	1600	2150	329	8.30	20.5	9.9	108	K2	K2	177

K--Results based on colony count outside the acceptable range (non-ideal colony count).

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
07067800	CURRENT RIVER BELOW HAWES CAMPGROUND (LAT 36 49 08N LONG 090 56 48W)								
OCT 1987									
14...	<0.010	0.200	<0.010	<0.20	<0.010	1	<5	<1	<10
MAY 1988									
18...	<0.010	0.300	<0.010	<0.20	0.020	2	7	<1	<10

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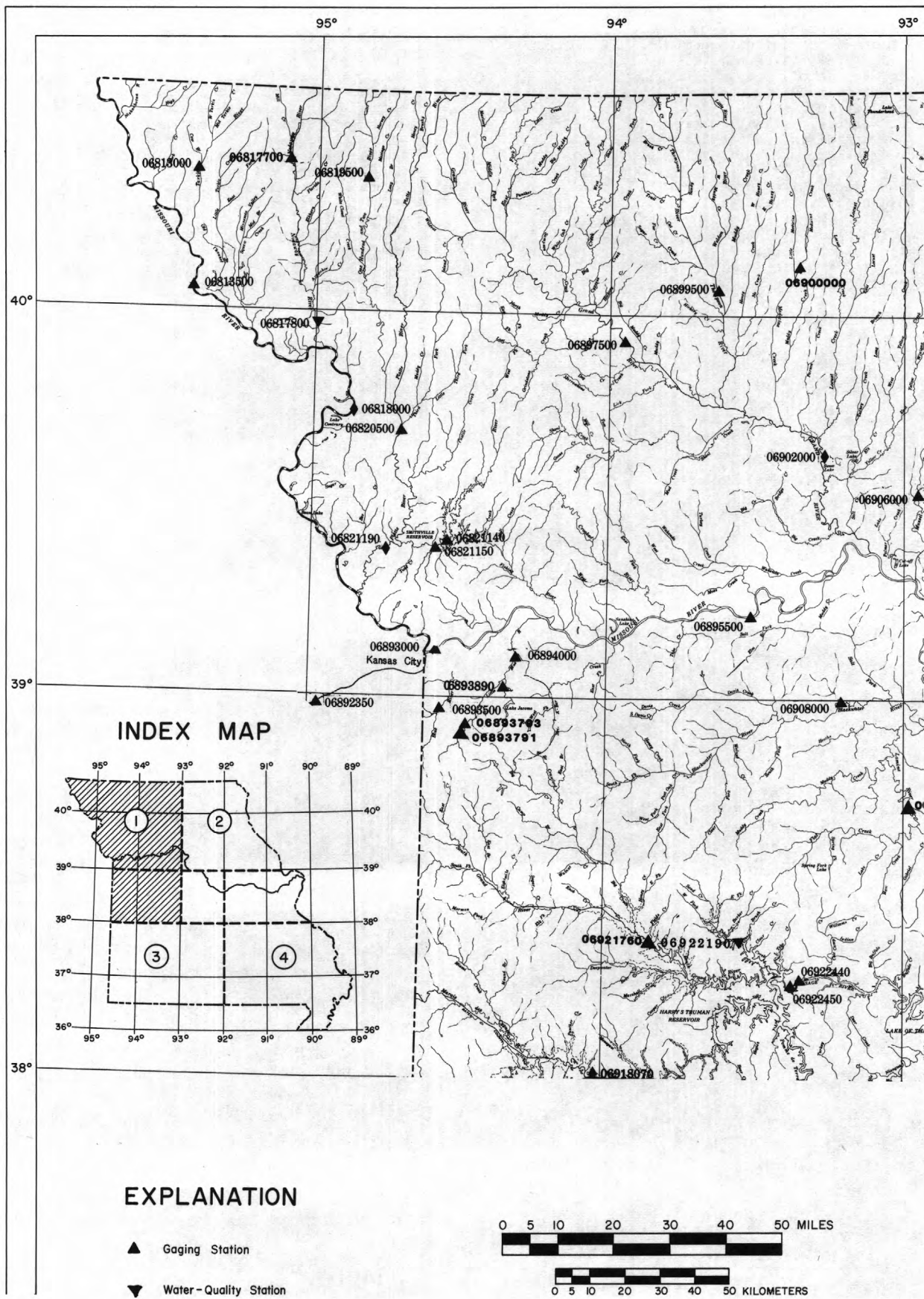
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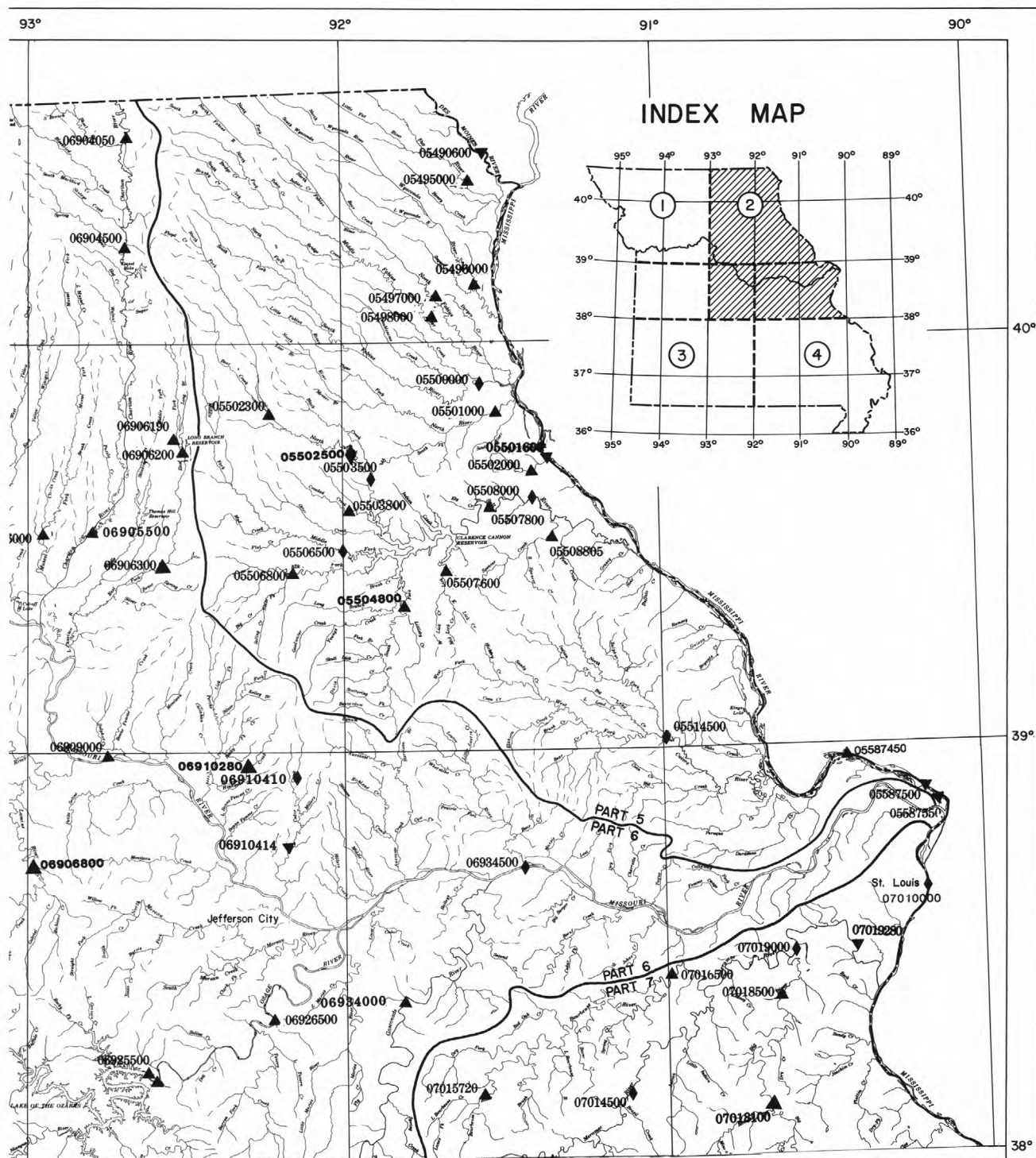
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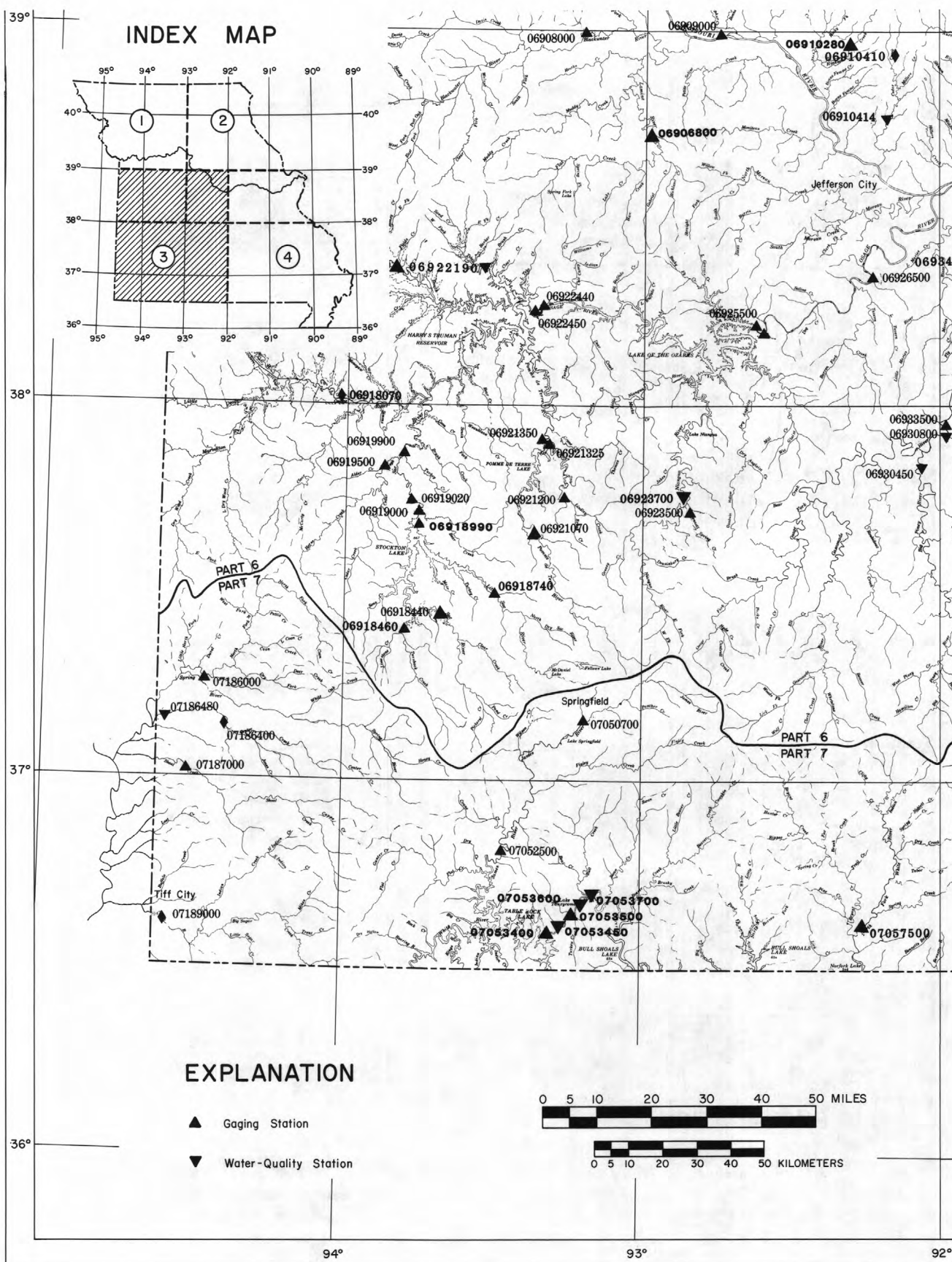
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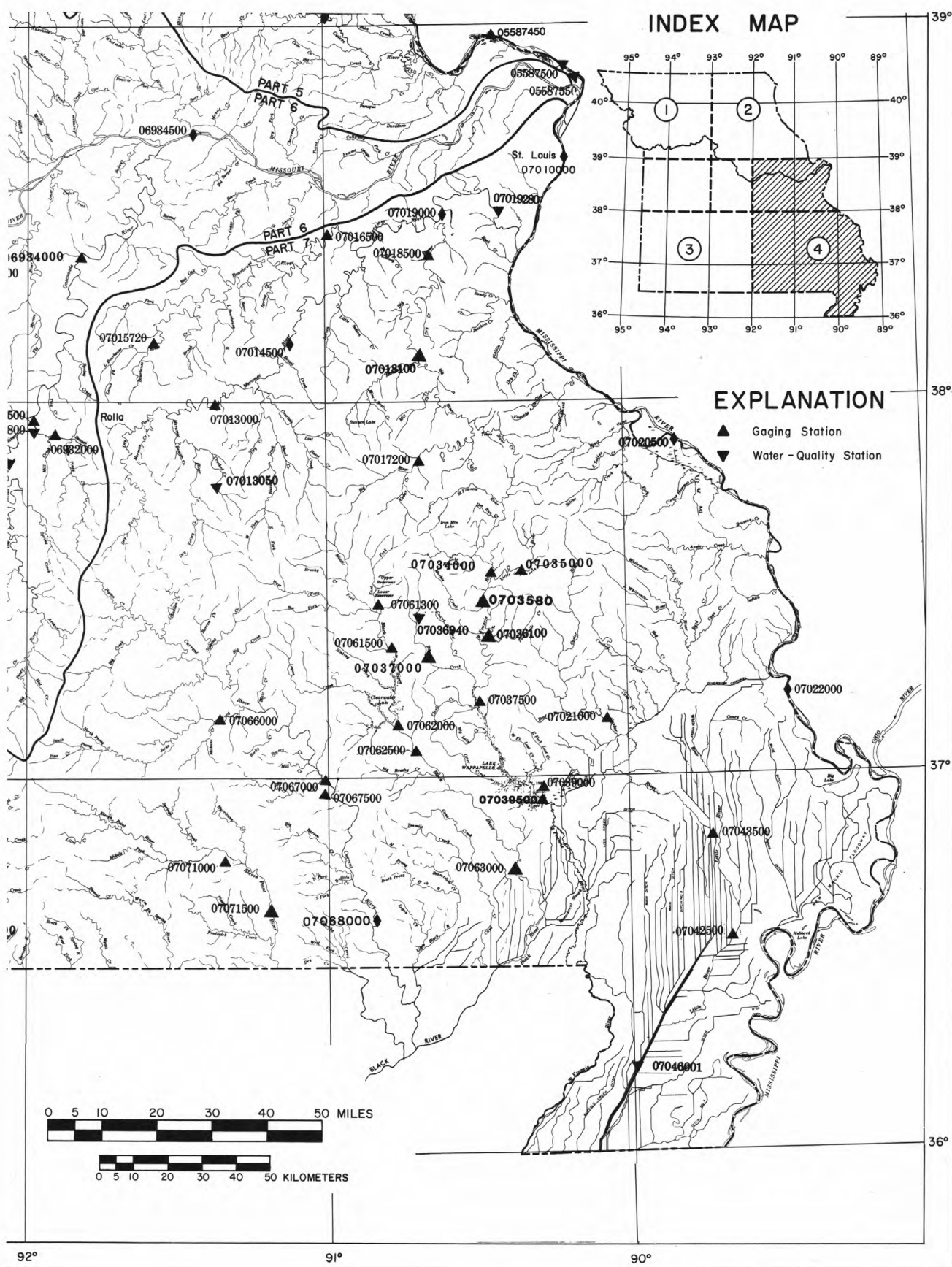
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## FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	$2.54 \times 10^1$	millimeters (mm)
	$2.54 \times 10^{-2}$	meters (m)
feet (ft)	$3.048 \times 10^{-1}$	meters (m)
miles (mi)	$1.609 \times 10^0$	kilometers (km)
<i>Area</i>		
acres	$4.047 \times 10^3$	square meters (m <sup>2</sup> )
	$4.047 \times 10^{-1}$	square hectometers (hm <sup>2</sup> )
	$4.047 \times 10^{-3}$	square kilometers (km <sup>2</sup> )
square miles (mi <sup>2</sup> )	$2.590 \times 10^0$	square kilometers (km <sup>2</sup> )
<i>Volume</i>		
gallons (gal)	$3.785 \times 10^0$	liters (L)
	$3.785 \times 10^0$	cubic decimeters (dm <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic meters (m <sup>3</sup> )
million gallons	$3.785 \times 10^3$	cubic meters (m <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
cubic feet (ft <sup>3</sup> )	$2.832 \times 10^1$	cubic decimeters (dm <sup>3</sup> )
	$2.832 \times 10^{-2}$	cubic meters (m <sup>3</sup> )
cfs-days	$2.447 \times 10^3$	cubic meters (m <sup>3</sup> )
	$2.447 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
acre-feet (acre-ft)	$1.233 \times 10^3$	cubic meters (m <sup>3</sup> )
	$1.233 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
	$1.233 \times 10^{-6}$	cubic kilometers (km <sup>3</sup> )
<i>Flow</i>		
cubic feet per second (ft <sup>3</sup> /s)	$2.832 \times 10^1$	liters per second (L/s)
	$2.832 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$2.832 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
gallons per minute (gal/min)	$6.309 \times 10^{-2}$	liters per second (L/s)
	$6.309 \times 10^{-2}$	cubic decimeters per second (dm <sup>3</sup> /s)
	$6.309 \times 10^{-5}$	cubic meters per second (m <sup>3</sup> /s)
million gallons per day	$4.381 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$4.381 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
<i>Mass</i>		
tons (short)	$9.072 \times 10^{-1}$	megagrams (Mg) or metric tons

