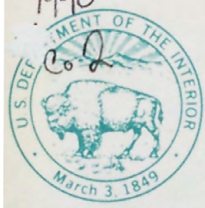
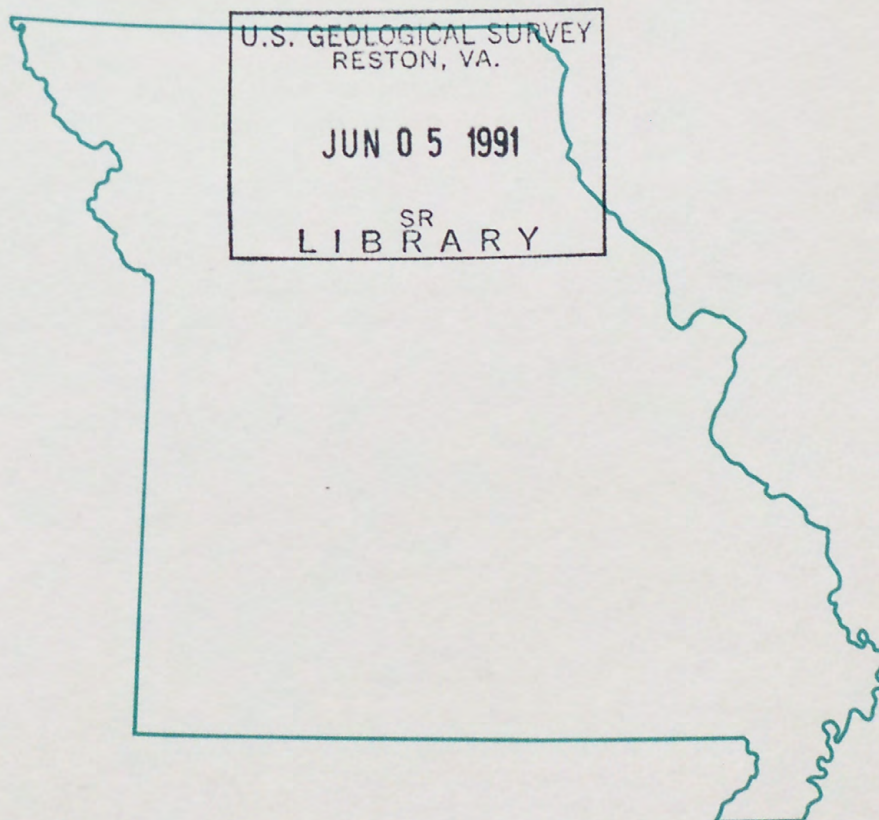


(200)  
Ga3  
Missouri  
1990



copy in R

# Water Resources Data Missouri Water Year 1990



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MO-90-1

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



# CALENDAR FOR WATER YEAR 1990

1989

OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7				1	2	3	4						1	2
8	9	10	11	12	13	14	5	6	7	8	9	10	11	3	4	5	6	7	8	9
15	16	17	18	19	20	21	12	13	14	15	16	17	18	10	11	12	13	14	15	16
22	23	24	25	26	27	28	19	20	21	22	23	24	25	17	18	19	20	21	22	23
29	30	31					26	27	28	29	30			24	25	26	27	28	29	30
														31						

1990

JANUARY							FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3					1	2	3
7	8	9	10	11	12	13	4	5	6	7	8	9	10	4	5	6	7	8	9	10
14	15	16	17	18	19	20	11	12	13	14	15	16	17	11	12	13	14	15	16	17
21	22	23	24	25	26	27	18	19	20	21	22	23	24	18	19	20	21	22	23	24
28	29	30	31				25	26	27	28				25	26	27	28	29	30	31

APRIL							MAY							JUNE						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7			1	2	3	4	5						1	2
8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9
15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16
22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23
29	30						27	28	29	30	31			24	25	26	27	28	29	30

JULY							AUGUST							SEPTEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7				1	2	3	4							1
8	9	10	11	12	13	14	5	6	7	8	9	10	11	2	3	4	5	6	7	8
15	16	17	18	19	20	21	12	13	14	15	16	17	18	9	10	11	12	13	14	15
22	23	24	25	26	27	28	19	20	21	22	23	24	25	16	17	18	19	20	21	22
29	30	31					26	27	28	29	30	31		23	24	25	26	27	28	29
														30						





# Water Resources Data Missouri Water Year 1990

by H.L. Reed, D.O. Hatten, T.J. Perkins, G.L. Gray, Jr., and J.V. Davis



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MO-90-1

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



**U.S. 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 U.S. Geological Survey policy and established guidelines, the following individuals contributed significantly to the collection, processing, and tabulation of the data:

Gary L. Alexander  
Terry W. Alexander  
Yemen D. Collier  
Suzanne R. Femmer  
H. Craig French  
Roy D. Glenn

Henry S. Hauck  
Robert R. Holmes, Jr.  
Leonard G. Huber  
Larry J. Lumpkin  
Gilbert B. Malone  
Michael C. Moody

Roger N. Nygaard  
Kevin D. Richards  
Sherry A. Ternes  
Robert E. Whitaker  
Lance D. Yarbrough

Felicia D. Headrick assembled the text of the report.

This report was prepared in cooperation with the State of Missouri and with other agencies under the general supervision of Daniel P. Bauer, District Chief, Missouri.



<b>REPORT DOCUMENTATION PAGE</b>		<b>1. REPORT NO.</b> USGS/WRD/HD-91/273	<b>2.</b>	<b>3. Recipient's Accession No.</b>
<b>4. Title and Subtitle</b> Water Resources Data - Missouri, Water Year 1990				<b>5. Report Date</b> March 1991
				<b>6.</b>
<b>7. Author(s)</b> H.L. Reed, D.O. Hatten, T.J. Perkins, G.L. Gray, Jr., and J.V. Davis				<b>8. Performing Organization Rept. No.</b> USGS-WDR-MO-90-1
<b>9. Performing Organization Name and Address</b> U.S. Geological Survey Water Resources Division 1400 Independence Road Mail Stop 200 Rolla, Missouri 65401				<b>10. Project/Task/Work Unit No.</b>
				<b>11. Contract(C) or Grant(G) No.</b> (C) (G)
<b>12. Sponsoring Organization Name and Address</b> U.S. Geological Survey Water Resources Division 1400 Independence Road Mail Stop 200 Rolla, Missouri 65401				<b>13. Type of Report &amp; Period Covered</b>
				<b>14.</b>
<b>15. Supplementary Notes</b> Prepared in cooperation with the State of Missouri and other agencies.				
<b>16. Abstract (Limit: 200 words)</b> The U.S. Geological Survey, Water Resources Division, 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. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of Missouri.  Water-resources data for the 1990 water year for Missouri consist of records of stage, discharge, and water quality of lakes and reservoirs; contains records for water discharge at 107 gaging stations; stage and contents at 11 lakes and reservoirs; water-level records for 58 ground-water monitoring wells; water quality at 43 sampling stations (including 2 lakes); and data for 13 crest-stage stations.				
<b>17. Document Analysis. a. Descriptors</b> *Missouri, *Hydrologic data, *Surface water, *Quality water, Gaging stations, Streamflow, Flow rates, Lakes, Reservoirs, Chemical analysis, Sediment, Water temperature, Water analysis, Water levels, Data collection, Sites  <b>b. Identifiers/Open-Ended Terms</b>   <b>c. COSATI Field/Group</b>				
<b>18. Availability Statement</b> No restriction on distribution  This book may be purchased from: National Technical Information Service Springfield, VA 22161		<b>19. Security Class (This Report)</b> Unclassified		<b>21. No. of Pages</b> 304
		<b>20. Security Class (This Page)</b> Unclassified		<b>22. Price</b>



# CONTENTS

	Page
Preface .....	iii
Hydrologic-data stations, in downstream order, for which records are published.....	vii
Ground-water monitoring stations.....	xi
Introduction.....	1
Cooperation .....	2
Water use.....	3
Missouri water-use fact sheet.....	3
Physiography.....	4
Hydrologic conditions.....	4
Streamflow .....	6
Chemical quality of streamflow .....	8
Downstream order and station number.....	9
Numbering system for miscellaneous sites .....	9
Special networks and programs .....	10
Explanation of stage and water-discharge records .....	10
Collection and computation of data .....	10
Accuracy of field data and computed results.....	12
Other data available .....	13
Explanation of ground-water records.....	13
Collection and computation of data .....	13
Data presentation .....	13
Explanation of water-quality records.....	14
Collection and examination of data .....	14
Water analysis .....	14
Water temperature .....	15
Sediment.....	15
Discontinued streamflow stations.....	16
Discontinued surface-water-quality stations.....	18
Access to WATSTORE data.....	20
Definition of terms .....	21
Publications on Techniques of Water-Resources Investigations .....	25
Hydrologic-data station records .....	27
Ground-water monitoring wells .....	231
Discharge at partial-record stations .....	290
Crest-stage partial-record stations .....	290
Annual maximum discharge at crest-stage partial-record stations, water year 1990.....	290
Analyses of samples collected at water-quality partial-record stations.....	292
Index .....	295

## ILLUSTRATIONS

		Page
Figure	1. Pie chart showing major water-use categories and percentage of surface water used in Missouri during 1985.....	3
	2. Pie chart showing major water-use categories and percentage of ground water used in Missouri during 1985.....	3
	3. Map showing major drainage basins, physiographic areas, and areas of greater-than-average discharge during 1990.....	5
	4. Graph showing comparison of 1990 water-year streamflow to long-term means.....	7
	5. Diagram showing system for numbering miscellaneous sites (latitude and longitude).....	9
	6. Map showing location of ground-water monitoring wells.....	230
	7. Map showing location of hydrologic-data stations .....	300

## TABLES

		Page
Table	1. Precipitation and departures from normal, in inches.....	4
	2. Comparisons of peak discharge for the 1990 water year with those for period of record for selected stations .....	6
	3. Comparisons of 1990 7-day low flows to 7-day, 2-year low flows and minimum daily flows for the period of record at selected stations .....	8

## HYDROLOGIC-DATA STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

(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)

	Page
<b>UPPER MISSISSIPPI RIVER BASIN</b>	
<b>Mississippi River:</b>	
<b>DES MOINES RIVER BASIN</b>	
Des Moines River at St. Francisville (cms).....	27
<b>FOX RIVER BASIN</b>	
Fox River at Wayland (d).....	31
<b>WYACONDA RIVER BASIN</b>	
Wyaconda River above Canton (d).....	32
<b>FABIUS RIVER BASIN</b>	
North Fabius River at Monticello (d).....	33
Middle Fabius River near Monticello (d).....	34
South Fabius River near Taylor (d).....	35
<b>NORTH RIVER BASIN</b>	
North River at Palmyra (d).....	36
<b>BEAR CREEK BASIN</b>	
Bear Creek at Hannibal (d).....	37
<b>SALT RIVER BASIN</b>	
North Fork Salt River at Hagers Grove (d).....	38
North Fork Salt River near Shelbina (ds).....	39
Crooked Creek near Paris (d).....	43
South Fork Salt River above Santa Fe (d).....	44
Middle Fork Salt River at Paris (ds).....	45
Elk Fork Salt River near Madison (d).....	49
Lick Creek at Perry (d).....	50
Salt River near Center (d).....	51
Salt River near New London (dcs).....	52
Spencer Creek below Plum Creek near Frankford (d).....	55
<b>CUIVRE RIVER BASIN</b>	
Cuivre River near Troy (dcm).....	56
Mississippi River at Grafton, IL (d).....	59
Mississippi River below Grafton, IL (cms).....	60
<b>MISSOURI RIVER BASIN</b>	
<b>Missouri River:</b>	
<b>TARKIO RIVER BASIN</b>	
Tarkio River at Fairfax (d).....	63
Missouri River at Rulo, NB (d).....	64
<b>NODAWAY RIVER BASIN</b>	
Nodaway River near Graham (d).....	65
Missouri River at St. Joseph (dcms).....	66
<b>PLATTE-RIVER BASIN</b>	
One Hundred and Two River at Maryville (d).....	71
Platte River near Agency (d).....	72
Smithville Reservoir near Smithville (e).....	73
Little Platte River at Smithville (d).....	74



## HYDROLOGIC-DATA STATIONS, IN DOWNSTREAM ORDER

	Page
MISSOURI RIVER BASIN--Continued	
PLATTE-RIVER BASIN--Continued	
Platte River at Sharps Station (dcm).....	75
KANSAS RIVER BASIN	
Kansas River at DeSoto, KS (d) .....	78
Missouri River at Kansas City (ds) .....	79
BLUE RIVER BASIN	
Blue River near Kansas City (d) .....	82
LITTLE BLUE RIVER BASIN	
Longview Reservoir at Kansas City (e).....	83
Little Blue River below Longview Dam at Kansas City (d).....	84
Blue Springs Reservoir near Blue Springs (e) .....	85
East Fork Little Blue River near Blue Springs (d) .....	86
Little Blue River near Lake City (d).....	87
Missouri River at Waverly (d) .....	88
GRAND RIVER BASIN	
Grand River near Gallatin (d).....	89
Thompson River at Trenton (d).....	90
Medicine Creek near Galt (d).....	91
Grand River near Sumner (dcm).....	92
CHARITON RIVER BASIN	
Chariton River at Livonia (d) .....	95
Chariton River at Novinger (d) .....	96
Chariton River near Prairie Hill (d) .....	97
Mussel Fork near Musselfork (d).....	98
LITTLE CHARITON RIVER BASIN	
Long Branch Reservoir near Macon (e) .....	99
East Fork Little Chariton River near Macon (d).....	100
East Fork Little Chariton River near Huntsville (dcm) .....	101
LAMINE RIVER BASIN	
Lamine River near Otterville (d) .....	104
Blackwater River at Blue Lick (d) .....	105
Missouri River at Boonville (d).....	106
Hinkson Creek near Columbia (dt).....	107
Cedar Creek near Columbia (dc).....	110
OSAGE RIVER BASIN	
Osage River above Schell City (dcm) .....	115
Sac River near Dadeville (d).....	118
Turnback Creek above Greenfield (d).....	119
Little Sac River near Walnut Grove (cm).....	120
Little Sac River near Morrisville (d).....	122
Stockton Lake near Stockton (e) .....	123
Sac River at Highway J below Stockton (d) .....	124
Cedar Creek near Pleasant View (d).....	125
Sac River near Caplinger Mills (d) .....	126
Pomme de Terre River near Polk (d) .....	127
Lindley Creek near Polk (d).....	128

## HYDROLOGIC-DATA STATIONS, IN DOWNSTREAM ORDER

	Page
MISSOURI RIVER BASIN--Continued	
OSAGE RIVER BASIN--Continued	
Pomme de Terre Lake near Hermitage (e).....	129
Pomme de Terre River near Hermitage (d).....	130
South Grand River near Clinton (d).....	131
West Fork Tebo Creek near Lewis (cm).....	132
Tributary to Middle Fork Tebo Creek near Leeton (c).....	134
Harry S. Truman Reservoir at Warsaw (e).....	135
Niangua River:	
Spring Branch:	
Bennett Spring at Bennett Springs (d).....	136
Lake of the Ozarks near Bagnell (e).....	137
Osage River near Bagnell (d).....	138
Osage River near St. Thomas (d).....	139
Osage River below St. Thomas (cm).....	140
GASCONADE RIVER BASIN	
Big Piney River near Big Piney (d).....	142
Gasconade River above Jerome (cm).....	143
Little Piney Creek at Newburg (d).....	145
Gasconade River at Jerome (d).....	146
Gasconade River near Rich Fountain (d).....	147
Missouri River at Hermann (dcmts).....	148
LOWER MISSISSIPPI RIVER BASIN	
Mississippi River at St. Louis (dts).....	154
MERAMEC RIVER BASIN	
Meramec River near Steelville (d).....	158
Meramec River near Sullivan (dcm).....	159
Bourbeuse River near High Gate (d).....	162
Bourbeuse River at Union (d).....	163
Big River at Irondale (d).....	164
Big River near Richwoods (d).....	165
Big River at Byrnesville (d).....	166
Meramec River near Eureka (dcm).....	167
Meramec River at Paulina Hills (cm).....	170
Mississippi River at Chester, IL (ds).....	172
HEADWATER DIVERSION CHANNEL BASIN	
Castor River at Zalma (d).....	176
Mississippi River at Thebes, IL (dcms).....	177
ST. FRANCIS RIVER BASIN	
St. Francis River near Roselle (d).....	184
Little St. Francis River at Fredericktown (d).....	185
St. Francis River near Mill Creek (d).....	186
St. Francis River near Saco (ds).....	187
Big Creek at Chloride (c).....	191
Big Creek at Des Arc (d).....	192
St. Francis River near Patterson (d).....	193

## HYDROLOGIC-DATA STATIONS, IN DOWNSTREAM ORDER

	Page
LOWER MISSISSIPPI RIVER BASIN--Continued	
ST. FRANCIS RIVER BASIN--Continued	
Wappapello Lake at Wappapello (e) .....	194
St. Francis River at Wappapello (d).....	195
Right Chute of Little River:	
Little River Ditch 251 near Lilbourn (d) .....	196
Little River Ditch 1 near Morehouse (d) .....	197
WHITE RIVER BASIN	
White River:	
James River near Springfield (d) .....	198
James River at Galena (d).....	199
Table Rock Lake near Branson (e).....	200
White River below Table Rock Dam near Branson (ct) .....	201
White River near Branson (d) .....	205
Lake Taneycomo at the School of the Ozarks (ct) .....	206
Lake Taneycomo at Branson (cm).....	210
North Fork River near Tecumseh (d) .....	212
Black River:	
East Fork Black River at Lesterville (d) .....	213
Black River near Annapolis (d).....	214
Clearwater Lake near Piedmont (e) .....	215
Black River at Leeper (d) .....	216
Black River at Poplar Bluff (d).....	217
Current River:	
Jacks Fork at Eminence (d) .....	218
Current River at Van Buren (d).....	219
Big Spring near Van Buren (d).....	220
Current River at Doniphan (d) .....	221
Spring River:	
Eleven Point River:	
Greer Spring at Greer (d).....	222
Eleven Point River near Bardley (d).....	223
ARKANSAS RIVER BASIN	
Arkansas River:	
Neosho River:	
Spring River near Waco (d) .....	224
Center Creek near Cartersville (d).....	225
Shoal Creek above Joplin (d) .....	226
Elk River near Tiff City (dcm).....	227



## GROUND-WATER MONITORING STATIONS

	Page
St. Joseph .....	231
Spickard.....	232
Vandike .....	233
Wayland.....	234
Hannibal .....	235
Vandalia.....	236
Scotts Corner .....	237
Mexico South .....	238
New Florence.....	239
Troy .....	240
Wentzville.....	241
O'Fallon .....	242
Columbia Bottoms.....	243
Washington.....	244
St. Clair.....	245
Jefferson City .....	246
Arrow Rock .....	247
Sedalia .....	248
Wellington .....	249
Warsaw .....	250
Osceola .....	251
Nevada West .....	252
Nevada East .....	253
Lamar .....	254
Halfway.....	255
Atlas Powder .....	256
Noel .....	257
Longview .....	258
Aurora .....	259
Springfield:	
Belcrest Street.....	260
Bissett School.....	261
Cherokee School.....	262
Fulbright .....	263
Kansas Street.....	264
Main Street .....	265
Southwest Power Plant .....	266
York Street .....	267
Rolla .....	268
Conservation.....	269
Industrial Park.....	270
Fairview .....	271

## GROUND-WATER MONITORING STATIONS

	Page
Akers.....	272
Ozark Lead 1.....	273
Ozark Lead 2.....	274
West Plains 2.....	275
Lower Eleven Point.....	276
Big Spring.....	277
Naylor .....	278
Malden .....	279
Steele .....	280
East Prairie .....	281
Sikeston .....	282
Delta .....	283
Duck Creek .....	284
National Lead.....	285
Fredericktown .....	286
Potosi .....	287
DeSoto.....	288

THIS IS A BLANK PAGE



THIS IS A BLANK PAGE

# WATER RESOURCES DATA FOR MISSOURI, 1990

## 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 107 gaging stations; stage and contents at 11 lakes and reservoirs; water level records for 58 ground-water monitoring wells; water quality at 43 sampling stations (including 2 lakes); and data for 13 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." These Water-Supply Papers were in an annual series through September 30, 1960, 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-90-1." 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, 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.

## WATER RESOURCES DATA FOR MISSOURI, 1990

### 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 R. Bagby, Director.

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

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

Division of Environmental Quality,  
David A. Shorr, Director.

Land Reclamation Commission,  
Daniel R. Schuette, 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,  
J. 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.

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 RESOURCES DATA FOR MISSOURI, 1990

### 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**

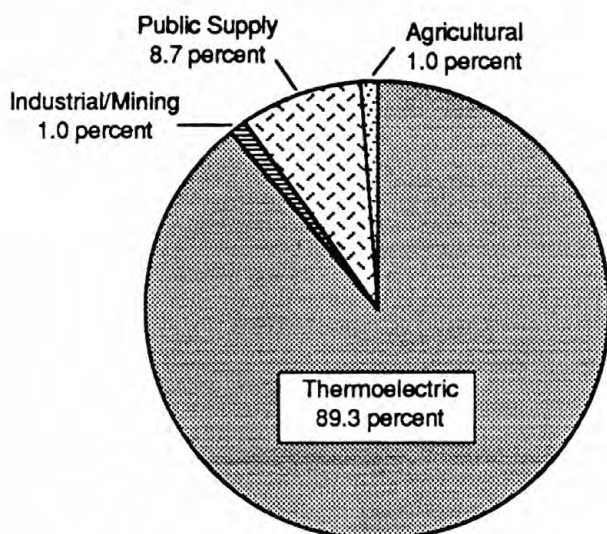


Figure 1.--Major water-use categories and percentage of surface water used in Missouri during 1985.

**GROUND WATER**

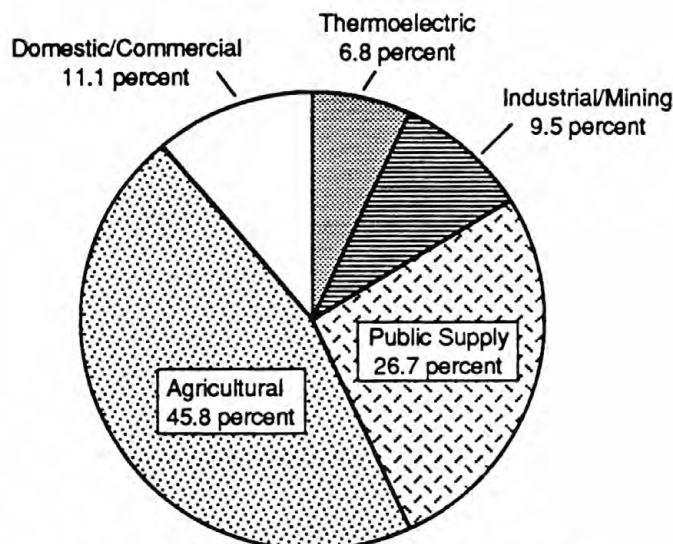


Figure 2.--Major water-use categories and percentage of ground water used in Missouri during 1985.

## WATER RESOURCES DATA FOR MISSOURI, 1990

### PHYSIOGRAPHY

Missouri has three distinct physiographic areas--the Central Lowland in the north and west, the Mississippi Alluvial Plain, and between them the Ozarks Plateaus (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 Ozarks Plateaus 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 (Bootheel) is a relatively flat area of about 3,000 square miles 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 Missouri except for the Mississippi Alluvial Plain (Bootheel) during the 1990 water year. The normal precipitation for the standard period 1951-80 ranges from about 36 inches annually in the northwest to about 47 inches annually 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)	<u>October-March</u>		<u>April-September</u>		<u>Water Year 1990</u>	
	Precipitation	Departure from normal (1951-80)	Precipitation	Departure from normal (1951-80)	Precipitation	Departure from normal (1951-80)
Northwest Prairie	11.97	+0.59	26.39	+1.69	38.36	+2.28
Northeast Prairie	12.75	-0.78	25.83	+3.24	38.58	+2.46
West Central Plains	14.26	+0.25	29.40	+4.93	43.66	+5.18
West Ozarks	19.76	+3.75	30.68	+6.49	50.44	+10.24
East Ozarks	17.77	-0.47	26.51	+3.28	44.28	+2.81
Bootheel	24.00	+1.28	21.86	-2.20	45.86	-0.92

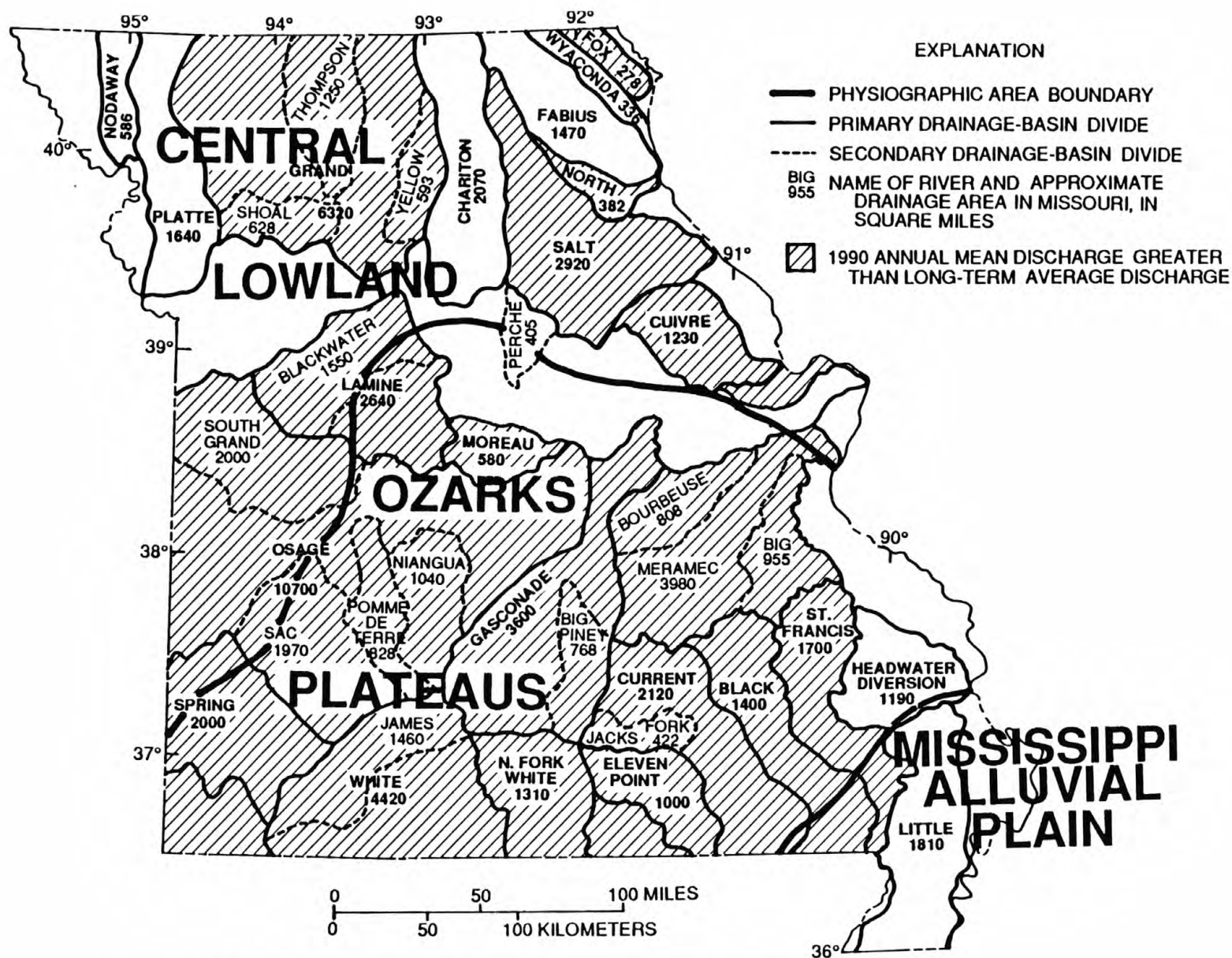


Figure 3.--Major drainage basins, physiographic areas, and areas of greater-than-average discharge during 1990.

## WATER RESOURCES DATA FOR MISSOURI, 1990

### Streamflow

Streamflow varies seasonally in Missouri and generally reflects precipitation patterns unless a stream is regulated. Monthly mean discharges during water year 1990 and long-term mean monthly discharges at representative stations are shown in figure 4. In general, streamflow was less than long-term mean flows for the first 4 to 5 months of the water year, then greater than average through mid-summer, and below average thereafter.

Peak discharges for water year 1990 are compared to the peak discharges for the period of record at 17 selected gaging stations in table 2. The 7-day average low flow for water year 1990 is compared to the 7-day, 2-year low flow and minimum 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.

Table 2.--*Comparisons of peak discharge for the 1990 water year with those for period of record for selected stations*

Station identification	Peak discharge during 1990 water year		Peak discharge for period of record	
	Cubic feet per second	Date	Cubic feet per second	Date
05508000 Salt River near New London	13,400	Mar. 15	107,000	Apr. 22, 1973
05587450 Mississippi River at Grafton, Il.	340,000	June 26	535,000	Apr. 29, 1973
06818000 Missouri River at St. Joseph	140,000	June 20	397,000	Apr. 22-23, 1952
06893000 Missouri River at Kansas City	133,000	June 21	573,000	July 14, 1951
06893890 East Fork Little Blue River near Blue Springs	755	May 15	11,000	Aug. 13, 1982
06894000 Little Blue River near Lake City	13,100	May 15	42,300	Aug. 13, 1982
06895500 Missouri River at Waverly	202,000	May 16	549,000	July 16, 1951
06897500 Grand River near Gallatin	22,400	Mar. 15	69,100	June 24, 1947
06905500 Chariton River near Prairie Hill	18,700	June 8	31,900	Apr. 23, 1973
06909000 Missouri River at Boonville	294,000	May 17	550,000	July 17, 1951
06934500 Missouri River at Hermann	381,000	May 17	676,000	June 6-7, 1903
07010000 Mississippi River at St. Louis	605,000	May 18	1,019,000	June 10-11, 1903
07016500 Bourbeuse River at Union	16,200	May 19	73,300	Dec. 5, 1982
07018500 Big River at Byrnesville	32,600	May 27	43,000	Nov. 21, 1985
07019000 Meramec River near Eureka	48,000	May 28	145,000	Dec. 6, 1982
07020500 Mississippi River at Chester, Il.	661,000	May 20	886,000	July 3, 1947
				Apr. 30, 1973
07022000 Mississippi River at Thebes, Il.	669,000	May 21	893,000	May 27, 1943

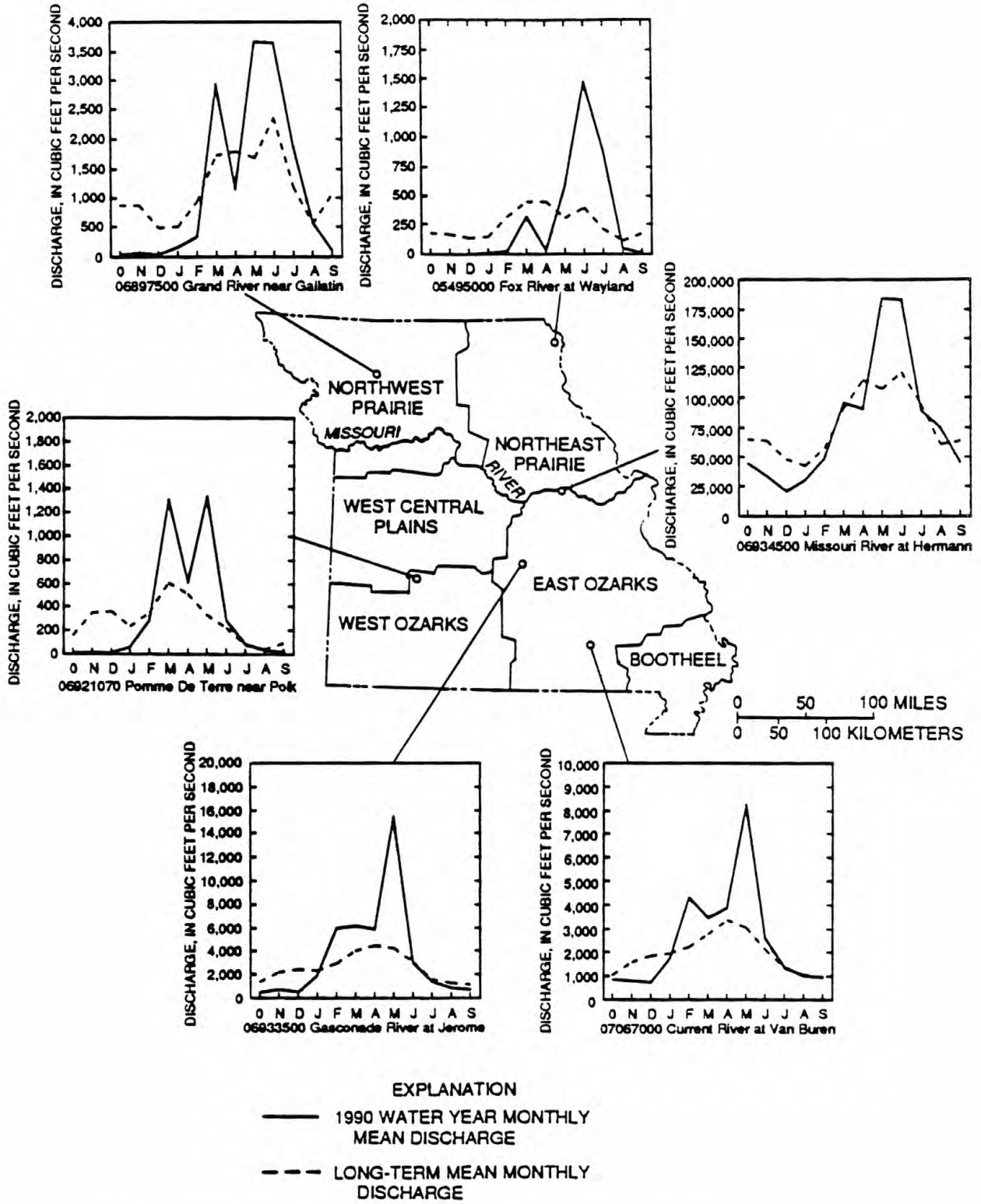


Figure 4.--Comparison of 1990 water-year streamflow to long-term means.



## WATER RESOURCES DATA FOR MISSOURI, 1990

Table 3.--*Comparisons of 1990 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 <u>low flows</u>		Minimum flows for <u>period of record used</u>	
	1990	2-year <sup>1</sup>	Discharge	Years of occurrence
05495000 Fox River at Wayland (1922-90)	0.5	1.3	0	Several years
06813000 Tarkio River at Fairfax (1922-90)	31	9.0	0	Several years
06921070 Pomme de Terre River near Polk (1969-90)	7.6	3.0	0.3	1980
07016500 Bourbeuse River at Union (1921-90)	30	32	11	1956
07067000 Current River at Van Buren (1912-90)	742	700	473	1956
07187000 Shoal Creek above Joplin (1942-90)	55	92	12	1954

<sup>1</sup> Skelton, John, 1976, Missouri stream and springflow characteristics--Low-flow frequency and flow duration: Rolla, Missouri Division of Geology and Land Survey Water Resources Report 32, 76 p.

### Chemical Quality of Streamflow

Samples for determining the chemical quality of streamflow were collected at 25 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.

Missouri streams generally are not contaminated by industrial wastes. Localized contamination may occur near urban areas, industrialized centers, agricultural-chemical-use areas, and waste-dump sites. The range of dissolved-solids concentrations in selected streams during water year 1990 is given in the following table:

Station identification	Dissolved-solids concentration ( <u>milligrams per liter</u> )	
	Minimum	Maximum
Des Moines River at St. Francisville	267	411
Cuivre River near Troy	221	262
Mississippi River below Grafton, IL	246	339
Missouri River at St. Joseph	434	516
Platte River at Sharps Station	216	281
Grand River near Sumner	171	303
Osage River below St. Thomas	149	194
Gasconade River above Jerome	131	198
Missouri River at Hermann	223	500
Meramec River near Eureka	127	242
Mississippi River at Thebes, IL	161	343

## WATER RESOURCES DATA FOR MISSOURI, 1990

Daily suspended-sediment samples and data on the particle-size of suspended sediment were collected at 8 stations in Missouri. At three Missouri River stations, point suspended-sediment samples and particle-size data were collected periodically. The following table lists two selected stations in the Central Lowland and Mississippi River at Thebes and their minimum and maximum daily mean suspended-sediment concentrations during water year 1990:

Station identification	Daily mean suspended-sediment concentration (milligrams per liter)	
	Minimum	Maximum
Middle Fork Salt River at Paris	3	1,480
Salt River near Shelbina	2	1,650
Mississippi River at Thebes	45	2,770

### 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 indention in a list of stations in the front of the report. Each indention represents one rank. The downstream order and system of indention 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.

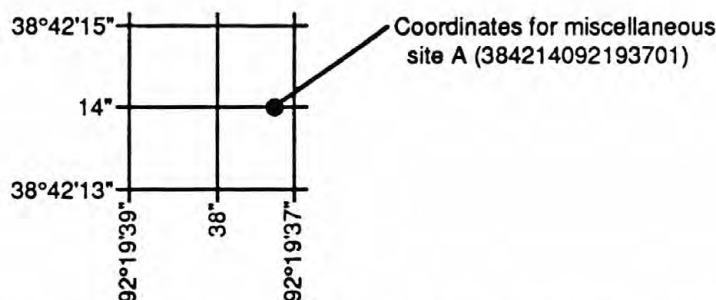


Figure 5.--System for numbering miscellaneous sites (latitude and longitude).

## WATER RESOURCES DATA FOR MISSOURI, 1990

### 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.

## WATER RESOURCES DATA FOR MISSOURI, 1990

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 at the top of each page gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, 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."

At the bottom of each page are shown selected summary statistics for the current water year and for the period of record. Included are average flow, highest and lowest annual means, highest and lowest daily means, instantaneous peak flow and peak stage, instantaneous low flow, annual runoff in inches, and the 10, 50, and 95 percentile flows.

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. 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" section.



## WATER RESOURCES DATA FOR MISSOURI, 1990

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 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 "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 and the line headed "IN." expresses the average discharge in inches.

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 an unusual source, of indefinite stage-relation, 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 stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, if measurements are made at these stations during the year, 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 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 ft<sup>3</sup>/s; to tenths between 1.0 and 10 ft<sup>3</sup>/s; to whole numbers between 10 and 1,000 ft<sup>3</sup>/s; and to 3 significant figures above 1,000 ft<sup>3</sup>/s. 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 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.



## WATER RESOURCES DATA FOR MISSOURI, 1990

### Other Data Available

Information of a more detailed nature than that published for most 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-usable 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 GROUND-WATER RECORDS

### Collection and Computation of Data

Measurements of water levels are made under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability.

Tables of water-level data are presented by counties arranged in alphabetical order. The prime identification number for a given well is the 15-digit number that appears in the upper left corner of the table. The secondary identification is the well map number and name shown at the beginning of each record.

Water-level records are obtained from direct measurements with a steel tape or M-scope, or from the graph or punched tape of a water-stage recorder. The water-level measurements in this report are given in feet with reference to land-surface datum (lsd). Land-surface datum is a datum plane that is approximately at land surface at each well. If known, the elevation of the land-surface datum is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. The method and frequency of measurement is given in the station description.

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given to a tenth of a foot or a larger unit.

### Data Presentation

Each well record consists of two parts, the station description and the data table of water levels during the water year. The description of the well is presented first through use of descriptive headings preceding the tabular data. The comments to follow clarify information presented under the various headings.

**LOCATION.**--This paragraph follows the well-identification number and reports the latitude and longitude (given in degrees, minutes, and seconds); the landline location; and a geographic point of reference.

**FORMATIONS OPEN TO THE WELL.**--This entry designates by name (if a name exists) and geologic age the formation(s) to which the well is open.

**WELL CHARACTERISTICS.**--This entry describes the well in terms of depth, diameter, casing depth and/or screened interval, method of construction, use, and additional information such as casing breaks, collapsed screen, and other changes since construction.

## WATER RESOURCES DATA FOR MISSOURI, 1990

**INSTRUMENTATION.**--This paragraph provides information on both the frequency of measurement and the collection method used, allowing the user to better evaluate the reported water-level extremes by knowing whether they are based on weekly, monthly, or some other frequency of measurement.

**DATUM.**--This entry describes both the measuring point and the land-surface elevation at the well. The measuring point is described physically (such as top of collar, notch in top of casing, plug in pump base, and so on), and in relation to land surface (such as 1.3 ft above land-surface datum). The elevation of the land-surface datum is described in feet above National Geodetic Vertical Datum of 1929 (NGVD of 1929); it is reported with a precision depending on the method of determination.

**REMARKS.**--This entry describes factors that may influence the water level in a well or the measurement of the water level. It identifies wells that also are water-quality observation wells, and may be used to acknowledge the assistance of local (non-Survey) observers.

**PERIOD OF PROCESSED RECORD.**--This entry indicates the period for which there are published records for the well. It reports the month and year of the start of publication of water-level records by the U.S. Geological Survey and the words "to current year" if the records are to be continued into the following year. Periods for which water-level records are available, but are not published by the Geological Survey, may be noted.

A table of water levels follows the station description for each well. Water levels are reported in feet below land-surface datum and all taped measurements of water level are listed. Daily maximum water levels are reported for wells equipped with a recording device. Missing records are indicated by dashes in place of the water level.

### 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, and so on); 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 publications listed in the section "Publications on Techniques of Water-Resources Investigations".

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 bi-hourly readings 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 RESOURCES DATA FOR MISSOURI, 1990

### Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures 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 measured 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.

## WATER RESOURCES DATA FOR MISSOURI, 1990

## 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
05497500	Middle Fabius River near Baring	185	1930-61
05500500	North River at Bethel	58.0	1930-73
05503000	Oak Dale Branch near Emden	2.64	1955-75
05503500	North Fork Salt River near Hunnewell	626	1931-40, 1979-88
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	2,230	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	1,240	1922-83
06818900	Platte River at Ravenwood	486	1921-23, 1924-25, 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
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
06898500	Weldon River near Mercer	246	1939-59
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, 1963-65, 1965-67, 1968
06918700	Oak Grove Branch near Brighton	1.30	1956-75
06918800	Little Sac River at Aldrich	304	1967-68
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 Ulrich	670	1960-69
06921720	Big Creek at Blainstown	414	1960-74
06921740	Brushy Creek near Blainstown	1.15	1960-75
06922000	South Grand River near Brownington	1,660	1921-71
06922800	Big Buffalo Creek near Stover	24.2	1965-77
06926200	Van Cleve Branch near Meta	0.75	1956-72
06925200	Starks Creek at Preston	4.18	1956-76

## WATER RESOURCES DATA FOR MISSOURI, 1990

17

## DISCONTINUED STREAMFLOW STATIONS--Continued

Station number	Station name	Drainage area (mi <sup>2</sup> )	Period of record
06924000	Niangua River near Decaturville	627	1929-69
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	1,250	1928-71
06928200	Laquey Branch near Hazlegreen	1.58	1958-72
06928500	Gasconade River near Waynesville	1,680	1914-71
06928700	Beeler Branch near Cabool	7.78	1967-76
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	1966-68, 1969-72
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	1,272	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
05500000	South Fabius River near Taylor	620	1972-73, 1979-88	C,M
05501000	North River at Palmyra	373	1972-75	C
05501600	Mississippi River at Hannibal	--	1982-89	C,M
05503500	North Fork Salt River near Hunnewell	626	1980-88	S
05587500	Mississippi River at Alton, IL	171,500	1980-85, 1986-89	S
05587550	Mississippi River below Alton, IL	171,500	1975-89	C,M
06817800	Nodaway River near Oregon	--	1968-75, 1977-89	C,M
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	1,870	1962-63, 1967-75, 1978-86	B,C,M,T
06906200	East Fork Little 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	2,610	1979-86	B,C,M,T
06909000	Missouri River at Boonville	505,700	1953-59, 1960-64	T
06910414	Cedar Creek near Ashland	--	1983-89	C,M
06916650	Marais Des Cygnes River near Worland	3,230	1962-63, 1972-75, 1977-81	C,M
06918440	Sac River near Dadeville	257	1974-78, 1980-82, 1983-87	C,M,T
06918990	Stockton Lake near Stockton	1,160	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 Ulrich	670	1983-87	C,M
06922200	Tebo Creek at Leesville	--	1978-83	B,C,M,T
06922500	Osage River at Warsaw	11,500	1969-78	T
06922800	Big Buffalo Creek near Stover	24.2	1965-77	T
06923700	Niangua River at Bennett Springs	--	1982-88	C,M
06928600	Gasconade River near Hooker	--	1977-86	C,M
06930450	Big Piney River at Devil's Elbow	--	1977-89	C,M
06935840	Missouri River near St. Louis	--	1969-74	C,T
07001000	Mississippi River at East St. Louis, IL	--	1969-73	C
07013050	Crooked Creek near Dillard	--	1982-88	C
07016400	Bourbeuse River above Union	808	1963-74, 1983-87	C,M
07018100	Big River near Richwoods (DeSoto)	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
07036100	St. Francis River near Saco	664	1983-87, 1988-89	C,M
07040100	St. Francis River at St. Francis, AR	--	1969-75	C
07046001	Little River Ditches near Kennett	--	1969-70, 1972-73, 1977-89	C,M
07050750	James River near Nixa	273	1966-75, 1977-80	T

## WATER RESOURCES DATA FOR MISSOURI, 1990

19

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

Station number	Station name	Drainage area (mi <sup>2</sup> )	Period of record	Type of record
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	1,245	1983-87	C,M
07063050	Black River below Poplar Bluff	--	1969-75	C
07063300	Main Ditch near Neelyville	--	1969-75	C
07068000	Current River at Doniphan	2,038	1979-80, 1981-82, 1984-89	C,M
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	1,164	1965-75, 1977-78, 1980-81	C
07186400	Center Creek near Carterville	232	1962-75, 1980-89	C,M
07186480	Center Creek near Smithville	--	1969-75, 1977-89	C,M
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

## WATER RESOURCES DATA FOR MISSOURI, 1990

## ACCESS TO WATSTORE DATA

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 Files - Contains over 220 million daily values of streamflow, 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-chemicals 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 provide 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 offices. (See address on the back of the title page.)

## WATER RESOURCES DATA FOR MISSOURI, 1990

### 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  $44.5^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$  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  $35^{\circ}\text{C} \pm 1.0^{\circ}\text{C}$  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 ( $\text{FT}^3/\text{s}$ ,  $\text{ft}^3/\text{s}$ ) 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.



## WATER RESOURCES DATA FOR MISSOURI, 1990

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 ( $\text{CaCO}_3$ ).

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 ( $\mu\text{g/g}$ ) 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 ( $\mu\text{G/L}$ ,  $\mu\text{g/L}$ ) 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 ( $\text{MG/L}$ ,  $\text{mg/L}$ ) 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  $\text{mg/L}$ , 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	0.004	-	.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.



## WATER RESOURCES DATA FOR MISSOURI, 1990

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.

## WATER RESOURCES DATA FOR MISSOURI, 1990

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.

## PUBLICATION ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

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-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F. P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 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.
- 2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and Warren E. Teasdale: USGS--TWRI Book 2, Chapter F1. 1989. 97 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. F. 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 in streams by dye tracing*, by F. A. Kilpatrick and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1989. 27 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-A18. *Determination of stream reaeration coefficients by use of tracers*, by F. A. Kilpatrick, R. E. Rathbun, N. Yotsukura, G. W. Parker, and L. L. DeLong: USGS--TWRI Book 3, Chapter A18. 1989. 52 pages.
- 3-A19. *Levels of streamflow gaging stations*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A19. 1990. 27 pages.

## PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS—Continued

- 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 programmed text 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-B4. *Regression modeling of ground-water flow*, by Richard L. Cooley and Richard L. Naff: USGS--TWRI Book 3, Chapter B4. 1990. 232 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. J. Fishman and L. C. Friedman: USGS--TWRI Book 5, Chapter A1. 1989. 545 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 the determination of organic substances in water and fluvial sediments*, edited by R. L. Wershaw, M. J. Fishman, R. R. Grabbe, and L. E. Lowe: USGS--TWRI Book 5, Chapter A3. 1987. 80 pages.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, by L. J. Britton and P. E. Greeson, editors: USGS--TWRI Book 5, Chapter A4. 1989. 363 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.
- 5-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments*, by L. C. Friedman and D. E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 pages.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
- 6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M. G. McDonald and A. W. Harbaugh: USGS--TWRI Book 6, Chapter A1. 1988. 586 pages.
- 7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
- 7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
- 7-C3. *A model for simulation of flow in singular and interconnected channels*, by R. W. Schaffranek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 pages.
- 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.
- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.



## DES MOINES RIVER BASIN

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, 2 mg/L, Feb. 13, 1990.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 765,000 tons, Mar. 20, 1982; minimum daily, 9.1 tons, Feb. 13, 1990.

## EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,490 mg/L, June 17; minimum daily mean, 2 mg/L, Feb. 13.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 412,000 tons, June 17; minimum daily, 9.1 tons, Feb. 13.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT 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 FLD. AS CACO3 (MG/L) (00904)
NOV 15...	1100	1470	477	8.7	8.5	1.5	11.6	101	K15	52	190	60
JAN 09...	0900	1980	615	8.5	0.0	0.50	15.1	107	K8	110	240	76
MAR 07...	0915	1540	640	9.0	1.0	4.0	14.3	101	K6	50	260	100
MAY 02...	0915	9650	580	8.3	13.0	35	9.4	90	4200	290	260	140
JUL 09...	1345	26400	394	8.0	26.0	44	7.2	90	200	K140	190	52
SEP 05...	0920	11300	580	8.3	25.0	19	7.9	96	96	K76	290	70

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 DIS TOT IT 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 SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)
NOV 15...	43	19	23	5.4	126	67	27	0.3	0.14	274	0.37
JAN 09...	59	23	39	5.7	166	85	43	0.4	0.43	368	0.50
MAR 07...	66	24	34	6.0	162	110	43	0.2	0.04	411	0.56
MAY 02...	66	23	19	3.6	122	65	29	0.5	2.9	355	0.48
JUL 09...	53	14	5.8	3.8	138	21	12	0.4	15	267	0.36
SEP 05...	74	25	11	3.3	218	49	26	0.4	16	369	0.50

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 1989 TO SEPTEMBER 1990

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- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 15...	1090	<0.01	0.10	0.02	<0.01	1.3	0.07	0.01	<0.01	16	48
JAN 09...	1970	0.02	1.0	0.60	0.64	1.4	0.22	0.15	0.16	12	68
MAR 07...	1710	0.02	0.50	0.01	<0.01	1.4	0.14	0.03	0.03	8	55
MAY 02...	9250	0.05	5.8	0.06	0.05	1.0	0.16	0.05	0.06	214	84
JUL 09...	19000	0.01	6.5	0.05	0.02	0.90	0.32	0.14	0.15	--	--
SEP 05...	11300	0.03	8.8	0.05	<0.01	1.0	0.14	0.08	0.10	52	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 15...	<10	<1	67	<0.5	<1	<1	<3	2	7	<1
JAN 09...	<10	1	74	<0.5	<1	<1	<3	<10	3	<10
MAY 02...	<10	<1	97	<0.5	<1	<1	<3	5	7	1
JUL 09...	<10	2	110	<0.5	<1	<1	<3	6	6	<1

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 15...	11	15	0.2	<10	2	<1	<1	240	<6	<3
JAN 09...	14	24	<0.1	<10	<10	<1	<1	280	<6	6
MAY 02...	13	7	<0.1	10	3	2	<1	220	<6	15
JUL 09...	9	9	<0.1	<10	2	1	<1	150	<6	18

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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)
MAR 16...	1020	31500	38	46	54	71	94	96	98	100	100
MAY 15...	1430	11000	49	59	69	82	94	94	96	99	100

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL

DATE	TIME	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
MAR 16...	1130	1	2	7	41	77	88	94	97	100

## DES MOINES RIVER BASIN

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

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	996	9	25	1220	---	24	1110	3	10
2	983	8	22	1370	---	27	1150	---	12
3	999	6	17	2080	---	27	1110	---	16
4	947	8	21	1820	---	25	1230	---	25
5	1050	6	16	1770	---	25	1360	8	29
6	1070	5	14	1810	---	26	1200	5	15
7	1150	8	23	1850	---	27	1430	17	65
8	1150	10	32	1720	---	26	1050	8	22
9	1040	9	27	1800	---	26	1150	---	25
10	1050	8	22	1780	---	26	1400	---	30
11	1000	7	18	1800	---	26	1580	---	35
12	1020	---	18	1770	---	26	1310	---	30
13	1100	---	19	1800	---	25	1220	---	28
14	1290	---	20	1640	---	19	1500	---	33
15	1260	---	20	1440	4	17	1220	---	30
16	1240	---	20	2530	5	37	1370	---	33
17	1360	---	21	1460	6	25	1490	---	35
18	1500	---	23	1200	32	105	1450	---	35
19	1440	---	23	1520	27	111	1450	---	36
20	1450	---	23	1550	7	27	1540	---	38
21	1430	---	22	1320	3	12	1630	---	39
22	1260	---	22	1290	3	11	1600	---	38
23	1190	---	21	1150	3	10	1630	---	37
24	1170	---	20	1160	4	14	1580	---	36
25	1120	---	19	1170	4	14	1440	---	36
26	1110	---	20	1180	4	14	1700	---	39
27	1060	---	21	1150	6	17	1780	---	41
28	1200	---	21	1150	4	14	1820	---	43
29	1100	---	20	1070	4	13	1910	---	45
30	1270	---	21	1030	3	9.3	1930	---	45
31	1310	---	23	---	---	---	1870	---	46
TOTAL	36315	---	654	45600	---	805.3	45210	---	1027
JANUARY			FEBRUARY			MARCH			
1	2060	---	50	1240	---	21	1980	34	184
2	2030	---	50	1220	---	22	1670	25	114
3	2000	---	50	1300	---	22	3770	11	113
4	2050	---	51	1220	5	17	1580	12	52
5	2070	---	52	1190	4	13	1720	14	65
6	2120	---	54	1220	4	14	1980	7	38
7	2180	---	55	1460	5	21	1950	17	90
8	2090	---	54	1630	10	46	2030	156	856
9	1970	---	50	1690	9	43	2250	107	650
10	1900	---	48	1700	5	24	2700	498	3630
11	1700	---	46	1720	6	29	13100	947	33500
12	1700	---	45	1570	4	18	29000	1520	119000
13	1700	---	46	1630	2	9.1	21300	1410	81200
14	1870	---	49	1700	---	11	21400	559	32300
15	1810	---	50	1570	---	12	23100	637	39800
16	1640	---	49	1460	---	30	31500	1410	120000
17	1640	---	48	2530	---	140	30000	1120	90600
18	1600	---	46	2380	---	130	30000	375	30400
19	1480	---	45	2320	19	122	30000	426	34500
20	1490	---	48	2310	13	83	30000	290	23500
21	1640	9	38	2320	10	64	30000	161	13000
22	1500	6	26	2290	12	76	29700	167	13400
23	1420	5	20	2340	30	187	17700	278	13300
24	1490	6	26	2110	33	186	9060	222	5430
25	1370	6	24	2600	32	221	9060	127	3110
26	1160	---	20	2320	34	210	8060	102	2210
27	1200	---	22	1990	27	147	6190	98	1630
28	1490	---	25	2250	44	264	5820	67	1050
29	1340	---	24	---	---	---	5810	55	865
30	1280	---	22	---	---	---	5310	43	621
31	1350	---	23	---	---	---	4610	33	417
TOTAL	52340	---	1256	51280	---	2182.1	412350	---	665625

## DES MOINES RIVER BASIN

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

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	4640	32	407	13400	285	10300	23400	277	17500
2	5010	44	599	9450	177	4510	23100	204	12800
3	5250	62	878	6260	227	3840	23000	305	19000
4	5180	63	880	7400	505	10100	22700	235	14400
5	5160	56	780	13800	510	19000	22300	262	15800
6	5080	56	768	16700	1370	61700	21800	233	13700
7	4920	47	626	12700	518	17800	20900	676	39000
8	4450	41	495	10500	382	10800	24100	1700	110000
9	4260	42	485	7780	154	3240	20600	606	33700
10	4080	40	443	5530	111	1660	20000	268	14500
11	4010	26	286	5110	97	1340	20000	132	7130
12	3920	28	301	4660	97	1220	20100	67	3630
13	3950	15	157	5970	121	1950	20100	127	6900
14	4000	17	180	11900	259	8330	20500	129	7140
15	3850	54	559	11400	459	14100	16900	246	11200
16	3760	69	705	10200	290	7990	16000	1600	61000
17	4110	74	825	11500	336	10400	43700	3490	412000
18	4170	67	759	12400	413	13800	46300	2140	267000
19	4040	63	693	11800	333	10600	27200	1070	78400
20	3920	62	661	9280	203	5080	29700	2040	168000
21	3480	59	550	8550	140	3230	26900	1930	140000
22	3350	60	538	9550	167	4300	23300	1870	117000
23	3450	83	772	16000	253	11000	27000	879	64100
24	3730	84	844	20300	304	16700	24400	445	29300
25	3910	96	1010	33400	1030	106000	22800	399	24600
26	3700	94	934	48200	2380	309000	28400	309	23700
27	3550	77	737	32200	753	65500	27500	489	36300
28	3270	128	1130	18000	311	15100	27400	546	40400
29	4760	252	3240	12600	311	10600	27500	1390	103000
30	14100	262	9960	20300	356	19500	35500	2570	247000
31	---	---	---	23400	291	18400	---	---	---
TOTAL	135060	---	31202	440240	---	797090	753100	---	2138200
JULY			AUGUST			SEPTEMBER			
1	36100	1150	112000	21300	352	20300	16400	149	6600
2	29600	626	50000	22200	3290	197000	14800	108	4310
3	27800	398	29900	22200	87	5190	14400	145	5620
4	27500	284	21100	22200	88	5260	14000	81	3050
5	27200	218	16000	23700	332	21200	11500	100	3110
6	28200	311	23600	23300	618	38900	9540	88	2250
7	27900	298	22500	16900	510	23300	7940	60	1280
8	28000	187	14200	19500	298	15700	5910	71	1130
9	28000	135	10200	21200	176	10100	4550	110	1330
10	28700	372	28800	21200	95	5460	4450	---	1440
11	28300	350	26700	21100	196	11100	4520	---	1420
12	28900	179	14000	21100	126	7180	4140	---	1260
13	28700	227	17600	21500	70	4080	3580	---	1170
14	28800	283	22000	21100	111	6310	3390	---	1100
15	28100	226	17200	20800	167	9360	3280	---	1020
16	27500	90	6650	21000	131	7410	3040	---	980
17	26900	55	3970	21100	111	6310	2690	---	920
18	26400	160	11400	21900	103	6090	2570	---	880
19	27100	146	10700	21900	136	8050	2540	---	830
20	32300	361	31400	21800	99	5800	2150	---	800
21	41400	828	92600	21600	127	7390	1950	---	790
22	45000	734	89200	21400	108	6270	1870	---	830
23	33200	715	64100	21300	135	7750	1940	---	950
24	22400	539	32600	21000	160	9070	2650	---	1100
25	21400	213	12300	21100	213	12100	2220	---	1060
26	21800	164	9640	20400	132	7260	2020	---	1020
27	22300	165	9950	18300	106	5230	2000	---	1010
28	24900	309	21300	16900	105	4800	2020	---	1000
29	28500	728	56100	16800	107	4830	1980	---	1000
30	25700	585	40600	16800	109	4940	1980	---	1000
31	21900	189	11200	16700	161	7280	---	---	---
TOTAL	880500	---	929510	639300	---	491020	156020	---	50260

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, 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: Dec. 19 to Jan. 11. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.3	1.1	1.4	7.5	39	26	116	96	6510	301	20
2	.89	1.2	2.1	1.5	10	31	27	66	80	3850	170	24
3	.78	1.1	1.6	1.6	11	25	25	48	66	715	108	20
4	.65	1.0	1.9	2.0	11	21	23	1790	66	276	91	16
5	.65	3.5	1.9	2.3	9.1	20	21	1340	65	147	91	13
6	.76	4.3	1.5	2.0	8.2	20	20	960	51	100	58	10
7	.70	3.4	1.3	1.8	8.0	20	26	401	291	83	43	8.6
8	.62	2.8	1.2	1.8	9.8	89	19	205	1070	89	35	7.4
9	.58	2.2	1.2	1.8	18	98	18	127	426	75	29	7.3
10	.58	1.5	1.2	1.9	28	151	22	99	244	127	25	6.8
11	.52	1.4	1.1	2.2	27	468	22	85	122	210	23	6.2
12	.44	1.2	1.0	18	22	1030	23	146	75	161	22	5.6
13	.40	1.4	1.0	27	18	568	23	186	61	149	21	5.2
14	.40	2.0	1.3	10	14	585	38	313	6120	158	23	4.8
15	.39	2.7	1.7	13	17	3670	52	530	4100	121	26	4.5
16	.58	2.4	2.3	10	15	1640	62	326	1460	147	23	3.9
17	.85	2.3	2.0	12	15	595	54	180	1510	81	21	3.3
18	.70	1.8	2.4	14	13	263	45	109	1880	55	19	4.6
19	.53	1.6	2.1	12	9.2	147	37	90	748	37	18	5.6
20	.47	1.3	1.8	11	11	99	33	73	5220	216	18	5.2
21	.40	.99	1.6	13	9.5	77	30	59	8440	2550	17	5.3
22	.58	.91	1.4	11	19	66	28	48	5690	3740	17	4.6
23	.71	1.0	1.3	11	61	55	26	41	2050	2180	17	4.5
24	.73	1.1	1.2	10	81	45	28	39	822	657	18	3.4
25	2.8	1.1	1.1	11	196	37	25	3350	429	328	18	3.8
26	7.2	1.5	1.1	12	109	31	23	3510	273	189	120	4.4
27	4.7	1.7	1.1	12	78	28	22	2150	191	123	135	5.5
28	2.3	1.2	1.2	15	52	25	28	644	154	176	64	6.1
29	1.9	.78	1.3	12	---	25	28	323	134	1740	37	5.0
30	2.0	.99	1.4	6.8	---	25	153	182	2080	1580	28	4.4
31	1.7	---	1.4	10	---	25	---	124	---	643	22	---
MEAN	1.21	1.72	1.48	8.75	31.7	323	33.6	570	1467	878	53.5	7.63
MAX	7.2	4.3	2.4	27	196	3670	153	3510	8440	6510	301	24
MIN	.39	.78	1.0	1.4	7.5	20	18	39	51	37	17	3.3
IN.	.00	.00	.00	.03	.08	.93	.09	1.64	4.09	2.53	.15	.02

## 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	1999
MEAN	178	172	140	153	318	445	450	306	395	213	114	181	
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	.00	.01	.02	.19	.42	8.56	2.35	1.39	.06	.21	.02	.17	
(WY)	1957	1957	1957	1957	1957	1956	1956	1956	1956	1936	1936	1937	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

	1990	Period
AVERAGE FLOW	282	255
HIGHEST ANNUAL MEAN		677
LOWEST ANNUAL MEAN		17.6
HIGHEST DAILY MEAN	8440	19900
LOWEST DAILY MEAN	.39	.00
INSTANTANEOUS PEAK FLOW	9040	26400
INSTANTANEOUS PEAK STAGE	16.61	21.71
INSTANTANEOUS LOW FLOW	0.35	0
ANNUAL RUNOFF (INCHES)	9.59	8.66
10 PERCENTILE	506	526
50 PERCENTILE	21	37
95 PERCENTILE	.70	.51

## 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 good. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	.73	.77	2.2	3.4	22	24	71	88	54	113	13
2	.83	1.0	.92	2.2	5.2	18	24	50	70	73	63	15
3	.54	1.4	.98	2.4	4.4	15	22	38	58	58	48	12
4	.43	1.3	1.0	3.5	4.0	13	22	1860	52	40	40	10
5	.34	1.7	1.1	3.2	3.6	11	20	2500	54	32	56	9.2
6	.28	1.7	1.2	3.4	3.3	12	17	882	49	27	33	8.3
7	.23	2.0	1.2	2.7	2.8	11	15	356	166	25	24	7.5
8	.30	2.0	1.3	2.7	2.8	133	14	215	2450	22	21	7.7
9	.24	1.8	1.4	2.7	3.0	148	13	362	1440	20	19	6.9
10	.23	1.8	1.4	2.9	3.5	126	16	347	390	19	17	6.8
11	.25	1.6	1.4	3.4	3.2	144	20	133	190	24	16	6.5
12	.23	1.5	1.7	4.2	3.6	915	22	981	118	78	16	6.4
13	.23	1.3	1.9	2.1	4.1	382	25	875	90	46	21	6.0
14	.23	1.4	1.9	2.1	5.4	578	70	468	4220	33	15	5.3
15	.21	2.4	1.9	2.0	5.1	4190	101	1130	5760	30	21	4.9
16	.43	2.0	1.5	2.7	5.1	2690	83	1390	5400	29	27	4.8
17	.82	2.2	1.3	4.4	3.7	638	72	484	1640	29	28	4.6
18	.74	2.4	1.0	5.2	4.7	222	58	222	1430	21	21	6.1
19	1.2	2.7	.98	5.3	5.8	131	47	154	422	19	12	7.8
20	1.1	2.1	.98	5.2	4.6	90	42	161	2080	40	11	7.9
21	.72	1.8	.98	4.4	5.5	70	37	100	4160	828	12	7.8
22	.58	1.9	.93	3.5	52	59	33	74	6250	2110	14	7.2
23	.74	1.9	.80	3.7	96	50	30	57	3480	1350	13	6.5
24	.70	1.8	.75	3.3	135	41	28	51	961	377	19	5.9
25	.60	1.4	.77	3.5	59	36	35	1840	316	153	16	4.0
26	.55	1.3	.77	3.1	51	32	29	3760	190	88	24	3.6
27	.50	1.5	1.1	3.6	34	28	25	4030	136	60	94	3.6
28	.42	1.2	1.2	3.2	30	26	32	889	97	126	58	17
29	.36	.92	1.7	2.6	---	27	41	323	75	1530	31	13
30	.56	.82	2.2	3.0	---	26	89	198	61	587	21	7.3
31	.60	---	2.2	2.5	---	25	---	127	---	232	16	---
MEAN	.53	1.65	1.27	3.25	19.4	352	36.9	778	1396	263	30.3	7.75
MAX	1.2	2.7	2.2	5.3	135	4190	101	4030	6250	2110	113	17
MIN	.21	.73	.75	2.0	2.8	11	13	38	49	19	11	3.6
IN.	.00	.00	.00	.01	.05	1.03	.10	2.28	3.97	.77	.09	.02

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

	MEAN	146	157	155	150	339	413	403	338	377	251	123	166
MAX	1677	1463	1399	946	1389	1346	1809	1736	2594	2389	2242	2510	
(WY)	1987	1986	1983	1946	1985	1985	1983	1986	1947	1982	1970	1986	
MIN	.00	.00	.47	.10	2.05	7.53	3.38	1.69	.66	.02	.00	.02	
(WY)	1954	1954	1954	1954	1989	1957	1956	1934	1956	1934	1934	1953	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	241	250
HIGHEST ANNUAL MEAN	751	1986
LOWEST ANNUAL MEAN	14.2	1989
HIGHEST DAILY MEAN	6250	Jun 22
LOWEST DAILY MEAN	.21	Oct 15
INSTANTANEOUS PEAK FLOW	6780	Jun 22
INSTANTANEOUS PEAK STAGE	22.40	Jun 22
INSTANTANEOUS LOW FLOW	0.20	Oct 15
ANNUAL RUNOFF (INCHES)	8.34	0
10 PERCENTILE	438	Several Years
50 PERCENTILE	15	
95 PERCENTILE	.53	



## 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 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	7.4	2.8	6.3	15	48	42	132	132	95	223	15
2	1.5	7.0	3.2	7.1	14	40	39	84	109	81	153	15
3	1.5	6.1	3.5	9.4	13	34	35	64	93	69	123	14
4	1.4	6.0	3.0	14	14	28	34	2010	94	61	97	13
5	1.5	5.6	4.1	15	12	25	31	2450	76	52	78	12
6	1.8	5.7	4.1	12	11	30	28	794	82	48	63	11
7	1.5	5.5	7.6	9.2	10	27	26	397	335	44	53	11
8	1.6	4.6	4.6	8.0	9.4	117	25	259	4680	39	45	11
9	1.4	4.2	3.9	7.1	10	160	25	259	1570	35	39	10
10	1.2	4.0	4.6	6.6	9.4	186	31	239	497	35	34	10
11	1.2	3.8	4.8	5.9	8.9	1740	30	158	274	39	31	9.5
12	1.1	3.2	5.6	5.4	8.0	1000	30	784	184	91	32	9.1
13	1.2	2.7	6.7	5.1	8.0	437	36	644	140	64	31	8.8
14	1.2	3.0	8.0	5.0	8.9	592	111	523	4850	47	29	8.6
15	1.2	4.3	6.7	4.9	10	3880	96	1010	7570	41	27	8.1
16	1.4	4.4	6.3	11	22	1420	130	1090	2150	36	27	8.0
17	6.8	4.3	5.2	27	28	455	105	468	938	39	27	7.5
18	5.4	3.9	5.5	22	22	230	81	246	799	32	24	11
19	4.7	3.6	5.5	18	18	151	67	174	391	34	23	13
20	3.8	3.9	5.2	16	16	112	63	144	3180	37	22	12
21	3.0	4.8	5.2	13	16	89	58	106	6060	1120	24	12
22	2.6	4.1	4.8	12	36	76	51	86	2450	2190	23	11
23	2.6	4.0	5.2	11	188	67	46	70	1850	669	23	9.3
24	2.9	4.7	4.8	10	97	61	53	65	580	258	24	8.2
25	2.5	3.8	5.2	11	168	54	53	2530	328	148	20	7.5
26	3.0	4.1	4.8	14	126	48	37	4550	241	100	18	8.3
27	2.1	4.0	5.2	9.0	92	44	35	1230	185	75	21	8.1
28	2.0	3.9	4.8	10	64	41	46	484	149	1300	20	20
29	2.9	4.6	5.2	10	---	41	320	301	125	3690	18	18
30	5.5	3.3	5.5	16	---	41	260	214	107	981	16	11
31	7.9	---	5.9	16	---	42	---	164	---	395	15	---
MEAN	2.58	4.48	5.08	11.2	37.7	365	67.5	701	1341	385	45.3	11.0
MAX	7.9	7.4	8.0	27	188	3880	320	4550	7570	3690	223	20
MIN	1.1	2.7	2.8	4.9	8.0	25	25	64	76	32	15	7.5
IN.	.01	.01	.01	.03	.09	.93	.17	1.79	3.31	.98	.12	.03

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

	196	194	175	190	344	464	512	368	426	272	124	190
MEAN	1496	1347	1521	1679	1346	2336	3171	2149	3148	3131	2149	1966
MAX	1987	1929	1983	1974	1937	1979	1973	1973	1947	1982	1970	1970
(WY)	.01	1.06	.73	.14	2.42	7.91	7.15	1.71	.07	.00	.00	.51
MIN	1957	1957	1957	1940	1989	1956	1956	1934	1934	1934	1934	1953
(WY)												

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	249	287
HIGHEST ANNUAL MEAN		830
LOWEST ANNUAL MEAN		18.0
HIGHEST DAILY MEAN	7570	17900
LOWEST DAILY MEAN	1.1	.00
INSTANTANEOUS PEAK FLOW	8430	20700
INSTANTANEOUS PEAK STAGE	23.29	33.03
INSTANTANEOUS LOW FLOW	0.90	0
ANNUAL RUNOFF (INCHES)	7.47	8.63
10 PERCENTILE	485	562
50 PERCENTILE	23	44
95 PERCENTILE	2.4	1.2

## FABIUS RIVER BASIN

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.--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.--Flood of June 17, 1945, reached a stage of 23.3 ft, from floodmarks.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	.92	1.1	3.6	4.6	29	40	137	92	47	68	4.0
2	2.2	1.0	1.1	3.5	6.3	23	37	87	78	41	39	3.6
3	2.0	.97	.90	3.5	7.0	19	35	64	67	36	28	3.3
4	2.0	.95	.96	5.0	6.9	15	33	2150	58	33	23	2.9
5	2.2	.87	1.0	4.6	6.8	14	30	2960	62	29	19	2.6
6	2.3	.71	1.2	4.1	6.4	15	26	1300	58	26	16	2.4
7	2.1	.67	1.2	3.6	6.0	15	24	382	396	25	13	2.2
8	2.1	.72	1.2	3.8	6.3	97	23	216	2770	24	12	2.4
9	2.0	.64	1.3	4.2	5.9	132	23	260	3640	23	10	2.2
10	1.9	.70	1.3	4.1	6.0	265	27	256	2530	23	8.9	2.3
11	1.8	1.7	1.8	4.6	6.6	178	29	131	358	25	8.1	2.4
12	1.6	1.8	1.7	3.6	6.7	422	27	1150	181	22	8.3	2.3
13	1.6	1.7	1.4	3.2	11	410	44	1050	128	21	8.0	2.1
14	1.6	2.1	1.4	3.3	9.9	633	159	805	2640	20	7.3	2.2
15	1.7	2.4	1.5	3.2	12	3740	160	1580	3150	26	6.8	2.1
16	2.5	1.5	1.3	3.7	11	2110	233	1800	3590	22	6.4	1.9
17	4.5	1.2	1.1	5.8	9.4	537	188	872	1700	20	6.5	2.1
18	4.8	.87	.96	6.7	9.6	227	132	327	581	19	6.3	3.3
19	6.2	.93	1.3	6.0	11	138	95	184	269	27	6.3	4.2
20	6.7	1.1	1.9	6.0	11	100	76	145	502	22	6.7	3.7
21	5.7	.90	1.3	5.4	10	79	60	110	2350	53	8.5	3.2
22	3.5	1.0	.93	4.9	66	66	52	89	1580	92	9.4	2.8
23	3.2	1.3	.84	5.3	257	59	48	75	498	136	8.3	2.4
24	2.8	1.2	.70	4.7	245	53	58	66	368	69	7.0	2.2
25	2.4	1.1	.82	4.9	200	47	60	1330	156	46	6.4	2.1
26	1.8	1.1	.93	4.4	86	39	47	2580	116	32	6.1	1.9
27	1.3	1.4	1.3	5.0	51	36	40	2430	89	26	5.7	1.8
28	1.0	1.2	1.7	4.3	37	34	50	491	73	23	5.4	2.7
29	.87	1.1	2.3	4.0	---	35	360	223	62	62	5.4	2.3
30	1.1	1.0	2.7	4.6	---	34	345	149	54	755	5.1	9.3
31	.98	---	3.4	3.7	---	34	---	114	---	185	4.6	---
MEAN	2.53	1.16	1.37	4.43	39.7	311	85.4	758	940	64.8	12.2	2.83
MAX	6.7	2.4	3.4	6.7	257	3740	360	2960	3640	755	68	9.3
MIN	.87	.64	.70	3.2	4.6	14	23	64	54	19	4.6	1.8
IN.	.01	.00	.00	.01	.11	.91	.24	2.23	2.67	.19	.04	.01

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

	178	165	163	203	320	474	480	360	325	276	111	161
MEAN	178	165	163	203	320	474	480	360	325	276	111	161
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	.00	.00	.11	.31	1.23	6.32	3.83	1.48	1.04	.78	.56	.09
(WY)	1954	1954	1957	1957	1957	1957	1956	1989	1956	1988	1988	1953

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	186	267
HIGHEST ANNUAL MEAN	749	1973
LOWEST ANNUAL MEAN	18.7	1989
HIGHEST DAILY MEAN	3740	Mar 15
LOWEST DAILY MEAN	.64	Nov 9
INSTANTANEOUS PEAK FLOW	5010	Mar 15
INSTANTANEOUS PEAK STAGE	16.94	Mar 15
INSTANTANEOUS LOW FLOW	0.40	Nov 10
ANNUAL RUNOFF (INCHES)	6.42	9.24
10 PERCENTILE	363	596
50 PERCENTILE	7.7	38
95 PERCENTILE	.83	1.1

## 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>.

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.--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.--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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	1.8	2.1	4.0	7.0	65	73	226	145	58	65	5.7
2	2.8	1.7	2.2	6.3	9.7	56	73	131	125	53	61	5.4
3	2.3	1.6	2.5	5.9	10	49	74	99	105	48	55	5.0
4	2.5	1.5	2.3	8.8	9.4	41	67	2950	93	43	129	5.0
5	2.5	1.4	2.6	8.7	8.6	36	63	4520	83	38	70	5.2
6	1.8	1.4	2.8	7.7	8.3	33	58	3760	184	33	39	4.1
7	1.5	1.3	2.6	7.6	8.5	30	52	1270	3530	30	30	4.3
8	1.5	1.3	2.3	7.9	8.2	189	47	444	7320	27	25	4.2
9	1.7	1.4	2.2	7.9	7.2	284	44	388	4050	25	22	3.9
10	1.9	2.1	2.0	7.4	6.6	272	47	2450	3020	30	19	3.9
11	1.7	2.1	2.1	6.7	6.0	405	48	778	1450	77	18	3.6
12	1.6	1.9	1.9	6.0	6.6	521	63	3210	364	89	24	3.4
13	1.3	1.9	1.7	5.6	7.0	385	111	4360	217	50	113	3.3
14	1.2	2.5	1.9	5.3	8.0	1020	799	2420	723	33	34	3.0
15	1.1	3.0	2.6	5.3	14	8580	744	3080	3130	27	24	2.8
16	2.4	2.6	3.1	5.1	18	5460	885	7020	2430	24	20	2.8
17	2.1	2.2	2.9	6.2	19	2060	664	7120	1220	20	19	2.5
18	2.7	1.9	2.9	6.2	23	495	324	1550	392	18	16	4.9
19	3.2	1.8	3.5	5.9	32	259	202	639	386	19	16	7.5
20	2.5	2.0	3.7	6.4	36	170	154	440	226	45	15	7.0
21	2.2	2.2	4.0	8.0	33	134	126	318	168	465	13	7.4
22	2.2	2.4	4.0	8.1	271	113	108	247	744	2490	12	13
23	1.9	2.3	5.9	7.3	860	95	95	202	290	538	11	12
24	1.8	2.1	7.1	6.4	693	90	85	170	158	193	9.7	8.9
25	1.6	2.1	4.5	7.2	410	86	78	1780	116	115	9.1	7.4
26	1.6	2.1	3.9	7.2	194	97	73	2250	98	86	8.6	6.5
27	1.6	2.1	3.4	6.9	121	104	90	1860	86	70	8.2	5.4
28	1.8	2.1	2.6	6.1	88	96	83	764	73	65	7.7	6.5
29	1.9	1.9	3.3	5.6	---	89	139	340	66	75	7.1	6.1
30	2.1	2.1	4.2	5.6	---	82	453	237	62	79	6.6	4.8
31	2.0	---	4.1	5.5	---	76	---	182	---	53	6.3	---
MEAN	2.00	1.96	3.13	6.61	104	693	197	1781	1035	162	29.5	5.52
MAX	3.2	3.0	7.1	8.8	860	8580	885	7120	7320	2490	129	13
MIN	1.1	1.3	1.7	4.0	6.0	30	44	99	62	18	6.3	2.5
IN.	.00	.00	.01	.01	.18	1.29	.36	3.31	1.86	.30	.05	.01

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

	MEAN	279	270	247	281	502	716	734	614	507	351	168	198
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	.00	.00	1.52	2.12	4.78	15.0	13.4	7.56	5.68	.71	.00	.39	
(WY)	1957	1957	1957	1954	1989	1956	1989	1989	1977	1988	1936	1953	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	337	396
HIGHEST ANNUAL MEAN	1105	1973
LOWEST ANNUAL MEAN	27.4	1989
HIGHEST DAILY MEAN	8580	18800
LOWEST DAILY MEAN	1.1	.00
INSTANTANEOUS PEAK FLOW	9880	19700
INSTANTANEOUS PEAK STAGE	12.85	19.5
INSTANTANEOUS LOW FLOW	0.99	0
ANNUAL RUNOFF (INCHES)	7.38	8.68
10 PERCENTILE	697	930
50 PERCENTILE	17	57
95 PERCENTILE	1.4	1.7

## NORTH RIVER BASIN

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 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 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	2.4	2.4	8.5	9.8	75	96	78	111	47	47	6.1
2	4.3	2.3	2.4	8.1	41	64	87	57	104	42	38	5.4
3	4.4	2.2	2.4	7.6	26	56	80	51	91	37	34	5.4
4	4.4	2.2	2.2	9.1	17	48	72	3350	83	33	282	5.6
5	4.4	2.3	2.2	12	13	43	66	1570	111	30	118	5.5
6	4.3	2.4	2.3	12	13	41	60	772	1980	26	63	6.7
7	4.7	2.7	2.5	11	12	40	52	286	6760	24	47	5.0
8	5.1	3.0	2.6	10	11	974	47	193	19500	22	36	4.8
9	5.3	3.0	2.7	9.7	9.8	450	44	139	1770	19	29	4.8
10	5.3	2.7	2.8	9.7	9.3	209	53	1490	492	21	25	4.5
11	5.7	2.5	2.9	9.6	9.0	311	60	498	271	85	22	3.7
12	4.8	2.4	3.1	9.4	8.5	591	68	4250	194	194	33	3.3
13	4.9	2.4	3.1	8.9	8.2	338	174	1800	158	88	34	3.2
14	5.1	2.6	3.2	8.8	8.6	2150	972	891	600	62	24	2.9
15	4.7	3.1	3.4	8.6	16	16900	1030	2470	510	46	23	2.4
16	5.7	3.1	3.5	8.6	128	1810	810	7640	315	36	22	2.2
17	8.5	2.9	3.6	9.4	77	558	372	5190	170	29	25	2.1
18	6.8	2.8	3.7	10	80	292	203	773	135	25	20	4.6
19	6.0	3.2	3.9	12	287	203	148	455	114	40	16	7.1
20	6.2	3.2	4.0	12	127	156	126	330	110	107	15	8.0
21	5.2	3.1	4.2	12	84	130	108	233	981	608	15	14
22	4.0	3.0	4.2	12	1990	114	93	187	1840	1110	13	21
23	3.1	2.8	4.4	11	2010	99	83	162	1730	575	12	18
24	2.7	2.8	4.4	9.8	565	98	73	146	1310	183	11	4.0
25	2.1	2.8	4.7	9.9	237	101	73	1560	706	102	11	2.9
26	1.8	3.0	5.0	9.9	142	145	60	675	265	78	16	2.8
27	1.6	2.5	5.3	9.4	114	159	54	316	104	69	24	2.4
28	1.8	2.5	5.7	8.9	92	145	64	191	62	67	18	3.8
29	2.0	2.6	6.6	8.9	---	127	209	154	52	78	7.5	5.4
30	2.3	2.4	7.3	9.2	---	114	125	130	48	86	7.1	6.7
31	2.4	---	7.5	9.2	---	103	---	118	---	65	6.6	---
MEAN	4.32	2.70	3.81	9.85	219	859	185	1166	1356	130	35.3	5.81
MAX	8.5	3.2	7.5	12	2010	16900	1030	7640	19500	1110	282	21
MIN	1.6	2.2	2.2	7.6	8.2	40	44	51	48	19	6.6	2.1
IN.	.01	.01	.01	.03	.61	2.66	.55	3.61	4.06	.40	.11	.02

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

	MEAN	165	172	172	180	315	462	467	421	333	233	106	123
MAX	1742	2639	1832	991	1720	2783	2691	2249	2296	2045	1357	1351	
(WY)	1987	1986	1983	1969	1982	1973	1973	1935	1947	1969	1970	1970	
MIN	.00	.00	.23	.66	.92	6.54	31.7	15.5	4.77	.52	.00	.17	
(WY)	1957	1957	1957	1954	1954	1956	1936	1989	1936	1936	1936	1940	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	332	258
HIGHEST ANNUAL MEAN	748	1973
LOWEST ANNUAL MEAN	22.1	1989
HIGHEST DAILY MEAN	19500	Jun 8
LOWEST DAILY MEAN	1.6	Oct 27
INSTANTANEOUS PEAK FLOW	29400	Jun 8
INSTANTANEOUS PEAK STAGE	25.08	Jun 8
INSTANTANEOUS LOW FLOW	1.5	Oct 27
ANNUAL RUNOFF (INCHES)	12.08	9.40
10 PERCENTILE	555	458
50 PERCENTILE	22	37
95 PERCENTILE	2.1	1.3



## BEAR CREEK BASIN

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.--No estimated daily discharges. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.94	.90	1.1	2.4	6.8	10	14	5.7	7.7	3.8	4.6	1.1
2	.82	.90	1.1	1.8	21	9.5	12	5.5	7.4	3.4	4.1	.91
3	.74	.90	1.0	1.9	20	8.7	10	7.2	6.6	3.1	5.2	.90
4	.82	.93	1.0	8.6	8.5	7.7	10	109	6.3	2.9	21	.82
5	.81	.94	1.1	9.9	7.6	7.5	9.2	33	22	2.6	7.4	.82
6	.96	.90	1.4	3.5	7.3	7.4	8.1	15	118	2.5	4.8	.84
7	.86	.90	1.1	2.6	5.9	7.0	7.5	11	171	2.4	3.9	.69
8	.82	.98	.90	2.2	5.2	99	7.1	9.1	278	2.3	3.7	.85
9	.82	.96	.86	2.1	4.9	136	7.3	9.3	322	2.0	3.5	1.1
10	.82	.96	.82	2.1	4.5	26	8.1	11	404	3.6	3.3	.99
11	.76	.90	.90	1.7	4.7	32	7.4	7.8	239	52	3.0	.83
12	.57	.90	.90	1.7	4.0	56	6.7	95	15	52	3.0	.82
13	.55	.96	.90	1.4	3.9	20	31	240	11	53	3.3	.74
14	.55	1.2	1.2	1.4	4.8	121	57	95	50	37	3.0	.62
15	.58	6.2	.91	1.4	23	367	61	57	19	9.1	2.8	.56
16	2.4	3.4	.82	1.5	22	526	61	192	12	6.0	3.4	.61
17	4.0	2.1	1.0	3.3	21	288	19	282	9.1	4.8	3.5	.55
18	2.7	1.7	1.1	4.4	21	31	14	313	7.9	4.1	2.9	1.9
19	1.9	1.4	1.2	3.3	21	23	12	84	6.9	3.8	2.4	1.8
20	1.5	1.3	.93	3.1	76	19	12	124	8.6	14	2.7	1.2
21	1.2	1.3	.79	3.0	11	16	11	178	7.1	56	2.5	1.8
22	.98	1.3	.57	2.7	101	16	10	27	6.3	55	2.5	1.3
23	.94	1.2	.55	2.4	269	14	9.5	15	5.7	153	2.4	.78
24	.99	1.2	.66	2.2	399	16	8.8	13	5.1	98	2.2	.71
25	.99	1.2	1.1	2.3	128	23	7.8	25	4.9	8.9	2.0	.66
26	.99	1.2	1.1	2.5	16	28	7.3	29	4.6	7.1	1.8	.67
27	.87	1.2	1.1	2.5	15	22	7.4	27	4.3	6.5	1.7	.61
28	.88	1.1	1.2	2.5	12	17	9.1	23	3.9	6.7	1.5	2.2
29	.89	1.0	4.1	2.8	---	16	7.1	10	4.1	5.7	1.3	1.4
30	.97	1.0	15	2.6	---	15	6.2	8.5	4.0	5.1	1.2	.92
31	.95	---	4.2	2.3	---	14	---	8.2	---	4.3	1.2	---
MEAN	1.12	1.37	1.63	2.84	44.4	64.5	15.3	66.8	59.0	21.6	3.61	.99
MAX	4.0	6.2	15	9.9	399	526	61	313	404	153	21	2.2
MIN	.55	.90	.55	1.4	3.9	7.0	6.2	5.5	3.9	2.0	1.2	.55
IN.	.04	.05	.06	.11	1.49	2.40	.55	2.48	2.13	.80	.13	.04

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

	MEAN	12.7	14.4	15.1	13.1	26.6	31.5	33.5	25.1	23.8	23.9	13.9	11.9
MAX	115	225	155	84.0	124	125	193	92.5	158	193	131	190	
(WY)	1970	1986	1983	1969	1985	1973	1973	1970	1939	1981	1970	1970	
MIN	.00	.00	.11	.27	.85	.88	1.16	1.51	.58	.00	.000	.01	
(WY)	1957	1957	1964	1977	1964	1956	1956	1956	1963	1954	1953	1988	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	23.5	20.4
HIGHEST ANNUAL MEAN		57.5
LOWEST ANNUAL MEAN		2.47
HIGHEST DAILY MEAN	526	2010
LOWEST DAILY MEAN	.55	.00
INSTANTANEOUS PEAK FLOW	735	6500
INSTANTANEOUS PEAK STAGE	6.74	14.05
INSTANTANEOUS LOW FLOW	0.55	0
ANNUAL RUNOFF (INCHES)	10.29	8.94
10 PERCENTILE	54	36
50 PERCENTILE	3.3	3.3
95 PERCENTILE	.67	.02



## 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, wire-weight gage, and crest-stage gage. Datum of gage is 702.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 29 to Dec. 28 and Jan. 9-15. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	19	4.3	17	4.6	50	104	90	41	32	21	3.2
2	2.2	23	4.7	21	12	41	85	54	36	21	15	3.9
3	1.6	11	6.0	16	20	34	60	42	30	18	12	3.5
4	1.6	7.1	7.2	21	24	26	48	5280	32	16	18	3.5
5	1.8	7.3	10	15	24	24	37	3000	30	14	14	3.2
6	1.6	7.8	8.4	13	21	28	27	794	52	12	10	2.8
7	1.2	5.1	7.2	10	32	36	21	412	2000	12	7.2	2.6
8	1.2	5.5	7.8	9.6	34	226	19	247	7930	11	7.2	2.8
9	3.0	5.7	7.2	10	23	430	18	479	1890	9.8	6.6	3.0
10	2.5	5.4	6.0	10	19	229	149	689	391	12	6.6	2.8
11	1.4	5.1	3.9	9.0	14	198	132	254	214	21	6.6	2.6
12	1.9	5.1	3.7	2.2	8.0	335	56	2990	151	14	6.6	3.2
13	.98	5.0	3.1	2.0	5.4	242	340	1750	119	14	6.0	3.0
14	.66	6.2	2.7	2.8	3.7	968	943	1670	2180	14	5.5	2.6
15	.58	9.3	2.4	1.8	7.2	5360	698	2470	2410	13	5.1	2.4
16	.98	5.9	2.1	1.7	11	1420	729	3780	415	11	7.2	2.4
17	1.7	5.1	1.9	10	8.9	351	265	813	319	9.4	13	2.4
18	3.0	5.7	1.7	11	20	191	142	289	252	8.8	16	5.8
19	11	7.3	1.5	20	75	113	90	183	115	10	15	15
20	13	7.0	1.3	22	54	82	70	137	84	14	11	7.1
21	5.9	5.7	1.1	11	72	71	58	105	260	280	8.4	7.7
22	3.2	5.1	1.0	7.7	422	64	53	85	127	380	5.5	6.5
23	4.0	4.2	1.2	5.4	1210	52	43	71	74	86	5.1	5.2
24	2.0	4.5	1.7	4.8	458	53	42	63	52	32	5.1	4.1
25	1.4	5.5	2.3	4.2	198	62	36	1090	42	18	4.7	3.6
26	1.4	5.7	3.4	2.9	110	124	23	1180	37	18	4.7	3.4
27	2.1	5.0	4.5	3.6	96	129	30	270	31	29	4.3	2.8
28	1.9	4.8	6.0	3.2	65	84	1050	133	26	137	3.9	16
29	3.2	4.8	7.9	2.7	---	84	606	87	24	180	3.5	6.4
30	7.1	4.7	12	4.7	---	125	197	62	30	80	4.3	5.1
31	16	---	14	3.2	---	112	---	48	---	30	3.9	---
MEAN	3.32	6.95	4.78	8.98	119	366	206	923	646	50.2	8.48	4.62
MAX	16	23	14	22	1210	5360	1050	5280	7930	380	21	16
MIN	.58	4.2	1.0	1.7	3.7	24	18	42	24	8.8	3.5	2.4
IN.	.01	.02	.02	.03	.34	1.16	.63	2.92	1.98	.16	.03	.01

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

	220	304	232	86.8	337	474	410	450	285	255	87.2	108
MEAN	220	304	232	86.8	337	474	410	450	285	255	87.2	108
MAX	1201	1426	1319	406	1599	1177	2036	1316	1074	1688	440	588
(WY)	1987	1986	1983	1982	1982	1979	1983	1981	1984	1981	1982	1986
MIN	2.02	4.40	2.20	1.13	5.18	22.5	8.20	10.4	3.55	4.01	3.90	3.41
(WY)	1989	1976	1977	1977	1989	1989	1989	1980	1988	1988	1984	1988

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	196	271
HIGHEST ANNUAL MEAN		553
LOWEST ANNUAL MEAN		35.4
HIGHEST DAILY MEAN	7930	18800
LOWEST DAILY MEAN	.58	.18
INSTANTANEOUS PEAK FLOW	9480	26900
INSTANTANEOUS PEAK STAGE	17.10	19.7
INSTANTANEOUS LOW FLOW	.50	.18
ANNUAL RUNOFF (INCHES)	7.29	10.07
10 PERCENTILE	331	496
50 PERCENTILE	14	28
95 PERCENTILE	1.7	2.1

## 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.--No estimated daily discharges. Water-discharge records good except those below 50 ft<sup>3</sup>/s, which are poor. Several observations of water temperature and specific conductance were made during the year. Water pumped 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	8.7	7.7	22	4.7	46	138	194	61	34	29	14
2	6.3	30	7.1	26	8.6	37	129	118	53	25	20	9.6
3	5.3	31	5.3	34	13	31	91	84	45	22	17	9.6
4	3.2	14	3.3	37	20	26	68	3100	40	19	66	9.3
5	3.7	9.0	7.9	23	21	23	53	5680	41	17	29	14
6	5.7	11	9.5	19	20	22	45	2710	121	13	14	7.0
7	5.2	10	9.3	15	19	25	38	798	1950	13	11	7.0
8	3.5	8.5	6.5	12	24	52	35	386	6950	12	11	8.2
9	2.8	7.2	6.6	13	22	446	31	624	8570	12	11	9.1
10	3.8	4.2	10	12	18	291	71	1610	3010	12	11	9.0
11	6.1	5.8	9.2	13	14	229	221	521	648	26	13	7.2
12	5.5	6.8	3.5	4.6	8.4	438	106	2770	326	22	11	7.1
13	3.5	9.0	3.1	2.7	5.7	326	168	4270	156	15	11	12
14	3.7	13	2.7	5.0	4.8	701	1230	1820	873	18	12	12
15	3.3	13	2.1	5.5	7.6	5000	765	3330	3950	16	12	11
16	3.9	10	1.4	6.8	18	4460	1070	5490	1250	12	10	9.0
17	6.8	7.4	.83	12	13	866	455	4770	394	9.7	17	4.2
18	6.7	5.7	.51	12	22	382	242	970	374	12	16	5.8
19	6.1	5.0	.45	13	56	229	164	447	179	19	12	12
20	14	8.0	.32	21	59	134	122	266	116	42	18	18
21	23	7.9	.20	20	51	88	100	174	242	106	13	8.7
22	14	7.0	.16	12	609	71	85	131	202	775	11	7.5
23	8.0	6.2	.26	8.2	1880	59	75	98	107	207	9.3	4.7
24	7.2	4.5	.51	4.3	807	59	68	81	67	66	9.4	3.7
25	7.7	3.5	1.2	3.5	293	65	68	936	49	34	10	4.6
26	4.4	3.6	1.5	2.6	131	133	55	2040	42	30	11	5.2
27	3.2	6.1	2.0	3.3	103	203	72	567	37	42	13	5.6
28	3.4	11	2.8	2.2	66	148	956	255	34	89	14	25
29	5.6	7.2	11	2.2	---	113	1090	161	31	165	13	34
30	5.2	7.5	18	2.6	---	140	378	99	29	149	19	11
31	5.8	---	20	2.7	---	155	---	76	---	54	18	---
MEAN	6.23	9.39	5.00	12.0	154	484	273	1438	998	67.3	15.9	10.2
MAX	23	31	20	37	1880	5000	1230	5680	8570	775	66	34
MIN	2.8	3.5	.16	2.2	4.7	22	31	76	29	9.7	9.3	3.7
IN.	.01	.02	.01	.03	.33	1.16	.63	3.45	2.32	.16	.04	.02

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

	145	140	135	206	355	462	485	394	470	244	119	141
MEAN	145	140	135	206	355	462	485	394	470	244	119	141
MAX	809	1212	835	1319	1395	1417	1944	2310	4171	2906	1214	1831
(WY)	1958	1962	1972	1965	1949	1948	1944	1935	1947	1969	1970	1970
MIN	.00	.00	.00	.01	3.41	6.41	7.24	14.7	2.93	.00	.00	.00
(WY)	1953	1954	1954	1954	1954	1956	1989	1941	1988	1936	1936	1953

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	290	277
HIGHEST ANNUAL MEAN		655
LOWEST ANNUAL MEAN		36.2
HIGHEST DAILY MEAN	8570	18600
LOWEST DAILY MEAN	.16	.00
INSTANTANEOUS PEAK FLOW	9460	23000
INSTANTANEOUS PEAK STAGE	19.49	27.4
INSTANTANEOUS LOW FLOW	0.16	0
ANNUAL RUNOFF (INCHES)	8.19	7.82
10 PERCENTILE	542	638
50 PERCENTILE	17	29
95 PERCENTILE	2.1	.24

## SALT RIVER BASIN

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

## WATER QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

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

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,040 mg/L, July 30, 1989; minimum daily mean, 2 mg/L, Nov. 25, 1989.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 23,100 tons, June 8, 1990; minimum daily, 0.00 tons, several days.

## EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,800 mg/L, June 14; minimum daily mean, 2 mg/L, Nov. 25.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 23,100 tons, June 8; minimum daily, 0.02 tons, Nov. 25.

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SED. SUSP. DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. DIAM. % FINER THAN .500 MM (70345)
MAR 15...	1115	5120	48	54	62	71	80	83	93	100
MAY 16...	0830	5360	51	61	70	78	88	89	94	100

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL

DATE	TIME	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
MAR 15...	1250	1	2	17	92	98	99	100	100	100

## SALT RIVER BASIN

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

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	6.5	35	.61	8.7	27	.63	7.7	8	.17
2	6.3	32	.54	30	7	.57	7.1	8	.15
3	5.3	42	.60	31	8	.67	5.3	10	.14
4	3.2	27	.23	14	7	.26	3.3	6	.05
5	3.7	26	.26	9.0	12	.29	7.9	3	.06
6	5.7	35	.54	11	14	.42	9.5	6	.15
7	5.2	33	.46	10	15	.40	9.3	7	.18
8	3.5	43	.41	8.5	20	.46	6.5	7	.12
9	2.8	36	.27	7.2	16	.31	6.6	7	.12
10	3.8	29	.30	4.2	10	.11	10	7	.19
11	6.1	32	.53	5.8	12	.19	9.2	10	.25
12	5.5	22	.33	6.8	14	.26	3.5	---	.20
13	3.5	25	.24	9.0	6	.15	3.1	---	.18
14	3.7	34	.34	13	7	.25	2.7	---	.17
15	3.3	47	.42	13	33	1.2	2.1	---	.22
16	3.9	39	.41	10	48	1.3	1.4	---	.21
17	6.8	26	.48	7.4	27	.54	.83	---	.18
18	6.7	30	.54	5.7	13	.20	.51	---	.16
19	6.1	40	.66	5.0	8	.11	.45	---	.15
20	14	23	.87	8.0	6	.13	.32	---	.11
21	23	12	.75	7.9	7	.15	.20	---	.07
22	14	7	.26	7.0	6	.11	.16	---	.05
23	8.0	11	.24	6.2	27	.45	.26	---	.03
24	7.2	27	.52	4.5	6	.07	.51	---	.04
25	7.7	29	.60	3.5	2	.02	1.2	---	.15
26	4.4	27	.32	3.6	4	.04	1.5	---	.20
27	3.2	28	.24	6.1	5	.08	2.0	---	.24
28	3.4	40	.37	11	8	.24	2.8	---	.36
29	5.6	27	.41	7.2	12	.23	11	---	.42
30	5.2	34	.48	7.5	10	.20	18	---	.50
31	5.8	37	.58	---	---	---	20	---	.58
TOTAL	193.1	---	13.81	281.8	---	10.04	154.94	---	5.80
JANUARY			FEBRUARY			MARCH			
1	22	---	.65	4.7	---	.29	46	38	4.8
2	26	---	.78	8.6	---	.42	37	37	3.7
3	34	---	.92	13	15	.53	31	31	2.6
4	37	---	1.1	20	16	.87	26	28	2.0
5	23	---	1.0	21	16	.91	23	28	1.8
6	19	---	.90	20	7	.38	22	27	1.6
7	15	---	.82	19	14	.72	25	58	3.9
8	12	---	.80	24	13	.84	52	104	15
9	13	---	.82	22	13	.77	446	301	362
10	12	---	.87	18	18	.88	291	230	181
11	13	---	.74	14	20	.76	229	188	116
12	4.6	---	.58	8.4	17	.39	438	376	449
13	2.7	---	.30	5.7	24	.37	326	235	207
14	5.0	---	.32	4.8	22	.29	701	574	2390
15	5.5	---	.60	7.6	29	.60	5000	1350	18300
16	6.8	---	.88	18	32	1.6	4460	615	7410
17	12	28	.91	13	14	.49	866	437	1020
18	12	12	.39	22	21	1.3	382	281	290
19	13	8	.28	56	70	11	229	216	134
20	21	10	.57	59	48	7.7	134	221	80
21	20	7	.38	51	20	2.8	88	149	35
22	12	8	.26	609	704	1950	71	100	19
23	8.2	7	.15	1880	997	5060	59	82	13
24	4.3	8	.09	807	373	813	59	35	5.6
25	3.5	13	.12	293	191	151	65	35	6.1
26	2.6	13	.09	131	135	48	133	48	17
27	3.3	15	.13	103	82	23	203	86	47
28	2.2	46	.27	66	48	8.6	148	73	29
29	2.2	22	.13	---	---	---	113	51	15
30	2.6	---	.11	---	---	---	140	47	18
31	2.7	---	.16	---	---	---	155	39	16
TOTAL	372.2	---	16.12	4318.8	---	8087.51	14998	---	31195.1

## SALT RIVER BASIN

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

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	138	40	15	194	85	45	61	23	3.8
2	129	56	20	118	89	28	53	18	2.6
3	91	36	9.0	84	404	92	45	17	2.0
4	68	28	5.1	3100	1660	14100	40	18	1.9
5	53	23	3.2	5680	572	8770	41	18	2.0
6	45	11	1.3	2710	353	2580	121	122	40
7	38	19	1.9	798	235	507	1950	1100	14100
8	35	11	1.0	386	181	189	6950	1230	23100
9	31	24	2.0	624	427	1160	8570	537	12400
10	71	37	7.1	1610	505	2190	3010	370	3010
11	221	129	77	521	172	242	648	209	367
12	106	61	18	2770	886	7060	326	214	188
13	168	237	208	4270	495	5710	156	110	46
14	1230	870	2890	1820	422	2080	873	1800	8090
15	765	374	772	3330	774	7110	3950	1270	13500
16	1070	658	1900	5490	785	11600	1250	493	1660
17	455	243	298	4770	380	4900	394	283	301
18	242	90	59	970	249	652	374	680	687
19	164	45	20	447	198	239	179	426	206
20	122	34	11	266	104	75	116	181	57
21	100	29	7.8	174	111	52	242	241	157
22	85	33	7.5	131	102	36	202	387	211
23	75	28	5.6	98	79	21	107	247	71
24	68	14	2.6	81	58	13	67	228	41
25	68	8	1.4	936	1080	4030	49	162	21
26	55	9	1.3	2040	1040	5710	42	105	12
27	72	24	4.6	567	453	694	37	78	7.7
28	956	996	2780	255	169	117	34	73	6.7
29	1090	1090	3220	161	180	78	31	123	10
30	378	127	130	99	234	62	29	182	14
31	---	---	---	76	92	19	---	---	---
TOTAL	8189	---	12479.4	44576	---	80161	29947	---	78315.7
JULY			AUGUST			SEPTEMBER			
1	34	73	6.7	29	74	5.8	14	22	.83
2	25	32	2.1	20	118	6.4	9.6	17	.45
3	22	27	1.6	17	64	2.9	9.6	18	.47
4	19	18	.93	66	111	20	9.3	17	.43
5	17	37	1.7	29	126	9.9	14	15	.58
6	13	28	.99	14	71	2.7	7.0	20	.38
7	13	17	.61	11	62	1.8	7.0	18	.35
8	12	16	.53	11	47	1.4	8.2	13	.28
9	12	18	.59	11	65	1.9	9.1	11	.26
10	12	42	1.4	11	92	2.7	9.0	18	.45
11	26	105	7.4	13	196	6.9	7.2	23	.45
12	22	65	3.9	11	36	1.1	7.1	39	.75
13	15	43	1.8	11	23	.69	12	36	1.2
14	18	40	1.9	12	20	.66	12	46	1.5
15	16	37	1.6	12	14	.45	11	30	.90
16	12	36	1.2	10	20	.53	9.0	18	.43
17	9.7	43	1.1	17	55	2.5	4.2	34	.39
18	12	150	4.9	16	167	7.2	5.8	50	.78
19	19	39	2.0	12	123	4.0	12	62	2.0
20	42	56	6.3	18	44	2.1	18	40	2.0
21	106	168	134	13	104	3.7	8.7	12	.28
22	775	350	732	11	149	4.4	7.5	36	.72
23	207	112	62	9.3	106	2.7	4.7	38	.48
24	66	84	15	9.4	80	2.0	3.7	32	.32
25	34	81	7.4	10	35	.95	4.6	33	.41
26	30	64	5.2	11	45	1.3	5.2	35	.49
27	42	68	7.7	13	47	1.7	5.6	23	.35
28	89	281	68	14	42	1.6	25	87	5.9
29	165	274	122	13	36	1.3	34	57	5.2
30	149	117	47	19	38	2.0	11	30	.89
31	54	84	12	18	31	1.5	---	---	---
TOTAL	2087.7	---	1261.55	491.7	---	104.78	305.1	---	29.92



## 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.--Estimated daily discharges: Sept. 23-24. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	.05	.02	.07	.52	.31	24	14	4.4	.13	.16	.00
2	.07	.05	.02	.07	12	.23	16	5.8	4.2	.10	.03	.00
3	.06	.05	.03	.09	5.1	.18	11	5.3	3.6	.02	214	.00
4	.03	.04	.03	.17	1.5	.16	7.3	1230	3.3	.00	357	.00
5	.03	.04	.03	.62	1.5	.15	5.9	741	13	.00	19	.00
6	.04	.04	.03	.42	1.4	.15	4.8	172	276	.00	4.1	.00
7	.03	.04	.03	.32	.76	.13	3.7	108	1610	.00	.92	.00
8	.02	.04	.03	.26	.57	15	3.5	64	3340	.00	.18	.00
9	.02	.04	.03	.22	.40	13	3.2	42	709	.00	.02	.00
10	.01	.04	.03	.20	.29	6.7	3.8	495	116	.00	.00	.00
11	.01	.03	.03	.19	.27	13	3.5	183	60	215	.00	.00
12	.01	.04	.02	.19	.23	204	3.0	1050	35	92	1.9	.00
13	.00	.04	.01	.18	.21	93	48	1150	32	17	14	.00
14	.00	.04	.01	.17	.40	602	176	281	347	5.1	.15	.00
15	.00	.04	.01	.17	30	2340	108	788	199	33	.00	.00
16	.02	.04	.01	.17	46	814	52	1760	63	1.4	.00	.00
17	.07	.04	.00	.30	23	147	37	2160	18	.50	.00	.00
18	.07	.03	.00	.33	34	74	18	554	6.0	.15	.00	.00
19	.05	.03	.01	.27	71	42	8.4	112	3.6	.05	.00	.00
20	.04	.03	.01	.31	43	28	6.7	72	2.6	41	.00	.00
21	.04	.03	.01	.35	22	22	5.8	47	6.1	156	.00	.00
22	.02	.03	.01	.28	642	17	5.2	34	36	429	.00	.00
23	.02	.03	.01	.23	694	13	4.5	25	2.5	99	.00	.02
24	.02	.03	.02	.20	111	15	3.9	19	.79	11	.00	.01
25	.02	.03	.02	.23	23	21	3.1	23	.79	2.1	.00	.01
26	.02	.03	.04	.21	5.3	46	2.5	32	.70	158	.00	.00
27	.02	.03	.05	.21	1.4	81	2.7	33	.32	292	.00	.01
28	.02	.03	.07	.24	.51	67	160	17	.18	31	.00	.17
29	.02	.02	.10	.25	---	46	143	8.5	.12	5.0	.00	.14
30	.06	.02	.11	.25	---	35	42	6.0	.14	3.0	.00	.13
31	.05	---	.08	.25	---	28	---	4.8	---	.72	.00	---
MEAN	.031	.036	.029	.24	63.3	154	30.5	362	230	51.4	19.7	.016
MAX	.08	.05	.11	.62	694	2340	176	2160	3340	429	357	.17
MIN	.00	.02	.00	.07	.21	.13	2.5	4.8	.12	.00	.00	.00
IN.	.00	.00	.00	.00	.82	2.22	.43	5.22	3.21	.74	.28	.00

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

	MEAN	39.0	74.4	72.8	20.4	79.7	84.8	62.7	102	78.9	52.7	17.5	23.6
MAX	320	550	247	86.4	359	208	319	362	230	398	48.0	192	
(WY)	1987	1986	1983	1982	1985	1984	1983	1990	1990	1981	1982	1986	
MIN	.00	.00	.00	.00	.00	.07	.16	1.53	.03	.00	.00	.00	
(WY)	1980	1981	1989	1989	1989	1989	1989	1988	1988	1988	1988	1983	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	76.2	58.9
HIGHEST ANNUAL MEAN		99.7
LOWEST ANNUAL MEAN		7.38
HIGHEST DAILY MEAN	3340	3870
LOWEST DAILY MEAN	.00	.00
INSTANTANEOUS PEAK FLOW	4330	12100
INSTANTANEOUS PEAK STAGE	11.14	15.53
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	12.93	9.99
10 PERCENTILE	111	83
50 PERCENTILE	.20	2.9
95 PERCENTILE	.00	.00

## 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: May 16-24 and June 7-9. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	1.2	2.4	6.5	5.3	69	118	20	52	11	17	3.2
2	4.1	1.4	2.5	4.9	22	50	91	17	47	12	13	2.8
3	3.9	1.8	2.5	4.5	41	38	72	18	41	11	27	2.4
4	2.9	2.9	2.6	5.3	31	31	57	915	32	9.8	695	1.8
5	2.6	2.9	2.6	6.2	26	28	46	1140	26	8.8	427	1.7
6	2.8	2.5	2.7	8.4	32	24	42	211	28	7.3	95	1.5
7	3.8	2.6	2.5	6.2	36	26	35	112	2870	6.2	44	1.4
8	4.3	2.5	2.5	5.2	33	958	28	77	6790	5.5	27	1.4
9	5.1	2.5	2.8	5.0	23	921	25	54	2750	15	19	1.4
10	5.3	2.7	3.0	4.5	18	249	25	44	354	12	15	1.3
11	3.8	3.0	2.9	4.3	14	133	24	36	170	785	13	1.6
12	4.3	3.1	2.5	4.0	11	118	22	375	107	1320	11	1.7
13	4.1	3.1	2.5	3.6	9.5	135	27	1120	77	210	9.8	2.0
14	4.8	2.9	2.2	3.4	8.8	1920	188	275	107	92	8.8	2.0
15	3.7	3.0	2.2	3.2	159	6930	256	1580	296	73	8.0	1.9
16	2.8	3.1	2.3	3.3	688	4070	207	7400	133	46	9.6	1.5
17	3.9	2.8	2.3	4.1	286	354	126	8570	73	32	559	1.2
18	5.7	2.5	2.3	5.0	115	197	75	818	52	23	191	3.0
19	4.1	2.5	2.5	7.5	83	132	51	374	43	19	68	6.9
20	1.9	2.8	2.3	10	60	97	41	344	38	20	39	4.0
21	1.1	2.8	2.2	13	40	77	49	246	34	28	27	4.3
22	.78	2.7	1.9	12	1210	67	53	184	28	32	20	3.2
23	.63	2.3	1.7	10	2640	56	47	204	24	27	17	2.3
24	.74	2.3	1.7	7.8	797	55	39	145	20	28	14	4.0
25	.84	2.5	1.8	6.8	218	64	32	95	18	22	11	4.3
26	1.2	2.6	1.7	6.1	102	104	27	955	16	17	9.4	4.2
27	1.2	2.8	1.8	6.2	73	335	24	711	15	411	7.4	4.0
28	.87	2.7	1.8	6.0	70	246	23	209	13	145	6.2	7.1
29	.78	2.4	2.6	5.1	---	193	22	119	12	53	5.2	12
30	1.1	2.5	6.4	4.7	---	298	21	79	11	31	4.9	15
31	1.3	---	11	4.4	---	177	---	60	---	21	3.9	---
MEAN	2.85	2.58	2.73	6.04	245	586	63.1	855	476	114	78.1	3.50
MAX	5.7	3.1	11	13	2640	6930	256	8570	6790	1320	695	15
MIN	.63	1.2	1.7	3.2	5.3	24	21	17	11	5.5	3.9	1.2
IN.	.01	.01	.01	.03	1.09	2.90	.30	4.23	2.28	.56	.39	.02

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

	MEAN	141	129	141	135	215	325	322	301	260	217	53.2	120
MAX	1646	1378	1447	792	1031	1715	1734	2238	1307	2415	544	1060	
(WY)	1942	1986	1983	1974	1985	1973	1944	1943	1942	1969	1982	1970	
MIN	.01	.36	.58	1.18	1.91	2.74	4.43	5.92	3.28	1.31	.46	.22	
(WY)	1954	1954	1964	1963	1954	1954	1963	1980	1988	1944	1964	1960	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	203	196
HIGHEST ANNUAL MEAN		509
LOWEST ANNUAL MEAN		10.7
HIGHEST DAILY MEAN	8570	May 17
LOWEST DAILY MEAN	.63	Oct 23
INSTANTANEOUS PEAK FLOW	12500	May 17
INSTANTANEOUS PEAK STAGE	22.45	May 17
INSTANTANEOUS LOW FLOW	0.45	Oct 25
ANNUAL RUNOFF (INCHES)	11.84	
10 PERCENTILE	291	
50 PERCENTILE	14	
95 PERCENTILE	1.5	
		1969
		1954
		Oct 13 1969
		Several Years
		Oct 13 1969
		Oct 13 1969
		Several Years

## 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 630.00 ft above National Geodetic Vertical Datum of 1929, 1961 adjustment. Prior to Jan. 22, 1940, nonrecording gage at present site, from Jan. 1940 to Sept. 1958, a water-stage recorder 1.4 mi downstream, from Sept. 1958 to July 1968, 1.5 mi downstream, and July 1968 to Apr. 1973, 1.5 mi downstream at datum 8.29 ft lower.

REMARKS.--No estimated daily discharges. Water-discharge records fair. City of Paris water intakes are in the same pool as gage. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	43	2.5	11	35	102	142	209	46	14	37	1.1
2	.00	49	2.8	14	94	83	125	136	42	12	24	1.7
3	.00	36	1.8	17	119	70	113	117	37	11	21	1.1
4	.00	24	1.5	26	93	60	95	2520	32	11	805	1.4
5	.00	18	2.2	24	93	54	73	3410	29	10	579	1.1
6	.00	15	3.2	45	92	51	59	2430	164	9.8	169	1.1
7	.00	11	4.4	34	73	48	50	1460	1040	8.8	75	2.1
8	.00	8.9	5.4	23	59	117	44	342	1790	7.7	41	.94
9	.00	9.8	4.9	19	59	290	40	200	4910	6.8	27	.00
10	.00	7.2	6.0	16	51	360	43	874	5700	14	22	.00
11	.00	2.1	6.3	13	40	228	39	1250	1230	503	20	.00
12	.00	.00	5.1	12	30	826	50	2140	157	1440	18	.00
13	.00	.05	3.9	10	24	615	203	2960	93	305	142	.00
14	.00	2.6	2.7	10	25	964	518	2440	335	187	58	.00
15	.00	2.1	2.7	9.3	134	4420	760	2190	611	210	24	.00
16	1.4	1.1	2.1	8.4	364	4160	447	3940	524	83	17	.00
17	9.0	2.1	1.1	16	247	2990	283	5160	185	88	22	.00
18	18	2.2	1.1	16	206	760	191	6150	101	96	31	.41
19	19	3.2	2.1	37	411	225	128	1800	61	43	23	.00
20	12	3.9	2.3	41	358	151	105	265	45	27	17	.00
21	9.4	3.1	2.9	34	233	123	90	186	36	102	13	1.1
22	8.8	1.9	2.2	30	1320	103	77	144	29	275	11	.02
23	8.7	.67	2.2	28	2850	79	69	121	32	343	8.7	.45
24	5.7	.85	1.8	24	2000	78	61	102	69	161	8.0	4.0
25	3.1	2.2	2.4	21	793	83	56	100	46	77	8.2	3.9
26	.40	3.0	3.4	19	228	141	50	107	30	39	7.9	2.0
27	.00	2.9	5.3	16	144	270	52	354	21	682	5.8	.00
28	.00	2.6	4.5	15	113	303	1240	151	16	282	4.7	.00
29	.00	2.3	9.2	17	---	215	1320	94	15	115	3.1	.00
30	.92	3.0	11	20	---	173	495	66	14	98	2.9	.00
31	8.2	---	9.8	22	---	156	---	53	---	78	1.7	---
MEAN	3.37	8.79	3.83	20.9	367	590	234	1338	581	172	72.5	.75
MAX	19	49	11	45	2850	4420	1320	6150	5700	1440	805	4.0
MIN	.00	.00	1.1	8.4	24	48	39	53	14	6.8	1.7	.00
IN.	.01	.03	.01	.07	1.08	1.91	.73	4.33	1.82	.56	.23	.00

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

	MEAN	179	173	166	166	276	438	460	363	327	242	98.4	128
MAX	1815	2083	1255	829	1634	1837	3164	1396	1747	2100	1195	1427	
(WY)	1987	1986	1983	1946	1985	1973	1973	1981	1947	1981	1958	1961	
MIN	.00	.00	.37	1.08	2.61	3.26	13.3	12.6	2.31	.37	1.13	.18	
(WY)	1957	1954	1954	1954	1989	1956	1989	1941	1988	1954	1953	1953	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	283	251
HIGHEST ANNUAL MEAN	743	1973
LOWEST ANNUAL MEAN	53.1	1956
HIGHEST DAILY MEAN	6150	May 18
LOWEST DAILY MEAN	.00	Oct 1-15, Nov 12, Sep 9-17, 19-20, 27-30
INSTANTANEOUS PEAK FLOW	7450	Jun 10
INSTANTANEOUS PEAK STAGE	12.46	Jun 10
INSTANTANEOUS LOW FLOW	0	Many Days
ANNUAL RUNOFF (INCHES)	10.79	9.57
10 PERCENTILE	598	582
50 PERCENTILE	28	30
95 PERCENTILE	.00	.59

## 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, 2 mg/L, Oct. 23, 1989.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 40,200 tons, Mar. 5, 1985; minimum daily, 0.00 tons, many years.

## EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,480 mg/L, June 8; minimum daily mean, 2 mg/L, Oct. 23.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 10,400 tons, June 9; minimum daily, 0.00 tons, many days.

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SED. SUSP. FALL DIAM. % FINER THAN (70337)	SED. SUSP. FALL DIAM. % FINER THAN (70338)	SED. SUSP. FALL DIAM. % FINER THAN (70339)	SED. SUSP. FALL DIAM. % FINER THAN (70340)	SED. SUSP. FALL DIAM. % FINER THAN (70342)	SED. SUSP. FALL DIAM. % FINER THAN (70343)	SED. SUSP. FALL DIAM. % FINER THAN (70344)	SED. SUSP. FALL DIAM. % FINER THAN (70345)
MAR 15...	0830	4150	52	60	70	80	94	98	100	100

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL

DATE	TIME	BED MAT. SIEVE DIAM. % FINER THAN (80164)	BED MAT. SIEVE DIAM. % FINER THAN (80165)	BED MAT. SIEVE DIAM. % FINER THAN (80166)	BED MAT. SIEVE DIAM. % FINER THAN (80167)	BED MAT. SIEVE DIAM. % FINER THAN (80168)	BED MAT. SIEVE DIAM. % FINER THAN (80169)	BED MAT. SIEVE DIAM. % FINER THAN (80170)	BED MAT. SIEVE DIAM. % FINER THAN (80171)	BED MAT. SIEVE DIAM. % FINER THAN (80172)	BED MAT. SIEVE DIAM. % FINER THAN (80173)
MAR 15...	1000	2	4	10	27	56	71	80	88	94	100

## SALT RIVER BASIN

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

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	.00	---	.00	43	15	1.8	2.5	---	.04
2	.00	---	.00	49	12	1.6	2.8	---	.04
3	.00	---	.00	36	12	1.1	1.8	---	.04
4	.00	19	.00	24	10	.65	1.5	3	.01
5	.00	8	.00	18	5	.26	2.2	3	.02
6	.00	8	.00	15	5	.19	3.2	---	.06
7	.00	11	.00	11	5	.16	4.4	---	.07
8	.00	12	.00	8.9	13	.31	5.4	---	.08
9	.00	16	.00	9.8	15	.41	4.9	---	.09
10	.00	14	.00	7.2	12	.22	6.0	---	.10
11	.00	7	.00	2.1	10	.06	6.3	---	.10
12	.00	12	.00	.00	7	.00	5.1	---	.09
13	.00	18	.00	.05	7	.01	3.9	---	.07
14	.00	14	.00	2.6	5	.04	2.7	---	.05
15	.00	5	.00	2.1	4	.02	2.7	---	.05
16	1.4	3	.01	1.1	5	.01	2.1	---	.04
17	9.0	3	.06	2.1	5	.03	1.1	---	.03
18	18	5	.25	2.2	5	.03	1.1	---	.03
19	19	4	.22	3.2	5	.05	2.1	---	.05
20	12	3	.11	3.9	5	.06	2.3	---	.06
21	9.4	3	.06	3.1	3	.03	2.9	---	.07
22	8.8	3	.06	1.9	11	.02	2.2	---	.07
23	8.7	2	.04	.67	---	.02	2.2	---	.06
24	5.7	4	.06	.85	---	.03	1.8	---	.05
25	3.1	4	.03	2.2	---	.05	2.4	---	.06
26	.40	3	.01	3.0	---	.05	3.4	---	.08
27	.00	9	.00	2.9	---	.04	5.3	---	.09
28	.00	12	.00	2.6	---	.04	4.5	---	.10
29	.00	17	.00	2.3	---	.04	9.2	---	.16
30	.92	16	.04	3.0	---	.05	11	---	.20
31	8.2	12	.28	---	---	---	9.8	---	.18
TOTAL	104.62	---	1.23	263.77	---	7.38	118.8	---	2.24
JANUARY			FEBRUARY			MARCH			
1	11	---	.21	35	11	1.0	102	37	10
2	14	---	.25	94	10	2.6	83	26	5.8
3	17	---	.35	119	13	4.1	70	25	4.8
4	26	---	.50	93	15	3.8	60	24	3.8
5	24	---	.48	93	25	6.2	54	20	2.9
6	45	---	.72	92	32	8.0	51	16	2.2
7	34	---	.65	73	35	6.8	48	15	1.9
8	23	---	.56	59	18	2.8	117	19	6.2
9	19	---	.50	59	23	3.6	290	50	39
10	16	---	.44	51	18	16	360	24	23
11	13	---	.38	40	11	1.2	228	50	31
12	12	---	.35	30	10	.80	826	125	336
13	10	---	.32	24	10	.64	615	192	338
14	10	---	.30	25	11	.73	964	158	761
15	9.3	---	.28	134	29	10	4420	263	3370
16	8.4	---	.27	364	42	41	4160	374	4750
17	16	---	.40	247	28	19	2990	372	3000
18	16	---	.50	206	28	16	760	275	563
19	37	---	.64	411	76	84	225	182	111
20	41	---	.53	358	82	79	151	117	48
21	34	---	.46	233	44	28	123	75	25
22	30	---	.38	1320	416	2430	103	48	13
23	28	5	.35	2850	436	3360	79	35	7.5
24	24	10	.65	2000	294	1590	78	36	7.6
25	21	9	.53	793	193	412	83	24	5.4
26	19	8	.40	228	124	77	141	16	6.0
27	16	6	.27	144	59	23	270	32	23
28	15	5	.19	113	52	16	303	55	45
29	17	5	.22	---	---	---	215	67	39
30	20	6	.30	---	---	---	173	66	31
31	22	14	.84	---	---	---	156	58	24
TOTAL	647.7	---	13.22	10288	---	8243.27	18298	---	13634.1



## SALT RIVER BASIN

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

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	142	51	20	209	103	58	46	63	7.8
2	125	44	15	136	84	31	42	57	6.5
3	113	30	9.0	117	76	24	37	47	4.7
4	95	24	6.2	2520	1010	7830	32	37	3.2
5	73	22	4.4	3410	631	5810	29	31	2.4
6	59	22	3.5	2430	365	2400	164	92	41
7	50	15	2.1	1460	301	1190	1040	954	2990
8	44	9	1.0	342	158	146	1790	1480	7170
9	40	10	1.0	200	110	60	4910	787	10400
10	43	17	1.9	874	540	1700	5700	324	4980
11	39	22	2.4	1250	453	1530	1230	204	678
12	50	27	3.7	2140	709	4850	157	144	61
13	203	70	38	2960	428	3420	93	71	18
14	518	115	161	2440	320	2110	335	132	194
15	760	219	454	2190	347	2110	611	367	605
16	447	142	171	3940	518	5510	524	444	629
17	283	102	78	5160	376	5240	185	418	209
18	191	88	45	6150	327	5440	101	334	91
19	128	76	26	1800	243	1180	61	172	28
20	105	71	20	265	55	40	45	91	11
21	90	78	19	186	10	4.8	36	71	6.9
22	77	71	15	144	13	4.9	29	64	5.0
23	69	62	11	121	19	6.2	32	44	3.8
24	61	67	11	102	18	4.9	69	50	9.3
25	56	32	4.9	100	16	4.3	46	18	2.2
26	50	17	2.3	107	42	12	30	85	6.9
27	52	22	3.1	354	151	145	21	39	2.2
28	1240	758	2790	151	124	50	16	13	.56
29	1320	506	1800	94	136	35	15	9	.36
30	495	221	295	66	86	15	14	7	.26
31	---	---	---	53	7	1.0	---	---	---
TOTAL	7018	---	6014.5	41471	---	50962.1	17440	---	28167.08
JULY			AUGUST			SEPTEMBER			
1	14	10	.37	37	39	3.9	1.1	19	.06
2	12	10	.32	24	27	1.7	1.7	13	.06
3	11	11	.32	21	33	1.9	1.1	15	.04
4	11	11	.32	805	986	2800	1.4	24	.09
5	10	12	.32	579	357	559	1.1	16	.05
6	9.8	12	.31	169	124	56	1.1	11	.03
7	8.8	11	.26	75	85	17	2.1	19	.11
8	7.7	11	.22	41	80	8.8	.94	18	.04
9	6.8	11	.20	27	63	4.6	.00	10	.00
10	14	53	2.0	22	57	3.4	.00	29	.00
11	503	841	2190	20	54	2.9	.00	30	.00
12	1440	1010	3930	18	40	1.9	.00	36	.00
13	305	203	167	142	70	27	.00	39	.00
14	187	139	70	58	54	8.5	.00	41	.00
15	210	110	63	24	45	2.9	.00	32	.00
16	83	46	10	17	104	4.8	.00	37	.00
17	88	22	5.3	22	87	5.2	.00	35	.00
18	96	34	8.7	31	69	5.8	.41	34	.04
19	43	66	7.7	23	37	2.3	.00	37	.00
20	27	50	3.6	17	29	1.3	.00	33	.00
21	102	8	48	13	25	.89	1.1	21	.06
22	275	94	70	11	17	.49	.02	6	.00
23	343	262	243	8.7	20	.48	.45	15	.02
24	161	58	25	8.0	23	.50	4.0	16	.17
25	77	77	16	8.2	22	.50	3.9	25	.26
26	39	66	6.9	7.9	25	.54	2.0	16	.09
27	682	867	1600	5.8	24	.38	.00	20	.00
28	282	469	357	4.7	20	.25	.00	39	.00
29	115	191	59	3.1	19	.16	.00	36	.00
30	98	57	15	2.9	18	.14	.00	27	.00
31	78	---	7.0	1.7	22	.10	---	---	---
TOTAL	5339.1	---	8906.84	2247.0	---	3523.33	22.42	---	1.12

## SALT RIVER BASIN

49

05506800 ELK FORK SALT RIVER NEAR MADISON, MO

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.

DRAINAGE AREA.--200 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1968 to current year.

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 690.16 ft above National Geodetic Vertical Datum of 1929 (Missouri State Highway and Transportation Commission bench mark).

REMARKS.--Estimated daily discharges: Dec 20-26. 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.--Flood of July 9, 1967, reached a stage of 31.25 ft, from floodmark, discharge, 31,200 ft<sup>3</sup>/s, by contracted-opening method. Flood in 1871 reached nearly the same stage, from information by local resident.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	21	1.7	11	31	34	78	79	24	11	10	1.4
2	1.8	11	1.9	8.0	318	26	68	53	21	20	7.9	2.6
3	1.5	6.9	2.1	7.6	223	21	53	58	17	13	20	2.9
4	1.2	3.9	2.3	12	112	16	41	3200	14	9.7	1600	3.8
5	1.2	2.9	2.3	24	102	14	35	3300	13	7.9	569	3.3
6	1.4	2.5	2.2	24	107	13	30	228	15	6.3	85	3.4
7	1.4	2.4	2.4	14	80	13	26	133	292	5.6	38	2.1
8	1.5	2.1	2.4	10	70	93	23	82	442	4.8	23	1.7
9	1.5	2.1	2.3	8.5	47	219	22	57	362	4.3	16	1.9
10	1.6	2.1	2.3	7.5	31	87	26	80	145	6.4	12	1.9
11	1.6	2.1	2.3	6.5	23	57	34	65	56	1690	24	1.7
12	1.9	2.0	1.7	5.5	17	785	33	2110	31	3100	20	1.6
13	2.0	1.8	1.9	4.0	14	301	251	1960	21	362	98	1.4
14	1.9	2.1	1.8	3.9	14	1160	684	220	201	133	29	1.2
15	2.0	1.9	1.6	3.6	410	7550	308	1390	254	68	14	1.2
16	3.5	1.9	1.3	3.6	1160	2360	288	5870	83	42	40	1.1
17	20	2.0	1.1	9.7	338	196	120	4550	45	28	87	.94
18	31	3.3	1.1	57	256	122	74	368	29	20	32	1.7
19	16	3.0	1.4	81	420	89	54	151	20	15	20	1.6
20	9.0	2.2	1.6	48	169	67	47	127	17	12	12	2.3
21	4.8	1.9	1.8	90	87	54	60	95	14	91	7.7	4.2
22	2.5	2.0	1.5	74	1760	47	89	70	13	101	5.3	2.4
23	2.4	2.0	1.5	36	3390	40	49	54	10	105	4.1	1.6
24	2.8	2.0	1.3	21	686	41	38	45	9.1	38	3.6	1.5
25	3.3	1.7	1.5	17	131	53	31	68	8.3	19	2.9	1.8
26	3.2	1.7	1.9	14	69	109	26	167	38	137	2.3	1.4
27	3.1	2.2	2.4	14	57	203	104	359	23	216	2.0	1.2
28	3.5	2.2	3.5	16	46	136	2230	74	13	63	1.6	1.1
29	4.3	2.1	6.3	23	---	99	641	51	9.6	27	1.2	.87
30	45	1.9	9.9	24	---	108	131	34	9.0	17	1.0	.91
31	61	---	12	18	---	97	---	27	---	13	1.6	---
MEAN	7.74	3.30	2.62	22.5	363	458	190	810	75.0	206	90.0	1.89
MAX	61	21	12	90	3390	7550	2230	5870	442	3100	1600	4.2
MIN	1.2	1.7	1.1	3.6	14	13	22	27	8.3	4.3	1.0	.87
IN.	.04	.02	.02	.13	1.89	2.64	1.06	4.67	.42	1.19	.52	.01

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

MEAN	131	146	162	113	193	284	313	231	197	149	42.1	91.3
MAX	1077	1248	750	533	935	1154	1651	810	1005	1409	256	577
(WY)	1987	1986	1983	1974	1985	1973	1973	1990	1969	1981	1985	1986
MIN	.25	1.24	.94	.95	2.07	3.02	10.8	11.5	1.61	1.06	.82	.63
(WY)	1981	1981	1989	1977	1989	1981	1989	1988	1988	1988	1980	1988

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	186	171
HIGHEST ANNUAL MEAN		364
LOWEST ANNUAL MEAN		23.6
HIGHEST DAILY MEAN	7550	24100
LOWEST DAILY MEAN	.87	.00
INSTANTANEOUS PEAK FLOW	8760	42300
INSTANTANEOUS PEAK STAGE	21.43	33.4
INSTANTANEOUS LOW FLOW	0.87	0
ANNUAL RUNOFF (INCHES)	12.61	11.58
10 PERCENTILE	254	285
50 PERCENTILE	18	14
95 PERCENTILE	1.1	.48

## SALT RIVER BASIN

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.--Estimated daily discharges: Dec. 14 to Jan. 3, May 2-10, 15, 16, and May 29 to July 12. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.02	.07	.20	1.8	8.7	16	2.3	3.6	.02	.61	.07
2	.03	.02	.08	.15	2.8	8.4	12	2.1	2.7	.02	.51	.06
3	.03	.02	.07	.14	3.1	6.4	10	2.1	2.2	.02	.49	.06
4	.02	.02	.07	.56	2.3	4.7	8.5	450	2.2	.01	6.2	.05
5	.02	.02	.07	.34	3.1	3.9	7.2	570	1.8	.00	22	.04
6	.02	.02	.10	.19	3.3	3.9	6.3	105	3.0	.00	8.7	.04
7	.02	.03	.11	.16	3.0	3.8	5.1	56	1600	.00	3.4	.03
8	.02	.03	.10	.14	2.3	117	4.5	8.0	785	.00	1.9	.03
9	.02	.03	.09	.14	1.8	88	4.1	5.0	121	.00	1.2	.02
10	.01	.03	.09	.12	1.6	29	4.2	4.2	17	.00	.82	.02
11	.01	.03	.10	.13	1.4	18	4.1	5.4	10	499	.63	.01
12	.01	.04	.08	.11	1.2	17	3.8	264	5.5	205	.52	.01
13	.01	.04	.08	.09	1.1	14	9.5	153	2.8	50	.53	.00
14	.00	.05	.12	.09	1.2	1490	34	40	1.6	22	.43	.00
15	.00	.07	.08	.10	13	2590	34	1650	3.2	18	.26	.00
16	.02	.07	.09	.10	104	172	22	3530	1.7	74	2.7	.00
17	.05	.07	.09	.70	31	43	15	1180	1.1	21	1.1	.00
18	.05	.07	.09	1.3	16	26	11	125	.54	8.5	.55	.01
19	.04	.07	.10	.96	13	18	7.7	53	.18	4.0	.37	.02
20	.03	.07	.09	1.0	7.3	13	7.2	37	.28	4.1	.24	.03
21	.03	.07	.08	.86	4.3	11	6.6	28	7.0	118	.24	.92
22	.03	.07	.07	.73	894	11	6.1	18	1.8	20	.21	.63
23	.03	.07	.06	.74	590	9.3	5.3	13	.69	17	.18	.28
24	.03	.06	.06	.75	127	10	4.6	10	.51	10	.14	.15
25	.02	.06	.07	.94	31	12	3.8	8.9	.16	4.5	.12	.13
26	.02	.07	.06	.94	12	25	3.5	12	.10	2.6	.10	.11
27	.02	.07	.07	.91	12	35	3.0	13	.05	2.0	.10	.09
28	.02	.07	.07	.83	10	23	2.8	10	.03	1.6	.13	.10
29	.02	.06	.10	.76	---	21	2.8	7.5	.03	1.2	.11	.08
30	.02	.06	.25	.73	---	25	2.5	5.8	.03	.99	.11	.07
31	.02	---	.33	.69	---	20	---	4.9	---	.70	.09	---
MEAN	.023	.049	.096	.50	67.7	157	8.91	270	85.9	35.0	1.76	.10
MAX	.05	.07	.33	1.3	894	2590	34	3530	1600	499	22	.92
MIN	.00	.02	.06	.09	1.1	3.8	2.5	2.1	.03	.00	.09	.00
IN.	.00	.00	.00	.01	.68	1.74	.10	3.00	.92	.39	.02	.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	17.3	104	109	36.1	98.8	85.3	72.0	88.0	63.1	72.7	27.0	16.7
MAX	95.9	652	442	151	389	340	302	270	221	481	143	120
(WY)	1987	1986	1983	1982	1985	1984	1984	1990	1982	1981	1982	1982
MIN	.00	.05	.05	.000	1.67	.41	2.49	1.27	.03	1.14	.000	.01
(WY)	1989	1981	1980	1980	1981	1981	1981	1988	1988	1989	1984	1983

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	52.5	65.6
HIGHEST ANNUAL MEAN		111
LOWEST ANNUAL MEAN		15.1
HIGHEST DAILY MEAN	3530	4800
LOWEST DAILY MEAN	.00	.00
INSTANTANEOUS PEAK FLOW	8840	9360
INSTANTANEOUS PEAK STAGE	20.38	26.24
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	6.85	8.57
10 PERCENTILE	30	75
50 PERCENTILE	.64	3.1
95 PERCENTILE	.01	.00

## 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 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: Nov. 16-21, 28-30, Jan. 31 to Feb. 7, and Feb. 15-20. 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. Flow regulated by Clarence Cannon Dam 0.5 mi upstream.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	49	32	52	170	3160	5750	528	8530	2070	3800	64
2	53	39	29	43	140	2780	4020	2210	5270	2060	1340	54
3	805	30	25	40	100	1420	5350	2600	6630	2060	18	50
4	758	25	23	39	80	904	3420	2050	9360	2050	17	1950
5	2210	23	160	35	90	2600	3470	214	6860	2040	16	2880
6	2490	843	53	33	70	2700	2470	56	76	1940	15	1660
7	98	35	27	28	45	2730	1920	4740	2370	1900	15	91
8	83	546	24	26	41	3120	831	7640	433	1820	38	318
9	1380	596	23	31	426	3280	1550	3530	3590	4310	33	1680
10	1380	31	24	64	407	1740	456	3090	9420	5860	770	2830
11	1390	26	23	57	36	1840	1180	5000	8760	6190	369	470
12	2130	24	214	49	190	3060	655	5170	8750	4650	45	123
13	2740	21	97	40	210	3000	1110	5090	8360	4940	40	170
14	96	22	59	35	69	3820	67	2950	5900	5810	197	41
15	32	526	52	34	250	6550	38	169	4170	5810	81	474
16	956	98	42	29	140	6020	927	236	5040	7080	777	219
17	2090	740	37	30	190	1840	1690	1370	4940	8350	1370	41
18	2680	1000	33	46	140	4490	1160	3590	5480	6480	1580	37
19	3190	250	29	58	120	10000	1480	5020	2990	5710	464	32
20	1890	70	28	50	110	9590	2140	5220	1860	4710	45	29
21	86	80	49	41	202	9540	1230	8830	1920	3140	1280	30
22	21	29	43	36	2080	9240	788	8820	1930	3510	1290	34
23	514	34	39	32	3900	9470	1800	8770	1920	5000	261	31
24	335	277	31	32	2620	7840	3350	9020	1970	4740	2230	27
25	225	77	25	48	2620	10100	2410	6960	1470	5360	2860	24
26	71	27	25	53	3280	10200	1040	5010	1680	5290	3470	875
27	31	26	21	44	2970	9140	824	6700	2080	5440	3780	2650
28	43	26	28	34	2880	6200	1090	9230	1980	4150	4090	1360
29	38	560	82	47	---	4740	573	7610	1610	2320	3230	64
30	162	50	71	77	---	4780	1390	6150	2050	3360	3270	55
31	111	---	60	140	---	5970	---	9130	---	4010	1060	---
MEAN	908	206	48.6	45.3	842	5221	1806	4732	4247	4263	1221	612
MAX	3190	1000	214	140	3900	10200	5750	9230	9420	8350	4090	2880
MIN	21	21	21	26	36	904	38	56	76	1820	15	24
IN.	.45	.10	.02	.02	.37	2.56	.86	2.32	2.02	2.09	.60	.29

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

	MEAN	785	1731	2379	1054	1769	2946	2507	2071	2532	2229	859	946
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	1982
MIN	4.62	14.8	31.4	30.5	81.6	87.0	126	67.5	126	75.2	13.9	25.3	
(WY)	1980	1981	1980	1980	1989	1989	1989	1989	1988	1983	1980	1983	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	2026	1816
HIGHEST ANNUAL MEAN		2703
LOWEST ANNUAL MEAN		283
HIGHEST DAILY MEAN	10200	65600
LOWEST DAILY MEAN	15	.44
INSTANTANEOUS PEAK FLOW	10800	72800
INSTANTANEOUS PEAK STAGE	13.91	33.00
INSTANTANEOUS LOW FLOW	14	.44
ANNUAL RUNOFF (INCHES)	11.71	10.50
10 PERCENTILE	6040	5300
50 PERCENTILE	843	265
95 PERCENTILE	25	20



## SALT RIVER BASIN

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 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.--Estimated daily discharges: Dec. 21 to Jan 10. Water-discharge 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. Flow regulated by Clarence Cannon 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	103	95	72	78	3450	6170	521	9110	2230	4430	162
2	66	52	45	63	186	3370	4010	1100	6210	2230	2570	79
3	61	41	37	56	130	2120	4930	2950	5770	2230	200	63
4	885	37	34	50	95	1070	3560	2160	9520	2200	96	423
5	996	33	32	44	82	1780	3530	1130	9060	2210	69	3050
6	3140	558	139	41	76	3100	2550	112	1350	2040	54	2210
7	1510	320	59	39	65	3010	1990	2200	4730	2040	45	919
8	100	54	36	37	57	3740	1220	8530	3290	1910	41	82
9	67	1020	33	36	52	3600	1460	4560	1610	3570	60	446
10	1740	148	31	45	648	2550	677	2010	9420	6100	61	3040
11	1180	48	30	59	107	1720	932	4980	9200	7450	1040	1730
12	1590	37	30	54	44	3240	666	6420	9040	5760	118	107
13	2350	33	207	49	232	3190	899	5350	8900	4790	90	199
14	2540	32	72	44	94	4930	734	3900	7130	6110	66	80
15	199	32	63	40	163	9110	187	1390	4560	6070	212	46
16	45	771	58	40	277	8360	741	3170	5090	6860	85	571
17	860	100	53	43	169	2160	620	1150	5470	8330	1180	86
18	2200	577	50	47	149	2930	2170	2480	5540	7030	1510	55
19	2910	1270	45	53	176	9660	788	6610	4280	6010	1450	48
20	3250	267	40	63	132	9490	2150	3460	2060	5170	132	39
21	2010	76	38	56	96	9250	1690	8870	2020	3820	144	41
22	334	74	52	49	3560	9280	903	8790	2170	3840	1910	38
23	46	43	48	43	4520	8840	1160	8800	2060	4860	655	36
24	45	34	44	41	3230	7600	2690	8900	2160	4330	739	35
25	767	194	40	40	2610	9860	3060	8050	1830	5600	2720	34
26	53	66	36	49	3490	9940	1440	5030	1620	5460	3530	31
27	192	35	34	55	3010	9450	773	5730	2090	5540	3790	2000
28	48	35	32	49	3040	6800	491	9600	2050	5120	4180	2920
29	32	535	30	45	---	4620	935	8660	1720	2140	3320	135
30	36	712	90	53	---	4630	836	5630	2210	3160	3360	72
31	139	---	82	74	---	5180	---	9270	---	4230	2490	---
MEAN	950	245	55.3	49.3	949	5420	1799	4888	4709	4466	1302	626
MAX	3250	1270	207	74	4520	9940	6170	9600	9520	8330	4430	3050
MIN	32	32	30	36	44	1070	187	112	1350	1910	41	31
IN.	.44	.11	.03	.02	.40	2.52	.81	2.27	2.12	2.08	.61	.28

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

	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
MEAN	1061	1120	1129	1232	1888	2858	3106	2354	2437	1523	833	990
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	150	73.4	45.8	2.49	.18	9.73
(WY)	1957	1954	1954	1954	1934	1956	1989	1934	1977	1936	1936	1976

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	2134	1707
HIGHEST ANNUAL MEAN		4692
LOWEST ANNUAL MEAN		307
HIGHEST DAILY MEAN	9940	Mar 26
LOWEST DAILY MEAN	30	Dec 11-12, 29
INSTANTANEOUS PEAK FLOW	13400	Mar 15
INSTANTANEOUS PEAK STAGE	13.68	Mar 15
INSTANTANEOUS LOW FLOW		Unknown
ANNUAL RUNOFF (INCHES)	11.68	9.35
10 PERCENTILE	6320	4570
50 PERCENTILE	896	263
95 PERCENTILE	35	16



## SALT RIVER BASIN

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 September 1989.

REMARKS.--Discontinued as National stream-quality accounting network station Sept. 1986. Discontinued as daily sediment station Sept. 1989. Oct. 1989 to present, partial-data site.

## 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, Dec. 2, 1988, and Mar. 1, 1989.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 143,000 tons, May 18, 1981; minimum daily, 0.20 tons, Mar. 1, 1989.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED CENT (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION) (MG/L) (00301)	HARD- NESS TOTAL (MG/L CACO3) (00900)	CALCIUM DIS- SOLVED AS CA (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED AS MG (MG/L AS MG) (00925)
OCT											
03...	1030	60	318	8.1	16.5	7.5	9.1	93	120	38	6.6
MAR											
06...	1320	943	256	8.2	3.5	5.0	12.6	95	100	32	5.6
APR											
02...	1020	4510	222	7.8	7.5	30	10.4	88	91	28	5.0

DATE	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 (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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	RESIDUE VOLATILE, SUS- PENDE (MG/L) (00535)
OCT										
03...	12	4.9	94	32	14	0.2	1.7	169	16	<1
MAR										
06...	8.6	5.1	90	24	7.4	0.6	1.7	151	38	<1
APR										
02...	7.2	5.4	74	25	8.4	0.1	3.8	142	52	23

## SALT RIVER BASIN

05508000 SALT RIVER NEAR NEW LONDON, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	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- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)
OCT 03...	<0.01	<0.10	0.02	0.01	0.70	0.05	0.02	<0.01	4.9	4.9
MAR 06...	<0.01	0.40	0.01	<0.01	1.1	0.02	<0.01	<0.01	6.3	5.4
APR 02...	0.02	0.80	0.12	0.10	0.80	0.11	0.03	0.03	7.6	6.2
DATE	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)				TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SEDI- MENT, SUS- PENDE (MG/L) (80154)			
JAN 24...	41				6.0	371	8			
MAR 14...	2960				12.0	242	173			
MAR 16...	7480				9.0	242	148			
MAY 17...	697				16.0	243	185			
JUL 24...	1000				24.5	180	22			
SEP 11...	1230				24.5	184	18			

## 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 discharge: Dec. 8. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	.20	1.0	3.4	4.5	45	48	28	52	7.4	3.5	.37
2	4.0	.16	1.3	3.5	13	42	41	27	49	6.4	2.9	.41
3	3.5	.24	1.1	3.2	21	38	37	29	45	5.5	3.7	.34
4	3.4	.21	1.2	4.6	41	34	37	2560	40	4.9	176	.25
5	4.1	.27	1.2	6.1	53	32	33	569	39	4.4	142	.28
6	3.8	.21	1.2	5.2	54	31	31	170	161	3.8	73	.19
7	2.6	.30	1.0	3.8	52	28	29	101	1350	3.5	34	.12
8	2.4	.41	.90	3.5	49	467	30	73	801	3.3	17	.10
9	2.1	.40	.93	3.9	45	269	29	60	173	3.0	9.2	.11
10	2.0	.29	1.5	3.2	41	100	28	54	77	3.0	5.8	.10
11	2.4	.47	1.9	2.8	42	67	26	47	55	1360	3.9	.08
12	2.3	.30	1.5	1.9	48	60	25	1080	44	496	3.0	.09
13	2.1	.30	1.5	1.4	50	52	33	627	36	207	2.7	.11
14	1.5	.46	1.6	1.2	49	1580	94	178	35	146	2.0	.15
15	1.5	.45	1.3	.94	112	4310	79	2600	39	92	1.7	.20
16	1.0	.33	1.1	1.2	238	454	106	11900	32	62	1.5	.34
17	.75	.43	1.0	2.2	94	141	60	2560	26	41	1.8	.28
18	.44	.40	.89	5.5	70	82	48	419	21	29	6.1	.43
19	.29	.60	1.0	5.9	94	64	44	266	18	20	3.7	.49
20	.28	.83	1.5	5.6	59	56	44	200	25	15	4.3	.35
21	.42	.48	1.4	4.9	50	53	43	145	47	24	5.5	.66
22	.54	.40	1.4	4.6	3310	49	42	111	39	77	4.0	.58
23	.65	.49	1.5	5.3	1500	41	41	88	30	47	3.3	.24
24	.75	.58	1.6	4.8	395	42	39	77	19	38	3.9	.34
25	.72	.74	2.0	4.4	117	46	35	160	15	24	2.6	.78
26	.54	.80	2.6	4.2	67	71	33	107	13	14	1.8	1.0
27	.46	1.1	3.1	4.3	59	72	32	96	11	10	1.4	1.0
28	.34	.71	3.8	2.5	52	62	34	79	9.7	8.4	1.1	.63
29	.33	.82	3.2	2.4	---	56	33	65	8.3	6.5	.77	.25
30	.17	.93	3.5	2.5	---	54	30	57	7.6	5.5	.43	.23
31	.16	---	3.2	2.9	---	50	---	54	---	4.4	.29	---
MEAN	1.58	.48	1.67	3.61	242	276	42.1	793	111	89.4	16.9	.35
MAX	4.1	1.1	3.8	6.1	3310	4310	106	11900	1350	1360	176	1.0
MIN	.16	.16	.89	.94	4.5	28	25	27	7.6	3.0	.29	.08
IN.	.01	.00	.01	.02	1.22	1.54	.23	4.44	.60	.50	.09	.00

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

	MEAN	57.3	239	265	83.1	221	215	214	224	121	215	35.7	39.0
MAX	376	1310	984	274	766	738	777	793	451	1788	93.7	163	
(WY)	1987	1986	1983	1982	1985	1984	1983	1990	1982	1981	1985	1986	
MIN	.22	.48	1.67	2.58	3.40	9.23	26.6	15.1	2.23	.84	1.17	.32	
(WY)	1989	1990	1990	1980	1980	1981	1986	1988	1988	1988	1984	1988	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	132	160
HIGHEST ANNUAL MEAN		239
LOWEST ANNUAL MEAN		36.5
HIGHEST DAILY MEAN	11900	15600
LOWEST DAILY MEAN	.08	.08
INSTANTANEOUS PEAK FLOW	15000	16200
INSTANTANEOUS PEAK STAGE	16.42	16.86
INSTANTANEOUS LOW FLOW	0.07	0.0
ANNUAL RUNOFF (INCHES)	8.67	10.57
10 PERCENTILE	110	216
50 PERCENTILE	5.1	22
95 PERCENTILE	.22	.34

## 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. 16 to Nov. 28. Water-discharge records good except for estimated daily discharges, which are poor. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	3.8	2.7	11	9.7	116	472	236	320	58	23	9.8
2	2.5	3.5	2.7	9.2	11	101	383	174	267	52	21	9.4
3	1.6	2.5	2.1	9.3	12	84	312	430	223	48	29	8.8
4	2.0	2.3	2.5	10	19	68	240	8770	190	44	40	8.2
5	3.7	2.1	2.8	8.8	21	56	195	3720	175	47	96	7.6
6	7.8	2.0	3.5	7.7	21	46	161	1430	1660	50	76	7.3
7	4.0	2.0	3.2	7.3	18	40	130	829	15800	101	56	7.1
8	2.6	2.0	2.9	11	17	632	108	587	22400	72	55	6.8
9	1.3	2.0	2.7	9.6	17	1980	96	439	5620	51	45	6.5
10	1.7	2.1	3.2	8.9	15	895	109	360	1860	40	34	6.3
11	2.1	2.2	3.1	8.1	14	453	101	285	709	164	30	6.1
12	1.5	2.5	2.6	5.7	13	281	92	8130	480	1200	27	6.0
13	1.6	2.1	2.7	4.6	11	190	495	15800	352	671	27	6.3
14	2.2	2.2	2.6	4.7	11	2230	3450	2530	283	266	24	7.5
15	3.1	2.8	3.3	4.7	25	12100	1210	4900	266	128	20	7.5
16	2.9	2.5	2.9	4.5	98	4080	850	50300	243	99	22	7.0
17	6.0	2.0	2.9	5.4	248	1420	628	41900	202	93	26	6.3
18	10	2.1	3.0	13	204	665	425	7080	168	75	23	7.7
19	6.0	2.1	3.3	20	132	436	328	2620	144	66	21	8.9
20	3.5	2.2	3.3	20	91	320	285	1870	123	54	33	9.1
21	2.0	2.0	3.1	21	69	243	261	1040	150	53	42	11
22	1.5	2.0	2.8	24	572	232	258	780	152	349	27	9.3
23	1.1	2.1	2.7	19	3420	245	237	637	109	177	27	8.8
24	1.5	2.2	3.1	15	1670	216	224	544	99	97	23	7.8
25	2.0	2.2	3.7	13	852	249	189	492	90	69	20	7.3
26	3.0	2.1	4.0	12	387	597	151	6910	81	54	18	7.3
27	2.8	2.0	4.8	14	231	1340	223	2060	75	46	16	7.1
28	1.5	1.9	6.3	13	156	917	745	1430	68	40	15	6.3
29	1.3	1.9	11	11	---	765	590	797	65	36	13	5.9
30	2.5	2.1	18	10	---	874	351	528	62	30	12	5.6
31	3.4	---	13	8.8	---	635	---	396	---	26	11	---
MEAN	2.97	2.25	4.21	11.1	299	1049	443	5419	1748	141	30.7	7.55
MAX	10	3.8	18	24	3420	12100	3450	50300	22400	1200	96	11
MIN	1.1	1.9	2.1	4.5	9.7	40	92	174	62	26	11	5.6
IN.	.00	.00	.01	.01	.34	1.34	.55	6.92	2.16	.18	.04	.01

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

	453	500	530	484	832	999	1147	993	718	513	277	378
MEAN	453	500	530	484	832	999	1147	993	718	513	277	378
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	.10	1.30	1.11	1.63	1.80	2.51	25.8	17.1	11.0	.44	.23	.24
(WY)	1965	1954	1964	1954	1954	1954	1954	1934	1936	1934	1936	1964

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	769	650
HIGHEST ANNUAL MEAN		1821
LOWEST ANNUAL MEAN		27.3
HIGHEST DAILY MEAN	50300	76400
LOWEST DAILY MEAN	1.1	.00
INSTANTANEOUS PEAK FLOW	71200	120000
INSTANTANEOUS PEAK STAGE	30.29	33.4
INSTANTANEOUS LOW FLOW		0
ANNUAL RUNOFF (INCHES)	11.57	9.77
10 PERCENTILE	833	1210
50 PERCENTILE	26	90
95 PERCENTILE	1.5	1.8



## CUIVRE RIVER BASIN

57

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

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1983 to current year.

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

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (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 FLD. AS CACO3 (MG/L) (00904)
NOV												
14...	0945	2.2	411	8.0	11.5	7.1	9.9	93	K52	K36	200	24
JAN												
08...	0945	7.6	462	7.7	1.0	2.9	13.1	94	<4	<4	220	28
MAR												
06...	1000	46	384	8.0	5.5	31	11.3	90	K22	170	170	39
MAY												
01...	0950	242	361	8.0	15.5	4.0	9.7	99	K710	68	170	26
JUL												
02...	0900	51	416	7.6	26.0	7.8	4.5	56	560	180	200	33
SEP												
04...	0940	8.0	397	7.7	25.5	2.5	8.3	102	84	52	190	6

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 DIS TOT IT 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, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV											
14...	62	10	9.8	4.5	172	17	12	0.2	6.6	229	0.31
JAN											
08...	68	13	12	4.5	196	20	14	0.1	5.0	262	0.36
MAR											
06...	54	9.3	9.5	5.6	134	29	15	0.2	8.7	244	0.33
MAY											
01...	54	8.1	9.1	3.3	142	29	13	0.4	5.2	221	0.30
JUL											
02...	64	9.9	9.6	4.2	168	26	14	0.4	6.0	239	0.33
SEP											
04...	59	9.8	9.7	4.7	182	26	16	0.4	3.6	228	0.31

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 1989 TO SEPTEMBER 1990

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- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 14...	1.36	<0.01	<0.10	0.01	0.01	0.90	0.08	0.02	<0.01	31	56
JAN 08...	5.38	<0.01	<0.10	0.02	0.02	0.70	0.06	<0.01	0.01	29	49
MAR 06...	30.4	0.04	2.4	0.14	0.12	0.70	0.12	0.03	0.04	38	86
MAY 01...	144	0.01	0.40	0.03	0.02	0.70	0.08	0.02	0.02	34	81
JUL 02...	32.8	<0.01	0.40	0.05	0.02	1.0	0.08	0.01	<0.01	50	60
SEP 04...	4.92	<0.01	<0.10	0.06	<0.01	0.70	0.47	<0.01	<0.01	28	76

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 14...	<10	<1	130	<0.5	<1	<1	<3	1	8	<1
JAN 08...	<10	<1	120	<0.5	1	<1	<3	<10	13	<10
MAY 01...	<10	<1	87	<0.5	<1	<1	<3	4	28	1
JUL 02...	<10	<1	150	<0.5	<1	1	<3	3	7	2

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 14...	<4	610	0.2	<10	1	<1	<1	140	<6	3
JAN 08...	<4	520	<0.1	<10	<10	<1	<1	140	<6	10
MAY 01...	<4	84	0.1	<10	1	<1	<1	100	<6	36
JUL 02...	6	460	<0.1	<10	3	<1	<1	140	<6	59

## MISSISSIPPI RIVER MAIN STEM

59

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: Nov. 1, Dec. 16-23, Jan. 12, and Feb. 19, 20, 24. Records fair except for estimated daily discharges, which are poor. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43300	32600	33800	30000	45000	68000	129000	87300	239000	302000	147000	176000
2	38800	29000	25700	34100	45900	68800	125000	94100	232000	293000	158000	177000
3	41300	35400	27500	33900	46200	68200	106000	93500	221000	288000	154000	175000
4	41200	35600	33400	29000	42300	68400	105000	99600	203000	286000	158000	170000
5	39900	33000	34800	37200	48300	70900	104000	133000	203000	285000	162000	156000
6	40600	34600	30000	35600	42600	72900	96700	151000	195000	281000	169000	148000
7	43500	31700	31900	34500	47000	74600	95600	160000	199000	274000	169000	136000
8	41200	30700	35300	38200	52200	76700	89000	156000	209000	264000	164000	115000
9	43400	29300	38800	37700	44900	79800	83500	147000	213000	251000	160000	82900
10	37100	30800	38300	37200	49100	79200	76900	144000	183000	235000	151000	60100
11	43800	33600	30500	33500	47600	86000	72900	139000	167000	221000	134000	66500
12	43400	36200	33200	32000	57900	123000	74500	143000	166000	210000	110000	72400
13	36600	35600	33200	30600	53700	169000	83100	175000	170000	197000	98100	72600
14	39800	36900	31400	32000	55200	184000	85500	185000	172000	187000	93800	73800
15	40900	27300	30000	29300	52300	192000	91200	186000	194000	178000	87200	70000
16	39400	28000	32000	34500	50000	208000	86100	225000	205000	173000	82600	68500
17	33700	30500	30000	32800	51700	220000	80700	241000	195000	167000	76400	71200
18	36200	36900	28000	32500	48100	233000	76800	235000	191000	164000	68800	71300
19	31200	34900	27000	41100	47100	238000	78800	205000	203000	153000	74200	73400
20	33900	30500	29000	31200	44100	239000	73700	186000	216000	142000	90500	66800
21	34200	35100	28000	31200	52500	243000	67800	189000	235000	140000	98900	64500
22	38700	33600	31000	36200	48500	239000	51900	203000	263000	166000	113000	64000
23	39200	32000	34000	31200	69300	231000	61400	211000	300000	188000	134000	67900
24	37000	40400	33600	31000	75000	224000	58400	221000	326000	186000	159000	70700
25	36800	37200	32600	28200	79000	218000	63500	224000	337000	175000	159000	68400
26	37100	37500	31800	38300	71200	216000	66300	243000	339000	159000	154000	63500
27	36200	36000	32600	39600	66600	215000	69500	259000	336000	143000	155000	63700
28	36400	28300	33800	41200	66000	210000	74400	261000	330000	122000	162000	63900
29	36000	32200	33300	41700	---	198000	73700	261000	322000	111000	166000	56200
30	34300	32600	31800	38100	---	183000	76100	258000	312000	118000	170000	49400
31	27700	---	29700	45300	---	153000	---	246000	---	126000	175000	---
MEAN	38150	33270	31810	34800	53550	159700	82570	185900	235900	199500	134000	91160
MAX	43800	40400	38800	45300	79000	243000	129000	261000	339000	302000	175000	177000
MIN	27700	27300	25700	28200	42300	68000	51900	87300	166000	111000	68800	49400
IN.	.26	.22	.21	.23	.33	1.07	.54	1.25	1.54	1.34	.90	.59

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

MEAN	115700	76210	73390	62590	72070	111900	116000	103800	108400	86000	72860	67390
MAX	334900	171300	130100	89630	101100	159700	138500	185900	235900	199500	134000	91160
(WY)	1987	1987	1987	1987	1988	1990	1987	1990	1990	1990	1990	1990
MIN	28050	33270	31810	34800	40940	72220	82570	69140	36310	30420	37230	37850
(WY)	1989	1990	1990	1990	1989	1989	1990	1988	1988	1988	1988	1988

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	107100	95800
HIGHEST ANNUAL MEAN		123300
LOWEST ANNUAL MEAN		53860
HIGHEST DAILY MEAN	339000	419000
LOWEST DAILY MEAN	25700	20100
INSTANTANEOUS PEAK FLOW	340000	535000
INSTANTANEOUS PEAK STAGE	428.25	436.99
INSTANTANEOUS LOW FLOW	25700	23900
ANNUAL RUNOFF (INCHES)	8.49	7.63
10 PERCENTILE	227000	170000
50 PERCENTILE	73100	72700
95 PERCENTILE	30200	29500

## MISSISSIPPI RIVER MAIN STEM

05587455 MISSISSIPPI RIVER BELOW GRAFTON, IL

## WATER-QUALITY RECORDS

LOCATION.--Lat. 38°57'04", long. 90°22'16", in sec. 24, T.6 N., R.11 W., Jersey County, Hydrologic Unit 0711009, 11.3 mi above Lock and Dam 26, 19.0 mi above mouth of Missouri River, at mi 214.6 upstream of the mouth of the Ohio River.

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

PERIOD OF RECORD.--March 1989 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT: October 1989 to current year.

EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,910 mg/L, May 23; minimum daily mean, 9 mg/L, Nov. 23.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 1,090,000 tons, May 23; minimum daily, 785 tons, Nov. 23.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 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 FLD. AS CACO3 (MG/L) (00904)
NOV 13...	1325	35600	475	8.5	10.5	12	11.6	105	K32	K4	200	41
JAN 10...	0940	37200	556	8.9	0.0	6.3	17.6	122	40	K4	230	49
MAR 08...	1000	76700	530	8.7	3.0	55	14.0	105	44	27	220	61
MAY 03...	1100	93500	448	8.4	15.0	20	7.4	74	170	K28	190	41
JUN 11...	1050	167000	454	7.9	19.5	180	6.3	69	3700	1700	190	65
SEP 06...	1000	148000	413	8.1	25.0	64	6.6	81	180	410	190	42

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 DIS TOT IT 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, DIS-SOLVED (TONS PER AC-FT) (70303)
NOV 13...	46	21	22	3.2	160	38	28	0.3	0.79	271	0.37
JAN 10...	55	23	27	3.2	182	46	40	0.3	1.0	319	0.43
MAR 08...	51	22	26	4.0	156	42	47	0.2	2.9	339	0.46
MAY 03...	42	20	16	3.6	146	42	27	0.5	0.37	251	0.34
JUN 11...	48	16	10	4.3	122	26	23	0.2	6.7	251	0.34
SEP 06...	49	16	8.8	3.8	146	30	17	0.3	7.8	246	0.33

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

## MISSISSIPPI RIVER MAIN STEM

05587455 MISSISSIPPI RIVER BELOW GRAFTON, IL--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 SOLVED (MG/L AS N) (00631)	NITRO- GEN, DIS- 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- PHORUS DIS- SOLVED (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 13...	26000	0.02	0.66	0.08	0.04	0.70	0.16	0.09	0.07	33	73
JAN 10...	32000	0.03	1.3	0.08	0.10	1.7	0.15	0.05	0.05	17	86
MAR 08...	70200	0.03	3.9	0.15	0.07	1.9	0.12	0.05	0.04	72	88
MAY 03...	63400	0.04	1.7	0.05	0.05	1.6	0.20	0.05	0.06	67	79
JUN 11...	113000	0.01	<0.10	0.10	0.03	1.8	0.16	<0.01	<0.01	--	--
SEP 06...	98300	<0.01	3.7	0.02	<0.01	0.70	0.17	0.10	0.11	109	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 13...	<10	1	52	<0.5	<1	<1	<3	4	7	<1
JAN 10...	<10	<1	47	<0.5	<1	<1	<3	<10	13	10
MAY 03...	<10	1	53	<0.5	1	<1	<3	6	6	1
JUN 11...	20	<1	91	<0.5	<1	<1	<3	5	14	<1

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 13...	7	6	0.2	<10	2	<1	<1	120	<6	9
JAN 10...	7	16	0.1	<10	<10	<1	<1	140	<6	8
MAY 03...	5	1	0.1	<10	2	<1	<1	100	<6	5
JUN 11...	6	7	<0.1	<10	3	<1	<1	110	<6	35

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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)
APR 13...	1225	83100	28	34	43	56	89	94	95	100	100
MAY 21...	1200	194000	37	42	47	56	74	76	85	97	100
JUN 11...	1130	167000	52	63	74	87	100	--	--	--	--
19...	1200	203000	44	53	64	76	97	98	99	100	--
25...	1500	337000	62	74	82	87	98	99	100	100	--



## MISSISSIPPI RIVER MAIN STEM

05587455 MISSISSIPPI RIVER BELOW GRAFTON, IL--Continued

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL

DATE	TIME	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
MAY 03...	1230	1	2	6	53	91	97	99	100	100

## SEDIMENT, SUSPENDED CONCENTRATION (MG/L), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	104	46	---	---	310	---	60	289	156	242	---
2	---	251	28	---	61	281	---	70	192	214	242	---
3	---	431	27	---	42	184	---	77	160	275	238	---
4	---	404	204	---	96	131	---	88	164	213	325	---
5	---	467	67	---	55	125	---	263	180	162	195	---
6	---	174	15	---	46	134	---	796	223	291	184	---
7	---	87	22	---	35	160	---	367	297	444	170	---
8	---	115	22	---	49	190	---	255	328	207	317	---
9	---	126	21	---	80	182	---	256	688	186	181	---
10	---	171	30	---	98	165	---	941	671	241	132	---
11	---	411	25	---	32	380	---	234	450	251	111	47
12	138	457	19	---	20	477	---	245	322	312	90	45
13	118	343	---	---	42	439	---	798	254	490	84	44
14	105	64	---	---	77	523	---	1030	224	308	77	45
15	107	21	---	---	63	683	---	919	268	234	58	49
16	189	35	---	41	40	926	---	1250	830	219	48	41
17	274	40	---	32	57	790	---	894	825	214	50	41
18	283	30	---	25	202	448	---	588	504	203	56	40
19	351	22	---	20	103	384	---	557	492	208	55	46
20	449	25	---	25	40	384	---	447	1110	188	54	45
21	460	49	---	50	34	374	---	1570	1020	188	77	43
22	404	16	---	28	50	352	---	573	845	266	93	90
23	272	9	---	20	77	307	36	1910	917	472	119	99
24	77	10	---	23	313	278	38	1390	647	639	160	57
25	317	11	---	88	351	254	43	631	510	520	183	68
26	360	12	---	152	313	225	36	692	334	411	174	60
27	342	19	---	98	213	---	35	524	303	298	169	49
28	327	26	---	40	293	---	45	434	318	229	162	50
29	292	52	---	---	---	---	61	479	270	248	157	53
30	263	56	---	---	---	---	68	225	231	185	166	52
31	310	---	---	---	---	---	---	196	---	166	---	---
TOTAL	---	4038	---	---	---	---	---	18759	13866	8638	---	---
MEAN	---	135	---	---	---	---	---	605	462	279	---	---
MAX	---	467	---	---	---	---	---	1910	1110	639	---	---
MIN	---	9	---	---	---	---	---	60	160	156	---	---
MED	---	54	---	---	---	---	---	524	325	234	---	---

## 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, 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. 11 and Jan. 14. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	58	35	40	59	35	208	100	260	228	242	89
2	54	51	36	45	33	35	182	95	247	213	224	84
3	51	48	33	50	66	36	163	96	223	197	481	81
4	50	47	46	48	61	35	161	131	202	180	303	81
5	53	47	46	46	55	36	155	151	191	166	206	75
6	70	46	44	45	52	37	144	125	196	178	173	69
7	68	44	40	50	49	57	138	109	2400	219	157	64
8	55	42	39	60	49	122	137	105	2630	176	147	62
9	53	42	53	70	48	165	143	201	582	153	138	63
10	49	40	46	75	44	141	157	225	374	198	129	59
11	46	38	45	100	41	226	140	144	330	203	126	57
12	42	37	43	90	41	160	129	250	296	177	866	55
13	41	41	40	80	43	129	154	520	273	226	992	52
14	39	39	38	100	27	168	171	318	3850	213	316	51
15	39	39	37	123	37	299	157	452	1430	165	237	47
16	41	35	35	137	59	550	149	525	2680	146	443	45
17	49	34	35	189	76	471	142	346	3640	129	414	44
18	53	32	34	262	64	386	130	287	868	117	220	57
19	46	38	34	158	58	296	127	306	710	122	236	62
20	43	42	33	129	56	249	131	280	530	314	456	61
21	45	40	32	118	52	233	130	227	521	232	203	57
22	45	39	31	114	56	218	126	219	1100	171	174	53
23	45	33	30	109	54	202	120	211	689	139	161	49
24	42	37	30	83	53	195	119	372	452	132	149	48
25	42	43	32	90	43	189	114	712	386	380	139	47
26	40	39	31	68	38	194	112	916	344	4320	129	45
27	39	39	32	66	47	182	115	396	309	1720	118	43
28	47	32	35	53	39	184	119	336	281	502	110	51
29	69	36	40	53	---	243	113	313	258	529	104	55
30	64	36	45	59	---	212	107	282	240	331	99	59
31	61	---	42	45	---	213	---	267	---	275	94	---
MEAN	49.7	40.5	37.8	88.9	50.0	190	140	291	883	402	258	58.8
MAX	70	58	53	262	76	550	208	916	3850	4320	992	89
MIN	39	32	30	40	27	35	107	95	191	117	94	43
IN.	.11	.09	.09	.20	.10	.43	.31	.66	1.94	.91	.58	.13

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

	132	118	94.6	98.4	185	292	252	296	420	265	166	186
MEAN	132	118	94.6	98.4	185	292	252	296	420	265	166	186
MAX	1124	990	553	612	890	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	.98	.21	1.20
(WY)	1940	1940	1940	1940	1940	1938	1956	1956	1956	1934	1934	1939

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	208	209
HIGHEST ANNUAL MEAN		677
LOWEST ANNUAL MEAN		23.6
HIGHEST DAILY MEAN	4320	11100
LOWEST DAILY MEAN	27	.00
INSTANTANEOUS PEAK FLOW	7150	16300
INSTANTANEOUS PEAK STAGE	20.70	25.48
INSTANTANEOUS LOW FLOW	14	0
ANNUAL RUNOFF (INCHES)	5.56	5.59
10 PERCENTILE	353	446
50 PERCENTILE	102	65
95 PERCENTILE	34	4.3

## MISSOURI RIVER MAIN STEM

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.--No estimated daily discharges. Records good. Several observations of water temperature and specific conductance were made during the year. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34900	28600	15900	19500	20300	20800	30900	33500	35700	43400	48100	33700
2	34700	26300	15100	18000	19900	20900	32100	33600	35000	45300	44000	33300
3	34600	24300	16500	17300	19300	19100	31500	33400	36900	41300	42700	33400
4	34900	22800	17400	17400	18500	17800	30900	34100	35700	39400	42500	33600
5	34700	21600	16700	17500	17500	17600	30400	34300	35600	40200	39900	33700
6	35100	21100	16400	18000	16900	17100	30400	33600	37200	37400	37500	34100
7	35400	21100	17800	18500	18400	17100	30600	33500	35700	37000	36000	34000
8	35500	20300	19500	18300	19900	18000	30600	33400	41000	38200	35100	34300
9	35400	19700	18700	18100	20400	19100	31000	33100	40700	35200	35000	34400
10	35100	17900	17600	18400	21200	20600	31100	35600	36600	34400	34800	34800
11	35200	17400	17000	18900	22200	24700	31100	36200	35500	36600	35100	34800
12	35100	17900	16600	19500	21500	24300	31300	35100	37100	36000	37000	35000
13	34700	17800	16200	18900	20800	22900	31500	35100	34300	35700	46200	35100
14	34500	17500	14800	18400	20500	23300	32100	33300	42700	36000	42000	35000
15	34400	17100	13800	17900	20900	26800	32100	34800	56500	35100	38200	34800
16	34200	16900	12200	17600	21300	27100	32000	40300	72400	34400	37400	34800
17	34400	17000	10800	18700	20600	26200	32700	36100	89000	34600	37200	34800
18	33800	17000	10200	21700	18900	25300	32700	35500	109000	33600	35800	35000
19	33700	16400	9660	22400	17800	22700	33000	37000	117000	33200	35100	35300
20	33800	15900	9980	21700	17800	20600	32700	40300	118000	35000	38200	35200
21	33800	17000	11800	21200	18000	20600	32600	49200	95500	36000	36400	35600
22	33400	16900	14100	20200	19400	19900	32200	44700	74100	38400	35100	35500
23	33500	16600	14600	18800	20700	18700	32100	37100	65000	37600	35300	34600
24	33600	17100	14000	18000	21100	18700	32200	36200	60400	36900	34800	34500
25	34200	16900	13400	18200	21600	18400	32500	46800	55200	37500	34600	34000
26	34500	16600	13100	18700	20900	18100	33100	56400	49900	73600	36700	34000
27	34800	16700	14400	18500	19900	17700	33200	47800	44800	94300	37900	33800
28	34500	17200	17600	18800	20600	18600	33300	44000	43300	74100	35900	33600
29	33100	17300	20000	19000	---	21000	33600	40000	43900	60900	34900	33200
30	31900	16500	20600	18900	---	24100	33200	38100	41700	50800	34400	33200
31	30100	---	20400	19700	---	28000	---	38600	---	49700	34200	---
MEAN	34240	18780	15380	18930	19890	21150	31960	38090	55180	42960	37680	34370
MAX	35500	28600	20600	22400	22200	28000	33600	56400	118000	94300	48100	35600
MIN	30100	15900	9660	17300	16900	17100	30400	33100	34300	33200	34200	33200
IN.	.10	.05	.04	.05	.05	.06	.09	.11	.15	.12	.10	.09

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

	MEAN	44960	42230	27070	22400	28260	42070	52440	50710	54560	47210	44060	45160
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	31960	35130	38460	33860	34070	34200	
(WY)	1962	1962	1964	1964	1964	1964	1990	1963	1977	1963	1961	1963	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	30760	41790
HIGHEST ANNUAL MEAN		65930
LOWEST ANNUAL MEAN		29670
HIGHEST DAILY MEAN	118000	216000
LOWEST DAILY MEAN	9660	5200
INSTANTANEOUS PEAK FLOW	120000	358000
INSTANTANEOUS PEAK STAGE	20.35	25.60
INSTANTANEOUS LOW FLOW	9660	4420
ANNUAL RUNOFF (INCHES)	1.01	1.37

## 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: Dec. 12 to Jan. 15, Jan. 20, and Mar. 16-20. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	285	294	172	110	340	281	1030	338	1220	710	701	167
2	266	359	187	100	263	262	921	315	1130	645	606	165
3	244	348	132	105	238	253	825	302	1050	593	722	159
4	234	311	164	120	289	251	733	397	974	540	832	170
5	225	293	186	110	359	251	679	455	895	495	587	170
6	228	279	220	100	324	250	648	430	843	791	556	155
7	236	275	224	95	313	298	598	403	2960	998	469	140
8	282	261	185	120	324	746	567	339	4620	657	407	133
9	268	249	135	140	349	2240	558	399	1910	549	382	129
10	233	241	184	165	347	2630	586	985	1170	531	369	124
11	214	231	127	200	333	2350	563	1470	944	833	359	120
12	198	223	120	250	320	1800	533	1000	818	761	694	115
13	189	224	115	220	305	1620	566	1750	733	789	1010	106
14	185	217	110	200	295	2240	645	1070	7800	946	739	102
15	183	211	105	300	217	5890	611	1070	4060	875	501	97
16	172	207	100	324	209	6510	589	1480	5030	648	821	92
17	182	196	100	526	200	3710	551	972	10900	541	884	88
18	240	181	98	596	272	2410	512	787	5940	469	448	90
19	265	179	96	1040	270	1800	491	689	3010	425	375	95
20	225	179	95	654	258	1460	493	697	2060	1310	357	109
21	214	221	94	453	271	1300	470	661	1590	1080	326	113
22	211	219	93	382	290	1210	453	598	2610	866	297	106
23	203	202	92	393	323	1130	442	541	2550	630	294	95
24	199	182	90	368	300	1050	416	729	1990	540	280	88
25	194	175	88	350	320	961	393	5260	1440	2430	266	86
26	186	208	90	610	258	938	380	9190	1210	5660	250	81
27	179	215	88	586	283	895	375	3820	1070	3530	236	83
28	222	197	88	424	322	852	380	2460	946	1860	221	92
29	254	162	95	365	---	1260	368	1950	861	1840	204	86
30	249	155	100	389	---	1180	356	1570	782	1170	187	82
31	258	---	115	337	---	1120	---	1360	---	874	173	---
MEAN	223	230	125	327	293	1585	558	1403	2437	1116	469	115
MAX	285	359	224	1040	359	6510	1030	9190	10900	5660	1010	170
MIN	172	155	88	95	200	250	356	302	733	425	173	81
IN.	.19	.19	.10	.27	.22	1.32	.45	1.17	1.97	.93	.39	.09

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

	MEAN	614	485	605	398	769	993	1479	1612	1505	1041	630	762
MAX	2313	1058	1758	1199	1839	1717	3614	3899	4936	2681	2758	2738	
(WY)	1987	1987	1983	1983	1983	1983	1984	1984	1984	1986	1987	1989	
MIN	47.2	77.1	69.7	67.4	82.2	315	58.8	48.6	68.5	75.1	46.2	50.1	
(WY)	1989	1989	1989	1989	1989	1989	1989	1989	1988	1988	1988	1988	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	743	854
HIGHEST ANNUAL MEAN		1516
LOWEST ANNUAL MEAN		320
HIGHEST DAILY MEAN	10900	23600
LOWEST DAILY MEAN	81	28
INSTANTANEOUS PEAK FLOW	17600	21000
INSTANTANEOUS PEAK STAGE	18.59	20.4
INSTANTANEOUS LOW FLOW	79	23
ANNUAL RUNOFF (INCHES)	7.31	8.40
10 PERCENTILE	1560	1980
50 PERCENTILE	339	343
95 PERCENTILE	95	44



## MISSOURI RIVER MAIN STEM

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: Dec. 16-18, 20-25, and Mar. 22, 23. Water-discharge records good. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34300	30300	16100	22000	22300	22700	32300	34400	40500	42800	51200	33100
2	34300	29000	15100	20600	22800	23000	34500	34600	37300	47400	47200	32400
3	33900	26300	14500	18700	22000	22500	34200	34400	38800	45800	46000	32200
4	34100	24400	17000	18400	20900	19900	32900	35000	39500	40600	50500	32600
5	34400	23000	18200	18300	19800	18400	31900	36000	37800	40900	34600	33000
6	34700	22000	17800	18600	18600	18000	31500	35100	39800	40500	40100	33300
7	35500	22000	18000	19500	18000	17700	31700	34200	43000	38100	37700	33700
8	36200	22100	20400	20200	19900	18400	31600	33800	49500	40200	36000	33400
9	36400	21000	22000	19900	21400	19400	31800	33900	54800	39500	34800	33700
10	36000	20000	20700	19900	22000	22800	32200	35200	42800	36400	34400	34100
11	35900	17700	19500	20600	23000	24900	32400	39700	38700	38000	34200	34400
12	36000	17700	18400	21000	23700	28100	32200	39100	38900	40400	36200	34300
13	35600	18500	18400	21000	22100	25900	32700	38600	38800	39200	46300	34500
14	35500	18300	16900	20000	21400	24800	33100	38800	42400	39200	47900	34700
15	36200	18000	15300	19000	21700	30600	33100	41100	72200	39100	39700	35000
16	36200	17600	14000	18000	22400	38500	32600	51900	85500	37400	41000	35500
17	36600	17700	12000	17900	22800	35000	32700	42700	102000	36900	40200	35400
18	36400	18000	10000	20100	21500	30900	32900	38000	115000	36400	36400	35300
19	36400	18200	8760	23800	19500	27900	33100	40000	120000	34700	34800	36000
20	36400	17400	8600	25000	18600	24100	33300	40500	134000	35400	38600	36300
21	36700	17400	8500	23800	18700	22300	33000	52300	115000	42900	38600	36600
22	36500	19000	8400	23200	19600	22400	32800	55500	94300	39800	35000	37100
23	36000	18700	8500	22200	21900	21200	32600	43200	72200	39200	34300	36500
24	36100	18200	9500	20400	23100	20500	32700	37600	65200	36200	34700	35800
25	36100	18500	12000	20000	23600	20400	32800	45300	61900	35700	33700	35300
26	36500	18000	12200	20300	23700	20300	33200	75400	55500	67100	34500	35400
27	37000	17400	12400	21300	22400	20000	34200	61400	50000	120000	37900	35400
28	37200	17400	14800	21000	21600	19100	34400	52000	45600	93300	36700	35400
29	36500	17900	19200	21000	---	21000	34300	46300	45400	73100	34900	34800
30	34400	17400	22100	21100	---	24600	34800	41700	44800	58000	33800	34500
31	32300	---	22600	21300	---	28100	---	41400	---	51700	33500	---
MEAN	35690	19970	15220	20580	21390	23660	32920	42230	62040	46640	38850	34660
MAX	37200	30300	22600	25000	23700	38500	34800	75400	134000	120000	51200	37100
MIN	32300	17400	8400	17900	18000	17700	31500	33800	37300	34700	33500	32200
IN.	.10	.05	.04	.06	.05	.06	.09	.12	.16	.13	.11	.09

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

	MEAN	38550	35360	22260	19470	26450	44660	57400	51610	65050	53610	41010	40120
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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	32860	41320
HIGHEST ANNUAL MEAN	72080	1984
LOWEST ANNUAL MEAN	20490	1940
HIGHEST DAILY MEAN	134000	Jun 20 380000
LOWEST DAILY MEAN	8400	Dec 22 2300
INSTANTANEOUS PEAK FLOW	140000	Jun 20 397000
INSTANTANEOUS PEAK STAGE	21.77	Jun 20 26.82
INSTANTANEOUS LOW FLOW	8200	Dec 20 2300
ANNUAL RUNOFF (INCHES)	1.06	1.34
10 PERCENTILE	45800	70200
50 PERCENTILE	33500	37100
95 PERCENTILE	17000	11500



## MISSOURI RIVER MAIN STEM

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

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 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 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (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 FLD. AS CACO3 (MG/L) (00904)
OCT												
03...	0730	33600	750	8.2	17.5	20	9.1	94	85	29	210	37
NOV												
07...	0730	22000	810	8.2	9.5	18	9.9	87	220	28	240	36
DEC												
05...	0730	18400	790	8.4	2.5	14	12.6	93	K600	140	260	53
JAN												
17...	0715	17700	730	8.1	4.0	12	12.9	99	140	K36	250	66
FEB												
06...	0750	18800	770	8.3	2.5	12	13.3	98	K150	K30	240	48
MAR												
06...	0700	18200	710	8.1	7.0	33	11.9	98	K15	K12	250	56
APR												
10...	0740	32000	748	8.6	11.0	10	10.5	97	73	92	250	120
MAY												
08...	0715	34000	755	8.6	16.0	14	10.1	103	K20	K14	240	69
JUN												
05...	0730	37800	718	8.4	19.5	53	7.9	87	140	81	240	55
JUL												
10...	0730	36700	759	8.2	28.0	63	6.4	82	210	82	260	71
AUG												
15...	0730	40400	699	8.4	25.0	170	5.9	72	K7300	1400	220	54
SEP												
11...	0745	34500	786	8.6	27.0	22	7.5	94	30	28	240	60

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 DIS TOT IT 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, DIS- SOLVED PER (TONS AC-FT) (70303)
OCT											
03...	52	20	68	5.3	174	200	19	0.5	7.8	470	0.64
NOV											
07...	58	22	65	5.6	200	190	24	0.5	12	504	0.69
DEC											
05...	66	24	68	5.8	210	180	27	0.5	16	516	0.70
JAN											
17...	62	22	67	5.8	179	180	25	0.5	16	505	0.69
FEB											
06...	62	20	61	5.4	189	170	24	0.4	17	505	0.69
MAR											
06...	64	21	63	7.0	190	160	28	0.5	19	495	0.67
APR											
10...	63	22	68	6.6	131	150	16	0.4	12	502	0.68
MAY											
08...	59	22	68	5.9	169	200	25	0.3	8.4	491	0.67
JUN											
05...	62	21	57	6.2	186	180	18	0.4	11	472	0.64
JUL											
10...	64	23	63	5.7	184	180	23	0.3	11	494	0.67
AUG											
15...	55	20	66	5.8	165	160	28	0.4	9.1	434	0.59
SEP											
11...	57	23	72	5.8	176	200	20	0.5	7.4	477	0.65

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

## MISSOURI RIVER MAIN STEM

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

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- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 03...	42600	<0.01	0.11	0.02	0.01	0.8	0.14	0.03	0.03	--	--
NOV 07...	29900	<0.01	0.46	0.01	<0.01	0.5	0.16	0.05	0.04	147	38
DEC 05...	25600	0.01	0.62	0.20	0.20	0.6	0.14	0.07	0.07	--	--
JAN 17...	24100	0.01	0.79	0.12	0.12	0.5	0.09	0.07	0.08	219	16
FEB 06...	25600	<0.01	0.76	0.11	0.10	0.5	0.12	0.11	0.12	--	--
MAR 06...	24300	0.01	0.90	0.06	0.02	0.8	0.06	0.09	0.09	170	31
APR 10...	43400	<0.01	0.60	<0.01	<0.01	0.8	0.16	0.04	0.04	--	--
MAY 08...	45100	--	--	--	--	--	--	--	--	243	31
JUN 05...	48200	<0.01	1.2	0.05	<0.01	1.1	0.32	0.07	0.07	--	--
JUL 10...	49000	0.01	1.6	0.04	0.03	0.6	0.30	0.11	0.10	453	69
AUG 15...	47300	0.01	0.80	0.16	0.03	2.0	0.15	0.11	0.10	--	--
SEP 11...	44400	<0.01	0.50	<0.01	<0.01	0.3	0.38	0.05	0.04	352	29

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 07...	20	2	110	<0.5	<1	<1	<3	1	8	<1
JAN 17...	<10	2	86	<0.5	<1	1	<3	<10	8	<10
MAY 08...	<10	2	88	<0.5	<1	<1	<3	3	4	<1
JUL 10...	<10	3	160	<0.5	1	1	<3	3	11	1

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 07...	44	5	0.5	<10	3	2	<1	530	<6	20
JAN 17...	41	7	<0.1	<10	<10	2	<1	550	<6	4
MAY 08...	47	1	<0.1	<10	2	2	<1	530	<6	5
JUL 10...	45	2	<0.1	<10	3	2	<1	480	<6	8

## MISSOURI RIVER MAIN STEM

69

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

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	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)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70331)
OCT									
03...	62	33800	166	--	--	--	--	--	64
03...	142	33800	320	--	--	--	--	--	31
03...	242	33800	327	--	--	--	--	--	29
03...	342	33800	208	--	--	--	--	--	39
03...	456	33800	267	--	--	--	--	--	31
NOV									
14...	50	18500	119	--	--	--	--	--	40
14...	130	18500	313	--	--	--	--	--	19
14...	230	18500	231	--	--	--	--	--	28
14...	330	18500	202	--	--	--	--	--	30
14...	444	18500	184	--	--	--	--	--	33
FEB									
13...	49	21900	140	--	--	--	--	--	59
13...	129	21900	317	--	--	--	--	--	26
13...	228	21900	268	--	--	--	--	--	34
13...	328	21900	247	--	--	--	--	--	37
13...	430	21900	254	--	--	--	--	--	33
MAR									
27...	50	20400	182	--	--	--	--	--	83
27...	130	20400	241	--	--	--	--	--	69
27...	230	20400	307	--	--	--	--	--	49
27...	330	20400	260	--	--	--	--	--	59
27...	444	20400	228	--	--	--	--	--	64
APR									
10...	60	32400	200	--	--	--	--	--	67
10...	140	32400	303	--	--	--	--	--	50
10...	240	32400	398	--	--	--	--	--	34
10...	340	32400	337	--	--	--	--	--	39
10...	454	32400	323	--	--	--	--	--	43
MAY									
21...	69	55500	585	84	89	97	100	100	--
21...	149	55500	761	66	74	98	100	100	--
21...	270	55500	543	84	91	100	100	100	--
21...	390	55500	484	--	--	--	--	--	--
21...	480	55500	641	77	84	98	100	100	--
JUN									
19...	99	119000	5580	97	98	100	100	100	--
19...	219	119000	5940	95	97	100	100	100	--
19...	339	119000	8310	96	97	100	100	100	--
19...	493	119000	11700	95	96	99	100	100	--
19...	614	119000	11700	98	99	100	100	100	--
JUL									
26...	62	62500	4020	98	99	100	100	100	--
26...	145	62500	3950	96	97	100	100	100	--
26...	247	62500	4220	90	93	99	100	100	--
26...	372	62500	3910	89	94	100	100	100	--
26...	475	62500	4490	79	85	99	100	100	--
AUG									
15...	70	38900	892	--	--	--	--	--	82
15...	150	38900	708	--	--	--	--	--	94
15...	349	38900	980	--	--	--	--	--	82
15...	451	38900	425	--	--	--	--	--	87
SEP									
06...	59	33400	140	--	--	--	--	--	65
06...	139	33400	287	--	--	--	--	--	28
06...	239	33400	247	--	--	--	--	--	38
06...	339	33400	198	--	--	--	--	--	53
06...	437	33400	192	--	--	--	--	--	43

## MISSOURI RIVER MAIN STEM

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

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL

DATE	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)
OCT									
03...	62	0	0	1	8	57	84	97	100
03...	142	0	0	17	49	81	90	94	100
03...	242	0	0	3	19	69	83	86	100
03...	342	0	0	12	66	95	100	100	100
03...	456	0	3	77	97	99	100	100	100
NOV									
14...	50	1	1	4	48	87	99	100	100
14...	130	0	0	51	92	99	100	100	100
14...	230	2	4	57	96	98	99	100	100
14...	330	1	1	54	99	100	100	100	100
14...	444	2	3	81	99	100	100	100	100
FEB									
13...	48	1	1	3	51	94	100	100	100
13...	128	0	0	55	99	100	100	100	100
13...	228	1	1	26	68	95	100	100	100
13...	328	1	1	11	67	97	100	100	100
13...	430	2	2	12	89	100	100	100	100
MAR									
27...	50	0	0	0	35	77	93	96	100
27...	130	0	0	8	44	81	96	98	100
27...	230	0	0	40	89	98	100	100	100
27...	330	0	0	77	99	100	100	100	100
27...	444	1	2	88	99	100	100	100	100
APR									
10...	60	0	0	3	41	87	98	100	100
10...	140	2	2	36	90	99	100	100	100
10...	240	1	2	65	98	100	100	100	100
10...	340	0	0	48	94	100	100	100	100
10...	454	0	0	51	98	100	100	100	100
MAY									
21...	70	0	0	3	27	71	93	100	100
21...	150	0	0	36	96	98	100	100	100
21...	270	0	0	22	70	96	100	100	100
21...	390	0	1	54	91	99	100	100	100
21...	480	0	1	60	100	100	100	100	100
JUN									
19...	105	1	3	51	100	100	100	100	100
19...	185	1	2	88	99	100	100	100	100
19...	285	1	1	76	100	100	100	100	100
19...	385	0	0	30	92	100	100	100	100
19...	487	0	0	2	79	99	100	100	100
JUL									
26...	67	0	0	4	42	96	99	100	100
26...	147	0	0	29	79	96	99	100	100
26...	247	2	2	54	93	100	100	100	100
26...	367	0	5	71	93	99	100	100	100
26...	469	1	2	41	73	95	99	100	100
AUG									
15...	70	0	0	2	26	71	--	97	100
15...	150	0	0	7	43	83	97	100	100
15...	250	0	0	10	46	99	100	100	100
15...	350	0	0	31	76	95	98	100	100
15...	452	0	0	9	59	97	100	100	100
SEP									
06...	59	0	0	0	16	70	93	100	100
06...	139	0	0	64	99	100	100	100	100
06...	239	0	0	45	92	99	100	100	100
06...	339	3	4	38	75	96	100	100	100
06...	437	1	2	27	56	80	90	94	100

## PLATTE RIVER BASIN

06819500 ONE HUNDRED AND TWO RIVER AT MARYVILLE, MO

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.

DRAINAGE AREA.--515 mi<sup>2</sup>.

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: Dec. 15 to Jan. 1, Apr. 3, June 19-27, and June 30 to July 25. Records fair except for estimated daily discharges, which are poor. 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	49	12	11	42	27	514	81	249	119	184	27
2	16	41	12	11	24	27	333	81	230	101	153	27
3	14	33	10	14	32	24	248	79	203	70	372	27
4	12	27	12	18	29	23	222	179	170	58	275	21
5	14	22	12	16	31	27	199	241	145	44	155	15
6	14	19	14	13	33	27	162	155	155	44	112	17
7	14	18	16	13	35	365	138	114	2930	83	91	20
8	16	19	13	14	40	2340	132	98	2300	80	82	11
9	18	20	9.3	18	39	889	135	388	555	48	76	8.6
10	14	17	11	161	37	1010	149	331	319	70	74	13
11	12	15	6.6	312	35	2400	143	185	231	261	72	17
12	9.1	15	8.6	200	33	1090	116	785	192	289	71	16
13	13	17	11	92	32	799	135	1240	167	341	115	15
14	10	21	9.5	74	27	4400	195	482	5960	257	107	13
15	9.8	18	10	65	23	6400	197	712	2090	130	176	8.2
16	11	14	9.5	54	24	3210	217	1010	3440	94	645	12
17	11	14	9.5	91	21	1030	180	425	6930	80	587	8.1
18	11	13	9.0	188	23	612	156	279	1730	65	168	13
19	11	12	9.0	88	22	421	139	263	748	143	95	16
20	9.8	13	8.5	81	22	333	151	328	589	4050	73	14
21	10	12	7.5	49	26	306	173	225	439	997	60	17
22	8.8	12	4.2	46	38	279	149	189	1520	599	54	10
23	7.3	12	1.5	58	52	240	134	178	898	412	47	6.7
24	10	12	1.3	53	59	222	124	257	438	133	45	5.0
25	12	15	4.5	56	51	228	115	4380	289	6680	40	6.0
26	11	14	10	55	33	238	107	4380	208	4030	34	7.1
27	10	12	7.5	58	46	207	108	858	187	4630	29	8.9
28	27	9.7	8.0	37	33	220	109	532	156	759	27	25
29	41	11	9.0	37	---	514	101	397	149	1670	26	15
30	57	12	10	44	---	475	88	320	144	439	26	16
31	43	---	11	31	---	505	---	273	---	247	28	---
MEAN	15.9	18.0	9.26	66.4	33.6	932	169	627	1125	872	132	14.5
MAX	57	49	16	312	59	6400	514	4380	6930	6680	645	27
MIN	7.3	9.7	1.3	11	21	23	88	79	144	44	26	5.0
IN.	.04	.04	.02	.15	.07	2.09	.37	1.40	2.44	1.95	.30	.03

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

MEAN	151	120	83.2	102	235	419	336	410	478	219	134	168
MAX	1897	945	818	1186	1240	1874	1655	2242	3187	1452	992	1312
(WY)	1974	1942	1983	1960	1973	1979	1984	1982	1947	1986	1982	1977
MIN	.05	.59	1.12	.11	2.09	3.42	.74	.11	5.18	.50	.18	.03
(WY)	1989	1989	1989	1977	1989	1954	1956	1989	1988	1989	1988	1988

### SUMMARY STATISTICS

FOR 1990 WATER YEAR

FOR PERIOD OF RECORD

AVERAGE FLOW	337		238	
HIGHEST ANNUAL MEAN			658	1982
LOWEST ANNUAL MEAN			18.6	1934
HIGHEST DAILY MEAN	6930	Jun 17	25500	Oct 12 1973
LOWEST DAILY MEAN	1.3	Dec 24	.00	Aug 1 1934
INSTANTANEOUS PEAK FLOW	12400	Jun 14	28000	Oct 12 1973
INSTANTANEOUS PEAK STAGE	14.73	Jun 14	19.25	Oct 12 1973
INSTANTANEOUS LOW FLOW	1.1	Dec 23	0	Several Years
ANNUAL RUNOFF (INCHES)	8.89		6.26	
10 PERCENTILE	613		476	
50 PERCENTILE	54		31	
95 PERCENTILE	8.7		1.1	



## PLATTE RIVER BASIN

06820500 PLATTE RIVER NEAR AGENCY, MO

LOCATION.--Lat 39°41'20", 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. Nov. 15, 1965 to Oct. 25, 1989, water-stage recorder at site 150 ft upstream at present datum.

REMARKS.--Estimated daily discharges: Oct. 1-26, Dec. 14-28, Jan. 1, 2, 8-19, Mar. 7-9, 12, 14, 15, and Aug. 20-29. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	115	398	46	70	147	158	1560	299	708	479	689	80
2	100	344	46	70	136	135	1250	266	642	435	548	76
3	90	272	42	71	119	116	937	251	577	389	664	75
4	85	212	40	71	113	105	767	685	518	348	1750	69
5	80	173	47	87	108	104	664	804	467	313	1040	67
6	75	142	50	92	127	94	592	790	591	296	578	64
7	70	122	51	108	136	134	532	612	918	282	421	61
8	65	110	42	120	159	3110	480	462	5700	286	351	58
9	60	103	50	115	147	5240	455	500	7220	279	304	56
10	57	95	50	110	142	2260	452	1300	1600	263	273	57
11	55	90	43	120	134	3120	440	1190	931	316	302	47
12	60	86	49	100	127	4630	429	1920	706	535	284	43
13	58	82	38	150	115	2320	520	3740	581	809	486	42
14	55	75	37	400	105	2960	818	4190	3470	506	460	44
15	50	69	36	350	104	11400	713	4460	9450	503	412	45
16	55	64	36	370	98	13100	689	6150	5330	410	734	41
17	50	64	36	350	109	8420	620	2580	6990	305	1260	40
18	48	63	36	250	93	2560	547	1390	10300	244	1140	41
19	46	61	36	320	99	1560	490	1030	6300	206	636	43
20	45	58	36	369	90	1190	466	844	3350	721	501	42
21	44	59	35	328	97	980	475	842	2400	7800	370	71
22	43	56	34	275	176	873	472	744	5590	3160	270	52
23	42	54	34	233	392	796	466	637	4990	1890	210	52
24	40	52	34	210	317	752	418	665	2110	1060	175	47
25	45	51	35	210	259	721	376	1170	1290	696	150	41
26	52	51	37	193	207	737	348	5040	949	3120	130	38
27	51	53	40	200	195	844	390	8160	783	5290	120	35
28	77	55	55	213	169	800	460	2050	671	5480	110	34
29	90	50	67	183	---	1780	389	1260	585	1600	104	31
30	263	48	67	154	---	1850	334	965	524	2080	94	38
31	310	---	68	143	---	1490	---	809	---	1060	87	---
MEAN	76.6	107	43.6	195	151	2398	585	1800	2875	1328	473	51.0
MAX	310	398	68	400	392	13100	1560	8160	10300	7800	1750	80
MIN	40	48	34	70	90	94	334	251	467	206	87	31
IN.	.05	.07	.03	.13	.09	1.57	.37	1.18	1.82	.87	.31	.03

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

	MEAN	686	528	342	387	811	1378	1363	1450	1971	878	462	891
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	.02	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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	845	929
HIGHEST ANNUAL MEAN		2671
LOWEST ANNUAL MEAN		67.4
HIGHEST DAILY MEAN	13100	Mar 16
LOWEST DAILY MEAN	31	Sep 29
INSTANTANEOUS PEAK FLOW	13600	Mar 16
INSTANTANEOUS PEAK STAGE	23.20	Mar 16
INSTANTANEOUS LOW FLOW	30	Dec 11, Sep 29, 30
ANNUAL RUNOFF (INCHES)	6.52	7.16
10 PERCENTILE	2090	2020
50 PERCENTILE	238	178
95 PERCENTILE	38	9.6

## 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, 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, 186,000 acre-ft, June 21, maximum elevation, 869.88 ft; minimum contents, 143,000 acre-ft, Dec. 23-25, elevation, 863.96 ft.

ELEVATION, IN FEET, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990  
OBSERVATIONS AT 08:00

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	864.52	864.44	864.12	864.00	864.38	864.87	865.46	866.02	867.44	867.55	864.65	864.69
2	864.47	864.43	864.12	864.00	864.38	864.87	865.29	865.95	867.20	867.19	864.59	864.68
3	864.40	864.43	864.10	864.00	864.38	864.91	865.24	865.93	866.94	866.80	864.54	864.64
4	864.31	864.40	864.07	864.05	864.37	864.91	865.23	865.90	866.69	866.44	864.59	864.64
5	864.23	864.42	864.08	864.05	864.37	864.91	865.25	865.90	866.42	866.04	864.60	864.64
6	864.24	864.42	864.12	864.05	864.40	864.95	865.19	865.92	866.49	865.60	864.53	864.62
7	864.21	864.41	864.09	864.05	864.42	864.97	865.17	865.89	867.62	865.30	864.45	864.59
8	864.20	864.41	864.07	864.05	864.45	864.98	865.17	865.89	867.60	865.14	864.40	864.59
9	864.20	864.37	864.04	864.07	864.47	865.01	865.17	865.86	869.04	865.09	864.31	864.57
10	864.19	864.37	864.05	864.07	864.47	865.04	865.20	865.94	869.33	865.02	864.26	864.57
11	864.19	864.37	864.06	864.07	864.47	865.10	865.17	865.92	869.37	865.02	864.23	864.55
12	864.17	864.37	864.02	864.07	864.47	865.11	865.13	866.07	869.41	864.95	864.23	864.54
13	864.17	864.36	864.01	864.06	864.52	865.46	865.18	866.30	869.21	864.95	864.28	864.53
14	864.17	864.38	864.00	864.05	864.48	865.82	865.22	866.47	868.95	864.88	864.28	864.51
15	864.16	864.37	864.00	864.04	864.50	866.82	865.26	866.94	868.94	864.83	864.28	864.47
16	864.18	864.31	863.99	864.04	864.49	867.08	865.27	868.39	869.24	864.76	864.45	864.45
17	864.16	864.25	863.99	864.15	864.49	867.13	865.31	868.51	869.32	864.71	864.66	864.41
18	864.12	864.25	863.99	864.18	864.49	867.18	865.29	868.57	869.34	864.65	864.68	864.38
19	864.09	864.24	863.97	864.19	864.51	867.20	865.28	868.66	869.64	864.59	864.68	864.44
20	864.04	864.23	863.97	864.24	864.52	867.20	865.29	868.70	869.85	864.54	864.77	864.43
21	864.04	864.25	863.98	864.24	864.52	867.03	865.33	868.67	869.88	864.50	864.77	864.43
22	864.04	864.23	863.97	864.25	864.62	866.87	865.34	868.65	869.85	864.59	864.77	864.40
23	864.04	864.19	863.96	864.28	864.77	866.68	865.37	868.43	869.87	864.59	864.77	864.37
24	864.04	864.18	863.96	864.30	864.85	866.51	865.39	868.14	869.68	864.59	864.77	864.34
25	864.05	864.18	863.96	864.33	864.85	866.32	865.39	868.19	869.46	864.47	864.77	864.32
26	864.05	864.18	863.97	864.31	864.84	866.14	865.41	868.12	869.20	864.42	864.77	864.32
27	864.06	864.18	863.98	864.34	864.86	866.01	865.57	868.11	868.99	864.38	864.77	864.32
28	864.18	864.15	863.98	864.33	864.87	865.87	865.93	868.11	868.63	864.47	864.77	864.33
29	864.23	864.13	863.99	864.32	---	865.86	866.00	868.12	868.24	864.69	864.75	864.32
30	864.40	864.11	864.00	864.33	---	865.75	866.02	867.97	867.92	864.73	864.74	864.29
31	864.43	---	864.00	864.32	---	865.59	---	867.68	---	864.72	864.70	---
(-)	146000	144000	143000	145000	149000	152000	155000	168000	170000	145000	145000	142000
(=)	-1000	-2000	-1000	+2000	+4000	+3000	+3000	+13000	+2000	-25000	0	-3000
MAX	864.52	864.44	864.12	864.34	864.87	867.20	866.02	868.70	869.88	867.55	864.77	864.69
MIN	864.04	864.11	863.96	864.00	864.37	864.87	865.13	865.86	866.42	864.38	864.23	864.29

CAL YR 1989 . . . +9,000

WTR YR 1990 . . . -5,000

(-) Contents, in acre-feet, at end of month

(=) Change in contents, in acre-feet

## PLATTE RIVER BASIN

06821150 LITTLE PLATTE RIVER AT SMITHVILLE, MO

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.

DRAINAGE AREA.--234 mi<sup>2</sup>.

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

REVISED RECORDS.--WDR MO 1970: Drainage area.

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.

REMARKS.--Estimated daily discharges: Dec. 15-29, Jan. 9, 10, Feb. 27, 28, Mar. 1, 3, 4, 6, 7, Apr. 18, 19, and May 5-7. Records fair. Construction of dam for Smithville Lake (station 06821140) began in June 1974 and partial regulation began Aug. 6, 1977. 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 1947 reached a stage of 37.4 ft.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	216	15	15	16	16	15	742	164	997	1490	173	10
2	214	12	15	15	17	16	403	166	992	1480	173	10
3	213	12	14	16	17	15	126	173	985	1370	436	10
4	212	17	14	18	16	14	84	188	981	1480	42	10
5	130	17	15	16	18	14	81	186	981	1470	124	10
6	22	14	15	15	19	15	60	196	406	1220	177	10
7	17	8.8	14	14	19	17	46	187	193	725	174	10
8	11	15	14	14	18	20	45	189	826	335	174	11
9	11	15	14	14	18	18	45	240	582	195	173	10
10	11	15	14	13	17	17	44	218	40	199	102	10
11	12	15	14	13	17	17	44	201	25	202	38	10
12	11	15	14	13	16	19	25	423	533	197	9.7	10
13	11	15	14	13	16	161	21	51	1270	204	9.5	10
14	12	15	14	13	16	690	17	268	887	198	9.4	10
15	12	15	14	13	17	498	16	3360	366	194	9.8	10
16	14	15	13	14	18	103	15	674	79	192	565	10
17	13	15	12	22	17	56	14	96	34	191	59	10
18	13	15	12	18	18	40	14	57	22	190	19	13
19	13	15	11	17	23	32	14	139	205	188	15	11
20	13	15	11	23	19	412	14	235	67	188	16	11
21	13	15	10	22	19	756	15	240	24	118	14	11
22	13	15	9.5	19	117	748	14	494	149	15	13	11
23	13	15	9.0	18	44	741	15	1230	476	7.4	12	11
24	13	15	10	16	25	741	15	549	1030	23	12	11
25	13	15	11	16	20	704	15	433	1030	183	11	11
26	13	15	12	16	18	755	16	75	1050	190	11	11
27	78	15	13	16	18	765	142	23	1230	89	11	11
28	48	15	14	16	16	755	64	21	1510	12	11	11
29	17	15	15	16	---	786	25	383	1500	7.6	10	10
30	155	15	16	16	---	754	58	988	1500	110	10	11
31	21	---	16	15	---	747	---	996	---	178	10	---
MEAN	50.9	14.7	13.2	16.0	22.5	337	75.0	414	666	414	84.6	10.5
MAX	216	17	16	23	117	786	742	3360	1510	1490	565	13
MIN	11	8.8	9.0	13	16	14	14	21	22	7.4	9.4	10
IN.	.25	.07	.06	.08	.10	1.66	.36	2.04	3.17	2.04	.42	.05

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

	MEAN	161	121	70.9	80.5	98.1	173	223	291	253	231	89.8	206
MAX	1108	755	274	318	322	1261	640	1583	1289	2126	663	1006	
(WY)	1974	1978	1986	1983	1973	1973	1978	1974	1967	1965	1981	1977	
MIN	.35	.60	.05	.07	9.47	4.73	9.85	11.4	13.3	1.08	.19	.11	
(WY)	1967	1967	1977	1977	1967	1981	1981	1988	1988	1976	1976	1976	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	178	158
HIGHEST ANNUAL MEAN		403
LOWEST ANNUAL MEAN		35.4
HIGHEST DAILY MEAN	3360	41000
LOWEST DAILY MEAN	7.4	.00
INSTANTANEOUS PEAK FLOW	7550	76600
INSTANTANEOUS PEAK STAGE	30.99	44.8
INSTANTANEOUS LOW FLOW	4.5	0
ANNUAL RUNOFF (INCHES)	10.31	9.16
10 PERCENTILE	696	356
50 PERCENTILE	17	26
95 PERCENTILE	10	1.2

## PLATTE RIVER BASIN

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: Apr. 16-23, 26, 27, May 20, 21, and June 3-5. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	384	354	106	96	205	306	3250	753	2570	2280	1630	167
2	368	376	103	98	219	284	3030	713	2500	2160	1180	159
3	358	370	100	103	217	267	2020	665	2300	1990	1270	150
4	350	318	99	134	192	240	1470	743	2100	1920	1440	146
5	331	254	99	153	191	228	1220	1500	1900	1880	2400	142
6	201	219	105	159	198	223	1100	1560	2940	1720	1440	139
7	144	183	109	146	229	240	1000	1380	2930	1210	919	135
8	122	171	108	154	241	381	954	1100	3150	751	704	139
9	106	152	100	177	251	5360	892	1070	8960	443	617	134
10	99	148	95	168	241	5980	863	1480	10300	400	538	128
11	96	144	101	160	227	3100	838	2330	7850	492	405	126
12	87	139	95	135	220	4790	813	2840	2610	487	436	121
13	90	138	87	184	210	5600	872	4590	2650	657	401	112
14	90	137	90	650	198	4230	1050	5850	2820	1030	511	105
15	81	131	76	708	193	6830	1430	8830	6860	817	497	101
16	69	124	72	457	176	8810	1390	11700	9770	737	1690	102
17	75	119	74	503	167	9750	1390	10400	9480	710	2650	98
18	72	117	73	543	170	10500	1200	5970	8760	599	1880	98
19	77	118	72	350	219	8070	1040	2590	9680	552	1340	127
20	70	118	75	433	221	3060	890	1890	10100	523	801	108
21	65	115	74	654	209	2640	800	1770	7430	3200	530	108
22	65	116	72	442	378	2350	730	1940	4310	7530	412	115
23	62	112	69	343	795	2150	657	2820	7480	4140	342	119
24	62	109	68	298	783	2090	638	2570	6790	2410	303	100
25	62	108	67	272	540	2060	604	1990	3930	1450	276	98
26	50	108	69	264	416	2060	548	2600	3020	1200	255	93
27	51	109	73	259	369	2200	840	6930	2610	5230	240	87
28	154	110	77	250	334	2290	1490	7860	2700	6930	224	83
29	206	108	86	260	---	2650	1120	3770	2530	7460	208	78
30	261	108	93	243	---	3930	734	3030	2380	3340	194	74
31	396	---	93	220	---	3620	---	2730	---	2850	181	---
MEAN	152	164	86.5	291	286	3429	1162	3418	5114	2164	836	116
MAX	396	376	109	708	795	10500	3250	11700	10300	7530	2650	167
MIN	50	108	67	96	167	223	548	665	1900	400	181	74
IN.	.07	.08	.04	.14	.13	1.66	.55	1.66	2.40	1.05	.41	.05

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

	1989	1989	1989	1989	1989	1989	1989	1989	1988	1988	1988	1983
MEAN	1529	792	1143	618	1317	2446	2069	2953	2910	2168	1180	1493
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	25.1	61.9	46.1	50.1	37.6	110	93.0	157	75.2	52.5	47.7	75.9
(WY)	1989	1989	1989	1989	1989	1989	1989	1989	1988	1988	1988	1983

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1442	1712
HIGHEST ANNUAL MEAN		3376
LOWEST ANNUAL MEAN		464
HIGHEST DAILY MEAN	11700	28300
LOWEST DAILY MEAN	50	12
INSTANTANEOUS PEAK FLOW	12300	29000
INSTANTANEOUS PEAK STAGE	30.06	34.55
INSTANTANEOUS LOW FLOW	42	12
ANNUAL RUNOFF (INCHES)	8.23	9.77
10 PERCENTILE	3900	4300
50 PERCENTILE	384	598
95 PERCENTILE	75	40



## 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 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 KF AGAR 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 FLD. AS CACO3 (MG/L) (00904)
NOV												
07...	1140	197	495	7.9	9.5	17	11.4	101	150	70	210	17
JAN												
17...	1215	472	405	7.6	3.0	63	12.1	90	K120	210	170	25
MAY												
08...	1115	1110	422	8.2	17.0	35	10.0	104	K800	400	190	39
JUL												
10...	1050	395	370	7.9	27.0	39	6.3	79	240	60	170	9

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 DIS TOT IT 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, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV											
07...	62	13	15	6.8	192	38	14	0.3	9.1	281	0.38
JAN											
17...	48	11	15	7.4	140	36	18	0.2	8.2	254	0.35
MAY											
08...	56	12	13	4.6	150	33	12	0.4	4.5	235	0.32
JUL											
10...	48	11	11	4.3	156	15	14	0.3	4.7	216	0.29

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- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV											
07...	149	0.01	0.31	0.01	<0.01	1.3	0.22	0.03	0.02	32	88
JAN											
17...	324	0.04	1.6	0.52	0.51	2.3	0.36	0.05	0.04	212	78
MAY											
08...	704	0.03	1.3	0.04	0.01	1.3	0.25	0.03	0.04	238	85
JUL											
10...	230	0.02	0.20	0.10	0.09	1.4	0.26	0.05	0.05	217	89

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



## PLATTE RIVER BASIN

06821190 PLATTE RIVER AT SHARPS STATION, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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 07...	10	<1	160	<0.5	<1	<1	<3	2	18	<1
JAN 17...	60	<1	130	<0.5	2	1	5	<10	95	<10
MAY 08...	20	1	130	<0.5	<1	<1	<3	5	18	<1
JUL 10...	<10	2	170	<0.5	<1	2	<3	2	14	2
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 07...	9	240	0.1	<10	5	<1	<1	270	<6	12
JAN 17...	5	220	<0.1	<10	<10	<1	<1	210	<6	<3
MAY 08...	6	21	<0.1	<10	2	<1	<1	250	<6	5
JUL 10...	7	160	<0.1	<10	2	<1	<1	230	<6	10

## 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: Dec. 16 to Jan. 8. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3040	4740	2620	1800	1440	1940	6300	1840	8650	20000	9260	3680
2	3090	3240	2590	1800	1740	1770	5860	1880	7010	16000	10000	3450
3	3030	2600	2570	1800	1720	1760	5270	1630	6280	14000	11600	3270
4	2900	2330	2530	1800	1760	1770	4890	1660	5690	13000	17700	2900
5	2790	2120	2460	1800	1660	1670	4640	1840	4900	9000	15400	2850
6	2740	2000	2420	1800	1730	1780	4500	2030	4300	6500	12100	2530
7	2800	1840	2460	1800	1850	1710	4380	2000	4770	4500	10900	2460
8	2670	1760	2380	1900	1850	3860	4260	1890	6860	4000	10600	2500
9	2750	1710	2360	2030	1810	7580	4060	1330	6910	3800	10500	2370
10	2800	1750	2390	2110	1740	6750	3780	2220	5070	3690	10500	2220
11	2840	1660	2330	2320	1870	5490	3190	2260	5030	3930	10200	2000
12	2730	1560	2350	2210	1740	4600	4180	3400	5440	3180	9810	2040
13	2850	1570	1880	1970	1650	4890	3810	5510	5720	3180	10200	1940
14	2760	1530	2030	1750	1570	7510	3400	6730	6570	2800	8760	2040
15	2730	1340	2790	1700	1540	12200	3130	21800	11400	2700	6400	1990
16	2710	1220	4600	1600	1590	13800	3040	48800	31000	2600	10500	1980
17	2740	1550	4600	1780	1520	12700	2920	32300	31200	2500	27800	1990
18	2720	2330	4600	1970	1640	7980	2800	19300	17000	2190	23600	1920
19	2690	2440	4600	2150	1740	6450	2710	12300	13800	2510	17500	2010
20	2760	2940	4600	2050	1680	6060	2370	12500	9190	2210	16500	2000
21	3270	2960	4600	2210	1730	5870	1910	14400	11700	2870	13300	2030
22	3410	3010	4600	2080	2020	5600	2090	14800	11700	4060	11900	1970
23	3480	3170	4600	2100	3530	5350	1970	14800	20400	4070	11000	1980
24	3560	3190	4600	1800	4260	5240	1990	16700	25800	3830	10200	2020
25	3590	3210	4600	1780	3530	5240	1900	16400	31000	3000	9200	2020
26	3610	2800	4600	1800	2870	5090	1810	14800	31800	2390	7180	1870
27	3520	2610	3000	1660	2270	5290	2020	13300	32400	2360	5840	1900
28	4050	2620	2000	1640	2020	5460	2100	12700	32200	2280	5190	1880
29	4770	2720	1800	1480	---	6030	1960	12200	26400	2510	4950	1930
30	10900	2620	1800	1500	---	7510	1870	10300	23000	3040	4660	2210
31	7720	---	1800	1560	---	6970	---	9150	---	7710	4080	---
MEAN	3485	2371	3134	1863	2002	5675	3304	10730	14770	5175	11200	2265
MAX	10900	4740	4600	2320	4260	13800	6300	48800	32400	20000	27800	3680
MIN	2670	1220	1800	1480	1440	1670	1810	1330	4300	2190	4080	1870
IN.	.07	.04	.06	.04	.03	.11	.06	.21	.28	.10	.22	.04

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

	MEAN	5773	4237	3198	2784	4334	7008	9374	10480	14770	11040	6022	6530
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	504	465	364	635	632	845	953	1188	1106	454	525	
(WY)	1957	1957	1957	1957	1957	1967	1956	1989	1989	1936	1934	1956	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	5526	7139
HIGHEST ANNUAL MEAN		29350
LOWEST ANNUAL MEAN		1326
HIGHEST DAILY MEAN	48800	486000
LOWEST DAILY MEAN	1220	160
INSTANTANEOUS PEAK FLOW	52700	510000
INSTANTANEOUS PEAK STAGE	15.49	37.3
INSTANTANEOUS LOW FLOW	1050	160
ANNUAL RUNOFF (INCHES)	1.26	1.62

## MISSOURI RIVER MAIN STEM

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 706.40 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. Prior to Oct. 1, 1989 at datum 10.00 ft higher.

REMARKS.--Estimated daily discharges: Dec. 24-30. Records good. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37300	39300	20300	24600	22100	22900	37100	35200	52900	68300	62000	36900
2	37600	34800	19700	23800	22800	23200	40000	35000	49200	63700	60000	36300
3	37500	32400	19100	23100	23400	23300	41200	35800	44500	64600	59200	35600
4	37300	29500	18700	22200	22700	23000	39700	36000	45000	62500	63400	35300
5	37400	27200	19500	21200	21700	21200	38200	36500	44000	58200	67000	35300
6	37300	25700	20800	21100	20700	19800	36900	38200	43500	57100	56100	35700
7	37300	24500	20700	20900	20000	19600	36200	36700	48900	54600	50200	36000
8	37900	23900	20500	21500	19400	20600	35900	35500	50000	48700	46800	36200
9	38500	23600	21300	22000	20400	26400	35700	36000	71300	47100	44700	35900
10	38600	22900	22700	21600	21800	33600	35900	36400	62500	44100	43600	35800
11	38400	22200	22300	21800	22400	33400	35700	38600	52900	41200	46400	36000
12	38300	20500	20900	22400	23200	31500	35800	46800	45700	42400	43100	36200
13	38400	19700	19800	22700	23900	37000	37000	49000	43800	44900	45600	36000
14	38000	20300	19100	22800	23400	40500	36700	51400	45800	43400	54800	35900
15	37700	20200	18400	22800	22800	47700	36900	86500	61100	42900	52100	36000
16	38500	19500	16100	22300	22500	53900	36900	126000	102000	42100	49800	35900
17	38500	19200	14900	22100	22600	58500	36300	101000	120000	40200	69000	35700
18	39100	19600	15100	21900	23100	51300	36200	70600	122000	39200	69800	36300
19	38900	20300	13600	23200	22600	45900	35900	56500	126000	38300	55900	36500
20	38700	20800	12900	26400	21100	38700	36100	52800	128000	36600	54200	36900
21	39100	20800	13200	27500	20000	33100	35400	55800	129000	40800	54000	37500
22	39600	20200	11900	26800	21200	30900	34600	67800	110000	57900	51100	37600
23	39100	21000	11800	25800	23200	30100	34100	66200	99700	52000	46600	37900
24	38300	21300	12500	24300	25600	29300	33500	58100	95600	47100	45100	37300
25	37700	20700	13000	22800	26500	27900	33600	58300	95300	41600	44600	36600
26	37700	20500	14000	22100	25800	27400	33700	72100	94100	41000	41600	36200
27	38500	19900	16000	22200	25400	27300	36300	87900	87300	100000	40800	36000
28	41000	19200	18000	22500	24000	27700	37700	75000	81500	108000	43000	36100
29	40700	19500	20000	22400	---	28300	36500	67700	74400	87300	41200	35900
30	48000	20100	22500	22100	---	31000	35300	59700	70900	73200	39000	35700
31	45900	---	24600	22000	---	35700	---	54100	---	62500	37600	---
MEAN	38930	22980	17870	22930	22650	32280	36370	56880	76560	54560	50910	36240
MAX	48000	39300	24600	27500	26500	58500	41200	126000	129000	108000	69800	37900
MIN	37300	19200	11800	20900	19400	19600	33500	35000	43500	36600	37600	35300
IN.	.09	.05	.04	.05	.05	.08	.08	.14	.18	.13	.12	.08

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

	MEAN	46340	41380	26800	23010	32060	53160	68540	64650	81570	67030	48000	48890
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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	39190	50140
HIGHEST ANNUAL MEAN		90840
LOWEST ANNUAL MEAN		22300
HIGHEST DAILY MEAN	129000	558000
LOWEST DAILY MEAN	11800	1500
INSTANTANEOUS PEAK FLOW	133000	573000
INSTANTANEOUS PEAK STAGE	26.43	36.2
INSTANTANEOUS LOW FLOW	11300	1500
ANNUAL RUNOFF (INCHES)	1.10	1.40
10 PERCENTILE	64500	91100
50 PERCENTILE	36400	42100
95 PERCENTILE	18900	13200

## MISSOURI RIVER MAIN STEM

06893000 MISSOURI RIVER AT KANSAS CITY, MO--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1988 to current year.

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (000009)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (000061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	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)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT									
02...	340	37600	276	--	--	--	--	--	35
02...	490	37600	278	--	--	--	--	--	38
02...	610	37600	220	--	--	--	--	--	40
02...	740	37600	141	--	--	--	--	--	60
02...	850	37600	112	--	--	--	--	--	78
NOV									
20...	362	20500	192	--	--	--	--	--	24
20...	452	20500	329	--	--	--	--	--	16
20...	578	20500	323	--	--	--	--	--	17
20...	718	20500	202	--	--	--	--	--	24
20...	858	20500	65	--	--	--	--	--	67
FEB									
12...	360	23000	292	--	--	--	--	--	15
12...	460	23000	332	--	--	--	--	--	13
12...	580	23000	258	--	--	--	--	--	14
12...	720	23000	176	--	--	--	--	--	20
12...	840	23000	72	--	--	--	--	--	47
MAR									
26...	362	27700	382	--	--	--	--	--	39
26...	453	27700	422	--	--	--	--	--	43
26...	579	27700	379	--	--	--	--	--	45
26...	719	27700	206	--	--	--	--	--	66
26...	839	27700	129	--	--	--	--	--	82
APR									
09...	367	35600	346	--	--	--	--	--	40
09...	487	35600	409	--	--	--	--	--	33
09...	607	35600	302	--	--	--	--	--	43
09...	727	35600	243	--	--	--	--	--	52
09...	847	35600	158	--	--	--	--	--	69
MAY									
17...	360	100000	4160	93	95	98	100	100	--
17...	505	100000	4100	91	93	100	100	100	--
17...	637	100000	4360	90	91	96	100	100	--
17...	755	100000	3710	93	94	99	100	100	--
17...	903	100000	3200	98	99	100	100	100	--
JUN									
21...	373	131000	6220	93	96	99	100	100	--
21...	503	131000	5490	93	96	98	100	100	--
21...	655	131000	5500	94	96	99	100	100	--
21...	805	131000	5880	91	94	99	100	100	--
21...	955	131000	5260	96	98	99	100	100	--
JUL									
27...	349	97200	4760	90	94	100	100	100	--
27...	505	97200	4130	90	91	97	100	100	--
27...	642	97200	4730	82	87	95	100	100	--
27...	765	97200	4920	86	90	97	100	100	--
27...	920	97200	3520	95	97	99	100	100	--
AUG									
16...	358	46900	1230	--	--	--	--	--	71
16...	478	46900	1040	--	--	--	--	--	80
16...	738	46900	666	--	--	--	--	--	93
16...	618	46900	881	--	--	--	--	--	83
16...	858	46900	582	--	--	--	--	--	96
SEP									
07...	454	36000	296	--	--	--	--	--	36
07...	608	36000	223	--	--	--	--	--	47
07...	728	36000	160	--	--	--	--	--	55
07...	848	36000	113	--	--	--	--	--	81

## MISSOURI RIVER MAIN STEM

81

06893000 MISSOURI RIVER AT KANSAS CITY, MO--Continued

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL

DATE	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	BED MAT. SIEVE DIAM. % FINER THAN (80164)	BED MAT. SIEVE DIAM. % FINER THAN (80165)	BED MAT. SIEVE DIAM. % FINER THAN (80166)	BED MAT. SIEVE DIAM. % FINER THAN (80167)	BED MAT. SIEVE DIAM. % FINER THAN (80168)	BED MAT. SIEVE DIAM. % FINER THAN (80169)	BED MAT. SIEVE DIAM. % FINER THAN (80170)	BED MAT. SIEVE DIAM. % FINER THAN (80171)
OCT									
02...	340	0	2	74	95	99	100	100	100
02...	490	0	0	3	35	70	90	95	100
02...	610	0	0	13	83	92	96	100	100
02...	740	0	0	27	49	87	97	100	100
02...	850	0	0	1	7	61	93	100	100
NOV									
20...	362	0	0	27	68	89	97	100	100
20...	452	1	1	72	96	99	100	100	100
20...	578	1	2	33	83	97	100	100	100
20...	718	0	0	6	32	77	93	100	100
20...	858	0	0	1	3	23	61	90	100
FEB									
12...	350	0	0	11	56	94	100	100	100
12...	460	0	0	54	88	99	100	100	100
12...	580	0	1	58	92	99	100	100	100
12...	720	0	0	45	91	99	100	100	100
12...	840	0	0	3	24	84	98	100	100
MAR									
26...	363	0	2	81	99	100	100	100	100
26...	453	0	0	34	58	88	95	100	100
26...	579	0	0	7	38	74	88	93	100
26...	719	0	0	48	85	97	100	100	100
26...	839	0	0	21	76	95	99	100	100
APR									
09...	367	0	4	86	99	100	100	100	100
09...	487	0	0	18	75	99	100	100	100
09...	607	0	2	86	99	100	100	100	100
09...	727	0	0	41	96	100	100	100	100
09...	847	0	0	4	46	85	98	100	100
MAY									
17...	354	1	1	14	78	96	100	100	100
17...	504	0	0	25	85	98	100	100	100
17...	640	1	1	8	49	77	90	94	100
17...	760	0	0	1	5	43	78	93	100
17...	910	0	0	15	81	97	100	100	100
JUN									
21...	373	1	1	60	95	100	100	100	100
21...	503	1	1	61	100	100	100	100	100
21...	655	0	0	2	8	66	86	99	100
21...	805	0	0	5	51	91	99	100	100
21...	955	0	0	0	1	22	67	100	100
JUL									
27...	358	1	1	62	99	100	100	100	100
27...	508	0	0	6	25	71	94	100	100
27...	640	0	0	46	95	100	100	100	100
27...	760	1	2	45	79	97	99	100	100
27...	910	0	0	1	40	44	77	95	100
AUG									
16...	356	0	0	34	81	98	100	100	100
16...	478	0	0	3	38	78	97	100	100
16...	618	1	2	48	92	99	100	100	100
16...	738	0	5	36	64	64	84	96	100
16...	858	0	0	0	3	64	96	100	100
SEP									
07...	363	0	1	28	65	90	96	97	100
07...	453	0	0	27	76	95	99	100	100
07...	607	0	1	28	85	99	100	100	100
07...	727	0	0	11	71	90	95	97	100
07...	847	0	0	0	8	30	60	77	100



## 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.--Estimated daily discharges: Dec. 15-27. Records good except for estimated daily discharges, which are poor. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	249	31	35	110	106	168	151	133	39	36	23
2	23	169	30	32	176	102	148	132	111	37	33	26
3	20	139	30	41	114	101	130	296	83	33	191	24
4	20	113	30	95	104	93	118	411	69	30	143	26
5	20	100	27	45	129	89	111	211	65	29	61	27
6	23	90	28	36	138	88	104	209	63	29	42	23
7	22	81	28	33	121	140	91	149	63	28	35	27
8	22	79	27	32	105	124	83	126	194	29	32	26
9	22	69	28	31	93	101	87	242	2080	28	31	24
10	22	62	28	30	83	93	400	169	219	67	30	26
11	21	57	27	28	76	136	163	124	147	83	318	19
12	19	54	25	26	71	158	119	1580	97	56	87	21
13	19	56	24	26	69	133	138	487	77	270	55	21
14	19	52	23	27	69	2200	135	408	743	62	39	19
15	19	46	23	23	126	1970	106	15400	1790	44	367	15
16	106	46	23	29	142	584	96	16800	501	38	393	16
17	66	49	23	136	118	345	99	1220	226	31	124	15
18	34	44	23	55	134	256	74	341	171	29	64	125
19	27	41	23	105	144	204	69	415	235	28	47	42
20	25	41	23	273	117	173	70	282	226	27	44	25
21	27	38	22	128	106	156	67	218	131	1550	36	17
22	27	37	21	89	906	142	64	193	87	721	33	18
23	26	35	21	73	480	130	62	156	67	123	30	18
24	23	34	22	67	236	194	60	2220	58	72	29	14
25	21	34	25	86	171	178	58	1090	79	55	27	17
26	22	32	25	76	148	205	154	1000	457	49	25	13
27	381	33	30	65	135	204	1160	369	80	43	26	13
28	915	33	38	63	117	320	669	262	55	70	24	17
29	418	31	45	57	---	292	276	206	51	101	24	16
30	4140	31	41	54	---	205	189	168	41	50	23	18
31	494	---	38	54	---	194	---	143	---	39	23	---
MEAN	228	65.8	27.5	62.9	162	304	176	1457	280	125	79.7	24.4
MAX	4140	249	45	273	906	2200	1160	16800	2080	1550	393	125
MIN	19	31	21	23	69	88	58	124	41	27	23	13
IN.	1.40	.39	.17	.39	.90	1.86	1.04	8.94	1.66	.77	.49	.14

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

	135	92.4	82.1	94.7	123	195	260	231	284	154	80.9	164
MEAN	135	92.4	82.1	94.7	123	195	260	231	284	154	80.9	164
MAX	790	771	472	445	740	1407	1279	1457	1285	1616	431	1395
(WY)	1987	1962	1974	1941	1985	1973	1944	1990	1967	1951	1982	1986
MIN	.00	.00	.00	.00	2.66	4.36	6.41	17.8	7.44	1.72	.94	.05
(WY)	1940	1940	1940	1940	1940	1957	1954	1956	1953	1946	1947	1939

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	251	159
HIGHEST ANNUAL MEAN		365
LOWEST ANNUAL MEAN		12.8
HIGHEST DAILY MEAN	16800	20000
LOWEST DAILY MEAN	13	.00
INSTANTANEOUS PEAK FLOW	31800	41000
INSTANTANEOUS PEAK STAGE	40.64	44.46
INSTANTANEOUS LOW FLOW	5.4	0
ANNUAL RUNOFF (INCHES)	18.15	11.45
10 PERCENTILE	321	275
50 PERCENTILE	65	43
95 PERCENTILE	20	2.7

## LITTLE BLUE RIVER BASIN

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), 35,370 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, 37,100 acre-ft, May 16, 1990, elevation, 903.36 ft; minimum, 2,680 acre-ft, Oct. 1, 1985, elevation, 849.40 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 37,100 acre-ft, May 16, elevation, 903.36 ft; minimum, 20,900 acre-ft, Sept. 30, elevation, 889.62 ft.

ELEVATION, IN FEET, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990  
OBSERVATIONS AT 08:00

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	891.01	892.68	890.90	890.49	890.88	891.40	891.56	891.67	891.60	891.23	891.17	890.76
2	890.99	892.33	890.88	890.50	891.03	891.36	891.51	891.62	891.53	891.17	891.12	890.67
3	890.95	892.06	890.86	890.48	891.08	891.31	891.48	891.57	891.46	891.12	891.09	890.70
4	890.94	891.88	890.85	890.57	891.13	891.28	891.43	891.94	891.38	891.06	891.26	890.68
5	890.90	891.78	890.83	890.57	891.19	891.25	891.41	891.87	891.33	891.02	891.22	890.65
6	890.88	891.69	890.81	890.57	891.25	891.23	891.38	891.79	891.29	890.98	891.17	890.62
7	890.88	891.59	890.77	890.56	891.28	891.25	891.34	891.70	891.27	890.95	891.11	890.58
8	890.84	891.52	890.77	890.55	891.29	891.28	891.31	891.59	891.22	890.91	891.08	890.56
9	890.82	891.47	890.74	890.56	891.29	891.27	891.28	891.52	892.36	890.87	891.04	890.54
10	890.80	891.37	890.73	890.56	891.29	891.29	891.51	891.51	892.16	890.83	891.01	890.51
11	890.76	891.31	890.72	890.55	891.28	891.30	891.53	891.45	891.86	890.86	891.02	890.36
12	890.76	891.27	890.70	890.53	891.26	891.35	891.48	891.97	891.68	890.85	891.09	890.22
13	890.72	891.25	890.67	890.51	891.24	891.35	891.43	892.16	891.55	890.99	891.10	890.10
14	890.70	891.21	890.64	890.49	891.21	891.38	891.43	892.02	891.44	891.02	891.07	890.01
15	890.68	891.17	890.66	890.48	891.26	893.14	891.36	892.12	892.06	891.01	891.06	889.98
16	890.66	891.13	890.63	890.48	891.31	892.87	891.33	903.36	892.36	890.97	891.24	889.96
17	890.79	891.10	890.61	890.58	891.31	892.45	891.32	902.32	892.05	890.94	891.27	889.90
18	890.76	891.10	890.59	890.61	891.31	892.15	891.28	901.10	891.83	890.90	891.23	889.89
19	890.73	891.09	890.57	890.59	891.32	891.96	891.25	899.82	891.70	890.87	891.18	889.89
20	890.72	891.07	890.56	890.76	891.34	891.80	891.24	898.51	891.61	890.84	891.13	889.87
21	890.68	891.05	890.57	890.81	891.32	891.69	891.22	897.07	891.56	890.85	891.10	889.88
22	890.67	891.04	890.56	890.83	891.46	891.60	891.21	895.60	891.49	891.08	891.07	889.83
23	890.65	891.04	890.54	890.85	892.00	891.52	891.20	893.88	891.32	891.08	891.05	889.79
24	890.62	891.03	890.50	890.84	891.86	891.52	891.19	893.00	891.25	891.05	890.97	889.75
25	890.62	891.01	890.50	890.88	891.66	891.52	891.17	892.69	891.19	891.01	890.93	889.74
26	890.60	891.00	890.50	890.89	891.57	891.54	891.16	892.74	891.49	891.03	890.89	889.72
27	890.59	890.99	890.51	890.88	891.51	891.57	891.78	892.46	891.60	891.01	890.83	889.67
28	892.05	890.97	890.49	890.91	891.45	891.57	892.09	892.20	891.47	890.98	890.88	889.66
29	892.13	890.95	890.47	890.91	---	891.62	891.95	891.95	891.38	891.30	890.84	889.65
30	893.70	890.89	890.52	890.88	---	891.61	891.83	891.83	891.29	891.28	890.81	889.62
31	893.20	---	890.53	890.90	---	891.58	---	891.69	---	891.22	890.74	---
(-)	24300	22000	21700	22000	22600	22700	22900	22800	22400	22300	21900	20900
(=)	+2100	-2300	-300	+300	+600	+100	+200	-100	-400	-100	-400	-1000
MAX	893.70	892.68	890.90	890.91	892.00	893.14	892.09	903.36	892.36	891.30	891.27	890.76
MIN	890.59	890.89	890.47	890.48	890.88	891.23	891.16	891.45	891.19	890.83	890.74	889.62

CAL YR 1989 . . . + 500

WTR YR 1990 . . . -1,300

(-) Contents, in acre-feet, at end of month

(=) Change of 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. Oct. 1, 1985 to July 24, 1990, at present site at datum 5.05 ft lower.

REMARKS.--No estimated daily discharges. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.1	202	6.9	5.8	7.4	34	40	59	48	25	17	6.3
2	6.3	137	6.9	5.8	7.4	31	37	47	41	21	14	6.4
3	6.3	98	6.9	5.8	7.7	27	33	47	33	18	14	6.3
4	6.5	74	7.1	5.8	8.5	25	30	89	27	15	22	6.1
5	6.5	57	6.9	5.8	12	23	27	79	24	12	19	6.0
6	6.3	45	6.9	5.8	14	21	25	66	21	9.9	16	6.1
7	6.3	38	6.9	5.9	16	23	23	55	20	9.9	13	6.2
8	6.5	32	6.9	5.9	17	25	23	45	25	9.1	12	6.0
9	6.5	27	6.9	5.8	16	25	21	40	159	7.9	9.7	6.2
10	6.1	22	6.9	5.8	16	25	42	37	124	7.5	8.7	31
11	6.3	20	6.9	6.1	15	27	43	33	93	7.1	11	55
12	6.3	18	6.9	6.3	16	30	38	99	71	7.1	13	55
13	6.3	17	6.8	6.3	14	30	37	124	54	9.9	12	55
14	6.3	15	6.5	6.3	13	121	37	106	72	11	11	23
15	6.3	12	6.3	6.3	16	335	35	1050	152	9.8	15	.98
16	6.3	11	6.3	6.4	18	248	33	1160	169	9.1	24	.30
17	6.5	9.8	6.1	6.6	18	175	32	1140	122	8.1	23	.00
18	6.6	8.6	5.8	6.6	19	124	30	1130	90	7.6	20	.91
19	6.6	8.7	5.8	6.6	20	92	29	1120	76	7.5	17	3.7
20	6.6	7.8	5.8	6.6	21	72	28	1110	65	7.3	14	5.1
21	6.6	7.4	5.8	6.6	20	57	28	1090	55	9.8	12	5.3
22	6.8	7.4	5.8	6.8	57	46	28	1050	41	14	10	5.5
23	7.1	7.3	5.8	6.9	93	38	28	611	33	14	9.0	5.5
24	7.4	8.7	5.8	6.9	79	37	28	322	27	12	8.2	5.5
25	7.4	7.2	5.8	7.2	63	37	24	237	27	10	7.9	5.5
26	7.4	7.1	5.8	7.1	53	39	22	240	59	11	7.7	5.5
27	13	7.2	5.8	7.3	45	42	104	187	61	9.7	7.3	5.5
28	104	7.1	5.8	7.4	39	43	127	133	48	13	7.1	5.5
29	135	7.0	5.8	7.4	---	48	99	95	38	27	7.1	5.5
30	436	7.1	5.8	7.4	---	47	76	72	30	24	7.0	5.5
31	324	---	5.8	7.6	---	44	---	57	---	20	6.1	---
MEAN	38.2	31.1	6.33	6.48	26.5	64.2	40.2	378	63.5	12.4	12.7	11.3
MAX	436	202	7.1	7.6	93	335	127	1160	169	27	24	55
MIN	6.1	7.0	5.8	5.8	7.4	21	21	33	20	7.1	6.1	.00
IN.	.88	.69	.15	.15	.55	1.47	.89	8.68	1.41	.28	.29	.25

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

MEAN	44.6	25.8	24.1	25.9	32.5	56.5	58.0	69.6	83.3	14.3	15.6	35.7
MAX	283	87.2	108	113	245	480	232	378	366	57.3	119	225
(WY)	1987	1985	1974	1974	1985	1973	1973	1990	1967	1981	1982	1986
MIN	2.86	3.58	1.96	.70	5.56	5.64	4.98	5.56	4.85	2.65	.24	2.13
(WY)	1979	1967	1977	1977	1986	1986	1986	1986	1986	1975	1984	1978

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	58.1	40.6
HIGHEST ANNUAL MEAN		108
LOWEST ANNUAL MEAN		11.0
HIGHEST DAILY MEAN	1160	3940
LOWEST DAILY MEAN	.00	.00
INSTANTANEOUS PEAK FLOW	2870	18700
INSTANTANEOUS PEAK STAGE	11.54	21.24
INSTANTANEOUS LOW FLOW	0	0
ANNUAL RUNOFF (INCHES)	15.68	10.95
10 PERCENTILE	100	59
50 PERCENTILE	15	9.7
95 PERCENTILE	5.1	1.4

## LITTLE BLUE RIVER BASIN

85

## 06893885 BLUE SPRINGS RESERVOIR NEAR BLUE SPRINGS, MO

LOCATION.--Lat 39°01'03", long 94°20'06", sec.33, T.49 N., R.31 W., Jackson County, Hydrologic Unit 10300101, in maintenance building at right end of dam on East Fork Little Blue River, 2.2 mi west of Blue Springs and 2.5 mi upstream from mouth.

DRAINAGE AREA.--32.8 mi<sup>2</sup>.

PERIOD OF RECORD.--August 19, 1988 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 a rolled earth filled type dam. An uncontrolled limited service type spillway 300 ft wide is located on left abutment. Capacity of surcharge pool, 3310 acre-ft (elevations 820.3 to 823.6 ft); of flood control pool, 1,590 acre-ft (elevations 802.0 to 820.3 ft); and of multi-purpose pool, 10,640 acre-ft (elevations 760.0 to 802.0 ft).

COOPERATION.--Records provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 22,800 acre-ft, May 17, 1990, elevation, 816.37 ft; minimum contents, 142 acre-ft, Oct. 22, 29, 30, Nov. 1-11, 1988, elevation, 773.10 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 22,800 acre-ft, May 17, elevation, 816.37 ft; minimum contents, 5,320 acre-ft, Oct. 16, 24-27, elevation, 793.31 ft.

ELEVATION, IN FEET, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990  
OBSERVATIONS AT 08:00

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	793.39	795.70	797.12	797.15	797.68	799.32	802.62	802.89	803.17	802.74	802.77	802.18
2	793.39	796.00	797.14	797.15	797.75	799.39	802.61	802.85	803.05	802.70	802.72	802.18
3	793.40	796.10	797.11	797.16	797.78	799.46	802.58	802.85	802.94	802.66	802.67	802.15
4	793.39	796.30	797.13	797.20	797.82	799.52	802.58	802.91	802.83	802.59	802.85	802.13
5	793.39	796.40	797.13	797.20	797.87	799.58	802.58	802.92	802.75	802.55	802.79	802.12
6	793.40	796.50	797.14	797.20	797.92	799.63	802.52	802.92	802.69	802.51	802.72	802.09
7	793.40	796.58	797.14	797.20	797.96	799.70	802.48	802.92	802.68	802.47	802.67	802.08
8	793.38	796.65	797.12	797.20	798.02	799.77	802.49	802.90	802.63	802.44	802.61	802.06
9	793.38	796.70	797.13	797.25	798.06	799.83	802.46	802.86	803.09	802.42	802.57	802.06
10	793.38	796.75	797.12	797.25	798.09	799.90	802.50	802.82	803.69	802.38	802.52	802.04
11	793.36	796.80	797.11	797.26	798.14	800.00	802.49	802.79	803.56	802.40	802.50	802.02
12	793.36	796.85	797.10	797.25	798.17	800.07	802.48	802.91	803.36	802.36	802.50	802.02
13	793.36	796.90	797.10	797.25	798.23	800.15	802.47	803.00	803.21	802.37	802.50	802.00
14	793.34	796.95	797.10	797.25	798.22	800.26	802.47	803.11	803.05	802.35	802.47	801.98
15	793.33	797.00	797.10	797.25	798.30	800.92	802.49	803.60	803.17	802.32	802.46	801.94
16	793.31	797.00	797.07	797.25	798.35	801.40	802.48	815.25	803.32	802.30	802.49	801.92
17	793.35	797.02	797.07	797.32	798.37	801.72	802.46	816.37	803.31	802.29	802.57	801.89
18	793.32	797.04	797.07	797.31	798.42	801.93	802.44	815.58	803.20	802.25	802.55	801.88
19	793.32	797.06	797.07	797.30	798.46	802.05	802.44	814.58	803.19	802.25	802.51	801.89
20	793.32	797.08	797.07	797.37	798.50	802.21	802.40	813.55	803.24	802.23	802.48	801.88
21	793.32	797.11	797.10	797.40	798.54	802.33	802.42	812.53	803.24	802.20	802.44	801.88
22	793.32	797.11	797.10	797.42	798.65	802.41	802.42	811.45	803.13	802.75	802.42	801.86
23	793.32	797.11	797.10	797.47	798.83	802.44	802.41	810.37	803.03	802.73	802.40	801.83
24	793.31	797.11	797.10	797.50	798.93	802.47	802.41	809.44	802.91	802.73	802.38	801.80
25	793.31	797.12	797.10	797.51	799.02	802.50	802.39	808.20	802.85	802.70	802.35	801.78
26	793.31	797.14	797.10	797.54	799.10	802.50	802.39	807.37	802.91	802.70	802.32	801.78
27	793.31	797.16	797.10	797.58	799.19	802.56	802.70	806.39	802.88	802.69	802.30	801.76
28	793.67	797.14	797.12	797.59	799.26	802.60	802.84	805.14	802.86	802.65	802.28	801.78
29	793.87	797.12	797.15	797.61	---	802.60	802.90	804.30	802.84	802.93	802.25	801.76
30	794.52	797.12	797.15	797.65	---	802.61	802.90	803.84	802.77	802.91	802.25	801.74
31	795.40	---	797.15	797.65	---	802.61	---	803.50	---	802.83	802.22	---
(-)	6520	7480	7500	7800	8890	11200	11400	11900	11300	11300	10900	10600
(=)	+1153	+960	+20	+300	+1090	+2310	+200	+500	-600	0	-400	-300
MAX	795.40	797.16	797.15	797.65	799.26	802.61	802.90	816.37	803.69	802.93	802.85	802.18
MIN	793.31	795.70	797.07	797.15	797.68	799.32	802.39	802.79	802.63	802.20	802.22	801.74

CAL YR 1989 . . . +7,187

WTR YR 1990 . . . +5,233

(-) Contents, in acre-feet, at end of month  
(=) Change in contents, in acre-feet



## LITTLE BLUE RIVER BASIN

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: Dec. 12-24, May 15-22, and Sept. 7-18. Records 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	.54	.13	.07	.28	.51	29	55	97	42	46	4.1
2	.07	.35	.13	.08	.49	.51	28	51	78	39	40	3.3
3	.05	.29	.11	.11	.40	.49	27	54	64	34	41	2.6
4	.05	.26	.12	.16	.45	.46	26	62	53	29	54	2.0
5	.05	.22	.13	.10	.60	.48	24	60	46	24	48	1.4
6	.04	.17	.13	.10	.55	.50	22	58	38	20	42	1.1
7	.03	.18	.11	.10	.46	.54	20	56	38	18	37	.60
8	.03	.19	.10	.11	.42	.61	18	52	36	16	34	.55
9	.03	.17	.11	.12	.37	.54	17	51	114	13	31	.50
10	.02	.15	.12	.10	.37	.53	20	47	171	13	25	.45
11	.02	.16	.10	.10	.34	.60	18	42	143	14	24	.40
12	.03	.19	.09	.08	.35	.63	17	65	114	12	23	.35
13	.02	.19	.09	.07	.36	.57	19	70	92	13	22	.30
14	.02	.19	.08	.09	.36	11	19	90	92	11	20	.25
15	.01	.18	.08	.10	.46	6.6	17	524	107	9.8	23	.20
16	.05	.16	.07	.13	.49	1.9	16	583	118	8.8	32	.15
17	.08	.15	.07	.40	.44	1.1	15	510	108	7.7	28	.14
18	.01	.15	.07	.25	.60	.85	14	513	88	6.7	25	.13
19	.01	.13	.06	.29	.67	1.7	12	513	96	6.1	23	.12
20	.02	.13	.06	.77	.54	5.7	12	510	103	5.3	21	.10
21	.02	.13	.05	.44	.53	9.9	11	509	99	24	19	.09
22	.01	.13	.04	.34	6.4	13	11	511	83	46	17	.09
23	.01	.12	.04	.31	2.2	16	10	511	68	43	15	.09
24	.02	.14	.05	.25	1.0	22	9.7	506	57	40	13	.09
25	.02	.14	.06	.25	.74	24	8.9	497	51	40	12	.08
26	.01	.12	.06	.23	.69	25	9.4	531	58	41	10	.08
27	2.0	.13	.07	.25	.62	26	51	480	55	37	9.4	.14
28	4.4	.11	.10	.21	.55	27	54	406	53	43	8.3	.15
29	3.1	.11	.11	.23	---	28	58	252	50	62	7.0	.11
30	16	.13	.10	.25	---	28	57	172	44	57	6.1	.10
31	1.5	---	.09	.23	---	28	---	125	---	50	5.2	---
MEAN	.90	.18	.088	.20	.78	9.12	22.3	273	80.5	26.6	24.5	.66
MAX	.16	.54	.13	.77	6.4	28	58	583	171	62	54	4.1
MIN	.01	.11	.04	.07	.28	.46	8.9	42	36	5.3	5.2	.08
IN.	.03	.01	.00	.01	.02	.31	.72	9.16	2.61	.89	.82	.02

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

	MEAN	28.2	14.9	12.7	11.1	15.3	32.4	43.8	49.6	48.7	16.0	25.3	24.6
MAX	276	47.8	43.2	43.7	51.7	107	204	273	273	174	45.1	230	179
(WY)	1987	1986	1983	1985	1975	1978	1984	1990	1984	1981	1982	1977	
MIN	.01	.12	.03	.00	.04	.37	.46	.20	.17	.05	.00	.00	.00
(WY)	1989	1977	1977	1977	1989	1989	1989	1989	1989	1989	1988	1976	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	37.0	26.9
HIGHEST ANNUAL MEAN		58.3
LOWEST ANNUAL MEAN		.31
HIGHEST DAILY MEAN	583	4850
LOWEST DAILY MEAN	.01	.00
INSTANTANEOUS PEAK FLOW	755	11000
INSTANTANEOUS PEAK STAGE	13.67	22.14
INSTANTANEOUS LOW FLOW	.01	0
ANNUAL RUNOFF (INCHES)	14.60	10.62
10 PERCENTILE	71	58
50 PERCENTILE	1.0	8.0
95 PERCENTILE	.04	.00



## 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: Dec. 13 to Jan. 3 and Jan. 9-16, 20-22. 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.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	489	20	24	35	93	172	229	222	101	98	18
2	14	299	19	22	98	86	150	194	181	86	83	16
3	13	202	17	30	70	79	134	253	144	77	364	16
4	13	149	18	252	59	71	131	590	118	83	326	15
5	13	121	19	109	80	67	115	360	102	76	131	15
6	13	98	18	84	87	65	104	331	119	66	98	13
7	13	82	17	59	79	85	98	237	104	59	80	13
8	13	70	16	55	72	97	94	201	101	42	69	12
9	13	60	18	77	67	81	88	225	879	32	58	14
10	13	53	18	39	61	74	176	213	486	37	50	13
11	13	46	17	33	57	82	129	164	365	71	122	30
12	12	42	14	31	56	99	113	818	269	41	113	53
13	13	39	14	24	52	89	157	554	207	126	72	53
14	13	40	13	21	50	1020	129	858	672	59	53	53
15	12	43	13	20	64	1250	110	7130	684	37	214	31
16	23	34	12	19	91	758	99	8240	638	30	513	11
17	52	28	12	55	84	538	98	2140	428	26	204	6.6
18	26	26	12	44	86	376	87	1770	297	22	113	22
19	16	24	11	40	105	266	80	1910	543	20	85	14
20	15	23	10	91	109	211	81	1740	417	19	82	13
21	14	26	9.5	66	77	178	76	1710	277	874	61	12
22	14	22	9.5	51	499	156	70	1680	205	803	52	11
23	14	20	9.5	43	425	135	67	1470	160	147	44	10
24	14	20	10	38	240	168	62	1220	132	104	39	9.7
25	14	22	12	40	172	181	62	1060	212	145	35	9.6
26	13	21	13	45	143	182	62	2050	720	197	31	9.7
27	176	20	17	42	125	190	1250	929	271	107	28	10
28	909	19	25	37	105	237	583	779	177	122	25	10
29	483	18	30	33	---	298	373	553	139	350	23	10
30	1690	18	28	32	---	215	281	382	116	156	21	11
31	798	---	26	31	---	191	---	280	---	117	20	---
MEAN	144	72.5	16.0	51.2	116	246	174	1299	313	137	107	17.8
MAX	1690	489	30	252	499	1250	1250	8240	879	874	513	53
MIN	12	18	9.5	19	35	65	62	164	101	19	20	6.6
IN.	.90	.44	.10	.32	.66	1.54	1.06	8.14	1.90	.86	.67	.11

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

MEAN	143	95.7	80.3	87.5	122	199	217	228	263	127	97.5	154
MAX	983	854	368	347	576	1153	1069	1299	1216	928	1455	1018
(WY)	1987	1962	1983	1982	1985	1973	1983	1990	1967	1951	1982	1961
MIN	.13	.49	1.36	1.36	3.09	4.15	11.3	27.9	10.3	.26	.02	.20
(WY)	1954	1957	1956	1957	1957	1956	1954	1956	1953	1954	1953	1953

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	226	152
HIGHEST ANNUAL MEAN		369
LOWEST ANNUAL MEAN		11.5
HIGHEST DAILY MEAN	8240	May 16
LOWEST DAILY MEAN	6.6	Sep 17
INSTANTANEOUS PEAK FLOW	13100	May 15
INSTANTANEOUS PEAK STAGE	24.07	May 15
INSTANTANEOUS LOW FLOW	5.7	Sep 18
ANNUAL RUNOFF (INCHES)	16.69	11.18
10 PERCENTILE	508	284
50 PERCENTILE	71	46
95 PERCENTILE	12	1.8

## MISSOURI RIVER MAIN STEM

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, 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: Dec. 19 to Jan. 3. Records good. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39600	48300	20800	27000	22500	25600	37400	38500	58600	71700	61100	38300
2	39400	40200	20700	26000	22800	24500	39100	37800	57200	67000	60600	37600
3	39400	35600	20000	25000	23700	24400	41400	37800	52400	63500	60200	37000
4	39300	33000	19200	24300	24200	24600	42200	41300	49100	64100	69200	36200
5	39100	30500	18700	23500	23800	24400	40700	41800	49700	59600	68200	35900
6	39000	28300	19100	22400	23200	23000	39100	40700	50200	56000	63000	35900
7	38900	26800	20300	22100	22400	21700	38100	41000	65800	54800	54200	36100
8	39000	25700	20600	21900	21800	21900	37500	38800	69100	50600	49600	36400
9	39500	25100	20500	22200	21200	23100	37200	37800	78500	45800	46800	36600
10	39900	24900	21100	22600	21700	27100	37300	38800	90100	44400	45200	36200
11	39900	24500	22400	22400	22900	33800	37800	38600	66200	41800	45300	36000
12	39400	23800	22600	22200	23700	34800	37200	44700	56300	40300	49000	36100
13	39200	22600	21700	22400	24400	34000	37500	58300	48400	42500	44600	36100
14	39100	21800	20600	22800	25000	40900	38800	54400	51400	44200	48500	36000
15	38800	22100	19900	22900	25100	60600	38600	76700	61300	42100	56500	36000
16	38800	21900	19000	22900	24500	64100	38500	185000	97600	41600	54000	36000
17	39600	21400	17500	22600	24200	60700	38200	174000	124000	40800	62800	35700
18	39600	21000	15900	22300	24200	59700	37400	113000	128000	39500	74400	35800
19	39900	21200	15500	22200	24500	51800	37200	81400	133000	38700	63700	36100
20	39700	21800	15000	23000	24500	46200	37000	69000	137000	37800	55800	36200
21	39500	22200	14000	25900	23300	39200	37200	64900	138000	37100	54300	36600
22	39900	22400	13500	27100	22500	34900	36600	70100	126000	49900	54500	36900
23	40400	21900	13000	26400	26700	32900	35700	79000	111000	60500	49800	36900
24	39800	22200	12500	25200	28500	32100	35200	70800	102000	50400	46600	37100
25	39200	22700	13000	24200	27400	31500	34700	67300	98700	45600	45700	36600
26	38700	22300	14500	23000	27900	30500	34700	74800	100000	42300	44700	35900
27	38900	22100	17000	22300	27400	30000	40100	97700	95900	56900	42100	35500
28	42800	21500	18500	22300	26700	30200	53400	91800	87500	111000	42100	35500
29	46500	20800	22000	22600	---	31700	46900	78800	81300	95900	43500	35500
30	49900	20600	25000	22600	---	32700	40200	70700	74100	78900	41400	35400
31	62100	---	26000	22400	---	33900	---	62800	---	66000	39600	---
MEAN	40800	25310	18710	23440	24310	35050	38760	68330	84610	54240	52810	36270
MAX	62100	48300	26000	27100	28500	64100	53400	185000	138000	111000	74400	38300
MIN	38700	20600	12500	21900	21200	21700	34700	37800	48400	37100	39600	35400
IN.	.10	.06	.04	.06	.05	.08	.09	.16	.19	.13	.12	.08

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

	MEAN	46150	41620	27500	23490	32640	53740	71460	66060	84200	69260	47840	47880
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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	41980	50960
HIGHEST ANNUAL MEAN		94120
LOWEST ANNUAL MEAN		22410
HIGHEST DAILY MEAN	185000	May 16
LOWEST DAILY MEAN	12500	Dec 24
INSTANTANEOUS PEAK FLOW	202000	May 16
INSTANTANEOUS PEAK STAGE	26.10	May 16
INSTANTANEOUS LOW FLOW		Not Determined
ANNUAL RUNOFF (INCHES)	1.17	1.42
10 PERCENTILE	69300	93800
50 PERCENTILE	37600	42500
95 PERCENTILE	20200	13400

## GRAND RIVER BASIN

89

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. 13-26, May 24, 25, 27-29, June 24-27, and Aug. 1, 2. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	239	47	92	122	328	1850	1050	530	560	2150	158
2	49	186	48	98	116	282	1410	764	467	504	778	149
3	45	168	40	99	115	248	1020	628	416	447	598	143
4	42	137	46	101	108	236	817	1360	364	411	715	133
5	40	102	42	120	100	224	698	6860	320	373	1090	124
6	38	85	44	117	111	218	606	4500	303	322	618	117
7	37	75	46	178	161	236	528	2270	1000	295	452	108
8	36	65	43	211	270	1430	479	1370	8920	305	383	102
9	35	60	42	169	289	4690	447	1040	8510	272	341	99
10	35	57	48	127	253	2310	434	5520	3790	243	324	152
11	34	54	42	115	217	3150	429	3820	1280	232	323	210
12	34	53	43	91	190	5440	404	3410	832	698	346	160
13	33	51	43	96	158	3320	462	9770	624	1160	419	148
14	32	49	42	163	139	8660	1390	7940	3580	764	364	113
15	30	47	40	208	119	18200	1250	8090	6590	601	432	93
16	29	47	38	189	103	15500	880	11500	3870	431	602	81
17	29	46	37	177	87	5380	789	5720	4800	322	844	75
18	29	47	36	202	107	2810	711	2730	9010	255	918	75
19	31	47	35	303	107	1890	578	1750	4410	208	567	81
20	32	48	34	329	105	1410	513	1390	6620	325	704	76
21	32	45	33	268	130	1150	525	1220	7920	10000	1640	77
22	33	46	32	242	432	1000	668	1130	10300	8600	748	71
23	33	47	32	213	2020	894	624	1070	11300	3910	466	71
24	34	47	33	203	1480	809	517	992	5220	1750	367	85
25	34	48	40	196	901	763	445	1140	2830	1070	318	73
26	33	48	50	180	503	819	396	9780	1740	824	279	66
27	38	49	66	159	446	1010	2630	9800	1130	1180	250	64
28	47	49	71	155	400	973	7080	4080	907	6990	226	126
29	54	48	74	146	---	2020	4060	1300	745	5820	205	98
30	139	47	76	133	---	3700	1730	795	640	5340	187	97
31	242	---	82	127	---	1980	---	627	---	3570	170	---
MEAN	46.5	71.2	46.0	168	332	2938	1146	3659	3632	1864	575	107
MAX	242	239	82	329	2020	18200	7080	11500	11300	10000	2150	210
MIN	29	45	32	91	87	218	396	627	303	208	170	64
IN.	.02	.04	.02	.09	.15	1.51	.57	1.88	1.80	.96	.29	.05

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

	MEAN	863	871	491	507	937	1722	1788	1687	2364	1189	555	1070
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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1222	1168
HIGHEST ANNUAL MEAN		3045
LOWEST ANNUAL MEAN		129
HIGHEST DAILY MEAN	18200	67000
LOWEST DAILY MEAN	29	2.0
INSTANTANEOUS PEAK FLOW	22400	69100
INSTANTANEOUS PEAK STAGE	24.28	39.55
INSTANTANEOUS LOW FLOW	28	2.0
ANNUAL RUNOFF (INCHES)	7.37	7.05
10 PERCENTILE	3840	2410
50 PERCENTILE	267	208
95 PERCENTILE	34	14

## GRAND RIVER BASIN

06899500 THOMPSON RIVER AT TRENTON, MO

LOCATION.--Lat 40°07'45", corr., long 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. 14-26 and June 24-27. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	90	33	92	123	254	847	1660	1470	658	1080	125
2	48	79	30	80	127	223	683	1200	1310	739	774	117
3	41	97	19	72	109	195	564	970	1150	647	628	107
4	38	104	34	92	95	181	486	3980	995	493	719	97
5	44	98	52	153	94	180	424	6320	894	402	497	90
6	38	79	46	234	98	189	372	3840	884	421	418	89
7	30	68	35	212	155	212	333	2080	2480	361	342	75
8	33	67	25	160	234	342	307	1340	8200	334	297	141
9	37	66	30	128	213	1440	289	1460	2580	380	261	302
10	37	61	45	117	183	3170	276	4190	1340	361	257	262
11	36	57	26	117	157	5900	259	1980	932	2700	285	216
12	29	51	37	68	140	5430	246	2440	752	2730	343	163
13	27	53	35	78	119	4250	284	5550	612	3750	358	135
14	32	39	34	135	104	10100	601	5130	3720	1790	821	110
15	31	29	32	162	50	10200	550	4150	5490	982	447	95
16	28	24	30	170	89	7240	1070	5520	3470	724	337	94
17	28	32	29	183	84	4880	810	3270	9850	588	298	76
18	24	33	28	229	96	2760	548	1700	12100	466	261	81
19	21	43	27	313	96	1850	424	1200	10300	394	219	85
20	22	32	26	293	89	1410	357	960	8050	6210	1140	78
21	22	23	25	531	89	1170	357	791	5490	10100	1440	82
22	25	26	24	336	382	1010	408	673	9840	5670	498	79
23	28	31	23	253	2130	881	389	599	5850	3980	373	98
24	28	36	25	221	1340	779	347	555	3150	2260	773	87
25	30	40	30	203	681	691	282	7680	1900	1490	209	83
26	31	35	45	169	394	661	257	13200	1430	1210	186	71
27	37	44	53	153	366	611	4630	7430	1300	7500	172	78
28	48	30	61	164	311	551	10100	3670	1180	3730	156	305
29	47	20	69	188	---	1020	5360	2530	888	6560	139	106
30	79	24	79	152	---	1170	2680	2030	738	3280	141	91
31	84	---	91	140	---	966	---	1690	---	1840	132	---
MEAN	36.9	50.4	38.0	181	291	2255	1151	3219	3611	2347	436	121
MAX	84	104	91	531	2130	10200	10100	13200	12100	10100	1440	305
MIN	21	20	19	68	50	180	246	555	612	334	132	71
IN.	.03	.03	.03	.12	.18	1.56	.77	2.22	2.41	1.62	.30	.08

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

	MEAN	621	670	455	465	892	1604	1582	1533	1814	796	537	622
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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1151	964
HIGHEST ANNUAL MEAN	2315	1973
LOWEST ANNUAL MEAN	117	1934
HIGHEST DAILY MEAN	13200	May 26 73800
LOWEST DAILY MEAN	19	Dec 3 1.0
INSTANTANEOUS PEAK FLOW	22800	May 25 95000
INSTANTANEOUS PEAK STAGE	15.35	May 25 25.7
INSTANTANEOUS LOW FLOW	19	Dec 3 1.0
ANNUAL RUNOFF (INCHES)	9.36	7.84
10 PERCENTILE	3800	2270
50 PERCENTILE	250	201
95 PERCENTILE	27	18



## GRAND RIVER BASIN

91

## 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: Dec. 12-26, Jan. 11-14, Feb. 16, 25, 26, and June 8, 14. Records 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.8	13	17	24	15	47	85	165	54	51	66	4.1
2	11	9.9	16	21	15	41	70	108	50	44	49	3.6
3	11	6.6	13	23	16	40	56	97	46	40	41	4.2
4	9.7	6.3	15	32	16	37	49	3390	38	34	111	4.5
5	12	4.8	16	66	21	37	42	3550	35	30	32	3.7
6	14	4.8	16	108	42	45	36	665	50	30	25	3.4
7	16	4.8	15	58	115	64	31	296	2130	30	18	2.8
8	18	4.8	15	38	138	84	30	165	5010	29	16	3.5
9	17	4.8	14	32	88	188	30	177	459	26	13	7.9
10	15	5.0	15	21	64	118	34	441	207	26	20	4.2
11	16	8.0	12	15	47	1690	32	182	119	22	15	1.7
12	17	8.7	7.0	10	36	631	28	563	87	115	15	2.0
13	16	8.7	4.0	12	29	763	45	407	71	84	16	2.0
14	18	8.8	3.8	14	20	2320	88	743	2860	89	14	3.0
15	13	9.0	3.6	16	13	4570	240	999	1410	47	12	1.6
16	17	7.7	3.5	17	15	1200	366	1060	371	29	14	2.0
17	19	9.1	3.5	20	16	411	160	316	989	19	11	2.0
18	19	10	3.5	39	23	251	93	144	508	16	9.3	4.9
19	17	11	3.5	49	25	156	68	98	168	15	7.6	9.5
20	14	13	3.5	39	30	111	59	80	1380	220	7.6	6.6
21	14	13	3.4	30	41	93	56	67	1920	813	11	7.5
22	16	14	3.3	26	333	85	49	57	2260	315	23	4.1
23	18	19	3.0	25	873	73	44	54	1330	173	12	5.3
24	17	16	3.0	27	374	66	39	52	355	84	8.7	6.2
25	18	15	3.5	27	162	63	35	1390	179	164	7.0	6.2
26	18	14	10	19	106	66	31	2130	118	68	4.2	7.0
27	25	15	14	22	87	55	1140	326	94	846	3.4	8.6
28	32	16	16	16	61	52	4770	158	76	2110	2.0	18
29	33	18	22	13	---	93	1250	102	63	560	2.0	11
30	55	18	24	17	---	120	315	78	57	298	4.5	10
31	23	---	24	14	---	108	---	62	---	102	3.9	---
MEAN	18.3	10.6	10.5	28.7	101	441	312	585	750	211	19.2	5.37
MAX	55	19	24	108	873	4570	4770	3550	5010	2110	111	18
MIN	9.7	4.8	3.0	10	13	37	28	52	35	15	2.0	1.6
IN.	.09	.05	.05	.15	.47	2.26	1.55	3.00	3.72	1.08	.10	.03

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

	MEAN	104	97.6	70.9	70.6	143	241	252	201	265	135	71.2	97.8
	MAX	688	1133	507	372	623	944	963	918	2555	942	1008	1006
	(WY)	1986	1962	1983	1960	1937	1982	1947	1935	1947	1969	1932	1926
	MIN	.91	1.32	1.01	.03	.52	2.43	1.55	2.44	3.21	.60	.22	.99
	(WY)	1954	1938	1939	1940	1939	1938	1989	1956	1956	1934	1936	1954

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

	208	144
AVERAGE FLOW		369
HIGHEST ANNUAL MEAN		1947
LOWEST ANNUAL MEAN		9.25
HIGHEST DAILY MEAN	5010	17300
LOWEST DAILY MEAN	1.6	.00
INSTANTANEOUS PEAK FLOW	7470	24200
INSTANTANEOUS PEAK STAGE	11.52	20.9
INSTANTANEOUS LOW FLOW	1.2	0
ANNUAL RUNOFF (INCHES)	12.55	8.71
10 PERCENTILE	402	260
50 PERCENTILE	28	23
95 PERCENTILE	3.3	1.1



## GRAND RIVER BASIN

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: Dec. 3, 4, 11-27 and Jan. 13, 14. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	355	2560	168	243	538	1360	4640	8840	3030	2470	4310	401
2	334	1170	172	244	545	1130	4070	5530	2670	2150	2710	375
3	303	775	169	273	551	997	3280	4160	2370	2040	2050	353
4	268	616	166	342	565	900	2610	8390	2120	1860	1720	343
5	257	544	181	310	541	831	2180	28900	1930	1640	1810	317
6	244	466	190	324	560	803	1910	24400	1880	1470	2010	304
7	249	408	191	397	726	783	1700	14500	6490	1440	1470	286
8	243	364	183	725	1170	893	1510	7820	34000	1330	1150	281
9	227	327	182	870	1400	2870	1370	5350	41800	1200	974	299
10	203	295	160	716	1250	6720	1350	6390	31900	1230	884	414
11	199	279	155	613	1010	6630	1300	12300	17900	1590	854	511
12	193	257	150	529	842	12800	1210	11300	8170	3650	825	473
13	188	250	148	459	721	14500	1210	22500	4530	6220	865	437
14	185	241	145	455	640	21600	1780	26400	8080	6170	941	365
15	190	231	142	517	592	44400	3660	32600	28000	3930	1150	317
16	200	211	140	595	533	48500	3690	40100	21200	2770	1170	274
17	207	203	138	658	473	37200	3810	33800	13600	2060	1190	249
18	176	190	135	858	448	16600	2910	16700	24700	1670	1300	250
19	170	191	135	1090	538	7940	2330	7790	23800	1400	1390	255
20	157	193	130	1090	716	5610	1890	5960	16400	1230	1280	273
21	153	171	125	1040	746	4350	1700	4740	23400	19600	1500	282
22	152	165	120	1090	1240	3720	1640	3860	18600	23900	2860	267
23	158	157	110	1010	7810	3200	1730	3370	31200	14700	1660	247
24	166	155	115	839	8810	2840	1680	3130	18900	7700	1150	227
25	155	155	120	768	4880	2600	1470	2830	9530	4530	877	233
26	147	163	140	712	2860	2600	1290	22100	7080	3370	716	236
27	151	170	160	655	1880	3140	4990	23800	6950	4060	631	218
28	176	174	197	616	1610	3300	37000	13000	4080	13900	561	355
29	511	169	222	580	---	3610	41100	6420	3290	15600	512	797
30	1540	170	231	593	---	7230	21000	4420	2800	10800	483	539
31	3760	---	244	575	---	6880	---	3550	---	7620	433	---
MEAN	375	381	160	638	1578	8921	5400	13390	14010	5590	1337	339
MAX	3760	2560	244	1090	8810	48500	41100	40100	41800	23900	4310	797
MIN	147	155	110	243	448	783	1210	2830	1880	1200	433	218
IN.	.06	.06	.03	.11	.24	1.50	.88	2.24	2.27	.94	.22	.06

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

	MEAN	2784	2936	1918	2000	3612	6041	6508	5423	7380	3445	1741	2980
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	176	52.8	41.0	62.5	
(WY)	1957	1957	1956	1940	1939	1957	1956	1956	1988	1934	1936	1955	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	4358	3888
HIGHEST ANNUAL MEAN	10020	1973
LOWEST ANNUAL MEAN	367	1934
HIGHEST DAILY MEAN	48500	Mar 16 166000
LOWEST DAILY MEAN	110	Dec 23 10
INSTANTANEOUS PEAK FLOW	50100	Mar 16 180000
INSTANTANEOUS PEAK STAGE	34.03	Mar 16 39.5
INSTANTANEOUS LOW FLOW	105	Dec 23 10
ANNUAL RUNOFF (INCHES)	8.60	7.67
10 PERCENTILE	14000	9960
50 PERCENTILE	1040	939
95 PERCENTILE	149	77

## 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 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT 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 AS CACO3 (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)
NOV												
08...	0900	373	485	8.1	10.0	10	10.6	95	87	69	220	22
JAN												
18...	0810	851	462	8.1	4.0	90	11.6	88	320	180	180	28
MAY												
09...	0830	5480	320	7.1	18.5	130	8.5	92	1200	1200	140	30
JUL												
11...	0830	1430	430	7.9	27.0	20	5.4	68	4400	6600	200	18

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 DIS TOT IT 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, DIS- SOLVED PER AC-FT) (70303)
NOV											
08...	68	12	15	5.9	197	45	13	0.2	11	303	0.41
JAN											
18...	54	11	16	6.6	153	44	17	0.2	7.7	285	0.39
MAY											
09...	44	7.9	7.6	4.4	113	29	29	0.2	11	171	0.23
JUL											
11...	61	12	11	4.7	183	22	11	0.2	11	258	0.35

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- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV											
08...	305	0.02	0.12	<0.01	<0.01	0.90	0.13	0.01	0.01	51	38
JAN											
18...	655	0.02	0.71	0.17	0.14	1.5	0.34	0.06	0.06	252	85
MAY											
09...	2530	<0.03	1.0	0.15	0.06	1.3	0.42	0.05	0.06	586	86
JUL											
11...	996	<0.01	0.20	0.08	0.02	1.1	0.35	0.05	0.03	439	93

## GRAND RIVER BASIN

06902000 GRAND RIVER NEAR SUMNER, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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 08...	20	<1	150	<0.5	<1	<1	<3	1	17	<1
JAN 18...	20	<1	130	<0.5	<1	1	<3	<10	32	<10
MAY 09...	70	1	160	<0.5	1	1	<3	5	89	<1
JUL 11...	10	1	160	<0.5	<1	2	<3	2	14	<1
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 08...	8	230	0.1	<10	4	<1	<1	260	<6	17
JAN 18...	4	150	<0.1	<10	<10	<1	<1	200	<6	5
MAY 09...	5	18	<0.1	<10	3	<1	<1	160	<6	16
JUL 11...	7	92	<0.1	<10	2	<1	<1	240	<6	14

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, 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: Nov. 30 to Dec. 3, Dec. 7, and Dec. 13 to Jan.2. Records poor. Several observations of water temperature and specific conductance were made during the year. Considerable regulation by Rathbun Lake (station 06903480) 51 mi upstream. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	55	20	45	43	90	113	290	649	664	1190	1230
2	32	51	24	50	55	77	110	195	637	640	1190	1050
3	32	40	25	63	45	71	82	158	620	759	1200	910
4	31	35	24	72	55	67	75	1810	602	920	1180	901
5	31	33	23	88	51	67	70	2660	600	912	794	899
6	31	31	27	94	75	90	68	1840	600	988	560	897
7	34	30	23	147	104	90	65	708	1800	1080	1090	897
8	35	29	22	177	112	146	61	403	2940	1090	1130	905
9	33	27	21	136	127	227	61	495	639	1090	1180	831
10	30	25	25	107	108	1440	60	550	271	1090	1190	716
11	28	25	28	98	85	2140	58	527	177	529	1210	887
12	27	24	23	101	79	1400	53	521	219	580	1020	889
13	26	24	25	103	66	1100	53	666	623	641	844	905
14	25	24	28	84	61	1620	73	723	3500	730	931	892
15	26	23	25	71	45	2820	106	604	2180	674	1090	873
16	27	23	25	62	57	2170	110	622	810	768	1180	865
17	27	22	24	56	88	880	102	556	1520	1010	1180	861
18	25	20	23	56	64	385	98	458	2430	1060	1200	866
19	25	20	22	82	65	253	83	411	1420	960	1230	866
20	28	21	21	71	57	193	83	388	3000	1670	1150	863
21	27	22	19	72	56	177	79	371	3930	2600	953	864
22	26	21	17	75	171	160	70	397	3770	2530	932	691
23	25	20	15	68	536	150	64	603	3020	1960	1050	182
24	25	19	15	60	556	129	62	621	1420	829	1190	72
25	25	21	17	62	316	115	59	2000	559	975	1210	52
26	25	22	16	58	196	108	59	3030	436	1020	1230	257
27	27	21	20	57	169	102	81	2710	715	1670	1230	782
28	28	21	25	67	124	89	1830	1450	699	2190	1220	790
29	30	20	30	51	---	93	1630	648	735	1900	1220	786
30	40	18	35	50	---	101	619	754	688	1190	1230	784
31	50	---	40	59	---	106	---	677	---	1020	1230	---
MEAN	29.5	26.2	23.5	78.8	127	537	205	898	1374	1153	1111	775
MAX	50	55	40	177	556	2820	1830	3030	3930	2600	1230	1230
MIN	25	18	15	45	43	67	53	158	177	529	560	52
IN.	.04	.03	.03	.11	.15	.72	.26	1.20	1.77	1.54	1.48	1.00

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

	415	506	665	313	471	875	827	756	805	968	544	521
MEAN	415	506	665	313	471	875	827	756	805	968	544	521
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	26.2	19.9	13.6	23.0	58.6	31.1	52.1	33.6	23.6	32.3	29.6
(WY)	1977	1990	1977	1977	1989	1989	1989	1980	1988	1988	1988	1976

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	531	638
HIGHEST ANNUAL MEAN		1253
LOWEST ANNUAL MEAN		69.3
HIGHEST DAILY MEAN	3930	8960
LOWEST DAILY MEAN	15	13
INSTANTANEOUS PEAK FLOW	4650	6800
INSTANTANEOUS PEAK STAGE	20.82	24.26
INSTANTANEOUS LOW FLOW	14	13
ANNUAL RUNOFF (INCHES)	8.34	10.03
10 PERCENTILE	1350	1470
50 PERCENTILE	120	279
95 PERCENTILE	22	25

## CHARITON RIVER BASIN

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: Oct. 1-4, Nov. 29 to Dec. 1, Dec. 9 to Jan. 3, Apr. 3-10, 12, 14, 17, 25, 26, and July 27 to Aug. 1. Records 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	56	25	60	55	173	139	678	785	836	1200	1370
2	33	59	24	70	49	138	121	407	748	801	1440	1280
3	33	51	17	80	60	120	105	309	697	810	1420	1030
4	33	40	32	85	50	109	95	7500	651	1120	1390	992
5	33	34	28	89	57	101	90	7270	633	1170	1190	987
6	33	32	31	112	81	136	86	4110	652	1220	458	964
7	33	31	24	131	126	185	84	1720	5670	1390	1150	953
8	39	31	24	194	212	231	80	843	14100	1410	1270	964
9	39	29	29	204	206	658	78	732	3030	1410	1450	954
10	33	28	30	151	175	1270	75	925	1120	1460	1360	728
11	32	28	30	108	131	7130	73	850	624	956	1390	932
12	32	27	29	119	99	3530	70	1440	397	635	1360	955
13	31	27	28	144	84	2400	73	1400	720	796	1060	955
14	30	27	28	130	72	4960	111	2470	15800	815	1080	947
15	28	26	28	86	65	8490	368	2090	8210	940	1170	952
16	30	26	28	60	80	4730	566	2280	2520	804	1330	957
17	31	28	28	63	73	1970	306	1180	2010	1210	1340	957
18	29	25	27	66	106	892	245	791	3920	1330	1350	973
19	30	26	26	68	80	531	171	610	2810	1310	1370	979
20	31	24	25	82	67	377	141	522	5190	1730	1360	979
21	33	24	24	85	71	310	134	451	9010	4960	943	987
22	31	24	23	70	198	270	106	415	9880	4200	1180	948
23	30	24	22	73	1370	223	96	598	6110	3620	1020	433
24	29	25	21	70	1120	188	74	709	3020	1300	1360	133
25	29	24	23	65	645	153	60	5980	1150	1210	1320	75
26	29	24	25	53	368	135	57	7270	676	1150	1350	62
27	29	25	30	61	319	120	120	4890	914	2800	1340	836
28	31	26	35	62	245	110	6680	3100	954	2500	1330	1010
29	34	26	40	55	---	134	4400	1020	931	2000	1330	989
30	48	28	45	52	---	139	1510	1040	922	1500	1340	989
31	52	---	50	47	---	145	---	879	---	1000	1370	---
MEAN	32.9	30.2	28.4	90.2	224	1292	544	2080	3462	1561	1259	876
MAX	52	59	50	204	1370	8490	6680	7500	15800	4960	1450	1370
MIN	28	24	17	47	49	101	57	309	397	635	458	62
IN.	.03	.02	.02	.08	.17	1.09	.44	1.75	2.82	1.31	1.06	.71

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

	507	565	529	491	764	1415	1368	1195	1454	781	495	504
MEAN	507	565	529	491	764	1415	1368	1195	1454	781	495	504
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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	960	838
HIGHEST ANNUAL MEAN		2191
LOWEST ANNUAL MEAN		81.6
HIGHEST DAILY MEAN	15800	21700
LOWEST DAILY MEAN	17	0.1
INSTANTANEOUS PEAK FLOW	20000	22900
INSTANTANEOUS PEAK STAGE	21.74	28.50
INSTANTANEOUS LOW FLOW	8.1	0.1
ANNUAL RUNOFF (INCHES)	9.51	8.31
10 PERCENTILE	2100	2220
50 PERCENTILE	200	185
95 PERCENTILE	25	8.0



## 06905500 CHARITON RIVER NEAR PRAIRIE HILL, MO

LOCATION.--Lat 39°32'25", long 92°47'23", in NW ¼, SW ¼, 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: Dec. 12 to Jan. 5, Feb. 23-26, June 22-24, and Sept. 27-30 Records 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	105	38	80	80	348	340	1560	927	1020	1070	1420
2	49	82	38	90	86	286	319	924	832	921	1160	1400
3	47	73	35	100	94	235	268	575	778	870	1570	1360
4	45	69	46	110	92	207	237	3920	717	841	1600	1110
5	47	69	45	120	97	194	211	9300	694	1020	1240	1050
6	48	64	45	130	91	191	185	5820	1020	1090	1090	1050
7	47	57	46	117	104	193	164	3380	3390	1080	595	1050
8	46	48	43	127	131	274	149	1800	17500	1220	839	1030
9	46	47	42	100	206	437	138	1440	9270	1360	1180	1040
10	46	45	46	111	226	565	164	1520	2690	1460	1440	1030
11	48	44	35	165	210	2660	261	1180	1370	2190	1410	878
12	47	44	35	121	177	4670	176	4230	894	1450	1410	950
13	46	45	34	62	137	3130	185	4100	637	931	1390	1000
14	45	46	34	75	124	3690	891	3250	6530	889	1100	1000
15	45	46	34	112	128	10800	685	5810	14500	875	1070	1010
16	48	46	34	135	103	6680	658	8640	5290	965	1200	1020
17	51	46	33	112	102	3550	1050	3320	2120	841	1390	1030
18	52	43	33	153	123	1850	591	1710	1900	1060	1410	1050
19	49	41	32	122	173	1110	440	1230	3090	1230	1460	1070
20	43	40	31	101	190	729	337	954	2140	1270	1550	1020
21	43	37	30	102	146	544	281	778	5630	1870	1540	1010
22	43	37	30	112	738	455	247	666	9000	4150	1230	1020
23	44	37	29	115	1400	398	219	595	10000	3480	1400	979
24	45	37	28	101	1450	365	189	632	5000	2930	1170	582
25	43	37	29	103	1380	346	167	840	2200	1460	1420	245
26	42	37	30	99	950	378	142	6090	1120	1240	1450	159
27	45	39	35	81	577	445	135	5070	732	1220	1480	124
28	51	40	40	82	431	381	990	3610	787	1760	1460	700
29	68	39	45	83	---	346	6280	2360	1020	3830	1430	1100
30	168	39	55	81	---	428	3040	1180	994	2480	1440	1150
31	120	---	70	81	---	381	---	991	---	1740	1420	---
MEAN	53.5	49.3	38.1	106	348	1492	638	2822	3759	1572	1310	955
MAX	168	105	70	165	1450	10800	6280	9300	17500	4150	1600	1420
MIN	42	37	28	62	80	191	135	575	637	841	595	124
IN.	.03	.03	.02	.07	.19	.92	.38	1.74	2.24	.97	.81	.57

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

	735	803	728	712	1090	1916	1989	1831	2041	1200	651	698
MEAN	735	803	728	712	1090	1916	1989	1831	2041	1200	651	698
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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1099	1196
HIGHEST ANNUAL MEAN		3353
LOWEST ANNUAL MEAN		166
HIGHEST DAILY MEAN	17500	30000
LOWEST DAILY MEAN	28	4.6
INSTANTANEOUS PEAK FLOW	18700	31900
INSTANTANEOUS PEAK STAGE	18.03	21.96
INSTANTANEOUS LOW FLOW	28	4.6
ANNUAL RUNOFF (INCHES)	7.98	8.68
10 PERCENTILE	2780	3120
50 PERCENTILE	403	318
95 PERCENTILE	37	23

## CHARITON RIVER BASIN

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 February 1990 (discontinued).

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: Dec. 14-27. Records poor. Several observations of water temperature and specific conductance were made during the year. Discharge not computed after Feb. 28; collection of stage data continued.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	4.0	2.8	4.8	8.7	---	---	---	---	---	---	---
2	2.5	3.3	2.8	4.5	9.7	---	---	---	---	---	---	---
3	2.3	3.1	3.2	5.1	13	---	---	---	---	---	---	---
4	2.2	.97	3.0	5.9	15	---	---	---	---	---	---	---
5	2.3	.00	3.2	7.6	18	---	---	---	---	---	---	---
6	2.2	.00	1.4	7.0	17	---	---	---	---	---	---	---
7	2.0	.00	.05	6.4	21	---	---	---	---	---	---	---
8	2.0	.16	.50	6.0	22	---	---	---	---	---	---	---
9	1.8	.05	1.6	6.1	19	---	---	---	---	---	---	---
10	1.6	.44	1.6	6.3	20	---	---	---	---	---	---	---
11	1.4	1.2	1.5	6.3	17	---	---	---	---	---	---	---
12	1.1	1.1	1.2	6.1	16	---	---	---	---	---	---	---
13	.74	2.1	.99	5.7	14	---	---	---	---	---	---	---
14	.36	2.6	.90	5.6	13	---	---	---	---	---	---	---
15	.05	2.3	.80	5.6	14	---	---	---	---	---	---	---
16	.53	2.7	.70	6.0	28	---	---	---	---	---	---	---
17	1.2	3.2	.60	7.6	37	---	---	---	---	---	---	---
18	1.1	3.6	.50	10	42	---	---	---	---	---	---	---
19	.85	3.3	.40	39	75	---	---	---	---	---	---	---
20	.47	2.8	.30	23	47	---	---	---	---	---	---	---
21	.35	2.3	.20	14	55	---	---	---	---	---	---	---
22	.28	2.2	.15	10	447	---	---	---	---	---	---	---
23	.42	2.7	.10	8.4	916	---	---	---	---	---	---	---
24	1.4	3.2	.10	7.9	573	---	---	---	---	---	---	---
25	.83	2.1	.20	7.7	201	---	---	---	---	---	---	---
26	.30	2.1	.50	7.1	87	---	---	---	---	---	---	---
27	.13	2.5	1.0	7.3	61	---	---	---	---	---	---	---
28	.71	1.5	3.1	7.8	52	---	---	---	---	---	---	---
29	2.2	1.8	3.7	7.7	---	---	---	---	---	---	---	---
30	20	2.1	3.8	7.7	---	---	---	---	---	---	---	---
31	19	---	4.5	8.3	---	---	---	---	---	---	---	---
MEAN	2.41	1.98	1.46	8.66	102	---	---	---	---	---	---	---
MAX	20	4.0	4.5	39	916	---	---	---	---	---	---	---
MIN	.05	.00	.05	4.5	8.7	---	---	---	---	---	---	---
IN.	.01	.01	.01	.04	.40	---	---	---	---	---	---	---

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

	163	158	169	143	244	318	463	335	315	245	71.3	156
MEAN	1246	976	1335	729	1453	1370	2585	1538	1225	3029	303	1295
MAX	1986	1986	1983	1965	1982	1973	1973	1973	1981	1981	1987	1973
(WY)	.04	1.05	.61	.44	.89	8.33	18.0	9.77	2.37	1.99	.74	.59
MIN	1964	1977	1964	1964	1964	1989	1989	1980	1988	1977	1964	1976
(WY)												

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	*****	234
HIGHEST ANNUAL MEAN		719
LOWEST ANNUAL MEAN		22.9
HIGHEST DAILY MEAN		18300
LOWEST DAILY MEAN	*****	.00
INSTANTANEOUS PEAK FLOW	*****	23100
INSTANTANEOUS PEAK STAGE	*****	22.11
INSTANTANEOUS LOW FLOW	*****	0
ANNUAL RUNOFF (INCHES)	*****	11.89

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

## LITTLE CHARITON RIVER BASIN

99

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, 47,800 acre-ft, May 17, elevation, 796.01 ft; minimum, 24,600 acre-ft, Feb. 1, elevation, 786.62.

ELEVATION, IN FEET, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990  
OBSERVATIONS AT 08:00

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	787.81	787.57	787.08	786.79	786.62	787.83	790.70	791.92	793.80	793.19	791.18	790.81
2	787.80	787.57	787.05	786.78	786.69	787.83	790.73	791.88	793.63	793.07	791.16	790.79
3	787.78	787.54	787.03	786.77	786.69	787.83	790.75	791.86	793.55	792.96	791.14	790.76
4	787.75	787.48	787.00	786.80	786.68	787.83	790.74	792.35	793.40	792.87	791.28	790.74
5	787.70	787.47	787.01	786.80	786.67	787.81	790.81	793.45	793.25	792.79	791.27	790.72
6	787.71	787.48	787.03	786.80	786.68	787.83	790.76	793.55	793.22	792.70	791.25	790.68
7	787.73	787.47	787.02	786.79	786.68	787.84	790.75	793.52	793.15	792.58	791.20	790.67
8	787.69	787.45	786.99	786.78	786.68	787.89	790.71	793.45	795.22	792.45	791.18	790.66
9	787.68	787.43	786.99	786.77	786.70	788.01	790.69	793.33	795.85	792.34	791.16	790.63
10	787.66	787.41	786.98	786.77	786.78	788.06	790.77	793.45	795.73	792.26	791.16	790.63
11	787.63	787.38	786.97	786.76	786.70	788.12	790.85	793.37	795.54	792.26	791.16	790.61
12	787.61	787.38	786.94	786.74	786.69	788.14	790.83	793.58	795.34	792.19	791.11	790.56
13	787.60	787.33	786.93	786.72	786.71	788.20	790.86	794.34	795.15	792.15	791.10	790.54
14	787.58	787.39	786.92	786.70	786.68	788.25	791.20	794.38	795.12	792.07	791.07	790.55
15	787.57	787.39	786.90	786.69	786.77	789.39	791.43	794.83	795.48	792.02	791.06	790.51
16	787.57	787.38	786.92	786.68	786.77	790.35	791.55	795.69	795.42	791.89	791.04	790.47
17	787.62	787.29	786.90	786.71	786.78	790.44	791.67	796.01	795.24	791.82	791.06	790.43
18	787.60	787.30	786.89	786.73	786.78	790.46	791.67	795.85	795.07	791.75	791.04	790.48
19	787.57	787.27	786.86	786.72	786.78	790.47	791.63	795.70	794.87	791.69	791.03	790.51
20	787.53	787.26	786.86	786.71	786.78	790.44	791.63	795.54	794.72	791.64	791.01	790.48
21	787.49	787.27	786.86	786.71	786.78	790.43	791.64	795.37	794.53	791.61	791.01	790.50
22	787.48	787.24	786.86	786.70	786.91	790.45	791.64	795.19	794.42	791.63	790.98	790.46
23	787.46	787.20	786.82	786.70	787.46	790.47	791.62	794.98	794.26	791.57	790.96	790.43
24	787.45	787.17	786.82	786.70	787.79	790.48	791.62	794.81	794.09	791.51	790.94	790.42
25	787.44	787.16	786.80	786.76	787.78	790.49	791.61	794.69	793.93	791.43	790.92	790.38
26	787.42	787.16	786.79	786.71	787.79	790.52	791.58	794.71	793.79	791.37	790.90	790.35
27	787.43	787.15	786.79	786.70	787.81	790.52	791.57	794.58	793.69	791.39	790.91	790.33
28	787.43	787.15	786.79	786.69	787.83	790.56	791.78	794.41	793.53	791.39	790.88	790.44
29	787.43	787.11	786.80	786.68	---	790.61	791.92	794.26	793.38	791.36	790.86	790.42
30	787.57	787.09	786.80	786.65	---	790.63	791.94	794.10	793.28	791.32	790.85	790.40
31	787.59	---	786.80	786.66	---	790.66	---	793.94	---	791.27	790.84	---
(-)	26500	25500	24900	24600	27000	33400	36500	41800	40000	34800	33800	32700
(=)	-1000	-1000	-600	-300	+2400	+6400	+3100	+5300	-1800	-5200	-1000	-1100
MAX	787.81	787.57	787.08	786.80	787.83	790.66	791.94	796.01	795.85	793.19	791.28	790.81
MIN	787.42	787.09	786.79	786.65	786.62	787.81	790.69	791.86	793.15	791.27	790.84	790.33

CAL YR 1989 . . . - 900  
WTR YR 1990 . . . +5,200

(-) Contents, in acre-feet, at end of month  
(=) Change in contents, in acre-feet

## LITTLE CHARITON RIVER BASIN

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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	7.7	7.7	7.2	6.9	8.0	6.6	49	255	156	30	9.4
2	7.3	7.6	7.6	7.2	6.8	8.1	6.5	46	244	143	7.7	9.4
3	7.3	7.7	7.7	7.3	6.8	8.0	6.6	46	235	129	9.4	9.4
4	7.4	7.7	7.9	7.1	7.1	8.1	6.6	179	220	115	12	9.4
5	7.4	7.7	7.8	7.0	7.2	8.2	6.7	284	208	99	12	9.4
6	7.4	7.7	7.8	7.0	7.2	8.2	6.8	293	202	118	12	9.4
7	7.4	7.7	7.8	7.1	7.1	8.2	7.0	288	418	143	12	9.4
8	7.4	7.8	7.7	7.2	7.1	8.3	7.2	272	345	131	12	9.2
9	7.5	7.8	7.8	7.2	7.0	8.3	7.2	263	329	121	11	9.1
10	7.5	7.8	7.7	7.1	7.3	8.4	7.4	266	322	119	11	9.1
11	7.5	7.8	7.6	7.0	7.4	8.2	7.6	255	313	93	11	9.1
12	7.8	7.8	7.6	7.0	7.4	8.3	7.8	294	306	33	11	9.1
13	7.8	8.1	7.6	7.0	7.3	8.2	8.2	323	298	59	11	9.1
14	7.8	8.0	7.5	7.0	7.3	24	13	331	297	102	10	9.1
15	7.9	8.0	7.3	7.0	7.3	11	19	349	305	90	10	8.9
16	7.8	8.0	7.3	7.2	7.5	7.0	25	374	301	79	10	8.7
17	7.6	8.1	7.4	7.1	7.4	6.9	28	373	293	72	10	8.7
18	7.6	8.0	7.4	6.9	7.5	6.8	28	363	284	67	9.9	8.8
19	7.6	8.1	7.4	6.8	7.5	6.8	28	355	274	62	9.8	8.9
20	7.7	8.1	7.4	6.8	7.5	6.7	28	347	266	59	9.6	8.9
21	7.7	8.1	7.3	6.7	7.5	6.7	29	338	257	59	9.6	8.9
22	7.8	8.0	7.2	6.8	10	6.6	28	331	248	62	9.4	8.8
23	7.8	7.9	7.2	6.8	8.2	6.5	28	322	239	58	9.3	8.7
24	7.8	7.8	7.3	6.7	7.8	6.6	27	314	229	54	9.0	8.7
25	7.8	7.8	7.4	6.9	7.8	6.6	27	311	219	51	9.0	8.7
26	7.8	7.8	7.2	6.8	7.9	6.7	27	309	210	51	9.2	8.7
27	7.8	7.8	7.2	6.8	7.8	6.6	27	301	200	51	9.4	8.7
28	7.8	7.6	7.2	6.8	8.0	6.6	40	286	189	51	9.4	8.7
29	8.4	7.7	7.2	6.9	---	6.6	51	284	176	50	9.4	8.7
30	7.8	7.7	7.2	7.0	---	6.6	52	274	165	50	9.6	8.7
31	7.6	---	7.2	6.9	---	6.6	---	264	---	48	9.6	---
MEAN	7.65	7.85	7.47	6.98	7.49	8.01	19.9	280	262	83.1	10.8	8.99
MAX	8.4	8.1	7.9	7.3	10	24	52	374	418	156	30	9.4
MIN	7.3	7.6	7.2	6.7	6.8	6.5	6.5	46	165	33	7.7	8.7
IN.	.08	.08	.08	.07	.07	.08	.20	2.88	2.61	.86	.11	.09

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

MEAN	75.3	73.1	89.4	61.2	60.7	152	195	178	99.3	70.9	58.1	82.1
MAX	425	354	298	299	205	688	939	510	349	340	401	727
(WY)	1974	1986	1983	1974	1975	1973	1973	1973	1984	1981	1981	1973
MIN	.00	.05	.00	.00	.00	7.30	7.27	7.21	.95	.10	.02	.00
(WY)	1976	1976	1979	1979	1979	1989	1989	1988	1977	1977	1975	1976

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	59.4	99.8
HIGHEST ANNUAL MEAN		317
LOWEST ANNUAL MEAN		7.13
HIGHEST DAILY MEAN	Jun 7	5460
LOWEST DAILY MEAN	Mar 23, Apr 2	.00
INSTANTANEOUS PEAK FLOW	Jun 7	8700
INSTANTANEOUS PEAK STAGE	Jun 7	20.60
INSTANTANEOUS LOW FLOW	Mar 22, 23, Apr 2	0
ANNUAL RUNOFF (INCHES)	7.20	12.09
10 PERCENTILE	269	290
50 PERCENTILE	7.3	22
95 PERCENTILE	6.5	.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>.

## WATER-DISCHARGE RECORDS

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: Dec. 11-27. Water-discharge records fair except for estimated daily discharges, which are poor. Some regulation by Long Branch Reservoir (station 06906190) 34 mi upstream since 1978. Low flow affected by operation of pumps 7 mi upstream. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.6	10	7.8	10	12	36	42	71	249	191	53	12
2	8.9	8.2	8.1	9.8	39	34	37	61	234	171	37	11
3	8.6	7.8	7.2	9.6	35	32	32	70	217	156	46	11
4	8.0	6.6	7.9	27	30	28	29	2080	202	145	657	10
5	11	6.1	8.0	19	29	27	27	654	199	132	94	10
6	11	6.9	8.6	15	25	28	25	533	378	119	44	10
7	9.5	6.8	8.5	12	34	28	24	378	513	157	32	10
8	10	8.2	4.7	12	26	52	24	308	1670	148	25	11
9	9.9	7.6	5.8	12	21	65	23	447	1580	137	22	11
10	8.6	6.5	9.1	11	18	45	25	818	430	196	32	11
11	7.8	5.9	8.5	12	16	42	26	357	366	2140	30	10
12	8.2	6.6	8.0	8.2	14	188	24	2140	341	1050	40	9.7
13	7.6	6.4	7.5	12	15	70	82	940	320	242	35	10
14	9.0	5.4	7.0	12	16	588	125	621	456	159	21	9.6
15	8.2	4.8	6.5	11	83	2280	94	1340	410	134	18	9.8
16	16	6.5	6.0	9.1	124	251	78	3080	365	109	23	9.8
17	22	6.0	5.5	26	70	109	64	2210	335	92	24	9.4
18	11	5.1	5.5	28	106	67	54	601	314	81	20	12
19	7.6	7.5	5.2	18	134	48	47	489	300	74	17	14
20	7.1	7.8	5.0	17	66	40	46	443	289	71	17	12
21	7.8	6.3	4.8	18	47	38	45	402	278	73	16	11
22	5.9	6.6	4.7	16	878	36	43	372	318	94	15	11
23	6.3	6.5	4.6	14	641	35	44	354	268	75	15	10
24	6.1	7.1	4.6	13	142	38	48	345	246	71	14	10
25	4.7	7.3	5.0	13	69	43	46	363	246	66	14	11
26	4.4	7.9	6.0	12	51	66	44	342	226	90	14	10
27	5.6	7.8	7.5	12	49	81	61	324	217	84	14	11
28	8.8	6.3	9.1	14	40	56	422	308	211	67	13	16
29	27	5.9	11	13	---	52	135	291	213	63	15	15
30	71	6.8	12	11	---	49	88	275	210	59	13	11
31	23	---	11	11	---	43	---	261	---	56	12	---
MEAN	11.9	6.84	7.12	14.1	101	148	63.5	686	387	210	46.5	11.0
MAX	71	10	12	28	878	2280	422	3080	1670	2140	657	16
MIN	4.4	4.8	4.6	8.2	12	27	23	61	199	56	12	9.4
IN.	.06	.03	.04	.07	.48	.78	.32	3.60	1.96	1.10	.24	.06

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

	140	130	126	127	154	268	339	255	221	164	70.7	135
MEAN	140	130	126	127	154	268	339	255	221	164	70.7	135
MAX	1019	756	666	527	732	1107	2079	705	1069	1191	400	783
(WY)	1987	1986	1983	1965	1985	1973	1973	1973	1969	1969	1981	1973
MIN	.22	1.65	.44	.46	.78	10.6	10.2	10.7	2.42	.05	.46	.04
(WY)	1964	1964	1964	1964	1964	1989	1989	1965	1977	1977	1964	1976

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	142	177
HIGHEST ANNUAL MEAN		510
LOWEST ANNUAL MEAN		17.3
HIGHEST DAILY MEAN	3080	May 16
LOWEST DAILY MEAN	4.4	Oct 26
INSTANTANEOUS PEAK FLOW	4270	Jul 11
INSTANTANEOUS PEAK STAGE	16.60	Jul 11
INSTANTANEOUS LOW FLOW	3.3	Dec 9
ANNUAL RUNOFF (INCHES)	8.75	10.95
10 PERCENTILE	353	451
50 PERCENTILE	26	39
95 PERCENTILE	5.7	.67



## LITTLE CHARITON RIVER BASIN

06906300 EAST FORK LITTLE CHARITON RIVER NEAR HUNTSVILLE, MO--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--September 1963 to June 1969, October 1973 to July 1975, July 1979 to November 1981, October 1982 to June 1987, October 1988 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
11...	1630	7.8	852	7.4	16.5	9.2	95	34	93	390	96	36
NOV												
08...	1200	8.2	1350	7.6	10.5	9.8	89	22	110	--	--	--
DEC												
06...	0730	8.6	956	7.6	2.5	13.8	101	24	K15	--	--	--
JAN												
19...	0700	18	1000	7.0	2.0	11.2	80	33	69	490	130	41
FEB												
14...	0730	16	1170	7.7	5.0	11.3	88	27	20	--	--	--
MAR												
22...	0800	36	1120	7.5	11.0	10.2	93	30	74	--	--	--
APR												
11...	0840	26	1190	7.8	7.5	11.1	91	29	44	610	150	56
MAY												
08...	1600	283	462	7.6	19.0	9.2	99	34	110	--	--	--
JUN												
05...	1530	180	412	7.6	17.5	9.8	103	42	110	--	--	--
JUL												
10...	1530	140	490	6.8	28.0	7.2	92	33	250	190	49	16
AUG												
07...	1415	30	815	7.6	23.0	8.7	100	32	K470	--	--	--
SEP												
05...	1030	10	988	7.7	27.5	6.6	83	26	K130	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT IT FIELD (MG/L AS CACO3) (00419)	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- SUS- SOLVED (MG/L) (70300)	RESIDUE AT 105 DEG. C, PENDE (MG/L) (00530)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)
OCT												
11...	51	5.9	126	370	6.6	0.3	648	30	<0.1	0.02	0.06	840
NOV												
08...	--	--	116	--	--	--	917	28	<0.1	0.09	0.04	1300
DEC												
06...	--	--	132	--	--	--	712	20	<0.1	0.10	0.03	1200
JAN												
19...	38	4.8	106	470	7.3	0.3	779	60	0.2	0.12	0.02	1300
FEB												
14...	--	--	128	--	--	--	968	22	<0.1	0.07	0.04	880
MAR												
22...	--	--	118	--	--	--	914	38	0.2	0.07	0.05	1200
APR												
11...	51	4.8	116	590	7.7	0.2	1020	24	<0.1	0.04	0.03	820
MAY												
08...	--	--	84	--	--	--	319	169	0.2	0.10	0.16	2800
JUN												
05...	--	--	88	--	--	--	286	<1	0.3	0.11	0.08	3100
JUL												
10...	16	4.0	50	180	12	0.3	317	49	0.4	0.05	0.05	3300
AUG												
07...	--	--	92	--	--	--	577	34	0.1	0.03	0.06	910
SEP												
05...	--	--	--	--	--	--	731	14	<0.1	0.06	0.04	1000

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

06906300 EAST FORK LITTLE CHARITON RIVER NEAR HUNTSVILLE, MO--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

[illegible]

## LAMINE RIVER BASIN

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 the left downstream end of 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 652.87 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: June 9 to July 12. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	122	12	23	32	183	478	297	323	120	85	18
2	8.2	68	11	21	45	162	439	237	269	100	71	17
3	7.9	40	10	19	64	147	333	662	246	90	339	16
4	8.1	30	10	20	79	130	280	14400	177	80	2360	15
5	8.9	25	10	19	80	121	256	3480	138	70	773	14
6	13	22	10	19	120	125	228	773	128	60	253	11
7	18	19	10	19	230	189	205	508	312	55	150	10
8	17	17	9.8	19	230	1120	184	369	1800	50	107	10
9	15	14	9.7	18	175	868	169	296	3000	45	84	10
10	12	13	9.7	17	136	483	315	264	1000	40	71	9.9
11	10	13	9.7	17	108	368	513	228	400	50	83	9.4
12	10	13	9.6	15	87	3780	320	1630	180	60	93	9.1
13	11	14	9.7	14	72	1140	776	1550	160	972	76	8.8
14	9.7	14	9.6	14	73	5090	2820	594	700	673	65	9.0
15	9.3	14	10	13	1070	24300	845	8930	2500	353	60	8.7
16	8.1	12	10	13	1860	2120	515	36800	800	217	92	8.2
17	7.6	11	9.8	15	609	759	372	30800	1000	143	132	7.6
18	11	11	9.9	20	325	515	299	2750	500	104	80	8.2
19	10	12	10	26	234	392	255	1680	250	84	59	15
20	9.8	12	10	138	182	316	236	1580	160	70	88	12
21	12	12	10	246	151	272	426	1310	140	2470	62	13
22	13	11	9.5	177	745	243	338	902	600	12200	44	14
23	13	11	8.7	117	3700	209	293	475	1100	1090	38	12
24	12	11	8.6	83	893	218	244	346	500	411	35	10
25	11	11	10	64	440	237	202	298	200	253	33	9.7
26	12	11	12	54	300	351	175	15900	190	274	30	9.2
27	11	11	13	47	251	1350	208	16700	450	203	26	8.3
28	12	13	14	42	211	976	3420	1150	350	151	23	6.2
29	17	10	17	36	---	1270	838	639	200	121	21	7.9
30	31	11	19	33	---	964	435	403	140	138	20	7.6
31	72	---	22	30	---	587	---	311	---	104	19	---
MEAN	13.8	20.3	11.1	45.4	446	1580	547	4718	597	673	177	10.8
MAX	72	122	22	246	3700	24300	3420	36800	3000	12200	2360	18
MIN	7.6	10	8.6	13	32	121	169	228	128	40	19	6.2
IN.	.03	.04	.02	.10	.86	3.36	1.12	10.02	1.23	1.43	.37	.02

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

MEAN	11.3	45.3	361	115	447	855	773	1608	306	236	218	22.2
MAX	13.8	71.0	915	198	756	1580	1444	4718	597	673	420	49.7
(WY)	1990	1988	1988	1988	1988	1990	1988	1990	1990	1990	1989	1989
MIN	9.64	20.3	11.1	45.4	139	265	329	44.9	10.5	11.0	58.3	6.00
(WY)	1989	1990	1990	1990	1989	1989	1989	1988	1988	1988	1988	1988

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	744	*****
HIGHEST ANNUAL MEAN	744	1990
LOWEST ANNUAL MEAN	159	1989
HIGHEST DAILY MEAN	36800	May 16 1990
LOWEST DAILY MEAN	6.2	Sep 28
INSTANTANEOUS PEAK FLOW	50600	May 16
INSTANTANEOUS PEAK STAGE	26.55	May 16
INSTANTANEOUS LOW FLOW	5.1	Sep 28
ANNUAL RUNOFF (INCHES)	18.60	3.1
10 PERCENTILE	1020	Nov 8 1988
50 PERCENTILE	83	*****
95 PERCENTILE	8.8	6.0

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

## 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. 11-27. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	508	17	38	116	354	619	2780	971	183	169	13
2	14	209	16	34	247	281	605	654	702	141	111	11
3	14	124	18	27	438	249	488	458	516	113	88	11
4	14	85	21	40	418	219	373	3360	381	97	3460	10
5	14	62	23	50	377	192	324	4630	306	83	4340	10
6	13	47	23	75	428	184	288	3840	1290	69	1150	9.7
7	12	39	22	65	429	207	258	1330	1290	57	279	8.7
8	11	33	25	48	337	554	229	619	1120	48	157	7.6
9	9.0	30	28	40	240	996	212	410	5290	43	113	7.5
10	8.4	27	29	35	187	638	349	363	6070	38	103	8.7
11	7.1	25	25	33	153	437	775	327	6630	39	443	8.3
12	7.0	25	22	33	129	860	423	2320	7060	43	642	7.2
13	6.4	24	19	29	113	1300	369	5010	5280	142	189	6.3
14	7.3	23	17	29	110	1710	1640	5180	3680	225	127	6.1
15	7.4	23	15	25	1080	6140	1320	7040	6310	131	182	6.0
16	8.2	20	13	24	3290	6690	572	15400	8610	100	2020	6.0
17	12	20	12	165	2710	8560	431	24800	13100	69	1040	6.0
18	15	21	11	707	1390	9440	356	30400	13600	48	303	6.7
19	22	20	10	371	1380	7140	291	27300	11000	39	157	9.0
20	27	20	9.5	816	964	1390	260	19800	8400	32	108	9.6
21	20	19	9.0	1490	580	593	260	13000	5900	126	80	9.3
22	14	18	8.0	556	1640	467	470	9120	3010	2810	59	8.8
23	11	17	7.5	299	4530	390	398	5930	1800	2730	47	9.5
24	9.8	17	7.5	211	4050	344	414	1160	661	553	41	9.4
25	9.4	18	8.0	171	2320	415	292	909	544	212	34	8.8
26	8.2	17	9.0	149	783	668	236	6940	2070	165	29	9.0
27	8.0	16	10	160	553	2060	730	7700	1370	276	25	8.6
28	9.1	16	13	193	471	1970	4530	9240	558	161	22	8.0
29	102	15	17	195	---	1160	5270	9690	322	869	19	7.9
30	822	16	20	151	---	1260	5610	8390	234	1490	16	7.8
31	1170	---	28	124	---	849	---	4520	---	375	15	---
MEAN	78.3	51.8	16.5	206	1052	1862	946	7504	3936	371	502	8.52
MAX	1170	508	29	1490	4530	9440	5610	30400	13600	2810	4340	13
MIN	6.4	15	7.5	24	110	184	212	327	234	32	15	6.0
IN.	.08	.05	.02	.21	.98	1.92	.94	7.73	3.92	.38	.52	.01

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

	584	574	422	455	690	1061	1380	1079	1246	738	282	559
MEAN	584	574	422	455	690	1061	1380	1079	1246	738	282	559
MAX	9500	6100	3359	2326	5206	4706	8473	7504	4416	8855	1668	5979
(WY)	1987	1929	1983	1974	1985	1973	1973	1990	1969	1951	1951	1961
MIN	.13	.32	1.66	1.55	5.54	9.50	29.6	9.93	18.4	1.78	1.61	.13
(WY)	1957	1957	1957	1957	1954	1956	1977	1932	1956	1933	1930	1956

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1382	758
HIGHEST ANNUAL MEAN		1959
LOWEST ANNUAL MEAN		95.8
HIGHEST DAILY MEAN	30400	May 18
LOWEST DAILY MEAN	6.0	Sep 15-17
INSTANTANEOUS PEAK FLOW	31000	May 18
INSTANTANEOUS PEAK STAGE	36.25	May 18
INSTANTANEOUS LOW FLOW	4.5	Jan 12
ANNUAL RUNOFF (INCHES)	16.75	9.19
10 PERCENTILE	4500	2270
50 PERCENTILE	162	86
95 PERCENTILE	7.9	1.4

## MISSOURI RIVER MAIN STEM

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.

GAUGE.--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: Oct. 31 to Nov. 3, Nov. 10-15, and Dec. 20-31. Records good except for estimated daily discharges, which are fair. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40400	60000	22200	40000	24300	30900	44300	73800	71100	80200	74600	41900
2	39800	50000	22200	28400	24600	29700	44000	58900	64900	77100	68200	40700
3	39200	45000	22200	26000	24900	28400	44700	50800	62600	72400	66900	39800
4	39100	37700	22100	26100	25600	27600	45500	63500	57600	69300	87100	39200
5	39300	35100	21600	25800	26100	27400	45400	85700	54000	68700	90100	38400
6	39300	32900	21100	25400	26300	27300	43700	89500	61700	64800	80400	37800
7	39000	30800	21000	24600	26100	26800	41900	78300	78400	61600	70000	37500
8	39000	29200	21500	24100	25600	26000	40800	66700	107000	60300	61000	37700
9	39100	27900	22200	24000	25200	27800	40000	56600	151000	56800	56600	37900
10	39400	27000	22400	24200	24800	29100	39800	52100	161000	52400	53900	38000
11	39800	26500	22300	24600	24600	33500	39900	52700	153000	53500	52400	37800
12	39900	26000	23000	24600	25000	43700	40500	62000	112000	58300	53000	37500
13	39500	25000	23800	24100	25600	56400	39900	84600	86100	59100	54900	37600
14	39100	24000	23800	23900	26100	56100	42800	95200	71000	59700	51500	37900
15	39000	23500	22900	24200	28000	94800	48000	104000	98700	56400	53400	37800
16	39000	22500	22000	24500	33500	126000	46000	199000	125000	51500	70400	37700
17	39000	22600	21700	25600	34700	119000	44300	279000	151000	48900	73200	37800
18	39200	22300	21000	25800	30200	106000	43700	277000	155000	46900	72200	38000
19	39200	21800	19200	25800	28600	93400	42000	212000	162000	45000	77700	38200
20	39200	21600	18500	25700	28800	70900	41000	146000	164000	44000	68200	38300
21	39400	21900	17000	27200	28300	56100	40400	112000	157000	43600	61100	38500
22	39200	22400	16000	28500	28900	47400	40600	94800	159000	65300	59600	38700
23	39300	22700	15500	29300	39300	41800	40500	91100	144000	88600	59600	38800
24	39700	22700	15400	29400	47400	39200	39600	89500	134000	81200	55000	38800
25	39500	22700	15200	28200	45400	38000	39300	78800	123000	64000	50800	38800
26	38900	23200	16000	26900	37400	37800	38900	94100	118000	56100	49300	38400
27	38500	23300	20000	25600	33800	38700	39200	128000	116000	52300	48000	37700
28	38700	23100	25000	24600	32100	41300	60300	149000	104000	74700	45400	37200
29	41600	22900	30000	24200	---	40200	94000	122000	94100	121000	44400	37000
30	47400	22600	35000	24100	---	41400	86600	96800	87200	107000	45300	37800
31	55000	---	45000	24200	---	44200	---	83300	---	88100	44100	---
MEAN	40120	27960	22150	26120	29690	49900	45920	107300	112800	65450	61240	38310
MAX	55000	60000	45000	40000	47400	126000	94000	279000	164000	121000	90100	41900
MIN	38500	21600	15200	23900	24300	26000	38900	50800	54000	43600	44100	37000
IN.	.09	.06	.05	.06	.06	.11	.10	.25	.25	.15	.14	.09

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

MEAN	53360	49050	33040	28550	41160	65940	87340	79600	99790	79840	53070	55200
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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	52390	60500
HIGHEST ANNUAL MEAN		107200
LOWEST ANNUAL MEAN		23730
HIGHEST DAILY MEAN	279000	534000
LOWEST DAILY MEAN	15200	1800
INSTANTANEOUS PEAK FLOW	294000	550000
INSTANTANEOUS PEAK STAGE	29.98	32.82
INSTANTANEOUS LOW FLOW		1800
ANNUAL RUNOFF (INCHES)	1.42	1.64
10 PERCENTILE	95400	118000
50 PERCENTILE	39600	46900
95 PERCENTILE	22000	15200



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 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. 9 to Jan. 15. Water-discharge records fair above 5 ft<sup>3</sup>/s and poor below. Gage is equipped with a U.S. Geological Survey temperature recorder.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.68	1.5	.87	1.5	12	31	38	19	21	9.3	1.4	1.7
2	.78	1.4	.87	1.3	42	26	29	16	19	6.9	1.1	1.5
3	.99	1.3	.85	1.2	25	24	23	82	17	5.4	22	1.5
4	.72	1.3	.92	1.6	21	20	20	1180	15	4.5	332	1.5
5	1.1	1.2	.99	4.0	22	19	18	142	14	147	36	1.4
6	2.5	1.2	1.1	2.5	29	19	16	63	1120	43	13	1.3
7	2.7	1.2	.96	2.0	26	23	14	41	3060	14	7.4	1.0
8	1.5	1.1	.87	3.0	18	390	13	32	1770	6.3	5.0	.78
9	.96	1.0	.80	3.1	12	147	12	27	913	3.9	3.4	.58
10	.87	1.0	.76	2.4	8.7	59	14	26	182	3.1	3.3	.49
11	.78	.98	.72	1.8	7.0	44	12	22	80	222	3.3	.46
12	.96	.97	.72	1.5	7.4	146	11	833	51	55	3.2	.37
13	.87	1.0	.70	1.6	6.9	65	169	281	38	30	4.2	.35
14	.78	1.1	.70	1.4	65	2160	213	74	464	16	2.7	.29
15	.71	1.2	.70	1.2	548	2470	91	1840	150	10	2.1	.21
16	.71	1.1	.70	3.6	252	184	61	4040	68	7.2	351	.21
17	.64	1.1	.68	17	66	79	37	485	43	5.5	140	.25
18	.64	.94	.68	13	39	50	26	137	32	4.4	30	.74
19	.78	.93	.68	23	33	39	21	174	26	3.6	107	.44
20	.96	.73	.68	28	24	32	20	112	27	3.6	154	.37
21	1.1	.86	.66	11	19	29	28	62	20	10	36	15
22	.96	.89	.66	6.3	1070	25	22	49	16	30	20	6.6
23	.96	.87	.66	4.6	632	21	19	40	14	6.4	13	2.5
24	.87	.80	.64	3.7	150	30	16	38	11	3.7	8.8	1.3
25	.87	.87	.64	4.9	57	36	14	39	21	2.6	6.5	1.3
26	.87	.80	.64	4.9	42	93	12	306	13	5.3	4.8	.94
27	.87	.81	.70	4.3	53	134	54	66	11	14	3.7	.42
28	.96	.84	.80	4.0	42	65	134	40	8.9	9.0	3.1	.33
29	1.8	.87	1.5	3.7	---	142	45	31	8.4	9.2	2.5	.31
30	1.6	.85	3.0	3.5	---	78	26	25	12	3.2	5.0	.31
31	1.6	---	2.5	2.8	---	47	---	22	---	1.9	2.9	---
MEAN	1.07	1.02	.91	5.43	119	217	40.9	334	275	22.5	42.9	1.48
MAX	2.7	1.5	3.0	28	1070	2470	213	4040	3060	222	351	15
MIN	.64	.73	.64	1.2	6.9	19	11	16	8.4	1.9	1.1	.21
IN.	.02	.02	.02	.09	1.76	3.56	.65	5.48	4.37	.37	.70	.02

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

	MEAN	37.9	23.8	33.0	38.8	50.5	87.4	80.0	92.2	76.4	53.3	18.2	19.9
MAX	275	73.8	138	166	135	386	223	334	275	301	112	120	
(WY)	1970	1969	1974	1969	1974	1973	1970	1990	1990	1981	1989	1970	
MIN	.50	.58	.34	.30	3.20	1.81	4.77	7.64	.70	.51	.00	.03	
(WY)	1967	1981	1980	1977	1981	1981	1971	1980	1988	1976	1976	1976	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	88.2	51.2
HIGHEST ANNUAL MEAN		111
LOWEST ANNUAL MEAN		13.3
HIGHEST DAILY MEAN	4040	4610
LOWEST DAILY MEAN	.21	.00
INSTANTANEOUS PEAK FLOW	9720	10000
INSTANTANEOUS PEAK STAGE	19.77	19.77
INSTANTANEOUS LOW FLOW	.17	0
ANNUAL RUNOFF (INCHES)	17.06	9.90
10 PERCENTILE	134	87
50 PERCENTILE	7.5	6.4
95 PERCENTILE	.50	.10

## MISSOURI RIVER BASIN

06910230 HINKSON CREEK NEAR COLUMBIA, MO--Continued

## WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--September 1986 to present year.

INSTRUMENTATION.--Digital temperature recorder. June 20, 1989, changed to thermograph recorder.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum daily, 30.0°C, Aug. 26-28; minimum daily, 0.3°C, Dec. 29 and 30.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.8	15.3	15.6	---	---	---	3.3	3.1	3.3	.6	.6	.6
2	16.1	15.8	15.8	---	---	---	3.3	3.1	3.3	.6	.6	.6
3	15.8	13.9	14.4	---	---	---	3.6	3.0	3.3	3.3	.6	1.1
4	13.9	12.8	13.3	---	---	---	3.3	3.0	3.3	3.3	1.1	1.7
5	14.1	13.0	13.3	---	---	---	3.3	3.3	3.3	1.1	.9	1.1
6	15.6	14.1	15.0	---	---	---	3.3	3.3	3.3	1.4	1.1	1.4
7	15.6	12.8	14.1	---	---	---	3.6	3.3	3.3	1.4	1.1	1.4
8	---	---	---	11.1	10.8	11.1	3.3	2.6	2.8	2.0	1.1	1.4
9	---	---	---	10.8	9.1	9.4	2.8	2.6	2.8	3.3	2.0	2.5
10	---	---	---	9.1	9.1	9.1	2.6	2.6	2.6	3.6	2.5	3.0
11	---	---	---	8.9	8.3	8.6	2.6	2.6	2.6	3.3	2.8	3.0
12	14.4	13.9	14.1	9.1	8.9	8.9	2.6	2.2	2.6	3.0	2.8	2.8
13	15.0	14.4	14.6	10.0	9.1	9.7	2.6	1.7	2.0	2.8	2.8	2.8
14	15.3	15.0	15.0	10.6	10.0	10.3	2.0	1.7	2.0	2.8	2.8	2.8
15	15.6	15.0	15.3	11.7	10.3	11.1	2.2	2.0	2.2	3.0	2.8	2.8
16	16.4	15.6	16.1	10.0	5.3	7.5	2.2	1.7	2.0	4.4	3.3	3.9
17	16.1	12.8	13.9	5.0	3.6	4.1	1.7	1.4	1.7	10.0	4.4	6.7
18	12.8	10.8	11.1	3.9	3.9	3.9	1.4	1.4	1.4	7.8	5.6	6.1
19	10.8	9.4	10.6	4.4	3.9	4.1	1.7	1.4	1.7	5.6	3.9	4.4
20	9.4	7.8	8.3	6.4	4.4	5.6	1.7	1.4	1.7	4.1	3.9	3.9
21	8.6	8.0	8.3	6.1	5.6	5.8	2.2	1.4	1.7	4.4	3.9	4.1
22	9.4	8.6	8.9	5.6	4.7	5.0	2.8	1.7	2.2	4.4	3.3	3.9
23	10.6	9.4	10.0	4.7	3.9	4.1	3.3	1.7	2.5	5.6	4.1	4.4
24	11.7	10.6	11.1	3.9	3.1	3.6	1.7	1.4	1.7	5.9	4.1	5.0
25	12.8	11.7	12.2	4.1	3.1	3.6	1.7	1.4	1.7	5.9	3.3	4.1
26	13.3	12.8	13.0	5.0	3.6	4.1	.9	.9	.9	3.3	2.0	2.2
27	13.6	13.3	13.3	7.0	5.0	5.8	1.4	1.1	1.1	---	---	---
28	---	---	---	7.0	4.4	5.6	1.4	1.4	1.4	---	---	---
29	---	---	---	4.1	3.3	3.6	1.4	.3	.9	---	---	---
30	---	---	---	3.6	3.3	3.6	.3	.3	.3	---	---	---
31	---	---	---	---	---	---	.6	.6	.6	---	---	---
MONTH	---	---	---	---	---	---	3.6	.3	2.1	---	---	---

## 06910230 HINKSON CREEK NEAR COLUMBIA, MO--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	6.4	3.3	4.7	13.9	10.0	12.2	17.0	14.4	15.6
2	---	---	---	7.2	3.9	5.6	13.6	10.6	12.2	17.0	14.4	15.3
3	---	---	---	7.5	5.0	6.1	13.3	9.7	11.7	15.0	13.3	14.1
4	---	---	---	8.3	4.7	6.4	13.9	10.0	12.2	13.3	13.0	13.0
5	---	---	---	8.3	7.0	7.8	13.9	11.1	12.2	15.9	12.2	13.9
6	---	---	---	8.1	7.2	7.8	11.4	8.3	9.7	18.0	14.4	15.9
7	---	---	---	8.1	7.2	7.8	12.2	7.8	10.3	19.7	15.0	17.5
8	---	---	---	9.4	7.8	8.6	13.6	10.0	11.7	20.6	17.0	18.3
9	---	---	---	11.1	8.3	9.7	13.6	12.2	12.8	20.0	16.1	17.8
10	---	---	---	15.0	11.1	13.3	12.8	11.7	12.2	17.5	14.0	15.6
11	---	---	---	15.8	14.7	15.3	12.8	9.4	11.1	16.4	13.0	14.7
12	---	---	---	16.7	14.1	15.3	12.8	9.1	11.4	15.6	13.0	13.9
13	11.1	9.1	10.0	17.5	15.9	16.7	12.5	9.1	10.0	16.4	14.4	15.3
14	9.1	5.0	7.2	17.0	13.9	15.6	11.7	8.9	10.3	17.0	15.3	16.1
15	4.7	4.1	4.4	13.9	12.5	13.3	13.0	11.1	12.2	17.0	15.9	16.4
16	4.1	3.9	3.9	12.5	10.6	11.7	14.4	10.9	13.0	15.9	15.9	15.9
17	3.9	2.5	3.3	12.5	10.6	11.7	14.4	11.4	12.8	17.2	14.7	15.6
18	5.3	2.8	3.9	11.1	9.4	10.3	14.4	11.1	14.1	18.3	15.6	17.0
19	6.1	4.1	5.0	10.0	7.2	8.6	14.4	12.2	13.6	17.8	16.4	17.0
20	5.8	3.6	4.7	10.0	6.4	7.8	15.6	14.1	14.7	17.2	16.1	16.7
21	6.7	4.1	5.0	12.2	8.3	10.0	19.1	15.3	16.7	17.0	15.3	16.1
22	7.2	5.6	6.4	13.0	11.4	12.2	21.1	17.0	18.9	18.0	14.4	16.4
23	5.9	4.7	5.0	12.5	5.9	9.7	22.8	18.6	21.1	18.9	15.6	17.2
24	5.9	4.7	5.0	8.3	4.1	5.6	23.0	19.7	21.4	18.9	17.2	18.0
25	4.4	2.5	3.3	9.1	5.3	7.2	23.0	19.7	21.1	21.4	17.0	18.9
26	4.4	2.5	3.0	10.0	6.1	7.8	23.3	20.6	22.2	20.6	18.6	19.4
27	7.0	4.7	5.6	9.7	6.7	7.8	23.0	19.4	21.1	18.3	17.2	18.0
28	6.7	5.0	5.6	9.7	9.1	9.4	19.4	16.4	18.0	19.7	16.4	18.0
29	---	---	---	9.1	8.9	8.9	18.9	15.3	17.0	21.4	17.5	19.1
30	---	---	---	8.9	8.9	8.9	18.3	15.3	17.0	20.6	18.3	19.4
31	---	---	---	10.0	8.9	9.4	---	---	---	18.3	17.0	17.5
MONTH	---	---	---	17.5	3.3	9.7	23.3	7.8	14.5	21.4	12.2	16.6
	JUNE			JULY			AUGUST			SEPTEMBER		
1	20.6	17.0	19.4	27.8	23.9	26.0	25.3	23.6	24.1	26.4	25.0	25.6
2	21.7	20.0	20.9	28.0	25.3	26.7	25.0	24.1	24.4	26.7	25.9	26.4
3	21.7	19.1	20.6	28.3	26.1	27.5	25.3	24.7	25.0	26.7	26.1	26.4
4	20.3	17.8	18.9	28.6	26.4	27.8	24.1	23.6	23.9	27.2	26.7	27.0
5	18.9	16.7	17.8	28.6	23.0	26.7	25.0	23.0	24.1	27.2	26.4	27.0
6	18.9	18.9	18.9	25.3	22.8	23.9	24.7	22.2	23.3	27.0	26.7	26.7
7	18.9	18.9	18.9	27.5	23.9	26.1	23.9	20.9	22.5	27.0	26.1	26.7
8	19.4	18.9	18.9	28.9	25.6	27.5	23.9	21.1	22.8	26.1	24.7	25.6
9	21.1	18.6	20.0	28.6	25.9	27.0	23.9	21.1	23.0	24.7	23.6	24.1
10	21.1	19.4	20.3	28.6	25.9	26.7	24.1	21.7	22.8	24.4	23.9	24.1
11	22.8	19.7	21.7	27.0	23.9	24.1	24.1	22.5	23.0	24.7	24.4	24.4
12	24.7	20.9	23.0	24.1	22.5	23.3	23.0	22.2	22.5	24.4	24.1	24.4
13	25.9	22.2	24.4	22.5	20.6	21.4	23.9	22.0	22.8	24.4	23.9	24.1
14	25.6	20.3	22.8	20.6	19.4	20.0	23.9	21.7	22.8	24.1	23.9	24.1
15	20.6	20.0	20.0	23.9	19.7	21.1	23.6	22.5	22.8	23.9	21.1	22.5
16	24.7	20.3	22.8	25.6	22.0	23.6	23.0	21.7	22.5	21.7	20.3	20.9
17	26.4	23.3	24.7	26.1	22.8	24.4	25.6	22.0	23.6	20.6	19.1	19.7
18	27.0	23.3	25.3	26.7	23.9	25.3	27.8	24.4	26.4	19.4	19.1	19.4
19	25.9	22.8	24.4	27.0	24.7	25.9	27.8	25.6	26.7	19.4	19.1	19.4
20	25.9	23.9	25.0	27.2	25.6	26.4	26.7	24.1	25.6	19.4	19.1	19.1
21	26.1	22.5	24.7	27.2	23.9	25.6	26.4	25.0	25.6	21.1	19.4	20.3
22	25.6	23.3	24.7	24.7	22.8	23.6	26.1	24.7	25.3	21.1	19.1	19.4
23	23.6	20.9	22.2	25.3	22.2	24.1	26.4	23.9	25.0	19.4	17.0	17.8
24	24.4	20.6	23.6	25.6	22.2	23.9	28.3	25.3	26.7	17.5	15.3	16.4
25	23.9	20.3	22.2	25.6	23.3	24.7	29.4	27.0	28.3	17.0	16.1	16.7
26	25.0	22.2	24.1	24.7	22.8	23.6	30.0	27.8	28.9	17.8	17.0	17.5
27	27.2	23.3	25.9	25.6	23.0	24.4	30.0	27.8	29.1	18.3	17.8	18.3
28	27.8	24.4	26.4	28.3	25.0	27.0	30.0	27.8	28.9	19.7	18.3	18.9
29	27.2	25.3	26.1	27.5	25.9	26.7	29.4	27.8	28.6	19.7	19.4	19.7
30	25.3	23.3	24.4	27.5	25.3	26.5	28.3	25.9	26.7	19.7	18.6	18.9
31	---	---	---	27.2	24.4	26.4	27.8	25.0	26.7	---	---	---
MONTH	27.8	16.7	22.4	28.9	19.4	25.1	30.0	20.9	25.0	27.2	15.3	22.0

## MISSOURI RIVER BASIN

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.--No estimated daily discharges. Water-discharge records fair.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.83	.94	.63	.77	2.4	16	24	3.7	2.3	3.6	1.4	.40
2	.75	1.0	.49	.60	13	12	16	2.7	1.9	2.9	1.0	.53
3	.64	.99	.36	.72	11	9.2	11	15	1.6	2.4	1.6	.42
4	.56	.99	.34	1.9	7.4	7.2	8.7	591	1.1	2.2	187	.34
5	.54	.97	.32	1.5	8.7	6.8	6.7	85	1.1	2.0	24	.27
6	.62	.95	.32	.89	15	7.4	5.6	32	219	2.0	5.7	.24
7	.58	1.0	.30	.68	15	14	4.6	18	2810	2.1	3.1	.19
8	.50	1.1	.31	.70	10	519	4.1	11	1940	2.1	1.8	.18
9	.49	.89	.30	.82	6.9	116	4.7	9.1	436	1.9	1.5	.19
10	.47	.67	.30	.82	5.1	43	4.8	8.2	98	1.7	1.2	.19
11	.40	.68	.27	.75	3.9	27	4.4	6.0	38	362	.84	.30
12	.38	.52	.26	.61	3.0	73	3.8	535	21	58	.86	.33
13	.40	.68	.25	.49	2.7	37	113	235	15	19	.89	.33
14	.46	.70	.20	.47	22	1630	161	44	176	9.3	.78	.33
15	.51	.97	.20	.50	349	2730	66	749	76	5.6	.72	.29
16	.32	1.1	.17	.64	234	149	44	3410	28	4.0	113	.28
17	.40	.84	.16	1.2	43	60	21	472	17	3.2	155	.26
18	.47	.71	.16	3.1	22	33	13	59	12	2.2	13	.38
19	.41	.72	.19	4.0	18	22	9.8	116	9.0	2.0	28	.43
20	.59	.62	.18	11	14	16	8.7	53	7.9	2.2	45	.46
21	.54	.57	.15	6.1	9.1	13	12	22	7.9	1.8	8.5	.64
22	.58	.51	.15	4.0	780	11	11	13	5.8	10	4.5	1.4
23	.66	.49	.13	2.3	767	7.8	9.5	7.9	4.1	13	2.8	.95
24	.66	.50	.14	1.8	138	11	7.4	5.5	3.6	4.2	2.1	.72
25	.72	.51	.17	1.9	37	15	5.9	5.3	3.4	1.8	1.4	.48
26	.71	.53	.18	1.9	22	56	5.0	244	3.8	37	1.1	.43
27	.72	.59	.29	2.0	35	103	4.7	38	4.0	52	1.5	.39
28	.73	.49	.36	1.8	28	41	7.5	14	3.1	7.3	.96	.36
29	.70	.66	1.2	1.5	---	102	7.2	6.7	2.5	3.2	.71	.34
30	.99	.85	1.7	1.5	---	59	5.1	3.7	2.4	2.0	.66	.34
31	.98	---	1.1	1.4	---	31	---	2.7	---	1.5	.48	---
MEAN	.59	.76	.36	1.88	93.6	193	20.3	220	198	20.1	19.7	.41
MAX	.99	1.1	1.7	11	780	2730	161	3410	2810	362	187	1.4
MIN	.32	.49	.13	.47	2.4	6.8	3.8	2.7	1.1	1.5	.48	.18
IN.	.02	.02	.01	.05	2.18	4.96	.51	5.66	4.94	.52	.51	.01

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

	MEAN	34.2	13.3	27.8	36.3	35.0	63.8	59.6	61.1	50.5	30.5	15.6	24.2
MAX	253	44.0	107	140	93.6	319	170	220	237	257	111	128	
(WY)	1970	1974	1974	1974	1990	1973	1970	1990	1969	1969	1968	1970	
MIN	.03	.13	.31	.94	1.45	2.49	2.29	1.20	.22	.02	.12	.01	
(WY)	1965	1967	1965	1967	1967	1968	1971	1988	1988	1975	1964	1988	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	63.9	38.5
HIGHEST ANNUAL MEAN		86.8
LOWEST ANNUAL MEAN		6.15
HIGHEST DAILY MEAN	3410	3620
LOWEST DAILY MEAN	.13	.00
INSTANTANEOUS PEAK FLOW	5520	5520
INSTANTANEOUS PEAK STAGE	16.55	16.55
INSTANTANEOUS LOW FLOW	.13	0
ANNUAL RUNOFF (INCHES)	19.37	11.67
10 PERCENTILE	68	48
50 PERCENTILE	2.0	2.7
95 PERCENTILE	.24	.03

## MISSOURI RIVER BASIN

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.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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)	ACIDITY (MG/L AS H) (71825)
OCT								
11...	1330	0.47	1600	6.2	13.5	5.6	54	0.3
NOV								
09...	0930	1.0	1760	6.6	8.0	10.4	89	0.2
DEC								
05...	1330	0.36	1720	6.3	3.5	12.3	94	0.5
JAN								
19...	1100	2.1	1380	5.8	3.0	11.3	84	0.3
FEB								
14...	1100	2.4	1010	6.8	6.5	10.2	83	0.3
MAR								
21...	1530	13	690	7.0	11.0	11.3	103	0.2
APR								
11...	1115	4.7	845	6.9	8.5	10.6	89	0.2
MAY								
09...	1000	8.1	641	6.8	17.5	8.2	87	0.2
JUN								
05...	1330	1.1	951	6.6	17.0	9.0	94	0.4
JUL								
11...	0830	713	291	6.6	23.0	6.6	77	<0.1
AUG								
08...	1000	1.6	478	6.8	20.0	8.1	89	<0.1
SEP								
06...	0800	0.23	1080	7.0	25.0	7.3	89	<0.1

DATE	ALKA- LITY WAT WH TOT IT FIELD MG/L AS CACO3 (00419)	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)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
OCT								
11...	44	910	1360	8	4100	110	6900	6600
NOV								
09...	46	1100	949	16	8100	6600	9300	9400
DEC								
05...	54	1100	1590	22	10000	9100	12000	12000
JAN								
19...	14	840	1250	34	3400	460	10000	9700
FEB								
14...	70	430	760	15	4000	1900	3100	2800
MAR								
21...	46	270	500	14	3300	1700	2400	2300
APR								
11...	33	430	690	17	2900	1900	3800	3900
MAY								
09...	46	290	446	13	2800	630	1500	1600
JUN								
05...	52	420	673	5	3600	1900	3500	3000
JUL								
11...	20	92	196	1860	30000	730	1400	790
AUG								
08...	44	180	306	46	3700	200	940	980
SEP								
06...	40	530	836	8	910	20	3200	3100



## MISSOURI RIVER BASIN

06910410 CEDAR CREEK NEAR COLUMBIA, MO--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	1380	1360	1370	1880	1800	1840	1780	1660	1730	1840	1790	1820
2	1430	1370	1410	1820	1800	1810	1750	1640	1670	1860	1790	1820
3	1460	1410	1430	1820	1800	1810	1710	1650	1680	1840	1730	1800
4	1490	1410	1470	1810	1780	1800	1740	1720	1730	1740	1640	1690
5	1510	1480	1500	1830	1780	1810	1740	1710	1730	1700	1650	1680
6	1540	1490	1520	1880	1820	1850	1720	1680	1710	1750	1680	1730
7	1580	1500	1560	1910	1860	1890	1740	1680	1720	1740	1710	1730
8	1580	1550	1570	1940	1870	1910	1780	1740	1770	1710	1690	1700
9	1570	1550	1560	1940	1880	1920	1800	1780	1790	1690	1650	1670
10	1590	1560	1580	1920	1880	1900	1790	1770	1780	1650	1570	1620
11	1610	1580	1590	1900	1870	1880	1800	1770	1780	1590	1550	1570
12	1630	1610	1620	1880	1860	1870	1850	1790	1810	1570	1540	1560
13	1670	1610	1640	1880	1850	1870	1930	1850	1880	1610	1570	1590
14	1670	1610	1650	1860	1850	1860	2010	1890	1960	1620	1590	1600
15	1690	1650	1670	1860	1830	1840	2030	1990	2000	1620	1570	1610
16	1710	1680	1690	1880	1840	1860	2060	1990	2020	1620	1550	1590
17	1720	1680	1700	1870	1750	1810	2080	2060	2070	1560	1480	1550
18	1790	1720	1760	1750	1720	1730	2100	2070	2090	1570	1420	1520
19	1790	1750	1780	1740	1710	1730	2100	2060	2080	1420	1270	1360
20	1750	1690	1730	1730	1710	1720	2210	2090	2150	1530	1180	1270
21	1740	1690	1720	1750	1720	1730	---	---	---	1220	1010	1100
22	1740	1690	1730	1770	1720	1740	---	---	---	1230	1180	1200
23	1740	1690	1720	1770	1720	1760	---	---	---	1300	1220	1260
24	1730	1690	1720	1780	1760	1770	---	---	---	1340	1300	1320
25	1730	1690	1720	1770	1750	1760	---	---	---	1430	1330	1370
26	1750	1720	1740	1770	1750	1760	---	---	---	1410	1390	1400
27	1770	1750	1760	1780	1750	1770	---	---	---	1400	1360	1390
28	1810	1760	1780	1780	1750	1770	1990	1930	1960	1370	1310	1340
29	1830	1800	1810	1820	1770	1800	1970	1890	1930	1340	1310	1330
30	1840	1800	1820	1800	1780	1800	1900	1780	1830	1330	1310	1320
31	1880	1810	1850	---	---	---	1820	1790	1800	1330	1310	1320
MONTH	1880	1360	1650	1940	1710	1810	---	---	---	1860	1010	1510
FEBRUARY			MARCH			APRIL			MAY			
1	1360	1300	1320	620	510	583	503	438	473	994	842	935
2	1360	1060	1180	680	600	652	547	491	519	984	944	969
3	1170	1020	1090	730	670	707	600	524	573	956	639	865
4	1220	1020	1150	790	720	761	644	599	621	638	219	329
5	1040	971	995	830	790	801	689	634	669	423	301	363
6	1000	875	916	830	800	815	734	687	713	495	423	458
7	959	862	903	860	729	816	778	700	751	567	455	526
8	863	825	842	690	260	326	832	776	806	619	567	592
9	861	819	849	430	300	361	835	786	820	660	619	643
10	885	851	868	504	400	468	861	793	846	710	660	679
11	919	875	893	590	510	546	871	800	844	---	---	---
12	974	901	936	570	400	470	923	861	896	---	---	---
13	998	966	981	520	400	444	924	255	684	---	---	---
14	---	---	---	540	110	229	435	306	357	---	---	---
15	---	---	---	---	---	---	408	339	358	---	---	---
16	---	---	---	---	---	---	420	380	396	---	---	---
17	480	370	426	---	---	---	484	412	444	---	---	---
18	560	480	521	---	---	---	546	474	511	---	---	---
19	580	560	572	---	---	---	588	516	570	---	---	---
20	600	560	584	---	---	---	630	588	621	---	---	---
21	660	600	628	---	---	---	661	621	644	---	---	---
22	740	200	342	783	746	759	675	623	654	---	---	---
23	300	200	255	809	782	796	756	675	730	---	---	---
24	436	300	359	813	774	797	739	719	731	---	---	---
25	550	440	497	866	694	806	771	729	753	---	---	---
26	630	510	593	751	389	656	813	771	795	---	---	---
27	630	550	583	497	324	355	845	803	826	---	---	---
28	590	500	537	417	332	376	836	807	820	---	---	---
29	---	---	---	413	310	349	859	809	838	---	---	---
30	---	---	---	375	308	337	872	810	837	---	---	---
31	---	---	---	448	343	408	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	924	255	670	---	---	---

## MISSOURI RIVER BASIN

113

06910410 CEDAR CREEK NEAR COLUMBIA, MO--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	630	560	591	933	885	902
2	---	---	---	---	---	---	690	600	641	1000	933	967
3	---	---	---	---	---	---	760	630	693	1040	969	1010
4	---	---	---	---	---	---	770	160	343	1070	1030	1050
5	---	---	---	---	---	---	276	170	221	1080	1040	1070
6	---	---	---	---	---	---	356	280	317	1090	1060	1080
7	---	---	---	---	---	---	430	350	390	1100	1080	1080
8	---	---	---	---	---	---	500	400	457	1120	1100	1110
9	---	---	---	---	---	---	560	500	530	1140	1110	1130
10	---	---	---	---	---	---	619	560	574	1170	1130	1150
11	---	---	---	---	---	---	650	600	630	1200	1150	1170
12	---	---	---	---	---	---	718	650	691	1210	1180	1200
13	---	---	---	---	---	---	790	720	756	1250	1200	1230
14	---	---	---	---	---	---	820	780	801	1280	1200	1260
15	---	---	---	---	---	---	860	800	830	1300	1270	1280
16	---	---	---	---	---	---	900	210	648	1330	1280	1310
17	---	---	---	---	---	---	220	140	177	1340	1310	1330
18	---	---	---	---	---	---	320	200	272	1360	1320	1340
19	---	---	---	---	---	---	460	210	344	1370	1330	1350
20	---	---	---	---	---	---	430	210	314	1420	1370	1400
21	---	---	---	---	---	---	380	290	331	1470	1320	1410
22	---	---	---	---	---	---	470	380	429	1630	1380	1500
23	---	---	---	---	---	---	540	470	506	1410	1220	1330
24	---	---	---	---	---	---	590	540	569	1330	1250	1290
25	---	---	---	670	590	626	655	588	615	1270	1210	1240
26	---	---	---	740	100	612	713	655	676	1250	1210	1240
27	---	---	---	380	210	279	761	712	734	1250	1220	1240
28	---	---	---	350	290	319	757	727	739	1250	1230	1240
29	---	---	---	420	350	391	803	756	780	1260	1220	1250
30	---	---	---	490	400	458	851	792	819	1280	1220	1250
31	---	---	---	570	490	528	887	838	859	---	---	---
MONTH	---	---	---	---	---	---	900	140	557	1630	885	1210

PH (STANDARD UNITS), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	6.1	6.0	6.0	6.5	6.4	6.5	6.4	6.3	6.4	6.0	5.9	5.9
2	6.0	5.9	6.0	6.5	6.4	6.4	6.3	6.2	6.3	5.9	5.8	5.8
3	6.0	5.9	6.0	6.4	6.3	6.4	6.3	6.2	6.3	5.9	5.7	5.7
4	6.0	6.0	6.0	6.5	6.2	6.4	6.3	6.2	6.3	6.1	5.8	6.0
5	6.1	6.0	6.0	6.6	6.3	6.4	6.3	6.2	6.2	5.9	5.8	5.9
6	6.1	6.1	6.1	6.6	6.4	6.5	6.2	6.1	6.2	5.8	5.7	5.8
7	6.1	6.1	6.1	6.5	6.5	6.5	6.2	6.1	6.2	5.7	5.6	5.7
8	6.1	6.1	6.1	6.6	6.5	6.5	6.3	6.2	6.2	5.6	5.6	5.6
9	6.1	6.1	6.1	6.6	6.5	6.6	6.3	6.1	6.2	5.7	5.6	5.6
10	6.1	6.0	6.1	6.6	6.5	6.6	6.1	6.1	6.1	5.8	5.7	5.7
11	6.1	6.0	6.1	6.7	6.6	6.6	6.3	6.1	6.2	5.8	5.7	5.8
12	6.1	6.0	6.0	6.6	6.5	6.6	6.4	6.3	6.3	5.9	5.8	5.9
13	6.1	6.0	6.1	6.6	6.5	6.6	6.3	6.3	6.3	5.9	5.9	5.9
14	6.1	6.0	6.1	6.6	6.5	6.5	6.5	6.3	6.4	5.9	5.9	5.9
15	6.1	6.0	6.1	6.7	6.4	6.6	6.4	6.4	6.4	5.9	5.9	5.9
16	6.1	6.1	6.1	6.8	6.7	6.7	6.4	6.3	6.4	5.9	5.9	5.9
17	6.1	6.0	6.0	6.7	6.7	6.7	6.4	6.3	6.3	6.0	5.9	5.9
18	6.1	6.0	6.1	6.7	6.6	6.6	6.3	6.2	6.2	6.0	5.9	6.0
19	6.2	6.1	6.1	6.6	6.5	6.6	6.3	6.2	6.2	6.2	5.8	5.9
20	6.2	6.2	6.2	6.5	6.5	6.5	6.3	6.2	6.3	6.2	5.7	5.9
21	6.3	6.2	6.3	6.5	6.5	6.5	6.3	6.2	6.2	6.2	6.0	6.1
22	6.3	6.2	6.2	6.5	6.5	6.5	6.2	6.2	6.2	6.2	6.1	6.2
23	6.2	6.1	6.2	6.5	6.5	6.5	6.2	5.9	6.1	6.2	6.2	6.2
24	6.1	6.1	6.1	6.5	6.5	6.5	6.1	5.9	6.0	6.2	6.2	6.2
25	6.1	6.1	6.1	6.5	6.5	6.5	6.1	6.0	6.0	6.3	6.2	6.3
26	6.2	6.1	6.1	6.5	6.4	6.5	6.2	6.0	6.1	6.3	6.2	6.2
27	6.3	6.2	6.2	6.5	6.4	6.4	6.2	6.1	6.1	6.3	6.2	6.3
28	6.3	6.1	6.2	6.5	6.5	6.5	6.1	6.0	6.1	6.4	6.3	6.4
29	6.4	6.2	6.3	6.5	6.5	6.5	6.2	5.9	6.0	6.4	6.4	6.4
30	6.4	6.3	6.4	6.5	6.3	6.4	6.2	5.8	6.1	6.4	6.3	6.4
31	6.5	6.4	6.4	---	---	---	6.2	6.0	6.1	6.4	6.3	6.4
MONTH	6.5	5.9	6.1	6.8	6.2	6.5	6.5	5.8	6.2	6.4	5.6	6.0

MISSOURI RIVER BASIN  
06910410 CEDAR CREEK NEAR COLUMBIA, MO--Continued  
PH (STANDARD UNITS), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	FEBRUARY			MARCH			APRIL			MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN										
1	6.4	6.3	6.4	6.9	6.9	6.9	7.4	7.3	7.4	6.4	6.9	6.3	6.4	7.4	7.1	6.8	6.9	6.7	6.8
2	6.6	6.3	6.5	6.9	6.8	6.8	7.4	7.3	7.3	6.5	6.9	6.3	6.5	7.3	7.1	6.7	6.4	6.7	6.7
3	6.7	6.6	6.7	6.9	6.8	6.8	7.3	7.1	7.3	6.7	6.9	6.2	6.5	7.3	6.9	6.7	6.3	6.6	6.7
4	6.9	6.7	6.8	6.9	6.8	6.8	7.2	7.1	7.1	6.8	6.8	6.4	6.8	7.1	6.8	6.7	6.4	6.6	6.8
5	7.0	6.9	6.9	6.8	6.8	6.8	7.2	7.1	7.1	6.9	6.8	6.8	6.8	7.1	6.9	6.8	6.8	6.8	6.8
6	7.1	6.9	7.0	6.9	6.8	6.8	7.2	7.1	7.1	7.0	6.8	6.7	6.8	7.1	6.9	6.7	6.8	6.7	6.8
7	7.2	7.1	7.1	7.0	6.8	6.8	7.2	7.1	7.1	7.1	6.9	6.7	6.7	7.1	6.9	6.7	6.7	6.7	6.7
8	7.1	7.0	7.1	7.3	7.0	7.2	7.1	6.9	7.0	7.2	7.2	6.8	7.1	7.0	6.7	6.7	6.6	6.6	6.7
9	7.1	7.0	7.1	7.3	7.1	7.1	7.0	6.9	6.9	7.0	7.0	6.8	7.0	6.9	6.9	6.8	6.7	6.8	6.7
10	7.0	7.0	7.0	7.1	7.0	7.1	7.0	6.9	6.9	7.1	7.1	6.8	7.0	6.9	6.9	7.0	6.8	6.9	6.9
11	7.0	6.9	6.9	7.0	7.0	7.0	7.0	6.8	6.9	7.0	7.0	6.8	6.9	6.9	6.8	6.8	6.8	6.8	6.8
12	6.9	6.8	6.9	7.3	7.0	7.2	6.8	6.7	6.8	6.9	7.2	6.8	6.7	6.8	6.7	6.7	6.7	6.7	6.7
13	6.8	6.8	6.8	7.2	7.1	7.1	7.4	6.7	6.8	6.4	7.1	6.7	7.4	7.0	6.7	6.7	6.7	6.7	6.7
14	6.8	6.8	6.8	7.3	6.9	7.1	7.6	7.2	7.4	6.3	6.3	6.2	6.3	6.2	6.2	6.3	6.2	6.3	6.3
15	7.1	6.8	7.0	---	---	---	7.3	7.1	7.2	6.2	6.1	6.1	6.2	6.1	6.1	6.2	6.1	6.2	6.1
16	7.0	7.0	7.0	---	---	---	7.2	7.0	7.1	6.1	6.0	6.0	6.1	6.1	6.0	6.1	6.1	6.0	6.1
17	7.0	6.9	6.9	---	---	---	7.1	6.9	7.0	6.0	6.0	6.0	6.1	6.0	6.0	6.1	6.0	6.0	6.1
18	6.9	6.8	6.8	---	---	---	7.0	6.7	6.8	6.1	6.0	6.0	6.1	6.0	6.0	6.1	6.0	6.0	6.1
19	6.8	6.8	6.8	---	---	---	6.7	6.6	6.7	6.1	5.9	5.9	6.1	6.0	6.0	6.1	6.0	6.0	6.1
20	6.9	6.8	6.8	---	---	---	6.6	6.5	6.6	6.4	6.1	6.1	6.4	6.3	6.1	6.4	6.3	6.1	6.4
21	6.8	6.7	6.8	---	---	---	6.5	6.4	6.5	6.4	6.5	6.4	6.5	6.5	6.4	6.5	6.4	6.5	6.4
22	7.1	6.7	7.0	7.3	7.2	7.3	6.4	6.2	6.4	6.4	6.2	6.2	6.3	6.3	6.2	6.4	6.2	6.3	6.4
23	7.1	7.0	7.0	7.4	7.3	7.4	6.3	6.2	6.3	6.3	6.2	6.1	6.3	6.2	6.1	6.2	6.1	6.2	6.3
24	7.0	6.9	7.0	7.4	7.2	7.3	6.3	6.1	6.2	6.2	6.1	6.1	6.2	6.1	6.1	6.2	6.1	6.2	6.1
25	6.9	6.8	6.9	7.4	7.3	7.3	6.2	6.1	6.1	6.2	6.1	6.1	6.2	6.1	6.1	6.2	6.1	6.2	6.1
26	6.8	6.8	6.8	7.7	7.4	7.5	6.1	6.0	6.1	6.1	6.0	6.0	6.1	6.1	6.0	6.1	6.0	6.0	6.1
27	6.9	6.8	6.9	7.8	7.5	7.7	6.1	6.0	6.1	6.1	6.0	6.0	6.1	6.0	6.0	6.1	6.0	6.0	6.1
28	6.9	6.8	6.9	7.5	7.5	7.5	6.1	6.0	6.0	6.1	6.0	6.0	6.1	6.0	6.0	6.1	6.0	6.0	6.1
29	---	---	---	7.7	7.5	7.6	6.1	5.9	6.0	6.1	5.9	5.9	6.1	6.0	6.0	6.1	6.0	6.0	6.1
30	---	---	---	7.6	7.5	7.5	6.4	6.1	6.3	6.4	6.1	6.1	6.4	6.3	6.1	6.4	6.3	6.1	6.4
31	---	---	---	7.5	7.4	7.4	---	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	7.2	6.3	6.9	---	---	---	7.6	5.9	6.8	---	---	---	---	---	---	---	---	---	---
										SEPTEMBER									
1	---	---	---	---	---	---	6.8	6.8	6.8	6.8	6.8	6.6	6.8	6.8	6.7	6.6	6.7	6.6	6.7
2	---	---	---	---	---	---	6.8	6.7	6.8	6.7	6.8	6.6	6.7	6.8	6.7	6.6	6.7	6.6	6.7
3	---	---	---	---	---	---	6.8	6.7	6.8	6.7	6.8	6.6	6.7	6.8	6.7	6.6	6.7	6.6	6.7
4	---	---	---	---	---	---	7.1	6.9	7.0	7.1	7.8	6.6	6.8	7.1	6.8	6.6	6.8	6.6	6.8
5	---	---	---	---	---	---	7.1	6.9	7.0	6.7	6.7	6.7	6.7	7.0	6.7	6.7	6.7	6.7	6.7
6	---	---	---	---	---	---	6.9	6.8	6.9	6.8	6.9	6.6	6.8	6.9	6.6	6.6	6.7	6.6	6.7
7	7.2	6.5	6.9	---	---	---	6.9	6.8	6.9	6.9	6.9	6.7	6.8	6.9	6.7	6.8	6.8	6.7	6.8
8	7.0	6.4	6.7	---	---	---	6.9	6.8	6.8	6.9	6.8	6.7	6.8	6.8	6.7	6.7	6.8	6.7	6.8
9	7.1	6.7	6.9	---	---	---	6.9	6.8	6.8	6.9	6.8	6.8	6.9	6.8	6.8	6.9	6.8	6.8	6.8
10	7.0	6.7	6.8	---	---	---	6.9	6.8	6.8	6.9	6.8	6.8	6.9	6.8	6.7	6.9	6.8	6.8	6.8
11	6.9	6.7	6.8	---	---	---	6.9	6.8	6.8	6.9	6.8	6.8	6.9	6.8	6.8	6.9	6.8	6.8	6.9
12	6.8	6.7	6.8	---	---	---	7.0	6.8	6.8	7.0	6.8	6.8	7.0	6.8	6.8	6.8	6.9	6.8	6.9
13	6.8	6.7	6.8	---	---	---	7.0	6.8	6.8	6.9	6.8	6.8	6.9	6.8	6.8	6.9	6.8	6.8	6.9
14	7.2	6.4	6.9	---	---	---	6.9	6.8	6.8	6.9	6.8	6.8	6.9	6.8	6.8	6.9	6.8	6.8	6.9
15	7.1	6.8	7.0	---	---	---	6.9	6.8	6.8	6.9	6.8	6.8	6.9	6.8	6.8	6.9	6.8	6.8	6.9
16	---	---	---	---	---	---	7.3	6.7	6.9	7.3	7.0	6.9	6.9	6.9	6.7	6.9	6.8	6.8	6.8
17	---	---	---	---	---	---	7.0	6.7	6.9	7.3	7.0	6.9	6.9	6.9	6.8	6.9	6.8	6.8	6.8
18	---	---	---	---	---	---	7.1	6.9	7.0	7.3	7.0	6.9	7.1	7.1	6.9	7.0	6.9	6.9	7.0
19	---	---	---	---	---	---	7.1	6.9	7.0	7.1	7.0	6.9	7.1	7.0	6.9	7.1	6.9	6.9	7.0
20	---	---	---	---	---	---	7.1	6.9	7.0	7.1	7.0	6.9	7.1	7.0	6.9	7.1	6.9	6.9	7.0
21	---	---	---	---	---	---	7.2	6.9	7.0	7.2	7.0	6.9	7.2	7.1	6.9	7.0	6.9	6.9	7.0
22	---	---	---	---	---	---	7.2	6.9	7.0	7.2	7.0	6.9	7.2	7.1	6.9	7.0	6.9	6.9	7.0
23	---	---	---	---	---	---	7.2	6.9	7.0	7.2	7.0	6.9	7.2	7.1	6.9	7.0	6.9	6.9	7.0
24	---	---	---	---	---	---	7.1	6.8	6.9	7.1	6.8	6.8	7.0	6.9	6.8	6.9	6.8	6.8	6.9
25	---	---	---	7.0	6.6	6.8	7.0	6.8	6.9	6.8	6.8	6.8	7.0	6.9	6.8	6.9	6.8	6.8	6.9
26	---	---	---	7.2	6.5	6.7	6.9	6.7	6.8	6.9	6.7	6.8	6.9	6.8	6.7	6.9	6.8	6.8	6.8
27	---	---	---	7.2	6.7	7.0	6.8	6.7	6.7	6.7	6.7	6.7	6.8	6.7	6.7	6.8	6.8	6.8	6.8
28	---	---	---	6.7	6.4	6.6	6.7	6.7	6.8	6.9	6.7	6.8	6.9	6.8	6.7	6.8	6.8	6.8	6.8
29	---	---	---	6.7	6.4	6.6	6.9	6.7	6.7	6.9	6.7	6.8	6.9	6.8	6.7	6.8	6.8	6.8	6.8
30	---	---	---	6.8	6.2	6.7	7.0	6.7	6.7	6.7	6.7	6.7	6.8	6.7	6.7	6.8	6.8	6.8	6.8
31	---	---	---	6.8	6.7	6.8	6.8	6.6	6.7	6.8	6.6	6.6	6.8	6.7	6.6	6.7	6.7	6.7	6.7
MONTH	---	---	---	---	---	---	7.4	6.5	6.9	---	---	---	7.4	6.9	6.5	6.6	6.6	6.6	6.8

## OSAGE RIVER BASIN

115

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, on downstream side of left pier of bridge on State Highway M, 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.

## WATER-DISCHARGE RECORDS

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 above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records poor except for discharges over 2,000 ft<sup>3</sup>/s, which are fair. 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 133,000 ft<sup>3</sup>/s, Oct. 5, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 42,700 ft<sup>3</sup>/s, Mar. 17.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	16400	410	---	1080	3170	5970	12700	21800	5880	756	---
2	---	17300	382	---	1080	3290	4680	9260	19400	4600	704	---
3	549	15300	389	---	1160	3810	4130	6600	17700	3650	596	---
4	499	8580	392	---	1380	4540	3590	8700	16100	3110	1260	---
5	482	3870	---	---	1510	4180	2980	10800	13800	2890	1160	---
6	532	2160	---	---	1670	3340	2740	9650	10400	2450	1070	---
7	679	1700	---	---	1970	4560	3340	7490	8180	1830	742	---
8	878	1440	---	---	2250	8750	3600	5260	7300	1720	599	---
9	792	1230	---	---	2310	10600	3090	3890	11000	1730	509	---
10	647	1130	---	---	2080	11800	3830	3060	16400	1310	380	---
11	536	1030	---	---	1820	12300	6190	2630	17600	1110	276	---
12	515	980	---	---	1620	14900	6300	2950	12800	1140	537	---
13	460	885	---	357	1440	15200	4520	4290	10200	1020	934	---
14	434	850	---	346	1400	19500	5010	6930	9030	960	1480	---
15	433	760	---	340	3530	35100	6310	8050	12400	710	1080	---
16	408	671	---	328	7390	41700	5250	12300	18200	---	1040	---
17	415	661	---	329	7940	42700	3960	23700	21000	---	1590	---
18	396	656	---	500	6030	41200	3380	32100	20500	---	1890	---
19	367	600	---	769	4120	36400	3050	38700	17600	---	1500	---
20	351	591	---	3340	3400	25000	2910	40100	11700	---	1030	---
21	376	574	---	6500	3090	18800	3860	39300	7940	---	713	---
22	387	522	---	5860	3510	14000	5820	38800	12900	2080	534	---
23	392	506	---	4540	9220	9480	5090	34300	15200	3320	446	---
24	393	501	---	3120	12600	6120	3770	26100	15600	3470	373	---
25	394	494	---	2300	12600	5620	2820	21900	14600	2190	320	---
26	410	486	---	1880	8410	6060	2500	19300	13400	1290	306	---
27	411	445	---	1590	4990	6730	8430	20100	12200	658	261	---
28	393	418	---	1440	3610	6940	15300	24100	10500	657	295	---
29	403	413	---	1290	---	6620	17600	25300	8860	554	---	---
30	2170	411	---	1200	---	6650	15800	26200	7170	1100	---	---
31	10400	---	---	1150	---	6950	---	24100	---	1030	---	---
MEAN	---	2719	---	1393	4043	14060	5527	17700	13720	---	---	---
MAX	---	17300	---	6500	12600	42700	17600	40100	21800	---	---	---
MIN	---	411	---	328	1080	3170	2500	2630	7170	---	---	---
IN.	---	.56	---	.30	.78	3.00	1.14	3.77	2.83	---	---	---

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

	MEAN	10390	3021	2261	2246	4525	8894	6131	6792	9056	3641	1936	1136
MAX	47040	8244	5212	8040	8960	18920	16190	17700	19800	8716	6925	2918	
(WY)	1987	1987	1987	1985	1987	1987	1983	1990	1981	1986	1989	1986	
MIN	.00	.00	.00	.00	.00	.00	.00	1827	.00	1553	3.35	.00	
(WY)	1981	1980	1981	1981	1981	1981	1981	1989	1980	1982	1984	1982	

## 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 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (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 AS CACO3 (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)
NOV 08...	1630	1400	410	7.9	11.0	16	9.6	86	280	320	200	38
JAN 11...	0820	802	693	8.2	1.5	3.7	15.3	108	K2	K5	310	120
MAR 08...	0900	8470	370	7.7	9.5	200	9.9	85	4200	13000	170	64
MAY 08...	1000	5360	395	7.9	16.5	45	8.1	82	220	K140	150	18
JUL 12...	0730	1080	376	7.8	27.5	93	4.8	60	1100	2800	170	42

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 DIS TOT IT 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, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV 08...	65	8.1	11	4.7	158	41	9.7	0.2	11	250	0.34
JAN 11...	91	20	34	4.0	193	150	27	0.4	3.4	468	0.64
MAR 08...	52	9.3	12	4.1	104	59	6.9	0.2	9.4	239	0.33
MAY 08...	40	12	21	2.6	131	61	6.5	0.3	8.1	263	0.36
JUL 12...	52	9.2	12	3.5	126	50	8.3	0.5	7.6	224	0.30

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- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. & FINER THAN .062 MM (70331)
NOV 08...	945	0.01	0.53	0.07	0.04	0.70	0.16	0.06	0.06	--	--
JAN 11...	1010	<0.01	<0.10	0.03	0.03	0.60	0.08	<0.01	0.01	35	37
MAR 08...	5470	0.02	0.70	0.12	0.09	2.3	0.14	0.05	0.05	610	91
MAY 08...	3810	0.01	0.40	0.06	0.03	1.0	0.15	0.04	0.02	121	91
JUL 12...	652	0.02	0.70	0.09	0.06	0.30	0.09	0.07	0.04	218	85

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



## OSAGE RIVER BASIN

06918070 OSAGE RIVER ABOVE SCHELL CITY, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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 08...	10	<1	86	<0.5	<1	<1	<3	1	32	<1
JAN 11...	<10	<1	84	<0.5	<1	2	<3	<10	7	10
MAY 08...	230	<1	81	<0.5	<1	<1	<3	2	280	1
JUL 12...	<10	1	78	<0.5	<1	<1	<3	3	11	<1
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 08...	6	50	<0.1	<10	2	<1	<1	310	<6	10
JAN 11...	14	130	<0.1	<10	<10	<1	<1	550	<6	4
MAY 08...	12	26	<0.1	<10	3	<1	<1	210	<6	11
JUL 12...	6	54	<0.1	<10	2	<1	<1	280	<6	4

## 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: May 23 to July 1. Records good, except for period of backwater from Stockton Lake May 23 to July 1, 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	28	20	24	54	299	583	223	800	320	84	25
2	28	23	20	21	67	313	524	215	640	303	81	23
3	30	21	20	27	84	334	480	737	540	278	82	22
4	28	22	20	45	102	336	451	1940	450	255	91	21
5	31	25	20	43	112	330	422	1180	390	236	79	20
6	57	28	20	32	153	322	395	859	365	244	73	19
7	53	29	20	26	189	442	368	696	340	284	69	18
8	51	29	23	22	185	723	346	590	315	221	66	24
9	48	31	24	21	189	698	329	520	490	199	64	31
10	42	29	24	19	199	610	963	467	305	187	61	25
11	40	27	22	17	202	553	671	424	295	206	60	26
12	46	29	19	16	192	904	550	450	260	201	64	32
13	41	32	20	15	179	892	506	466	240	201	62	30
14	39	41	17	15	176	4550	508	400	230	194	58	25
15	34	36	17	15	443	7900	476	2650	220	179	367	23
16	31	31	15	15	794	2710	448	7070	215	164	141	21
17	30	26	15	43	577	1680	421	5230	210	155	83	20
18	30	25	17	89	470	1240	386	2040	500	146	68	37
19	31	26	19	166	407	1010	362	2770	365	139	62	45
20	31	28	19	476	354	844	347	3520	280	133	63	31
21	30	29	19	338	320	740	331	5970	245	129	56	81
22	30	29	19	248	345	655	314	3550	1130	137	51	218
23	32	28	19	195	377	577	299	1600	650	126	48	118
24	32	26	19	156	374	565	283	1050	475	118	46	87
25	31	25	19	129	347	517	269	800	400	113	42	70
26	30	25	20	105	324	535	273	800	500	108	38	59
27	25	25	22	90	306	562	271	2210	475	104	36	53
28	23	23	23	78	301	661	266	2190	405	99	33	42
29	25	20	31	67	---	795	248	1400	360	94	30	39
30	34	20	35	61	---	709	233	1100	340	91	27	38
31	34	---	30	53	---	644	---	1000	---	87	26	---
MEAN	34.6	27.2	20.9	86.0	279	1085	411	1746	414	176	71.3	44.1
MAX	57	41	35	476	794	7900	963	7070	1130	320	367	218
MIN	23	20	15	15	54	299	233	215	210	87	26	18
IN.	.16	.12	.09	.39	1.13	4.87	1.78	7.83	1.80	.79	.32	.19

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

	130	290	317	222	299	475	401	315	200	101	62.6	71.5
MEAN	130	290	317	222	299	475	401	315	200	101	62.6	71.5
MAX	780	1139	1007	650	918	1170	1232	1746	714	328	205	186
(WY)	1987	1986	1988	1973	1985	1975	1973	1990	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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	369	240
HIGHEST ANNUAL MEAN	520	1973
LOWEST ANNUAL MEAN	50.2	1977
HIGHEST DAILY MEAN	7900	Mar 15
LOWEST DAILY MEAN	15	Dec 16-17, Jan 13-16
INSTANTANEOUS PEAK FLOW	11200	May 16
INSTANTANEOUS PEAK STAGE	19.73	May 16
INSTANTANEOUS LOW FLOW	15	Dec 14-17, Jan 12-16
ANNUAL RUNOFF (INCHES)	19.47	12.69
10 PERCENTILE	727	518
50 PERCENTILE	110	113
95 PERCENTILE	19	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.--Estimated daily discharges: Dec. 13-27 and May 28 to June 17. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	31	23	19	93	378	553	246	900	324	92	48
2	37	30	23	19	107	424	507	236	750	297	91	47
3	36	30	22	21	122	462	470	915	600	274	92	46
4	35	29	22	24	135	458	442	1710	500	255	95	45
5	34	29	22	24	151	438	415	1060	440	240	89	44
6	37	29	22	24	180	416	388	831	390	251	84	44
7	39	28	21	23	206	689	360	693	340	335	81	44
8	37	29	22	22	203	892	339	599	330	229	79	76
9	35	28	22	22	229	775	333	533	650	205	77	63
10	34	28	20	22	258	673	1160	477	600	193	75	52
11	32	28	20	21	252	605	716	436	350	203	76	54
12	31	27	20	20	234	962	598	496	300	191	79	52
13	31	27	19	20	216	816	546	471	270	198	77	50
14	30	26	19	20	204	4020	545	413	260	191	76	48
15	30	27	19	20	661	6840	500	3000	270	174	194	47
16	30	26	19	19	837	2190	471	8340	250	163	122	46
17	30	26	19	28	625	1400	439	4390	240	155	94	44
18	32	26	19	62	528	1080	405	1830	660	149	84	57
19	31	26	19	141	458	894	381	3670	429	142	78	56
20	31	25	19	681	403	765	362	2890	392	134	77	52
21	31	25	19	381	363	680	345	5030	457	134	73	163
22	30	24	19	295	401	610	326	2590	1500	139	70	170
23	30	24	19	245	485	549	311	1730	695	132	68	111
24	29	24	19	207	459	536	295	1420	544	125	65	96
25	29	24	19	178	423	495	279	1210	484	122	63	85
26	31	24	19	156	394	520	292	1590	659	116	59	77
27	30	24	19	140	364	515	289	3010	564	112	56	71
28	28	24	19	124	361	658	286	2200	467	107	55	67
29	30	24	21	112	---	673	272	1600	407	102	52	63
30	33	23	21	103	---	632	257	1100	358	99	51	63
31	33	---	20	94	---	595	---	1000	---	95	50	---
MEAN	32.4	26.5	20.2	106	334	1021	429	1797	502	180	79.8	66.0
MAX	39	31	23	681	837	6840	1160	8340	1500	335	194	170
MIN	28	23	19	19	93	378	257	236	240	95	50	44
IN.	.15	.12	.09	.49	1.38	4.67	1.90	8.22	2.22	.82	.37	.29

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

	144	307	311	233	327	504	440	351	237	133	95.5	95.7
MEAN	144	307	311	233	327	504	440	351	237	133	95.5	95.7
MAX	921	1385	982	765	1020	1377	1291	1797	833	445	354	338
(WY)	1987	1986	1988	1973	1985	1973	1973	1990	1974	1976	1982	1986
MIN	23.4	21.7	20.2	19.9	27.5	39.5	39.3	93.9	44.3	24.2	14.4	11.6
(WY)	1979	1981	1990	1981	1981	1981	1981	1981	1972	1972	1980	1980

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	385	264
HIGHEST ANNUAL MEAN		564
LOWEST ANNUAL MEAN		84.1
HIGHEST DAILY MEAN	8340	14200
LOWEST DAILY MEAN	19	9.4
INSTANTANEOUS PEAK FLOW	16000	44000
INSTANTANEOUS PEAK STAGE	20.21	23.74
INSTANTANEOUS LOW FLOW	18	9.8
ANNUAL RUNOFF (INCHES)	20.73	14.22
10 PERCENTILE	774	561
50 PERCENTILE	126	127
95 PERCENTILE	21	25

## OSAGE RIVER BASIN

06918600 LITTLE SAC RIVER NEAR WALNUT GROVE, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat. 37°23'55", long. 93°24'36", in NW 1/4, SE 1/4, sec. 24, T.31 N., R.23 W., Greene County, Hydrologic Unit 10290106, at bridge on County Highway BB, 7.5 mi east of Walnut Grove.

PERIOD OF RECORD.--Water years 1984 to February 1986, October 1988 to June 1990 (discontinued).

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE PER (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)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	
OCT													
10...	1150	50	592	7.9	17.5	8.0	83	18	160	230	80	8.0	
NOV													
06...	1215	48	582	7.8	11.0	11.1	100	14	84	--	--	--	
DEC													
04...	1430	48	577	8.5	4.0	16.0	122	19	K11	--	--	--	
JAN													
08...	1400	42	539	8.5	3.5	15.7	119	19	K4	210	69	8.8	
FEB													
06...	1115	100	495	8.2	8.0	11.6	98	15	54	--	--	--	
MAR													
05...	1215	98	455	8.5	10.0	12.8	112	17	48	--	--	--	
APR													
04...	1050	166	385	8.3	12.0	13.3	123	<10	100	190	63	7.8	
MAY													
10...	0840	190	397	8.0	13.0	9.1	87	29	170	--	--	--	
JUN													
04...	1215	195	396	8.1	17.0	9.9	102	27	150	--	--	--	
DATE		SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT IT FIELD MG/L AS CACO3 (00419)	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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)
OCT													
10...	39	5.7	210	29	47	0.4	341	<1	1.8	0.02	1.8	150	
NOV													
06...	--	--	202	--	--	--	353	<1	4.1	0.03	2.0	40	
DEC													
04...	--	--	312	--	--	--	362	3	3.7	0.01	2.0	50	
JAN													
08...	36	6.1	172	42	46	0.4	349	13	4.5	0.03	2.2	40	
FEB													
06...	--	--	173	--	--	--	325	11	2.2	<0.01	0.08	120	
MAR													
05...	--	--	187	--	--	--	294	194	1.6	<0.01	0.25	220	
APR													
04...	7.3	1.8	154	12	14	<0.1	228	<1	1.0	<0.01	0.10	100	
MAY													
10...	--	--	172	--	--	--	235	16	1.3	0.01	0.14	120	
JUN													
04...	--	--	181	--	--	--	231	6	1.4	0.02	0.11	220	

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

[illegible]



## 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.--Estimated daily discharges: Dec. 14-27. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	13	9.3	16	38	191	495	145	707	104	23	11
2	14	13	9.9	18	61	212	414	143	573	94	24	11
3	13	12	11	20	94	217	356	1770	451	84	25	12
4	13	11	10	25	100	203	316	3010	373	76	25	12
5	14	12	10	26	112	194	285	1270	329	68	24	11
6	16	12	10	24	154	188	266	827	295	63	22	12
7	17	12	11	22	163	640	240	606	266	61	20	12
8	19	11	12	20	142	940	220	460	249	59	19	14
9	18	11	12	17	149	641	207	379	640	53	19	19
10	17	11	12	16	183	463	1850	314	405	49	18	25
11	16	11	11	15	165	408	885	269	274	69	20	29
12	15	11	11	15	139	1340	575	390	225	66	21	28
13	15	12	10	14	118	865	482	475	195	74	23	23
14	14	12	9.5	14	108	8780	653	329	193	84	21	18
15	14	12	9.5	14	942	7510	512	2100	200	70	59	16
16	13	12	9.5	14	868	1900	441	6030	170	58	52	16
17	13	11	9.5	26	460	1220	521	3070	148	50	41	15
18	13	11	9.5	58	317	924	420	1380	133	46	30	26
19	12	11	9.5	153	246	755	332	2360	152	42	25	26
20	12	11	9.5	528	204	611	293	1760	185	38	24	23
21	11	11	9.5	218	176	512	270	2800	202	37	41	26
22	12	11	9.5	141	244	428	250	1440	581	38	33	66
23	13	11	9.5	106	417	361	229	996	305	35	29	52
24	13	12	9.5	84	325	376	212	796	206	33	25	35
25	12	11	9.5	72	249	339	195	657	170	31	20	29
26	12	11	9.5	61	212	511	195	1030	241	31	17	24
27	11	11	9.7	53	191	764	186	3090	217	29	16	20
28	10	12	11	47	188	1200	186	1640	164	27	14	17
29	10	10	15	41	---	958	167	984	136	26	13	15
30	12	9.2	16	38	---	728	155	776	116	25	12	14
31	14	---	16	37	---	599	---	831	---	23	11	---
MEAN	13.6	11.4	10.7	63.0	242	1128	394	1359	283	53.0	24.7	21.9
MAX	19	13	16	528	942	8780	1850	6030	707	104	59	66
MIN	10	9.2	9.3	14	38	188	155	143	116	23	11	11
IN.	.07	.05	.05	.31	1.06	5.49	1.85	6.61	1.33	.26	.12	.10

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

	134	329	310	214	291	521	405	287	186	70.7	34.3	86.4
MEAN	134	329	310	214	291	521	405	287	186	70.7	34.3	86.4
MAX	808	1256	1045	665	1139	1290	1263	1359	656	342	144	291
(WY)	1987	1986	1988	1973	1985	1973	1973	1990	1981	1979	1988	1970
MIN	13.6	10.8	10.7	9.05	31.1	38.9	32.7	30.9	20.7	11.6	4.90	3.15
(WY)	1990	1981	1990	1981	1981	1972	1981	1977	1972	1980	1980	1980

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	302	239
HIGHEST ANNUAL MEAN		516
LOWEST ANNUAL MEAN		58.6
HIGHEST DAILY MEAN	8780	13200
LOWEST DAILY MEAN	9.2	.60
INSTANTANEOUS PEAK FLOW	13600	22300
INSTANTANEOUS PEAK STAGE	18.28	21.95
INSTANTANEOUS LOW FLOW	9.1	0.3
ANNUAL RUNOFF (INCHES)	17.31	13.66
10 PERCENTILE	709	517
50 PERCENTILE	45	81
95 PERCENTILE	10	9.2

## OSAGE RIVER BASIN

123

## 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 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, 1,229,000 acre-ft, May 31, June 1, elevation, 879.78 ft; minimum, 738,000 acre-ft, Jan. 14, elevation, 861.19 ft.

ELEVATION, IN FEET, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990  
OBSERVATIONS AT 24:00

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	867.26	863.77	862.21	861.31	862.01	864.67	872.32	869.98	879.78	874.25	868.03	865.85
2	867.14	863.78	862.04	861.22	862.01	864.79	872.26	869.90	879.69	873.95	868.02	865.73
3	866.89	863.81	862.12	861.28	862.10	864.89	872.17	870.23	879.54	873.64	868.08	865.54
4	866.67	863.77	862.10	861.28	862.17	865.01	872.05	870.99	879.40	873.34	868.16	865.31
5	866.40	863.72	862.09	861.28	862.21	865.11	871.99	871.26	879.23	873.03	868.15	865.06
6	866.34	863.66	862.08	861.28	862.29	865.20	871.88	871.31	879.04	872.79	868.13	864.82
7	866.34	863.65	862.04	861.29	862.38	865.40	871.76	871.27	878.84	872.47	868.12	864.71
8	866.34	863.58	862.03	861.34	862.45	865.70	871.63	871.21	878.64	872.14	868.07	864.61
9	866.15	863.52	862.01	861.29	862.52	865.84	871.51	871.08	878.55	871.80	867.96	864.43
10	865.97	863.53	861.95	861.32	862.60	865.95	871.98	870.98	878.35	871.43	867.84	864.23
11	865.73	863.51	861.85	861.27	862.66	866.21	872.01	870.94	878.14	871.14	867.88	864.15
12	865.49	863.53	861.73	861.20	862.74	866.51	872.00	870.82	877.90	870.84	867.88	864.04
13	865.39	863.42	861.65	861.20	862.75	866.78	871.98	870.76	877.64	870.79	867.89	863.90
14	865.20	863.33	861.60	861.19	862.91	866.95	872.01	870.67	877.60	870.81	867.89	863.86
15	865.18	863.14	861.63	861.20	863.27	871.12	871.99	871.59	877.41	870.81	868.08	863.77
16	864.91	863.20	861.63	861.20	863.55	871.75	871.89	874.18	877.20	870.66	867.96	863.75
17	864.67	863.12	861.63	861.23	863.75	872.15	871.86	875.30	876.94	870.49	867.82	863.68
18	864.37	862.99	861.62	861.29	863.88	872.44	871.78	875.81	876.72	870.26	867.66	863.63
19	864.12	862.91	861.62	861.52	863.99	872.64	871.67	876.75	876.52	870.06	867.61	863.47
20	863.89	862.87	861.57	861.70	864.10	872.66	871.56	877.32	876.33	869.81	867.62	863.36
21	863.83	862.88	861.49	861.82	864.17	872.64	871.44	878.30	876.22	869.75	867.48	863.34
22	863.82	862.75	861.28	861.89	864.24	872.50	871.32	878.65	876.16	869.52	867.39	863.31
23	863.83	862.75	861.24	861.94	864.27	872.48	871.18	878.72	875.98	869.28	867.29	863.33
24	863.82	862.75	861.24	861.95	864.40	872.41	871.02	878.70	875.71	869.04	867.13	863.29
25	863.83	862.72	861.24	861.96	864.49	872.34	870.86	878.59	875.51	868.84	866.97	863.17
26	863.83	862.72	861.25	862.00	864.48	872.28	870.72	878.77	875.35	868.61	866.83	862.91
27	863.81	862.50	861.25	862.00	864.57	872.30	870.60	879.44	875.12	868.36	866.60	862.72
28	863.82	862.37	861.26	862.02	864.57	872.40	870.45	879.72	874.89	868.26	866.39	862.67
29	863.80	862.23	861.26	862.03	---	872.44	870.27	879.73	874.62	868.28	866.20	862.67
30	863.83	862.21	861.30	862.02	---	872.43	870.17	879.71	874.44	868.03	866.06	862.68
31	863.80	---	861.30	862.04	---	872.40	---	879.78	---	868.03	866.00	---
(-)	798000	761000	741000	758000	816000	1014000	955000	1229000	1071000	900000	850000	772000
(=)	-83000	-37000	-20000	+17000	+58000	+198000	-59000	+274000	-158000	-171000	-50000	-78000
MAX	867.26	863.81	862.21	862.04	864.57	872.66	872.32	879.78	879.78	874.25	868.16	865.85
MIN	863.80	862.21	861.24	861.19	862.01	864.67	870.17	869.90	874.44	868.03	866.00	862.67

CAL YR 1989 . . . - 56,000

WTR YR 1990 . . . -109,000

(-) Contents, in acre-feet, at end of month

(=) Change in contents, in acre-feet

## OSAGE RIVER BASIN

06919020 SAC RIVER AT HIGHWAY J BELOW STOCKTON, MO

LOCATION.--Lat 37°44'07", long 93°46'47", NW ¼ 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.--No estimated daily discharges. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	72	72	72	600	381	3170	2760	4760	3230	112	855
2	988	64	532	984	567	491	3120	2360	5010	4770	105	1490
3	2920	60	197	79	104	249	2890	3460	4700	4900	108	1800
4	2840	58	68	75	118	219	3140	2630	4780	4760	898	2470
5	2850	58	67	73	128	200	2930	1550	4600	4840	192	2990
6	2320	847	67	70	167	1230	2850	3250	4770	4890	119	2760
7	108	76	336	67	192	1530	2930	3360	4640	4860	105	1600
8	84	660	440	66	168	609	3090	3370	4730	4850	264	576
9	2100	664	71	66	151	1570	2840	3240	4780	4970	951	1550
10	2210	71	68	65	143	1580	3020	3050	4830	4820	1340	2170
11	2710	69	1200	64	131	809	2840	2830	4840	5160	311	1190
12	2920	67	1290	670	314	1870	3140	2880	4940	5050	96	1280
13	2350	841	644	62	115	656	3210	3010	4830	3980	91	1290
14	1310	829	162	57	115	3450	3620	3260	5170	251	86	412
15	261	1000	73	57	892	4760	2910	2650	5320	179	85	621
16	2260	413	73	336	718	773	3570	2020	4910	1540	1650	255
17	2880	497	73	108	281	461	3330	2000	4850	2210	1670	754
18	2830	1660	70	70	228	351	3150	518	4940	3120	1850	1070
19	3190	886	70	131	197	689	3430	1440	5180	2860	1040	2040
20	2850	258	67	366	170	2370	2890	2350	4950	3070	277	1640
21	785	67	248	180	511	3050	3480	3750	4880	2150	1090	736
22	213	781	1150	137	1900	3280	3150	3680	5080	3110	1500	311
23	69	399	1260	119	2590	3000	3100	4690	4970	3140	1000	249
24	117	60	351	107	458	3080	3020	4680	4750	3240	1740	552
25	82	57	73	806	729	2400	3530	4770	5110	3040	1750	652
26	77	272	73	164	1200	3490	3090	5010	5090	3160	1650	2840
27	76	1390	72	97	422	2880	3170	3600	4960	2710	2460	2240
28	60	1380	71	92	1770	2830	3090	3180	4900	1770	2790	408
29	60	1860	76	424	---	3400	2930	4970	4910	373	2080	418
30	194	402	77	149	---	3130	2260	4730	3700	2210	1270	52
31	386	---	75	84	---	3090	---	4640	---	796	583	---
MEAN	1360	527	296	190	539	1867	3096	3216	4863	3226	944	1242
MAX	3190	1860	1290	984	2590	4760	3620	5010	5320	5160	2790	2990
MIN	60	57	67	57	104	200	2260	518	3700	179	85	52
IN.	1.21	.46	.26	.17	.43	1.67	2.67	2.87	4.20	2.88	.84	1.07

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

	MEAN	531	615	1216	1279	1180	1676	2119	1687	1461	1071	821	913
MAX	1360	1933	3983	3051	2763	4230	4613	3263	4863	3226	1762	1567	
(WY)	1990	1986	1986	1974	1988	1975	1974	1983	1990	1990	1982	1982	
MIN	51.1	60.1	61.9	66.7	98.8	64.8	60.5	113	269	121	77.2	213	
(WY)	1974	1981	1981	1981	1981	1977	1981	1977	1977	1977	1977	1980	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1784	1214
HIGHEST ANNUAL MEAN		1827
LOWEST ANNUAL MEAN		256
HIGHEST DAILY MEAN	5320	10100
LOWEST DAILY MEAN	52	25
INSTANTANEOUS PEAK FLOW	7190	14800
INSTANTANEOUS PEAK STAGE	18.83	24.91
INSTANTANEOUS LOW FLOW	49	24
ANNUAL RUNOFF (INCHES)	18.75	12.76
10 PERCENTILE	4680	3280
50 PERCENTILE	1290	597
95 PERCENTILE	66	59

## OSAGE RIVER BASIN

125

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: Dec. 1-27. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	22	8.3	14	65	477	468	291	1690	77	6.6	1.4
2	26	28	8.3	13	74	732	394	237	846	62	5.8	1.3
3	24	22	8.3	14	85	1130	306	1310	699	52	7.3	1.3
4	21	17	8.3	18	102	970	261	4370	490	45	267	1.7
5	20	15	8.3	21	124	676	238	2440	328	39	113	1.9
6	26	15	8.3	21	182	582	512	986	256	34	70	2.0
7	45	15	8.0	22	208	1670	646	662	210	222	44	2.0
8	135	13	8.0	27	181	2930	373	490	297	270	32	1.7
9	79	12	8.0	23	155	1430	292	373	422	98	26	1.4
10	51	11	8.0	20	136	821	1060	301	205	60	20	1.5
11	38	10	8.0	18	126	987	1930	255	155	49	17	1.4
12	29	11	8.0	16	126	4340	808	613	126	36	17	1.4
13	25	10	8.0	14	105	2980	644	709	105	60	16	1.4
14	21	9.9	8.0	13	96	4750	1930	437	127	42	13	1.3
15	19	11	8.0	12	466	9880	1200	2200	1360	33	18	1.4
16	16	10	7.5	11	1620	6880	775	7070	615	31	22	1.4
17	15	10	7.5	14	864	1730	730	9420	879	28	50	1.1
18	13	9.3	7.5	17	447	828	613	6570	256	24	113	1.3
19	13	8.6	7.5	50	325	685	483	2380	174	21	60	1.4
20	11	11	7.3	515	257	547	400	5100	126	19	39	1.6
21	8.7	10	7.6	685	218	458	821	2670	112	21	28	1.8
22	8.6	10	7.6	286	477	386	536	1510	292	20	20	1.7
23	9.1	9.7	7.6	188	1970	321	391	909	1080	16	15	1.6
24	9.3	9.1	7.6	145	1340	302	313	617	304	13	11	1.4
25	9.9	9.3	7.6	121	639	309	263	507	152	12	9.2	1.2
26	11	9.1	7.3	103	442	453	281	662	121	13	7.5	1.1
27	11	9.1	7.8	91	350	748	704	3140	337	12	6.0	.92
28	10	9.1	9.2	83	322	815	835	3830	336	9.9	4.8	.79
29	9.9	8.7	12	74	---	759	732	1210	155	9.0	3.8	.75
30	16	8.7	13	68	---	785	411	685	100	8.5	2.9	.60
31	21	---	14	67	---	573	---	999	---	7.4	1.9	---
MEAN	25.1	12.1	8.40	89.8	411	1643	645	2031	412	46.6	34.4	1.39
MAX	135	28	14	685	1970	9880	1930	9420	1690	270	267	2.0
MIN	8.6	8.6	7.3	11	65	302	238	237	100	7.4	1.9	.60
IN.	.07	.03	.02	.25	1.02	4.51	1.71	5.58	1.09	.13	.09	.00

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

	198	319	288	252	401	622	533	474	353	217	79.5	142
MEAN	198	319	288	252	401	622	533	474	353	217	79.5	142
MAX	3055	1794	1327	1063	2307	2275	2458	2969	1753	2229	641	1663
(WY)	1987	1986	1974	1949	1985	1973	1973	1961	1981	1958	1950	1951
MIN	.00	.00	.06	.12	.14	.23	4.09	39.1	4.95	.03	.00	.00
(WY)	1954	1954	1954	1954	1954	1954	1956	1988	1953	1954	1954	1953

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	449	322
HIGHEST ANNUAL MEAN		731
LOWEST ANNUAL MEAN		16.0
HIGHEST DAILY MEAN	9880	26200
LOWEST DAILY MEAN	.60	.00
INSTANTANEOUS PEAK FLOW	10900	37000
INSTANTANEOUS PEAK STAGE	22.15	27.35
INSTANTANEOUS LOW FLOW	.56	.00
ANNUAL RUNOFF (INCHES)	14.51	10.42
10 PERCENTILE	990	681
50 PERCENTILE	46	70
95 PERCENTILE	1.4	.14



## OSAGE RIVER BASIN

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.--Estimated daily discharges: Dec. 23, 24, Jan. 2, 12, 13, 18-25, 28, May 30, 31, June 2-5, and July 29. Records good except for Dec. 23, 24, and Jan. 18-25, which are poor. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	223	116	105	182	1270	3680	3140	6500	3340	158	554
2	122	107	98	500	1340	1400	3710	2810	6000	4690	125	1740
3	2770	103	732	237	271	1610	3540	5330	5700	4780	125	1750
4	2860	94	103	126	257	1410	3530	8520	5200	4640	1320	2550
5	2960	91	93	123	303	1030	3340	4320	5100	4710	516	3080
6	3340	765	85	121	399	1720	3600	4380	5030	4770	253	3050
7	467	261	319	115	492	3080	3640	4080	4750	4950	182	2530
8	259	99	493	123	426	4510	3610	3920	4890	4980	151	550
9	1100	1320	179	115	360	2570	3370	3700	5180	4900	478	1150
10	2650	120	91	113	321	3380	4050	3600	4910	4790	1540	2770
11	2710	96	1060	104	292	1980	5430	3200	4900	5000	1250	1280
12	2970	93	827	400	471	6750	4130	3790	4920	4910	152	1700
13	2730	479	1260	300	305	4750	3940	3900	4790	5550	136	1310
14	1990	825	496	98	242	8120	5950	3700	5070	842	127	1560
15	690	841	103	93	1060	16200	4750	5370	6680	315	154	124
16	1270	1270	93	206	3080	10900	4400	10100	5360	668	852	999
17	2980	481	90	333	1490	3500	4210	12800	5570	2440	1700	195
18	2990	1000	91	100	833	1620	4210	8490	5090	3020	2130	1000
19	3320	1360	90	200	646	1370	3820	4080	5640	3040	1790	2300
20	3110	832	89	800	521	2860	3760	7780	5110	3120	1040	1580
21	1530	109	91	900	446	3580	4550	7060	4880	3140	229	1500
22	511	93	1160	500	2440	3740	3880	5290	5610	2470	1950	730
23	114	1200	1200	400	5030	3680	3720	5690	5870	3310	1340	433
24	103	104	700	300	2720	3550	3420	5280	5030	3260	1530	463
25	154	84	107	700	1560	3080	3900	5210	5050	3120	1910	213
26	106	82	95	398	1770	3990	3540	5550	5100	3200	2050	2440
27	101	778	95	201	1070	3800	4030	7790	5190	2940	2360	2630
28	96	1510	98	200	2210	3790	4090	7270	5120	2170	3130	1230
29	89	2090	105	325	---	4320	3920	6510	4910	1360	2390	737
30	99	1310	104	547	---	4030	2860	6000	3810	1440	1700	105
31	487	---	106	184	---	3960	---	5800	---	1740	800	---
MEAN	1445	594	334	289	1091	3921	3953	5628	5232	3342	1083	1408
MAX	3340	2090	1260	900	5030	16200	5950	12800	6680	5550	3130	3080
MIN	89	82	85	93	182	1030	2860	2810	3810	315	125	105
IN.	.92	.37	.21	.18	.63	2.50	2.44	3.59	3.23	2.13	.69	.87

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

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	1304	1176	1749	1500	1800	2565	2728	2275	1902	1190	892	1004
MAX	11070	4069	5838	3683	5202	5630	5394	5628	5232	3342	1726	1599
(WY)	1987	1986	1986	1985	1985	1985	1985	1990	1990	1990	1982	1978
MIN	61.1	66.7	56.6	53.5	101	82.7	76.3	278	465	170	84.8	223
(WY)	1981	1981	1981	1981	1981	1981	1981	1981	1978	1988	1977	1980

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

	1990	Period
AVERAGE FLOW	2366	1672
HIGHEST ANNUAL MEAN		2691
LOWEST ANNUAL MEAN		399
HIGHEST DAILY MEAN	16200	51200
LOWEST DAILY MEAN	82	44
INSTANTANEOUS PEAK FLOW	17400	60000
INSTANTANEOUS PEAK STAGE	24.07	30.00
INSTANTANEOUS LOW FLOW	80	44
ANNUAL RUNOFF (INCHES)	17.75	12.55
10 PERCENTILE	5210	4090
50 PERCENTILE	1650	1010
95 PERCENTILE	95	73



## OSAGE RIVER BASIN

127

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.--Estimated daily discharges: Nov. 11 and 12. Records fair. Several observation 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.1	8.6	9.2	12	26	232	620	157	566	90	25	13
2	7.1	12	9.2	11	36	276	486	150	447	80	22	12
3	6.8	11	8.8	12	80	269	385	2500	353	71	29	13
4	6.7	10	8.4	17	106	243	329	3590	283	64	164	14
5	6.2	9.6	8.2	16	109	221	297	1120	244	142	42	12
6	10	9.6	8.1	14	150	226	398	752	214	86	32	11
7	11	9.6	8.5	13	158	556	271	571	191	61	27	9.9
8	10	9.6	9.0	10	128	1160	233	429	169	52	24	8.7
9	9.2	9.6	9.4	9.9	114	682	209	340	532	47	22	6.4
10	8.1	9.1	9.4	9.5	149	500	3310	283	442	42	21	6.7
11	7.9	8.4	9.2	9.2	150	447	1140	238	231	474	20	20
12	12	8.4	9.2	8.7	118	1360	725	423	181	154	20	15
13	13	12	8.7	8.2	97	731	756	727	162	189	20	12
14	13	11	8.4	8.6	88	10400	1120	408	359	197	20	14
15	9.9	11	8.4	8.8	1410	11200	746	1820	249	114	24	15
16	8.2	11	8.2	8.9	1200	1450	690	5530	165	89	38	15
17	6.7	11	7.9	14	508	946	1630	2360	132	68	45	15
18	8.3	12	7.9	26	357	747	907	987	112	56	30	17
19	10	11	7.9	270	277	640	665	1400	430	49	24	74
20	11	12	7.9	611	225	520	551	1260	331	43	46	36
21	14	11	7.9	241	194	440	493	4170	333	40	105	27
22	14	8.7	7.8	136	323	374	406	1110	861	41	51	56
23	14	8.4	7.0	93	588	306	342	726	408	39	35	76
24	14	8.4	7.0	69	409	332	286	570	237	35	27	44
25	13	8.4	7.7	56	301	350	244	467	201	34	22	32
26	12	8.6	8.5	48	250	640	232	3270	256	35	20	25
27	24	9.7	9.2	41	223	943	213	2920	213	33	18	22
28	20	9.6	10	36	220	1440	227	1360	165	30	17	20
29	9.3	9.6	14	33	---	1210	217	770	127	32	17	18
30	7.2	9.3	14	29	---	838	178	576	104	32	15	17
31	7.2	---	12	26	---	748	---	578	---	28	15	---
MEAN	10.7	9.94	8.94	61.5	285	1304	610	1341	290	82.2	33.5	22.6
MAX	24	12	14	611	1410	11200	3310	5530	861	474	164	76
MIN	6.2	8.4	7.0	8.2	26	221	178	150	104	28	15	6.4
IN.	.04	.04	.04	.26	1.08	5.45	2.47	5.60	1.17	.34	.14	.09

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

MEAN	161	355	366	238	347	607	509	334	219	75.6	40.7	99.9
MAX	1094	1408	1488	639	1496	1673	1491	1341	1043	326	154	604
(WY)	1987	1986	1983	1975	1985	1973	1983	1990	1981	1976	1985	1977
MIN	8.88	9.94	8.94	10.8	42.5	61.6	26.8	41.5	15.9	4.16	2.72	1.70
(WY)	1979	1990	1990	1977	1981	1981	1981	1977	1988	1980	1980	1980

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	340	279
HIGHEST ANNUAL MEAN		532
LOWEST ANNUAL MEAN		124
HIGHEST DAILY MEAN	11200	18500
LOWEST DAILY MEAN	6.2	.30
INSTANTANEOUS PEAK FLOW	15700	23100
INSTANTANEOUS PEAK STAGE	18.90	23.08
INSTANTANEOUS LOW FLOW	5.7	0.3
ANNUAL RUNOFF (INCHES)	16.72	13.71
10 PERCENTILE	780	577
50 PERCENTILE	45	85
95 PERCENTILE	7.9	7.1

## OSAGE RIVER BASIN

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 except for periods Oct. 1 to Jan. 17 and Aug. 7 to Sept. 30, 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 September 1914 reached a stage of about 25.2 ft.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	2.5	2.2	3.7	13	128	220	70	175	42	6.0	1.4
2	4.7	2.5	2.4	3.0	28	136	191	65	151	31	5.7	1.3
3	4.9	1.9	2.4	3.1	32	118	172	495	128	24	6.2	1.3
4	4.5	2.1	2.3	5.6	40	102	162	1420	105	19	129	1.1
5	4.3	2.2	2.1	7.2	51	92	162	270	92	16	35	1.0
6	4.4	2.1	2.1	4.7	94	102	230	192	80	15	14	.93
7	4.1	2.2	2.0	3.7	89	245	174	157	72	13	7.8	.85
8	5.3	2.1	2.2	3.4	67	357	158	135	63	11	5.1	.85
9	3.1	1.9	2.4	3.4	69	191	146	121	63	8.1	3.7	.85
10	2.9	1.7	2.5	3.2	61	151	1330	111	72	6.6	3.0	.87
11	2.3	1.4	2.5	3.1	48	178	309	98	49	265	2.8	1.6
12	2.8	1.4	2.3	3.1	38	473	214	227	38	131	3.1	1.9
13	2.6	1.6	2.0	3.3	33	189	646	160	30	228	3.5	1.8
14	2.9	2.1	1.9	3.5	32	5600	753	128	1260	117	3.0	1.6
15	2.6	3.1	2.1	3.4	777	3410	291	839	314	89	3.1	1.4
16	2.7	4.4	2.0	3.3	309	402	231	3120	172	49	4.4	1.2
17	2.5	4.5	1.9	5.7	195	284	305	645	119	31	2.8	1.1
18	2.2	3.5	2.0	14	151	240	205	264	85	23	2.4	1.6
19	1.7	2.9	2.2	105	128	237	175	289	351	18	3.6	2.6
20	1.6	2.5	2.3	168	110	205	164	242	292	15	3.2	2.4
21	1.4	2.1	2.3	66	99	187	157	1580	211	13	3.1	2.2
22	2.7	1.8	2.3	42	363	172	142	305	349	15	2.7	2.2
23	3.5	1.6	2.3	31	432	157	130	218	173	15	2.5	2.3
24	3.0	2.0	1.8	24	209	172	119	185	121	12	2.5	2.0
25	3.0	3.3	1.8	21	160	218	107	166	280	11	2.6	1.8
26	3.0	2.6	2.1	17	133	307	99	2020	236	11	2.4	1.8
27	2.8	2.3	2.8	14	118	241	96	644	166	12	2.2	2.1
28	2.9	2.4	3.0	12	120	418	114	321	113	11	2.1	1.8
29	2.5	2.1	3.8	11	---	319	93	210	81	11	2.0	1.4
30	2.6	2.1	4.4	11	---	265	79	175	57	8.4	1.9	1.3
31	2.6	---	4.6	11	---	244	---	191	---	6.8	1.6	---
MEAN	3.11	2.36	2.42	19.8	143	501	246	486	183	41.2	8.81	1.55
MAX	5.3	4.5	4.6	168	777	5600	1330	3120	1260	265	129	2.6
MIN	1.4	1.4	1.8	3.0	13	92	79	65	30	6.6	1.6	.85
IN.	.03	.02	.02	.20	1.33	5.16	2.45	5.00	1.83	.42	.09	.02

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

	83.7	93.9	117	88.9	129	209	172	144	80.5	35.2	14.4	34.3
MEAN	812	566	526	357	764	855	650	843	421	534	100	258
MAX	1987	1986	1983	1973	1985	1973	1983	1961	1985	1958	1958	1958
(WY)	.00	.04	.38	.75	1.49	16.9	4.86	8.23	.73	.08	.00	.00
MIN	1977	1964	1964	1964	1964	1981	1981	1988	1988	1980	1976	1960
(WY)												

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	137	99.5
HIGHEST ANNUAL MEAN		232
LOWEST ANNUAL MEAN		25.9
HIGHEST DAILY MEAN	5600	12000
LOWEST DAILY MEAN	.85	.00
INSTANTANEOUS PEAK FLOW	11200	31900
INSTANTANEOUS PEAK STAGE	17.92	23.60
INSTANTANEOUS LOW FLOW	.80	0
ANNUAL RUNOFF (INCHES)	16.58	12.07
10 PERCENTILE	274	184
50 PERCENTILE	13	25
95 PERCENTILE	1.4	.00

## OSAGE RIVER BASIN

129

## 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, Mar. 18, elevation, 851.35 ft, Mar. 18; minimum, 231,000 acre-ft, Jan. 16, elevation, 838.24 ft.

ELEVATION, IN FEET, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990  
OBSERVATIONS AT 08:00

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	840.19	839.27	838.66	838.26	839.19	841.04	845.90	841.45	849.03	840.93	841.06	840.48
2	840.15	839.22	838.64	838.26	839.26	841.05	845.42	841.47	848.47	840.93	841.02	840.44
3	840.11	839.19	838.62	838.25	839.28	841.08	844.87	841.70	847.86	840.93	840.98	840.39
4	840.07	839.16	838.61	838.30	839.39	841.08	844.32	843.31	847.20	840.92	841.06	840.35
5	840.04	839.13	838.58	838.30	839.45	841.06	843.71	845.55	846.52	840.90	841.11	840.32
6	840.05	839.08	838.55	838.29	839.56	841.05	843.22	844.65	845.84	840.91	841.11	840.28
7	840.05	839.06	838.54	838.29	839.72	841.07	842.72	844.51	845.13	840.91	841.07	840.24
8	840.02	839.05	838.53	838.28	839.82	841.43	842.15	844.21	844.41	840.89	841.04	840.20
9	839.99	839.03	838.52	838.32	839.89	841.70	841.56	843.85	843.92	840.85	841.00	840.16
10	839.95	838.98	838.50	838.30	839.96	841.75	841.34	843.50	843.90	840.82	840.97	840.11
11	839.92	838.98	838.48	838.29	840.01	841.72	842.35	843.09	843.21	840.87	840.93	840.14
12	839.87	838.98	838.47	838.29	840.06	842.05	842.24	842.76	842.44	841.07	840.93	840.11
13	839.86	838.95	838.45	838.28	840.10	842.43	841.88	842.55	841.64	841.11	840.93	840.07
14	839.82	838.94	838.44	838.26	840.08	843.05	841.85	842.26	841.27	841.18	840.90	840.04
15	839.79	838.94	838.43	838.25	840.30	848.96	841.85	841.97	843.24	841.23	840.87	840.00
16	839.76	838.92	838.42	838.24	841.35	851.11	842.21	842.56	843.09	841.23	840.90	839.94
17	839.72	838.92	838.41	838.29	841.50	851.31	841.90	845.92	842.84	841.23	840.89	839.90
18	839.67	838.87	838.39	838.28	841.45	851.35	841.82	846.61	842.55	841.22	840.86	839.90
19	839.62	838.85	838.38	838.26	841.34	851.21	841.44	846.72	842.35	841.20	840.83	839.90
20	839.58	838.84	838.37	838.74	841.22	850.81	841.21	847.06	842.35	841.19	840.85	839.90
21	839.54	838.82	838.34	838.94	841.05	850.36	841.18	847.47	842.18	841.19	840.83	839.90
22	839.50	838.81	838.33	839.03	840.95	849.87	841.15	848.50	842.08	841.26	840.82	839.91
23	839.48	838.79	838.32	839.08	841.22	849.33	841.09	848.33	842.05	841.25	840.80	839.86
24	839.45	838.78	838.30	839.11	841.35	848.86	841.00	848.02	841.82	841.22	840.79	839.84
25	839.42	838.75	838.29	839.16	841.32	848.33	841.04	847.67	841.53	841.18	840.76	839.81
26	839.39	838.73	838.27	839.17	841.22	847.88	841.13	847.43	841.34	841.18	840.72	839.77
27	839.35	838.73	838.26	839.18	841.08	847.48	841.19	849.00	841.17	841.14	840.71	839.73
28	839.32	838.69	838.26	839.17	841.02	847.10	841.30	850.05	840.88	841.12	840.65	839.71
29	839.30	838.68	838.26	839.19	---	847.02	841.37	850.41	840.91	841.15	840.60	839.66
30	839.32	838.67	838.27	839.19	---	846.71	841.42	850.09	840.92	841.14	840.57	839.64
31	839.30	---	838.27	839.19	---	846.33	---	849.55	---	841.10	840.52	---
(-)	240000	235000	232000	239000	253000	300000	257000	331000	253000	254000	249000	242000
(=)	-7000	-5000	-3000	+7000	+14000	+47000	-43000	+74000	-78000	+1000	-5000	-7000
MAX	840.19	839.27	838.66	839.19	841.50	851.35	845.90	850.41	849.03	841.26	841.11	840.48
MIN	839.30	838.67	838.26	838.24	839.19	841.04	841.00	841.45	840.88	840.82	840.52	839.64

CAL YR 1989 . . . -26,000

WTR YR 1990 . . . - 5,000

(-) Contents, in acre-feet, at end of month

(=) Change in contents, in acre-feet

## OSAGE RIVER BASIN

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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	103	45	42	42	479	2960	107	3360	105	103	98
2	99	103	45	42	42	479	2950	108	3350	105	102	98
3	98	102	45	42	42	479	2930	628	3340	105	102	107
4	98	102	45	42	42	477	2970	1080	3330	105	104	104
5	98	102	45	42	42	476	2860	1160	3320	105	103	96
6	100	80	45	42	71	476	2770	1660	3310	105	102	96
7	99	42	45	42	99	480	2760	1900	3300	105	102	96
8	99	42	46	42	98	721	2750	2100	3290	105	101	97
9	99	43	45	42	98	982	2320	2100	1150	105	101	96
10	99	43	45	42	98	980	2000	2090	2350	106	101	97
11	100	43	46	43	98	986	2420	2090	3400	107	102	98
12	102	43	46	43	98	988	2500	2090	3390	107	102	97
13	102	43	46	42	98	985	2300	2080	2340	108	101	96
14	102	43	46	42	100	1070	2050	2070	808	106	100	97
15	103	44	46	42	316	1040	2050	2080	1020	105	102	97
16	104	44	46	42	815	1040	2410	536	1600	105	100	97
17	104	43	46	42	1040	1040	2740	98	1590	105	99	97
18	103	43	46	42	1040	1700	2730	529	1590	105	99	98
19	103	43	45	48	1030	2590	2350	1150	1600	105	100	97
20	102	43	45	45	1030	3020	1320	1150	1600	105	99	97
21	102	44	45	43	1030	2990	858	1160	1600	107	98	97
22	101	44	45	42	1030	2980	859	1970	1600	106	98	98
23	101	44	44	43	1030	2960	861	2490	1600	105	98	98
24	102	44	43	43	1030	2950	540	2480	1600	105	98	98
25	102	44	42	43	1020	2940	102	2480	1600	105	98	98
26	103	44	42	42	1020	2930	103	963	1590	105	98	98
27	103	44	42	42	873	2970	105	96	1590	104	98	98
28	102	44	42	42	479	2990	105	94	733	104	99	98
29	102	44	42	42	---	2990	106	1420	104	105	98	98
30	103	45	42	42	---	2980	107	3380	104	104	99	98
31	103	---	42	41	---	2970	---	3370	---	104	98	---
MEAN	101	54.5	44.5	42.5	495	1714	1796	1507	2039	105	100	97.8
MAX	104	103	46	48	1040	3020	2970	3380	3400	108	104	107
MIN	98	42	42	41	42	476	102	94	104	104	98	96
IN.	.19	.10	.08	.08	.84	3.21	3.26	2.83	3.70	.20	.19	.18

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

	239	526	682	466	608	918	903	860	528	321	97.5	112
MEAN	239	526	682	466	608	918	903	860	528	321	97.5	112
MAX	1131	2872	2886	1878	2100	3487	2948	4799	2157	1635	480	613
(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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	673	521
HIGHEST ANNUAL MEAN		1163
LOWEST ANNUAL MEAN		67.8
HIGHEST DAILY MEAN	3400	9000
LOWEST DAILY MEAN	41	.00
INSTANTANEOUS PEAK FLOW	3430	9000
INSTANTANEOUS PEAK STAGE	9.22	15.02
INSTANTANEOUS LOW FLOW	41	0
ANNUAL RUNOFF (INCHES)	14.85	11.51
10 PERCENTILE	2550	1810
50 PERCENTILE	102	109
95 PERCENTILE	42	25



## OSAGE RIVER BASIN

131

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. Discharge could not be computed for May 23 to June 6, 9-12, 14, 19-25, 31, and Sept. 28-30 because of missing stage record. Records poor. Stage discharge relation affected by backwater from Truman Reservoir and daily values are calculated using fall computations. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	5190	74	76	210	845	2070	2630	---	365	648	24
2	59	2480	69	78	205	719	1700	1720	---	294	400	22
3	56	1200	77	81	334	628	1300	1340	---	238	319	21
4	54	767	90	83	457	555	941	2520	---	211	1070	21
5	55	556	88	89	489	482	760	4730	---	168	1470	20
6	55	431	85	100	564	434	663	3890	---	151	898	24
7	53	339	79	103	623	423	616	2140	2200	185	495	27
8	55	261	73	103	619	534	562	1520	2180	183	316	26
9	56	199	72	97	516	756	517	1130	---	140	213	25
10	53	177	69	90	419	807	616	888	---	118	141	30
11	55	160	66	86	362	762	1400	741	---	205	108	34
12	53	153	75	81	322	1980	1310	804	---	301	88	37
13	53	146	78	91	268	2540	1010	2100	8490	212	75	33
14	54	137	70	88	255	2390	2710	2530	---	213	66	34
15	61	123	67	75	1060	14000	3200	2360	19700	202	83	34
16	49	116	64	74	2970	27700	1950	15600	17800	163	876	40
17	43	121	66	101	3160	16400	1310	39100	18700	133	1280	41
18	43	117	66	594	1950	8870	1020	39000	9460	102	652	42
19	39	112	65	464	1510	6820	824	21800	---	76	343	36
20	44	110	65	1740	1250	5730	699	16100	---	56	226	35
21	52	109	63	2830	961	4980	766	11600	---	74	153	31
22	54	95	59	1710	981	4430	866	9590	---	1840	111	33
23	53	88	58	1070	3380	3630	748	---	---	3550	84	27
24	55	91	59	731	4970	3090	592	---	---	1900	65	26
25	55	84	59	542	3220	2840	455	---	---	1010	52	25
26	58	81	58	438	1710	3730	400	---	2600	642	43	20
27	55	80	58	360	1230	7860	1410	---	2700	603	35	17
28	56	75	62	332	989	7250	11900	---	2350	446	31	---
29	761	72	65	302	---	4930	11900	---	1310	1110	28	---
30	1890	73	68	250	---	3880	5190	---	650	2000	27	---
31	4300	---	73	233	---	3020	---	---	---	1280	26	---
MEAN	272	458	69.0	422	1249	4613	1980	---	---	586	336	---
MAX	4300	5190	90	2830	4970	27700	11900	---	---	3550	1470	---
MIN	39	72	58	74	205	423	400	---	---	56	26	---
IN.	.25	.40	.06	.38	1.02	4.19	1.74	---	---	.53	.31	---

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

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	159	275	819	307	717	1952	1818	2130	1002	414	513	258
MAX	272	458	1622	422	1249	4613	3798	5959	2998	644	1455	707
(WY)	1990	1990	1987	1990	1990	1990	1988	1990	1990	1987	1989	1989
MIN	46.4	92.0	69.0	112	116	365	425	116	33.8	199	45.7	29.0
(WY)	1989	1989	1990	1989	1989	1989	1989	1988	1988	1989	1988	1987

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

## AVERAGE FLOW

\*\*\*\*\*

\*\*\*\*\*

## HIGHEST ANNUAL MEAN

## LOWEST ANNUAL MEAN

## HIGHEST DAILY MEAN

39100 May 17

62300 Oct 1 1986

## LOWEST DAILY MEAN

\*\*\*\*\*

15

## INSTANTANEOUS PEAK FLOW

43000 May 18

66000 Sep 12 1987

## INSTANTANEOUS PEAK STAGE

21.64 May 18

\*\*\*\*\*

## INSTANTANEOUS LOW FLOW

\*\*\*\*\*

\*\*\*\*\*

## ANNUAL RUNOFF (INCHES)

\*\*\*\*\*

\*\*\*\*\*

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



## OSAGE RIVER BASIN

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 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	
OCT 13...	0800	1.0	2160	7.8	14.5	5.1	49	42	1300	340	110	
NOV 09...	0740	1.0	2270	8.0	10.0	7.9	70	72	1500	420	120	
DEC 07...	0745	1.0	2270	8.1	1.5	12.2	86	29	1400	370	120	
JAN 11...	1100	1.0	1890	8.0	2.5	12.4	90	K4	1200	300	100	
FEB 08...	1445	2.7	1630	8.2	8.5	13.8	118	K9	960	250	82	
MAR 08...	1230	9.3	1500	8.1	11.5	13.8	125	260	850	220	73	
APR 04...	1535	9.6	1610	8.3	13.5	14.5	138	110	690	170	64	
MAY 07...	1430	9.6	1410	8.3	18.5	13.3	141	320	830	210	73	
JUN 07...	0830	9.5	1820	8.0	20.5	7.7	85	220	1100	280	100	
JUL 12...	1020	9.6	1330	7.9	22.5	6.5	75	2800	750	190	66	
AUG 10...	0800	9.0	1850	7.8	21.0	7.2	80	520	1200	290	110	
SEP 06...	1100	1.0	2060	8.1	26.0	5.5	67	410	1300	330	110	
DATE		SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT IT FIELD MG/L AS CACO3 (00419)	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)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
OCT 13...	75	7.5	196	1300	5.1	0.3	8.9	2030	<0.10	0.40	0.07	
NOV 09...	80	6.3	262	1400	4.9	0.3	12	2250	<0.10	<0.20	0.03	
DEC 07...	82	6.3	194	1400	4.3	0.3	7.0	2170	<0.10	0.20	0.04	
JAN 11...	61	5.5	156	1100	5.3	0.4	9.4	1800	<0.10	0.30	0.02	
FEB 08...	54	5.7	160	930	10	0.3	5.0	1530	<0.10	0.40	0.03	
MAR 08...	49	6.8	147	730	9.9	0.2	5.6	1360	0.20	0.40	0.03	
APR 04...	54	6.2	161	900	6.8	0.2	7.0	1480	<0.10	0.40	0.03	
MAY 07...	46	5.5	163	870	6.4	0.4	6.1	1290	0.10	0.90	0.04	
JUN 07...	59	7.2	225	1000	6.0	0.3	7.9	1750	0.10	0.60	0.03	
JUL 12...	34	6.6	150	560	13	0.3	8.3	942	1.2	0.60	0.07	
AUG 10...	54	7.1	225	1000	--	0.2	9.0	1760	<0.10	0.40	0.04	
SEP 06...	68	8.9	228	1200	8.6	0.6	9.8	2100	0.20	0.60	0.06	

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

## OSAGE RIVER BASIN

133

06922190 WEST FORK TEBO CREEK NEAR LEWIS, MO

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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 13...	50	3400	<1	1	1	20	2	10
JAN 11...	20	3400	<1	<1	1	20	2	10
APR 04...	140	4600	<1	<1	2	30	2	10
JUL 12...	650	5400	<1	1	1	40	3	20

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) AS MN) (01053)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G) AS ZN) (01093)
OCT 13...	90	20000	<1	40	220	4300	<10	100
JAN 11...	130	29000	<1	40	140	2500	<10	100
APR 04...	300	74000	<1	50	540	3100	<10	120
JUL 12...	850	68000	2	60	260	2900	<10	130

## OSAGE RIVER BASIN

06922075 TRIBUTARY TO MIDDLE FORK TEBO CREEK NEAR LEETON, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat. 38°32'41", long. 93°37'37", in SE 1/4 SW 1/4 SE 1/4 sec.36, T.44 N., R.25 W., Henry County, Hydrologic Unit 10290108, at bridge on County Highway 2, 5 mi southeast of Leeton.

PERIOD OF RECORD.--July 1989 to September 1990.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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)	ALKA- LITY WAT WH TOT IT FIELD MG/L AS CACO3 (00419)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
OCT											
13...	0930	0.10	3140	2.9	14.0	4.5	43	--	2400	67000	55000
NOV											
09...	0900	0.10	2970	3.0	7.0	8.9	74	--	1900	49000	37000
DEC											
07...	0930	0.10	3330	3.3	0.5	11.2	77	--	2700	55000	49000
JAN											
11...	1230	0.10	2830	3.3	3.5	11.1	83	--	2200	2300	3100
FEB											
09...	0810	0.89	1600	4.2	5.5	11.2	88	--	1100	15000	11000
MAR											
08...	1430	5.9	807	6.8	14.5	9.3	90	34	380	7700	4600
APR											
05...	0830	1.0	1690	4.3	7.5	10.2	85	--	1000	69000	12000
MAY											
07...	1300	2.0	1410	4.4	22.0	7.8	89	--	1200	45000	12000
JUN											
07...	0945	1.0	2880	3.6	20.5	6.2	69	--	3300	58000	18000
JUL											
12...	1150	0.90	2870	3.4	23.5	5.0	59	--	1700	38000	25000
AUG											
09...	1600	0.10	2470	3.2	25.0	5.4	65	--	1700	30000	27000
SEP											
06...	1300	0.10	2610	2.9	29.0	6.3	82	--	1800	17000	43000

## OSAGE RIVER BASIN

135

## 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, 2,600,000 acre-ft, May 28, elevation, 722.97 ft; minimum, 1,180,000 acre-ft, Sept. 27, elevation, 705.56 ft.

ELEVATION, IN FEET, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990  
OBSERVATIONS AT 24:00

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	706.54	706.77	706.46	706.32	706.42	708.05	715.33	708.76	721.83	714.26	706.96	706.20
2	706.38	706.89	706.44	706.27	706.43	707.91	714.91	708.66	721.54	713.68	706.82	706.21
3	706.31	706.85	706.46	706.38	706.50	707.56	714.49	708.78	721.15	713.08	706.83	706.03
4	706.37	707.06	706.47	706.40	706.57	707.50	713.94	709.66	720.66	712.40	707.07	706.04
5	706.38	707.18	706.48	706.43	706.59	707.34	713.38	710.16	720.13	711.69	707.19	705.96
6	706.42	706.85	706.41	706.45	706.63	707.11	712.83	710.50	719.56	711.07	707.23	706.05
7	706.49	706.71	706.31	706.48	706.66	707.16	712.19	710.30	718.99	710.38	707.04	706.13
8	706.49	706.35	706.32	706.50	706.60	707.22	711.57	710.02	718.37	709.63	706.86	706.17
9	706.45	706.26	706.36	706.45	706.52	707.15	710.90	709.62	718.88	709.08	706.59	706.18
10	706.56	706.24	706.38	706.40	706.63	707.39	710.57	709.23	718.79	708.60	706.35	706.25
11	706.58	706.26	706.38	706.41	706.73	707.74	710.20	708.90	718.52	708.63	706.43	706.35
12	706.57	706.32	706.36	706.34	706.59	708.35	709.85	708.82	717.99	708.29	706.48	706.39
13	706.51	706.33	706.41	706.33	706.49	708.71	709.59	708.70	717.30	708.04	706.34	706.39
14	706.59	706.40	706.42	706.33	706.56	710.95	709.41	708.61	718.23	707.82	706.28	706.38
15	706.64	706.50	706.33	706.22	706.73	713.02	709.31	709.50	718.54	707.45	706.30	706.32
16	706.61	706.48	706.34	706.27	706.83	714.98	709.02	712.48	718.44	707.12	706.18	706.31
17	706.48	706.50	706.35	706.31	707.10	716.12	708.58	714.85	718.05	706.87	706.31	706.28
18	706.35	706.51	706.37	706.31	707.20	716.65	708.23	716.89	717.51	706.77	706.47	706.27
19	706.40	706.61	706.39	706.50	707.22	716.96	707.90	718.40	717.20	706.74	706.61	706.16
20	706.37	706.58	706.39	706.78	707.14	717.34	707.23	719.23	716.97	706.61	706.52	706.12
21	706.48	706.50	706.38	707.18	707.00	717.66	707.36	719.71	716.76	706.77	706.44	706.19
22	706.48	706.33	706.09	707.34	707.00	717.79	707.23	719.84	716.67	706.94	706.32	706.20
23	706.48	706.36	706.15	707.40	707.34	717.79	706.92	719.90	716.49	707.14	706.21	706.18
24	706.46	706.38	706.19	707.35	707.81	717.71	706.55	719.91	716.24	707.30	706.25	706.13
25	706.49	706.40	706.18	707.01	708.10	717.43	706.53	720.09	716.12	707.31	706.30	706.07
26	706.48	706.41	706.18	706.82	708.34	717.06	706.56	721.76	716.00	707.19	706.27	705.75
27	706.51	706.46	706.21	706.70	708.38	716.73	706.83	722.76	715.80	707.00	706.25	705.56
28	706.51	706.35	706.22	706.77	708.22	716.41	707.43	722.97	715.61	706.86	706.17	705.62
29	706.61	706.35	706.28	706.63	---	716.10	708.38	722.87	715.28	706.79	706.22	705.63
30	706.39	706.40	706.30	706.55	---	715.95	708.68	722.47	714.81	706.76	706.15	705.64
31	706.42	---	706.33	706.50	---	715.66	---	722.14	---	706.92	706.20	---
(-)	1230000	1230000	1220000	1230000	1330000	1880000	1360000	2500000	1808000	1256000	1215000	1184000
(=)	0	0	-10000	+10000	+100000	+550000	-520000	+1140000	-692000	-552000	-41000	-31000
MAX	706.64	707.18	706.48	707.40	708.38	717.79	715.33	722.97	721.83	714.26	707.23	706.39
MIN	706.31	706.24	706.09	706.22	706.42	707.11	706.53	708.61	714.81	706.61	706.15	705.56

CAL YR 1989 . . . - 8,000  
WTR YR 1990 . . . -46,000

(-) Contents, in acre-feet, at end of month  
(=) Change in contents, in acre-feet

## OSAGE RIVER BASIN

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: Nov. 25 to Dec. 29. Records fair except for estimated daily discharges, which are poor. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	98	118	105	132	186	292	252	438	196	184	149
2	105	97	116	105	160	184	281	245	411	194	178	148
3	105	97	116	104	161	184	269	471	383	192	175	148
4	104	98	114	109	161	180	260	606	362	188	234	148
5	105	99	114	108	172	177	252	522	343	185	246	148
6	107	99	112	106	178	174	247	450	328	185	212	148
7	107	101	112	105	182	181	241	403	315	184	196	148
8	105	98	110	105	179	259	234	372	301	181	187	148
9	105	98	110	104	176	272	229	349	292	179	181	148
10	107	99	108	103	177	255	400	325	285	176	177	148
11	104	99	108	103	174	243	429	307	278	178	173	150
12	103	99	108	102	166	270	364	316	271	183	171	151
13	103	99	106	102	160	280	333	327	265	263	169	149
14	103	176	106	103	154	758	363	313	259	227	167	149
15	103	241	106	103	266	1210	355	316	258	202	163	148
16	102	204	104	102	402	611	335	387	252	190	164	148
17	101	166	104	139	345	498	322	476	247	183	175	146
18	100	149	104	178	304	430	306	430	242	179	176	146
19	100	139	104	173	272	380	295	399	239	176	170	151
20	101	133	103	322	249	344	287	397	236	173	165	149
21	102	128	102	287	234	320	280	453	232	172	162	149
22	101	125	102	245	234	301	272	468	231	173	159	151
23	100	122	102	216	245	280	264	426	226	170	157	147
24	100	120	103	193	236	266	256	391	221	168	155	145
25	99	120	104	175	217	255	250	369	215	165	155	145
26	99	120	103	160	206	259	244	2150	213	219	153	146
27	99	120	103	152	198	259	243	778	209	299	153	144
28	99	118	104	145	190	268	280	655	206	248	152	144
29	99	118	104	142	---	290	280	573	202	221	151	142
30	99	118	106	137	---	290	266	510	199	203	150	142
31	99	---	106	132	---	297	---	465	---	191	149	---
MEAN	102	123	107	144	212	328	291	481	272	195	173	147
MAX	107	241	118	322	402	1210	429	2150	438	299	246	151
MIN	99	97	102	102	132	174	229	245	199	165	149	142
IN.	1.18	1.38	1.24	1.66	2.21	3.78	3.25	5.54	3.04	2.25	1.99	1.65

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

MEAN	132	154	165	158	184	233	254	241	190	144	126	118
MAX	578	508	436	295	447	712	504	487	704	262	193	224
(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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	215	175
HIGHEST ANNUAL MEAN		296
LOWEST ANNUAL MEAN		93.4
HIGHEST DAILY MEAN	2150	6350
LOWEST DAILY MEAN	97	55
INSTANTANEOUS PEAK FLOW	12600	14400
INSTANTANEOUS PEAK STAGE	10.42	11.1
INSTANTANEOUS LOW FLOW	97	55
ANNUAL RUNOFF (INCHES)	*****	*****
10 PERCENTILE	358	289
50 PERCENTILE	175	134
95 PERCENTILE	100	83

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



## 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, 1,311,800 acre-ft, May 26, elevation, 661.75 ft; minimum, 960,700 acre-ft, Jan. 1, elevation, 655.29 ft.

## MONTH END ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

Date	Elevation (feet)	Contents (acre-ft)	Change in contents (acre-feet)
Sept. 30 . . . . .	658.51	1,132,800	-----
Oct. 31 . . . . .	658.32	1,122,200	+10600
Nov. 30 . . . . .	659.03	1,162,300	+40100
Dec. 31 . . . . .	655.30	961,200	-201100
CAL YR 1989 . . . . .	-----	-----	-178200
Jan. 31 . . . . .	656.96	1,048,000	+86800
Feb. 28 . . . . .	656.70	1,034,000	-14000
Mar. 31 . . . . .	658.86	1,152,500	+118500
Apr. 30 . . . . .	658.42	1,127,800	-24700
May 31 . . . . .	660.04	1,220,200	+92400
June 30 . . . . .	659.35	1,180,700	-39500
July 31 . . . . .	659.53	1,191,100	+10400
Aug. 31 . . . . .	658.69	1,142,800	-48300
Sept. 30 . . . . .	657.90	1,098,900	-43900
WTR YR 1990 . . . . .	-----	-----	-12700

## 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. Several observations of water temperature and specific conductance were made during the year. Flow regulated by Lake of the Ozarks (station 06925500) 1.3 mi upstream.

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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	504	4580	479	660	8780	18200	34100	20300	50400	29800	4300	725
2	1360	7040	488	547	8600	18000	34000	18400	52000	29800	5840	588
3	587	7440	475	560	1700	17000	34000	33200	52200	29800	6520	569
4	483	11500	2250	564	539	11700	34000	34600	52100	29800	1460	8660
5	474	6020	1110	559	2230	17600	33200	34200	52100	29800	811	8600
6	7200	8780	501	556	10100	17500	33900	34000	52200	29800	3860	9060
7	1990	9020	2850	550	7540	19400	33900	33800	52400	29800	5630	3680
8	502	8200	868	553	5810	18800	34000	33800	52500	29900	6840	709
9	5000	5940	474	561	6360	19600	34000	33700	54300	29200	7380	570
10	3380	1250	486	649	936	22400	34000	33600	52800	19900	6600	2520
11	570	691	728	546	534	15900	33900	25100	52100	16200	1610	1370
12	5540	540	539	540	5060	18900	33100	17800	52000	27200	843	628
13	6540	1570	494	522	6240	23100	34000	16900	52000	23300	5860	3390
14	1550	2350	559	531	12900	29400	34300	20600	52100	2860	5940	3700
15	583	2340	2070	529	12700	35500	34200	33200	53000	3310	6380	3400
16	6020	2850	3410	533	9520	34600	34100	35500	53100	11500	3960	3380
17	7840	1130	3040	540	3740	34200	34000	28800	52200	9740	4060	3240
18	10400	479	6230	546	3180	34000	34000	12400	51200	13600	962	2450
19	1880	471	5520	579	2900	33900	34000	14200	49600	10100	524	2260
20	2440	663	9680	569	16100	34000	33900	21400	47100	12000	4320	2460
21	608	1440	11800	567	18000	34000	29200	32500	38800	15300	1390	2470
22	525	985	11600	562	17700	34100	21800	33800	33900	7000	547	2470
23	741	571	7940	546	18800	34000	27800	39800	33800	4910	6170	2450
24	512	534	8120	605	14100	33900	20700	47800	33700	1770	9860	1640
25	1310	492	7880	3310	13600	33900	21000	49000	33500	956	3390	624
26	794	549	8080	11900	16800	34000	15600	75700	33800	5760	1020	553
27	502	515	6360	1650	19400	34000	10200	80500	33800	13900	8000	1220
28	673	501	6760	563	22000	34000	1560	68400	33700	10600	7380	4790
29	576	470	4140	5330	---	34100	571	53700	33300	2380	2790	986
30	2640	477	5980	6460	---	34100	13100	48500	31500	3780	2580	566
31	4700	---	3720	7000	---	34100	---	49000	---	3640	828	---
MEAN	2530	2980	4020	1603	9495	27350	28000	35940	45910	15720	4118	2658
MAX	10400	11500	11800	11900	22000	35500	34300	80500	54300	29900	9860	9060
MIN	474	470	474	522	534	11700	571	12400	31500	956	524	553
IN.	.21	.24	.33	.13	.71	2.25	2.23	2.96	3.66	1.30	.34	.21

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

	MEAN	6625	8180	7260	7876	9754	13920	17180	15870	15010	8853	5164	5707
MAX	59310	45280	25590	26750	34720	57300	81050	92260	78160	96780	38810	54540	
(WY)	1942	1987	1983	1985	1949	1973	1927	1943	1935	1951	1927	1951	
MIN	471	538	717	586	535	359	452	516	515	492	508	486	
(WY)	1957	1957	1940	1940	1964	1931	1931	1956	1931	1931	1930	1954	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	15020	10060
HIGHEST ANNUAL MEAN		24640
LOWEST ANNUAL MEAN		1046
HIGHEST DAILY MEAN	80500	212000
LOWEST DAILY MEAN	470	235
INSTANTANEOUS PEAK FLOW	84900	220000
INSTANTANEOUS PEAK STAGE	30.38	48.8
INSTANTANEOUS LOW FLOW	470	183
ANNUAL RUNOFF (INCHES)	14.57	9.75
10 PERCENTILE	34700	28200
50 PERCENTILE	6970	4010
95 PERCENTILE	507	441

## 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: Dec. 22-25. Records fair. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	586	5390	739	3610	7140	21100	35000	20600	51900	32200	4690	1050
2	581	6560	749	1110	9670	18600	34900	20000	52800	31600	4870	814
3	1600	6600	724	884	7590	20000	34700	30900	53500	31600	7700	732
4	793	10400	729	886	1860	14300	34600	38300	53600	31500	7280	1820
5	599	8930	2910	843	1690	16600	34100	37100	53500	31500	2210	9980
6	1010	7170	1310	829	4250	18400	34000	35600	53700	31800	1300	8900
7	7740	9000	987	822	10800	20800	34400	34900	54000	31700	5930	9150
8	1880	9090	2960	818	6470	22100	34300	34500	54600	31600	6140	3370
9	1180	7570	1170	819	6730	22000	34300	34300	61600	31300	7580	984
10	5370	4980	785	809	5970	24400	34700	34200	58700	27000	6980	891
11	2750	1440	758	895	1410	20200	35300	29100	56200	14900	6520	3140
12	1110	969	892	803	1270	18800	34400	21700	55000	27000	1860	1500
13	5870	858	849	773	6110	24000	34300	19100	54000	28200	1560	863
14	6200	2230	753	776	10000	40300	37600	21400	54000	12900	6510	4380
15	1700	2600	814	778	14300	50900	36400	34800	54700	3010	6880	3570
16	1220	3370	2790	782	12100	40400	35500	45100	58500	8570	6540	3320
17	7020	3460	3210	800	9820	36900	35100	51100	55800	9140	3960	3290
18	8050	1360	4840	789	4510	35700	34700	32200	54800	13200	4830	2830
19	7000	830	5710	818	4190	35100	34600	23100	53300	12600	1250	2440
20	2240	783	6700	1010	7990	34700	34500	26800	52600	9510	810	2230
21	2380	881	11100	1140	19400	34500	32300	33900	47100	16800	5660	2410
22	947	1830	12500	988	18900	34500	22900	37500	39400	22800	1410	2420
23	760	1240	12500	932	21800	34500	29700	38800	37500	5450	1020	2400
24	897	897	10000	872	19000	34600	22400	48200	37100	5850	8790	2370
25	743	802	9000	929	14900	34400	25000	50500	36900	2500	9610	1470
26	1320	768	7970	6550	16000	34500	17600	81500	37000	1950	3100	759
27	1000	803	7560	10300	18600	34500	13700	93800	36800	12400	2200	665
28	719	783	6140	1780	23600	34600	9510	70800	36600	15000	9720	1550
29	806	752	6730	1260	---	34800	2260	55700	36300	10100	6910	4980
30	1080	739	4450	6320	---	34900	4040	52000	35000	2690	2970	1110
31	2930	---	6670	7260	---	35100	---	51100	---	5140	3130	---
MEAN	2519	3436	4355	1870	10220	29550	29230	39950	49220	17790	4836	2846
MAX	8050	10400	12500	10300	23600	50900	37600	93800	61600	32200	9720	9980
MIN	581	739	724	773	1270	14300	2260	19100	35000	1950	810	665
IN.	.20	.26	.35	.15	.73	2.35	2.25	3.18	3.79	1.41	.38	.22

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

	MEAN	7270	8539	7951	8176	10400	14830	17070	16150	15480	9953	4841	5947
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	550	628	781	640	684	798	626	715	924	706	620	564	
(WY)	1961	1957	1940	1940	1964	1954	1956	1932	1956	1956	1956	1956	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	16320	10540
HIGHEST ANNUAL MEAN		24520
LOWEST ANNUAL MEAN		1237
HIGHEST DAILY MEAN	93800	215000
LOWEST DAILY MEAN	581	373
INSTANTANEOUS PEAK FLOW	100000	216000
INSTANTANEOUS PEAK STAGE	29.01	43.8
INSTANTANEOUS LOW FLOW	570	346
ANNUAL RUNOFF (INCHES)	15.28	9.87
10 PERCENTILE	38400	29600
50 PERCENTILE	7480	4400
95 PERCENTILE	753	599

## OSAGE RIVER BASIN

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.--Water years 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 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 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 KF AGAR (COLS./ PER 100 ML) (31625)	STREP- TOCOCCI FECAL, 0.7 KF AGAR (COLS./ PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB FLD. AS CACO3 (MG/L) (00904)
NOV												
08...	0700	11700	302	8.2	16.0	5.4	11.6	118	21	24	140	18
JAN												
19...	1300	800	334	8.3	6.0	1.6	12.2	97	22	24	150	19
MAR												
20...	1400	34700	308	8.1	9.0	1.1	12.5	106	41	31	140	13
MAY												
07...	1200	34800	269	7.8	15.0	5.4	9.7	95	33	25	130	29
JUL												
09...	1300	31600	266	7.5	26.5	6.0	4.4	54	120	K1200	110	12

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 DIS TOT IT 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, DIS- SOLVED PER (TONS AC-FT) (70303)
NOV											
08...	38	10	6.3	2.8	118	26	6.8	0.1	2.7	158	0.21
JAN											
19...	39	12	6.0	2.9	128	36	6.1	0.1	0.54	194	0.26
MAR											
20...	40	10	6.0	3.3	128	21	7.0	0.2	0.45	175	0.24
MAY											
07...	37	9.2	5.7	3.0	102	26	7.5	0.2	4.9	168	0.23
JUL											
09...	34	7.0	5.0	3.0	102	21	6.1	0.1	6.1	151	0.21

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

## OSAGE RIVER BASIN

141

06926510 OSAGE RIVER BELOW ST. THOMAS, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	
	NOV 08...	4990	0.01	0.20	0.02	0.02	1.0	0.04	0.01	0.03	--	--
	JAN 19...	388	<0.01	<0.10	0.03	0.02	0.30	0.02	<0.01	<0.01	4	78
	MAR 20...	16400	<0.01	0.10	0.01	<0.01	0.50	0.03	0.01	<0.01	29	73
MAY 07...	15800	<0.01	0.40	0.03	0.02	0.70	0.04	<0.01	<0.01	27	66	
JUL 09...	12900	0.01	0.40	0.03	0.02	0.40	0.05	0.02	0.01	71	42	
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 08...	<10	1	67	<0.5	<1	<1	<3	<1	<3	<1		
JAN 19...	20	<1	64	<0.5	<1	<1	<3	<10	<3	<10		
MAY 07...	40	<1	60	<0.5	<1	<1	<3	2	44	<1		
JUL 09...	30	1	61	<0.5	<1	2	<3	2	34	<1		
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 08...	<4	3	0.2	<10	<1	<1	<1	110	<6	13		
JAN 19...	<4	53	<0.1	<10	<10	<1	1	110	<6	<3		
MAY 07...	<4	16	<0.1	<10	2	<1	<1	120	<6	7		
JUL 09...	4	20	<0.1	<10	2	<1	<1	120	<6	9		



## GASCONADE RIVER BASIN

06930000 BIG PINEY RIVER NEAR BIG PINEY, MO

LOCATION.--Lat 37°39'58", long 92°03'02", in NE 1/4 SE 1/4 sec.8. T.34 N., R.10 W., Pulaski County, on downstream side of left pier of Ross bridge, 3 mi east of Big Piney, 14.8 mi upstream from Spring Creek, and at mi 22.

DRAINAGE AREA.--560 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1921 to September 30, 1982, April 4, 1988 to current year.

REVISED RECORDS.--WSP 826: 1935. WSP 1176: 1943, 1945. WSP 1340: 1922-23, 1927-28(M), 1933(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 800.99 ft above National Geodetic Vertical Datum of 1929. Prior to July 12, 1961, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharge: Dec. 13-28. Records good except for period of estimated daily discharge, which is fair. Several observations of water-temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 24.54 ft, Dec. 4, 1982, from floodmark, present datum; discharge, 81,200 ft<sup>3</sup>/s, from indirect measurement.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	145	145	127	166	279	539	1980	580	1360	270	196	158
2	145	141	129	162	3850	516	1430	576	1190	265	193	157
3	145	137	128	163	2010	515	1120	4430	1050	262	196	152
4	144	137	129	173	1230	510	947	13100	925	253	200	149
5	142	139	132	170	1090	488	835	2700	828	247	205	147
6	148	137	133	164	970	466	736	1860	760	251	195	145
7	148	138	134	152	825	464	654	1440	709	320	188	151
8	145	138	140	137	699	547	598	1200	658	304	183	168
9	143	139	137	128	788	796	558	1040	666	257	181	193
10	141	144	137	129	2900	826	1140	932	597	238	174	189
11	140	141	133	127	1620	746	2200	833	544	242	174	341
12	139	137	131	125	1130	929	1480	847	523	239	180	227
13	138	137	133	123	876	2150	1160	1000	496	250	192	226
14	139	147	133	121	724	1490	1080	1020	475	253	187	215
15	137	136	133	122	1640	3440	1120	885	452	252	187	197
16	139	134	131	126	5310	2970	1020	1720	431	241	208	186
17	171	134	133	204	2130	1710	1400	11200	411	234	215	174
18	200	133	133	386	1410	1270	1730	3510	390	225	197	177
19	187	132	133	786	1100	1030	1170	2150	372	218	195	176
20	195	132	133	2420	902	866	1170	5440	366	220	188	169
21	177	130	131	2000	762	754	2080	5070	366	291	183	185
22	165	138	128	1010	733	685	1520	5510	364	300	178	391
23	162	137	127	713	953	626	1210	2230	343	270	175	536
24	157	142	129	669	935	602	1030	1700	325	246	174	310
25	153	138	129	629	777	598	892	1400	324	235	171	253
26	150	137	129	448	668	622	781	9910	312	229	170	227
27	149	137	130	365	612	762	715	9440	360	224	170	211
28	150	131	131	326	573	822	686	4920	310	217	168	199
29	150	129	140	301	---	941	663	2810	291	212	164	190
30	147	128	165	275	---	1070	613	1990	281	207	162	183
31	146	---	171	258	---	3010	---	1600	---	200	158	---
MEAN	153	137	134	422	1339	1057	1124	3324	549	247	184	213
MAX	200	147	171	2420	5310	3440	2200	13100	1360	320	215	536
MIN	137	128	127	121	279	464	558	576	281	200	158	145
IN.	.31	.27	.28	.87	2.49	2.18	2.24	6.84	1.09	.51	.38	.42

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

	270	447	437	531	647	848	964	909	566	297	246	231
MEAN	270	447	437	531	647	848	964	909	566	297	246	231
MAX	1261	2127	1940	2554	2237	2565	3637	3324	2892	1969	1947	1056
(WY)	1950	1952	1943	1950	1982	1945	1927	1990	1928	1951	1927	1965
MIN	82.3	.00	98.5	98.5	127	154	188	142	111	89.3	93.5	72.9
(WY)	1957	1983	1956	1956	1934	1981	1954	1932	1934	1934	1954	1954

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	738	534
HIGHEST ANNUAL MEAN	1179	1927
LOWEST ANNUAL MEAN	149	1954
HIGHEST DAILY MEAN	13100	May 4
LOWEST DAILY MEAN	121	Jan 14
INSTANTANEOUS PEAK FLOW	20400	May 4
INSTANTANEOUS PEAK STAGE	17.22	May 4
INSTANTANEOUS LOW FLOW	121	Jan 12-16
ANNUAL RUNOFF (INCHES)	17.89	69
10 PERCENTILE	1590	1050
50 PERCENTILE	250	253
95 PERCENTILE	126	107

## GASCONADE RIVER BASIN

143

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 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION) (00301)	COLI- FORM, FECAL, UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (00904)
NOV												
07...	1400	415	377	8.3	14.0	0.70	10.2	99	K3	K1	200	6
JAN												
22...	0915	8830	265	7.6	6.5	64	11.7	95	3400	8100	120	48
MAR												
20...	1200	5730	262	7.6	10.0	2.0	10.8	94	K160	86	130	7
MAY												
07...	1430	8620	230	7.8	16.5	17	9.4	96	480	190	120	13
JUL												
09...	1030	1090	329	7.9	27.0	2.3	6.4	80	30	K10	160	0
SEP												
04...	1100	504	348	8.1	25.5	1.5	8.2	99	K10	K17	170	46

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 DIS TOT IT 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, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV											
07...	40	24	3.0	1.4	192	6.0	4.5	0.1	5.6	198	0.27
JAN											
22...	25	14	2.3	3.1	72	9.0	5.4	<0.1	7.1	148	0.20
MAR											
20...	26	15	2.3	1.8	120	7.0	6.0	0.1	8.7	135	0.18
MAY											
07...	26	14	2.1	1.7	110	6.5	5.2	0.2	9.0	131	0.18
JUL											
09...	33	19	2.6	1.6	164	6.0	5.2	0.4	6.9	165	0.22
SEP											
04...	35	21	2.6	1.5	--	15	6.1	0.2	8.9	180	0.24

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 1989 TO SEPTEMBER 1990

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- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 07...	222	0.01	0.13	<0.01	<0.01	<0.20	0.01	<0.01	0.02	--	--
JAN 22...	3530	<0.01	0.68	0.04	0.03	0.90	0.08	0.05	0.04	195	77
MAR 20...	2090	<0.01	0.70	0.02	<0.01	0.40	0.05	0.02	0.03	32	73
MAY 07...	3050	<0.01	0.50	0.05	0.03	0.50	0.07	0.06	0.03	48	78
JUL 09...	486	0.01	0.20	0.02	0.01	<0.20	0.02	0.02	<0.01	41	34
SEP 04...	245	<0.01	<0.10	0.04	0.01	0.40	<0.01	<0.01	<0.01	5	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 07...	<10	<1	50	<0.5	<1	<1	<3	<1	4	<1
JAN 22...	310	<1	39	<0.5	<1	2	<3	<10	130	<10
MAY 07...	40	<1	41	<0.5	<1	<1	<3	1	30	<1
JUL 09...	<10	<1	53	<0.5	<1	<1	<3	2	4	<1

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 07...	<4	7	0.1	<10	<1	<1	<1	41	<6	24
JAN 22...	<4	7	<0.1	<10	<10	<1	4	26	<6	3
MAY 07...	<4	9	<0.1	<10	<1	<1	<1	29	<6	6
JUL 09...	<4	17	<0.1	<10	1	<1	<1	38	<6	10

## 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.--Estimated daily discharges: Dec. 15-17, 19-24, Apr. 19 to May 2, and May 17-30. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	66	58	60	104	148	286	270	367	102	88	73
2	61	65	58	58	196	140	258	1500	334	98	86	72
3	60	64	56	59	182	141	232	4650	291	96	95	71
4	60	64	57	65	180	135	216	880	254	104	99	71
5	61	65	58	61	188	131	201	541	231	116	93	70
6	66	65	58	60	190	126	187	452	393	136	88	70
7	64	65	58	60	184	126	165	395	284	117	85	70
8	62	64	59	60	166	143	157	354	226	105	85	133
9	63	64	57	60	169	153	148	328	352	99	83	105
10	62	65	57	59	183	152	583	302	278	96	82	85
11	61	64	58	58	176	146	427	263	213	103	82	81
12	62	64	56	57	156	209	326	417	183	106	84	79
13	63	63	54	57	144	208	356	472	161	103	88	79
14	63	95	56	56	134	256	503	403	166	102	85	79
15	63	100	56	56	1170	765	382	439	257	99	85	75
16	64	81	55	56	695	411	327	1030	264	95	94	75
17	65	71	55	105	305	327	307	900	183	91	90	73
18	64	71	59	154	305	288	679	800	161	91	84	82
19	63	68	55	272	266	267	580	740	142	88	82	84
20	63	67	54	615	227	220	500	1000	137	87	82	79
21	64	65	54	316	208	220	450	700	131	223	82	85
22	64	66	54	248	239	206	400	500	128	250	81	84
23	64	64	54	207	282	185	350	450	121	142	79	78
24	65	61	54	173	246	179	300	700	118	120	78	76
25	65	61	68	157	176	168	250	2000	117	109	76	75
26	64	61	61	134	190	181	227	1500	115	104	76	74
27	64	61	58	124	179	180	210	1100	111	103	76	73
28	65	60	57	115	161	184	190	800	109	98	76	73
29	64	57	64	108	---	197	180	620	106	96	74	73
30	64	58	66	103	---	247	170	430	102	93	74	73
31	67	---	62	96	---	306	---	408	---	88	73	---
MEAN	63.3	66.8	57.6	125	250	218	318	818	201	112	83.4	79.0
MAX	67	100	68	615	1170	765	679	4650	393	250	99	133
MIN	60	57	54	56	104	126	148	263	102	87	73	70
IN.	.36	.37	.33	.72	1.30	1.25	1.78	4.71	1.12	.64	.48	.44

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

	MEAN	98.9	123	149	142	178	227	247	255	209	99.9	81.7	78.3
MAX	913	676	1300	770	678	822	1335	871	1545	524	493	364	
(WY)	1950	1986	1983	1950	1985	1945	1957	1935	1951	1946	1934	1934	
MIN	26.9	33.1	35.7	34.9	35.6	42.8	43.7	32.2	27.6	27.6	28.1	28.1	
(WY)	1957	1957	1956	1956	1934	1956	1956	1932	1934	1934	1936	1954	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	199	157
HIGHEST ANNUAL MEAN		391
LOWEST ANNUAL MEAN		47.0
HIGHEST DAILY MEAN	4650	May 3
LOWEST DAILY MEAN	54	Dec 13, 20-24
INSTANTANEOUS PEAK FLOW	5480	May 3
INSTANTANEOUS PEAK STAGE	9.37	May 3
INSTANTANEOUS LOW FLOW	52	Dec 3**
ANNUAL RUNOFF (INCHES)	13.52	10.63
10 PERCENTILE	404	276
50 PERCENTILE	101	83
95 PERCENTILE	57	37

\*\* May have been less during period of Dec. 12-24.



## 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: Dec. 21-24. Records good except for ice affected and estimated daily discharges, which are fair. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	584	524	548	556	1300	2980	8910	3300	7090	1330	1130	647
2	577	523	542	547	1840	2760	7590	2990	6040	1260	1050	631
3	563	518	530	542	6500	2610	6100	9210	5210	1190	1020	620
4	542	517	527	583	7080	2550	5070	24400	4540	1150	1060	610
5	539	521	533	572	5320	2540	4370	31100	4020	1170	1060	598
6	571	517	531	567	4610	2510	3890	24300	3850	1280	1080	589
7	571	517	528	564	4250	2460	3480	9950	3420	1210	1010	578
8	546	524	553	566	3830	2610	3110	7240	3120	1240	934	684
9	537	520	544	560	3450	3910	2810	5920	5560	1240	892	749
10	530	523	543	547	4510	5990	4120	5080	4230	1150	860	698
11	521	521	542	542	6640	5740	8680	4390	3230	1130	837	696
12	518	519	533	530	6620	5120	9620	4480	2840	1230	841	891
13	516	515	525	525	4820	6200	7680	6200	2560	1280	905	780
14	513	693	525	517	3820	8640	7730	6450	2400	1180	872	763
15	511	1450	525	513	5450	13900	7030	5880	2770	1160	851	748
16	518	2480	492	514	14300	21100	6340	7540	3330	1150	877	736
17	520	1380	507	705	18200	22600	5730	19200	2360	1140	893	704
18	522	1020	540	1020	16600	14500	6750	29900	2070	1130	893	740
19	562	859	525	1870	7890	7740	9770	24700	1900	1090	877	755
20	552	767	504	5200	5830	6090	6950	15500	1810	1050	1050	715
21	561	705	520	10100	4750	5080	6860	16000	1730	1800	1050	728
22	550	680	525	8560	4330	4430	7620	20200	1690	2430	953	754
23	543	647	535	5190	4560	3890	6760	19700	1620	1820	884	900
24	537	631	545	3690	4980	3530	5600	14600	1570	1540	842	1080
25	533	623	545	2910	4760	3220	4820	8120	1560	1380	806	900
26	533	611	537	2400	4180	3110	4220	20000	1770	1290	774	809
27	533	601	532	2050	3670	3210	3780	44100	1650	1320	747	788
28	533	582	529	1800	3270	3870	3610	41800	1570	1680	726	774
29	533	567	575	1610	---	4530	3610	21700	1470	1900	703	744
30	537	557	592	1490	---	5580	3610	14200	1390	1520	681	713
31	535	---	574	1350	---	7180	---	8920	---	1280	661	---
MEAN	540	720	536	1893	5977	6135	5874	15390	2946	1346	897	737
MAX	584	2480	592	10100	18200	22600	9770	44100	7090	2430	1130	1080
MIN	511	515	492	513	1300	2460	2810	2990	1390	1050	661	578
IN.	.22	.28	.22	.77	2.19	2.49	2.31	6.25	1.16	.55	.36	.29

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

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	1424	2204	2470	2299	2981	4032	4509	4269	3123	1580	1226	1170
MAX	10390	10120	17740	10980	11540	13110	20450	15390	18500	10730	9244	7707
(WY)	1950	1984	1983	1950	1985	1945	1945	1990	1935	1951	1927	1905
MIN	289	368	392	368	491	597	504	668	517	339	324	293
(WY)	1957	1957	1956	1956	1964	1956	1956	1932	1934	1934	1936	1956

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

	1990 WATER YEAR	PERIOD OF RECORD
AVERAGE FLOW	3574	2592
HIGHEST ANNUAL MEAN		6491
LOWEST ANNUAL MEAN		544
HIGHEST DAILY MEAN	44100	121000
LOWEST DAILY MEAN	492	259
INSTANTANEOUS PEAK FLOW	51700	136000
INSTANTANEOUS PEAK STAGE	20.43	31.34
INSTANTANEOUS LOW FLOW	422	254
ANNUAL RUNOFF (INCHES)	17.09	12.39
10 PERCENTILE	7850	5460
50 PERCENTILE	1240	1230
95 PERCENTILE	508	437



## 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. 15-24. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	635	571	580	716	1550	3470	8960	3890	9130	1610	1410	721
2	631	561	569	694	1520	3200	8970	3570	7380	1530	1290	701
3	621	558	561	668	3180	3000	7410	6070	6350	1460	1230	689
4	609	557	560	620	6590	2880	6100	18800	5590	1400	1310	677
5	608	560	556	628	6640	2820	5230	28400	5020	1460	1280	668
6	656	558	557	595	5240	2840	4640	33600	5030	1740	1230	651
7	641	560	549	599	4780	2800	4200	24600	5360	1810	1230	639
8	631	552	546	598	4460	3200	3820	9650	4480	1510	1170	632
9	618	555	569	602	4040	3530	3490	7210	7340	1510	1110	722
10	608	553	558	587	3680	5070	3900	6080	6830	1470	1070	798
11	603	560	553	569	5420	6440	6380	5310	4780	1430	1050	732
12	601	564	547	567	7000	5840	10400	5310	3980	1450	1040	740
13	599	562	540	557	6010	5600	9950	6370	3570	1500	1030	882
14	593	578	572	559	4710	8700	10900	7330	3340	1520	1090	802
15	589	696	540	556	4610	14500	8720	8410	3170	1400	1050	781
16	577	1440	520	562	9110	18900	7490	12600	4070	1360	1540	754
17	572	2230	514	616	18300	23700	6650	17300	3630	1330	1130	748
18	566	1390	575	722	19900	24600	6090	24900	2920	1300	1080	751
19	560	1060	575	1130	14900	12400	8820	33300	2610	1280	1040	797
20	607	897	575	2720	7220	7540	9390	29400	2410	1230	1020	776
21	602	797	560	7020	5680	6140	6940	20000	2270	1950	1140	763
22	610	735	560	9920	5100	5320	7770	19200	2150	4020	1110	767
23	605	694	560	7490	5360	4690	7920	23600	2060	3020	1020	762
24	605	672	560	4860	5270	4260	6630	22600	1970	2160	952	864
25	598	650	665	3770	5250	3860	5680	13000	1870	1820	900	1070
26	584	644	700	3100	4880	3630	5020	19900	1890	1620	856	925
27	581	639	667	2620	4340	3580	4510	30500	2070	1520	822	857
28	580	608	660	2270	3840	3840	4180	42300	1910	1480	790	840
29	594	591	696	1720	---	4650	4040	44300	1820	1870	769	821
30	581	583	716	1810	---	5280	4000	26100	1700	1930	747	794
31	571	---	739	1650	---	6570	---	13600	---	1600	725	---
MEAN	601	739	587	1971	6378	6866	6607	18300	3890	1687	1072	771
MAX	656	2230	739	9920	19900	24600	10900	44300	9130	4020	1540	1070
MIN	560	552	514	556	1520	2800	3490	3570	1700	1230	725	632
IN.	.22	.26	.21	.71	2.09	2.49	2.32	6.64	1.37	.61	.39	.27

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

	MEAN	1757	2187	2391	2608	3225	4504	5423	5138	3998	1840	1448	1192
MAX	12060	9226	12750	12700	7637	14640	22720	18300	19810	12630	9365	3850	
(WY)	1950	1952	1988	1950	1949	1945	1945	1990	1935	1951	1927	1945	
MIN	288	394	403	374	558	620	531	717	647	385	334	295	
(WY)	1957	1957	1956	1956	1954	1956	1956	1932	1934	1954	1936	1954	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	4116		2970	
HIGHEST ANNUAL MEAN			6560	1927
LOWEST ANNUAL MEAN			629	1954
HIGHEST DAILY MEAN	44300	May 29	91100	Apr 16 1945
LOWEST DAILY MEAN	514	Dec 17	275	Sep 19 1954
INSTANTANEOUS PEAK FLOW	48600	May 29	134000	Dec 6 1982
INSTANTANEOUS PEAK STAGE	20.90	May 29	33.27	Dec 6 1982
INSTANTANEOUS LOW FLOW		Unknown	275	Sep 19 1954
ANNUAL RUNOFF (INCHES)	17.57		12.68	
10 PERCENTILE	9110		6430	
50 PERCENTILE	1490		1440	
95 PERCENTILE	539		472	

## 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, and at 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.--Estimated daily discharges: Dec. 1-4, 24, and 25. Water-discharge records good. Discharge measurements made biweekly 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44900	57800	23300	51600	33600	63100	92100	112000	158000	129000	97000	52600
2	44500	69100	23200	48400	34200	58400	94500	108000	138000	119000	85900	49400
3	43900	62000	23100	34700	36300	54400	93500	96200	128000	114000	80300	46900
4	43500	52900	23000	28300	38000	53100	92400	123000	123000	109000	85200	45600
5	43500	51200	22300	27000	36300	47100	91500	155000	116000	105000	102000	45500
6	43300	47000	22500	27000	34800	48200	90000	163000	119000	105000	98900	51000
7	43300	43200	22900	26700	36000	49900	87700	161000	156000	102000	88800	51000
8	47500	42500	21600	26200	42400	55300	85300	145000	210000	98700	82200	50200
9	44900	40600	22000	25700	39100	65800	83700	116000	228000	96700	74700	46100
10	43000	37500	23000	25400	37200	62100	83000	102000	244000	93000	70900	44100
11	45500	34400	22500	25500	36100	63400	84300	95500	239000	84100	67600	43300
12	45800	31100	22300	25800	33800	62700	86800	97600	214000	79500	64800	44000
13	44100	29100	22400	26100	33600	73900	90000	126000	174000	91400	61300	44000
14	46700	28000	23000	26100	35600	110000	107000	132000	150000	90300	62200	42800
15	47700	27200	23700	25800	41200	183000	105000	143000	149000	78300	63600	44000
16	44000	27400	23400	25900	53400	217000	101000	261000	178000	68700	68300	45100
17	42800	27200	22600	26300	62000	206000	97000	366000	210000	67200	93100	44600
18	47400	28300	23500	26800	63100	182000	93500	367000	231000	65300	89300	44800
19	51100	27000	24000	28300	55300	168000	91800	343000	235000	66100	84400	44800
20	51200	24900	23800	29200	46400	143000	92800	288000	238000	63300	86700	44400
21	46500	23900	18200	29800	44700	116000	92300	215000	237000	61100	78800	44200
22	45700	23500	19400	35400	55300	101000	87700	176000	227000	72700	72800	44400
23	44200	23800	21600	38300	70800	91400	83800	160000	217000	91100	68700	44500
24	42900	24800	20000	36800	82900	85800	86600	161000	201000	98800	67200	44600
25	42700	24400	19000	35200	79000	81900	80100	165000	188000	90400	69300	44800
26	42700	23900	18200	33800	73500	80800	78800	172000	175000	73900	65800	44800
27	42100	23800	18300	35300	67000	82600	72100	224000	170000	66300	59100	43600
28	41800	23900	19300	39000	62800	84200	69300	251000	164000	70300	56900	42500
29	41400	23800	19100	31600	---	87500	89700	250000	150000	92900	59800	41900
30	43000	23500	20300	28400	---	89500	116000	225000	139000	127000	56600	44000
31	49000	---	22400	30800	---	89500	---	192000	---	111000	53400	---
MEAN	44860	34260	21740	31010	48730	95370	89980	183600	183500	89710	74700	45450
MAX	51200	69100	24000	51600	82900	217000	116000	367000	244000	129000	102000	52600
MIN	41400	23500	18200	25400	33600	47100	69300	95500	116000	61100	53400	41900
IN.	.10	.07	.05	.07	.10	.21	.19	.40	.39	.20	.16	.10

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

	MEAN	64370	63870	47640	42330	57300	89920	114400	107600	120900	95050	60510	63470
MAX	286700	152700	178900	129000	136800	267500	333400	231400	320600	445200	130300	208900	
(WY)	1987	1986	1983	1973	1982	1973	1973	1943	1935	1951	1951	1951	
MIN	15170	16630	12110	6827	12280	22810	36490	31930	38770	33560	18200	21830	
(WY)	1940	1940	1938	1940	1940	1964	1956	1934	1934	1936	1936	1937	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	78720	77290
HIGHEST ANNUAL MEAN		140500
LOWEST ANNUAL MEAN		29750
HIGHEST DAILY MEAN	367000	May 18
LOWEST DAILY MEAN	18200	Dec 21, 26
INSTANTANEOUS PEAK FLOW	381000	May 17
INSTANTANEOUS PEAK STAGE	32.77	May 17
INSTANTANEOUS LOW FLOW	16900	Dec 21
ANNUAL RUNOFF (INCHES)	2.04	2.00
10 PERCENTILE	168000	154000
50 PERCENTILE	59600	58400
95 PERCENTILE	22400	20000

## 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, 807 microsiemens, Jan. 3; minimum daily, 325 microsiemens, Aug. 1.

WATER TEMPERATURE: Maximum daily, 29.5°C, July 5; minimum daily, 0.0°C, Dec. 16-20.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (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 AS CAC03 (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L) (00904)
OCT												
11...	0930	45300	664	8.2	17.0	22	8.5	87	94	K26	230	53
NOV												
09...	1200	40800	670	8.4	12.5	20	15.1	142	220	54	230	60
DEC												
05...	0930	22300	738	8.4	4.0	15	14.2	109	120	50	260	3
JAN												
18...	1130	26800	764	8.2	5.5	8.5	13.4	104	K85	K80	250	58
FEB												
13...	1230	33800	606	8.1	9.0	8.5	13.3	133	K90	240	230	48
MAR												
21...	1030	118000	377	7.7	10.0	190	11.2	98	470	3100	150	32
APR												
10...	1140	82800	424	8.1	11.5	20	10.8	97	K70	K120	170	41
MAY												
08...	1200	148000	370	7.8	16.5	120	8.4	85	K700	6200	140	34
JUN												
05...	0930	117000	408	7.9	20.0	110	9.0	98	510	670	170	41
JUL												
10...	1000	93500	487	8.0	29.0	67	6.0	77	130	K800	170	34

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

## MISSOURI RIVER MAIN STEM

06934500 MISSOURI RIVER at HERMANN, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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 DIS TOT IT 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, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT 11...	56	21	65	5.8	174	180	21	0.5	6.0	453	0.62
NOV 09...	58	20	51	5.3	168	150	19	0.4	8.2	404	0.55
DEC 05...	66	22	59	5.8	252	140	29	0.4	14	467	0.64
JAN 18...	66	21	63	6.4	194	170	31	0.4	14	500	0.68
FEB 13...	59	19	49	5.3	178	120	29	0.3	13	415	0.56
MAR 21...	42	11	15	5.2	118	41	9.0	0.3	9.3	223	0.30
APR 10...	46	13	23	4.2	126	60	12	0.2	7.2	254	0.35
MAY 08...	38	11	20	3.9	106	69	9.6	0.3	7.7	236	0.32
JUN 05...	48	13	22	4.8	132	64	12	0.2	8.2	263	0.36
JUL 10...	48	13	27	5.1	140	82	14	0.6	9.6	291	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- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 11...	55400	<0.01	<0.12	0.02	0.02	0.80	0.20	0.07	0.08	--	--
NOV 09...	44500	<0.01	0.39	0.04	0.03	0.60	0.16	0.06	0.07	--	--
DEC 05...	28100	<0.01	0.84	0.01	<0.01	0.60	0.20	0.10	0.07	--	--
JAN 18...	36200	0.01	0.90	0.13	0.13	0.60	0.14	0.12	0.11	108	16
FEB 13...	37900	0.01	0.94	0.05	0.02	1.3	0.18	0.10	0.10	--	--
MAR 21...	70800	0.03	1.2	0.10	0.02	0.70	0.29	0.06	0.06	1170	44
APR 10...	56800	<0.01	0.60	0.03	0.02	0.50	0.10	0.05	0.04	253	22
MAY 08...	94100	0.02	0.70	0.07	0.05	1.4	0.42	0.01	0.05	834	60
JUN 05...	82900	<0.01	1.2	0.01	0.02	1.0	0.28	0.06	0.07	577	60
JUL 10...	73500	<0.01	1.3	0.03	<0.01	0.40	0.13	0.09	0.09	600	42

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 09...	<10	2	100	<0.5	<1	<1	<3	<1	12	<1
JAN 18...	20	2	100	<0.5	<1	1	<3	<10	<3	<10
MAY 08...	230	<1	77	<0.5	<1	<1	<3	3	270	1
JUL 10...	<10	3	110	<0.5	<1	2	<3	4	15	1

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 09...	32	120	0.2	<10	2	1	<1	440	<6	9
JAN 18...	40	5	<0.1	<10	<10	2	2	530	<6	5
MAY 08...	12	22	<0.1	<10	2	<1	<1	200	<6	<3
JUL 10...	18	2	<0.1	<10	2	1	<1	280	<6	11

## MISSOURI RIVER MAIN STEM

151

06934500 MISSOURI RIVER AT HERMANN, MO--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	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)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV									
02...	804	70600	292	--	--	--	--	--	56
02...	629	70600	332	--	--	--	--	--	57
02...	454	70600	192	--	--	--	--	--	100
02...	279	70600	571	--	--	--	--	--	42
02...	129	70600	303	--	--	--	--	--	69
30...	820	23500	39	--	--	--	--	--	80
30...	620	23500	74	--	--	--	--	--	42
30...	445	23500	92	--	--	--	--	--	38
30...	270	23500	89	--	--	--	--	--	46
30...	120	23500	96	--	--	--	--	--	40
JAN									
22...	820	34300	354	--	--	--	--	--	85
22...	620	34300	453	--	--	--	--	--	71
22...	445	34300	392	--	--	--	--	--	47
22...	270	34300	220	--	--	--	--	--	31
FEB									
07...	820	33200	61	--	--	--	--	--	70
07...	620	33200	120	--	--	--	--	--	31
07...	445	33200	126	--	--	--	--	--	25
07...	270	33200	187	--	--	--	--	--	15
APR									
18...	1010	89600	135	--	--	--	--	--	38
18...	828	89600	218	--	--	--	--	--	24
18...	653	89600	381	--	--	--	--	--	16
18...	477	89600	348	--	--	--	--	--	24
18...	326	89600	143	--	--	--	--	--	66
MAY									
29...	1100	266000	1280	86	89	99	100	100	--
29...	925	266000	1520	82	86	98	100	100	--
29...	750	266000	1580	90	93	99	100	100	--
29...	575	266000	1840	86	89	98	100	100	--
29...	425	266000	1900	90	93	100	100	100	--
AUG									
20...	984	85000	594	--	--	--	--	--	94
20...	809	85000	702	--	--	--	--	--	89
20...	634	85000	840	--	--	--	--	--	76
20...	459	85000	808	--	--	--	--	--	82
20...	309	85000	562	--	--	--	--	--	94



## MISSOURI RIVER MAIN STEM

06934500 MISSOURI RIVER AT HERMANN, MO--Continued

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL

DATE	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)
NOV									
02...	804	0	0	3	45	89	99	100	100
02...	629	0	0	18	73	91	95	97	100
02...	454	0	0	41	98	99	100	100	100
02...	279	0	0	31	76	93	98	100	100
02...	129	0	0	13	63	87	94	95	100
30...									
30...	820	0	0	2	28	83	97	100	100
30...	620	0	0	27	74	96	100	100	100
30...	445	1	1	40	91	99	100	100	100
30...	270	0	0	66	97	99	100	100	100
30...	120	0	0	55	93	97	97	100	100
JAN									
22...	820	0	0	1	25	77	97	100	100
22...	620	0	0	12	67	95	100	100	100
22...	445	0	0	28	93	98	100	100	100
22...	270	0	1	59	96	100	100	100	100
22...	120	0	1	73	100	100	100	100	100
FEB									
07...	820	0	0	2	12	42	67	88	100
07...	620	2	2	7	38	73	89	100	100
07...	270	4	4	44	94	99	100	100	100
07...	120	3	3	14	77	97	100	100	100
APR									
18...	1000	0	0	1	28	60	88	96	100
18...	828	0	0	6	45	80	96	100	100
18...	653	1	2	49	93	98	99	100	100
18...	478	1	1	31	88	100	100	100	100
18...	328	0	0	5	47	86	96	100	100
MAY									
29...	1100	0	0	9	45	85	95	100	100
29...	925	0	0	9	62	94	100	100	100
29...	750	0	0	12	77	99	100	100	100
29...	575	0	2	9	46	89	100	100	100
29...	425	0	0	6	40	51	71	87	100
AUG									
20...	984	0	0	0	4	44	73	85	100
20...	809	1	1	14	51	93	100	100	100
20...	634	0	0	7	19	64	89	96	100
20...	459	0	0	30	62	96	99	100	100
20...	309	0	0	15	61	97	100	100	100

## MISSOURI RIVER MAIN STEM

06934500 MISSOURI RIVER AT HERMANN, MO--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	684	701	756	783	630	578	498	479	397	488	325	745
2	728	668	746	804	628	585	494	471	396	489	357	736
3	733	665	745	807	661	586	515	446	400	488	360	721
4	740	650	744	790	675	588	517	441	464	482	435	717
5	742	592	752	788	677	586	534	440	462	483	449	727
6	746	575	747	797	680	585	542	441	485	484	456	733
7	744	572	743	790	687	587	541	507	488	484	454	731
8	745	634	750	790	688	576	544	517	397	483	549	764
9	748	646	679	791	682	582	550	532	367	481	553	769
10	742	653	726	793	682	583	554	400	359	490	552	774
11	743	720	748	785	684	572	554	367	358	491	556	774
12	744	725	749	780	682	571	555	359	359	488	523	773
13	743	728	760	780	650	379	536	357	406	559	506	773
14	743	712	758	781	670	314	545	355	477	561	507	731
15	733	708	755	777	634	301	547	355	427	559	510	633
16	729	708	718	778	635	301	547	355	485	559	507	743
17	726	720	519	781	636	299	562	356	484	625	504	773
18	725	740	611	747	641	334	569	347	509	638	506	771
19	750	753	653	745	637	344	571	360	491	640	505	776
20	755	755	625	741	629	348	571	360	516	635	662	774
21	760	753	649	740	627	464	562	372	522	645	685	775
22	761	745	615	716	513	492	561	338	500	645	707	775
23	759	742	600	731	500	501	564	339	492	646	710	774
24	760	740	604	739	503	500	623	338	486	645	703	771
25	761	744	600	717	498	498	630	337	452	553	695	774
26	760	745	597	712	505	495	635	336	480	549	694	776
27	759	742	611	667	506	496	511	373	502	547	695	773
28	730	741	768	663	500	497	485	358	545	545	708	781
29	728	747	772	672	---	491	475	355	576	544	713	775
30	728	738	779	667	---	493	471	353	499	545	712	775
31	726	---	780	677	---	486	---	353	---	548	710	---
TOTAL	22975	21062	21659	23329	17340	15012	16363	12097	13781	17019	17508	22687
MEAN	741	702	699	753	619	484	545	390	459	549	565	756
MAX	761	755	780	807	688	588	635	532	576	646	713	781
MIN	684	572	519	663	498	299	471	336	358	481	325	633
MED	743	722	744	778	636	497	547	359	482	547	549	773

WTR YR 1990 TOTAL 220832 MEAN 605 MAX 807 MIN 299 MED 627

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	14.0	5.5	2.5	5.0	5.5	10.0	16.5	19.0	28.0	28.0	26.0
2	19.5	13.0	5.0	1.5	5.0	5.5	10.0	16.5	19.0	29.0	28.0	25.5
3	19.0	13.0	5.0	2.0	5.5	5.5	10.5	15.0	19.5	28.5	28.5	25.5
4	16.0	12.5	4.5	3.0	5.5	5.5	11.5	15.5	19.0	29.0	28.0	25.0
5	16.0	12.5	4.0	3.0	6.0	6.0	12.0	16.0	19.0	29.5	28.0	25.0
6	16.0	12.5	3.5	3.5	5.5	6.5	11.5	16.0	19.0	28.0	28.5	24.5
7	18.0	13.0	3.5	3.5	6.0	7.0	12.0	17.0	19.5	27.0	28.5	24.5
8	18.0	12.5	3.0	4.0	6.0	9.0	12.0	17.0	19.0	25.5	28.0	24.0
9	18.0	12.0	2.5	4.0	5.5	10.5	12.5	16.5	19.5	23.0	28.5	24.0
10	18.5	11.0	2.0	4.5	6.0	12.0	13.0	16.5	20.0	23.5	28.5	24.0
11	19.0	10.5	1.5	6.0	6.5	13.0	12.5	17.0	19.5	25.0	28.5	24.0
12	19.0	10.0	1.5	5.5	7.0	14.0	12.0	16.5	19.0	26.0	28.0	24.0
13	19.0	9.5	1.5	6.0	6.5	14.0	11.5	16.5	19.0	27.0	28.0	23.5
14	19.0	9.0	1.0	5.5	6.5	13.5	12.0	17.0	20.0	27.5	27.5	23.5
15	18.0	9.0	.5	6.0	6.0	13.0	12.0	16.5	21.0	28.0	27.5	23.0
16	17.5	9.0	.0	6.0	6.0	13.0	12.5	16.0	23.0	28.5	27.5	23.0
17	16.5	9.0	.0	6.0	5.5	13.5	11.5	16.0	24.0	28.5	27.5	23.0
18	15.0	8.0	.0	6.0	5.0	13.0	12.0	16.5	25.0	29.0	28.0	23.5
19	16.0	7.5	.0	5.5	5.0	13.5	13.0	17.0	26.0	29.0	28.0	23.0
20	16.0	7.5	.0	5.5	5.5	13.5	14.0	17.5	26.5	29.0	27.5	22.5
21	16.0	8.0	1.5	5.5	5.5	13.0	15.0	18.5	27.0	29.0	27.0	22.0
22	16.0	8.0	2.5	5.0	5.0	12.0	15.5	19.0	27.0	29.0	27.5	22.0
23	16.0	8.0	3.0	5.0	5.0	11.5	16.5	19.0	27.5	29.0	28.0	22.5
24	16.0	8.5	3.5	5.0	4.5	10.0	17.5	18.5	27.5	29.0	28.5	21.5
25	15.0	8.0	3.5	5.0	4.0	9.5	18.0	18.5	28.0	28.5	28.0	21.0
26	15.0	8.5	3.0	5.0	4.0	10.0	19.0	19.0	28.0	28.5	28.5	21.0
27	15.0	9.0	3.5	5.0	5.0	9.5	18.5	19.0	28.0	28.0	28.0	20.5
28	14.5	7.0	3.0	5.0	5.0	9.0	18.0	19.0	28.0	28.0	28.5	20.0
29	14.5	6.0	2.5	5.0	---	10.0	17.0	20.0	28.0	28.5	29.0	20.5
30	14.5	5.0	2.0	5.0	---	10.5	17.5	20.0	28.0	28.0	29.0	21.5
31	14.0	---	2.0	5.0	---	10.0	---	20.0	---	28.0	29.0	---
MEAN	16.8	9.7	2.4	4.7	5.5	10.4	13.7	17.4	23.1	27.8	28.1	23.1
MAX	19.5	14.0	5.5	6.0	7.0	14.0	19.0	20.0	28.0	29.5	29.0	26.0
MIN	14.0	5.0	.0	1.5	4.0	5.5	10.0	15.0	19.0	23.0	27.0	20.0

WTR YR 1990 MEAN 15.3 MAX 29.5 MIN .0

## MISSISSIPPI RIVER MAIN STEM

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: Apr. 30 to May 3. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	87500	71300	56900	51200	77400	135000	221000	212000	440000	438000	281000	235000
2	84200	86700	57900	56800	87600	136000	219000	219000	406000	420000	274000	234000
3	84500	96700	58800	66100	88400	136000	204000	210000	370000	405000	256000	229000
4	76500	102000	53800	71100	87200	123000	199000	206000	328000	396000	253000	220000
5	67200	92500	50300	69200	84200	129000	201000	258000	300000	388000	253000	207000
6	73500	92700	48900	66700	80900	129000	194000	303000	287000	384000	271000	199000
7	79500	82800	49400	68200	81200	124000	192000	313000	318000	381000	272000	194000
8	79600	83600	55100	70000	83500	132000	182000	303000	386000	373000	263000	183000
9	70100	76500	59200	67600	86000	144000	174000	279000	426000	360000	251000	158000
10	76700	77600	56600	65500	92700	155000	166000	253000	435000	345000	234000	115000
11	71600	76800	54800	64000	91100	160000	165000	229000	432000	330000	218000	112000
12	75700	75800	49800	65000	89500	193000	164000	233000	424000	310000	198000	118000
13	74300	69200	44300	63000	90700	230000	169000	283000	391000	283000	187000	117000
14	77800	70900	44500	59800	91200	244000	185000	328000	347000	272000	183000	127000
15	72300	68800	44700	59200	96500	289000	204000	323000	332000	270000	173000	125000
16	78400	71500	44900	59100	103000	387000	203000	410000	347000	256000	165000	121000
17	77200	58900	44500	62200	104000	424000	192000	525000	368000	239000	163000	116000
18	75400	67600	41300	70500	106000	425000	180000	594000	390000	229000	171000	112000
19	78700	66100	42700	74900	104000	412000	176000	599000	411000	221000	178000	123000
20	84500	65700	43300	75200	103000	399000	172000	564000	431000	212000	190000	119000
21	84600	60200	42900	75000	101000	383000	169000	509000	452000	207000	200000	115000
22	80700	55200	42500	74000	97900	362000	158000	463000	470000	230000	201000	118000
23	75600	59400	41200	74800	130000	340000	150000	414000	485000	263000	212000	121000
24	72200	58700	41500	75000	161000	324000	146000	375000	497000	286000	223000	124000
25	71800	59200	42000	76700	167000	308000	150000	366000	500000	286000	217000	123000
26	71000	66100	41300	79200	146000	297000	151000	385000	497000	254000	215000	119000
27	70600	63000	42800	83600	137000	292000	150000	413000	491000	222000	215000	116000
28	71000	60400	45100	83000	142000	288000	162000	459000	483000	206000	215000	117000
29	71300	57600	47000	83700	---	280000	156000	490000	472000	198000	218000	110000
30	74500	56200	49700	80300	---	261000	174000	493000	456000	222000	227000	97700
31	77000	---	50800	76800	---	240000	---	472000	---	275000	234000	---
MEAN	76310	71660	48020	69920	103900	254200	177600	370400	412400	295500	219700	144200
MAX	87500	102000	59200	83700	167000	425000	221000	599000	500000	438000	281000	235000
MIN	67200	55200	41200	51200	77400	123000	146000	206000	287000	198000	163000	97700
IN.	.13	.11	.08	.12	.16	.42	.28	.61	.66	.49	.36	.23

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

	MEAN	136800	138300	116600	110500	139800	228400	301200	275500	257800	208200	132100	131500
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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	187500	181700	
HIGHEST ANNUAL MEAN		331900	1973
LOWEST ANNUAL MEAN		67700	1934
HIGHEST DAILY MEAN	599000	851000	Apr 28 1973
LOWEST DAILY MEAN	41200	27800	Dec 12 1937
INSTANTANEOUS PEAK FLOW	605000	1019000	Jun 10 1903
INSTANTANEOUS PEAK STAGE	33.18	38.00	Jun 10 1903
INSTANTANEOUS LOW FLOW	39800	18000	Dec 23 1863
ANNUAL RUNOFF (INCHES)	3.65	3.54	
10 PERCENTILE	402000	354000	
50 PERCENTILE	153000	146000	
95 PERCENTILE	49100	56400	

## MISSISSIPPI RIVER MAIN STEM

07010000 MISSISSIPPI RIVER AT ST. LOUIS, MO--Continued

## WATER-QUALITY RECORDS

## PERIOD OF RECORD.--

WATER TEMPERATURES: October 1951 to current year.

SEDIMENT RECORDS: April 1948 to current year.

REMARKS.--Sediment discharge for many days computed from turbidity readings.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 6,720 mg/L, Feb. 24, 1985; minimum daily mean, 19 mg/L, Jan. 21, 22, 1967.

SEDIMENT LOADS: Maximum daily, 9,830,000 tons, Feb. 24, 1985; minimum daily, 2,800 tons, Jan. 21, 1967.

## EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,390 mg/L, June 22; minimum daily mean, 21 mg/L, Dec. 2.

SEDIMENT LOADS: Maximum daily, 3,030,000 tons, June 22 and 23; minimum daily, 3,280 tons, Dec. 2.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	14.5	---	---	---	---	---	---	---	---	---	---
2	19.0	---	---	1.0	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	4.0	---	---	---	---	---	---	28.0	---	---
5	---	---	---	---	4.5	---	---	---	---	---	---	---
6	---	12.5	---	---	---	---	---	---	20.0	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	10.5	---	---	---	---	---
10	17.0	---	---	2.0	---	---	---	---	---	---	---	27.5
11	---	---	---	---	---	---	---	16.0	---	---	---	---
12	---	---	---	---	7.0	10.5	---	---	---	---	---	---
13	---	13.0	---	---	---	---	---	---	---	---	24.0	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	20.0	---	---	4.5	---	---	---	---	---	24.0	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	17.0	26.5	---	---	---
20	---	---	---	---	4.5	---	---	---	---	26.0	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	8.0	---	4.0	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	15.5	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	15.0	---	---	---	---	7.5	---	---	---	---	28.0	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	4.5	---	---	---	---	---	---	---	---
30	---	6.0	---	---	---	---	---	---	---	27.5	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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)
MAY										
11...	0900	230000	41	47	55	65	79	83	96	100
19...	1300	603000	42	48	55	64	83	87	96	100

## MISSISSIPPI RIVER MAIN STEM

07010000 MISSISSIPPI RIVER AT ST. LOUIS, MO--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	87500	60	14200	71300	100	19300	56900	40	6130
2	84200	83	18900	86700	106	24800	57900	21	3280
3	84500	81	18500	96700	116	30300	58800	33	5260
4	76500	85	17600	102000	149	41200	53800	34	4940
5	67200	79	14300	92500	156	38900	50300	34	4590
6	73500	73	14500	92700	120	30000	48900	33	4360
7	79500	72	15500	82800	196	43800	49400	30	4060
8	79600	66	14100	83600	198	44800	55100	27	3980
9	70100	64	12100	76500	237	49000	59200	36	5710
10	76700	60	12400	77600	228	47800	56600	39	5970
11	71600	60	11500	76800	259	53800	54800	30	4470
12	75700	54	11000	75800	247	50500	49800	28	3800
13	74300	67	13400	69200	272	50800	44300	30	3600
14	77800	57	12000	70900	281	53900	44500	36	4320
15	72300	48	9390	68800	306	56900	44700	34	4130
16	78400	44	9310	71500	228	44100	44900	37	4450
17	77200	43	8960	58900	162	25700	44500	45	5410
18	75400	44	8890	67600	112	20500	41300	43	4800
19	78700	45	9660	66100	102	18200	42700	39	4550
20	84500	56	12700	65700	83	14700	43300	36	4230
21	84600	62	14100	60200	63	10200	42900	31	3640
22	80700	48	10400	55200	41	6110	42500	33	3810
23	75600	60	12300	59400	42	6720	41200	31	3470
24	72200	61	11900	58700	44	6950	41500	31	3530
25	71800	66	12700	59200	43	6920	42000	34	3850
26	71000	78	14900	66100	32	5800	41300	32	3610
27	70600	64	12200	63000	33	5550	42800	32	3710
28	71000	69	13300	60400	38	6240	45100	30	3650
29	71300	92	17700	57600	45	6940	47000	28	3570
30	74500	88	17700	56200	46	6980	49700	46	6130
31	77000	83	17300	---	---	---	50800	30	4130
TOTAL	2365500	---	413410	2149700	---	827410	1488500	---	135140
JANUARY			FEBRUARY			MARCH			
1	51200	38	5290	77400	48	10000	135000	33	12100
2	56800	42	6440	87600	48	11300	136000	37	13700
3	66100	66	11700	88400	50	11900	136000	41	14900
4	71100	62	11800	87200	43	10000	123000	38	12800
5	69200	51	9570	84200	44	10000	129000	36	12500
6	66700	67	12100	80900	35	7700	129000	44	15200
7	68200	56	10300	81200	37	8160	124000	48	16000
8	70000	51	9550	83500	40	9050	132000	50	17700
9	67600	53	9660	86000	36	8300	144000	52	20200
10	65500	54	9550	92700	36	8990	155000	65	27400
11	64000	45	7720	91100	32	7990	160000	104	45000
12	65000	40	6970	89500	39	9420	193000	240	125000
13	63000	37	6280	90700	39	9670	230000	323	201000
14	59800	36	5890	91200	36	8910	244000	425	280000
15	59200	27	4380	96500	42	10900	289000	598	467000
16	59100	28	4470	103000	59	16400	387000	654	683000
17	62200	29	4890	104000	62	17300	424000	1160	1330000
18	70500	31	5890	106000	85	24300	425000	1050	1210000
19	74900	37	7490	104000	129	36300	412000	1060	1180000
20	75200	35	7050	103000	186	51700	399000	581	626000
21	75000	44	8910	101000	155	42200	383000	608	629000
22	74000	59	11800	97900	103	27300	362000	535	523000
23	74800	58	11800	130000	60	21200	340000	463	425000
24	75000	62	12500	161000	61	26300	324000	510	446000
25	76700	76	15600	167000	67	30300	308000	425	353000
26	79200	82	17500	146000	56	22200	297000	375	301000
27	83600	72	16300	137000	23	8510	292000	325	256000
28	83000	63	14100	142000	37	14000	288000	296	230000
29	83700	61	13800	---	---	---	280000	306	231000
30	80300	59	12800	---	---	---	261000	302	213000
31	76800	49	10200	---	---	---	240000	263	170000
TOTAL	2167400	---	302300	2910000	---	480300	7881000	---	10086500



## MISSISSIPPI RIVER MAIN STEM

157

07010000 MISSISSIPPI RIVER AT ST. LOUIS, MO--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	221000	223	133000	212000	136	78000	440000	363	432000
2	219000	200	118000	219000	391	231000	406000	737	808000
3	204000	194	107000	210000	683	387000	370000	1030	1030000
4	199000	174	93500	206000	298	166000	328000	729	646000
5	201000	179	97000	258000	220	153000	300000	473	383000
6	194000	165	86600	303000	273	223000	287000	407	315000
7	192000	161	83700	313000	414	350000	318000	393	337000
8	182000	150	73800	303000	395	324000	386000	727	758000
9	174000	141	66200	279000	313	236000	426000	763	878000
10	166000	120	54000	253000	323	221000	435000	1260	1480000
11	165000	124	55400	229000	292	181000	432000	1630	1900000
12	164000	132	58500	233000	207	130000	424000	2200	2520000
13	169000	132	60200	283000	336	257000	391000	1200	1270000
14	185000	108	53800	328000	608	538000	347000	942	883000
15	204000	116	63700	323000	492	429000	332000	592	530000
16	203000	177	97100	410000	698	773000	347000	445	417000
17	192000	159	82600	525000	873	1240000	368000	881	876000
18	180000	131	63700	594000	1280	2060000	390000	905	953000
19	176000	123	58500	599000	1080	1750000	411000	1040	1150000
20	172000	124	57700	564000	905	1380000	431000	939	1090000
21	169000	134	61300	509000	875	1200000	452000	1580	1930000
22	158000	152	65000	463000	836	1050000	470000	2390	3030000
23	150000	116	47000	414000	852	952000	485000	2320	3030000
24	146000	103	40500	375000	401	406000	497000	2000	2680000
25	150000	90	36300	366000	299	295000	500000	1540	2080000
26	151000	82	33300	385000	344	357000	497000	1620	2170000
27	150000	74	30200	413000	426	475000	491000	1180	1560000
28	162000	86	37600	459000	426	528000	483000	1340	1750000
29	156000	94	39600	490000	1140	1510000	472000	1000	1280000
30	174000	87	41000	493000	744	990000	456000	617	759000
31	---	---	---	472000	837	1070000	---	---	---
TOTAL	5328000	---	1995800	11483000	---	19940000	12372000	---	38925000
JULY			AUGUST			SEPTEMBER			
1	438000	419	495000	281000	701	532000	235000	219	139000
2	420000	374	425000	274000	1120	827000	234000	205	130000
3	405000	382	417000	256000	1170	808000	229000	241	149000
4	396000	342	366000	253000	952	650000	220000	231	138000
5	388000	302	317000	253000	596	407000	207000	211	118000
6	384000	246	255000	271000	425	311000	199000	210	113000
7	381000	292	301000	272000	423	311000	194000	184	96300
8	373000	258	260000	263000	610	433000	183000	157	77600
9	360000	250	243000	251000	817	554000	158000	113	48400
10	345000	230	214000	234000	322	204000	115000	71	22000
11	330000	249	222000	218000	421	248000	112000	62	18900
12	310000	226	189000	198000	307	164000	118000	60	19200
13	283000	254	194000	187000	222	112000	117000	51	16300
14	272000	240	176000	183000	151	74700	127000	51	17600
15	270000	214	156000	173000	124	57900	125000	50	16800
16	256000	199	138000	165000	97	43400	121000	46	15000
17	239000	203	131000	163000	101	44500	116000	42	13000
18	229000	212	131000	171000	126	58300	112000	37	11100
19	221000	195	117000	178000	164	78700	123000	47	15600
20	212000	211	121000	190000	223	114000	119000	43	13700
21	207000	175	97600	200000	190	102000	115000	37	11500
22	230000	213	132000	201000	232	126000	118000	34	10800
23	263000	254	181000	212000	286	164000	121000	40	13200
24	286000	395	305000	223000	274	165000	124000	43	14500
25	286000	408	315000	217000	255	149000	123000	36	11800
26	254000	699	479000	215000	266	154000	119000	34	11000
27	222000	422	253000	215000	233	135000	116000	40	12400
28	206000	432	240000	215000	211	122000	117000	39	12200
29	198000	318	170000	218000	280	165000	110000	39	11500
30	222000	257	154000	227000	282	173000	97700	40	10600
31	275000	209	155000	234000	265	167000	---	---	---
TOTAL	9161000	---	7349600	6811000	---	7654500	4324700	---	1308000

## MERAMEC RIVER BASIN

07013000 MERAMEC RIVER NEAR STEELVILLE, MO

LOCATION.--Lat 37°59'58", long 91°21'39", in NE 1/4 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. 22-27. 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 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	157	161	164	197	277	423	1310	849	1140	323	236	196
2	157	161	164	187	1650	403	1190	792	1030	313	233	194
3	159	161	162	187	1790	387	976	3980	924	297	231	191
4	157	161	163	186	1170	364	832	13700	829	277	236	186
5	157	160	163	185	1030	347	741	3590	757	269	242	180
6	162	160	162	188	976	335	666	2050	743	391	242	180
7	161	160	162	185	944	330	600	1570	1290	490	235	181
8	160	159	162	181	840	337	538	1290	949	370	230	190
9	162	159	162	182	753	388	500	1120	1760	309	222	273
10	161	160	163	180	952	399	954	1020	2350	281	215	327
11	157	159	163	173	978	391	2840	903	1480	271	207	261
12	157	159	164	170	849	415	1830	1010	1070	267	207	251
13	157	161	164	169	709	703	1300	1590	883	289	209	248
14	157	166	163	168	612	813	1910	1780	774	293	330	236
15	157	223	168	168	1120	5280	1720	1410	724	285	420	218
16	164	299	171	167	4800	5840	1360	4100	694	275	365	212
17	164	239	180	188	2150	1980	1140	6580	656	255	641	202
18	180	204	169	339	1390	1460	1050	4520	1060	240	524	204
19	172	189	165	488	1100	1210	937	2570	816	231	400	207
20	170	181	172	2190	889	1030	928	5310	645	230	346	207
21	167	174	163	1780	743	877	1980	2740	580	316	303	218
22	165	171	160	1080	695	783	2490	2610	538	787	278	218
23	163	170	160	788	823	699	1740	1920	502	636	255	222
24	162	168	160	634	791	646	1400	1520	459	444	238	222
25	162	170	170	529	650	606	1190	1290	432	357	229	218
26	162	168	180	464	553	601	1030	3840	408	312	220	216
27	162	165	170	402	485	678	923	8310	396	298	215	204
28	162	164	164	359	448	698	976	2860	377	275	215	194
29	161	163	171	319	---	720	1030	1990	355	263	213	191
30	161	163	185	294	---	752	925	1540	339	248	205	187
31	161	---	192	270	---	1220	---	1290	---	245	200	---
MEAN	162	175	167	419	1077	1004	1234	2892	832	327	276	214
MAX	180	299	192	2190	4800	5840	2840	13700	2350	787	641	327
MIN	157	159	160	167	277	330	500	792	339	230	200	180
IN.	.24	.25	.25	.62	1.44	1.48	1.76	4.27	1.19	.48	.41	.31

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

	MEAN	287	466	574	545	661	879	1034	954	750	347	258	255
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	118	116	114	126	141	138	131	134	92.9	104	82.2	
(WY)	1957	1965	1965	1956	1934	1954	1954	1977	1932	1934	1936	1956	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	730	583
HIGHEST ANNUAL MEAN	1473	1985
LOWEST ANNUAL MEAN	177	1954
HIGHEST DAILY MEAN	13700	44500
LOWEST DAILY MEAN	157	76
INSTANTANEOUS PEAK FLOW	15500	51200
INSTANTANEOUS PEAK STAGE	14.45	26.15
INSTANTANEOUS LOW FLOW	156	74
ANNUAL RUNOFF (INCHES)	12.69	10.14
10 PERCENTILE	1600	1080
50 PERCENTILE	303	261
95 PERCENTILE	161	116

\*\* May have been less during period Dec. 22-27.

## MERAMEC RIVER BASIN

07014500 MERAMEC RIVER NEAR SULLIVAN, MO

LOCATION.--Lat 38°09'30", long 91°06'30", in SE 1/4 NE 1/4 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.--Estimated daily discharges: Dec. 15-29 and June 12-14. Water-discharge records good except for estimated daily discharges, which are 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	351	353	323	460	724	912	2960	1770	2440	677	479	443
2	351	352	320	436	3070	853	2700	1640	2210	658	463	434
3	346	348	313	415	3910	815	2280	6130	2000	635	454	426
4	340	345	314	418	2570	772	1940	18000	1790	614	456	422
5	338	346	317	406	2250	733	1690	14300	1620	597	469	415
6	353	347	316	408	2090	700	1500	4600	1700	648	465	402
7	362	347	315	406	1990	688	1320	3400	2480	796	454	393
8	352	348	321	394	1790	685	1170	2810	2300	776	439	404
9	347	350	321	386	1580	723	1060	2440	2430	654	422	486
10	349	345	320	376	1810	779	1630	2230	3420	602	412	557
11	342	342	320	369	2000	776	4590	2000	2850	587	405	544
12	336	341	319	362	1730	818	4020	2190	2500	593	415	536
13	333	342	316	356	1450	1270	2900	3050	1800	601	418	533
14	329	362	314	350	1250	1660	3440	3540	1500	639	452	515
15	330	463	310	351	1930	5140	3570	2890	1380	655	584	492
16	346	600	310	350	7220	9540	2840	5920	1300	616	2110	470
17	500	565	330	396	5870	4790	2410	12700	1240	578	1600	450
18	704	492	320	456	3200	3010	2190	11600	1220	546	1210	452
19	569	438	310	740	2400	2410	1980	5560	1590	526	889	465
20	486	405	320	3060	1930	2120	1910	7150	1190	511	759	449
21	438	381	340	4180	1610	1840	3160	6080	1090	571	680	470
22	414	370	310	2350	1470	1640	4780	4640	1040	1040	623	504
23	395	361	290	1670	1520	1470	3720	3890	964	1250	587	527
24	383	356	310	1290	1580	1350	3380	3110	905	933	561	519
25	374	355	330	1070	1350	1250	2750	2660	856	745	535	500
26	367	351	350	911	1180	1220	2270	9260	817	652	515	498
27	363	347	370	806	1070	1380	1990	12500	789	600	497	498
28	361	341	390	721	981	1480	2000	8570	761	569	483	498
29	359	334	410	655	---	1490	2160	4170	733	540	472	498
30	353	323	441	609	---	1560	1960	3300	703	519	460	498
31	355	---	453	570	---	2520	---	2770	---	496	450	---
MEAN	385	378	334	830	2197	1819	2542	5641	1587	659	620	477
MAX	704	600	453	4180	7220	9540	4780	18000	3420	1250	2110	557
MIN	329	323	290	350	724	685	1060	1640	703	496	405	393
IN.	.30	.29	.26	.65	1.55	1.42	1.92	4.41	1.20	.52	.48	.36

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

MEAN	596	985	1230	1156	1446	1924	2290	1944	1329	720	519	481
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	249	231	216	281	295	347	292	263	205	199	146
(WY)	1957	1957	1956	1956	1954	1954	1954	1932	1932	1954	1964	1956

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1452	1216
HIGHEST ANNUAL MEAN		3014
LOWEST ANNUAL MEAN		340
HIGHEST DAILY MEAN	18000	70600
LOWEST DAILY MEAN	290	131
INSTANTANEOUS PEAK FLOW	19700	77300
INSTANTANEOUS PEAK STAGE	17.17	32.0
INSTANTANEOUS LOW FLOW		131
ANNUAL RUNOFF (INCHES)	13.37	11.19
10 PERCENTILE	3100	2370
50 PERCENTILE	628	580
95 PERCENTILE	319	236

## MERAMEC RIVER BASIN

07014500 MERAMEC RIVER NEAR SULLIVAN, MO---Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1963 to July 1975, July 1977 to June 1990 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
10...	1130	351	337	7.9	15.5	9.8	98	12	K6	200	39	24
NOV												
07...	1100	343	382	8.4	13.0	10.7	101	<10	K7	--	--	--
DEC												
04...	1300	314	420	8.4	4.0	15.0	115	<10	<1	--	--	--
JAN												
18...	0840	445	373	7.9	8.5	10.4	87	<10	K13	210	41	25
FEB												
13...	0930	1470	248	8.2	9.5	11.1	97	14	K11	--	--	--
MAR												
20...	0930	2090	246	8.0	9.0	11.1	94	13	100	--	--	--
APR												
10...	0905	1250	264	8.0	12.0	10.1	93	19	380	140	29	17
MAY												
08...	0900	2860	213	8.0	16.5	8.7	89	16	56	--	--	--
JUN												
04...	1025	1800	240	7.9	19.0	8.7	93	23	48	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT IT FIELD (MG/L AS CACO3) (00419)	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)	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- PHORUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)
OCT												
10...	3.0	1.1	188	8.0	3.5	0.10	175	<1	<0.10	0.01	0.01	50
NOV												
07...	--	--	196	--	--	--	214	<1	<0.10	0.02	<0.01	<10
DEC												
04...	--	--	244	--	--	--	206	1	<0.10	<0.01	0.02	60
JAN												
18...	3.5	1.0	196	10	4.5	0.10	194	18	<0.10	0.02	<0.01	50
FEB												
13...	--	--	126	--	--	--	155	6	0.30	0.02	0.03	180
MAR												
20...	--	--	118	--	--	--	132	10	0.30	0.01	0.03	710
APR												
10...	2.4	1.0	124	11	4.8	0.10	150	6	<0.10	0.03	0.02	300
MAY												
08...	--	--	102	--	--	--	126	138	0.30	0.02	0.03	460
JUN												
04...	--	--	130	--	--	--	138	12	0.30	0.04	0.04	460

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

07014500 MERAMEC RIVER NEAR SULLIVAN, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

[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: Dec. 9 to Jan. 2, Mar. 30 to Apr. 1, and Apr. 10, 11, 13-15, 21. Records fair. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.60	1.5	1.1	2.1	7.6	51	200	45	70	4.8	4.0	1.2
2	.52	1.4	1.2	3.3	53	49	138	40	57	4.3	3.4	1.1
3	.40	1.5	1.2	3.6	46	44	88	3690	44	3.6	89	1.1
4	.27	1.4	1.2	4.5	40	38	71	605	36	4.6	67	1.1
5	.19	1.5	1.2	4.2	57	34	52	253	32	13	20	1.1
6	.60	1.4	1.4	4.2	78	32	42	147	682	164	11	1.1
7	.69	1.5	1.4	3.5	72	35	35	100	295	49	6.9	1.0
8	.67	1.5	1.5	2.8	53	83	29	75	121	21	5.1	1.1
9	.61	1.4	1.6	2.4	40	100	26	63	775	11	4.0	5.1
10	.51	1.5	1.6	2.2	32	76	30	71	214	6.8	3.3	3.7
11	.55	1.5	1.6	2.1	26	62	50	57	103	23	3.1	2.0
12	.75	1.5	1.7	1.8	22	159	129	487	69	39	3.0	1.5
13	.74	1.6	1.7	1.7	19	124	100	409	50	17	2.9	1.3
14	.78	3.3	1.7	1.7	18	180	400	168	44	12	2.7	1.2
15	.90	4.7	1.7	1.7	798	980	250	977	54	9.3	2.9	1.0
16	.99	4.5	1.7	1.7	378	287	163	3730	40	6.7	80	.90
17	1.0	3.7	1.7	4.6	139	148	122	1440	46	5.0	57	.89
18	1.1	2.3	1.8	24	87	100	95	309	177	4.2	21	1.1
19	1.1	1.8	1.9	19	64	91	74	770	54	3.5	11	1.7
20	1.1	1.6	1.8	114	48	73	90	435	38	3.0	7.1	1.6
21	1.1	1.4	1.8	41	41	62	50	1190	31	267	4.8	2.6
22	1.1	1.5	1.8	22	182	60	122	331	25	263	3.9	2.6
23	1.2	1.4	1.8	16	366	58	82	173	20	84	3.4	2.3
24	1.2	1.3	1.9	12	157	57	60	115	16	40	3.0	2.3
25	1.3	1.3	2.0	18	88	67	51	89	13	24	2.5	1.7
26	1.3	1.3	2.0	18	68	70	41	5810	11	17	2.2	1.4
27	1.4	1.2	2.0	12	62	62	36	572	10	15	1.9	1.2
28	1.3	1.1	2.0	8.5	56	59	153	263	8.2	11	1.7	1.1
29	1.4	1.1	2.0	7.0	---	86	97	153	6.5	7.8	1.5	1.0
30	1.4	1.1	2.0	6.3	---	100	58	103	5.3	6.0	1.4	.95
31	1.5	---	2.1	5.5	---	120	---	82	---	4.6	1.2	---
MEAN	.91	1.79	1.68	12.0	111	114	97.8	734	105	36.9	13.9	1.60
MAX	1.5	4.7	2.1	114	798	980	400	5810	775	267	89	5.1
MIN	.19	1.1	1.1	1.7	7.6	32	26	40	5.3	3.0	1.2	.89
IN.	.01	.01	.01	.10	.85	.98	.81	6.27	.87	.32	.12	.01

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

	MEAN	54.4	156	210	122	189	238	220	162	108	25.4	28.0	30.3
MAX	552	799	1213	549	634	747	568	734	962	93.8	373	369	
(WY)	1987	1986	1983	1969	1985	1984	1979	1990	1985	1977	1982	1965	
MIN	.34	.94	1.68	.65	12.4	1.32	1.57	3.88	.95	.25	.19	.14	
(WY)	1967	1981	1990	1977	1981	1981	1981	1977	1972	1972	1971	1971	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	103	127
HIGHEST ANNUAL MEAN		315
LOWEST ANNUAL MEAN		21.7
HIGHEST DAILY MEAN	5810	21000
LOWEST DAILY MEAN	.19	.00
INSTANTANEOUS PEAK FLOW	11500	49300
INSTANTANEOUS PEAK STAGE	16.42	23.65
INSTANTANEOUS LOW FLOW	.15	0
ANNUAL RUNOFF (INCHES)	10.36	12.77
10 PERCENTILE	166	221
50 PERCENTILE	8.8	18
95 PERCENTILE	.85	.27

## MERAMEC RIVER BASIN

163

07016500 BOURBEUSE RIVER AT UNION, MO

LOCATION.--Lat 38°26'45", long 90°59'30", in SE 1/4 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.--Estimated daily discharges: Dec. 15-28. 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.

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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	30	77	41	76	279	994	626	728	126	97	64
2	32	31	71	42	94	240	1200	458	602	120	89	61
3	32	31	68	45	88	218	908	1410	524	114	84	59
4	31	33	68	51	98	198	702	6240	437	109	88	57
5	29	35	66	54	101	183	524	8870	376	104	83	55
6	35	36	65	56	112	173	417	2520	557	131	75	53
7	38	38	64	57	156	168	345	1250	3120	111	90	51
8	35	48	61	57	175	168	297	872	2650	97	190	50
9	35	44	55	57	180	165	258	655	1350	94	152	51
10	34	41	50	56	190	186	275	533	1250	117	121	50
11	34	39	46	61	184	226	436	461	1660	179	102	46
12	34	39	41	62	166	281	1750	621	837	151	90	45
13	35	47	39	57	146	269	1220	1350	564	130	81	43
14	35	47	37	52	128	301	2270	2570	430	116	73	42
15	32	54	41	51	169	1960	5840	1740	364	108	69	42
16	30	49	40	51	175	6670	2670	6840	316	122	448	42
17	30	47	39	55	1280	3350	1340	13000	304	145	660	40
18	29	44	39	56	1060	1240	941	15200	371	125	1430	43
19	29	56	40	59	580	800	723	10600	807	110	579	46
20	30	61	40	78	391	583	607	3460	359	99	369	45
21	32	68	39	72	298	468	556	3790	367	98	271	45
22	32	62	41	77	279	404	622	2090	285	124	205	45
23	31	58	36	124	289	347	617	2200	233	106	167	45
24	36	56	37	197	550	323	614	1170	205	103	135	44
25	47	54	39	160	1030	310	541	842	185	396	115	45
26	37	52	40	130	681	303	468	4840	171	296	102	44
27	32	62	42	109	459	306	392	10900	161	220	93	43
28	30	84	43	92	341	311	426	14900	150	174	85	44
29	30	84	44	83	---	335	604	5590	141	145	78	42
30	28	80	46	78	---	374	837	1350	131	124	73	43
31	28	---	41	72	---	463	---	945	---	107	67	---
MEAN	32.7	50.3	48.2	73.9	338	697	980	4126	654	139	205	47.5
MAX	47	84	77	197	1280	6670	5840	15200	3120	396	1430	64
MIN	28	30	36	41	76	165	258	458	131	94	67	40
IN.	.05	.07	.07	.11	.44	.99	1.35	5.89	.90	.20	.29	.07

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

	MEAN	327	504	654	596	783	1136	1213	1120	856	306	171	209
MAX	4575	3320	6107	3518	3214	4207	4425	4126	4583	2554	1037	2069	
(WY)	1950	1986	1983	1950	1985	1984	1927	1990	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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	620	654
HIGHEST ANNUAL MEAN		1590
LOWEST ANNUAL MEAN		106
HIGHEST DAILY MEAN	15200	May 18
LOWEST DAILY MEAN	28	Oct 30-31
INSTANTANEOUS PEAK FLOW	16200	May 19
INSTANTANEOUS PEAK STAGE	17.84	May 19
INSTANTANEOUS LOW FLOW	27	Oct 30
ANNUAL RUNOFF (INCHES)	10.42	11.00
10 PERCENTILE	1180	1310
50 PERCENTILE	112	166
95 PERCENTILE	33	33

## 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: Dec. 16 to Feb. 27 and Sept. 13-24. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	19	18	35	360	125	752	142	212	20	13	14
2	14	18	18	33	1040	118	492	142	196	20	13	14
3	13	21	17	32	760	111	375	2670	163	18	12	13
4	12	21	17	31	470	101	319	903	135	18	13	13
5	12	22	17	29	800	95	277	466	122	19	14	13
6	12	22	17	28	540	91	247	328	946	45	14	12
7	16	22	17	27	350	93	213	257	435	26	12	12
8	15	23	19	26	200	112	187	208	191	21	11	15
9	14	23	19	26	230	113	161	184	153	18	11	20
10	14	22	19	25	470	109	997	173	125	17	10	19
11	14	21	19	25	360	104	565	147	100	17	10	39
12	16	19	19	24	270	391	291	659	82	17	10	32
13	16	18	17	24	210	300	222	703	70	19	16	40
14	16	34	16	23	150	223	320	321	62	20	15	30
15	17	70	16	23	580	592	230	278	58	20	13	25
16	264	48	14	23	2000	332	194	3570	53	18	379	19
17	284	35	13	26	1000	237	240	3430	48	15	119	16
18	63	29	10	90	600	193	205	804	43	15	50	16
19	39	26	16	400	350	227	177	684	38	26	34	18
20	31	24	14	1400	240	189	353	583	39	19	28	17
21	26	22	13	900	160	167	375	540	42	76	25	17
22	23	22	13	540	220	154	266	431	36	254	24	32
23	22	23	14	410	190	136	213	324	33	57	23	23
24	21	21	15	270	160	141	193	258	30	34	21	18
25	20	21	16	210	150	179	168	212	29	26	20	16
26	19	21	17	150	145	288	149	5100	27	22	19	16
27	18	20	19	120	140	278	137	1010	26	20	17	15
28	18	20	23	94	132	231	154	613	26	18	16	13
29	17	19	26	68	---	222	141	408	23	17	15	13
30	17	18	31	62	---	1140	129	311	22	15	14	13
31	21	---	33	120	---	904	---	260	---	14	14	---
MEAN	36.1	24.8	17.8	171	438	248	291	843	119	31.0	32.4	19.1
MAX	284	70	33	1400	2000	1140	997	5100	946	254	379	40
MIN	12	18	10	23	132	91	129	142	22	14	10	12
IN.	.24	.16	.12	1.13	2.61	1.64	1.86	5.55	.76	.20	.21	.12

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

MEAN	68.6	226	290	192	271	337	342	217	105	53.5	60.6	53.0
MAX	339	1086	1027	734	695	866	921	842	872	262	393	238
(WY)	1971	1986	1983	1969	1985	1978	1972	1990	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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	188	184
HIGHEST ANNUAL MEAN		449
LOWEST ANNUAL MEAN		56.6
HIGHEST DAILY MEAN	5100	May 26
LOWEST DAILY MEAN	10	Dec 18, Aug 10-12
INSTANTANEOUS PEAK FLOW	17900	May 16
INSTANTANEOUS PEAK STAGE	16.96	May 16
INSTANTANEOUS LOW FLOW		Unknown
ANNUAL RUNOFF (INCHES)	14.59	2.2
10 PERCENTILE	428	369
50 PERCENTILE	32	59
95 PERCENTILE	13	7.8

## 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.--Estimated daily discharges: Dec. 13 to Jan. 3. 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 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	136	148	145	228	542	454	2040	663	1060	220	155	136
2	139	144	145	230	3990	436	1890	673	949	215	149	131
3	136	141	144	235	2390	418	1250	5520	862	204	149	127
4	133	138	141	222	2300	401	971	8980	749	195	164	129
5	133	135	139	215	2700	384	810	2610	676	196	217	133
6	143	136	141	211	1840	374	691	1630	871	257	186	133
7	154	146	140	200	1410	370	591	1240	3770	398	153	128
8	151	150	141	195	1090	387	510	1000	1310	313	144	134
9	146	148	142	193	947	407	470	850	1350	253	138	186
10	143	143	145	188	1680	404	1440	785	921	216	132	200
11	141	139	150	185	1430	390	3570	676	737	202	129	183
12	138	135	146	179	998	459	1740	1310	627	209	133	183
13	139	133	120	174	780	926	1220	2520	551	221	154	193
14	139	140	127	168	647	866	1710	1650	499	232	176	184
15	138	225	115	166	3140	956	1530	1170	467	218	164	158
16	147	415	125	165	9740	1350	1160	6280	438	203	329	149
17	3250	349	130	186	2790	991	1090	15900	409	189	1620	138
18	973	263	135	230	1610	770	1370	8180	377	177	741	138
19	489	226	140	399	1220	676	1000	2570	349	175	437	145
20	337	203	135	5750	966	694	1000	2650	342	167	325	145
21	266	186	130	2770	800	609	1790	1900	366	236	262	153
22	230	176	125	1230	741	542	1470	1710	340	635	226	182
23	217	171	118	821	870	501	1170	1420	319	771	208	181
24	202	166	118	603	818	481	992	1170	293	457	195	168
25	189	162	122	492	645	476	847	999	276	316	184	154
26	179	159	135	434	546	533	722	22000	264	248	176	145
27	168	157	145	393	504	761	632	16200	254	219	168	139
28	160	154	160	351	479	716	1040	3310	247	199	159	136
29	154	149	175	321	---	662	992	2020	235	186	154	132
30	148	145	190	299	---	975	736	1480	226	176	148	131
31	150	---	210	281	---	3650	---	1220	---	162	140	---
MEAN	302	176	141	571	1700	710	1215	3880	671	260	252	152
MAX	3250	415	210	5750	9740	3650	3570	22000	3770	771	1620	200
MIN	133	133	115	165	479	370	470	663	226	162	129	127
IN.	.47	.27	.22	.90	2.41	1.11	1.84	6.09	1.02	.41	.40	.23

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

MEAN	285	627	843	683	948	1256	1229	1017	524	404	259	260
MAX	1641	4223	4332	3845	2935	2838	4383	3880	3150	2492	1357	1492
(WY)	1950	1986	1983	1950	1985	1985	1957	1990	1985	1951	1950	1950
MIN	47.5	87.9	90.5	84.0	124	123	271	170	110	86.0	69.9	40.6
(WY)	1957	1977	1956	1977	1954	1954	1981	1965	1980	1980	1955	1956

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	832	693
HIGHEST ANNUAL MEAN		1766
LOWEST ANNUAL MEAN		198
HIGHEST DAILY MEAN	22000	38300
LOWEST DAILY MEAN	115	22
INSTANTANEOUS PEAK FLOW	30500	55800
INSTANTANEOUS PEAK STAGE	23.97	27.15
INSTANTANEOUS LOW FLOW		20
ANNUAL RUNOFF (INCHES)	15.37	12.81
10 PERCENTILE	1630	1320
50 PERCENTILE	248	275
95 PERCENTILE	129	82



## 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	153	191	165	266	463	599	2970	878	1470	268	211	169
2	155	190	163	269	2280	559	2060	816	1300	260	203	165
3	156	185	162	274	3530	530	1730	3180	1160	251	200	161
4	155	182	162	263	2100	501	1300	8630	1030	243	204	156
5	152	179	160	243	2900	472	1080	6640	906	234	208	152
6	159	177	159	247	2410	452	924	2370	1080	257	222	153
7	166	182	159	234	1870	442	803	1730	2780	282	226	151
8	174	184	161	225	1500	439	712	1400	2850	357	200	148
9	174	184	161	217	1230	452	636	1200	1610	317	191	148
10	165	184	164	212	1250	470	1010	1090	1520	274	187	185
11	160	180	163	207	1830	463	3080	963	1040	248	184	207
12	155	177	164	201	1400	463	2750	1830	835	241	188	197
13	154	174	159	196	1100	572	1770	3270	717	245	185	191
14	152	177	139	193	907	1020	2370	2490	631	246	188	191
15	153	195	149	189	1730	1030	2140	1840	576	252	201	192
16	157	230	130	186	6040	1260	1660	8050	535	244	284	178
17	927	365	152	197	6790	1370	1370	13100	500	234	805	167
18	2030	359	161	205	2280	1040	1470	17200	465	227	1450	167
19	878	289	170	258	1640	859	1410	8710	431	219	704	165
20	516	251	161	2020	1330	782	1210	3570	409	213	457	164
21	376	226	156	4500	1110	787	1540	2710	397	301	344	166
22	309	209	146	1920	984	710	1900	2080	401	699	284	170
23	275	195	139	1250	957	654	1530	1870	377	733	251	180
24	254	187	133	925	1040	617	1310	1540	361	726	232	187
25	242	185	134	742	914	580	1140	1320	340	467	218	179
26	231	182	148	622	776	580	981	6540	324	352	208	171
27	220	178	165	539	691	672	859	26800	313	296	200	162
28	212	175	183	479	642	826	917	21500	302	264	194	153
29	205	171	200	425	---	815	1380	3870	290	244	187	148
30	200	167	217	383	---	843	1090	2170	278	231	180	145
31	197	---	240	356	---	2280	---	1720	---	220	175	---
MEAN	310	204	162	595	1846	746	1503	5196	841	311	296	169
MAX	2030	365	240	4500	6790	2280	3080	26800	2850	733	1450	207
MIN	152	167	130	186	463	439	636	816	278	213	175	145
IN.	.39	.25	.20	.75	2.10	.94	1.83	6.53	1.02	.39	.37	.21

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

	341	666	873	882	1121	1454	1622	1409	813	495	290	286
MEAN	341	666	873	882	1121	1454	1622	1409	813	495	290	286
MAX	2290	4709	5594	5064	3696	4539	6190	5196	4530	3895	1490	1696
(WY)	1950	1986	1983	1950	1982	1945	1927	1990	1928	1957	1950	1950
MIN	49.7	99.6	103	90.4	139	137	345	177	105	56.4	41.4	48.7
(WY)	1957	1977	1956	1977	1954	1954	1932	1932	1936	1936	1936	1956

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1012	854
HIGHEST ANNUAL MEAN	1934	1985
LOWEST ANNUAL MEAN	227	1954
HIGHEST DAILY MEAN	26800	May 27 40100
LOWEST DAILY MEAN	130	Dec 16 25
INSTANTANEOUS PEAK FLOW	32600	May 27 43000
INSTANTANEOUS PEAK STAGE	24.37	May 27 26.47
INSTANTANEOUS LOW FLOW	117	Dec 14 25
ANNUAL RUNOFF (INCHES)	14.98	12.64
10 PERCENTILE	2020	1740
50 PERCENTILE	300	336
95 PERCENTILE	154	95



## 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: Dec. 3, 9, 11-14, 26-27, Jan. 25-26, Feb. 26, 27, and Aug. 16 to Sept. 7. 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 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	528	571	735	849	1160	2180	6640	4190	6350	1190	916	820
2	528	563	730	862	2690	2020	6710	3620	5330	1150	885	800
3	520	556	714	878	6520	1880	6220	7730	4640	1100	898	770
4	516	552	708	889	6960	1760	5090	19900	4040	1070	923	740
5	510	553	707	851	6450	1680	4210	27300	3520	1030	890	730
6	561	547	713	834	5710	1590	3560	28200	4250	1070	861	720
7	565	553	699	812	4730	1540	3070	18900	7410	1190	874	710
8	564	563	709	802	4120	1530	2700	8490	10300	1240	846	693
9	567	582	709	787	3610	1510	2430	6470	7210	1300	887	690
10	549	573	708	766	3210	1510	2730	5390	5840	1190	860	712
11	536	564	708	754	3820	1560	5590	4460	6380	1090	833	792
12	523	554	690	735	3770	1650	8680	5760	5840	1110	827	827
13	520	550	680	729	3250	1740	8800	8560	4230	1060	814	820
14	514	554	672	716	2740	2240	9140	9090	3370	1040	802	813
15	511	629	658	714	3340	3270	10700	9640	2870	1040	822	804
16	511	681	744	711	7680	8190	11600	21800	2550	1050	2200	785
17	546	813	726	789	13300	15300	7570	35800	2370	1030	3500	757
18	2770	1000	720	820	11500	11400	5970	39900	2560	1020	3700	756
19	1450	946	719	772	6900	6060	5310	41700	2360	965	2700	760
20	1210	891	775	1650	4890	4600	4640	32100	2750	932	2100	751
21	1000	844	774	6800	3880	3940	5070	18700	2290	940	1800	758
22	868	814	856	6830	3350	3440	6080	15000	2070	1780	1500	753
23	783	788	771	4500	3140	3020	7590	10800	1890	2050	1300	764
24	728	770	698	3110	3130	2750	6930	8800	1740	2190	1200	785
25	691	761	669	2540	3020	2540	5940	6740	1600	1870	1100	797
26	668	752	718	2100	2920	2430	5210	11000	1490	1710	1020	794
27	643	748	736	1810	2810	2370	4340	31700	1420	1450	980	772
28	616	734	757	1580	2430	2590	4230	46600	1360	1250	950	752
29	597	750	778	1400	---	2890	4450	38100	1290	1120	920	732
30	592	745	800	1270	---	2960	4510	18600	1240	1030	880	711
31	591	---	819	1170	---	4200	---	8120	---	958	850	---
MEAN	719	683	729	1607	4680	3430	5857	17840	3685	1233	1279	762
MAX	2770	1000	856	6830	13300	15300	11600	46600	10300	2190	3700	827
MIN	510	547	658	711	1160	1510	2430	3620	1240	932	802	690
IN.	.22	.20	.22	.49	1.29	1.04	1.73	5.43	1.09	.38	.39	.22

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

	MEAN	1427	2385	3096	2984	3922	5061	6052	5238	3644	1824	1115	1135
MAX	12120	15450	23620	17320	14730	13960	22580	17840	18070	12600	4286	5478	
(WY)	1950	1986	1983	1950	1982	1978	1927	1990	1945	1951	1950	1934	
MIN	235	464	426	374	538	513	945	708	503	318	255	244	
(WY)	1957	1957	1956	1956	1954	1954	1954	1932	1936	1936	1936	1956	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	3542	3149
HIGHEST ANNUAL MEAN	7407	1985
LOWEST ANNUAL MEAN	750	1954
HIGHEST DAILY MEAN	46600	May 28
LOWEST DAILY MEAN	510	Oct 5
INSTANTANEOUS PEAK FLOW	48000	May 28
INSTANTANEOUS PEAK STAGE	25.65	May 28
INSTANTANEOUS LOW FLOW	506	Oct 5
ANNUAL RUNOFF (INCHES)	12.70	11.29
10 PERCENTILE	7730	6670
50 PERCENTILE	1200	1370
95 PERCENTILE	553	435

## 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.

## 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 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION) (00301)	COLI- FORM, FECAL, UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)
NOV												
16...	0920	680	432	8.3	9.0	4.0	9.1	80	150	640	230	56
JAN												
10...	1245	765	444	8.5	0.5	0.80	14.1	99	<1	K2	230	37
MAR												
09...	1020	1500	350	8.3	8.5	4.5	11.7	101	K94	35	180	26
MAY												
04...	1345	20800	214	7.9	12.5	100	9.1	87	2300	3600	92	0
JUL												
02...	1200	1140	364	8.3	26.5	5.4	7.7	97	37	K14	190	27
SEP												
07...	0850	705	373	8.2	26.5	5.5	6.7	85	--	K1	190	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- LITY WAT DIS TOT IT 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, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV											
16...	46	28	5.9	1.4	174	25	7.3	0.1	4.5	234	0.32
JAN											
10...	46	27	6.2	1.3	190	28	8.1	0.1	2.0	242	0.33
MAR											
09...	38	21	5.1	1.4	156	23	5.9	0.1	5.1	213	0.29
MAY											
04...	17	12	2.9	1.6	92	16	4.6	<0.1	7.2	127	0.17
JUL											
02...	41	22	4.7	1.5	166	20	7.9	<0.1	4.7	193	0.26
SEP											
07...	38	23	4.7	1.6	190	26	7.3	0.2	8.0	195	0.27

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

## MERAMEC RIVER BASIN

169

07019000 MERAMEC RIVER NEAR EUREKA, MO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. & FINER THAN .062 MM (70331)
NOV 16...	430	<0.01	<0.10	<0.01	<0.01	0.20	0.03	0.01	0.01	19	43
JAN 10...	500	<0.01	<0.10	0.01	<0.01	0.40	0.02	<0.01	<0.01	20	52
MAR 09...	863	<0.01	0.30	<0.01	<0.01	0.50	0.02	<0.01	<0.01	3	67
MAY 04...	7130	<0.01	0.20	0.05	0.02	1.4	0.22	0.01	0.02	497	87
JUL 02...	594	0.01	<0.10	0.02	<0.01	<0.20	0.04	<0.01	<0.01	9	94
SEP 07...	371	<0.01	0.10	0.05	<0.01	0.30	0.04	<0.01	<0.01	346	4

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 16...	<10	<1	170	<0.5	<1	<1	<3	1	10	<1
JAN 10...	<10	<1	150	<0.5	<1	<1	<3	<10	3	<10
MAY 04...	80	<1	120	<0.5	<1	<1	<3	10	100	4
JUL 02...	<10	<1	170	<0.5	<1	<1	<3	2	4	1

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 16...	<4	14	0.2	<10	<1	<1	<1	63	<6	5
JAN 10...	<4	11	<0.1	<10	<10	<1	<1	60	<6	4
MAY 04...	<4	7	0.1	<10	2	<1	<1	37	<6	29
JUL 02...	<4	42	<0.1	<10	1	<1	<1	60	<6	10

## 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, water years 1982 to current year.

REMARKS.--Records of discharge are given for gaging station near Eureka, Mo.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
03...	1515	564	442	8.4	19.5	9.8	107	<10	K8	200	40	24
NOV												
16...	1100	750	442	8.3	9.5	9.0	80	13	760	--	--	--
DEC												
13...	0700	650	456	8.5	0.5	14.0	98	13	25	--	--	--
JAN												
11...	0705	840	450	8.4	1.0	13.6	97	12	K72	--	44	26
FEB												
20...	1130	5290	253	8.0	5.0	11.7	91	24	250	--	--	--
MAR												
09...	0750	1650	370	8.2	8.0	11.0	94	--	>1200	--	--	--
APR												
03...	0911	6700	282	8.2	10.0	9.2	82	23	K360	--	--	--
MAY												
04...	0845	28900	257	8.0	13.0	8.7	84	40	1600	--	--	--
JUN												
13...	0840	4780	253	7.9	22.0	6.2	72	20	400	--	--	--
JUL												
03...	0830	1210	364	8.2	26.5	6.4	81	23	60	180	39	20
AUG												
09...	1315	976	388	8.4	24.0	7.0	84	23	K56	--	--	--
SEP												
07...	1330	780	397	8.0	28.0	6.9	91	10	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT IT FIELD CACO3 (00419)	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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)
OCT												
03...	9.9	2.0	166	28	12	0.10	238	12	0.30	0.11	0.17	440
NOV												
16...	--	--	180	--	--	--	244	44	0.20	0.15	0.18	920
DEC												
13...	--	--	194	--	--	--	255	9	0.10	0.16	0.13	80
JAN												
11...	11	1.5	192	31	13	0.10	248	13	<0.10	0.28	0.13	70
FEB												
20...	--	--	100	--	--	--	158	33	0.30	0.08	0.08	2000
MAR												
09...	--	--	156	--	--	--	215	26	0.30	0.14	0.16	490
APR												
03...	--	--	126	18	9.6	0.40	166	47	0.20	0.09	0.08	1600
MAY												
04...	--	--	114	--	--	--	137	237	0.20	0.05	0.18	5900
JUN												
13...	--	--	108	--	--	--	140	86	0.30	0.05	0.05	1300
JUL												
03...	7.3	1.8	162	22	12	<0.10	199	18	0.10	0.07	0.09	310
AUG												
09...	--	--	170	--	--	--	211	21	<0.10	0.02	0.08	850
SEP												
07...	--	--	172	--	--	--	216	2	0.20	0.07	0.11	630

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

## 171

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990



## MISSISSIPPI RIVER MAIN STEM

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.--Estimated daily discharges: Dec. 19-26. Water-discharge records good except for estimated daily discharges, which are fair. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92500	77800	57600	54100	81800	144000	248000	182000	519000	450000	282000	244000
2	89700	76300	57900	53700	90900	140000	235000	218000	482000	430000	285000	245000
3	86800	85800	58900	57900	97400	139000	229000	227000	439000	413000	272000	244000
4	85800	95800	59500	67500	101000	134000	211000	234000	389000	400000	264000	237000
5	79500	98000	56000	68500	104000	126000	209000	249000	341000	391000	259000	227000
6	73200	92400	53500	67700	101000	129000	206000	316000	317000	386000	265000	213000
7	77300	90900	52900	66400	95100	127000	201000	345000	323000	381000	277000	206000
8	82800	84800	54000	67300	92100	125000	195000	343000	368000	375000	273000	202000
9	81500	82800	59100	68600	92600	131000	185000	318000	415000	364000	265000	187000
10	75800	77300	62500	67700	93900	142000	178000	289000	442000	348000	251000	156000
11	78400	76900	61800	67300	96900	151000	179000	259000	450000	332000	234000	123000
12	75800	76300	60600	65300	95700	161000	176000	245000	448000	315000	216000	118000
13	77900	73600	56200	65600	94000	205000	177000	271000	433000	292000	200000	121000
14	77200	69900	52200	64800	94800	237000	188000	328000	394000	272000	191000	124000
15	78500	70800	52100	62500	102000	257000	206000	347000	357000	264000	184000	130000
16	76600	70000	51900	61600	117000	338000	221000	388000	345000	258000	175000	128000
17	86900	69500	52300	62200	117000	409000	216000	508000	358000	243000	171000	123000
18	81500	63500	52300	64200	121000	434000	202000	580000	377000	231000	170000	119000
19	80100	67200	51000	70300	122000	429000	189000	629000	398000	224000	181000	118000
20	81400	66800	51300	84200	116000	418000	184000	654000	420000	216000	188000	125000
21	84600	65900	51600	80500	113000	404000	180000	625000	441000	209000	202000	121000
22	84800	62700	51100	80100	109000	385000	179000	574000	459000	220000	208000	119000
23	80600	58900	50600	80500	110000	362000	163000	515000	477000	243000	212000	121000
24	77400	61200	49700	80600	138000	341000	157000	476000	495000	271000	227000	124000
25	74900	60800	50200	79400	170000	323000	152000	450000	507000	287000	230000	125000
26	74400	61500	50200	81300	173000	309000	154000	462000	509000	279000	227000	124000
27	73400	64900	49900	83500	150000	301000	151000	477000	504000	248000	225000	121000
28	73000	63000	51300	86300	146000	296000	152000	497000	495000	224000	226000	119000
29	73600	60900	52400	86700	---	292000	160000	529000	484000	209000	227000	118000
30	74000	59000	52900	86700	---	283000	155000	552000	469000	207000	231000	111000
31	76500	---	53700	84000	---	270000	---	546000	---	248000	240000	---
MEAN	79560	72840	54100	71520	112000	256200	187900	407500	428500	297700	227700	153100
MAX	92500	98000	62500	86700	173000	434000	248000	654000	519000	450000	285000	245000
MIN	73000	58900	49700	53700	81800	125000	151000	182000	317000	207000	170000	111000
IN.	.13	.11	.09	.12	.16	.42	.30	.66	.67	.48	.37	.24

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

	MEAN	147300	150600	132900	126500	154600	248800	333000	304200	270900	229600	145800	141400
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	127200	81040	69050	69580	66030	
(WY)	1957	1957	1964	1964	1964	1964	1977	1989	1988	1988	1988	1976	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	196200	198600
HIGHEST ANNUAL MEAN		347500
LOWEST ANNUAL MEAN		96770
HIGHEST DAILY MEAN	654000	885000
LOWEST DAILY MEAN	49700	37600
INSTANTANEOUS PEAK FLOW	661000	886000
INSTANTANEOUS PEAK STAGE	35.53	43.32
INSTANTANEOUS LOW FLOW	49500	30000
ANNUAL RUNOFF (INCHES)	3.76	3.81
10 PERCENTILE	426000	384000
50 PERCENTILE	153000	161000
95 PERCENTILE	53500	65600

## 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 fair.

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, 2,460 mg/L, June 22; minimum daily mean, 27 mg/L, Sept. 11.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 3,070,000 tons, June 23; minimum daily, 4,300 tons, Dec. 22.

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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)
MAR											
15...	1115	251000	29	36	44	56	76	79	96	100	--
MAY											
10...	1130	289000	36	43	49	61	78	81	96	100	--
20...	1300	654000	42	47	54	60	79	82	94	100	100

## MISSISSIPPI RIVER MAIN STEM

07020500 MISSISSIPPI RIVER AT CHESTER, IL--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	92500	---	45500	77800	158	33300	57600	172	26700
2	89700	---	45000	76300	154	31800	57900	142	22100
3	86800	---	43200	85800	179	41400	58900	148	23600
4	85800	---	43000	95800	202	52400	59500	153	24600
5	79500	---	40000	98000	178	47000	56000	146	22000
6	73200	---	38000	92400	199	49700	53500	106	15200
7	77300	---	38500	90900	236	58000	52900	102	14500
8	82800	---	40000	84800	226	51600	54000	75	11000
9	81500	---	40400	82800	228	51000	59100	51	8190
10	75800	---	40800	77300	335	70000	62500	45	7510
11	78400	---	40000	76900	192	39800	61800	59	9790
12	75800	---	40000	76300	176	36300	60600	108	17600
13	77900	---	40000	73600	211	41900	56200	---	13300
14	77200	---	40000	69900	160	30200	52200	---	11000
15	78500	---	40300	70800	187	35800	52100	---	9000
16	76600	---	41000	70000	139	26300	51900	---	7290
17	86900	---	44000	69500	109	20500	52300	---	6380
18	81500	---	43000	63500	144	24700	52300	---	5500
19	80100	---	41200	67200	209	37900	51000	---	5000
20	81400	---	40400	66800	200	36100	51300	---	4600
21	84600	---	40100	65900	162	28800	51600	---	4350
22	84800	---	40000	62700	121	20500	51100	---	4300
23	80600	---	40000	58900	80	12800	50600	---	4900
24	77400	---	39800	61200	50	8300	49700	---	5500
25	74900	---	39900	60800	36	5860	50200	45	6100
26	74400	---	39700	61500	100	16600	50200	49	6640
27	73400	---	39700	64900	157	27500	49900	65	8770
28	73000	---	39800	63000	179	30500	51300	87	12000
29	73600	---	40000	60900	112	18400	52400	91	12900
30	74000	---	40000	59000	111	17800	52900	78	11100
31	76500	195	40300	---	---	---	53700	63	9150
TOTAL	2466400	---	1263600	2185200	---	1002760	1677200	---	350570
JANUARY			FEBRUARY			MARCH			
1	54100	58	8540	81800	60	13200	144000	292	114000
2	53700	59	8510	90900	172	42300	140000	310	117000
3	57900	45	7090	97400	121	31900	139000	300	113000
4	67500	72	13200	101000	85	23300	134000	255	92300
5	68500	133	24600	104000	98	27500	126000	166	56400
6	67700	267	48900	101000	87	23700	129000	192	67000
7	66400	162	29100	95100	97	24900	127000	222	76200
8	67300	124	22500	92100	101	25100	125000	224	75700
9	68600	92	17000	92600	119	29700	131000	230	81300
10	67700	98	17800	93900	95	24200	142000	242	92800
11	67300	74	13500	96900	77	20100	151000	249	101000
12	65300	53	9290	95700	109	28100	161000	277	121000
13	65600	40	7160	94000	84	21200	205000	406	224000
14	64800	38	6580	94800	100	25600	237000	702	449000
15	62500	55	9270	102000	272	75000	257000	1100	763000
16	61600	102	17000	117000	166	52600	338000	1600	1460000
17	62200	68	11400	117000	133	42100	409000	1860	2060000
18	64200	51	8860	121000	133	43300	434000	1750	2050000
19	70300	135	25700	122000	152	50100	429000	1530	1780000
20	84200	108	24500	116000	196	61300	418000	1220	1380000
21	80500	62	13600	113000	188	57400	404000	828	903000
22	80100	92	19800	109000	219	64500	385000	836	869000
23	80500	125	27100	110000	159	47100	362000	1090	1070000
24	80600	131	28400	138000	257	95700	341000	827	761000
25	79400	81	17400	170000	294	135000	323000	542	472000
26	81300	95	20800	173000	350	164000	309000	851	710000
27	83500	93	21000	150000	399	162000	301000	540	439000
28	86300	117	27200	146000	300	118000	296000	419	335000
29	86700	100	23400	---	---	---	292000	519	409000
30	86700	61	14200	---	---	---	283000	537	411000
31	84000	106	24100	---	---	---	270000	517	377000
TOTAL	2217000	---	567500	3135200	---	1528900	7942000	---	18029700

## MISSISSIPPI RIVER MAIN STEM

175

07020500 MISSISSIPPI RIVER AT CHESTER, IL--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	248000	618	414000	182000	236	116000	519000	897	1260000
2	235000	380	241000	218000	494	291000	482000	801	1040000
3	229000	166	103000	227000	621	381000	439000	746	884000
4	211000	216	123000	234000	1080	683000	389000	789	829000
5	209000	366	207000	249000	1350	906000	341000	453	417000
6	206000	281	156000	316000	1090	931000	317000	362	310000
7	201000	251	136000	345000	713	664000	323000	384	335000
8	195000	329	173000	343000	663	614000	368000	534	531000
9	185000	302	151000	318000	785	674000	415000	625	701000
10	178000	231	111000	289000	744	580000	442000	1650	1960000
11	179000	161	77600	259000	516	361000	450000	1130	1370000
12	176000	168	79900	245000	507	335000	448000	1530	1850000
13	177000	245	117000	271000	625	457000	433000	1400	1640000
14	188000	194	98400	328000	919	814000	394000	1190	1260000
15	206000	329	183000	347000	1360	1270000	357000	955	921000
16	221000	1020	609000	388000	1650	1720000	345000	819	763000
17	216000	755	440000	508000	1940	2660000	358000	865	836000
18	202000	400	218000	580000	1910	2990000	377000	1130	1150000
19	189000	520	266000	629000	1300	2210000	398000	1190	1280000
20	184000	677	336000	654000	932	1650000	420000	1400	1590000
21	180000	626	304000	625000	960	1620000	441000	1720	2050000
22	179000	439	212000	574000	890	1380000	459000	2460	3040000
23	163000	266	117000	515000	825	1150000	477000	2380	3070000
24	157000	200	84700	476000	834	1070000	495000	2180	2920000
25	152000	164	67300	450000	788	958000	507000	1940	2660000
26	154000	252	105000	462000	672	838000	509000	1760	2420000
27	151000	275	112000	477000	633	816000	504000	1640	2230000
28	152000	270	111000	497000	814	1090000	495000	1500	2000000
29	160000	256	111000	529000	1110	1590000	484000	1320	1720000
30	155000	169	70600	552000	1120	1660000	469000	1010	1280000
31	---	---	---	546000	1000	1470000	---	---	---
TOTAL	5638000	---	5534500	12633000	---	33949000	12855000	---	44317000
JULY			AUGUST			SEPTEMBER			
1	450000	772	938000	282000	1240	945000	244000	815	537000
2	430000	669	776000	285000	1390	1070000	245000	242	160000
3	413000	606	675000	272000	1430	1050000	244000	153	101000
4	400000	603	652000	264000	1050	746000	237000	155	99000
5	391000	580	612000	259000	629	440000	227000	159	97500
6	386000	528	550000	265000	542	388000	213000	499	287000
7	381000	485	499000	277000	470	352000	206000	197	110000
8	375000	464	470000	273000	411	303000	202000	100	54300
9	364000	662	650000	265000	504	360000	187000	43	21800
10	348000	609	572000	251000	351	238000	156000	91	38500
11	332000	455	408000	234000	242	153000	123000	27	8970
12	315000	397	338000	216000	263	153000	118000	82	26100
13	292000	415	327000	200000	307	166000	121000	208	67800
14	272000	439	322000	191000	167	86100	124000	50	16900
15	264000	426	304000	184000	107	53200	130000	33	11700
16	258000	376	262000	175000	203	96100	128000	43	15000
17	243000	350	229000	171000	127	58600	123000	43	14300
18	231000	351	219000	170000	89	40700	119000	32	10200
19	224000	356	215000	181000	167	81700	118000	37	11900
20	216000	316	184000	188000	277	141000	125000	71	23900
21	209000	364	205000	202000	346	189000	121000	58	19000
22	220000	355	211000	208000	238	134000	119000	59	19000
23	243000	419	275000	212000	194	111000	121000	196	64000
24	271000	523	383000	227000	219	134000	124000	357	119000
25	287000	627	486000	230000	261	162000	125000	388	131000
26	279000	769	579000	227000	221	135000	124000	374	125000
27	248000	694	465000	225000	493	299000	121000	331	108000
28	224000	614	371000	226000	569	347000	119000	220	70600
29	209000	716	404000	227000	303	186000	118000	62	19700
30	207000	887	496000	231000	181	113000	111000	57	17000
31	248000	1070	719000	240000	210	136000	---	---	---
TOTAL	9230000	---	13796000	7058000	---	8867400	4593000	---	2405170

## HEADWATER DIVERSION CHANNEL BASIN

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: Dec. 15-27. 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 1915 reached a stage of 28.0 ft, present datum, from floodmarks by local residents.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	87	95	95	141	448	480	2350	1440	804	116	74	68
2	88	96	95	133	2080	446	1520	1680	1050	114	72	66
3	85	96	94	124	2080	411	1080	1920	796	115	70	64
4	81	95	94	129	1370	379	830	3830	604	113	73	63
5	79	95	95	131	1020	352	692	2590	502	111	91	63
6	79	95	95	130	833	333	592	1620	442	102	105	62
7	78	96	95	124	685	328	515	1190	415	101	95	61
8	79	100	95	120	578	352	456	897	444	94	86	61
9	79	99	97	117	768	378	411	726	375	91	80	65
10	79	101	98	114	2840	392	2350	648	331	87	76	69
11	78	103	98	111	2300	397	4010	558	295	84	73	71
12	77	100	97	108	1360	396	2310	1150	264	82	89	75
13	77	98	97	105	946	400	1450	3420	240	80	130	83
14	77	97	97	104	729	394	1110	2570	231	81	106	82
15	77	98	96	103	2630	424	871	1600	237	83	101	77
16	80	98	96	103	5070	430	728	1390	206	82	95	73
17	101	98	95	119	3240	418	755	3160	190	78	98	70
18	108	97	95	157	1480	400	1060	5410	176	75	114	67
19	111	96	94	308	1100	395	1010	2290	162	73	114	68
20	111	96	93	2850	937	385	867	1300	158	72	104	68
21	104	96	93	2750	692	365	933	1430	161	70	98	70
22	99	99	94	1260	1230	352	1590	2240	182	111	103	85
23	96	103	94	770	1300	338	1460	1520	163	161	101	89
24	95	103	95	559	929	353	1220	1030	151	140	93	83
25	94	102	95	461	721	367	1020	780	140	117	88	78
26	94	102	96	393	623	372	815	2160	132	102	83	75
27	93	101	97	347	564	425	714	5480	127	93	80	73
28	92	99	98	311	516	491	2400	3510	121	88	78	71
29	92	96	103	297	---	529	3020	1930	120	83	75	69
30	93	96	116	280	---	922	1990	1260	118	81	72	72
31	95	---	133	256	---	2960	---	1060	---	77	70	---
MEAN	89.0	98.2	97.6	420	1395	496	1338	1993	311	95.4	89.9	71.4
MAX	111	103	133	2850	5070	2960	4010	5480	1050	161	130	89
MIN	77	95	93	103	448	328	411	558	118	70	70	61
IN.	.24	.26	.27	1.14	3.44	1.35	3.53	5.43	.82	.26	.25	.19

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

	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931
MEAN	162	398	571	717	714	1035	1021	785	435	169	107	118
MAX	1576	2045	5507	3735	2279	3521	3645	2871	4082	1195	298	883
(WY)	1985	1985	1983	1937	1989	1945	1927	1946	1928	1976	1982	1965
MIN	37.0	59.1	72.1	60.7	95.4	98.0	142	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 1990 WATER YEAR

## FOR PERIOD OF RECORD

	1990 WATER YEAR	PERIOD OF RECORD
AVERAGE FLOW	535	517
HIGHEST ANNUAL MEAN		1088
LOWEST ANNUAL MEAN		149
HIGHEST DAILY MEAN	5480	42700
LOWEST DAILY MEAN	61	16
INSTANTANEOUS PEAK FLOW	6410	97100
INSTANTANEOUS PEAK STAGE	19.59	29.92
INSTANTANEOUS LOW FLOW	60	16
ANNUAL RUNOFF (INCHES)	17.18	16.59
10 PERCENTILE	1530	1060
50 PERCENTILE	115	182
95 PERCENTILE	71	48



## MISSISSIPPI RIVER MAIN STEM

177

## 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: Dec. 9-12. Water-discharge records good except for estimated daily discharges, which are fair. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97600	76100	61300	54500	81800	155000	270000	175000	539000	477000	266000	239000
2	94100	76800	60300	54600	86100	152000	252000	210000	510000	456000	283000	244000
3	91000	77900	60500	54600	97000	146000	243000	235000	474000	438000	282000	244000
4	89700	86900	61200	58600	103000	142000	231000	248000	434000	418000	270000	240000
5	88100	97800	61300	67000	107000	131000	218000	248000	389000	405000	261000	233000
6	82300	99500	59100	72200	109000	126000	215000	284000	349000	395000	262000	223000
7	78300	95500	57700	74900	106000	128000	209000	326000	340000	388000	271000	213000
8	82200	92800	57000	77700	101000	125000	205000	341000	362000	381000	275000	210000
9	87300	86800	56800	80700	103000	126000	197000	336000	407000	370000	270000	203000
10	84600	83500	59900	81200	109000	134000	199000	316000	425000	357000	262000	186000
11	80500	78600	62800	78200	109000	144000	202000	293000	463000	343000	248000	156000
12	80900	77500	61600	74200	108000	151000	196000	272000	467000	327000	232000	131000
13	78700	76800	60800	70200	106000	172000	193000	277000	457000	312000	215000	126000
14	79800	74300	57600	68500	105000	225000	197000	301000	430000	296000	204000	128000
15	78800	71400	54600	67400	121000	253000	209000	328000	388000	282000	196000	131000
16	79000	71700	54200	65200	146000	291000	225000	339000	361000	273000	187000	135000
17	79900	71700	54000	64100	143000	364000	237000	424000	362000	264000	179000	132000
18	85800	70200	54300	63900	141000	410000	229000	508000	375000	252000	171000	127000
19	81200	67000	54100	66100	144000	431000	213000	574000	391000	241000	171000	124000
20	79800	69900	54200	84600	140000	430000	202000	635000	420000	235000	183000	123000
21	81800	71200	53400	91400	132000	422000	195000	651000	435000	233000	193000	128000
22	84700	71900	53200	84700	132000	409000	191000	636000	454000	237000	203000	125000
23	85300	68900	52600	84100	127000	389000	184000	595000	471000	252000	206000	123000
24	81600	65700	53200	83400	136000	369000	172000	541000	484000	274000	212000	124000
25	79100	65400	52400	82500	173000	350000	168000	518000	499000	293000	226000	127000
26	77100	63900	52300	81200	195000	332000	165000	477000	510000	298000	225000	128000
27	75400	64200	52100	82200	181000	316000	166000	489000	512000	281000	221000	126000
28	73600	66300	52000	84400	159000	303000	166000	497000	511000	252000	219000	123000
29	72600	64400	52700	86100	---	296000	176000	516000	499000	229000	220000	121000
30	73100	62600	53900	84900	---	292000	176000	540000	490000	215000	223000	119000
31	74000	---	54200	87100	---	288000	---	554000	---	225000	230000	---
MEAN	81870	75570	56300	74530	125000	258100	203400	409200	440300	312900	227900	159700
MAX	97600	99500	62800	91400	195000	431000	270000	651000	539000	477000	283000	244000
MIN	72600	62600	52000	54500	81800	125000	165000	175000	340000	215000	171000	119000
IN.	.13	.12	.09	.12	.18	.42	.32	.66	.69	.51	.37	.25

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

MEAN	146000	150500	133600	129300	156900	248000	325500	303400	273400	225800	141800	137200
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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	202500		198000	
HIGHEST ANNUAL MEAN			359800	1973
LOWEST ANNUAL MEAN			71730	1934
HIGHEST DAILY MEAN	651000	May 21	886000	May 27 1943
LOWEST DAILY MEAN	52000	Dec 28	24700	Jan 21 1940
INSTANTANEOUS PEAK FLOW	669000	May 21	893000	May 27 1943
INSTANTANEOUS PEAK STAGE	39.69	May 22	43.43	Apr 30 1973
INSTANTANEOUS LOW FLOW	52000	Dec 28	23400	Dec 13 1937
ANNUAL RUNOFF (INCHES)	3.86		3.77	
10 PERCENTILE	426000		387000	
50 PERCENTILE	166000		160000	
95 PERCENTILE	55700		61300	

## 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, 2,770 mg/L, June 20; minimum daily mean, 47 mg/L, Feb. 13.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 3,140,000 tons, June 20; minimum daily, 8,220 tons, Dec. 31.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	AGENCY	AGENCY	DIS-	SPE-	PH	TEMPER-	TUR-	OXYGEN,	OXYGEN	
		COL- LECTING SAMPLE (CODE NUMBER) (00027)	ANA- LYZING SAMPLE (CODE NUMBER) (00028)	CHARGE, INST. CUBIC FEET PER SECOND (00061)	CIFIC CON- DUCT- ANCE (US/CM) (00095)						(STAND- ARD UNITS) (00400)
NOV 08...	1300	1028	17002	93200	519	8.0	13.0	48	9.8	96	22
JAN 04...	0945	1028	17002	57800	621	8.4	2.5	15	14.1	105	19
MAR 14...	1405	1028	17002	230000	508	8.3	11.0	8.7	11.1	103	35
MAY 09...	1415	1028	17002	335000	397	7.9	15.5	71	7.1	73	36
JUL 18...	1450	1028	17002	252000	472	8.1	24.0	51	6.5	78	22
DATE	COLI- FORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (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)
NOV 08...	K8300	880	200	57	53	48	20	19	35	34	3.7
JAN 04...	K770	490	240	56	60	58	23	22	37	36	3.3
MAR 14...	9800	1800	200	50	52	47	20	19	25	25	3.5
MAY 09...	4600	--	160	48	46	41	16	15	20	19	5.5
JUL 18...	>6000	190	200	43	57	50	19	17	17	16	2.7

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

## MISSISSIPPI RIVER MAIN STEM

07022000 MISSISSIPPI RIVER AT THEBES, IL--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT DIS TOT IT 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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	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, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)
NOV 08...	--	142	89	24	0.3	--	102	12	0.68	0.73	0.41
JAN 04...	4.3	180	84	30	0.3	343	34	5	0.92	--	0.45
MAR 14...	3.0	146	57	33	<0.1	272	204	22	2.6	--	0.18
MAY 09...	4.1	116	53	27	0.2	229	330	26	1.1	--	0.14
JUL 18...	4.1	152	58	23	0.3	259	366	26	4.1	--	0.10

DATE	AMMONIA UN- IONIZED (MG/L AS N) (00619)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS P) (00625)	PHOS- PHORUS DIS- SOLVED TOTAL (MG/L AS P) (00665)	PHOS- PHORUS 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)
NOV 08...	0.010	0.75	0.26	0.12	5500	80	3	100	97	<0.5	<0.5
JAN 04...	0.012	0.80	0.15	0.08	530	90	1	90	80	<0.5	<0.5
MAR 14...	0.007	1.8	0.22	0.07	2800	60	2	100	71	<0.5	<0.5
MAY 09...	0.003	0.50	0.32	0.08	7000	<50	3	200	84	<0.5	<0.5
JUL 18...	0.007	1.1	0.28	0.14	2400	70	1	100	88	<0.5	<0.5

DATE	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	BORON, DIS- SOLVED (UG/L AS B) (01020)	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)
NOV 08...	80	70	<3	<3	9	<5	<5	<5	21	6	3700
JAN 04...	80	70	<3	<3	<5	<5	<5	<5	11	<5	950
MAR 14...	<50	<50	<3	<3	7	<5	<5	<5	57	8	4400
MAY 09...	<50	<50	<3	<3	7	<5	<5	<5	28	<5	8300
JUL 18...	<50	<50	<3	<3	<5	<5	<5	<5	20	<5	3700

DATE	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)	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)
NOV 08...	52	15	9	230	12	8	7	<3	<3	310
JAN 04...	<50	22	<5	87	17	<5	<5	<3	<3	300
MAR 14...	<50	88	<5	280	<5	<5	<5	<3	<3	200
MAY 09...	<50	15	<5	470	<5	<10	<10	<3	<3	160
JUL 18...	<50	13	<5	320	<5	<5	<5	<3	<3	180

## MISSISSIPPI RIVER MAIN STEM

181

07022000 MISSISSIPPI RIVER AT THEBES, IL--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, TOTAL (UG/L AS V) (01087)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOV- ERABLE (UG/L AS 2N) (01092)	ZINC, DIS- SOLVED (UG/L AS 2N) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS TOTAL (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 08...	290	10	<5	<100	<100	7.2	0.010	<5	--	--
JAN 04...	290	<5	<5	<50	<50	7.0	<0.005	<5	--	--
MAR 14...	180	8	<5	<100	<100	10	--	<5	358	50
MAY 09...	140	14	<5	<50	<50	13	<0.005	<5	415	90
JUL 18...	160	<5	<5	<50	<50	9.6	<0.005	<5	--	--

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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)
MAR 14...	1410	230000	21	25	30	37	56	63	96	100	--
MAY 20...	1200	646000	42	49	54	64	83	87	97	100	100



## MISSISSIPPI RIVER MAIN STEM

07022000 MISSISSIPPI RIVER AT THEBES, IL--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	97600	203	53500	76100	128	26200	61300	149	24600
2	94100	198	50200	76800	130	27000	60300	102	16500
3	91000	205	50500	77900	111	23300	60500	90	14700
4	89700	156	37900	86900	155	36300	61200	82	13600
5	88100	154	36700	97800	194	51100	61300	95	15700
6	82300	176	39100	99500	187	50200	59100	215	34300
7	78300	127	26800	95500	195	50300	57700	99	15400
8	82200	152	33600	92800	279	70000	57000	78	12000
9	87300	175	41300	86800	192	45000	56800	86	13100
10	84600	142	32500	83500	92	20800	59900	79	12700
11	80500	122	26600	78600	129	27400	62800	118	20100
12	80900	143	31200	77500	146	30500	61600	140	23400
13	78700	119	25300	76800	104	21500	60800	104	17100
14	79800	145	31300	74300	104	20800	57600	---	15000
15	78800	132	28000	71400	113	21900	54600	---	14200
16	79000	135	28900	71700	199	38600	54200	---	13700
17	79900	187	40300	71700	117	22700	54000	---	13000
18	85800	359	83100	70200	119	22600	54300	---	12500
19	81200	199	43700	67000	100	18100	54100	---	12200
20	79800	143	30900	69900	95	18000	54200	---	11600
21	81800	179	39600	71200	92	17600	53400	---	11200
22	84700	178	40700	71900	84	16300	53200	---	11000
23	85300	151	34900	68900	75	14000	52600	---	10800
24	81600	112	24800	65700	169	30000	53200	---	10700
25	79100	107	22800	65400	188	33300	52400	---	10700
26	77100	110	23000	63900	109	18800	52300	---	11000
27	75400	134	27300	64200	111	19200	52100	81	11400
28	73600	126	25100	66300	118	21100	52000	129	18100
29	72600	121	23800	64400	101	17600	52700	66	9370
30	73100	104	20500	62600	102	17300	53900	57	8310
31	74000	110	22100	---	---	---	54200	56	8220
TOTAL	2537900	---	1076000	2267200	---	847500	1745300	---	446200
JANUARY			FEBRUARY			MARCH			
1	54500	67	9840	81800	133	29300	155000	235	98300
2	54600	73	10700	86100	163	37900	152000	224	91900
3	54600	59	8720	97000	112	29300	146000	220	86700
4	58600	64	10100	103000	142	39600	142000	221	84600
5	67000	89	16100	107000	99	28700	131000	220	77900
6	72200	101	19600	109000	85	25100	126000	221	75100
7	74900	74	15000	106000	70	20100	128000	196	67600
8	77700	78	16400	101000	57	15600	125000	225	75800
9	80700	108	23500	103000	71	19800	126000	186	63300
10	81200	83	18100	109000	152	44800	134000	243	88100
11	78200	86	18300	109000	72	21100	144000	225	87600
12	74200	80	16000	108000	55	16100	151000	238	97200
13	70200	99	18700	106000	47	13400	172000	283	131000
14	68500	82	15200	105000	107	30400	225000	414	251000
15	67400	74	13400	121000	583	190000	253000	741	506000
16	65200	77	13600	146000	376	148000	291000	1070	840000
17	64100	89	15300	143000	196	75800	364000	930	914000
18	63900	91	15800	141000	115	43700	410000	986	1090000
19	66100	358	63900	144000	98	38200	431000	899	1050000
20	84600	1280	293000	140000	115	43600	430000	1110	1290000
21	91400	536	132000	132000	122	43300	422000	938	1070000
22	84700	204	46800	132000	130	46200	409000	779	861000
23	84100	279	63300	127000	120	41300	389000	637	669000
24	83400	547	123000	136000	100	36800	369000	571	569000
25	82500	141	31500	173000	151	70400	350000	586	554000
26	81200	93	20400	195000	148	77800	332000	583	522000
27	82200	117	25900	181000	195	95400	316000	532	454000
28	84400	172	39100	159000	205	87900	303000	483	395000
29	86100	135	31400	---	---	---	296000	604	483000
30	84900	116	26600	---	---	---	292000	725	571000
31	87100	99	23300	---	---	---	288000	352	273000
TOTAL	2310400	---	1194560	3500900	---	1409600	8002000	---	13487100

## MISSISSIPPI RIVER MAIN STEM

07022000 MISSISSIPPI RIVER AT THEBES, IL--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	270000	362	264000	175000	183	86500	539000	874	1270000
2	252000	326	222000	210000	322	183000	510000	753	1040000
3	243000	368	241000	235000	382	243000	474000	633	810000
4	231000	362	226000	248000	560	375000	434000	666	780000
5	218000	380	224000	248000	539	361000	389000	676	710000
6	215000	403	234000	284000	567	435000	349000	529	498000
7	209000	357	201000	326000	731	643000	340000	463	425000
8	205000	304	168000	341000	578	532000	362000	503	492000
9	197000	377	201000	336000	555	504000	407000	621	682000
10	199000	340	182000	316000	548	467000	425000	826	948000
11	202000	399	218000	293000	544	431000	463000	980	1230000
12	196000	269	142000	272000	387	284000	467000	1050	1320000
13	193000	277	144000	277000	342	256000	457000	1220	1500000
14	197000	249	133000	301000	467	379000	430000	1050	1220000
15	209000	266	150000	328000	663	587000	388000	1070	1120000
16	225000	284	173000	339000	692	634000	361000	847	825000
17	237000	301	193000	424000	1040	1190000	362000	724	707000
18	229000	299	185000	508000	1510	2070000	375000	823	833000
19	213000	276	159000	574000	1020	1580000	391000	1450	1530000
20	202000	250	136000	635000	689	1180000	420000	2770	3140000
21	195000	247	130000	651000	1330	2340000	435000	2610	3060000
22	191000	235	121000	636000	825	1420000	454000	1510	1850000
23	184000	245	122000	595000	729	1170000	471000	1910	2430000
24	172000	190	88300	541000	887	1300000	484000	1930	2520000
25	168000	211	95600	518000	934	1310000	499000	1840	2470000
26	165000	300	134000	477000	761	981000	510000	1610	2220000
27	166000	231	104000	489000	592	782000	512000	1300	1790000
28	166000	437	196000	497000	612	821000	511000	1010	1390000
29	176000	219	104000	516000	758	1060000	499000	934	1260000
30	176000	170	80900	540000	1000	1460000	490000	932	1230000
31	---	---	---	554000	887	1330000	---	---	---
TOTAL	6101000	---	4971800	12684000	---	26394500	13208000	---	41300000
JULY			AUGUST			SEPTEMBER			
1	477000	774	997000	266000	322	231000	239000	278	180000
2	456000	635	782000	283000	560	428000	244000	249	164000
3	438000	565	668000	282000	882	671000	244000	240	158000
4	418000	456	515000	270000	930	678000	240000	256	166000
5	405000	498	544000	261000	768	541000	233000	247	156000
6	395000	619	661000	262000	581	411000	223000	233	140000
7	388000	402	421000	271000	451	330000	213000	203	117000
8	381000	337	347000	275000	442	328000	210000	194	110000
9	370000	379	378000	270000	507	369000	203000	164	89800
10	357000	373	360000	262000	395	280000	186000	154	77500
11	343000	297	275000	248000	338	226000	156000	186	78300
12	327000	317	280000	232000	307	192000	131000	171	60500
13	312000	329	277000	215000	295	171000	126000	120	40700
14	296000	361	288000	204000	296	163000	128000	109	37700
15	282000	364	277000	196000	286	151000	131000	114	40300
16	273000	301	222000	187000	254	128000	135000	103	37700
17	264000	263	188000	179000	307	148000	132000	103	36700
18	252000	230	156000	171000	205	94600	127000	108	37000
19	241000	239	155000	171000	189	87100	124000	103	34300
20	235000	223	142000	183000	256	126000	123000	113	37400
21	233000	220	139000	193000	383	200000	128000	92	31800
22	237000	201	128000	203000	246	135000	125000	92	30900
23	252000	243	166000	206000	283	157000	123000	91	30400
24	274000	266	196000	212000	294	168000	124000	101	34000
25	293000	313	248000	226000	329	201000	127000	96	33000
26	298000	408	329000	225000	359	218000	128000	96	33100
27	281000	509	386000	221000	331	198000	126000	81	27400
28	252000	531	361000	219000	308	182000	123000	78	26000
29	229000	354	219000	220000	260	155000	121000	85	27800
30	215000	312	181000	223000	251	151000	119000	110	35300
31	225000	287	174000	230000	267	166000	---	---	---
TOTAL	9699000	---	10460000	7066000	---	7684700	4792000	---	2108600

## 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.--Estimated daily discharges: Feb. 17-19. Records fair 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	5.3	11	27	160	159	1040	435	216	8.9	12	12
2	5.0	6.3	10	25	842	157	722	440	186	7.9	10	11
3	4.6	7.5	10	22	593	150	427	4060	168	6.9	8.5	10
4	4.6	7.9	11	22	610	133	325	1950	137	6.0	17	9.4
5	4.6	7.3	12	22	703	119	262	754	111	5.0	73	7.9
6	4.3	6.4	12	25	462	114	216	458	255	14	44	6.9
7	4.3	8.1	12	22	351	121	187	331	924	13	23	6.2
8	3.9	9.4	13	19	265	175	166	255	265	11	15	10
9	5.4	10	14	19	534	205	146	209	175	11	14	71
10	5.8	10	14	17	1120	193	1660	208	136	10	12	33
11	6.1	9.5	15	17	590	174	1450	180	108	9.1	9.4	26
12	6.5	8.8	14	15	355	452	620	965	87	10	9.1	18
13	6.1	8.4	14	14	263	532	402	1580	70	7.7	12	15
14	5.8	8.2	14	13	207	361	415	642	58	6.6	11	13
15	5.8	8.7	13	13	225	505	372	793	49	6.9	20	12
16	20	23	12	12	2010	515	306	3230	44	13	705	8.9
17	70	27	11	18	925	338	493	6690	37	15	812	7.1
18	62	22	11	42	525	251	461	998	32	12	232	5.9
19	23	16	11	69	335	256	321	555	28	8.6	132	5.4
20	13	14	11	599	245	274	370	538	25	7.8	82	5.0
21	9.4	13	11	615	205	223	536	876	24	15	58	6.7
22	7.9	12	10	305	393	198	407	747	28	582	44	8.6
23	7.3	13	8.9	203	630	180	359	426	22	212	35	9.0
24	6.6	13	7.9	156	387	172	321	308	18	95	30	15
25	6.2	13	7.0	129	266	212	263	277	15	51	26	12
26	5.5	12	7.0	111	209	568	214	10800	14	34	22	9.4
27	5.1	13	7.5	96	191	505	210	3420	12	26	19	7.5
28	5.0	11	8.9	81	172	391	844	886	12	24	17	6.2
29	4.6	11	15	72	---	355	578	511	11	19	16	5.4
30	4.3	11	19	57	---	1790	371	338	10	15	16	5.3
31	4.7	---	23	55	---	2390	---	263	---	14	14	---
MEAN	10.7	11.5	11.9	93.9	492	393	482	1423	109	41.2	82.3	12.6
MAX	70	27	23	615	2010	2390	1660	10800	924	582	812	71
MIN	3.9	5.3	7.0	12	160	114	146	180	10	5.0	8.5	5.0
IN.	.05	.05	.06	.46	2.19	1.93	2.30	7.01	.52	.20	.41	.06

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

	113	690	453	211	523	595	348	437	324	34.4	62.9	28.5
MEAN	113	690	453	211	523	595	348	437	324	34.4	62.9	28.5
MAX	550	2017	952	517	1165	1130	722	1423	1617	73.0	341	118
(WY)	1985	1986	1988	1985	1985	1985	1984	1990	1985	1986	1985	1984
MIN	8.28	11.5	11.9	57.0	242	294	186	28.8	7.70	7.78	1.65	1.54
(WY)	1988	1990	1990	1986	1987	1986	1986	1987	1988	1983	1983	1983

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	263	318
HIGHEST ANNUAL MEAN		710
LOWEST ANNUAL MEAN		124
HIGHEST DAILY MEAN	10800	28000
LOWEST DAILY MEAN	3.9	.83
INSTANTANEOUS PEAK FLOW	16000	43000
INSTANTANEOUS PEAK STAGE	13.83	20.40
INSTANTANEOUS LOW FLOW	3.9	0.76
ANNUAL RUNOFF (INCHES)	15.25	18.44
10 PERCENTILE	604	607
50 PERCENTILE	25	80
95 PERCENTILE	5.4	4.3

## 07035000 LITTLE ST. FRANCIS RIVER AT FREDERICKTOWN, MO

LOCATION.--Lat 37°33'33", long 90°18'46", in NW ¼ 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.--Estimated daily discharges: Mar. 28 to Apr. 1. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	92	5.5	21	192	69	500	252	120	7.3	3.8	3.7
2	3.4	74	5.6	16	447	66	231	234	114	7.0	3.6	3.6
3	3.1	14	4.8	16	238	60	188	1200	96	6.5	12	3.5
4	3.1	5.9	4.9	23	318	52	132	515	72	5.9	19	3.5
5	3.1	5.5	5.6	18	277	49	111	275	59	7.7	47	3.5
6	3.6	5.8	6.1	15	193	49	96	190	390	28	18	3.4
7	3.9	10	4.9	13	148	57	80	142	318	20	9.3	3.4
8	3.5	8.8	6.9	12	119	81	69	112	143	12	7.0	5.5
9	3.5	6.5	5.9	12	449	83	63	97	95	7.9	6.1	4.3
10	3.5	6.1	6.5	10	478	75	929	96	73	5.9	5.2	6.3
11	3.4	5.9	6.6	10	257	68	472	75	56	4.9	4.7	4.4
12	3.6	5.7	5.3	8.7	191	86	244	509	47	7.6	5.4	5.7
13	3.5	5.7	5.0	7.1	159	94	179	731	40	6.5	8.5	4.5
14	3.6	6.6	5.0	7.3	131	80	175	278	39	5.8	6.2	4.5
15	3.6	9.3	5.3	7.9	1230	141	143	667	36	5.6	6.7	4.2
16	62	7.2	4.6	8.1	664	118	125	1850	31	4.9	141	3.6
17	144	6.5	4.6	27	330	92	224	1800	28	4.3	97	3.1
18	25	6.5	4.8	38	249	75	180	383	24	4.1	32	2.7
19	13	6.4	4.8	489	197	89	141	255	19	4.0	20	2.8
20	9.2	6.8	4.8	1050	138	78	226	218	24	3.9	18	2.6
21	7.4	6.1	4.8	282	123	68	298	379	24	31	13	4.4
22	6.1	8.6	4.6	185	227	66	225	271	23	113	10	3.3
23	5.7	6.7	4.2	137	208	105	175	180	17	29	9.7	2.5
24	5.0	5.9	4.2	112	136	127	143	136	14	14	8.6	2.2
25	22	5.9	3.8	97	100	114	119	278	12	9.3	7.5	2.1
26	127	6.4	4.2	81	91	219	102	3940	11	7.3	6.1	2.5
27	123	6.2	5.0	57	84	194	132	725	11	6.4	5.9	3.2
28	122	5.9	5.0	49	74	120	447	420	9.4	6.0	5.3	3.7
29	116	4.9	14	46	---	100	259	260	8.4	5.0	4.7	4.3
30	112	4.9	26	43	---	800	171	181	7.4	4.8	4.3	4.6
31	106	---	22	34	---	1100	---	145	---	4.3	3.9	---
MEAN	34.1	11.9	6.62	94.6	266	148	219	542	65.4	12.6	17.7	3.72
MAX	144	92	26	1050	1230	1100	929	3940	390	113	141	6.3
MIN	3.1	4.9	3.8	7.1	74	49	63	75	7.4	3.9	3.6	2.1
IN.	.43	.15	.08	1.21	3.06	1.88	2.70	6.90	.81	.16	.23	.05

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

	MEAN	55.1	225	175	97.6	192	211	147	184	111	15.0	51.4	19.7
MAX	273	591	359	173	336	352	229	542	521	23.4	282	65.0	
(WY)	1985	1985	1988	1988	1989	1985	1984	1990	1985	1985	1985	1984	
MIN	1.97	11.9	6.62	28.7	81.3	132	78.5	11.7	3.33	9.11	1.10	1.50	
(WY)	1988	1988	1990	1986	1987	1987	1988	1987	1988	1988	1989	1988	1983

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	118	123
HIGHEST ANNUAL MEAN		265
LOWEST ANNUAL MEAN		42.4
HIGHEST DAILY MEAN	3940	5290
LOWEST DAILY MEAN	2.1	.76
INSTANTANEOUS PEAK FLOW	6620	11000
INSTANTANEOUS PEAK STAGE	16.47	22.22
INSTANTANEOUS LOW FLOW	1.7	0.66
ANNUAL RUNOFF (INCHES)	17.66	18.48
10 PERCENTILE	266	258
50 PERCENTILE	20	37
95 PERCENTILE	3.2	1.3



## 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.--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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	134	33	120	543	433	2190	1160	569	37	25	25
2	11	121	32	100	2380	412	1610	1330	520	33	22	21
3	12	100	31	91	1500	390	1060	6840	468	30	20	19
4	12	55	31	106	1620	358	779	4460	391	27	25	17
5	11	38	31	110	1600	325	631	1810	333	23	90	16
6	10	32	31	104	1120	306	547	1210	764	22	138	15
7	10	32	30	95	862	324	477	869	1840	69	87	14
8	9.1	36	31	87	680	458	424	656	698	65	54	21
9	10	40	33	81	1550	555	385	552	472	46	39	37
10	13	41	35	76	2730	528	4170	546	387	36	33	77
11	12	36	33	73	1470	485	3390	466	327	29	28	58
12	12	33	33	66	958	922	1550	1640	271	27	28	52
13	12	32	32	62	737	1150	1070	4610	235	26	67	50
14	11	31	31	58	602	808	1010	1750	206	28	69	43
15	11	33	30	56	5190	1140	884	2230	187	26	48	35
16	391	34	28	53	5840	1180	717	5060	171	23	457	29
17	799	49	27	89	1840	788	1010	14000	153	22	1520	23
18	318	52	26	244	1230	600	1180	2470	132	26	465	20
19	161	45	26	1350	923	590	793	1430	112	36	263	18
20	108	40	28	6180	669	593	998	1310	105	21	163	16
21	82	36	25	1770	567	521	1560	2160	106	21	119	17
22	67	37	21	945	1050	473	1230	1900	103	666	93	22
23	57	37	20	661	1490	447	1130	1200	95	471	79	23
24	51	38	19	514	998	481	901	825	77	222	68	22
25	44	37	18	440	667	526	692	665	70	127	60	24
26	58	37	19	372	560	1190	576	16700	62	84	53	23
27	157	38	21	319	512	1270	523	7320	56	65	47	19
28	154	35	24	253	467	1010	1850	2110	52	52	41	16
29	154	33	32	227	---	896	1520	1340	47	47	37	14
30	146	34	80	198	---	3690	1010	913	42	38	32	12
31	149	---	124	178	---	5190	---	697	---	30	29	---
MEAN	98.8	45.9	32.7	486	1441	904	1196	2911	302	79.8	139	26.6
MAX	799	134	124	6180	5840	5190	4170	16700	1840	666	1520	77
MIN	9.1	31	18	53	467	306	385	466	42	21	20	12
IN.	.23	.10	.07	1.11	2.97	2.07	2.64	6.65	.67	.18	.32	.06

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

	MEAN	54.5	260	834	674	1321	1027	705	795	237	77.5	57.8	30.6
MAX	98.8	662	1995	826	1745	1296	1196	2911	595	109	139	54.2	
(WY)	1990	1989	1988	1988	1989	1988	1990	1990	1989	1989	1990	1988	
MIN	16.5	45.9	32.7	486	776	804	444	64.5	16.4	37.7	4.18	11.5	
(WY)	1988	1990	1990	1990	1988	1987	1987	1987	1988	1988	1988	1987	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	635	*****	
HIGHEST ANNUAL MEAN		635	1990
LOWEST ANNUAL MEAN		476	1988
HIGHEST DAILY MEAN	16700	May 26	16700
LOWEST DAILY MEAN	9.1	Oct 8	1.8
INSTANTANEOUS PEAK FLOW	25900	May 26	25900
INSTANTANEOUS PEAK STAGE	17.13	May 26	17.13
INSTANTANEOUS LOW FLOW	8.9	Oct 8-9	5.7
ANNUAL RUNOFF (INCHES)	17.06		*****
10 PERCENTILE	1520		1260
50 PERCENTILE	104		121
95 PERCENTILE	15		9.3

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



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.--No estimated daily discharges. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	141	51	172	857	565	3500	1840	863	62	46	44
2	23	129	50	157	4290	517	2510	2250	769	58	41	41
3	21	119	48	143	2590	481	1620	8250	668	53	38	37
4	21	99	47	155	2250	434	1220	7980	526	48	59	34
5	20	69	46	175	2410	389	979	3070	420	42	79	32
6	21	56	46	168	1700	361	818	1900	426	55	117	30
7	22	51	45	153	1290	368	687	1380	2430	43	133	31
8	22	55	47	141	986	540	589	1050	976	67	99	34
9	21	58	47	131	2660	803	514	843	580	70	74	34
10	20	60	47	121	4720	785	5510	778	436	56	60	42
11	19	61	48	111	2500	701	6050	667	352	49	53	73
12	22	58	48	101	1570	952	2570	1830	292	49	64	62
13	24	54	46	93	1150	1580	1670	7890	248	46	91	57
14	24	53	45	88	910	1160	1460	3070	219	42	120	56
15	24	53	44	83	5600	1410	1340	2750	197	43	101	50
16	57	50	43	78	9650	1680	1120	5780	179	42	95	44
17	1260	51	41	105	3020	1210	1440	20800	164	41	1730	39
18	500	59	40	471	1820	913	2020	4770	148	38	594	35
19	238	67	40	1340	1360	838	1370	2270	131	41	312	32
20	162	62	39	11600	1020	846	1600	1910	121	53	219	29
21	127	57	38	3310	816	744	2870	2610	122	50	188	34
22	105	57	34	1610	1190	657	2160	2900	124	286	147	35
23	89	57	33	1060	2170	597	1860	1780	117	593	124	34
24	78	57	31	781	1510	636	1600	1250	107	261	108	34
25	69	55	31	634	1040	655	1240	970	93	163	95	34
26	63	56	30	527	816	1400	984	16800	86	118	85	34
27	85	55	30	451	710	1870	833	12300	82	93	75	35
28	149	54	31	375	631	1540	2500	3560	78	77	66	32
29	148	53	37	331	---	1340	2610	2140	70	65	59	30
30	146	51	46	297	---	4190	1660	1430	66	60	53	28
31	143	---	117	256	---	8550	---	1070	---	52	49	---
MEAN	121	65.2	44.1	813	2187	1249	1897	4125	370	90.8	167	38.9
MAX	1260	141	117	11600	9650	8550	6050	20800	2430	593	1730	73
MIN	19	50	30	78	631	361	514	667	66	38	38	28
IN.	.21	.11	.08	1.41	3.43	2.17	3.19	7.16	.62	.16	.29	.07

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

	MEAN	515	1749	1338	906	1779	1691	1070	1369	1035	124	266	74.3
MAX	2404	4900	3058	1654	2846	2858	1951	4125	4250	170	1215	304	
(WY)	1985	1986	1988	1985	1985	1985	1984	1990	1985	1985	1985	1984	
MIN	27.1	65.2	44.1	179	656	1218	606	94.7	29.1	48.8	10.7	24.2	
(WY)	1988	1990	1990	1986	1987	1986	1987	1987	1988	1988	1988	1987	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	924	987
HIGHEST ANNUAL MEAN		2084
LOWEST ANNUAL MEAN		356
HIGHEST DAILY MEAN	20800	May 17
LOWEST DAILY MEAN	19	Oct 11
INSTANTANEOUS PEAK FLOW	30400	May 26
INSTANTANEOUS PEAK STAGE	18.62	May 26
INSTANTANEOUS LOW FLOW	19	Oct 10-12
ANNUAL RUNOFF (INCHES)	18.89	20.18
10 PERCENTILE	2310	2170
50 PERCENTILE	132	254
95 PERCENTILE	30	24

## ST. FRANCIS RIVER BASIN

07036100 ST. FRANCIS RIVER NEAR SACO, MO--Continued

## WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SEDIMENT RECORDS: November 1988 to current year.

EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 527 mg/L, Jan. 20; minimum daily mean, 1 mg/L, Apr. 25.

SUSPENDED-SEDIMENT LOADS: Maximum daily, 18,000 tons, May 17; minimum daily, 0.12 tons, Oct. 12.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	23	---	.31	141	2	.76	51	2	.28
2	23	5	.31	129	6	2.1	50	2	.27
3	21	4	.23	119	17	5.5	48	2	.26
4	21	4	.23	99	14	3.7	47	2	.25
5	20	4	.22	69	8	1.5	46	2	.25
6	21	3	.17	56	4	.60	46	2	.25
7	22	3	.18	51	3	.41	45	2	.24
8	22	2	.12	55	2	.30	47	---	.56
9	21	3	.17	58	---	.31	47	---	.56
10	20	4	.22	60	2	.32	47	---	.56
11	19	3	.15	61	---	.33	48	---	.58
12	22	2	.12	58	2	.31	48	---	.58
13	24	2	.13	54	2	.29	46	---	.54
14	24	---	.13	53	2	.29	45	---	.52
15	24	---	.13	53	---	.29	44	---	.50
16	57	---	.79	50	2	.27	43	---	.48
17	1260	---	641	51	2	.28	41	---	.47
18	500	---	38	59	3	.48	40	---	.45
19	238	4	2.6	67	2	.36	40	---	.45
20	162	2	.87	62	4	.67	39	---	.44
21	127	3	1.0	57	3	.46	38	---	.43
22	105	---	.85	57	2	.31	34	---	.35
23	89	2	.48	57	2	.31	33	---	.33
24	78	2	.42	57	2	.31	31	---	.31
25	69	2	.37	55	2	.30	31	---	.30
26	63	2	.34	56	2	.30	30	---	.28
27	85	3	.69	55	3	.45	30	---	.28
28	149	2	.80	54	2	.29	31	---	.29
29	148	2	.80	53	2	.29	37	---	.42
30	146	2	.79	51	2	.28	46	---	.54
31	143	2	.77	---	---	---	117	---	2.6
TOTAL	3746	---	693.39	1957	---	22.37	1366	---	14.62

## ST. FRANCIS RIVER BASIN

07036100 ST. FRANCIS RIVER NEAR SACO, MO--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	172	---	6.0	857	70	307	565	11	17
2	157	---	4.5	4290	156	1810	517	63	88
3	143	---	3.8	2590	44	308	481	35	45
4	155	---	4.0	2250	---	285	434	---	34
5	175	---	6.2	2410	---	299	389	---	23
6	168	---	5.8	1700	31	142	361	---	21
7	153	---	3.9	1290	13	45	368	---	22
8	141	---	3.7	986	4	11	540	---	45
9	131	---	3.2	2660	46	940	803	---	90
10	121	---	2.8	4720	---	2000	785	---	81
11	111	---	2.5	2500	---	560	701	---	68
12	101	---	2.2	1570	---	205	952	---	110
13	93	---	2.0	1150	14	43	1580	---	230
14	88	---	1.8	910	14	34	1160	---	150
15	83	---	4.7	5600	183	4970	1410	22	84
16	78	33	6.9	9650	---	6800	1680	8	36
17	105	---	9.0	3020	---	880	1210	---	41
18	471	---	32	1820	---	360	913	3	7.4
19	1340	---	1260	1360	---	190	838	---	94
20	11600	527	16500	1020	6	128	846	51	116
21	3310	335	2990	816	33	73	744	6	12
22	1610	21	91	1190	---	155	657	2	3.5
23	1060	---	78	2170	9	480	597	---	3.2
24	781	8	17	1510	---	225	636	---	17
25	634	7	12	1040	---	112	655	---	19
26	527	17	24	816	---	165	1400	---	44
27	451	---	30	710	105	201	1870	31	157
28	375	---	21	631	---	119	1540	10	42
29	331	---	18	---	---	---	1340	7	25
30	297	---	15	---	---	---	4190	111	2440
31	256	---	11	---	---	---	8550	---	1750
TOTAL	25218	---	21172.0	61236	---	21847	38712	---	5915.1
APRIL			MAY			JUNE			
1	3500	20	189	1840	15	75	863	---	9.3
2	2510	18	122	2250	3	20	769	---	8.3
3	1620	10	44	8250	---	5250	668	---	5.4
4	1220	---	23	7980	---	1810	526	---	4.3
5	979	6	16	3070	---	108	420	4	4.2
6	818	---	11	1900	---	26	426	---	21
7	687	---	9.3	1380	---	15	2430	96	629
8	589	---	33	1050	---	8.5	976	---	115
9	514	45	62	843	---	7.5	580	---	48
10	5510	209	4770	778	3	7.0	436	---	28
11	6050	---	2140	667	---	5.4	352	---	20
12	2570	16	111	1830	---	1360	292	---	16
13	1670	4	18	7890	---	4900	248	---	12
14	1460	---	12	3070	---	157	219	---	10
15	1340	---	11	2750	14	101	197	---	7.5
16	1120	---	9.1	5780	---	3510	179	---	6.3
17	1440	15	60	20800	---	18000	164	---	5.0
18	2020	154	838	4770	---	1170	148	---	4.0
19	1370	25	91	2270	---	288	131	---	3.5
20	1600	3	13	1910	---	57	121	---	3.0
21	2870	3	24	2610	---	395	122	---	3.2
22	2160	---	17	2900	5	36	124	---	3.4
23	1860	2	10	1780	2	11	117	---	2.7
24	1600	2	9.1	1250	---	6.8	107	---	2.4
25	1240	1	3.5	970	---	7.8	93	2	.58
26	984	---	2.6	16800	---	17800	86	2	.54
27	833	---	47	12300	---	6710	82	2	.51
28	2500	---	1040	3560	---	500	78	17	3.6
29	2610	---	113	2140	---	40	70	---	1.2
30	1660	2	9.6	1430	---	19	66	---	1.1
31	---	---	---	1070	---	14	---	---	---
TOTAL	56904	---	9858.2	127888	---	62415.0	11090	---	979.03

## ST. FRANCIS RIVER BASIN

07036100 ST. FRANCIS RIVER NEAR SACO, MO--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	62	---	.96	46	---	.60	44	6	.71
2	58	---	.85	41	---	.50	41	6	.66
3	53	---	.74	38	---	.44	37	5	.50
4	48	---	.64	59	---	.88	34	4	.37
5	42	---	.52	79	---	1.6	32	7	.60
6	55	---	.79	117	---	2.6	30	10	.81
7	43	---	.54	133	---	3.4	31	9	.75
8	67	---	1.1	99	---	2.3	34	13	1.2
9	70	---	1.2	74	---	1.4	34	13	1.2
10	56	---	.81	60	---	.90	42	5	.57
11	49	---	.66	53	---	.74	73	13	2.6
12	49	---	.66	64	---	1.0	62	25	4.2
13	46	---	.60	91	---	2.0	57	---	3.1
14	42	---	.52	120	---	2.8	56	14	2.1
15	43	---	.54	101	4	1.1	50	7	.94
16	42	---	.52	95	3	.77	44	5	.59
17	41	---	.50	1730	---	270	39	5	.53
18	38	---	.44	594	4	6.4	35	6	.57
19	41	---	.50	312	3	2.5	32	5	.43
20	53	---	.74	219	---	2.4	29	4	.31
21	50	---	.68	188	4	2.0	34	6	.55
22	286	---	13	147	9	3.6	35	6	.57
23	593	---	48	124	15	5.0	34	3	.28
24	261	---	11	108	5	1.5	34	2	.18
25	163	---	5.0	95	15	3.8	34	2	.18
26	118	---	2.7	85	5	1.1	34	5	.46
27	93	---	2.1	75	3	.61	35	5	.47
28	77	---	1.5	66	4	.71	32	---	.34
29	65	---	1.0	59	---	.80	30	---	.32
30	60	---	.90	53	---	.71	28	---	.38
31	52	---	.72	49	5	.66	---	---	---
TOTAL	2816	---	100.43	5174	---	324.82	1166	---	26.47

## 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; water years 1983 to June 1990 (discontinued).

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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)
OCT										
13...	1130	1.1	417	7.8	18.0	8.9	93	10	10	10
NOV										
13...	1000	1.8	424	8.3	11.5	11.7	107	<10	20	15
DEC										
07...	0930	2.1	390	7.8	4.0	15.0	113	30	<10	11
JAN										
16...	1400	3.8	294	7.4	10.5	12.8	114	10	20	11
FEB										
15...	1000	273	127	7.8	7.5	12.3	104	740	50	5
MAR										
23...	1000	22	188	7.6	10.0	12.6	110	50	20	4
APR										
12...	1300	60	141	7.8	11.5	11.2	100	120	20	2
MAY										
10...	1030	15	212	7.8	12.5	10.9	102	200	10	10
JUN										
07...	1200	4.0	268	7.7	20.0	10.0	110	210	20	18

DATE	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)	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)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
OCT									
13...	8	6	1	100	42	3	3	110	56
NOV									
13...	11	2	1	20	32	16	2	100	76
DEC									
07...	8	1	1	40	19	10	4	100	86
JAN									
16...	5	2	<10	30	21	11	<10	50	48
FEB									
15...	2	<1	<10	980	46	110	10	40	24
MAR									
23...	2	2	<10	50	10	4	<10	30	31
APR									
12...	<1	2	<10	160	8	3	<10	20	9
MAY									
10...	8	4	1	230	14	410	2	40	36
JUN									
07...	6	5	1	220	9	88	1	30	39



## ST. FRANCIS RIVER BASIN

07037000 BIG CREEK AT DES ARC, MO

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.

DRAINAGE AREA.--99.6 mi<sup>2</sup>.

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.--Estimated daily discharges: Oct. 19 to Nov. 12, June 10 to July 11, and July 13-16. Records poor. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	50	27	55	177	123	492	266	197	22	19	14
2	21	45	26	57	731	115	363	329	182	21	17	14
3	21	42	26	51	414	107	274	1270	156	20	17	14
4	19	38	26	60	349	99	218	783	134	19	22	15
5	17	36	25	70	307	92	181	437	116	18	26	15
6	17	35	25	71	236	88	154	317	104	17	26	15
7	18	33	25	68	185	87	135	240	98	18	23	15
8	18	31	26	68	149	104	122	188	89	19	21	16
9	18	31	26	64	422	130	110	158	81	17	20	18
10	17	34	26	60	585	137	874	146	75	22	19	19
11	16	33	25	57	370	135	686	126	69	27	18	19
12	16	33	24	53	255	232	404	353	65	33	22	19
13	16	33	24	50	193	296	297	885	61	30	38	20
14	16	33	23	48	155	222	249	433	57	27	36	20
15	17	31	23	47	705	313	204	428	53	25	30	18
16	23	29	22	45	781	316	175	928	51	23	31	17
17	206	28	21	84	419	241	354	2540	48	22	32	17
18	123	27	22	242	300	195	315	543	45	21	29	16
19	95	27	22	484	229	181	253	363	43	20	26	16
20	80	27	23	2060	183	163	344	300	41	20	26	16
21	58	28	24	503	158	149	508	342	40	21	27	22
22	50	30	23	301	220	140	393	345	45	42	25	26
23	40	32	25	202	330	130	471	256	40	41	24	24
24	37	33	23	152	251	134	483	213	37	33	23	23
25	34	32	23	125	193	127	352	184	34	29	21	23
26	40	32	24	106	165	177	271	904	31	27	20	22
27	70	30	25	92	147	266	221	706	29	24	19	21
28	66	29	25	79	133	247	266	477	27	23	18	20
29	62	27	27	71	---	230	276	357	25	23	16	20
30	58	27	36	64	---	642	227	279	23	22	15	22
31	56	---	48	59	---	861	---	232	---	20	15	---
MEAN	44.0	32.5	25.5	179	312	209	322	494	69.9	24.1	23.3	18.5
MAX	206	50	48	2060	781	861	874	2540	197	42	38	26
MIN	16	27	21	45	133	87	110	126	23	17	15	14
IN.	.51	.36	.30	2.07	3.27	2.42	3.61	5.72	.78	.28	.27	.21

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

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	93.0	249	228	134	218	247	201	167	160	38.9	34.0	25.4
MAX	396	610	632	232	400	357	322	494	587	95.7	102	43.5
(WY)	1985	1986	1988	1988	1989	1985	1990	1990	1985	1987	1985	1988
MIN	21.7	32.5	25.5	37.0	93.6	154	106	28.9	15.0	14.2	7.67	6.50
(WY)	1988	1990	1990	1984	1987	1987	1987	1987	1988	1984	1983	1983

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

	1990	PERIOD
AVERAGE FLOW	145	149
HIGHEST ANNUAL MEAN		267
LOWEST ANNUAL MEAN		71.8
HIGHEST DAILY MEAN	2540	6350
LOWEST DAILY MEAN	14	4.9
INSTANTANEOUS PEAK FLOW	6420	16000
INSTANTANEOUS PEAK STAGE	9.32	12.92
INSTANTANEOUS LOW FLOW	13	5.2
ANNUAL RUNOFF (INCHES)	19.81	20.37
10 PERCENTILE	367	324
50 PERCENTILE	46	57
95 PERCENTILE	17	15

## ST. FRANCIS RIVER BASIN

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: May 19, 20, 22-25, 29, 30, and Sept. 11-24. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	191	102	179	756	1060	5130	2040	2300	137	110	115
2	69	190	100	257	4160	991	3240	2770	1980	127	101	108
3	66	178	98	253	3770	929	2340	5530	1670	119	97	102
4	65	165	97	256	2580	864	1790	12100	1400	111	114	93
5	62	157	97	264	2810	793	1500	4850	1180	102	164	86
6	61	131	102	291	2370	741	1300	2990	1020	98	150	81
7	62	115	121	283	1760	717	1150	2280	1650	100	154	76
8	62	109	130	271	1530	832	1020	1860	1820	108	190	74
9	61	110	129	253	2130	1070	927	1590	1110	96	166	78
10	61	112	130	235	5490	1190	2900	1450	888	109	139	83
11	59	112	130	219	3840	1140	8160	1340	729	109	120	120
12	58	112	127	201	2400	1120	3770	1860	617	103	118	97
13	58	111	123	188	1790	1710	2400	7490	543	101	147	89
14	57	110	119	175	1470	1670	1970	5270	494	102	181	85
15	58	107	113	167	2840	1570	1840	3570	458	98	190	79
16	57	103	106	160	11200	2030	1670	5620	420	93	191	77
17	380	100	107	192	4830	1770	2220	22000	383	89	555	75
18	1020	100	106	387	2690	1430	2740	12100	350	85	1220	73
19	574	101	102	878	2010	1270	2290	6000	314	82	607	72
20	372	110	98	11300	1620	1230	2010	4000	295	83	421	71
21	275	110	97	6840	1380	1170	3450	2590	285	89	314	80
22	219	113	115	2620	1420	1080	3060	3500	320	170	272	78
23	185	113	92	1760	2280	1000	3220	2600	273	423	222	77
24	160	111	88	1390	2240	995	3220	2100	249	566	187	76
25	142	110	86	1170	1680	1020	2210	1700	227	381	164	75
26	130	110	87	1010	1390	1190	1710	7040	208	280	143	75
27	120	109	87	842	1250	1910	1440	22700	192	217	130	73
28	112	106	87	702	1150	1940	1820	8000	176	174	125	71
29	174	103	95	593	---	1730	3270	5200	160	150	135	71
30	192	102	109	510	---	2710	2330	3700	148	134	130	73
31	196	---	123	459	---	9650	---	2900	---	120	120	---
MEAN	169	120	107	1107	2673	1565	2537	5443	729	153	228	82.8
MAX	1020	191	130	11300	11200	9650	8160	22700	2300	566	1220	120
MIN	57	100	86	160	756	717	927	1340	148	82	97	71
IN.	.20	.14	.13	1.33	2.91	1.89	2.96	6.57	.85	.19	.28	.10

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

	MEAN	374	916	1279	1408	1587	2190	2298	1719	952	338	223	240
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	178	287	139	33.6	21.3	11.2	14.8	
(WY)	1954	1954	1954	1956	1963	1941	1981	1930	1936	1936	1936	1953	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1235	1124
HIGHEST ANNUAL MEAN		2731
LOWEST ANNUAL MEAN		343
HIGHEST DAILY MEAN	22700	May 27
LOWEST DAILY MEAN	57	Oct 14, 16
INSTANTANEOUS PEAK FLOW	28100	May 17
INSTANTANEOUS PEAK STAGE	20.84	May 17
INSTANTANEOUS LOW FLOW	56	Oct 14
ANNUAL RUNOFF (INCHES)	17.54	15.97
10 PERCENTILE	2960	2350
50 PERCENTILE	233	334
95 PERCENTILE	71	36

## ST. FRANCIS RIVER 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, 343,000 acre-ft, May 19, elevation, 381.31 ft; minimum, 34,600 acre-ft, Mar. 24, elevation, 355.48 ft.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990  
OBSERVATIONS AT 08:00

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64000	63500	63800	65800	47000	79700	71600	185000	283000	74500	63800	63700
2	64000	63700	63700	65900	49700	74500	82800	190000	273000	72000	63700	63600
3	63900	63700	63800	65800	55900	69100	88400	197000	263000	69700	63500	63500
4	63600	63600	63300	66100	59600	63400	90700	218000	252000	67600	63400	63300
5	63300	63400	63500	66000	58500	58200	91200	244000	241000	65900	65000	63300
6	63300	63700	63800	65600	58000	54200	90700	250000	230000	64200	65400	63600
7	63500	63800	64100	65400	56600	51200	88500	252000	221000	62600	65200	63700
8	63600	64200	64600	65100	54000	48400	86100	253000	215000	62300	64900	64000
9	63600	63900	64700	65000	51200	46500	84500	253000	208000	62000	64700	63900
10	63700	63700	64900	65000	52700	44800	86000	254000	200000	61800	64800	63700
11	63900	63300	65500	64900	60100	43600	105000	253000	192000	61800	64600	63600
12	63900	63200	65500	63600	62900	42200	122000	252000	183000	62300	64200	63400
13	64000	63100	65100	60100	61900	40900	129000	258000	175000	62200	65100	63300
14	64200	63100	65200	57000	61100	40600	134000	274000	166000	62200	64400	63500
15	64200	63100	65600	54500	61600	40700	137000	280000	158000	62200	63800	63800
16	64400	64100	65000	51900	79000	40700	140000	284000	150000	62200	63800	63600
17	65200	62900	64900	49700	103000	41000	143000	298000	142000	62400	65200	63200
18	65200	62800	64800	48200	111000	40900	146000	339000	135000	62500	65300	63100
19	65000	63000	64600	46400	112000	40100	150000	343000	127000	62600	66000	63300
20	64300	63100	64600	53600	110000	38700	153000	334000	120000	62900	65600	63400
21	63800	63500	64500	76100	107000	37300	157000	324000	114000	63400	66000	63600
22	63400	64000	64600	84200	104000	35900	164000	317000	109000	65600	64800	64900
23	63200	64000	64700	82900	102000	35100	167000	309000	104000	66200	63800	65100
24	63200	63800	64900	79300	100000	34600	170000	300000	99000	66600	63300	65000
25	63300	63700	65100	75200	97300	34700	172000	291000	94500	66200	63300	64400
26	63400	63900	65300	69300	92800	34800	173000	283000	90300	65500	63400	63900
27	63400	63800	65300	63400	88100	34900	174000	297000	86400	65000	63500	63700
28	63300	64200	65200	59800	83600	36200	174000	326000	82700	64900	63400	63400
29	63200	63800	65300	56100	---	38100	177000	322000	79800	64500	63400	63300
30	63300	63800	65500	52400	---	40300	182000	311000	77000	64500	63500	63400
31	63600	---	65700	49500	---	49200	---	298000	---	64200	63800	---
(-)	360.09	360.11	360.34	358.17	362.33	358.13	371.24	278.93	361.62	360.16	360.11	360.07
(=)	-200	+200	+1900	-16200	+34100	-34400	+132800	+116000	-221000	-12800	-400	+400
MAX	65200	64200	65700	84200	112000	79700	182000	343000	283000	74500	66000	65100
MIN	63200	62800	63300	46400	47000	34600	71600	185000	77000	61800	63300	63100

CAL YR 1989 (=) . . . . -4700

WTR YR 1990 (=) . . . . -400

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

(=) Change in contents, in acre feet

## ST. FRANCIS RIVER BASIN

195

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 (revised) 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 fair. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	232	219	226	2040	3570	1030	1270	9720	1370	266	198
2	205	231	218	279	2290	3840	1150	929	8310	1330	192	200
3	212	231	220	353	3050	3850	1550	805	7850	1170	189	200
4	213	230	170	400	3370	3780	1690	727	7610	1030	175	183
5	188	230	40	472	3800	3580	2200	1240	7290	963	80	89
6	87	231	40	478	3710	3020	2290	2410	6650	894	107	78
7	79	232	40	478	3670	2570	2440	2560	5990	669	300	105
8	77	245	40	430	3570	2480	2390	2470	5530	373	297	201
9	76	337	40	358	3380	2420	1970	2120	5430	287	200	207
10	76	346	40	352	3410	2250	1700	2060	5370	204	212	205
11	76	292	170	624	3440	2210	1330	2040	5380	200	308	205
12	77	215	240	1360	3460	2190	1170	2050	5320	197	321	204
13	76	210	240	1640	3360	2170	892	2070	5240	163	434	154
14	75	210	229	1670	2910	2170	858	2090	5170	110	545	80
15	74	211	228	1660	3080	2180	849	2090	5150	104	394	130
16	77	264	227	1620	2240	2240	846	2220	4730	104	335	198
17	176	297	227	1540	2020	2320	1080	3220	4380	94	473	177
18	656	170	245	1510	2210	2330	1570	6370	4240	68	782	83
19	851	81	230	1540	3170	2320	1220	9170	4100	70	731	74
20	676	74	228	1830	3560	2290	840	9670	3890	68	729	73
21	490	102	197	2180	3600	2210	970	9690	3570	67	800	75
22	435	207	104	2900	3640	2110	1820	9580	3280	79	896	72
23	328	218	94	3580	3700	1860	2400	9290	3040	103	617	70
24	234	218	91	3840	4050	1500	2790	8210	2640	472	396	131
25	227	217	88	3840	4100	1230	2850	7970	2440	645	230	386
26	227	217	141	3780	4140	1310	2820	7910	2210	611	216	315
27	227	217	220	3550	4080	1540	2570	8270	2080	439	214	213
28	227	217	222	3100	3920	1590	2430	9870	1850	340	213	201
29	228	219	226	2890	---	1590	2300	10200	1580	328	193	199
30	231	220	225	2580	---	1270	1890	10300	1480	326	100	201
31	233	---	226	2240	---	1020	---	10400	---	324	135	---
MEAN	233	221	167	1719	3320	2291	1730	5138	4717	426	357	164
MAX	851	346	245	3840	4140	3850	2850	10400	9720	1370	896	386
MIN	74	74	40	226	2020	1020	840	727	1480	67	80	70
IN.	.21	.19	.15	1.51	2.64	2.01	1.47	4.52	4.02	.37	.31	.14

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

	404	872	1837	2255	2322	2768	2947	2453	1389	760	407	413
MEAN	404	872	1837	2255	2322	2768	2947	2453	1389	760	407	413
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	167	188	286	308	63.5	62.3	6.00	87.1	40.0	34.0
(WY)	1949	1954	1990	1981	1963	1941	1981	1987	1978	1980	1965	1955

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1694	1565
HIGHEST ANNUAL MEAN		3534
LOWEST ANNUAL MEAN		406
HIGHEST DAILY MEAN	10400	21800
LOWEST DAILY MEAN	40	.00
INSTANTANEOUS PEAK FLOW	10400	22300
INSTANTANEOUS PEAK STAGE	31.34	25.60
INSTANTANEOUS LOW FLOW	40	0
ANNUAL RUNOFF (INCHES)	17.54	16.21
10 PERCENTILE	4160	4180
50 PERCENTILE	690	655
95 PERCENTILE	74	39



## 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.--Estimated daily discharges: Oct. 1-4. Records fair. 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  $\text{ft}^3/\text{s}$ .

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	73	57	73	1590	498	1070	658	395	142	107	69
2	90	70	57	68	2800	488	640	1140	405	129	109	71
3	80	66	57	68	2100	428	521	1230	369	133	108	73
4	75	66	60	82	1230	391	469	986	347	135	118	76
5	72	74	66	72	630	366	431	686	334	134	131	80
6	73	111	65	68	473	343	397	549	327	136	107	73
7	73	85	59	68	412	321	376	481	337	153	91	66
8	70	105	57	67	375	335	354	439	314	207	88	67
9	69	91	57	69	817	330	338	416	297	155	87	67
10	70	77	59	66	2030	311	402	413	280	133	85	66
11	71	71	62	65	973	300	775	377	270	134	83	64
12	71	69	55	63	572	292	679	370	266	161	86	61
13	70	68	61	59	480	279	482	358	263	130	94	64
14	69	68	62	64	417	267	414	333	258	118	94	63
15	70	108	57	65	2620	586	379	323	248	119	87	59
16	148	95	75	63	3970	490	365	340	237	116	88	59
17	324	70	73	91	2770	393	347	1640	230	114	91	58
18	134	68	69	92	1380	351	333	754	217	123	85	59
19	95	64	63	350	750	339	326	458	210	132	82	65
20	84	64	64	2370	572	322	320	381	209	141	81	61
21	80	63	71	1790	506	314	340	2400	199	138	79	79
22	80	63	87	853	680	318	334	2310	202	163	79	105
23	77	63	103	385	726	296	305	1000	185	216	80	61
24	76	61	106	263	595	286	290	510	176	180	79	57
25	76	64	108	217	481	338	281	422	173	134	76	57
26	76	65	116	188	438	313	270	660	170	117	76	57
27	76	68	115	180	420	297	274	826	168	113	72	56
28	75	62	77	172	436	294	1820	783	165	116	73	53
29	74	57	75	738	---	556	2390	562	158	116	69	53
30	75	57	74	472	---	1840	1040	472	148	107	71	72
31	75	---	81	275	---	2320	---	428	---	104	71	---
MEAN	88.6	72.9	72.5	307	1116	471	559	732	252	137	88.0	65.7
MAX	324	111	116	2370	3970	2320	2390	2400	405	216	131	105
MIN	69	57	55	59	375	267	270	323	148	104	69	53
IN.	.44	.35	.36	1.51	4.95	2.31	2.65	3.59	1.20	.67	.43	.33

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

MEAN	137	261	376	445	545	539	465	461	290	208	140	123
MAX	578	1552	1416	2051	2066	1442	1752	1264	804	642	468	378
(WY)	1985	1958	1979	1950	1989	1975	1979	1986	1957	1957	1957	1965
MIN	36.7	41.6	49.5	55.2	83.6	86.4	97.8	146	96.2	74.4	54.7	33.2
(WY)	1954	1954	1956	1981	1977	1981	1954	1977	1988	1954	1980	1980

### SUMMARY STATISTICS

FOR 1990 WATER YEAR

FOR PERIOD OF RECORD

AVERAGE FLOW	325			331	
HIGHEST ANNUAL MEAN				774	1979
LOWEST ANNUAL MEAN				94.7	1954
HIGHEST DAILY MEAN	3970	Feb 16		6490	Mar 29 1975
LOWEST DAILY MEAN	53	Sep 28-29		29	Sep 20 1954
INSTANTANEOUS PEAK FLOW	4210	Feb 16		6580	Mar 29 1975
INSTANTANEOUS PEAK STAGE	12.52	Feb 16		15.16	Feb 15 1950
INSTANTANEOUS LOW FLOW	53	Sep 28-30		29	Sep 20 1954
ANNUAL RUNOFF (INCHES)	18.76			19.15	
10 PERCENTILE	670			632	
50 PERCENTILE	129			193	
95 PERCENTILE	59			59	



## ST. FRANCIS RIVER BASIN

## 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: Dec. 16-29. Records good except for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. Little River Ditch 1 flows into Little River Ditch 251 at point 35.3 mi downstream.

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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	109	99	93	126	1200	457	1780	1210	672	155	112	76
2	106	97	92	104	4770	463	1180	952	626	153	106	71
3	99	97	88	104	3160	433	702	1420	579	145	97	66
4	97	98	93	114	2120	392	513	1950	447	140	109	64
5	98	108	96	113	1360	363	431	1250	392	136	189	68
6	98	108	97	109	860	335	382	743	369	130	189	69
7	97	109	92	105	647	323	350	552	355	213	147	66
8	96	110	92	105	525	351	323	462	330	213	124	67
9	97	115	90	110	1080	390	314	417	299	167	109	70
10	98	106	94	104	2840	388	2870	446	274	150	105	72
11	97	102	92	101	1680	366	5370	438	261	143	105	113
12	97	99	83	96	1020	351	2830	400	252	149	107	85
13	95	99	90	95	659	330	1990	1070	251	136	122	67
14	94	101	86	98	503	329	1280	1060	302	139	122	64
15	94	112	83	102	4830	529	787	685	316	134	115	61
16	104	101	94	102	8590	608	621	522	262	127	110	61
17	110	99	98	133	5450	484	585	2930	255	122	108	61
18	100	99	100	206	3070	399	650	3220	248	122	99	68
19	99	95	110	346	2510	366	535	1650	251	124	95	68
20	100	95	133	6000	1630	342	455	1050	269	121	94	67
21	101	95	150	5190	943	336	427	1340	273	114	94	98
22	101	103	155	2620	2160	329	405	2270	260	577	98	108
23	104	99	160	1890	2550	303	382	1310	317	989	117	81
24	101	98	160	1150	1340	319	352	809	283	468	106	73
25	96	101	150	676	858	405	324	573	246	240	96	73
26	96	101	150	517	664	401	307	2590	224	163	86	71
27	97	105	130	437	558	363	299	4700	206	134	81	72
28	98	96	110	353	458	341	1940	3150	189	119	79	73
29	98	90	103	388	---	382	3370	2110	175	110	79	74
30	99	91	105	363	---	2040	1850	1230	164	110	75	77
31	104	---	120	317	---	3100	---	831	---	111	74	---
MEAN	99.4	101	109	719	2073	526	1120	1398	312	195	108	73.5
MAX	110	115	160	6000	8590	3100	5370	4700	672	989	189	113
MIN	94	90	83	95	458	303	299	400	164	110	74	61
IN.	.25	.25	.28	1.84	4.80	1.35	2.78	3.58	.77	.50	.28	.18

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

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	177	431	629	748	907	968	866	737	384	271	182	180
MAX	944	2615	2875	4286	3646	2800	2851	2633	1564	817	658	703
(WY)	1985	1958	1983	1950	1989	1979	1979	1961	1989	1957	1985	1975
MIN	30.6	50.2	73.5	72.3	115	106	146	155	88.7	70.9	49.6	35.0
(WY)	1954	1954	1954	1981	1963	1981	1971	1949	1988	1954	1953	1953

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

	1990 WATER YEAR	PERIOD OF RECORD
AVERAGE FLOW	559	538
HIGHEST ANNUAL MEAN		1261
LOWEST ANNUAL MEAN		134
HIGHEST DAILY MEAN	8590	11700
LOWEST DAILY MEAN	61	21
INSTANTANEOUS PEAK FLOW	9070	11200
INSTANTANEOUS PEAK STAGE	16.53	18.42
INSTANTANEOUS LOW FLOW	59	21
ANNUAL RUNOFF (INCHES)	16.87	16.23
10 PERCENTILE	1470	1290
50 PERCENTILE	148	203
95 PERCENTILE	73	66

## 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.--No estimated daily discharges. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	14	12	12	51	181	410	212	654	81	42	13
2	16	13	12	11	742	219	350	182	549	66	26	12
3	15	12	11	9.0	483	272	306	4430	454	55	28	12
4	14	11	11	12	417	276	264	3450	375	53	29	11
5	14	12	11	11	418	246	234	1360	328	48	24	11
6	18	12	12	12	370	219	207	888	292	46	24	10
7	19	11	11	12	319	437	179	664	255	67	25	11
8	16	11	10	12	263	1000	162	516	227	59	22	16
9	16	11	12	11	580	847	147	430	243	51	23	17
10	17	11	13	10	846	613	587	362	255	55	22	17
11	17	11	13	9.4	543	487	707	310	205	52	23	29
12	16	11	11	8.6	396	1110	469	382	182	51	21	24
13	15	11	8.8	9.0	309	869	379	370	163	57	21	22
14	15	11	8.7	8.8	245	1800	477	304	154	62	23	20
15	14	11	9.3	8.7	3940	8490	506	3160	220	60	32	18
16	12	9.9	8.2	11	2450	1760	446	5740	226	51	36	16
17	11	9.4	7.9	74	908	1100	2010	2830	165	51	28	15
18	12	9.4	8.3	224	638	813	808	1220	133	48	25	15
19	12	10	8.7	526	480	643	556	1230	141	46	20	16
20	12	11	8.7	1720	378	534	470	1410	129	43	26	16
21	12	11	8.1	574	318	448	476	6920	128	41	22	81
22	12	12	8.0	333	296	382	406	1850	187	43	20	78
23	12	12	8.3	221	329	324	344	1120	178	42	19	53
24	12	12	8.1	157	325	298	295	821	145	40	19	30
25	12	13	8.5	117	279	264	251	653	126	38	19	23
26	11	13	9.3	93	238	245	214	812	187	60	19	24
27	12	13	9.4	77	205	238	210	2600	168	295	18	21
28	12	12	8.7	64	187	319	384	1480	131	130	17	18
29	12	12	11	53	---	514	335	884	108	77	16	20
30	12	13	12	45	---	469	262	670	90	56	15	32
31	14	---	12	39	---	467	---	681	---	55	14	---
MEAN	13.9	11.5	10.0	145	605	835	428	1546	227	63.8	23.2	23.4
MAX	19	14	13	1720	3940	8490	2010	6920	654	295	42	81
MIN	11	9.4	7.9	8.6	51	181	147	182	90	38	14	10
IN.	.07	.05	.05	.68	2.56	3.91	1.94	7.25	1.03	.30	.11	.11

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

	MEAN	109	235	301	192	269	437	398	386	192	120	41.9	91.6
MAX	587	1327	1370	730	972	1041	1193	1672	873	1148	262	881	
(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 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	327	231
HIGHEST ANNUAL MEAN	465	1985
LOWEST ANNUAL MEAN	52.8	1956
HIGHEST DAILY MEAN	8490	Mar 15 13900
LOWEST DAILY MEAN	7.9	Dec 17 .30
INSTANTANEOUS PEAK FLOW	14600	Mar 15 24800
INSTANTANEOUS PEAK STAGE	16.24	Mar 15 18.20
INSTANTANEOUS LOW FLOW	5.9	Jan 10 0.1
ANNUAL RUNOFF (INCHES)	18.05	Dec 17 12.74
10 PERCENTILE	701	507
50 PERCENTILE	53	76
95 PERCENTILE	8.7	8.4

## 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: Dec. 15-26. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	161	114	106	90	705	1290	2390	1220	3990	551	294	162
2	147	112	106	88	2630	1440	2170	1120	3340	525	287	161
3	141	109	105	87	2810	1620	1950	5380	2690	491	264	159
4	138	108	103	88	2160	1660	1770	15700	2190	466	251	157
5	131	110	100	110	1860	1580	1630	8740	1840	438	250	156
6	138	106	104	120	1740	1460	1500	5670	1600	485	232	155
7	143	106	106	111	1550	1910	1380	4740	1450	455	233	152
8	159	106	108	107	1360	3130	1290	4210	1360	448	219	221
9	143	105	110	103	1850	3500	1210	3830	1510	428	211	317
10	133	107	109	102	3200	2960	1580	3500	1530	406	212	258
11	130	107	107	100	2810	2590	2530	3210	1310	386	212	225
12	126	107	103	98	2250	3200	2370	2960	1180	383	221	248
13	125	104	104	98	1820	3880	2010	2720	1080	384	225	244
14	123	104	101	98	1510	7780	1930	2180	1010	448	236	230
15	122	105	100	99	3040	26200	2090	3330	977	397	241	207
16	119	106	100	101	10500	16200	2040	14000	976	376	299	190
17	113	108	100	963	4200	5370	2210	17300	962	365	398	183
18	112	107	100	1920	3040	4010	2710	6940	854	331	295	177
19	113	104	100	2180	2530	3350	2030	4970	859	329	255	187
20	114	105	100	5680	2080	2950	1770	5460	889	323	248	215
21	111	102	99	3550	1760	2700	1650	8280	818	305	303	290
22	115	109	98	2320	1680	2440	1600	11500	943	303	235	1420
23	109	110	98	1660	1640	2190	1490	5410	922	309	220	880
24	108	111	99	1260	1590	2020	1390	3850	789	303	209	614
25	110	107	99	993	1510	1850	1280	2950	724	295	202	487
26	108	104	99	794	1380	1690	1220	2870	739	292	194	391
27	108	106	97	650	1290	1570	1160	5150	857	313	187	338
28	108	103	96	546	1260	1710	1190	7500	755	420	180	303
29	108	106	94	486	---	2400	1480	4540	666	434	177	277
30	108	106	93	432	---	2610	1350	3420	604	369	171	267
31	108	---	92	394	---	2490	---	4100	---	332	164	---
MEAN	124	107	101	820	2348	3863	1746	5702	1314	390	236	309
MAX	161	114	110	5680	10500	26200	2710	17300	3990	551	398	1420
MIN	108	102	92	87	705	1290	1160	1120	604	292	164	152
IN.	.14	.12	.12	.96	2.48	4.51	1.97	6.66	1.49	.46	.28	.35

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

MEAN	503	806	938	865	1104	1512	1731	1598	1167	596	411	363
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	145	179	87.6	46.0	22.6	45.8
(WY)	1954	1954	1956	1956	1954	1954	1954	1936	1936	1954	1954	1953

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1420	965
HIGHEST ANNUAL MEAN		2499
LOWEST ANNUAL MEAN		119
HIGHEST DAILY MEAN	26200	46900
LOWEST DAILY MEAN	87	11
INSTANTANEOUS PEAK FLOW	30900	52700
INSTANTANEOUS PEAK STAGE	19.44	29.82
INSTANTANEOUS LOW FLOW	85	10
ANNUAL RUNOFF (INCHES)	19.53	13.27
10 PERCENTILE	3330	2110
50 PERCENTILE	405	424
95 PERCENTILE	96	91

## WHITE RIVER BASIN

## 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, 3,350,000 acre-ft, May 7, 8, elevation, 928.73 ft; minimum, 2,260,000 acre-ft, Dec. 22-28, Jan. 2, 5, minimum elevation, 904.09 ft, Dec. 24.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990  
OBSERVATIONS AT 24:00

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2530000	2370000	2290000	2270000	2480000	2740000	2860000	2850000	3280000	2980000	2800000	2700000
2	2520000	2370000	2290000	2260000	2520000	2750000	2850000	2850000	3270000	2970000	2800000	2700000
3	2510000	2360000	2290000	2270000	2550000	2750000	2830000	3080000	3250000	2960000	2790000	2690000
4	2500000	2360000	2290000	2270000	2570000	2750000	2810000	3280000	3220000	2940000	2790000	2690000
5	2490000	2360000	2290000	2260000	2580000	2750000	2790000	3330000	3200000	2930000	2790000	2680000
6	2490000	2360000	2290000	2270000	2600000	2740000	2770000	3340000	3180000	2920000	2790000	2680000
7	2490000	2360000	2280000	2270000	2620000	2760000	2750000	3350000	3180000	2910000	2790000	2670000
8	2490000	2350000	2290000	2270000	2620000	2770000	2750000	3350000	3180000	2910000	2790000	2670000
9	2480000	2350000	2280000	2270000	2630000	2770000	2740000	3340000	3190000	2900000	2790000	2670000
10	2470000	2340000	2280000	2270000	2640000	2770000	2750000	3340000	3190000	2890000	2780000	2660000
11	2470000	2340000	2280000	2270000	2650000	2770000	2760000	3330000	3180000	2890000	2790000	2660000
12	2460000	2340000	2280000	2270000	2650000	2790000	2760000	3310000	3170000	2890000	2790000	2650000
13	2450000	2340000	2270000	2270000	2640000	2800000	2750000	3290000	3170000	2890000	2790000	2650000
14	2450000	2340000	2270000	2270000	2640000	2870000	2760000	3270000	3160000	2890000	2780000	2640000
15	2450000	2330000	2270000	2270000	2700000	2980000	2760000	3250000	3160000	2880000	2780000	2640000
16	2440000	2320000	2270000	2270000	2740000	3030000	2760000	3280000	3150000	2880000	2770000	2630000
17	2430000	2320000	2270000	2290000	2750000	3050000	2760000	3300000	3140000	2870000	2770000	2620000
18	2420000	2320000	2270000	2300000	2760000	3050000	2800000	3290000	3140000	2860000	2760000	2610000
19	2410000	2320000	2270000	2340000	2770000	3040000	2860000	3280000	3120000	2850000	2760000	2600000
20	2400000	2310000	2270000	2380000	2780000	3030000	2880000	3270000	3110000	2840000	2760000	2600000
21	2400000	2310000	2270000	2400000	2770000	3010000	2890000	3280000	3100000	2840000	2750000	2600000
22	2400000	2300000	2260000	2410000	2770000	2990000	2880000	3290000	3090000	2840000	2750000	2590000
23	2390000	2300000	2260000	2420000	2750000	2970000	2880000	3280000	3080000	2840000	2750000	2590000
24	2390000	2300000	2260000	2420000	2750000	2950000	2880000	3260000	3070000	2840000	2740000	2590000
25	2380000	2300000	2260000	2430000	2740000	2920000	2880000	3240000	3060000	2830000	2730000	2580000
26	2380000	2300000	2260000	2440000	2740000	2900000	2890000	3240000	3040000	2820000	2720000	2570000
27	2380000	2300000	2260000	2440000	2740000	2880000	2890000	3260000	3030000	2810000	2720000	2570000
28	2380000	2300000	2260000	2440000	2740000	2880000	2890000	3270000	3020000	2810000	2720000	2560000
29	2380000	2290000	2270000	2440000	---	2880000	2880000	3260000	3000000	2810000	2710000	2560000
30	2380000	2290000	2270000	2440000	---	2870000	2860000	3260000	2990000	2800000	2700000	2560000
31	2370000	---	2270000	2450000	---	2870000	---	3280000	---	2800000	2700000	---
(-)	907.01	904.86	904.18	908.82	915.77	918.79	918.69	927.41	921.54	917.30	914.99	911.56
(=)	-170000	-80000	-20000	+180000	+290000	+130000	-10000	+420000	-290000	-190000	-100000	-140000
MAX	2530000	2370000	2290000	2450000	2780000	3050000	2890000	3350000	3280000	2980000	2800000	2700000
MIN	2370000	2290000	2260000	2260000	2480000	2740000	2740000	2850000	2990000	2800000	2700000	2560000
CAL YR 1989	. . . -100,000											
WTR YR 1990	. . . + 20,000											

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

(=) Change in contents, in acre-feet



## WHITE RIVER BASIN

201

07053450 WHITE RIVER BELOW TABLE ROCK DAM NEAR BRANSON, MO

## WATER-QUALITY RECORDS

LOCATION.--Lat 36°35'42", long 93°18'32", sec.22, T.22 N., R.22 W., Taney County, Hydrologic Unit 11010003, on left bank in SW corner of U.S. Army Corps of Engineers' carpentry building, 600 ft below Table Rock Dam.

## 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 water temperature and dissolved oxygen record exceeds 20 percent of the year. The monitor was not operated from Jan. 9 to July 10, 1990.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.1	8.8	9.3	10.4	9.2	9.9	10.6	9.2	9.9	7.8	6.7	7.1
2	9.5	8.8	9.3	10.3	9.4	10.0	10.6	9.5	9.9	7.1	6.6	6.9
3	9.7	9.0	9.4	10.4	9.3	10.0	10.5	9.1	9.8	7.6	6.7	7.1
4	10.7	9.0	9.4	10.4	9.4	9.8	10.8	9.5	10.1	7.5	6.7	7.1
5	9.6	8.9	9.4	10.9	9.5	10.0	10.5	9.7	10.0	7.9	6.6	7.1
6	10.0	9.3	9.6	10.6	9.3	9.9	10.4	9.6	9.9	7.9	6.7	7.1
7	10.5	9.0	9.6	---	---	---	10.3	9.4	9.8	7.9	6.7	7.1
8	10.2	8.9	9.5	10.3	9.4	9.8	10.2	9.3	9.8	7.8	6.6	7.1
9	10.1	8.8	9.5	10.4	9.5	10.1	10.2	9.2	9.6	---	---	---
10	9.7	9.2	9.6	10.2	9.6	10.0	10.4	9.5	9.8	---	---	---
11	10.5	8.9	9.6	10.2	9.4	9.8	10.1	9.5	9.9	---	---	---
12	9.9	9.1	9.6	10.2	9.5	9.8	10.2	9.3	9.8	---	---	---
13	10.0	9.1	9.7	10.2	9.4	9.9	10.6	9.5	9.9	---	---	---
14	10.2	9.1	9.6	10.3	9.5	10.0	10.3	9.2	9.7	---	---	---
15	10.7	9.2	9.6	10.4	9.6	10.1	9.8	8.8	9.3	---	---	---
16	10.0	9.2	9.6	11.1	9.6	10.6	9.7	8.7	9.0	---	---	---
17	10.1	9.3	9.9	10.9	9.9	10.5	9.0	8.6	8.8	---	---	---
18	10.0	9.3	9.9	10.6	9.7	10.1	9.3	8.3	8.7	---	---	---
19	10.1	9.4	10.0	10.4	9.7	10.0	9.4	8.3	8.7	---	---	---
20	10.3	9.3	9.8	10.7	9.8	10.3	9.3	8.3	8.7	---	---	---
21	10.2	9.1	9.6	10.6	9.5	10.0	8.6	7.8	8.2	---	---	---
22	10.3	9.1	9.6	10.6	9.5	10.2	8.2	7.3	7.7	---	---	---
23	10.0	9.3	9.7	10.5	9.5	9.9	8.2	7.0	7.6	---	---	---
24	10.2	9.4	9.8	10.4	9.5	9.9	7.6	7.0	7.3	---	---	---
25	10.1	9.5	9.8	10.3	9.4	9.9	8.4	7.1	7.6	---	---	---
26	10.6	9.4	9.8	10.3	9.6	9.9	8.1	7.2	7.5	---	---	---
27	10.4	9.2	9.7	10.9	9.7	10.3	8.4	7.1	7.5	---	---	---
28	10.1	9.3	9.7	10.8	9.6	10.4	7.9	7.0	7.3	---	---	---
29	10.5	9.4	9.9	10.7	9.6	10.2	7.5	7.1	7.3	---	---	---
30	10.2	9.5	9.9	10.6	9.4	9.9	7.4	7.0	7.2	---	---	---
31	10.4	9.5	9.9	---	---	---	8.1	7.0	7.2	---	---	---
MONTH	10.7	8.8	9.7	---	---	---	10.8	7.0	8.8	---	---	---



## WHITE RIVER BASIN

07053450 WHITE RIVER BELOW TABLE ROCK DAM NEAR BRANSON, MO--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	---	---	---	---	---	---	13.8	12.8	13.0	14.3	13.0	13.3
2	---	---	---	---	---	---	13.5	12.7	12.9	13.7	13.0	13.2
3	---	---	---	---	---	---	13.8	12.8	13.0	13.6	13.0	13.2
4	---	---	---	---	---	---	13.6	12.9	13.2	13.4	13.0	13.2
5	---	---	---	---	---	---	15.3	12.9	13.4	13.5	13.1	13.3
6	---	---	---	---	---	---	15.0	12.8	13.2	13.4	13.1	13.3
7	---	---	---	---	---	---	14.2	12.7	13.2	---	---	---
8	---	---	---	---	---	---	14.2	12.7	13.1	---	---	---
9	---	---	---	---	---	---	14.3	12.7	13.1	---	---	---
10	---	---	---	---	---	---	13.4	12.7	13.0	---	---	---
11	---	---	---	14.0	12.9	13.3	13.3	12.8	13.0	---	---	---
12	---	---	---	13.8	12.8	13.1	14.7	12.8	13.2	14.7	14.3	14.6
13	---	---	---	12.9	12.7	12.8	13.9	12.8	13.0	15.0	14.3	14.6
14	---	---	---	13.4	12.5	12.9	13.8	12.9	13.2	15.5	14.3	14.7
15	---	---	---	13.3	12.5	12.8	14.0	13.1	13.4	15.0	14.0	14.3
16	---	---	---	13.1	12.5	12.9	14.2	13.4	13.7	14.5	13.8	14.0
17	---	---	---	13.5	12.7	12.9	14.5	13.7	13.9	13.9	13.4	13.7
18	---	---	---	---	---	---	14.6	13.9	14.2	14.1	13.3	13.6
19	---	---	---	---	---	---	14.8	14.2	14.4	14.1	13.6	13.8
20	---	---	---	---	---	---	15.4	14.5	14.7	13.9	13.5	13.8
21	---	---	---	---	---	---	15.4	14.6	14.9	13.9	13.5	13.8
22	---	---	---	---	---	---	15.8	13.6	14.9	13.9	13.3	13.8
23	---	---	---	---	---	---	15.4	14.7	14.9	14.2	13.3	13.7
24	---	---	---	---	---	---	15.0	14.7	14.9	14.0	13.2	13.7
25	---	---	---	13.3	12.7	12.9	15.2	14.8	15.0	14.1	13.4	13.8
26	---	---	---	13.1	12.8	12.9	15.7	14.8	15.0	13.9	13.4	13.8
27	---	---	---	13.5	12.8	13.0	15.1	13.1	14.1	14.0	13.4	13.9
28	---	---	---	13.4	12.8	13.1	13.5	13.0	13.2	14.0	13.5	13.9
29	---	---	---	13.9	12.8	13.1	13.7	13.0	13.2	14.4	13.6	13.9
30	---	---	---	13.8	12.8	13.1	13.9	12.9	13.2	14.0	13.5	13.8
31	---	---	---	13.6	12.7	13.1	14.0	12.9	13.2	---	---	---
MONTH	---	---	---	---	---	---	15.8	12.7	13.7	---	---	---

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

[illegible]

## WHITE RIVER BASIN

07053450 WHITE RIVER BELOW TABLE ROCK DAM NEAR BRANSON, MO--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	7.6	4.3	5.7	10.0	4.5	7.0
2	---	---	---	---	---	---	7.4	4.2	5.3	9.2	4.4	7.0
3	---	---	---	---	---	---	9.0	4.3	6.1	9.1	4.2	6.4
4	---	---	---	---	---	---	9.3	4.0	7.0	8.5	3.6	5.7
5	---	---	---	---	---	---	9.5	4.0	7.6	7.1	3.5	4.9
6	---	---	---	---	---	---	9.7	5.8	7.4	7.6	3.6	5.3
7	---	---	---	---	---	---	10.0	5.9	7.7	---	---	---
8	---	---	---	---	---	---	10.4	6.6	7.9	---	---	---
9	---	---	---	---	---	---	10.5	5.0	7.1	---	---	---
10	---	---	---	---	---	---	8.0	3.6	6.0	---	---	---
11	---	---	---	11.0	5.3	8.0	9.3	5.5	6.7	---	---	---
12	---	---	---	10.5	6.6	8.5	10.5	5.6	7.2	---	---	---
13	---	---	---	10.0	6.5	9.1	8.5	4.8	6.6	---	---	---
14	---	---	---	8.2	5.9	6.7	9.0	3.4	6.2	---	---	---
15	---	---	---	---	---	---	8.1	4.1	6.1	11.5	4.8	7.7
16	---	---	---	---	---	---	8.6	3.9	5.8	11.6	4.6	7.4
17	---	---	---	---	---	---	8.9	4.1	6.0	10.7	4.3	6.2
18	---	---	---	---	---	---	8.5	4.0	6.3	8.2	3.6	5.3
19	---	---	---	---	---	---	8.3	4.4	6.2	7.7	3.6	4.8
20	---	---	---	---	---	---	9.1	4.1	6.7	8.3	3.4	4.6
21	---	---	---	---	---	---	8.5	4.1	6.4	7.6	3.5	4.4
22	---	---	---	---	---	---	9.7	4.8	6.9	6.2	3.7	4.4
23	---	---	---	---	---	---	10.3	4.8	7.1	10.3	3.9	7.2
24	---	---	---	---	---	---	8.7	4.7	6.3	9.0	3.4	6.0
25	---	---	---	---	---	---	9.0	4.8	6.2	8.9	3.3	4.7
26	---	---	---	---	---	---	9.4	4.6	6.7	8.3	3.0	4.3
27	---	---	---	---	---	---	8.0	4.4	6.0	8.8	3.3	4.6
28	---	---	---	---	---	---	8.6	4.3	6.1	9.0	3.3	4.8
29	---	---	---	---	---	---	8.4	4.1	5.9	9.6	4.1	5.4
30	---	---	---	---	---	---	8.8	4.1	6.3	9.7	4.4	7.3
31	---	---	---	7.3	4.4	5.8	9.7	4.2	6.9	---	---	---
MONTH	---	---	---	---	---	---	10.5	3.4	6.5	---	---	---

## WHITE RIVER BASIN

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.

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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2000	1960	1030	40	310	9750	14400	15000	19500	7720	930	1710
2	5770	1820	320	1170	40	7840	15000	20600	19500	8780	2830	1760
3	7230	2430	310	40	420	7310	15000	6190	19500	8160	2540	3790
4	2430	300	260	40	40	7640	15100	16600	19600	9060	1080	4820
5	5980	150	40	580	390	7590	15100	18100	19600	8080	190	5290
6	3250	1240	490	40	1970	11400	15200	19200	15900	7970	140	4380
7	140	780	1400	40	3280	12700	15200	19900	5210	3620	180	4330
8	390	3240	340	40	4720	11000	8160	19900	4270	3780	150	2540
9	3960	3010	40	40	7060	14700	9140	19400	4030	3960	1770	2660
10	2660	1840	40	40	3990	15100	9400	19400	5090	5310	3840	3700
11	1770	140	1740	40	1670	13700	11900	19400	7740	40	240	3330
12	6040	150	1510	40	8650	11000	15200	19400	7920	880	140	2730
13	4420	1350	1270	40	9860	13300	11600	19400	6180	2180	1260	5060
14	740	1380	75	40	8810	12500	7660	19800	4640	1570	2840	4160
15	230	2050	1330	40	6050	7510	7430	20100	6160	1360	2910	2360
16	3890	3300	40	40	7270	12600	11200	16400	6790	4360	4370	2630
17	4740	1980	40	40	10500	16900	15200	17600	7720	3890	4320	3830
18	4750	1070	40	40	7840	18700	15100	24400	7050	5260	3190	4140
19	5160	160	355	40	8290	19200	15000	19500	8570	5750	3290	5910
20	2780	1140	350	40	10000	19700	14900	19500	9560	4990	2330	5630
21	900	1390	670	40	14500	19800	14900	19500	10200	1610	3020	5200
22	730	3620	980	40	13600	19600	14900	18000	9850	210	2770	5040
23	3050	140	920	40	13100	18100	14900	19500	9760	1250	3040	670
24	2390	140	40	40	13300	16900	14900	19500	9560	2790	6050	1880
25	2130	140	40	40	8830	16900	14700	19500	10600	4970	5020	4830
26	1290	140	40	40	7250	15900	14700	16700	10100	4170	4280	5250
27	270	1970	40	400	7260	14900	14900	15800	10400	4730	5210	4960
28	150	1810	40	40	11400	14900	14900	19200	9020	4220	3870	4790
29	180	1350	40	790	---	14900	14900	19500	8190	1540	4280	3960
30	2480	370	40	1480	---	14900	15000	17800	7940	2780	3870	170
31	540	---	40	820	---	15000	---	17700	---	740	2190	---
MEAN	2659	1352	449	201	6800	13930	13520	18470	10000	4056	2650	3717
MAX	7230	3620	1740	1480	14500	19800	15200	24400	19600	9060	6050	5910
MIN	140	140	40	40	40	7310	7430	6190	4030	40	140	170
IN.	.76	.38	.13	.06	1.76	4.00	3.75	5.30	2.78	1.16	.76	1.03

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

MEAN	1594	2813	3754	3368	3884	5425	6039	6037	3959	3300	2712	1977
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	128	189	267	201	420	419	341	415	519	140	51.3	136
(WY)	1957	1954	1956	1990	1964	1964	1981	1981	1954	1954	1954	1953

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	6474	3738
HIGHEST ANNUAL MEAN		7797
LOWEST ANNUAL MEAN		729
HIGHEST DAILY MEAN	24400	72000
LOWEST DAILY MEAN	40	.00
INSTANTANEOUS PEAK FLOW	*****	89100
INSTANTANEOUS PEAK STAGE	*****	36.9
INSTANTANEOUS LOW FLOW	*****	0
ANNUAL RUNOFF (INCHES)	21.86	12.62

\*\*\*\*\* 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.--The number of missing days of water temperature and dissolved oxygen record exceeds 20 percent of the year. The monitor was not operated from Jan. 9 to June 4, 1990.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.5	9.1	10.9	11.1	10.1	10.7	10.5	7.8	9.3	6.8	5.4	6.0
2	9.8	9.0	9.3	11.2	10.0	10.5	9.9	8.5	9.5	6.7	4.8	5.9
3	9.7	8.9	9.2	11.3	9.3	10.4	8.8	7.5	8.2	6.8	6.0	6.5
4	10.4	9.0	9.6	10.8	9.8	10.3	9.0	6.9	8.0	6.7	5.9	6.4
5	9.9	9.1	9.6	11.6	10.2	10.9	9.2	7.4	8.3	6.8	5.6	6.2
6	9.6	9.2	9.4	11.0	10.3	10.8	9.2	8.6	8.9	7.0	5.9	6.3
7	10.8	8.9	9.7	12.6	9.9	10.9	9.5	8.4	9.1	6.9	5.7	6.2
8	11.9	9.4	10.4	10.3	9.5	9.8	9.3	7.5	8.8	6.7	5.5	6.0
9	10.7	9.0	10.0	10.5	8.9	9.7	8.6	7.1	7.7	---	---	---
10	10.3	9.0	9.6	10.4	9.5	9.9	8.6	7.2	7.7	---	---	---
11	11.4	8.7	9.6	10.7	9.3	9.8	9.1	6.9	8.2	---	---	---
12	9.9	9.0	9.4	11.3	9.5	10.3	8.9	7.4	8.4	---	---	---
13	10.1	9.1	9.4	11.4	9.9	10.6	9.1	7.9	8.6	---	---	---
14	10.9	9.2	9.9	10.9	9.8	10.2	8.9	7.8	8.4	---	---	---
15	12.9	10.0	10.8	10.2	9.6	9.9	8.9	6.1	7.9	---	---	---
16	11.6	9.5	10.3	10.7	8.7	9.8	7.4	6.1	6.8	---	---	---
17	9.6	9.4	9.5	10.9	9.2	10.1	6.0	4.8	5.5	---	---	---
18	9.5	9.2	9.4	11.1	9.4	10.0	5.2	4.4	4.7	---	---	---
19	9.7	8.8	9.4	10.7	9.6	10.1	4.9	3.6	4.2	---	---	---
20	10.4	8.6	9.6	11.5	10.1	10.5	6.6	4.5	5.6	---	---	---
21	10.4	8.8	9.7	10.3	9.7	10.1	6.1	4.6	5.4	---	---	---
22	10.7	9.5	10.0	10.1	9.5	9.9	6.4	4.3	5.4	---	---	---
23	10.7	9.6	10.1	10.4	9.1	9.6	7.3	4.6	5.9	---	---	---
24	10.9	9.5	9.9	9.6	8.3	8.9	6.0	5.6	5.8	---	---	---
25	10.7	9.6	9.9	9.2	8.2	8.8	6.0	5.2	5.6	---	---	---
26	10.9	9.5	10.3	11.0	8.9	9.6	5.7	4.7	5.2	---	---	---
27	11.8	10.4	10.8	10.9	9.8	10.3	5.0	4.1	4.5	---	---	---
28	11.7	10.1	10.9	10.3	9.1	9.8	5.8	4.2	4.9	---	---	---
29	13.3	11.5	12.2	10.6	8.7	9.8	6.2	5.3	5.8	---	---	---
30	12.1	10.3	11.1	9.7	8.1	8.9	6.4	6.0	6.2	---	---	---
31	11.4	10.1	10.6	---	---	---	6.7	6.0	6.2	---	---	---
MONTH	13.3	8.6	10.0	12.6	8.1	10.0	10.5	3.6	6.9	---	---	---



## 07053600 LAKE TANEYCOMO AT THE SCHOOL OF THE OZARKS, MO--Continued

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	---	---	---	13.1	12.2	12.5	15.1	12.7	13.4	16.8	13.8	14.7
2	---	---	---	13.0	12.2	12.5	14.7	12.5	13.2	15.5	11.6	14.0
3	---	---	---	13.3	12.3	12.6	13.4	12.5	13.0	---	---	---
4	---	---	---	13.0	12.3	12.6	15.7	13.4	14.3	---	---	---
5	14.0	13.4	13.7	13.0	12.3	12.6	16.1	12.9	14.2	14.7	13.4	13.8
6	14.1	11.6	13.3	13.0	12.3	12.6	18.6	15.2	16.6	14.7	13.0	13.8
7	12.6	11.7	12.0	13.4	12.3	12.9	19.6	17.6	18.4	14.5	13.1	13.6
8	12.5	11.7	12.0	14.5	12.7	13.4	19.6	17.1	18.0	16.0	13.5	14.5
9	12.6	11.8	12.1	13.7	12.6	12.9	19.0	12.8	16.7	15.5	14.0	14.4
10	12.4	11.4	11.9	13.2	12.5	12.8	14.0	12.7	13.0	14.7	14.0	14.2
11	12.2	11.4	11.7	15.8	12.4	13.9	13.3	12.6	12.9	14.3	13.9	14.1
12	12.4	11.5	11.8	---	---	---	15.3	13.1	14.1	14.7	13.7	14.1
13	12.4	11.6	12.0	---	---	---	16.7	12.9	14.4	14.1	13.7	13.9
14	13.5	11.6	12.1	13.2	11.3	12.5	14.5	10.9	13.1	14.5	13.7	14.0
15	12.5	11.6	11.9	14.2	12.0	12.9	15.0	13.0	13.6	15.2	13.7	14.1
16	12.7	11.6	12.0	13.4	11.9	12.7	14.8	12.0	13.8	14.8	13.6	13.9
17	12.7	11.7	12.0	13.2	11.9	12.2	15.2	13.7	14.2	14.0	13.8	13.9
18	12.7	11.7	12.1	13.6	12.0	12.4	16.5	14.1	14.7	14.5	13.8	14.0
19	12.5	11.8	12.1	12.9	12.0	12.3	---	---	---	14.7	13.8	14.1
20	12.5	11.8	12.1	13.2	12.0	12.4	---	---	---	14.0	13.8	13.9
21	12.0	11.8	11.9	14.7	12.1	12.7	---	---	---	14.3	13.8	14.0
22	12.7	11.9	12.2	13.4	12.4	12.9	---	---	---	14.6	13.6	14.0
23	12.7	11.9	12.2	15.3	12.8	13.9	17.0	13.4	15.5	15.1	13.4	14.1
24	12.6	12.0	12.2	14.6	12.0	12.9	15.9	13.7	15.1	15.0	13.5	14.4
25	12.3	11.9	12.1	13.8	11.9	12.4	15.8	13.0	14.7	14.6	13.3	14.0
26	12.6	12.0	12.2	13.4	11.9	12.3	16.1	13.7	15.1	14.7	13.6	14.0
27	12.8	12.1	12.4	14.0	12.0	12.5	15.6	13.8	14.9	15.0	13.9	14.3
28	12.9	12.1	12.4	14.2	12.0	12.5	16.0	12.9	14.7	14.9	13.5	14.3
29	13.0	12.1	12.5	15.5	12.2	13.1	15.8	13.0	14.5	15.2	13.8	14.4
30	13.1	12.2	12.5	14.7	12.2	12.7	15.4	14.2	14.6	14.4	12.2	13.1
31	---	---	---	15.0	12.3	13.2	15.9	14.0	14.5	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

07053600 LAKE TANEYCOMO AT THE SCHOOL OF THE OZARKS, MO--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

[illegible]

## WHITE RIVER BASIN

07053600 LAKE TANEYCOMO AT THE SCHOOL OF THE OZARKS, MO--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	8.2	5.6	6.6	9.2	5.9	7.5	---	---	---
2	---	---	---	8.0	6.0	6.7	9.0	5.1	6.2	---	---	---
3	---	---	---	9.2	5.2	6.5	8.1	5.6	6.3	---	---	---
4	---	---	---	6.9	5.3	6.0	9.3	5.4	6.8	---	---	---
5	8.5	7.9	8.2	7.3	5.1	6.2	7.1	4.2	5.6	6.5	3.2	4.0
6	8.3	7.3	7.9	7.8	5.6	6.6	9.2	5.9	7.3	7.1	4.0	5.0
7	8.6	6.0	7.2	8.7	5.5	6.4	11.5	8.4	9.6	7.1	3.6	4.7
8	8.9	6.4	7.7	9.2	4.5	6.4	11.5	8.8	9.5	8.0	4.1	5.0
9	8.4	5.6	7.1	7.8	5.4	6.4	11.0	5.8	8.8	7.1	4.2	5.1
10	8.8	5.6	7.4	7.6	4.7	6.2	7.8	4.9	6.2	7.0	3.9	5.1
11	8.9	6.5	7.3	8.3	5.3	6.5	6.0	5.2	5.6	6.9	4.1	5.1
12	8.1	6.0	7.1	10.3	5.3	9.4	8.3	4.9	6.5	6.6	4.0	5.1
13	8.6	5.6	7.2	11.0	7.1	10.1	9.4	6.3	7.6	6.1	4.1	4.7
14	10.2	6.4	7.6	11.6	7.0	9.5	7.8	3.9	5.8	6.0	3.5	4.3
15	8.6	6.2	7.3	10.6	6.9	8.3	6.8	3.7	4.7	6.5	3.7	4.4
16	9.4	6.5	7.6	10.3	6.5	8.3	6.7	4.2	5.4	6.6	3.7	4.8
17	8.8	5.6	6.9	8.5	5.9	6.9	6.6	4.8	5.4	4.6	3.5	4.1
18	8.6	5.6	7.1	8.5	5.4	6.1	6.9	3.8	4.9	5.3	3.1	4.0
19	7.7	5.6	6.8	7.9	5.5	6.3	6.2	3.7	4.5	4.9	3.4	4.2
20	7.4	5.6	6.6	7.8	5.7	6.8	---	---	---	4.5	3.3	4.0
21	7.3	5.2	6.4	11.1	6.8	7.5	---	---	---	4.8	3.4	4.2
22	7.3	6.3	6.7	8.1	6.9	7.6	---	---	---	4.9	3.8	4.2
23	7.4	5.6	6.5	10.3	7.2	8.4	6.6	3.5	4.4	6.2	3.6	4.7
24	7.9	5.1	6.5	8.8	5.0	7.2	5.6	3.0	3.9	6.3	4.7	5.7
25	7.7	5.9	6.5	8.7	5.3	6.1	5.3	2.6	3.6	5.6	3.6	4.7
26	7.4	5.6	6.5	8.0	5.1	5.8	6.9	2.9	3.9	5.3	3.3	3.9
27	8.0	6.1	6.7	8.4	5.7	6.5	5.7	3.7	4.5	4.8	3.3	3.9
28	8.1	6.2	7.1	8.4	4.6	5.3	6.8	3.3	4.3	4.9	2.9	3.9
29	8.3	5.7	6.7	9.3	4.8	6.4	6.8	3.2	4.3	5.4	3.7	4.3
30	8.2	6.0	6.9	8.5	4.4	5.9	6.9	3.5	4.2	4.9	3.4	4.2
31	---	---	---	9.2	4.0	5.7	---	---	---	---	---	---
MONTH	---	---	---	11.6	4.0	6.9	---	---	---	---	---	---

## 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, 1,000 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 1989 TO SEPTEMBER 1990

DATE	TIME	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)	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)
OCT												
11...	0745	209	7.6	10.5	8.6	76	18	29	110	34	5.2	3.6
NOV												
06...	1650	207	7.5	10.5	7.8	69	<10	120	--	--	--	--
DEC												
05...	0730	201	7.8	7.5	8.7	72	17	K5	--	--	--	--
JAN												
09...	0715	206	8.0	6.0	11.8	94	19	K1	110	33	5.8	4.0
FEB												
06...	1445	233	7.9	7.5	11.1	91	15	38	--	--	--	--
MAR												
06...	1000	211	8.0	7.0	11.9	96	17	K7	--	--	--	--
APR												
04...	0745	214	7.9	8.5	10.4	88	<10	23	110	33	6.2	4.3
MAY												
09...	1410	205	8.0	12.5	9.7	91	16	43	--	--	--	--
JUN												
05...	0900	194	7.8	13.5	8.7	83	32	K2	--	--	--	--
JUL												
10...	0730	184	7.8	12.5	6.7	62	18	K18	87	28	4.1	2.8
AUG												
08...	0900	186	7.9	18.5	8.3	87	19	K15	--	--	--	--
SEP												
04...	0730	191	7.4	13.5	5.2	49	13	43	--	--	--	--

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT WH TOT IT FIELD (MG/L AS CACO3) (00419)	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)	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- PHORUS 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)
OCT												
11...	1.5	93	8.0	4.9	0.1	119	4	0.50	0.02	0.02	60	<10
NOV												
06...	--	89	--	--	--	118	10	0.50	0.04	0.02	<10	<10
DEC												
05...	--	134	--	--	--	118	1	0.40	0.04	0.05	40	<10
JAN												
09...	1.6	90	8.0	5.2	0.1	122	11	0.20	0.03	0.03	30	<10
FEB												
06...	--	106	--	--	--	135	<1	0.20	0.03	0.13	280	10
MAR												
06...	--	92	--	--	--	130	18	0.20	<0.01	0.02	50	<10
APR												
04...	1.5	89	8.3	15	0.1	129	<1	0.30	<0.01	0.02	70	<10
MAY												
09...	--	88	--	--	--	110	4	0.50	0.01	0.03	80	10
JUN												
05...	--	87	--	--	--	109	<1	0.60	0.03	0.03	30	20
JUL												
10...	1.5	76	4.7	5.2	<0.1	107	8	0.50	0.02	0.06	230	<10
AUG												
08...	--	84	--	--	--	104	3	0.40	<0.01	0.06	80	20
SEP												
04...	--	79	--	--	--	101	<1	0.50	0.04	0.02	30	10

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

[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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	367	316	320	284	1060	763	2010	1010	1740	634	429	348
2	365	312	319	280	4240	780	1670	1080	1600	624	425	345
3	360	308	312	284	1890	809	1440	9310	1470	607	422	343
4	355	307	312	298	1400	799	1300	6310	1360	597	440	342
5	355	311	317	294	1170	776	1200	3020	1280	579	441	339
6	362	310	318	295	1030	752	1110	2290	1230	601	430	341
7	361	324	311	291	926	741	1020	1920	1180	630	420	345
8	358	319	311	287	836	796	962	1680	1120	581	414	395
9	356	315	310	287	864	977	926	1530	1080	557	411	393
10	357	311	310	288	1350	1020	1950	1420	1050	543	409	381
11	350	315	305	287	1320	986	2590	1300	1010	540	408	369
12	345	312	301	283	1110	2370	1900	1360	972	533	411	369
13	340	316	301	279	978	2510	1600	2430	946	529	409	379
14	334	320	298	283	887	1910	1460	1880	932	529	405	371
15	334	320	296	286	1080	3240	1340	1700	918	522	409	356
16	395	319	283	291	2350	2460	1250	2220	893	508	410	347
17	436	315	291	393	1610	1860	3210	4420	869	491	400	341
18	386	319	287	796	1290	1560	2200	2660	844	484	394	339
19	363	320	289	882	1120	1370	1700	2130	820	520	394	339
20	344	322	281	2840	990	1210	1550	2340	812	555	389	341
21	336	326	281	1500	906	1110	1800	2170	798	510	383	384
22	331	337	279	1000	909	1060	1600	2200	823	514	378	651
23	326	335	279	804	941	1010	1480	1890	789	500	374	511
24	326	330	271	694	913	962	1370	1690	751	481	373	432
25	323	333	275	622	838	937	1270	1550	736	468	370	403
26	320	335	278	563	789	915	1180	1750	738	466	368	387
27	318	335	278	524	768	897	1140	3740	719	463	364	376
28	316	329	276	493	765	916	1130	5390	692	466	362	367
29	315	321	286	474	---	1010	1100	2980	667	492	358	360
30	320	320	288	459	---	1370	1050	2280	649	444	354	374
31	320	---	287	444	---	2490	---	1950	---	434	352	---
MEAN	348	320	295	551	1226	1302	1517	2568	983	529	397	379
MAX	436	337	320	2840	4240	3240	3210	9310	1740	634	441	651
MIN	315	307	271	279	765	741	926	1010	649	434	352	339
IN.	.71	.64	.61	1.13	2.28	2.68	3.02	5.28	1.96	1.09	.82	.75

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

	402	616	699	701	865	1057	1235	1125	769	554	415	394
MEAN	402	616	699	701	865	1057	1235	1125	769	554	415	394
MAX	1040	2751	2842	2322	2872	2473	3623	2775	2515	1632	889	1015
(WY)	1985	1986	1983	1950	1985	1945	1945	1957	1945	1951	1958	1975
MIN	214	224	223	201	261	290	370	352	276	239	204	193
(WY)	1957	1955	1956	1956	1964	1981	1963	1977	1954	1954	1954	1954

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	866	735
HIGHEST ANNUAL MEAN		1555
LOWEST ANNUAL MEAN		299
HIGHEST DAILY MEAN	9310	45100
LOWEST DAILY MEAN	271	187
INSTANTANEOUS PEAK FLOW	19400	133000
INSTANTANEOUS PEAK STAGE	14.35	28.10
INSTANTANEOUS LOW FLOW	235	187
ANNUAL RUNOFF (INCHES)	20.95	17.78
10 PERCENTILE	1840	1330
50 PERCENTILE	500	495
95 PERCENTILE	286	257

## 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: Nov. 23 to Dec. 3, Dec. 22-26, Jan. 1-8, and Aug. 25 to Sept. 23. Records fair. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	17	6.8	11	307	72	733	172	107	2.3	2.1	6.5
2	1.6	16	5.6	7.0	1690	59	332	211	95	1.5	1.7	5.1
3	1.5	6.6	4.7	5.0	516	72	170	1050	63	14	1.5	4.1
4	1.4	4.1	4.2	8.0	391	54	182	1640	65	13	1.7	3.3
5	1.3	3.3	3.7	12	360	42	97	1080	35	3.1	8.9	2.8
6	15	3.1	3.4	22	298	65	107	275	47	1.9	20	2.3
7	2.8	3.2	3.1	40	166	47	81	126	69	1.5	12	2.0
8	1.8	2.8	3.0	26	159	106	75	140	30	1.4	5.8	15
9	2.1	15	2.7	21	385	122	68	112	39	1.2	3.7	12
10	2.7	18	6.0	20	793	90	986	113	37	1.1	2.7	9.5
11	2.2	18	18	20	327	83	1590	73	34	1.2	2.2	7.0
12	2.2	15	17	19	178	431	1010	389	31	1.3	2.5	30
13	21	5.1	7.8	20	153	437	234	1720	29	7.8	26	20
14	5.9	3.5	3.6	19	129	239	188	1200	23	10	32	14
15	4.2	3.7	2.9	20	1640	577	178	470	18	3.3	11	9.5
16	49	28	2.8	20	2210	405	149	1280	18	2.0	8.4	6.5
17	57	24	3.2	31	469	222	199	3310	16	2.0	6.9	4.6
18	94	15	4.0	51	251	170	162	2010	17	2.5	12	3.6
19	81	14	8.7	98	146	165	151	929	18	2.6	3.4	3.0
20	83	13	38	1670	133	135	155	268	15	2.3	4.3	2.5
21	49	13	35	1600	106	104	238	828	14	2.6	16	3.5
22	31	15	11	150	227	103	198	876	14	24	17	7.0
23	25	19	7.5	139	310	101	183	325	13	39	5.7	15
24	25	25	5.5	122	207	102	224	196	11	33	2.4	33
25	25	24	4.5	73	105	89	147	120	2.8	19	2.2	200
26	18	17	3.5	78	120	241	163	1400	1.4	19	2.1	25
27	7.8	14	2.9	67	87	384	106	1740	4.8	16	2.0	8.4
28	5.8	11	2.5	44	90	260	129	430	19	7.6	20	5.1
29	12	9.5	12	41	---	181	150	186	6.7	4.9	15	3.8
30	32	8.2	23	41	---	576	97	179	5.2	3.5	11	3.3
31	23	---	20	40	---	1260	---	131	---	2.7	8.5	---
MEAN	22.1	12.8	8.92	146	427	226	283	741	29.9	7.98	8.73	15.6
MAX	94	28	38	1670	2210	1260	1590	3310	107	39	32	200
MIN	1.3	2.8	2.5	5.0	87	42	68	73	1.4	1.1	1.5	2.0
IN.	.27	.15	.11	1.79	4.71	2.75	3.34	9.05	.35	.10	.11	.18

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

	MEAN	34.8	160	186	106	166	236	234	154	72.4	19.4	29.2	34.5
MAX	252	1179	896	313	455	578	657	741	705	212	305	285	
(WY)	1985	1986	1983	1969	1985	1977	1983	1990	1985	1981	1982	1970	
MIN	.54	2.65	5.20	4.53	9.62	32.6	73.3	14.3	3.38	.44	.39	.26	
(WY)	1964	1966	1981	1977	1963	1981	1980	1965	1978	1964	1988	1983	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	159	120
HIGHEST ANNUAL MEAN	334	1985
LOWEST ANNUAL MEAN	25.8	1965
HIGHEST DAILY MEAN	3310	May 17
LOWEST DAILY MEAN	1.1	Jul 10
INSTANTANEOUS PEAK FLOW	5560	May 17
INSTANTANEOUS PEAK STAGE	8.40	May 17
INSTANTANEOUS LOW FLOW	1.0	Jul 10
ANNUAL RUNOFF (INCHES)	22.90	17.25
10 PERCENTILE	365	232
50 PERCENTILE	22	28
95 PERCENTILE	1.7	.86

## WHITE RIVER BASIN

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. Occasional slight 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	161	180	172	211	391	569	2590	763	922	198	171	147
2	159	176	169	210	3820	531	1720	877	819	192	167	143
3	157	171	166	206	2620	506	1260	3510	726	190	163	140
4	155	164	162	214	1940	485	968	7060	639	191	171	138
5	153	161	161	220	1890	440	798	3340	543	182	186	138
6	157	160	161	223	1470	447	717	2110	506	199	181	136
7	162	160	161	217	1150	436	618	1520	502	263	178	136
8	159	173	163	212	872	486	550	1250	448	238	169	153
9	157	171	163	207	1120	537	507	1050	417	212	162	151
10	156	171	163	204	2540	527	1910	945	426	198	157	156
11	154	171	165	200	1900	529	3920	819	397	190	155	187
12	153	170	167	195	1280	894	2660	1050	371	197	164	202
13	155	168	166	191	958	1820	1610	3770	345	199	198	186
14	157	167	160	190	809	1440	1200	3130	326	205	241	176
15	155	170	158	188	2150	2120	1060	2070	308	202	222	167
16	205	182	156	188	7060	2520	922	2900	301	191	279	160
17	682	198	155	225	2860	1650	898	16100	289	183	273	155
18	391	188	155	411	1830	1200	922	5200	279	177	251	151
19	365	182	155	600	1300	1030	842	3200	275	175	224	149
20	292	178	171	4850	1070	860	805	2140	276	171	205	148
21	277	176	170	3710	892	760	1030	2480	286	175	201	163
22	234	183	166	1590	920	674	1090	3070	279	281	197	183
23	213	184	170	1010	1120	622	1140	1940	262	309	191	194
24	200	184	155	809	1000	616	1210	1430	250	275	181	197
25	197	184	153	637	795	568	1040	1150	237	237	174	339
26	193	182	153	545	754	704	881	2990	228	214	168	288
27	183	179	154	470	650	1110	754	5230	223	203	165	182
28	175	178	157	430	614	1150	790	2650	226	193	177	165
29	171	175	164	382	---	1060	831	1720	216	185	169	158
30	174	173	191	357	---	1520	734	1350	205	181	157	161
31	185	---	203	336	---	3390	---	1080	---	177	151	---
MEAN	209	175	164	633	1635	1006	1199	2835	384	206	189	172
MAX	682	198	203	4850	7060	3390	3920	16100	922	309	279	339
MIN	153	160	153	188	391	436	507	763	205	171	151	136
IN.	.50	.40	.39	1.51	3.52	2.40	2.77	6.76	.89	.49	.45	.40

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

	MEAN	269	603	673	583	750	1012	1125	867	527	274	208	218
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	119	108	147	161	371	232	140	88.5	76.7	72.4	
(WY)	1957	1965	1956	1956	1963	1941	1956	1988	1972	1954	1965	1955	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	729	592
HIGHEST ANNUAL MEAN		1420
LOWEST ANNUAL MEAN		244
HIGHEST DAILY MEAN	16100	May 17
LOWEST DAILY MEAN	136	Sep 6-7
INSTANTANEOUS PEAK FLOW	26200	May 17
INSTANTANEOUS PEAK STAGE	15.16	May 17
INSTANTANEOUS LOW FLOW	135	Sep 7
ANNUAL RUNOFF (INCHES)	20.46	16.61
10 PERCENTILE	1860	1170
50 PERCENTILE	225	269
95 PERCENTILE	155	101

## WHITE RIVER BASIN

215

## 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, 134,000 acre-ft, May 29, elevation, 529.40 ft; minimum, 21,800 acre-ft, Mar. 1, minimum elevation, 493.94 ft.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990  
OBSERVATIONS AT 24:00

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23700	22100	22100	22500	23500	21800	30600	23200	133000	64700	28500	26000
2	23800	22000	22100	22500	30800	22000	29600	25300	133000	61600	27400	25700
3	23800	21900	22000	22500	35300	22200	27500	31100	133000	58400	26200	25700
4	23600	21900	22000	22500	37200	22400	25000	45800	131000	55300	26700	25800
5	23500	21900	21900	22400	36700	22400	23000	48300	130000	52200	27000	25900
6	23500	22100	22000	22400	34400	22500	22300	47800	129000	48900	27000	26000
7	23700	22200	22000	22300	31700	22700	22500	45400	127000	45800	26700	26200
8	23700	22300	22000	22200	28600	22600	22400	42100	125000	42700	26500	26300
9	23800	22200	21900	22200	30200	22300	22200	38700	123000	39600	26600	26200
10	23900	22200	21900	22100	34600	22200	24900	35300	121000	36500	26600	26300
11	23900	22100	21900	22000	36200	22000	32000	32000	119000	33400	26600	25900
12	23800	22000	21900	22000	34900	22300	33900	32700	116000	30200	26900	25500
13	23500	22000	21900	22000	31600	23800	33300	37500	114000	28200	27000	25500
14	22900	22100	22000	22000	28300	24200	31700	40300	111000	27500	26900	25600
15	22200	22200	21900	22000	33300	25700	29800	41600	109000	27400	26900	25700
16	22000	22100	21900	22200	46100	28000	27700	44900	107000	27400	27300	25800
17	22700	22200	21900	22700	47900	28500	26600	77100	104000	27700	27400	25900
18	22700	22300	21900	23000	46200	28100	25800	87600	101000	28200	27200	26000
19	22500	22400	21900	24600	43300	25800	24200	91600	98600	28400	26900	26000
20	22200	22300	22000	36900	40100	23700	23300	92900	96600	28600	26500	25800
21	22100	22300	22000	44900	37200	22400	23700	98600	94400	28500	26300	25700
22	22100	22300	22000	45500	36600	22000	24100	106000	91600	28700	26200	25400
23	22000	22200	21900	42900	34300	22200	23900	108000	88700	28800	26000	25000
24	21900	22200	22000	39700	31600	22800	22800	108000	86000	28700	25900	24700
25	21900	22200	21900	36500	28900	23300	22300	107000	83100	28600	25900	24300
26	21900	22200	21900	32900	25700	23400	22100	116000	80100	28400	25800	24400
27	21900	22300	22000	29600	23500	23200	22000	129000	77100	28300	25800	24200
28	21900	22200	22000	26700	22300	23000	22000	133000	74000	28400	26000	23800
29	21900	22200	22100	23800	---	22800	22000	134000	70900	28500	26200	23500
30	22000	22200	22200	22600	---	24000	22000	133000	67800	28500	26400	23200
31	22200	---	22400	22400	---	28900	---	133000	---	28500	26300	---
(-)	494.19	494.17	494.27	494.30	494.21	498.01	494.03	529.32	513.40	497.82	496.61	494.80
(=)	-1300	0	+200	0	-100	+6600	-6900	+111000	-65200	-39300	-2200	-3100
MAX	23900	22400	22400	45500	47900	28900	33900	134000	133000	64700	28500	26300
MIN	21900	21900	21900	22000	22300	21800	22000	23200	67800	27400	25800	23200

CAL YR 1989 . . . -5,100  
WTR YR 1990 . . . - 300

(-) 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: Oct. 12-17 and Dec. 26 to Jan 10. Records 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	278	265	300	280	726	1150	2550	933	1710	1970	352	452
2	276	329	300	325	592	788	3000	438	1470	1950	525	467
3	285	337	299	400	855	622	2940	728	1460	1940	1090	442
4	339	326	298	400	1200	602	2860	810	1630	1980	459	339
5	343	283	300	400	1820	586	2530	3090	1620	1960	380	327
6	339	278	299	400	3160	580	1760	3210	1600	2010	367	324
7	284	281	296	400	3140	575	978	3310	1590	2040	447	324
8	275	285	298	400	3060	632	939	3650	1630	2010	456	322
9	274	315	296	400	2330	804	927	3620	1750	1980	435	324
10	276	320	291	400	802	794	1030	2980	1740	1950	350	342
11	308	320	290	391	1320	781	981	3290	1780	2000	397	492
12	312	319	289	357	1950	760	2310	1950	1880	1990	418	512
13	450	318	286	348	3340	767	2660	1100	1870	1630	390	486
14	620	291	276	348	3290	1250	2630	2400	1870	846	465	352
15	620	284	275	340	2320	1340	2580	2330	1860	513	485	335
16	300	280	273	311	959	1390	2520	1950	1690	415	533	332
17	342	278	270	324	2540	1650	2260	1430	1830	293	539	329
18	450	278	276	318	3110	1640	1870	1860	1850	255	595	328
19	635	278	275	574	3420	1970	2000	2200	1850	246	596	341
20	629	281	274	649	3330	2640	2110	2200	1820	251	594	369
21	527	313	274	370	3250	1630	1590	1560	1490	313	569	488
22	438	326	280	825	1870	1390	1560	710	1890	336	488	499
23	420	334	278	2550	2350	903	1700	1330	1880	336	482	495
24	394	332	276	2970	2760	661	2380	2250	1870	380	479	494
25	348	321	275	2910	2680	631	2080	2310	1860	365	442	492
26	344	304	280	2830	2570	703	1540	2010	1890	365	433	488
27	338	303	280	2740	2260	1060	1340	934	1950	365	426	486
28	318	302	280	2420	1720	1390	1320	1600	1940	362	349	485
29	316	300	280	1900	---	1410	1220	2410	2000	361	330	485
30	309	300	280	1650	---	1410	1200	2400	1990	356	325	490
31	262	---	280	648	---	1510	---	2250	---	350	338	---
MEAN	376	303	285	954	2240	1097	1912	2040	1775	1036	469	415
MAX	635	337	300	2970	3420	2640	3000	3650	2000	2040	1090	512
MIN	262	265	270	280	592	575	927	438	1460	246	325	322
IN.	.44	.34	.33	1.11	2.36	1.28	2.16	2.38	2.01	1.21	.55	.47

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

	MEAN	474	669	985	1116	1238	1507	1689	1447	1118	564	468	447
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	218	224	209	274	314	410	280	210	170	166	183	
(WY)	1956	1965	1965	1956	1963	1941	1932	1932	1936	1934	1936	1954	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1065	975
HIGHEST ANNUAL MEAN		2219
LOWEST ANNUAL MEAN		431
HIGHEST DAILY MEAN	3650	52900
LOWEST DAILY MEAN	246	62
INSTANTANEOUS PEAK FLOW	3700	78400
INSTANTANEOUS PEAK STAGE	6.48	20.01
INSTANTANEOUS LOW FLOW	243	62
ANNUAL RUNOFF (INCHES)	14.65	13.41
10 PERCENTILE	2420	2410
50 PERCENTILE	563	519
95 PERCENTILE	275	215



## WHITE RIVER BASIN

217

## 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 0.10 ft lower.

REMARKS.--Estimated daily discharges: Dec. 22-27. Records good. Several observations of water temperature and specific conductance were made during the year. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	451	425	415	396	1950	2330	2680	1820	2820	2220	547	428
2	444	412	409	387	3350	1870	3110	1580	2580	2200	542	555
3	437	472	407	399	2490	1500	3300	1560	2300	2180	718	596
4	445	487	408	497	2060	1280	3270	2650	2190	2170	1160	567
5	503	489	410	505	2040	1200	3180	2380	2220	2180	735	449
6	522	462	410	500	2470	1140	2880	3310	2180	2180	551	418
7	519	427	405	499	3160	1110	2220	3460	2140	2220	501	413
8	458	424	405	498	3250	1180	1630	3520	2110	2230	580	420
9	441	420	408	500	3590	1270	1510	3660	2130	2200	599	411
10	437	444	408	497	3790	1360	2770	3660	2180	2170	570	407
11	435	455	401	497	2480	1340	4200	3390	2160	2150	473	425
12	470	456	396	489	2290	1310	2780	3410	2190	2210	513	606
13	487	458	396	451	2670	1270	3040	2760	2240	2180	576	665
14	507	457	394	440	3350	1320	3180	2280	2240	1850	524	639
15	695	429	381	439	5610	1760	3120	2900	2240	1300	605	485
16	789	408	379	428	6440	1850	3050	2850	2210	985	657	438
17	753	394	379	447	3900	1910	3010	3000	2080	815	764	422
18	565	393	379	499	3500	2050	2760	2380	2150	634	746	415
19	698	390	378	825	3570	2070	2460	2530	2160	569	788	417
20	839	389	374	4650	3650	2370	2560	2720	2170	543	802	421
21	857	390	370	2890	3570	2660	2580	3200	2080	541	825	498
22	777	437	370	1270	3700	2150	2280	3500	1960	707	777	645
23	681	452	368	1530	3030	1820	2190	2380	2160	671	681	657
24	647	457	365	2580	3020	1440	2340	2400	2160	655	656	657
25	624	457	362	2920	3150	1240	2730	2830	2150	715	644	662
26	570	435	360	2930	3070	1150	2500	3340	2140	724	600	663
27	549	425	359	2890	2990	1210	2100	4300	2170	722	578	659
28	535	419	358	2830	2750	1520	2150	3050	2200	707	562	654
29	507	412	381	2620	---	1870	2130	2880	2200	606	479	655
30	495	411	403	2300	---	2410	1880	3090	2230	572	437	668
31	481	---	411	1930	---	2990	---	3040	---	556	421	---
MEAN	568	433	389	1308	3246	1676	2653	2898	2205	1367	633	534
MAX	857	489	415	4650	6440	2990	4200	4300	2820	2230	1160	668
MIN	435	389	358	387	1950	1110	1510	1560	1960	541	421	407
IN.	.53	.39	.36	1.21	2.72	1.55	2.38	2.68	1.98	1.27	.59	.48

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

	MEAN	635	939	1355	1583	1725	2086	2253	1958	1320	799	648	605
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	315	335	309	376	430	709	556	415	293	270	268	
(WY)	1957	1954	1954	1956	1963	1941	1956	1987	1941	1944	1944	1954	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

	1478	1323
AVERAGE FLOW		
HIGHEST ANNUAL MEAN	2858	1985
LOWEST ANNUAL MEAN	564	1954
HIGHEST DAILY MEAN	6440	Jun 10 1945
LOWEST DAILY MEAN	358	Sep 25 1966
INSTANTANEOUS PEAK FLOW	7220	Dec 4 1982
INSTANTANEOUS PEAK STAGE	16.36	Dec 4 1982
INSTANTANEOUS LOW FLOW	357	Sep 25 1966
ANNUAL RUNOFF (INCHES)	16.12	14.43
10 PERCENTILE	3080	3200
50 PERCENTILE	833	770
95 PERCENTILE	391	321

## 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 fair. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	156	145	130	137	445	360	1590	592	1040	268	209	163
2	153	145	132	132	3660	347	1210	670	939	270	204	162
3	148	141	135	132	1650	346	924	5790	845	271	209	162
4	148	140	131	137	1170	333	765	5590	756	264	216	162
5	147	142	127	143	993	315	697	2280	684	260	221	161
6	150	142	130	146	843	293	621	1580	640	278	213	161
7	149	138	128	144	718	287	546	1240	609	442	207	164
8	149	141	122	143	618	321	490	1010	576	315	193	174
9	149	144	123	140	714	526	470	853	533	279	194	179
10	145	144	129	142	1530	608	954	762	491	263	195	186
11	143	144	133	141	1310	538	2000	667	462	262	192	187
12	141	138	127	137	980	1630	1310	882	435	262	200	186
13	141	138	128	129	763	2160	1010	2400	412	270	209	187
14	141	145	128	129	622	1370	859	1540	403	275	201	184
15	138	140	124	128	1400	4380	768	1270	383	269	198	178
16	157	140	122	127	3070	2820	697	1840	364	254	202	176
17	177	138	122	261	1560	1740	1730	4660	352	254	192	172
18	213	138	123	960	1120	1330	1230	2470	346	249	187	171
19	194	133	121	1040	865	1090	850	1880	327	248	186	169
20	170	134	119	4070	675	891	740	2380	322	261	187	169
21	161	133	118	1630	566	763	764	2150	334	280	188	196
22	154	144	113	948	617	689	785	2250	345	284	186	205
23	150	135	114	658	784	609	798	1800	337	265	183	233
24	148	134	118	489	734	571	708	1450	327	255	174	213
25	146	133	121	380	589	543	641	1200	322	248	178	197
26	144	131	121	312	494	543	585	1930	317	242	177	188
27	143	138	124	277	441	568	564	2660	309	236	169	183
28	142	139	127	262	395	570	613	2970	301	228	166	179
29	139	135	134	258	---	589	681	2060	291	223	167	174
30	138	131	144	247	---	891	611	1520	277	219	167	173
31	143	---	142	233	---	2570	---	1220	---	214	165	---
MEAN	152	139	126	458	1047	987	874	1986	469	265	191	180
MAX	213	145	144	4070	3660	4380	2000	5790	1040	442	221	233
MIN	138	131	113	127	395	287	470	592	277	214	165	161
IN.	.44	.39	.37	1.33	2.74	2.86	2.45	5.75	1.32	.77	.55	.50

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

	MEAN	222	388	448	463	561	708	828	736	472	257	206	187
MAX	1092	1786	2462	2065	1906	1944	2920	2168	2745	1682	984	466	
(WY)	1985	1974	1983	1949	1985	1945	1927	1950	1928	1951	1927	1975	
MIN	76.5	98.1	96.9	89.8	120	139	203	129	109	84.8	82.6	73.1	
(WY)	1957	1955	1956	1956	1934	1956	1954	1936	1936	1934	1954	1956	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	571	455
HIGHEST ANNUAL MEAN		1072
LOWEST ANNUAL MEAN		154
HIGHEST DAILY MEAN	5790	24100
LOWEST DAILY MEAN	113	67
INSTANTANEOUS PEAK FLOW	20900	55800
INSTANTANEOUS PEAK STAGE	12.59	17.58
INSTANTANEOUS LOW FLOW	111	64
ANNUAL RUNOFF (INCHES)	19.47	15.51
10 PERCENTILE	1430	896
50 PERCENTILE	255	237
95 PERCENTILE	128	109

\*\* May have been less during period Dec. 21, 22.

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.

PERIOD OF RECORD.--October 1912 to current year. Prior to July 1921 monthly discharge only, published in WSP 1311.

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.--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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	863	837	778	830	1620	2060	7120	2960	5150	1660	1060	938
2	858	822	777	803	7550	1960	5300	3080	4770	1630	1050	930
3	845	815	768	793	8010	1890	4300	6050	4340	1600	1040	922
4	834	814	768	816	5160	1830	3700	22500	3950	1570	1100	914
5	828	820	777	818	4270	1750	3320	11300	3650	1540	1120	908
6	832	823	782	807	3760	1690	3000	7260	3420	1520	1070	905
7	842	827	775	795	3340	1660	2690	5860	3230	1610	1030	906
8	815	860	782	792	2960	1800	2460	5020	3060	1670	1010	951
9	797	834	781	785	3360	1950	2290	4460	2900	1540	998	981
10	780	820	776	776	6610	2150	3660	4100	2790	1460	987	981
11	765	811	775	765	6000	2130	7330	3710	2640	1430	983	1010
12	756	808	767	753	4530	2440	5990	4010	2520	1430	1030	1010
13	753	805	764	743	3640	5510	4710	6120	2420	1460	1110	981
14	754	812	762	743	3090	4690	4100	5730	2360	1430	1050	960
15	752	831	757	744	4430	6500	3690	4950	2330	1400	1020	932
16	763	814	749	745	10000	12000	3400	5520	2230	1340	1110	914
17	893	800	749	931	7560	6970	3310	16500	2160	1290	1180	900
18	966	797	754	2020	5170	5250	4580	16300	2100	1240	1080	891
19	961	791	750	2600	4130	4390	3640	8290	2040	1220	1030	887
20	890	790	749	7740	3470	3690	3420	8560	2030	1200	1020	889
21	858	791	737	7390	3010	3210	3830	9650	2060	1230	1030	956
22	842	845	732	4130	2920	2920	4010	11700	2020	1630	999	1080
23	836	858	732	3060	3080	2700	3910	8430	1970	1520	986	1010
24	829	840	739	2510	3070	2570	3670	6730	1910	1320	986	985
25	822	827	834	2160	2760	2460	3380	5780	1860	1240	975	947
26	820	822	815	1890	2480	2380	3110	9250	1840	1180	977	923
27	815	819	761	1680	2300	2490	2930	19000	1810	1160	967	911
28	817	800	757	1510	2180	2740	3050	11300	1770	1140	966	901
29	818	786	784	1390	---	2850	3160	8770	1730	1130	961	887
30	829	781	829	1300	---	3720	3070	6750	1690	1110	955	899
31	848	---	850	1230	---	7490	---	5770	---	1080	943	---
MEAN	828	817	771	1744	4302	3479	3871	8239	2625	1386	1027	940
MAX	966	860	850	7740	10000	12000	7330	22500	5150	1670	1180	1080
MIN	752	781	732	743	1620	1660	2290	2960	1690	1080	943	887
IN.	.57	.55	.53	1.21	2.69	2.41	2.59	5.70	1.76	.96	.71	.63

MEAN	1068	1620	1879	1950	2242	2789	3340	3026	2127	1304	1082	982
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	492	573	535	538	658	777	805	679	628	575	532	495
(WY)	1957	1955	1956	1956	1934	1941	1956	1936	1936	1936	1954	1956

FOR PERIOD OF RECORD

AVERAGE FLOW	2492		1947	
HIGHEST ANNUAL MEAN			4811	1985
LOWEST ANNUAL MEAN			799	1954
HIGHEST DAILY MEAN	22500	May 4	63000	Mar 12 1935
LOWEST DAILY MEAN	732	Dec 22, 23	476	Oct 8 1956
INSTANTANEOUS PEAK FLOW	29900	May 4	125000	Aug 21 1915
INSTANTANEOUS PEAK STAGE	15.14	May 4	25.9	Aug 21 1915
INSTANTANEOUS LOW FLOW	732	Dec 21-24, Jan 13-15	473	Oct 7 1956
ANNUAL RUNOFF (INCHES)	20.30		15.86	
10 PERCENTILE	5580		3690	
50 PERCENTILE	1300		1210	
95 PERCENTILE	756		630	

## 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: Jan. 20-23, Feb. 2-24, Mar. 13-21, and Mar. 30 to June 7 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	373	323	305	290	508	504	610	650	700	502	381	391
2	380	323	303	290	650	497	600	645	690	489	382	391
3	382	323	302	290	650	490	590	750	680	486	382	391
4	386	322	300	291	580	484	590	750	670	482	384	391
5	388	321	300	290	560	478	585	750	660	480	390	391
6	390	321	302	288	540	472	585	740	650	474	396	386
7	378	322	304	287	525	467	580	720	640	474	398	385
8	364	323	305	287	513	503	580	710	638	467	398	380
9	359	323	306	287	525	521	590	700	616	467	398	379
10	352	322	307	287	580	523	640	690	605	463	398	379
11	348	321	307	287	580	528	650	680	595	456	398	378
12	345	321	305	287	550	539	640	680	584	453	398	376
13	344	323	304	287	530	600	630	670	578	454	401	381
14	343	323	299	290	500	650	625	665	569	451	401	377
15	340	323	297	288	550	660	620	665	561	446	401	371
16	341	323	297	288	700	660	620	660	552	438	400	367
17	341	323	297	290	680	660	700	680	546	432	398	364
18	341	321	290	299	650	650	720	720	541	427	395	363
19	337	323	289	390	630	640	710	710	539	424	395	360
20	337	323	291	450	620	620	700	700	537	420	395	359
21	333	320	290	450	610	600	700	700	536	416	395	358
22	332	316	290	420	590	583	690	700	529	416	397	358
23	332	315	290	400	576	576	685	690	526	414	400	360
24	328	315	290	385	552	574	680	680	524	405	401	359
25	324	317	290	370	562	553	675	680	523	400	399	360
26	325	318	288	357	547	544	670	750	520	396	398	357
27	324	312	288	352	523	543	665	800	509	392	398	357
28	323	308	289	342	511	549	660	790	504	388	398	356
29	323	306	290	332	---	579	655	780	501	383	398	351
30	323	305	290	329	---	610	650	750	501	383	397	350
31	323	---	290	338	---	630	---	730	---	384	393	---
MEAN	347	319	297	326	575	564	643	709	577	437	396	371
MAX	390	323	307	450	700	660	720	800	700	502	401	391
MIN	323	305	288	287	500	467	580	645	501	383	381	350
IN.	4.00	3.56	3.42	3.76	5.99	6.51	7.18	8.18	6.44	5.05	4.56	4.14

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

	MEAN	355	465	586	496	540	569	659	593	519	421	379	364
	MAX	491	769	1070	721	748	705	800	888	673	538	468	417
(WY)	1985	1986	1983	1985	1985	1985	1985	1984	1983	1986	1986	1986	1986
MIN	282	287	297	295	346	440	500	376	325	320	293	292	292
(WY)	1988	1988	1990	1987	1987	1983	1987	1987	1987	1987	1987	1987	1987

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	462	495
HIGHEST ANNUAL MEAN		620
LOWEST ANNUAL MEAN		361
HIGHEST DAILY MEAN	800**	2000
LOWEST DAILY MEAN	287	236
INSTANTANEOUS PEAK FLOW	*****	*****
INSTANTANEOUS PEAK STAGE	*****	*****
INSTANTANEOUS LOW FLOW	*****	236
ANNUAL RUNOFF (INCHES)	*****	*****
10 PERCENTILE	680	717
50 PERCENTILE	400	446
95 PERCENTILE	292	295

\*\* Estimated due to backwater from Current River

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



## WHITE RIVER BASIN

221

## 07068000 CURRENT RIVER AT DONIPHAN, MO

LOCATION.--Lat 36°37'19", long 90°50'51", in NW 1/4 NW 1/4 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>.

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.--No estimated daily discharges. 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.

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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1270	1240	1170	1160	2160	2870	7660	3530	6330	2430	1810	1540
2	1270	1230	1160	1140	3910	2790	6140	3620	5820	2390	1790	1520
3	1260	1220	1160	1130	8750	2710	5070	4660	5300	2360	1790	1510
4	1250	1210	1150	1150	5850	2630	4440	11100	4970	2340	1820	1500
5	1240	1220	1160	1140	4570	2540	4040	24900	4620	2300	1870	1490
6	1240	1230	1160	1130	4010	2450	3730	9810	4390	2260	1830	1480
7	1250	1230	1160	1130	3630	2400	3480	7180	4190	2240	1790	1490
8	1250	1240	1160	1120	3320	2500	3260	6150	3990	2320	1770	1510
9	1240	1240	1160	1110	3480	2690	3100	5510	3840	2280	1740	1540
10	1240	1230	1160	1100	5180	2820	4870	5070	3720	2210	1720	1550
11	1230	1210	1160	1100	6440	2910	6980	4710	3590	2180	1710	1540
12	1220	1210	1150	1080	5180	2860	7520	4510	3450	2200	1730	1570
13	1220	1200	1150	1080	4270	3910	5880	5660	3350	2210	1780	1570
14	1220	1200	1140	1070	3720	5100	5050	6590	3270	2200	1800	1550
15	1220	1220	1140	1070	4590	4590	4590	5700	3220	2180	1800	1520
16	1220	1210	1130	1070	8090	9140	4290	5460	3130	2150	1800	1500
17	1250	1200	1130	1150	9710	8750	4470	8250	3040	2100	1860	1480
18	1340	1200	1120	1450	6430	5860	4680	19100	2960	2070	1850	1470
19	1370	1190	1130	2550	5040	4930	4540	13100	2880	2040	1770	1470
20	1350	1190	1130	4500	4310	4320	4130	7870	2840	2010	1720	1460
21	1310	1190	1120	8000	3820	3850	4210	9310	2850	2010	1710	1570
22	1260	1220	1110	4960	3660	3560	4430	10500	2840	2140	1700	1620
23	1270	1230	1090	3590	3650	3370	4480	10200	2770	2410	1680	1620
24	1260	1230	1080	3010	3660	3230	4400	7770	2710	2210	1670	1560
25	1250	1210	1080	2650	3500	3160	4140	6750	2660	2080	1640	1540
26	1240	1210	1150	2360	3260	3040	3860	6730	2630	2010	1620	1510
27	1230	1210	1120	2130	3080	3030	3670	13000	2580	1950	1600	1500
28	1230	1200	1090	1940	2980	3170	3630	19000	2540	1910	1590	1490
29	1220	1180	1110	1800	---	3330	3660	10600	2500	1890	1580	1490
30	1230	1180	1130	1680	---	3700	3640	8310	2460	1870	1560	1520
31	1240	---	1160	1590	---	5650	---	7100	---	1840	1550	---
MEAN	1255	1213	1136	1972	4652	3802	4601	8766	3515	2155	1731	1523
MAX	1370	1240	1170	8000	9710	9140	7660	24900	6330	2430	1870	1620
MIN	1220	1180	1080	1070	2160	2400	3100	3530	2460	1840	1550	1460
IN.	.71	.66	.64	1.12	2.38	2.15	2.52	4.96	1.92	1.22	.98	.83

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

	MEAN	1624	2281	2678	2819	3125	3836	4538	4110	3000	1969	1679	1536
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	927	950	917	1122	1218	1476	1183	1075	959	951	903	
(WY)	1957	1955	1956	1956	1934	1941	1956	1936	1936	1934	1936	1954	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	3017	2761
HIGHEST ANNUAL MEAN		5856
LOWEST ANNUAL MEAN		1326
HIGHEST DAILY MEAN	24900	90000
LOWEST DAILY MEAN	1070	852
INSTANTANEOUS PEAK FLOW	30500	122000
INSTANTANEOUS PEAK STAGE	12.22	25.49
INSTANTANEOUS LOW FLOW	1070	852
ANNUAL RUNOFF (INCHES)	20.10	18.40
10 PERCENTILE	5950	4980
50 PERCENTILE	2020	1900
95 PERCENTILE	1110	1080

\*\* May have been less during period Dec. 22-25.



## WHITE RIVER BASIN

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.--Estimated daily discharges: Jan. 6-10 and Jan. 20 to Feb. 21. Records fair except for estimated daily discharges, Jan. 20 to Feb. 21, which are poor. Several observations of water temperature and specific conductance were made during the year. Occasional runoff from drainage area of 2.97 mi<sup>2</sup> included in records.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	295	253	240	231	300	371	546	572	570	413	359	352
2	295	251	241	231	400	370	545	571	567	409	354	353
3	289	249	241	232	450	369	538	664	562	406	356	352
4	287	249	240	231	440	368	534	708	555	401	357	353
5	288	248	240	230	430	362	526	693	551	398	355	351
6	288	247	244	228	420	359	517	679	546	397	356	351
7	285	245	239	226	410	355	505	670	537	399	353	352
8	281	247	239	224	400	368	495	657	533	398	353	353
9	279	247	239	222	420	388	483	652	530	397	353	359
10	282	244	241	221	450	392	553	648	524	392	355	358
11	283	244	241	217	440	391	615	635	521	386	355	357
12	282	244	240	214	430	398	603	634	517	384	357	356
13	277	244	237	209	425	435	587	665	515	384	354	357
14	272	244	235	209	420	456	588	644	508	381	351	352
15	271	245	235	208	420	528	575	639	502	379	352	346
16	270	243	236	208	500	572	567	635	498	376	355	345
17	267	243	235	222	490	580	651	629	490	376	354	342
18	265	242	233	239	470	579	660	625	489	374	350	340
19	262	240	231	280	450	566	650	616	483	368	353	340
20	259	241	234	350	430	561	639	607	475	369	355	338
21	258	240	233	340	420	551	651	604	470	371	350	340
22	256	240	233	330	414	543	647	605	464	370	351	341
23	253	239	233	320	418	534	638	600	459	368	354	337
24	253	236	234	315	410	526	631	590	455	365	353	335
25	252	237	233	305	400	513	620	584	447	362	353	337
26	252	237	230	300	390	497	607	578	443	361	353	336
27	254	236	230	290	382	489	605	578	436	361	353	335
28	254	234	228	280	379	482	600	593	429	360	354	331
29	254	232	228	270	---	472	597	590	421	360	351	331
30	256	237	230	260	---	483	589	583	414	359	352	329
31	255	---	232	260	---	532	---	577	---	359	350	---
MEAN	270	243	236	255	422	464	585	623	497	380	354	345
MAX	295	253	244	350	500	580	660	708	570	413	359	359
MIN	252	232	228	208	300	355	483	571	414	359	350	329
IN.	3.12	2.71	2.72	2.94	4.39	5.35	6.53	7.19	5.55	4.38	4.08	3.85

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

	MEAN	253	276	298	323	345	390	439	441	402	333	293	265
MAX	447	586	750	648	652	674	724	776	861	611	563	503	
(WY)	1985	1985	1928	1928	1949	1975	1927	1927	1927	1945	1927	1928	
MIN	111	111	113	108	144	152	180	142	140	127	122	120	
(WY)	1957	1955	1956	1956	1981	1981	1936	1936	1936	1936	1936	1955	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	389	338
HIGHEST ANNUAL MEAN		566
LOWEST ANNUAL MEAN		174
HIGHEST DAILY MEAN	708	1010
LOWEST DAILY MEAN	208	104
INSTANTANEOUS PEAK FLOW	719	1770
INSTANTANEOUS PEAK STAGE	1.60	2.97
INSTANTANEOUS LOW FLOW	205	104
ANNUAL RUNOFF (INCHES)	*****	*****
10 PERCENTILE	597	549
50 PERCENTILE	359	317
95 PERCENTILE	230	145

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

## WHITE RIVER BASIN

223

## 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	401	352	297	278	544	851	1430	1390	1580	844	612	504
2	401	352	299	271	1200	848	1320	1540	1560	836	605	505
3	394	347	297	272	1080	856	1220	3210	1500	825	602	508
4	388	343	297	281	957	841	1150	5110	1430	813	622	505
5	385	342	297	276	888	816	1100	2800	1380	802	623	512
6	385	344	297	272	832	790	1040	2230	1350	790	599	508
7	382	344	296	268	784	776	993	1960	1310	779	588	523
8	373	344	294	268	743	852	953	1800	1270	768	583	521
9	373	342	294	268	883	1080	929	1690	1240	761	581	522
10	373	337	294	266	1530	1070	1850	1610	1210	755	580	517
11	373	332	294	263	1280	1020	2810	1550	1180	755	575	508
12	373	332	294	260	1090	993	1940	1600	1150	752	580	508
13	371	328	290	257	980	1300	1670	2940	1130	739	576	505
14	367	328	290	253	911	1190	1530	2230	1140	730	569	504
15	365	334	289	253	1240	1850	1420	1950	1110	724	586	498
16	363	327	286	253	2060	2010	1360	2000	1080	713	607	492
17	365	324	286	287	1610	1560	2890	1860	1060	700	585	488
18	365	320	286	300	1380	1380	2660	1750	1050	695	564	483
19	365	317	286	371	1230	1270	1910	1660	1020	690	556	483
20	364	316	283	755	1110	1170	1740	1600	1010	693	550	481
21	360	315	281	726	1020	1110	1910	1600	999	694	544	540
22	360	326	274	628	1030	1070	1870	1620	1000	709	539	519
23	362	317	271	577	1050	1030	1770	1580	972	683	536	492
24	363	313	271	532	1000	1000	1670	1540	944	671	532	479
25	358	314	272	498	942	971	1560	1500	932	660	527	476
26	356	315	275	473	900	946	1470	1510	912	652	523	474
27	353	315	276	453	873	931	1420	1600	898	647	519	471
28	348	313	279	437	860	925	1450	2040	882	640	516	467
29	348	304	281	426	---	926	1430	2010	866	637	514	467
30	350	297	282	415	---	1020	1380	1770	853	628	509	495
31	352	---	282	399	---	1440	---	1660	---	619	506	---
MEAN	369	328	287	372	1072	1093	1595	1965	1134	723	565	498
MAX	401	352	299	755	2060	2010	2890	5110	1580	844	623	540
MIN	348	297	271	253	544	776	929	1390	853	619	506	467
IN.	.54	.46	.42	.54	1.41	1.59	2.24	2.86	1.60	1.05	.82	.70

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

	MEAN	416	557	702	777	842	1062	1296	1154	899	610	485	424
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	168	176	170	159	224	264	339	266	245	213	199	181	
(WY)	1957	1957	1956	1956	1963	1981	1981	1936	1936	1936	1936	1956	

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	831	768
HIGHEST ANNUAL MEAN		1782
LOWEST ANNUAL MEAN		310
HIGHEST DAILY MEAN	5110	26800
LOWEST DAILY MEAN	253	155
INSTANTANEOUS PEAK FLOW	6360	49800
INSTANTANEOUS PEAK STAGE	8.40	21.64
INSTANTANEOUS LOW FLOW	253	152
ANNUAL RUNOFF (INCHES)	14.23	13.14
10 PERCENTILE	1610	1430
50 PERCENTILE	625	541
95 PERCENTILE	275	225

## 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: Dec. 15-24. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	159	92	65	79	155	1260	1650	831	8010	684	190	119
2	152	91	65	76	157	1950	1320	719	4780	636	185	116
3	146	91	65	73	170	2650	1120	4280	3490	589	195	115
4	143	90	65	72	211	2230	1010	5960	2330	549	204	111
5	141	87	65	71	241	1480	931	5380	1830	514	200	110
6	289	84	65	71	284	1280	880	2900	1590	489	194	108
7	475	84	64	73	306	6690	1030	1720	1390	472	189	108
8	402	83	65	69	295	6040	852	1370	1330	607	182	110
9	252	80	66	67	311	4210	755	1180	2440	577	171	110
10	185	78	65	65	359	2110	3810	1050	2350	445	170	119
11	161	79	63	63	375	3700	4110	958	1500	388	200	114
12	147	79	63	61	349	12600	2650	1230	1220	364	190	110
13	138	79	63	59	304	7400	1390	1720	1090	344	184	111
14	111	79	63	59	284	14600	1240	1260	1150	348	177	108
15	102	75	63	58	1310	24800	1280	8550	2960	341	175	105
16	95	71	63	60	3150	23500	1190	11200	2780	315	205	101
17	93	77	63	70	2400	11500	1060	21000	3000	299	475	100
18	90	74	63	83	1230	3240	964	21700	1810	283	307	120
19	89	73	63	315	933	2120	899	17500	1490	272	241	117
20	88	73	63	2380	781	1790	825	17300	1100	263	203	121
21	89	71	63	2220	687	1570	783	16600	959	258	186	299
22	88	70	63	907	1050	1410	907	15200	4830	277	171	737
23	86	69	63	574	3320	1270	750	7300	4250	275	162	488
24	86	69	63	435	2560	1230	687	2810	2430	258	159	294
25	86	68	64	353	1370	1230	636	2220	1100	250	155	237
26	86	67	66	299	941	1500	1500	7700	1120	238	149	214
27	84	67	67	255	792	2090	4430	22100	1660	230	141	193
28	82	66	68	230	834	2030	4500	24000	1570	222	138	178
29	83	65	82	199	---	2390	2200	16500	943	214	133	168
30	90	65	89	177	---	2330	1110	5550	770	205	129	162
31	95	---	83	164	---	1980	---	13700	---	198	124	---
MEAN	142	76.5	66.2	314	899	4974	1549	8435	2242	368	190	173
MAX	475	92	89	2380	3320	24800	4500	24000	8010	684	475	737
MIN	82	65	63	58	155	1230	636	719	770	198	124	100
IN.	.14	.07	.07	.31	.80	4.93	1.49	8.36	2.15	.36	.19	.17

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

MEAN	671	850	675	670	913	1234	1439	1483	1382	653	463	449
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	73.4	15.2	7.71	22.0
(WY)	1957	1954	1964	1964	1964	1954	1956	1932	1954	1954	1954	1956

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1632	899
HIGHEST ANNUAL MEAN		2705
LOWEST ANNUAL MEAN		61.4
HIGHEST DAILY MEAN	24800	81800
LOWEST DAILY MEAN	58	4.5
INSTANTANEOUS PEAK FLOW	28700	103000
INSTANTANEOUS PEAK STAGE	22.93	30.94
INSTANTANEOUS LOW FLOW	57	4.2
ANNUAL RUNOFF (INCHES)	19.04	10.49
10 PERCENTILE	3540	1790
50 PERCENTILE	268	289
95 PERCENTILE	63	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>.

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.--Estimated daily discharges: Dec. 15-24. Records good. Several observations of water temperature and specific conductance were made during the year.

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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	44	31	28	87	501	360	238	1070	185	91	63
2	68	42	32	28	85	444	341	231	894	178	90	61
3	64	41	30	29	85	389	321	834	758	174	95	61
4	63	40	30	38	90	349	309	1500	665	167	105	60
5	62	41	31	36	95	310	298	836	606	161	92	61
6	75	41	32	33	107	304	283	655	553	157	87	58
7	70	41	33	32	111	575	271	560	503	155	85	57
8	61	41	34	31	112	685	260	483	481	147	83	57
9	60	39	33	28	114	532	254	436	551	141	82	56
10	59	39	32	26	167	465	325	386	531	137	83	56
11	57	38	31	25	161	583	345	356	426	144	91	61
12	55	38	30	24	153	1640	294	555	382	139	93	62
13	54	38	30	24	144	782	283	535	353	138	85	62
14	56	38	30	24	143	3750	275	407	334	137	82	60
15	53	37	30	25	401	4860	265	1940	322	130	81	57
16	51	35	30	25	682	1410	257	2220	308	125	102	56
17	50	35	30	44	393	1020	247	2660	289	121	97	57
18	50	36	30	46	323	841	236	1480	273	119	86	65
19	49	36	30	121	282	715	230	2940	260	117	80	61
20	48	36	30	681	248	629	225	1710	249	113	78	65
21	47	36	30	276	230	575	220	3750	241	115	75	143
22	47	36	30	212	235	524	223	1620	269	119	73	101
23	46	33	30	185	288	469	215	1110	247	113	77	81
24	46	33	30	163	290	444	211	916	231	109	80	72
25	43	33	30	147	261	407	206	777	222	106	77	67
26	42	33	30	132	243	382	230	4240	229	104	71	64
27	41	34	30	121	231	358	257	6350	226	101	70	62
28	41	33	30	110	242	370	288	2870	211	98	67	61
29	41	31	32	101	---	395	264	1220	201	96	66	60
30	52	31	30	95	---	382	250	1100	192	96	65	61
31	50	---	28	88	---	372	---	1720	---	93	64	---
MEAN	53.8	37.0	30.6	96.1	214	821	268	1504	403	130	82.4	65.6
MAX	75	44	34	681	682	4860	360	6350	1070	185	105	143
MIN	41	31	28	24	85	304	206	231	192	93	64	56
IN.	.27	.18	.15	.48	.96	4.08	1.29	7.48	1.94	.65	.41	.32

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

	114	266	226	171	219	363	340	275	235	125	64.8	106
MEAN	114	266	226	171	219	363	340	275	235	125	64.8	106
MAX	507	1318	992	579	782	1189	1154	1504	849	861	132	388
(WY)	1987	1986	1974	1973	1985	1975	1973	1990	1974	1976	1989	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	1981	1963	1963	1972	1972	1972	1980

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	311	208
HIGHEST ANNUAL MEAN	491	1973
LOWEST ANNUAL MEAN	51.4	1981
HIGHEST DAILY MEAN	6350	May 27
LOWEST DAILY MEAN	24	Jan 12-14
INSTANTANEOUS PEAK FLOW	8540	May 26
INSTANTANEOUS PEAK STAGE	11.90	May 26
INSTANTANEOUS LOW FLOW	24	Jan 11-16
ANNUAL RUNOFF (INCHES)	18.20	12.18
10 PERCENTILE	622	411
50 PERCENTILE	104	98
95 PERCENTILE	30	27



## 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.--Estimated daily discharges: Dec. 21-24. 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 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	89	66	59	211	755	803	589	3120	450	261	176
2	90	81	65	58	215	889	762	561	1980	435	261	172
3	85	77	66	60	237	893	718	1080	1620	419	280	168
4	83	75	68	74	248	850	681	3450	1390	406	280	166
5	84	75	68	71	242	811	647	2500	1240	393	259	167
6	98	73	68	67	237	788	614	1570	1130	382	245	161
7	100	72	69	62	248	919	587	1310	1040	387	238	159
8	92	69	73	62	245	1080	560	1130	998	369	238	157
9	86	71	72	60	266	1020	544	1010	1150	352	235	158
10	81	70	72	59	659	917	619	915	1030	384	230	156
11	81	71	70	58	481	953	932	838	957	402	241	158
12	79	70	66	55	417	1840	712	880	867	400	257	159
13	75	70	66	51	378	1580	669	867	808	390	238	159
14	76	69	66	54	357	3670	658	775	766	386	227	156
15	75	67	63	54	469	7440	625	1870	823	375	227	151
16	75	65	63	54	965	4630	593	2520	810	361	271	147
17	74	63	69	123	800	2260	562	4720	722	352	282	152
18	73	65	70	176	676	1740	545	2670	656	347	226	158
19	72	67	66	267	604	1450	517	3540	615	343	215	162
20	73	68	66	1080	545	1250	504	2640	589	337	225	173
21	74	67	66	780	498	1130	499	3010	569	325	210	299
22	79	68	66	542	484	1040	567	2890	722	331	204	352
23	80	69	67	457	488	933	523	1890	722	327	205	252
24	80	70	67	398	474	888	501	1560	594	312	242	212
25	74	69	70	353	452	848	482	1350	556	307	220	197
26	73	68	72	320	433	806	529	2060	563	302	201	184
27	70	67	71	291	421	768	683	5180	554	296	194	178
28	70	64	66	267	481	785	712	4390	519	285	191	171
29	72	63	71	244	---	865	683	2150	491	279	184	167
30	96	65	68	229	---	860	637	1870	466	274	181	166
31	98	---	65	218	---	834	---	3240	---	266	179	---
MEAN	81.0	69.9	67.8	216	437	1467	622	2098	936	354	231	180
MAX	100	89	73	1080	965	7440	932	5180	3120	450	282	352
MIN	70	63	63	51	211	755	482	561	466	266	179	147
IN.	.22	.18	.18	.58	1.07	3.96	1.63	5.66	2.45	.96	.62	.47

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

	295	384	329	299	375	556	654	707	535	322	219	227
MEAN	295	384	329	299	375	556	654	707	535	322	219	227
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	81.4	47.0	37.1	47.0
(WY)	1957	1964	1964	1964	1964	1954	1954	1963	1954	1954	1954	1953

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	565	408
HIGHEST ANNUAL MEAN		1008
LOWEST ANNUAL MEAN		77.8
HIGHEST DAILY MEAN	7440	36700
LOWEST DAILY MEAN	51	15
INSTANTANEOUS PEAK FLOW	8340	62100
INSTANTANEOUS PEAK STAGE	11.77	16.8
INSTANTANEOUS LOW FLOW	49	12
ANNUAL RUNOFF (INCHES)	17.98	12.99
10 PERCENTILE	1180	821
50 PERCENTILE	279	227
95 PERCENTILE	62	66



07189000 ELK RIVER NEAR TIFF CITY, MO

LOCATION.--Lat 36°37'53", long 94°35'12", in NE 1/4 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. U.S. Army Corps of Engineers satellite telemeter at station.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990, MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	203	146	99	103	474	3150	2330	2080	6210	477	198	150
2	193	140	102	101	1760	2830	1980	1820	3990	443	199	148
3	194	133	100	106	2030	2650	1640	14300	3020	428	198	144
4	195	126	98	115	1430	2170	1500	18900	2320	400	200	139
5	187	124	99	116	1070	1760	1340	9110	1820	365	199	136
6	188	122	99	125	1010	1520	1200	5230	1540	345	195	137
7	191	122	99	112	951	2400	1080	3910	1350	332	189	136
8	187	115	102	117	887	4700	981	3100	1250	310	187	136
9	177	113	103	118	2910	3620	920	2560	1480	296	184	138
10	158	115	103	115	3330	2610	4910	2140	2200	283	184	139
11	141	114	102	111	1830	2250	6870	1740	5070	274	188	140
12	135	112	103	106	1400	5380	3910	1630	2290	270	193	139
13	132	112	100	96	1180	5760	2860	1660	1500	259	197	139
14	128	109	96	104	1040	10300	2300	1470	1210	254	195	139
15	124	109	96	106	2100	23900	1910	1330	1110	249	191	139
16	122	106	103	113	6070	9680	1730	4510	1010	243	188	136
17	119	103	93	410	2170	5640	4370	5840	923	232	186	136
18	119	102	96	1360	2340	4140	5460	3360	839	230	182	139
19	116	103	96	2760	1760	3230	3720	3250	783	226	181	159
20	113	103	96	11400	1420	2360	2960	2930	705	222	184	183
21	113	103	96	4530	1220	2160	3310	6590	624	217	176	242
22	117	107	96	2370	1120	1860	3480	5700	1660	216	169	297
23	116	109	96	1620	1070	1590	3800	3300	1810	220	169	264
24	116	109	96	1250	1010	1490	3220	2530	1170	218	168	227
25	113	109	96	1030	954	1400	2490	1990	911	216	169	208
26	112	106	96	750	903	1340	5220	1810	810	217	165	192
27	109	108	98	764	870	1370	6960	5320	797	216	162	181
28	109	106	99	667	1040	1760	4130	4760	731	211	157	172
29	111	99	104	515	---	3180	3150	3050	664	204	154	167
30	132	99	106	547	---	3310	2530	2570	573	201	151	168
31	141	---	106	487	---	2740	---	7240	---	199	148	---
MEAN	142	113	99.2	1039	1620	3944	3075	4378	1679	273	181	166
MAX	203	146	106	11400	6070	23900	6960	18900	6210	477	200	297
MIN	109	99	93	96	474	1340	920	1330	573	199	148	136
IN.	.19	.14	.13	1.37	1.93	5.22	3.94	5.79	2.15	.36	.24	.21

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

MEAN	529	777	1234	803	1156	1694	1731	1178	727	240	204	199
MAX	2888	3581	3430	2509	2537	3944	3411	4378	1679	374	559	712
(WY)	1987	1986	1988	1985	1985	1990	1986	1990	1990	1989	1985	1986
MIN	84.6	77.1	99.2	64.6	100	161	204	403	170	129	84.7	50.3
(WY)	1983	1981	1990	1981	1981	1981	1981	1981	1988	1988	1988	1980

## SUMMARY STATISTICS

## FOR 1990 WATER YEAR

## FOR PERIOD OF RECORD

AVERAGE FLOW	1392	870
HIGHEST ANNUAL MEAN		1648
LOWEST ANNUAL MEAN		185
HIGHEST DAILY MEAN	23900	33700
LOWEST DAILY MEAN	93	38
INSTANTANEOUS PEAK FLOW	36800	137000
INSTANTANEOUS PEAK STAGE	21.19	28.4
INSTANTANEOUS LOW FLOW	93	5.1
ANNUAL RUNOFF (INCHES)	21.67	13.55
10 PERCENTILE	3700	1840
50 PERCENTILE	243	353
95 PERCENTILE	99	72

## 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; water years 1983 to June 1990 (discontinued).

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (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)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	
OCT													
11...	1610	139	275	8.5	20.5	11.5	127	13	K8	140	52	3.1	
NOV													
08...	0820	112	299	7.8	12.5	8.1	76	<10	K12	--	--	--	
DEC													
05...	1615	103	277	8.5	8.5	15.0	128	16	36	--	--	--	
JAN													
10...	0830	112	281	8.0	4.5	11.5	87	<10	K7	140	50	3.0	
FEB													
07...	1320	960	256	8.0	9.5	11.5	99	<10	K12	--	--	--	
MAR													
07...	0900	1930	229	7.9	10.5	10.1	89	13	K650	--	--	--	
APR													
03...	1000	1600	233	8.0	11.5	10.6	95	<10	25	120	44	3.0	
MAY													
08...	1425	3010	231	7.8	16.5	8.2	83	25	120	--	--	--	
JUN													
06...	0830	1560	246	7.9	19.0	8.5	92	16	130	--	--	--	
DATE		SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT WH TOT IT FIELD MG/L AS CACO3 (00419)	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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)
OCT													
11...	4.9	2.0	128	7.0	6.9	<0.1	149	<1	0.80	0.01	0.08	30	
NOV													
08...	--	--	128	--	--	--	183	2	0.80	0.02	0.07	<10	
DEC													
05...	--	--	176	--	--	--	166	1	1.0	0.03	0.12	30	
JAN													
10...	5.2	1.7	124	8.0	8.0	<0.1	166	11	1.2	0.04	0.08	20	
FEB													
07...	--	--	109	--	--	--	164	13	1.7	0.02	0.05	40	
MAR													
07...	--	--	102	--	--	--	145	21	1.4	0.02	0.05	320	
APR													
03...	3.0	1.4	102	8.8	6.0	<0.1	146	<1	1.4	<0.01	0.04	220	
MAY													
08...	--	--	105	--	--	--	137	19	1.4	0.02	0.06	260	
JUN													
06...	--	--	111	--	--	--	144	<1	1.4	0.02	0.05	200	

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

[illegible]

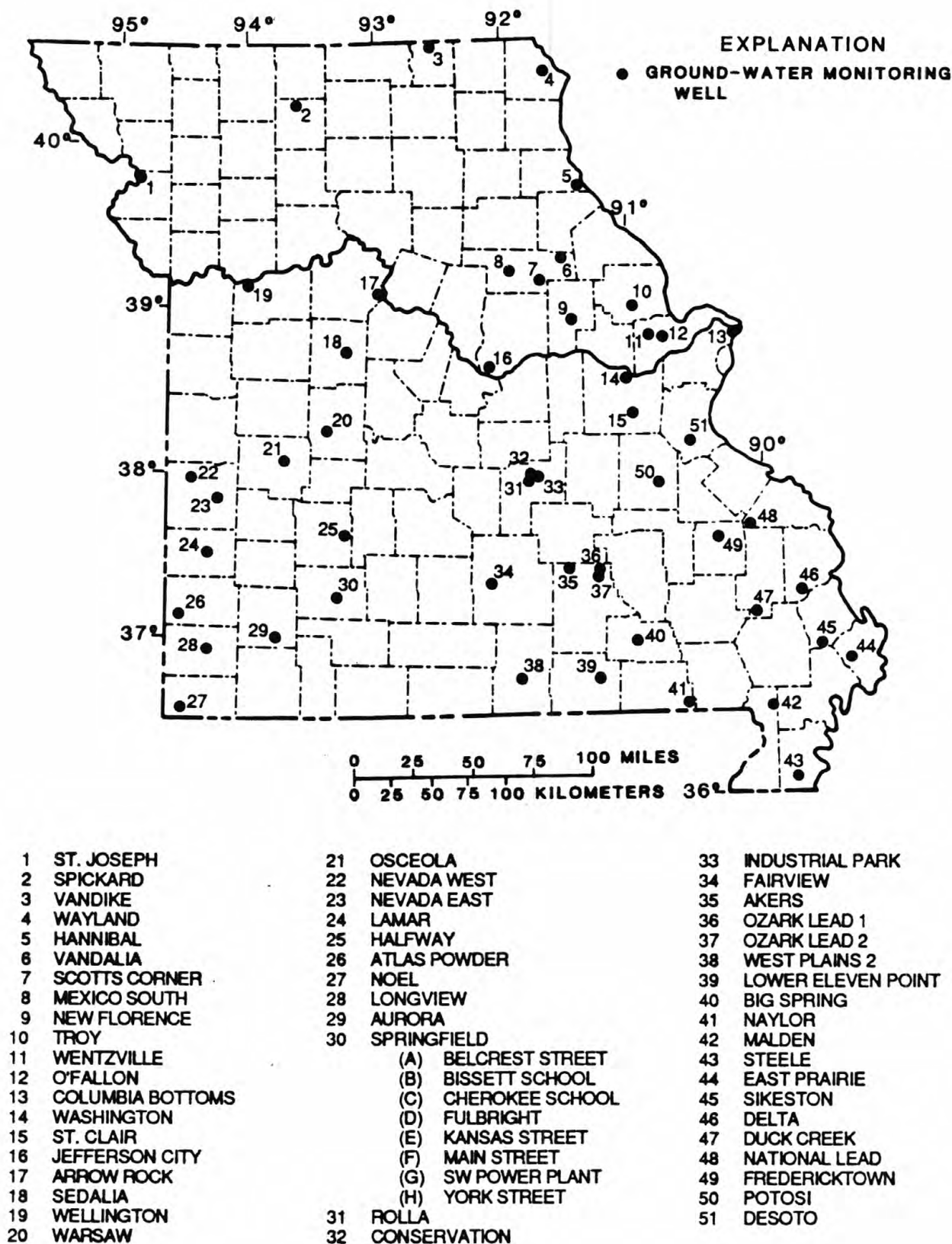


Figure 6.--Ground-water monitoring wells.

## 1-St. Joseph

COUNTY--Buchanan

WELL IDENTIFICATION NUMBER--394254094523901

LOCATION--T.57N., R.35W., 31bcb, lat. 37°42'54", long. 94°52'39", 0.2 miles north of Highway U, Eric Street.

FORMATIONS OPEN TO THE WELL--Alluvium.

WELL CHARACTERISTICS--Drilled May 2, 1957, total depth 83.5 feet, 58 feet of 8-inch casing, 13 feet of 4-inch casing, 4 feet of 4-inch screen.

DGLS Log Number: 16,116

INSTRUMENTATION--Digital recorder, installed March 28, 1984.

DATUM--820 feet above NGVD of 1929.

Measuring point: Recorder platform, 0.75 feet above land surface.

PERIOD OF PROCESSED RECORD--March 23, 1989, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.05	24.88	26.41	27.28	27.06	26.99	26.27	25.14	22.65	20.51	21.79	23.12
2	24.06	24.94	26.41	27.23	27.10	26.92	26.25	25.09	22.60	20.69	21.80	23.22
3	24.16	24.96	26.44	27.16	27.12	26.89	26.19	25.04	22.66	20.88	21.80	23.30
4	24.22	24.98	26.37	27.18	27.12	26.88	26.06	24.99	22.74	21.10	21.77	23.34
5	24.16	25.03	26.36	27.23	27.10	26.88	26.00	24.96	22.71	21.30	21.76	23.39
6	24.19	25.32	26.45	27.24	27.11	26.95	25.98	24.91	22.68	21.42	21.82	23.44
7	24.30	25.41	26.57	27.20	27.12	27.01	25.95	24.83	22.67	21.47	21.88	23.52
8	24.33	25.47	26.61	27.13	27.06	27.00	25.88	24.81	22.56	21.56	21.91	23.59
9	24.34	25.57	26.53	27.12	27.06	26.99	25.81	24.82	22.18	21.70	21.97	23.57
10	24.36	25.79	26.49	27.19	27.09	26.96	25.74	24.88	21.67	21.85	22.03	23.49
11	24.33	25.91	26.56	27.18	27.11	26.88	25.74	24.84	21.38	21.92	22.08	23.43
12	24.33	26.02	26.58	27.25	27.09	26.81	25.69	24.67	21.25	21.98	22.15	23.39
13	24.37	26.12	26.55	27.26	27.04	26.76	25.60	24.58	21.24	22.06	22.22	23.35
14	24.38	26.20	26.64	27.14	27.10	26.66	25.56	24.45	21.38	22.09	22.26	23.31
15	24.36	26.24	26.72	27.11	27.04	26.60	25.51	24.27	21.42	22.06	22.25	23.27
16	24.39	26.20	26.79	27.12	27.02	26.58	25.46	24.07	21.22	22.08	22.26	23.26
17	24.52	25.97	26.80	27.14	27.10	26.48	25.48	23.96	20.98	22.19	22.23	23.36
18	24.61	25.92	26.82	27.24	27.04	26.39	25.50	23.81	20.74	22.32	22.19	23.42
19	24.62	25.93	26.90	27.25	27.05	26.36	25.43	23.62	20.38	22.42	22.20	23.47
20	24.55	25.97	26.95	27.12	27.07	26.33	25.38	23.54	19.91	22.49	22.26	23.56
21	24.49	26.07	27.10	27.08	27.00	26.27	25.34	23.51	19.50	22.56	22.33	23.59
22	24.54	26.06	27.23	27.06	26.93	26.28	25.30	23.45	19.07	22.56	22.38	23.62
23	24.63	26.11	27.26	26.99	26.96	26.42	25.25	23.37	18.75	22.52	22.42	23.68
24	24.75	26.01	27.18	26.98	27.05	26.46	25.21	23.29	18.63	22.49	22.48	23.69
25	24.87	25.98	27.14	27.03	27.12	26.45	25.20	23.24	18.67	22.48	22.57	23.65
26	24.93	26.10	27.18	27.05	27.05	26.45	25.19	23.17	18.82	22.52	22.68	23.69
27	24.94	26.09	27.21	27.04	26.99	26.44	25.16	23.00	19.10	22.52	22.78	23.75
28	24.92	26.28	27.26	27.13	27.01	26.39	25.12	22.86	19.51	22.31	22.86	23.83
29	24.87	26.39	27.28	27.06	---	26.36	25.07	22.77	19.96	22.02	22.90	23.90
30	24.86	26.40	27.33	27.01	---	26.36	25.12	22.73	20.31	21.85	23.00	23.91
31	24.86	---	27.29	27.06	---	26.33	---	22.70	---	21.79	23.07	---
MEAN	24.49	25.81	26.82	27.14	27.06	26.63	25.58	24.04	20.91	21.93	22.26	23.50
MAX	24.94	26.40	27.33	27.28	27.12	27.01	26.27	25.14	22.74	22.56	23.07	23.91
MIN	24.05	24.88	26.36	26.98	26.93	26.27	25.07	22.70	18.63	20.51	21.76	23.12



COUNTY--Grundy

WELL IDENTIFICATION NUMBER--401444093442001

LOCATION--T.63N., R.25W., 20bdb, lat. 40°14'44", long. 93°44'20", approximately 8 miles west of Spickard,  
State Highway C, University of Missouri Agriculture Center.

FORMATIONS OPEN TO THE WELL--Glacial Drift.

WELL CHARACTERISTICS--Drilled October 31, 1958, total depth 140 feet, 136 feet of casing and 4 feet of screen.

INSTRUMENTATION--Graphic recorder from November 5, 1958, to December 22, 1980. Digital recorder, installed  
December 22, 1980.

DATUM--788 feet above NGVD of 1929.

Measuring point: Base of recorder, 2.5 feet above land surface.

PERIOD OF PROCESSED RECORD--December 1980 to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.59	15.32	14.58	13.98	13.46	13.08	12.38	11.99	11.41	11.08	11.05	10.93
2	16.59	15.30	14.57	13.94	13.45	13.02	12.40	11.98	11.37	11.08	11.05	10.96
3	16.58	15.23	14.56	13.89	13.44	13.03	12.39	11.94	11.41	11.07	11.01	10.97
4	16.53	15.15	14.46	13.84	13.44	12.99	12.35	11.86	11.43	11.07	10.95	10.98
5	16.42	15.11	14.42	13.84	13.41	12.97	12.36	11.85	11.38	11.09	10.99	10.98
6	16.40	15.12	14.44	13.83	13.39	12.99	12.37	11.82	11.37	11.10	11.02	10.96
7	16.39	15.07	14.48	13.79	13.37	12.97	12.37	11.79	11.33	11.08	11.02	10.95
8	16.32	15.03	14.46	13.75	13.31	12.90	12.35	11.78	11.28	11.07	11.00	10.94
9	16.26	15.00	14.38	13.74	13.33	12.90	12.31	11.72	11.29	11.08	11.00	10.92
10	16.22	15.01	14.37	13.75	13.31	12.88	12.32	11.74	11.32	11.09	10.98	10.93
11	16.15	14.97	14.39	13.75	13.32	12.83	12.35	11.74	11.31	11.06	10.96	10.95
12	16.14	14.97	14.35	13.78	13.27	12.81	12.33	11.65	11.28	11.06	10.95	10.95
13	16.10	14.91	14.30	13.77	13.28	12.75	12.26	11.67	11.27	11.05	10.94	10.94
14	16.04	14.88	14.31	13.72	13.28	12.65	12.23	11.63	11.24	11.03	10.94	10.94
15	15.98	14.88	14.31	13.72	13.17	12.63	12.22	11.58	11.21	11.01	10.94	10.94
16	15.96	14.89	14.30	13.70	13.19	12.65	12.23	11.56	11.18	11.02	10.90	10.96
17	15.97	14.84	14.26	13.67	13.23	12.65	12.24	11.59	11.19	11.04	10.87	10.98
18	15.97	14.86	14.25	13.71	13.19	12.67	12.26	11.59	11.22	11.05	10.88	10.95
19	15.91	14.81	14.23	13.68	13.22	12.70	12.22	11.54	11.15	11.05	10.88	10.93
20	15.83	14.78	14.21	13.60	13.22	12.68	12.20	11.55	11.13	11.00	10.88	10.94
21	15.78	14.77	14.25	13.60	13.15	12.61	12.19	11.57	11.14	11.02	10.90	10.91
22	15.76	14.75	14.27	13.59	13.06	12.61	12.17	11.57	11.09	11.04	10.90	10.92
23	15.73	14.75	14.22	13.52	13.06	12.65	12.13	11.55	11.10	11.08	10.89	10.95
24	15.71	14.67	14.12	13.53	13.13	12.61	12.13	11.54	11.10	11.09	10.89	10.93
25	15.68	14.64	14.06	13.52	13.15	12.58	12.14	11.43	11.10	11.09	10.89	10.90
26	15.63	14.64	14.06	13.51	13.10	12.58	12.14	11.43	11.09	11.10	10.90	10.91
27	15.59	14.57	14.02	13.51	13.11	12.55	11.99	11.44	11.09	11.10	10.91	10.90
28	15.51	14.66	14.00	13.54	13.12	12.50	11.94	11.43	11.08	11.08	10.91	10.88
29	15.45	14.65	13.97	13.49	---	12.44	11.94	11.43	11.08	11.02	10.91	10.90
30	15.36	14.61	13.97	13.48	---	12.42	11.98	11.44	11.08	11.04	10.92	10.90
31	15.33	---	13.95	13.48	---	12.40	---	11.44	---	11.05	10.92	---
MEAN	16.00	14.89	14.27	13.68	13.26	12.73	12.23	11.64	11.22	11.06	10.94	10.94
MAX	16.59	15.32	14.58	13.98	13.46	13.08	12.40	11.99	11.43	11.10	11.05	10.98
MIN	15.33	14.57	13.95	13.48	13.06	12.40	11.94	11.43	11.08	11.00	10.87	10.88

COUNTY--Schuyler

WELL IDENTIFICATION NUMBER--403452092292901

LOCATION--T.66N., R.14W., 29cda, lat. 40°34'52", long. 92°29'29", 0.5 miles west of Highway CC,  
1.3 mile north, Highway C and Highway CC.

FORMATIONS OPEN TO THE WELL--Glacial Till.

WELL CHARACTERISTICS--Hand dug, 1933, total depth 27 feet, rock walled.

INSTRUMENTATION--Digital recorder, installed July 21, 1980.

DATUM--935 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.0 feet above land surface.

PERIOD OF RECORD--November 30, 1988, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.54	21.71	21.89	22.10	22.33	22.54	22.20	21.81	20.40	16.92	15.29	16.59
2	21.55	21.72	21.89	22.11	22.34	22.54	22.19	21.80	20.35	16.93	15.34	16.64
3	21.56	21.73	21.90	22.11	22.34	22.55	22.17	21.79	20.31	16.94	15.39	16.68
4	21.56	21.73	21.91	22.12	22.35	22.55	22.16	21.77	20.27	16.94	15.44	16.72
5	21.56	21.74	21.91	22.13	22.36	22.55	22.14	21.75	20.23	16.97	15.48	16.76
6	21.56	21.74	21.92	22.14	22.37	22.56	22.13	21.73	20.19	16.99	15.53	16.80
7	21.57	21.75	21.92	22.14	22.37	22.56	22.11	21.71	20.10	17.01	15.58	16.83
8	21.57	21.75	21.93	22.15	22.38	22.57	22.10	21.68	19.92	17.03	15.64	16.86
9	21.58	21.75	21.94	22.16	22.38	22.58	22.09	21.64	19.87	17.04	15.68	16.90
10	21.59	21.76	21.95	22.16	22.39	22.57	22.07	21.61	19.83	17.06	15.73	16.93
11	21.59	21.76	21.95	22.17	22.40	22.56	22.06	21.58	19.80	17.08	15.77	16.96
12	21.59	21.76	21.95	22.18	22.41	22.57	22.05	21.55	19.76	17.10	15.81	17.00
13	21.59	21.77	21.97	22.18	22.42	22.56	22.04	21.52	19.72	17.12	15.86	17.03
14	21.60	21.78	21.98	22.19	22.42	22.55	22.02	21.48	18.82	17.13	15.90	17.06
15	21.61	21.78	21.98	22.20	22.44	22.48	22.01	21.44	18.55	17.15	15.94	17.10
16	21.61	21.79	21.98	22.20	22.45	22.44	21.99	21.40	18.52	17.17	15.99	17.13
17	21.61	21.80	21.98	22.21	22.45	22.43	21.97	21.36	18.50	17.19	16.04	17.17
18	21.62	21.81	21.98	22.22	22.46	22.41	21.95	21.32	18.49	17.22	16.07	17.20
19	21.63	21.82	21.99	22.23	22.47	22.41	21.95	21.29	18.48	17.24	16.10	17.22
20	21.65	21.82	22.00	22.24	22.48	22.40	21.94	21.24	18.08	17.21	16.14	17.25
21	21.65	21.83	22.00	22.25	22.48	22.38	21.93	21.20	17.85	17.20	16.19	17.28
22	21.66	21.83	22.00	22.25	22.49	22.36	21.92	21.15	17.09	17.20	16.23	17.31
23	21.66	21.84	22.00	22.26	22.49	22.35	21.91	21.11	16.87	17.20	16.27	17.34
24	21.67	21.85	22.00	22.27	22.50	22.34	21.90	21.07	16.86	17.22	16.31	17.37
25	21.67	21.85	22.04	22.28	22.51	22.32	21.89	20.83	16.86	17.23	16.35	17.40
26	21.68	21.86	22.07	22.28	22.52	22.31	21.88	20.66	16.87	17.25	16.39	17.42
27	21.68	21.86	22.07	22.29	22.52	22.29	21.87	20.61	16.87	17.25	16.43	17.45
28	21.69	21.87	22.07	22.30	22.53	22.28	21.86	20.57	16.88	16.07	16.46	17.48
29	21.69	21.88	22.08	22.31	---	22.26	21.84	20.53	16.88	15.17	16.49	17.51
30	21.70	21.89	22.08	22.31	---	22.24	21.82	20.48	16.91	15.18	16.53	17.54
31	21.71	---	22.09	22.32	---	22.22	---	20.44	---	15.23	16.56	---
MEAN	21.62	21.79	21.98	22.21	22.43	22.44	22.01	21.29	18.67	16.89	15.97	17.10
MAX	21.71	21.89	22.09	22.32	22.53	22.58	22.20	21.81	20.40	17.25	16.56	17.54
MIN	21.54	21.71	21.89	22.10	22.33	22.22	21.82	20.44	16.86	15.17	15.29	16.59

COUNTY--Clark

WELL IDENTIFICATION NUMBER--402356091344001

LOCATION--T.65N., R.6W., 29cad, lat. 40°23'56", long 91°34'40", north edge of Wayland, County Highway B.

FORMATIONS OPEN TO THE WELL--Alluvium and undifferentiated Pleistocene.

WELL CHARACTERISTICS--Drilled on October 1, 1974, total depth 160 feet, casing details unknown.

INSTRUMENTATION--Graphic recorder from October 8, 1974, to July 10, 1990. Digital recorder, installed July 10, 1990.

DATUM--540 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.5 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational. Well may be completed in a former channel of the Des Moines River.

PERIOD OF PROCESSED RECORD--December 4, 1984, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49.40	49.40	50.40	---	51.00	50.74	48.30	48.48	46.93	44.29	46.96	47.58
2	49.20	49.50	50.30	---	50.87	50.85	48.45	47.24	46.45	45.53	46.23	48.29
3	49.10	49.50	50.50	---	51.07	51.00	48.52	49.04	46.79	45.20	47.03	48.94
4	49.40	50.20	50.50	---	51.08	50.57	48.71	47.94	46.94	45.50	46.04	47.96
5	49.60	49.20	50.40	---	51.05	50.77	48.29	47.42	47.02	45.10	46.57	48.38
6	49.60	49.70	50.40	---	51.10	51.05	48.82	47.12	46.72	46.15	46.57	48.45
7	49.10	49.30	50.60	---	50.81	50.46	48.80	47.30	46.89	45.30	46.37	47.77
8	49.40	49.80	50.30	---	51.18	50.15	48.59	47.26	46.86	46.03	46.49	46.93
9	49.30	49.50	50.50	---	50.88	50.24	48.61	47.32	46.38	45.88	46.66	47.51
10	49.50	49.60	50.20	51.12	51.06	50.23	48.29	47.24	47.10	46.46	46.80	47.89
11	49.40	49.50	50.70	51.11	51.13	50.06	48.42	47.29	47.14	45.45	46.40	48.97
12	49.30	49.20	50.30	51.18	51.00	50.08	48.52	47.15	46.99	45.62	46.71	49.68
13	49.10	49.30	50.40	51.20	50.99	49.99	48.07	47.19	47.95	45.80	47.16	48.95
14	49.30	49.60	50.40	51.02	50.84	49.80	48.24	47.13	46.32	45.77	46.18	47.91
15	49.20	50.00	50.50	51.34	50.76	49.42	48.39	46.99	46.07	45.80	46.85	47.36
16	49.40	50.30	50.50	51.38	51.06	49.21	48.17	47.58	45.02	46.49	46.76	47.52
17	49.60	50.20	50.40	50.90	50.77	48.86	48.29	47.25	45.28	46.03	47.43	47.88
18	49.50	50.60	50.60	51.09	50.82	48.63	48.29	48.33	44.54	46.72	48.06	47.00
19	49.50	50.70	50.30	50.89	50.97	49.05	48.22	47.65	46.35	45.90	46.92	47.44
20	49.50	50.40	---	51.44	50.88	49.07	48.14	46.95	44.45	46.47	46.45	46.87
21	49.20	50.70	---	51.07	50.67	48.59	48.41	47.41	44.41	45.94	46.63	47.36
22	49.20	50.50	---	51.14	50.59	48.92	48.48	47.37	43.39	45.53	46.30	47.14
23	49.20	50.40	---	51.11	50.86	48.69	48.17	46.03	43.85	45.85	47.55	47.52
24	49.00	50.50	---	50.74	50.71	48.97	48.87	47.60	44.57	46.09	46.49	47.34
25	49.30	50.60	---	50.90	50.81	49.56	47.97	47.75	44.74	45.79	47.51	47.67
26	49.50	50.50	---	50.83	50.72	48.55	49.35	46.57	44.22	46.02	46.61	48.44
27	49.10	50.40	---	50.95	50.89	49.10	48.17	46.04	45.27	46.19	47.45	47.51
28	49.50	50.50	---	50.85	50.65	49.55	47.74	45.64	45.29	46.25	47.28	48.46
29	49.80	50.40	---	51.05	---	48.52	48.10	46.87	45.10	46.07	48.01	47.41
30	50.00	50.40	---	51.11	---	48.52	48.11	46.43	44.98	46.60	47.98	46.34
31	49.50	---	---	51.02	---	48.58	---	46.47	---	45.95	47.75	---
MEAN	49.38	50.01	---	---	50.90	49.61	48.38	47.23	45.80	45.86	46.91	47.82
MAX	50.00	50.70	---	---	51.18	51.05	49.35	49.04	47.95	46.72	48.06	49.68
MIN	49.00	49.20	---	---	50.59	48.52	47.74	45.64	43.39	44.29	46.04	46.34

COUNTY--Marion

WELL IDENTIFICATION NUMBER--395043091262601

LOCATION--T.58N., R.5W., 10abb, lat. 39°50'43", long. 91°26'26", 4.1 miles east of Palmyra, State Highway 169, and 3.2 miles north on County Road JJ, the Rural Electric Association Northwest Power Plant.

FORMATIONS OPEN TO THE WELL--Alluvium.

WELL CHARACTERISTICS--Drilled May 22, 1957, total depth 129 feet, 58 feet pf 8-inch casing, 23 feet of 4-inch casing, and 4 feet of 4-inch well screen.  
DGLS Log Number: 16,183

INSTRUMENTATION--Graphic recorder from May 28, 1957, to May 15, 1990. Digital recorder, installed May 15, 1990.

DATUM--480 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 9.0 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--June 14, 1984, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34.55	34.62	34.68	---	34.23	34.24	31.24	31.12	---	---	28.90	---
2	34.37	34.38	34.76	---	34.14	34.31	32.08	31.02	---	---	28.90	---
3	34.56	34.14	34.70	---	34.18	34.54	31.90	30.97	---	---	28.88	---
4	34.86	34.32	34.62	---	34.34	34.30	31.76	30.09	---	---	28.49	27.43
5	34.84	34.45	34.73	---	34.50	34.15	31.91	28.37	---	---	28.18	27.50
6	34.65	34.62	34.84	---	34.47	34.12	32.02	27.63	---	---	27.79	27.79
7	34.25	34.80	34.46	---	34.38	33.95	32.19	27.90	---	---	27.48	28.34
8	34.75	34.64	34.20	34.27	34.25	33.64	32.59	28.61	---	---	27.98	28.56
9	34.78	34.38	34.10	34.39	34.12	33.50	32.97	29.50	---	---	28.43	---
10	34.64	34.25	34.38	34.35	34.05	33.52	33.01	29.63	---	26.38	28.92	---
11	34.60	34.15	34.88	34.55	33.93	32.19	33.01	29.93	---	27.02	29.30	---
12	34.73	34.24	34.60	35.00	33.75	29.60	32.87	29.16	---	27.69	29.61	---
13	34.65	34.28	34.39	34.90	33.94	28.35	32.58	28.67	---	28.15	29.86	---
14	34.63	34.33	34.52	34.83	34.04	29.18	32.22	29.34	---	28.19	30.65	---
15	34.60	34.36	34.60	34.73	33.90	26.19	32.10	---	---	28.43	31.29	---
16	34.60	34.45	---	34.45	34.25	23.89	32.35	---	---	28.81	31.71	---
17	34.55	34.42	---	34.17	34.48	23.97	32.72	---	---	29.07	32.46	---
18	34.52	34.57	---	34.23	34.30	24.84	32.90	---	---	29.30	32.47	---
19	34.48	34.78	---	34.35	34.40	25.31	32.94	---	---	29.78	31.52	---
20	34.40	34.98	---	34.25	34.45	25.56	33.17	---	---	30.39	31.46	---
21	34.38	34.95	---	34.24	34.35	25.92	33.63	---	---	29.01	31.32	---
22	34.50	34.82	---	34.32	33.76	26.25	33.53	---	---	27.43	---	---
23	34.62	34.50	---	34.48	33.43	26.53	33.23	---	---	27.38	---	---
24	34.50	34.25	---	34.50	34.00	26.65	33.41	---	---	28.39	---	---
25	34.63	34.42	---	34.34	34.20	26.69	33.04	---	---	29.94	---	---
26	34.68	34.60	---	34.15	34.17	26.78	32.96	---	---	30.58	---	---
27	34.60	34.80	---	34.31	34.12	27.15	32.63	---	---	31.20	---	---
28	34.45	35.05	---	34.34	34.17	27.77	32.53	---	---	31.96	---	---
29	34.43	34.41	---	34.30	---	28.70	32.36	---	---	31.80	---	---
30	34.57	34.80	---	34.31	---	29.53	31.63	---	---	30.70	---	---
31	34.65	---	---	34.27	---	30.74	---	---	---	29.42	---	---
MEAN	34.58	34.53	---	---	34.15	29.42	32.58	---	---	---	---	---
MAX	34.86	35.05	---	---	34.50	34.54	33.63	---	---	---	---	---
MIN	34.25	34.14	---	---	33.43	23.89	31.24	---	---	---	---	---

COUNTY--Audrain

WELL IDENTIFICATION NUMBER--391825091285001

LOCATION--T.52N., R.5W., 5ddd, lat. 39°18'25", long. 91°28'50", west of intersection of Highland Street and Walsh Boulevard in Vandalia, well number 3.

FORMATIONS OPEN TO THE WELL--Kimmiswick Formation, Decorah Formation, Plattin Formation, Joachim Formation, and St. Peter Sandstone.

WELL CHARACTERISTICS--Drilled January 1, 1939, total depth 700 feet, 425 feet of 10-inch casing, open hole.  
DGLS Log Number: 5,230

INSTRUMENTATION--Digital recorder.

DATUM--765 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.6 feet above land surface.

REMARKS--Several weeks missing when recorder did not operate properly.

PERIOD OF PROCESSED RECORD--June 17, 1970, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	202.99	---	205.25	196.55	190.77	196.35	194.46	190.83	188.77	190.37	192.44	193.55
2	202.96	---	205.15	195.95	190.46	195.50	---	190.55	188.68	190.45	192.38	193.65
3	203.18	---	205.00	195.33	189.80	195.15	---	190.18	188.78	190.49	192.21	193.81
4	203.19	---	204.60	194.55	189.41	195.05	193.90	189.86	188.87	190.51	192.10	193.77
5	202.96	207.73	204.85	194.27	189.50	194.90	193.77	189.96	188.74	190.58	192.28	193.72
6	203.11	207.61	205.00	193.98	189.54	195.20	193.93	189.73	188.78	191.01	192.34	193.99
7	203.33	207.18	205.10	193.41	189.59	195.27	193.98	189.58	188.77	191.34	192.25	194.27
8	203.83	206.62	204.75	192.75	189.81	195.65	194.21	189.45	188.80	191.39	192.23	194.18
9	209.92	206.49	204.45	192.48	189.90	195.75	194.48	189.30	188.97	192.07	192.26	194.11
10	209.93	207.40	204.40	192.40	190.00	195.63	194.26	188.93	189.14	192.30	192.25	194.18
11	209.74	207.82	205.15	192.10	189.65	196.05	194.27	188.71	189.28	192.19	192.35	194.29
12	210.53	207.60	---	191.95	188.80	197.90	194.09	188.40	189.33	192.40	192.29	194.47
13	211.69	206.27	---	191.93	189.25	197.87	193.73	188.56	189.28	192.53	192.27	194.49
14	211.32	206.30	---	192.52	189.35	198.85	194.74	188.39	189.31	192.61	192.28	194.28
15	210.97	206.29	---	192.40	189.86	198.90	196.10	188.26	189.26	192.89	192.28	194.45
16	210.75	206.17	---	192.25	190.40	198.75	195.57	188.39	189.28	193.21	192.22	194.70
17	209.95	205.89	---	192.20	190.74	198.68	195.66	188.33	189.43	193.78	192.10	194.99
18	209.78	206.05	---	192.44	190.36	197.95	193.38	188.34	189.34	194.32	192.13	195.14
19	210.80	205.67	---	191.90	190.17	196.51	193.21	187.61	189.20	194.28	192.25	195.48
20	210.00	205.62	---	190.80	189.65	195.12	192.80	187.66	189.24	193.98	192.34	196.71
21	209.60	205.52	---	190.85	189.12	195.11	192.28	187.86	189.45	193.77	192.49	197.12
22	210.05	205.42	---	190.65	188.70	194.95	191.15	188.10	189.47	193.59	192.52	198.34
23	---	205.50	---	190.12	188.92	194.56	191.00	188.31	189.64	193.48	192.40	198.50
24	---	205.25	---	190.25	188.34	194.24	190.96	188.40	189.73	193.26	192.52	198.02
25	---	205.20	---	190.00	190.20	194.22	191.07	188.29	189.94	193.11	192.60	197.53
26	210.08	205.27	---	190.12	196.83	194.05	190.89	188.44	189.91	192.92	192.65	197.74
27	---	205.42	---	189.80	196.94	194.28	190.66	188.41	190.00	192.75	192.70	197.48
28	---	205.65	205.40	189.50	197.05	194.41	190.46	188.46	189.99	192.64	192.77	197.09
29	---	205.62	201.55	190.35	---	194.48	190.14	188.53	190.09	192.39	192.90	197.89
30	---	205.46	196.95	190.78	---	194.27	190.44	188.77	190.40	192.35	193.05	199.94
31	---	---	196.57	190.87	---	194.11	---	188.77	---	192.43	193.32	---
MEAN	---	---	---	192.11	190.47	195.80	---	188.82	189.33	192.43	192.42	195.60
MAX	---	---	---	196.55	197.05	198.90	---	190.83	190.40	194.32	193.32	199.94
MIN	---	---	---	189.50	188.34	194.05	---	187.61	188.68	190.37	192.10	193.55



COUNTY--Audrain

WELL IDENTIFICATION NUMBER--390950091384801

LOCATION--T.51N., R.7W., 25ccc, lat. 39°9'50", long. 91°38'48", in basement of Laddonia R-6 School, Scotts Corner, intersection of State Highway 54, State Highway 19, and County Road BB.

FORMATIONS OPEN TO THE WELL--Keokuk Limestone, Burlington Limestone, Chouteau Group, undifferentiated Devonian, Kimmswick Formation, Decorah Formation, Plattin Formation, Joachim Dolomite, and St. Peter Sandstone.

WELL CHARACTERISTICS--Total depth 650 feet, cased to unknown depth.

INSTRUMENTATION--Graphic recorder from April 1, 1981, to January 22, 1990. Digital recorder, installed January 22, 1990.

DATUM--795 feet above NGVD of 1929.

Measuring point: Base of recorder platform, at land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--April 18, 1984, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	228.45	228.08	---	226.14	225.10	223.50	222.41	222.11	222.67	216.69	219.37
2	---	228.50	227.98	---	226.11	224.87	223.43	222.48	222.29	222.80	216.96	219.66
3	---	228.55	227.97	---	226.08	224.80	223.42	222.47	222.33	222.79	217.09	219.92
4	---	227.84	227.43	---	226.07	224.71	223.47	222.27	222.24	222.63	217.16	220.18
5	---	228.07	227.39	---	226.05	224.61	223.44	222.21	222.29	222.25	217.29	220.37
6	---	228.00	227.69	---	225.97	224.59	223.42	222.20	222.38	222.00	217.40	220.53
7	---	227.90	228.05	---	225.92	224.60	223.40	222.16	222.38	221.90	217.43	220.73
8	---	227.87	---	---	225.77	224.49	223.38	222.10	222.35	221.75	217.39	220.95
9	---	228.03	227.40	---	225.64	224.45	223.26	221.98	222.24	---	217.42	221.02
10	---	228.17	227.36	---	225.61	224.38	223.09	221.94	222.21	---	217.41	221.18
11	---	228.30	227.72	---	225.55	224.20	223.18	221.99	222.20	215.09	217.40	221.50
12	---	228.10	227.48	---	225.51	224.15	223.39	221.91	222.39	215.13	217.41	221.64
13	---	228.10	227.48	---	225.35	224.13	223.26	221.81	222.51	215.20	217.41	221.88
14	---	227.95	227.53	---	225.45	224.02	223.02	221.83	222.51	215.22	217.49	221.94
15	---	228.06	227.52	---	225.35	223.89	222.92	221.82	222.52	215.13	217.75	222.08
16	---	228.13	227.41	---	225.38	224.14	222.81	221.67	222.59	215.17	218.01	222.14
17	229.30	228.15	227.35	---	225.56	224.25	222.82	221.65	222.61	215.25	218.21	222.40
18	229.40	228.25	227.51	---	225.51	224.26	222.92	221.68	222.61	215.31	218.07	222.50
19	229.35	228.12	227.45	227.06	225.49	224.29	222.93	221.61	222.65	215.29	218.08	222.41
20	229.10	228.13	227.56	226.59	225.55	224.36	222.88	221.51	222.86	215.26	218.10	222.46
21	228.90	228.15	227.72	226.58	225.41	224.06	222.82	221.51	222.78	215.30	218.15	222.49
22	228.85	228.20	---	---	224.87	223.86	222.70	221.62	222.78	215.31	218.18	222.54
23	228.80	228.25	---	226.30	224.85	224.12	222.51	221.73	---	215.37	218.14	222.65
24	228.85	227.90	---	226.17	225.01	224.24	222.48	221.79	---	215.42	218.17	222.66
25	228.95	227.80	---	226.22	225.25	224.11	222.47	221.95	---	215.50	218.22	222.59
26	228.90	227.90	---	226.35	225.19	224.01	222.46	221.98	---	215.64	218.27	222.59
27	228.85	227.56	---	226.32	225.11	223.99	222.41	221.99	---	215.73	218.31	222.59
28	228.80	228.20	---	226.52	225.11	223.84	222.18	222.02	---	215.80	218.36	222.64
29	228.60	228.41	---	226.31	---	223.68	222.13	222.03	222.82	215.91	218.42	222.67
30	228.40	228.25	---	226.17	---	223.61	222.21	222.03	223.03	216.09	218.71	222.69
31	228.35	---	---	226.17	---	223.54	---	222.03	---	216.44	219.08	---
MEAN	---	228.11	---	---	225.53	224.24	222.94	221.95	---	---	217.81	221.70
MAX	---	228.55	---	---	226.14	225.10	223.50	222.48	---	---	219.08	222.69
MIN	---	227.56	---	---	224.85	223.54	222.13	221.51	---	---	216.69	219.37

COUNTY--Audrain

WELL IDENTIFICATION NUMBER--390743091533001

LOCATION--T.50N., R.9W., 11cbbd, lat. 39°07'43", long. 91°53'30", at Villa Inn Motel.

FORMATIONS OPEN TO THE WELL--Not available.

WELL CHARACTERISTICS--Total depth 650 feet.

INSTRUMENTATION--Digital recorder, installed January 18, 1990.

DATUM--835 feet above NGVD of 1929.

Measuring point: Base of recorder, 2.0 feet above land surface.

PERIOD OF RECORD--January 18, 1990, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	304.24	305.46	305.12	304.22	303.42	303.99	305.84	306.45
2	---	---	---	---	304.30	305.25	305.13	304.22	303.28	303.97	305.89	306.75
3	---	---	---	---	304.39	305.25	305.20	304.17	303.40	303.94	306.12	306.71
4	---	---	---	---	304.45	305.25	304.97	303.93	303.54	303.96	306.18	306.81
5	---	---	---	---	304.50	305.26	304.98	304.02	303.38	304.01	306.25	306.93
6	---	---	---	---	304.43	305.39	305.09	304.02	303.35	304.09	306.42	306.86
7	---	---	---	---	304.48	305.46	305.16	303.93	303.37	304.08	306.46	306.91
8	---	---	---	---	304.30	305.29	305.08	303.85	303.39	304.06	306.41	306.98
9	---	---	---	---	304.31	305.35	304.94	303.72	303.51	304.12	306.80	307.13
10	---	---	---	---	304.35	305.30	304.85	303.81	303.62	304.19	306.99	307.43
11	---	---	---	---	304.37	305.19	305.07	303.87	303.61	304.12	306.87	307.32
12	---	---	---	---	304.41	305.17	305.12	303.64	303.51	304.15	306.68	307.28
13	---	---	---	---	304.31	305.20	305.06	303.75	303.49	304.27	306.62	307.24
14	---	---	---	---	304.53	305.00	304.99	303.77	303.59	304.22	306.60	307.18
15	---	---	---	---	304.39	304.95	304.84	303.65	303.57	304.25	306.58	307.39
16	---	---	---	---	304.55	305.22	304.79	303.49	303.57	304.45	306.59	307.44
17	---	---	---	---	304.90	305.26	304.88	303.63	303.60	304.60	306.47	307.63
18	---	---	---	304.45	304.83	305.32	304.97	303.68	303.72	304.67	306.43	307.50
19	---	---	---	304.31	304.93	305.48	304.86	303.43	303.67	304.79	306.38	307.49
20	---	---	---	304.13	305.12	305.61	304.74	303.45	303.67	304.89	306.36	307.51
21	---	---	---	304.18	305.29	305.45	304.69	303.56	303.82	304.83	306.44	307.42
22	---	---	---	304.22	304.78	305.41	304.61	303.61	303.76	304.84	306.52	307.60
23	---	---	---	303.92	304.85	305.74	304.45	303.56	303.83	304.98	306.63	307.83
24	---	---	---	303.94	305.12	305.73	304.38	303.47	303.88	305.10	306.59	---
25	---	---	---	303.96	305.47	305.62	304.41	303.31	303.93	305.31	306.72	---
26	---	---	---	304.10	305.31	305.57	304.32	303.34	303.96	305.36	306.95	---
27	---	---	---	304.04	305.29	305.51	304.17	303.37	303.98	305.40	306.76	---
28	---	---	---	304.38	305.46	305.41	304.03	303.35	303.98	305.58	306.62	---
29	---	---	---	304.15	---	305.26	304.04	303.40	303.99	305.58	306.49	---
30	---	---	---	304.13	---	305.19	304.17	303.46	304.01	305.61	306.48	---
31	---	---	---	304.31	---	305.17	---	303.49	---	305.79	306.44	---
MEAN	---	---	---	---	304.70	305.35	304.77	303.68	303.65	304.62	306.50	---
MAX	---	---	---	---	305.47	305.74	305.20	304.22	304.01	305.79	306.99	---
MIN	---	---	---	---	304.24	304.95	304.03	303.31	303.28	303.94	305.84	---

COUNTY--Montgomery

WELL IDENTIFICATION NUMBER--385432091264701

LOCATION--T.48N., R.5W., 23cca, lat. 38°54'32", long. 91°26'47", New Florence Water Tower, well number 1-A.

FORMATIONS OPEN TO THE WELL--Joachim Dolomite, St. Peter Sandstone, Powell Dolomite, Jefferson City Dolomite, and Roubidoux Formation.

WELL CHARACTERISTICS--Drilled April 1, 1956, total depth 1,030 feet, 323 feet of 8-inch casing, open.

DGLS Log Number: 14,429

INSTRUMENTATION--Graphic recorder from May 29, 1981, to May 22, 1990. Digital recorder, installed May 22, 1990.

DATUM--877 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.5 feet above land surface.

REMARKS--Several days missing when recorder was not operational.

PERIOD OF PROCESSED PERIOD--June 15, 1984, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	333.18	333.93	334.39	335.99	335.90	336.10	333.82	333.84	333.28	334.10	334.05	334.12
2	333.44	333.94	334.46	336.16	335.84	---	333.97	333.84	333.20	334.05	333.99	334.41
3	333.59	333.82	334.45	336.36	335.98	---	333.96	---	333.08	333.94	333.96	334.78
4	333.55	333.64	334.07	336.10	336.02	---	333.73	333.59	333.20	333.93	333.88	334.85
5	333.32	333.53	333.98	336.09	336.03	335.84	333.83	333.75	333.33	333.96	334.02	334.83
6	333.47	333.58	334.36	336.12	335.91	335.97	333.95	333.74	333.16	334.06	334.10	335.02
7	333.58	333.51	334.58	336.39	---	---	334.03	333.68	333.12	334.14	334.09	335.16
8	333.53	333.51	334.50	336.58	335.74	335.74	334.00	333.59	333.13	334.14	333.99	335.21
9	333.42	333.59	334.20	336.33	335.74	335.76	333.87	333.47	333.13	334.16	333.98	335.27
10	333.48	333.80	334.38	336.45	335.77	335.75	333.81	333.59	333.25	334.25	333.93	335.47
11	333.41	333.80	334.57	336.30	335.82	335.65	334.06	333.69	333.36	334.24	333.96	335.53
12	333.49	333.92	334.38	336.10	335.79	335.61	334.05	333.49	333.29	334.25	333.90	335.58
13	333.44	333.76	334.47	336.27	335.67	---	333.89	333.66	333.15	334.26	333.88	335.50
14	333.35	333.68	334.52	336.44	335.83	335.41	333.84	333.65	333.14	334.09	334.03	335.52
15	333.30	333.82	334.67	336.37	335.62	334.97	333.79	333.50	333.18	334.05	334.00	335.49
16	333.35	334.00	334.69	336.36	335.78	334.81	333.75	333.39	333.13	334.15	333.95	335.38
17	333.70	333.92	334.74	336.41	336.16	---	334.02	333.67	333.11	334.20	333.95	335.26
18	---	334.09	334.74	336.22	336.17	334.52	334.12	333.62	333.21	334.18	333.91	335.29
19	---	333.95	334.74	336.07	336.13	334.35	333.98	333.36	333.19	334.11	333.99	335.27
20	---	333.97	334.93	335.78	---	334.26	333.90	333.45	333.04	334.04	333.95	335.53
21	---	333.95	335.21	335.88	335.90	334.05	333.85	333.59	333.14	333.99	333.95	335.50
22	---	334.02	335.43	335.86	335.43	334.01	333.77	333.57	333.15	333.95	334.01	335.27
23	333.81	334.27	335.76	335.58	---	334.40	333.66	333.29	333.13	334.04	334.02	335.32
24	333.87	334.01	335.99	335.67	336.00	334.37	333.65	333.23	333.33	333.97	333.99	335.03
25	333.83	333.87	336.10	335.72	336.34	334.28	333.73	333.08	333.48	334.03	333.99	334.57
26	333.83	334.07	336.13	335.85	336.14	334.30	333.66	333.11	333.53	334.02	333.95	334.64
27	333.90	333.76	---	335.81	336.13	334.20	333.48	333.14	333.85	334.01	334.03	334.64
28	333.75	334.30	336.23	---	336.23	334.03	333.38	333.15	334.04	333.96	334.02	334.70
29	333.69	334.49	336.27	335.85	---	333.94	333.48	333.18	334.08	333.91	333.91	334.77
30	333.66	334.35	336.23	335.77	---	333.93	333.70	333.24	334.16	333.96	333.84	334.78
31	333.82	---	336.08	336.00	---	333.90	---	333.30	---	334.02	333.95	---
MEAN	---	333.89	---	---	---	---	333.82	---	333.32	334.07	333.97	335.09
MAX	---	334.49	---	---	---	---	334.12	---	334.16	334.26	334.10	335.58
MIN	---	333.51	---	---	---	---	333.38	---	333.04	333.91	333.84	334.12

COUNTY--Lincoln

WELL IDENTIFICATION NUMBER--385836090584201

LOCATION--T.49N., R.1W., 26dac, lat. 38°58'36", long. 90°58'42", corner of Cap and Geis Streets in Troy, well number 4.

FORMATIONS OPEN TO THE WELL--Kimmswick Formation, Decorah Formation, Plattin Formation, Joachim Dolomite, and St. Peter Sandstone.

WELL CHARACTERISTICS--Drilled April 12, 1946, total depth 813 feet, 400 feet of 8-inch casing, open hole.  
DGLS Log Number: 9,108

INSTRUMENTATION--Graphic recorder, from April 15, 1980, to June 8, 1989. Digital recorder, installed June 8, 1989.

DATUM--535 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 4.0 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--December 18, 1980, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82.74	83.57	75.74	74.28	79.46	79.30	77.59	74.48	---	---	87.47	---
2	82.11	84.10	75.59	74.03	80.00	79.61	76.43	75.25	---	---	88.46	---
3	83.57	84.39	74.85	75.37	80.13	79.97	76.98	75.54	---	---	89.38	---
4	84.68	84.37	73.85	76.76	78.77	78.45	77.46	75.89	---	77.16	89.76	---
5	85.16	82.74	73.98	77.88	77.58	77.23	77.99	76.84	73.09	79.11	88.38	---
6	85.66	81.59	74.34	78.52	78.09	78.15	78.44	75.97	73.80	79.41	87.26	---
7	86.02	81.97	74.74	77.26	78.86	79.10	78.54	74.60	74.39	79.33	---	---
8	84.53	82.62	74.69	76.16	79.48	79.56	76.88	75.15	74.50	79.03	---	---
9	83.08	83.10	74.17	76.53	80.45	80.13	75.55	75.68	74.67	79.04	---	---
10	82.13	83.63	73.26	76.54	80.87	80.16	76.13	76.88	74.67	80.06	---	---
11	82.85	83.73	72.91	77.54	79.35	78.47	77.04	77.66	73.46	80.68	---	---
12	83.97	82.35	73.10	79.36	78.04	77.20	77.56	77.59	---	81.54	---	---
13	85.03	80.85	73.24	79.68	78.65	77.90	77.56	76.12	---	82.20	---	---
14	85.35	81.28	74.27	78.08	79.67	78.56	75.94	74.84	75.16	82.36	---	---
15	83.74	82.00	75.38	77.06	79.68	79.30	74.47	74.77	77.36	81.58	---	---
16	82.44	82.69	76.12	77.67	80.25	80.12	73.54	74.77	77.31	80.94	---	---
17	83.24	82.98	75.02	78.31	80.81	80.37	74.58	74.78	75.87	80.60	---	---
18	84.10	82.37	74.21	79.17	79.14	78.84	75.59	---	74.65	82.02	---	---
19	84.34	80.66	75.21	79.53	77.79	77.66	76.12	---	75.31	83.46	---	---
20	84.52	79.43	76.32	79.43	76.91	78.38	76.53	---	76.22	84.66	---	---
21	84.57	79.38	76.39	78.11	77.47	79.06	76.64	---	76.99	85.39	---	---
22	83.10	79.22	76.41	76.93	77.87	79.19	75.03	---	77.56	84.27	---	---
23	81.87	79.04	76.43	77.34	78.65	79.73	73.79	---	77.95	83.42	---	---
24	82.50	77.77	76.18	78.28	79.26	80.08	74.53	---	76.64	84.51	---	---
25	83.49	76.66	75.76	79.08	78.20	78.72	75.36	---	75.63	85.60	---	---
26	84.13	75.98	75.81	79.78	76.96	77.30	75.73	---	76.56	86.50	---	---
27	84.79	75.20	75.66	79.98	77.78	77.93	76.19	---	---	87.20	---	97.94
28	84.99	75.83	75.47	78.84	78.78	78.66	76.19	---	---	87.49	---	98.62
29	83.48	75.91	75.07	77.49	---	79.02	74.64	---	---	86.04	---	97.51
30	82.17	75.83	74.74	78.14	---	79.31	73.65	---	---	84.98	---	95.83
31	82.81	---	74.39	79.05	---	79.29	---	---	---	86.16	---	---
MEAN	83.78	80.71	74.95	77.81	78.89	78.93	76.09	---	---	---	---	---
MAX	86.02	84.39	76.43	79.98	80.87	80.37	78.54	---	---	---	---	---
MIN	81.87	75.20	72.91	74.03	76.91	77.20	73.54	---	---	---	---	---

## 11-Wentzville

COUNTY--St. Charles

WELL IDENTIFICATION NUMBER--384848090504001

LOCATION--T.47N., R.2E., 19cca, lat. 38°48'48", long. 90°50'40", west side of Wall Street, north of Pearce Boulevard, Wentzville, well number 2.

FORMATIONS OPEN TO THE WELL--Kimmswick Formation, Decorah Formation, Plattin Formation, Joachim Dolomite, St. Peter Sandstone, Powell Dolomite, Cotter Dolomite, Jefferson City Dolomite, and Roubidoux Formation.

WELL CHARACTERISTICS--Drilled February 1, 1943, total depth 1,337 feet, 380 feet of 10-inch casing, open hole.  
DGLS Log Number: 8,083 and 11,827

INSTRUMENTATION--Graphic recorder from May 13, 1980, to May 25, 1990. Digital recorder, installed March 25, 1990.

DATUM--608 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.0 feet above land surface.

REMARKS--Several weeks were missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--August 29, 1984, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	168.92	170.15	170.06	169.76	169.71	170.50	---	---	170.91	171.45	173.20	174.00
2	169.01	170.17	170.16	169.77	169.81	170.29	---	---	170.78	171.48	173.20	174.07
3	169.23	170.13	170.21	169.67	170.05	170.26	---	---	170.86	171.47	173.18	174.12
4	169.24	169.95	169.76	169.66	170.03	170.27	---	---	170.98	171.56	173.12	174.15
5	169.01	169.83	169.63	169.78	170.12	170.28	---	---	170.86	171.65	173.27	174.12
6	169.04	169.96	169.73	169.79	170.02	170.37	---	---	170.80	171.74	173.42	174.00
7	169.21	169.83	170.02	169.69	169.99	170.47	---	---	170.81	171.77	173.45	173.94
8	169.16	169.75	169.99	169.50	169.84	170.28	---	---	170.79	171.82	173.44	174.04
9	169.09	169.75	169.81	169.45	169.83	170.28	---	---	170.88	171.89	173.44	174.09
10	169.13	169.91	169.74	169.62	169.85	170.26	---	---	170.99	171.95	173.44	174.16
11	169.57	169.89	169.92	169.56	169.89	170.23	---	---	170.98	171.93	173.45	174.26
12	169.93	169.96	169.96	169.79	169.89	170.55	---	---	170.89	172.01	173.46	174.30
13	170.13	169.81	169.85	169.88	169.82	170.64	---	---	170.84	172.13	173.53	174.31
14	170.10	169.93	169.95	169.69	169.97	170.32	---	---	170.91	172.09	173.59	174.28
15	170.07	169.96	169.95	169.68	169.83	170.31	---	---	170.91	172.14	173.59	174.35
16	170.10	170.06	170.06	169.74	170.01	170.32	---	---	170.91	172.32	173.57	174.42
17	170.29	169.94	170.02	169.64	170.31	170.35	---	---	170.96	172.44	173.52	174.67
18	170.50	170.12	169.99	169.90	170.27	170.48	---	---	171.07	172.49	173.54	174.62
19	170.35	169.96	169.99	169.89	170.34	170.67	---	---	171.00	172.50	173.56	174.60
20	170.42	169.89	170.39	169.64	170.55	170.72	---	---	170.98	172.66	173.59	174.71
21	170.35	169.90	170.67	169.69	170.28	170.50	---	---	171.11	172.71	173.66	174.68
22	170.31	169.90	170.67	169.71	169.83	170.45	---	---	171.05	172.69	173.68	174.78
23	170.30	169.97	170.56	169.46	169.98	170.71	---	---	171.13	172.80	173.67	174.95
24	170.30	169.78	170.15	169.50	170.27	170.66	---	---	171.23	172.86	173.86	175.27
25	170.28	169.71	169.88	169.55	170.63	170.58	---	---	171.30	172.93	174.03	175.24
26	170.24	169.73	169.88	169.68	170.46	170.55	---	170.84	171.29	172.98	173.98	174.80
27	170.20	169.70	169.78	169.68	170.44	170.43	---	170.85	171.31	172.99	173.93	174.53
28	170.15	169.93	169.81	169.94	170.54	170.23	---	170.85	171.33	172.97	173.84	174.56
29	170.05	170.00	169.69	169.70	---	170.18	---	170.90	171.36	172.95	173.82	174.64
30	170.00	169.86	169.65	169.67	---	---	---	170.97	171.43	173.03	173.90	174.70
31	170.08	---	169.62	169.82	---	---	---	170.97	---	173.13	173.95	---
MEAN	169.83	169.91	169.99	169.69	170.09	---	---	---	171.02	172.31	173.58	174.45
MAX	170.50	170.17	170.67	169.94	170.63	---	---	---	171.43	173.13	174.03	175.27
MIN	168.92	169.70	169.62	169.45	169.71	---	---	---	170.78	171.45	173.12	173.94



242

12-O'Fallon

COUNTY--St. Charles

WELL IDENTIFICATION NUMBER--384836090420201

LOCATION--T.47N., R.3E., 29aaa, lat. 38°48'36", long. 90°40'2", building in O'Fallon City Hall parking lot.

FORMATIONS OPEN TO THE WELL--Plattin Formation, Joachim Dolomite, and St. Peter Sandstone.

WELL CHARACTERISTICS--Drilled September 20, 1940, total depth 833 feet, 33 feet of 10-inch casing, 375 feet of 8-inch casing, open hole.

DGLS Log Number: 6,414

INSTRUMENTATION--Digital recorder.

DATUM--564 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.8 feet above land surface.

REMARKS--Several days missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--February 18 to December 12, 1986, October 1, 1988 to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	212.83	263.81	262.90	262.60	261.50	256.38	254.42	256.42	257.10	266.09	269.29	272.17
2	213.09	265.55	260.10	262.56	260.63	257.87	255.01	256.29	258.28	266.60	269.09	270.97
3	213.30	265.85	260.90	262.94	260.29	256.84	256.20	256.89	258.37	267.13	269.05	269.56
4	213.61	264.51	260.65	264.19	258.48	255.73	256.44	257.69	259.00	267.15	268.37	270.36
5	214.60	267.01	261.41	264.56	257.90	255.58	256.08	258.23	259.78	266.74	267.35	272.39
6	214.53	265.52	261.80	263.88	258.60	256.76	256.33	256.72	260.09	265.06	267.56	273.19
7	---	265.25	262.42	264.55	258.34	256.47	255.85	256.53	259.97	268.34	268.19	272.73
8	---	265.88	262.19	263.20	258.23	256.00	254.26	256.44	260.17	268.11	267.84	271.89
9	---	266.17	262.90	260.47	257.79	256.08	253.59	255.73	260.73	268.71	267.87	271.68
10	---	266.54	262.90	259.15	257.18	256.20	253.78	255.71	261.05	271.15	267.51	273.01
11	---	265.01	262.96	257.82	255.87	255.06	254.19	255.48	261.65	272.58	267.45	276.20
12	---	263.70	262.56	256.39	255.80	254.78	254.07	254.18	261.96	272.62	267.04	277.86
13	---	265.11	263.30	255.32	256.45	255.02	254.22	253.65	262.94	272.11	266.95	278.76
14	---	264.32	263.76	254.75	256.22	255.36	254.87	252.85	263.67	270.87	267.36	279.14
15	---	264.72	264.16	254.63	256.31	254.96	255.03	253.23	264.94	270.04	266.76	278.35
16	---	265.66	264.38	254.56	257.24	254.83	255.71	253.30	264.86	270.03	266.24	276.76
17	---	265.75	263.50	256.99	257.54	254.78	257.05	253.22	264.84	270.36	266.04	277.32
18	---	265.77	262.68	260.91	257.18	254.36	257.06	253.59	265.86	270.53	266.35	278.48
19	260.84	264.23	263.02	263.97	256.47	255.26	256.44	254.14	267.36	270.47	266.47	277.88
20	260.45	264.04	264.15	264.84	256.45	257.00	255.94	252.70	267.55	269.41	266.48	278.09
21	260.72	264.37	262.62	264.22	257.08	257.07	254.61	253.03	267.17	268.79	266.65	278.26
22	259.57	264.42	263.53	264.77	256.81	255.64	252.66	254.32	267.24	267.62	266.74	277.50
23	259.64	263.74	264.28	266.64	256.95	254.22	252.17	255.01	266.63	267.83	266.99	276.83
24	260.34	263.49	263.63	266.99	257.19	253.69	252.56	255.89	265.92	268.45	267.54	276.64
25	260.88	263.49	263.17	267.06	256.78	252.68	253.05	255.33	265.55	269.52	268.89	277.02
26	260.98	263.49	263.41	266.40	256.31	253.16	252.76	255.20	266.28	269.31	270.13	277.60
27	261.32	263.49	263.47	264.96	257.51	253.82	253.46	255.08	266.13	269.17	271.35	277.66
28	261.39	263.49	263.86	263.15	257.57	253.22	253.17	254.81	266.14	268.54	272.55	277.67
29	260.31	263.39	263.84	262.05	---	253.94	253.53	255.33	266.12	267.59	273.57	277.40
30	259.27	262.10	263.21	262.55	---	255.00	255.01	256.47	266.47	267.91	273.70	276.43
31	263.67	---	263.00	261.95	---	254.94	---	256.29	---	268.97	273.04	---
MEAN	---	264.66	262.92	261.90	257.52	255.25	254.65	255.15	263.46	268.96	268.40	275.66
MAX	---	267.01	264.38	267.06	261.50	257.87	257.06	258.23	267.55	272.62	273.70	279.14
MIN	---	262.10	260.10	254.56	255.80	252.68	252.17	252.70	257.10	265.06	266.04	269.56

COUNTY--St Louis

WELL IDENTIFICATION NUMBER--384849090092001

LOCATION--T.47N., R.8E., 18dba, lat. 38°48'49", long. 90°09'20", 2 miles east on Madison Ferry Road,  
0.5 mile north.

FORMATIONS OPEN TO THE WELL--Mississippi River Alluvium.

WELL CHARACTERISTICS--Drilled June 24, 1957, total depth 125 feet, 59 feet of 8-inch casing, 41 feet  
of 4-inch casing, 4 feet of 4-inch screen.

DGLS Log Number: 16,274

INSTRUMENTATION--Digital recorder, installed July 1980.

DATUM--422 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 10.5 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--August 29, 1989, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30.81	32.20	32.84	33.58	33.89	33.95	31.75	30.64	21.88	---	22.83	25.78
2	30.89	32.23	32.89	33.53	33.93	33.89	31.67	30.58	21.91	---	22.90	25.84
3	30.97	32.24	32.92	33.49	33.94	33.88	31.57	30.51	---	---	22.96	25.88
4	31.00	32.24	32.92	33.49	33.97	33.84	31.46	30.47	---	---	22.97	---
5	31.00	32.25	32.96	33.48	33.99	33.82	31.40	30.45	---	---	23.11	---
6	31.09	32.29	33.02	33.45	33.99	33.82	31.34	30.39	---	---	23.23	---
7	31.16	32.28	33.07	33.40	34.02	33.79	31.28	30.31	---	---	23.25	---
8	31.19	32.29	33.10	33.34	34.01	33.74	31.20	30.24	---	---	23.28	---
9	31.23	32.31	33.11	33.34	34.05	33.73	31.13	30.14	---	---	23.34	26.28
10	31.29	32.36	33.15	33.34	34.06	33.71	31.09	30.10	---	---	23.44	26.40
11	31.33	32.36	33.20	33.34	34.09	33.69	31.07	29.99	---	---	23.57	26.53
12	31.40	32.38	33.23	33.39	34.08	33.67	31.03	29.92	---	---	23.70	26.65
13	31.45	32.38	33.26	33.41	34.09	33.64	30.97	29.87	---	---	23.91	26.76
14	31.48	32.40	33.30	33.39	34.11	33.59	30.94	29.74	---	---	24.06	26.86
15	31.52	32.43	33.34	33.45	34.10	33.58	30.90	29.59	---	---	24.21	26.99
16	31.57	32.46	33.37	33.48	34.17	33.54	30.86	29.11	---	---	24.36	27.14
17	31.66	32.47	33.40	33.51	34.18	33.49	30.86	28.56	---	21.36	24.51	27.31
18	31.71	32.52	33.43	33.60	34.14	33.42	30.81	27.93	---	21.57	24.67	27.34
19	31.76	32.52	33.46	33.59	34.19	33.35	30.76	27.31	---	21.76	24.80	27.46
20	31.82	32.54	33.49	33.59	34.18	33.25	30.72	26.76	---	21.98	24.93	27.57
21	31.86	32.56	33.53	33.65	34.11	33.11	30.70	26.25	---	22.12	25.05	27.64
22	31.90	32.59	33.53	33.68	34.04	33.01	30.66	25.70	---	21.37	25.13	27.79
23	31.94	32.63	33.53	33.67	34.09	32.90	30.63	25.19	---	20.91	25.20	27.92
24	31.98	32.63	33.53	33.71	34.14	32.76	30.62	24.82	---	21.07	25.29	27.96
25	32.01	32.65	33.52	33.76	34.15	32.63	30.62	24.52	---	21.29	25.37	28.01
26	32.03	32.70	33.56	33.78	34.06	32.50	30.59	24.08	---	21.49	25.43	27.86
27	32.06	32.70	33.55	33.81	34.04	32.36	30.56	23.70	---	21.71	25.47	27.64
28	32.08	32.78	33.56	33.83	34.02	32.22	30.58	23.22	---	21.97	25.50	27.72
29	32.11	32.79	33.54	33.83	---	32.09	30.58	22.63	---	22.22	25.58	27.83
30	32.12	32.81	33.54	33.87	---	31.97	30.65	22.24	---	22.51	25.67	27.92
31	32.17	---	33.54	33.88	---	31.86	---	22.01	---	22.73	25.73	---
MEAN	31.57	32.47	33.30	33.57	34.07	33.25	30.97	27.64	---	---	24.30	---
MAX	32.17	32.81	33.56	33.88	34.19	33.95	31.75	30.64	---	---	25.73	---
MIN	30.81	32.20	32.84	33.34	33.89	31.86	30.56	22.01	---	---	22.83	---

COUNTY--Franklin

WELL IDENTIFICATION NUMBER--383212091012301

LOCATION--T.44N., R.1W., 27cbb, lat. 38°32'12", long. 91°1'23", east of Washington, 0.5 miles south of junction of State Highway 100 and County Road A, and 0.25 miles west of County Road A.

FORMATIONS OPEN TO THE WELL--Jefferson City Dolomite, Roubidoux Foramtion, Gasconade Formation, Eminence Dolomite, Potosi Dolomite, Derby-Doerun Dolomite, Davis Dolomite, and Bonnetterre Formation.

WELL CHARACTERISTICS--Drilled January 1, 1931, total depth 1,360 feet, 76 feet of 10-inch casing, open hole.  
DGLS Log Number: 2,402

INSTRUMENTATION--Graphic recorder, installed April 30, 1956.

DATUM--575 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 3.0 feet above land surface.

PERIOD OF PROCESSED RECORD--July 27, 1964, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88.05	88.17	86.71	88.25	89.04	86.90	84.29	85.44	82.19	82.33	85.81	86.94
2	88.26	88.16	86.80	88.19	89.27	87.06	83.53	85.29	82.14	82.37	85.79	87.88
3	87.85	88.05	86.33	87.96	89.25	87.35	82.92	85.17	82.25	82.52	85.66	87.72
4	87.68	87.65	85.67	88.14	89.24	87.45	82.38	85.00	82.24	82.85	85.52	87.49
5	87.76	87.25	85.69	88.49	89.04	87.42	82.25	85.10	81.98	83.22	85.71	87.54
6	87.45	87.21	86.10	88.71	88.70	86.81	82.25	85.10	81.97	83.54	85.58	87.53
7	87.15	86.55	86.67	88.67	88.83	86.82	82.05	85.02	82.12	83.74	85.37	87.92
8	87.41	86.38	86.88	88.40	88.75	86.95	81.63	84.97	82.20	84.04	85.25	87.96
9	87.80	86.50	86.75	88.38	88.99	87.40	81.33	84.89	82.22	84.34	85.19	87.65
10	88.09	86.87	85.90	88.56	89.05	87.75	82.07	85.68	82.89	84.46	85.11	87.40
11	88.09	86.78	85.35	88.68	89.05	87.90	83.25	85.55	82.30	84.57	84.90	87.52
12	88.23	86.82	85.55	89.00	88.99	87.85	84.30	85.08	81.58	84.76	84.59	87.59
13	88.43	86.59	85.73	89.17	88.78	87.13	85.48	85.20	81.31	84.92	84.58	87.63
14	88.53	86.52	86.23	89.07	88.87	86.74	86.19	84.83	81.39	84.80	84.63	87.58
15	88.45	86.48	86.15	89.15	88.63	86.95	86.79	84.50	81.44	84.55	84.61	87.42
16	88.32	86.76	86.00	89.20	88.85	87.30	86.94	84.35	81.52	84.60	84.51	87.44
17	88.56	86.76	85.70	88.94	89.15	87.60	86.87	84.54	81.75	84.80	84.71	87.63
18	88.75	87.10	85.55	89.68	88.95	87.84	87.09	84.46	81.72	85.10	84.88	87.42
19	88.73	86.90	85.36	89.62	88.97	87.95	87.20	83.90	81.43	85.34	84.72	87.21
20	88.50	86.65	85.21	89.35	88.95	87.85	87.30	83.35	81.28	85.60	84.49	86.95
21	88.25	86.74	85.37	89.55	88.73	87.45	87.22	83.17	81.35	85.85	84.42	86.43
22	88.14	86.43	85.50	89.53	88.38	87.47	86.93	83.13	81.16	85.95	84.42	86.27
23	87.99	86.62	85.52	89.35	88.66	87.95	86.74	82.96	81.18	85.75	85.23	86.02
24	88.02	86.38	84.90	89.30	89.09	87.85	86.95	82.83	81.26	85.72	84.99	85.59
25	87.68	86.11	84.52	89.18	89.40	87.65	87.10	82.66	81.11	85.75	84.96	85.16
26	87.88	86.15	84.57	89.10	88.87	87.51	86.83	82.73	81.08	85.68	85.61	84.85
27	88.22	85.83	84.85	89.10	88.00	87.39	86.40	82.81	81.24	85.64	85.35	84.50
28	88.45	86.44	85.77	89.40	86.97	87.33	86.08	82.65	81.49	86.18	85.35	84.28
29	88.37	86.70	86.57	89.60	---	87.14	85.86	82.58	81.78	85.77	85.67	84.10
30	88.16	86.69	87.30	89.62	---	86.33	85.79	82.38	82.20	86.06	86.17	84.02
31	88.19	---	87.75	89.13	---	85.34	---	82.23	---	85.85	86.65	---
MEAN	88.11	86.81	85.90	88.98	88.84	87.30	85.07	84.11	81.73	84.73	85.18	86.72
MAX	88.75	88.17	87.75	89.68	89.40	87.95	87.30	85.68	82.89	86.18	86.65	87.96
MIN	87.15	85.83	84.52	87.96	86.97	85.34	81.33	82.23	81.08	82.33	84.42	84.02

COUNTY--Franklin

WELL IDENTIFICATION NUMBER--382100090592801

LOCATION--T.42N., R.01W., 26ddb, lat. 38°21'00", long. 90°59'28", Missouri Highway Department maintenance buildings, north outerbound road to Interstate 44, between State Highway 47 intersection and exit 239.

FORMATIONS OPEN TO THE WELL--Roubidoux Formation and Gasconade Formation.

WELL CHARACTERISTICS--Drilled April 28, 1956, total depth 255 feet, 80 feet of 8-inch casing, open hole.  
DGLS Log Number: 14,462

INSTRUMENTATION--Digital recorder, installed April 1, 1980.

DATUM--739 feet above NGVD of 1929.

Measuring point: Base of recorder, 3.0 feet above land surface.

REMARKS--Several days missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--April 2, 1980, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67.36	68.27	68.63	69.77	69.69	68.72	67.82	67.52	66.45	68.01	68.94	69.40
2	67.52	68.33	68.63	69.71	69.61	68.55	67.90	67.52	66.44	68.05	68.97	69.47
3	67.70	68.28	68.81	69.61	69.45	68.68	67.87	67.22	66.64	68.08	68.98	69.49
4	67.66	68.14	68.44	69.66	69.41	68.69	67.70	66.68	66.86	68.17	69.06	69.47
5	67.47	68.12	---	69.78	69.27	68.73	67.85	66.80	66.81	68.24	69.11	69.43
6	67.54	68.32	---	69.81	69.07	68.87	68.00	66.82	66.82	68.24	69.11	69.47
7	67.63	68.21	---	69.77	69.12	68.88	68.09	66.84	66.80	68.18	69.05	69.50
8	67.53	68.21	---	69.70	68.97	68.62	68.06	66.88	66.74	68.17	68.76	69.68
9	67.47	68.28	68.99	69.78	69.04	68.62	67.98	66.81	66.86	68.22	68.63	69.56
10	67.49	68.44	68.94	69.96	69.12	68.58	67.91	67.08	66.96	68.25	68.63	69.46
11	67.49	68.40	69.17	69.95	69.25	68.55	67.96	67.23	66.97	68.21	68.67	69.54
12	67.55	68.49	69.15	70.15	69.27	68.58	67.85	66.93	66.89	68.26	68.73	69.47
13	67.61	68.37	69.04	70.15	69.22	68.53	67.67	67.06	66.92	68.31	68.76	69.51
14	67.56	68.27	69.15	69.93	69.40	68.35	67.45	66.98	67.06	68.21	68.77	69.62
15	67.52	68.19	69.20	70.04	69.12	68.24	67.31	66.81	67.10	68.27	68.83	69.58
16	67.54	68.38	69.27	70.09	69.10	68.15	67.28	66.40	67.14	68.44	68.89	---
17	67.75	68.37	69.19	69.96	69.20	68.12	67.54	66.26	67.24	68.51	68.95	---
18	68.09	68.51	69.22	70.10	68.94	68.26	67.59	66.28	67.35	68.53	68.96	---
19	67.96	68.44	69.26	69.88	69.05	68.42	67.44	66.07	67.29	68.52	68.93	---
20	67.84	68.32	69.27	69.55	69.09	68.38	67.36	66.15	67.28	68.52	68.95	---
21	67.83	68.43	69.49	69.61	68.87	68.15	67.32	66.39	67.44	68.39	69.07	---
22	67.96	68.38	69.58	69.55	68.52	68.21	67.24	66.57	67.39	68.35	69.13	---
23	68.02	68.58	69.51	69.37	68.70	68.53	67.16	66.54	67.51	68.42	69.19	---
24	68.06	68.43	69.25	69.46	68.85	68.44	67.11	66.55	67.65	68.48	69.26	---
25	68.09	68.33	69.18	69.57	69.00	68.37	67.14	66.50	67.74	68.47	69.30	---
26	68.09	68.47	69.35	69.68	68.74	68.34	67.07	66.24	67.75	68.52	69.33	69.16
27	68.09	68.30	69.36	69.67	68.75	68.25	67.00	66.02	67.81	68.71	69.29	69.24
28	68.09	68.72	69.48	69.87	68.84	68.12	67.00	66.03	67.85	68.77	69.21	69.29
29	68.06	68.80	69.42	69.65	---	68.04	67.11	66.19	67.92	68.78	69.20	69.38
30	68.05	68.65	69.45	69.68	---	68.01	67.41	66.36	68.01	68.95	69.30	69.42
31	68.19	---	69.50	69.84	---	67.94	---	66.45	---	68.93	69.34	---
MEAN	67.77	68.38	---	69.78	69.09	68.42	67.54	66.65	67.19	68.39	69.01	---
MAX	68.19	68.80	---	70.15	69.69	68.88	68.09	67.52	68.01	68.95	69.34	---
MIN	67.36	68.12	---	69.37	68.52	67.94	67.00	66.02	66.44	68.01	68.63	---

## 16-Jefferson City

COUNTY--Callaway

WELL IDENTIFICATION NUMBER--383549092094201

LOCATION--T.44N., R.11W., 10cccd, lat. 37°31'15", long. 94°16'15", Jefferson City Airport.

FORMATIONS OPEN TO THE WELL--Alluvium.

WELL CHARACTERISTICS--Drilled April 20, 1956, total depth 95 feet, 60 feet of 8-inch casing, 31 feet of 4-inch casing, and 4 feet of 4-inch well screen.

INSTRUMENTATION--Digital recorder, installed May 1, 1980.

DATUM--550.7 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 10.0 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--May 15, 1980, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.33	28.73	29.40	30.39	31.00	31.18	30.11	29.58	---	17.77	20.45	22.39
2	28.35	28.74	29.43	30.42	31.02	31.17	30.09	29.55	---	17.90	20.50	22.45
3	28.38	28.72	29.47	30.45	31.04	31.17	30.06	29.52	---	18.04	20.51	22.52
4	28.38	28.69	29.48	30.47	31.05	31.17	30.04	29.47	---	18.22	20.35	22.59
5	28.37	28.68	29.52	30.50	31.07	31.18	30.02	29.43	---	18.39	20.52	22.67
6	28.39	28.73	29.56	30.52	31.08	31.19	30.01	29.39	---	18.46	20.58	22.72
7	28.41	28.73	29.59	30.54	31.09	31.20	29.99	29.34	19.08	18.48	20.60	22.79
8	28.41	28.75	29.62	30.55	31.10	31.20	29.97	29.29	18.13	18.64	20.66	22.88
9	28.42	28.77	29.64	30.58	31.12	31.21	29.96	29.23	17.67	18.80	20.75	22.96
10	28.43	28.80	29.67	30.60	31.13	31.21	29.94	29.19	17.52	18.93	20.84	23.05
11	28.44	28.81	29.71	30.63	31.15	31.21	29.93	29.16	17.38	19.05	20.93	23.14
12	---	28.83	29.74	30.65	31.16	31.22	29.91	29.10	17.28	19.21	21.03	23.21
13	---	28.85	29.77	30.67	31.17	31.21	29.89	29.07	17.33	19.31	21.14	23.27
14	28.47	28.86	29.80	30.69	31.18	31.12	29.87	29.02	17.36	19.36	21.22	23.34
15	28.48	28.89	29.84	30.71	31.19	31.00	29.85	28.95	17.21	19.50	21.30	23.41
16	28.50	28.93	29.86	30.74	31.21	30.91	29.83	28.78	17.27	19.67	21.31	23.49
17	28.53	28.95	29.89	30.76	31.21	30.82	29.81	28.56	17.33	19.79	21.38	23.60
18	28.55	28.99	29.92	30.79	31.21	30.75	29.79	---	17.35	19.91	21.44	23.60
19	28.55	29.01	29.95	30.80	31.22	30.68	29.76	---	17.22	20.01	21.51	23.66
20	28.55	29.04	29.97	30.82	31.22	30.60	29.75	---	17.21	20.14	21.58	23.72
21	28.56	29.07	30.01	30.83	31.22	30.54	29.73	---	17.21	20.15	21.65	23.77
22	28.59	29.10	30.04	30.85	31.21	30.48	29.70	---	17.15	19.70	21.72	23.85
23	28.61	29.14	30.07	30.86	31.22	30.42	29.69	---	17.20	19.84	21.78	23.93
24	28.62	29.16	30.09	30.88	31.23	30.37	29.68	---	17.26	19.96	21.85	23.95
25	28.63	29.19	30.13	30.90	31.22	30.33	29.67	---	17.29	20.05	21.92	23.99
26	28.64	29.23	30.17	30.91	31.20	30.29	29.65	---	17.28	20.13	21.98	24.07
27	28.66	29.25	30.21	30.93	31.20	30.25	29.64	---	17.37	20.21	22.05	24.13
28	28.67	29.31	30.25	30.94	31.19	30.21	29.62	---	17.45	20.31	22.12	24.20
29	28.68	29.34	30.28	30.95	---	30.18	29.61	---	17.56	20.40	22.18	24.26
30	28.69	29.37	30.32	30.97	---	30.16	29.60	---	17.70	20.43	22.25	24.32
31	28.72	---	30.35	30.99	---	30.14	---	---	---	20.43	22.32	---
MEAN	---	28.96	29.86	30.72	31.15	30.80	29.84	---	---	19.39	21.30	23.40
MAX	---	29.37	30.35	30.99	31.23	31.22	30.11	---	---	20.43	22.32	24.32
MIN	---	28.68	29.40	30.39	31.00	30.14	29.60	---	---	17.77	20.35	22.39



COUNTY--Cooper

WELL IDENTIFICATION NUMBER--390207092570801

LOCATION--T.49N., R.19W., 12bac, lat 39°2'7", long. 92°57'8", 2.5 miles south of Arrow Rock, State Highway 41.

FORMATIONS OPEN TO THE WELL--Burlington Limestone, Sedalia Formation, and Chouteau Group.

WELL CHARACTERISTICS--Total depth 230 feet.

INSTRUMENTATION--Graphic recorder from March 29, 1962, to March 13, 1990. Digital recorder, installed March 13, 1990.

DATUM--700 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.3 feet above land surface.

PERIOD OF PROCESSED RECORD--January 15, 1980, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58.43	58.62	58.82	59.40	57.82	56.83	56.91	57.47	57.78	57.66	58.15	58.13
2	58.48	58.66	58.83	59.41	57.83	56.83	57.01	57.44	57.81	57.67	58.17	58.19
3	58.58	58.73	58.84	59.31	57.86	56.92	57.03	57.43	57.85	57.68	58.17	58.23
4	58.64	58.71	58.90	59.29	57.79	56.93	56.98	56.91	57.88	57.70	58.17	58.27
5	58.53	58.61	58.96	59.35	57.63	56.99	57.07	57.58	57.88	57.71	58.25	58.28
6	58.54	58.52	58.78	59.36	57.53	57.08	57.15	57.58	57.68	57.71	58.31	58.26
7	58.58	58.56	58.74	59.32	57.49	57.09	57.20	57.64	57.87	57.71	58.31	58.29
8	58.60	58.53	58.78	59.21	57.48	57.05	57.23	57.70	57.76	57.72	58.30	58.37
9	58.59	58.46	58.94	59.18	57.29	57.09	57.21	57.75	57.54	57.72	58.31	58.39
10	58.63	58.44	59.02	59.28	57.22	57.08	57.25	57.85	56.94	57.73	58.32	58.45
11	58.58	58.46	58.97	59.22	57.22	57.02	57.33	57.93	57.05	57.73	58.33	58.51
12	58.56	58.48	58.90	59.32	57.26	57.00	57.33	57.91	57.24	57.75	58.36	58.53
13	58.58	58.49	58.96	59.26	57.29	56.89	57.32	57.94	57.32	57.77	58.43	58.57
14	58.58	58.44	59.06	59.01	57.38	56.78	57.33	57.87	57.40	57.76	58.45	58.58
15	58.55	58.40	58.97	58.93	57.38	55.55	57.33	56.66	57.42	57.77	58.47	58.61
16	58.50	58.38	59.00	58.90	57.24	55.25	57.34	56.18	57.44	57.81	57.62	58.64
17	58.56	58.50	59.06	58.85	56.74	55.58	57.49	56.83	57.48	57.85	58.05	58.71
18	58.67	58.51	59.14	58.94	56.66	55.99	57.52	56.77	57.51	57.87	58.11	58.69
19	58.70	58.50	59.14	58.96	56.74	56.40	57.47	57.05	57.50	57.87	58.05	58.70
20	58.67	58.56	59.16	58.79	56.80	56.45	57.46	57.23	57.52	57.87	58.04	58.74
21	58.57	58.51	59.18	58.78	56.88	56.40	57.53	57.36	57.53	57.90	58.04	58.75
22	58.54	58.52	59.22	58.72	56.85	56.49	57.51	57.37	57.53	57.95	58.03	58.80
23	58.55	58.52	59.35	58.51	55.87	56.69	57.47	57.37	57.56	58.01	58.04	58.88
24	58.57	58.57	59.22	58.40	55.69	56.73	57.50	57.54	57.58	58.02	58.05	58.85
25	58.60	58.64	59.15	58.37	56.16	56.77	57.58	57.50	57.59	58.01	58.06	58.77
26	58.63	58.51	59.15	58.30	56.49	56.86	57.56	57.10	57.60	58.01	58.07	58.83
27	58.61	58.48	59.31	58.18	56.65	56.88	57.46	57.37	57.61	58.01	58.08	58.87
28	58.62	58.54	59.33	58.21	56.80	56.85	57.54	57.36	57.62	58.01	58.08	58.91
29	58.63	58.52	59.28	58.01	---	56.85	57.53	57.56	57.64	58.02	58.10	58.97
30	58.61	58.74	59.29	57.92	---	56.87	57.57	57.73	57.66	58.09	58.11	58.99
31	58.60	---	59.29	57.91	---	56.89	---	57.77	---	58.12	58.12	---
MEAN	58.58	58.54	59.06	58.86	57.07	56.68	57.34	57.41	57.56	57.85	58.17	58.59
MAX	58.70	58.74	59.35	59.41	57.86	57.09	57.58	57.94	57.88	58.12	58.47	58.99
MIN	58.43	58.38	58.74	57.91	55.69	55.25	56.91	56.18	56.94	57.66	57.62	58.13

COUNTY--Pettis

WELL IDENTIFICATION NUMBER--384830093192501

LOCATION--T.47N., R.22W., 34cad, lat. 38°48'30", long. 93°19'25", 5 miles west of Sedalia, County Road T.

FORMATIONS OPEN TO THE WELL--Jefferson City Dolomite, Roubidoux Formation, Gasconade Formation, Eminence Dolomite, Potosi Dolomite, Derby-Doerun Dolomite, and Davis Dolomite.

WELL CHARACTERISTICS--Drilled May 6, 1971, total depth 1,410 feet, 432 feet of 13-inch casing, open hole.  
DGLS Log Number: 26,814

INSTRUMENTATION--Graphic recorder from January 12, 1973, to March 13, 1990. Digital recorder, installed March 13, 1990.

DATUM--825 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.9 feet above land surface.

PERIOD OF PROCESSED RECORD--January 12, 1973, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	151.07	151.42	151.42	151.39	151.15	151.77	151.39	151.51	151.11	151.14	151.40	151.40
2	151.30	151.51	151.53	151.22	151.28	151.41	151.56	151.46	151.04	151.09	151.36	151.48
3	151.50	151.37	151.61	151.11	151.33	151.48	151.52	151.33	151.19	151.06	151.30	151.50
4	151.43	151.13	151.12	151.21	151.44	151.39	151.33	151.28	151.28	151.12	151.28	151.52
5	151.18	151.01	150.99	151.30	151.39	151.41	151.42	151.40	151.06	151.18	151.45	151.47
6	151.31	151.22	151.18	151.33	151.29	151.52	151.56	151.36	151.07	151.23	151.56	151.32
7	151.47	151.08	151.49	151.37	151.34	151.53	151.60	151.27	151.09	151.19	151.53	151.30
8	151.36	151.04	151.48	150.91	151.17	151.39	151.54	151.21	151.11	151.20	151.44	151.34
9	151.26	151.06	151.18	151.07	151.21	151.41	151.39	151.11	151.23	151.25	151.42	151.32
10	151.31	151.21	151.11	151.16	151.19	151.38	151.47	151.33	151.32	151.25	151.39	151.38
11	151.19	151.17	151.43	151.25	151.29	151.28	151.69	151.32	151.23	151.21	151.36	151.45
12	151.32	151.27	151.33	151.52	151.15	151.30	151.64	151.11	151.12	151.29	151.36	151.46
13	151.37	151.12	151.20	151.45	151.16	151.17	151.45	151.33	151.02	151.36	151.44	151.40
14	151.30	151.02	151.31	151.17	151.28	151.03	151.47	151.26	151.11	151.22	151.44	151.37
15	151.20	151.14	151.43	151.24	151.07	151.15	151.39	151.10	151.05	151.19	151.41	151.36
16	151.28	151.36	151.47	151.23	151.39	151.32	151.37	151.10	150.99	151.31	151.37	151.42
17	151.55	151.23	151.35	151.18	151.12	151.40	151.66	151.37	151.05	151.37	151.32	151.63
18	151.74	151.46	151.38	151.51	151.48	151.56	151.68	151.29	151.16	151.38	151.32	151.49
19	151.64	151.36	151.43	151.31	151.71	151.79	151.53	151.00	150.97	151.33	151.32	151.48
20	151.42	151.29	151.39	151.09	151.71	151.71	151.46	151.13	150.99	151.27	151.38	151.45
21	151.28	151.30	151.74	151.22	151.41	151.42	151.48	151.29	151.08	151.22	151.45	151.39
22	151.36	151.27	151.91	151.21	151.12	151.48	151.37	151.38	151.05	151.27	151.43	151.46
23	151.43	151.45	151.75	150.96	151.31	151.86	151.26	151.24	151.09	151.33	151.36	151.60
24	151.45	151.17	151.35	150.99	151.16	151.82	151.25	151.16	151.13	151.32	151.36	151.47
25	151.47	151.04	151.14	151.16	151.36	151.79	151.33	151.03	151.13	151.34	151.39	151.26
26	151.44	151.17	151.21	151.15	151.12	151.80	151.22	151.12	151.10	151.35	151.42	151.30
27	151.44	150.94	151.18	151.24	151.23	151.68	151.09	151.14	151.10	151.35	151.40	151.31
28	151.40	151.51	151.14	151.46	151.81	151.49	151.08	151.15	151.07	151.31	151.31	151.40
29	151.32	151.61	151.04	151.16	---	151.42	151.08	151.20	151.09	151.29	151.31	151.49
30	151.26	151.48	151.13	151.19	---	151.41	151.42	151.22	151.16	151.37	151.36	151.52
31	151.34	---	151.13	151.27	---	151.40	---	151.21	---	151.42	151.36	---
MEAN	151.37	151.25	151.34	151.23	151.31	151.48	151.42	151.24	151.11	151.26	151.39	151.42
MAX	151.74	151.61	151.91	151.52	151.81	151.86	151.69	151.51	151.32	151.42	151.56	151.63
MIN	151.07	150.94	150.99	150.91	151.07	151.03	151.08	151.00	150.97	151.06	151.28	151.26

COUNTY--Lafayette

WELL IDENTIFICATION NUMBER--390852094003301

LOCATION--T.50N., R.28W., 11ccc, lat. 39°08'52", long. 94°00'33", 2.0 miles northwest of Wellington,  
1.8 miles northeast of Waterloo.

FORMATIONS OPEN TO THE WELL--Missouri River Alluvium.

WELL CHARACTERISTICS--Total depth unknown, casing unknown.

INSTRUMENTATION--Digital recorder

DATUM--690 feet above NGVD of 1929.

Measuring point: 6.0 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--July 27, 1988, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	20.51	21.97	21.74	19.84	18.82	11.98	12.16	14.90	17.42
2	---	---	---	20.69	21.99	21.78	19.72	18.82	12.37	12.51	15.01	17.56
3	---	---	---	20.84	21.97	21.83	19.56	18.78	12.95	12.88	15.07	17.68
4	---	19.85	---	20.99	21.95	21.83	19.42	18.70	13.42	13.12	14.49	17.80
5	---	20.01	21.42	21.11	21.96	---	19.38	18.64	13.68	13.47	14.25	17.89
6	---	20.15	21.50	21.23	22.00	21.96	19.38	18.58	13.97	13.80	14.37	17.95
7	---	20.25	21.54	21.32	22.04	22.04	19.38	18.51	13.74	14.04	14.73	18.03
8	---	20.38	21.56	21.40	22.07	22.08	19.38	18.54	13.63	14.40	15.06	18.09
9	---	---	21.57	21.49	22.11	22.08	19.36	18.58	12.49	14.82	15.39	18.13
10	---	---	21.58	21.53	22.13	21.89	19.40	18.58	11.87	15.14	15.66	18.20
11	---	---	21.58	21.60	22.12	21.63	19.39	18.52	12.51	15.47	15.85	18.25
12	---	---	21.55	21.66	22.06	21.46	19.35	18.33	13.12	15.81	15.90	18.29
13	17.35	---	21.61	21.67	22.04	21.33	19.31	17.91	13.75	15.95	16.12	18.31
14	17.41	---	21.67	21.69	21.99	21.07	19.26	17.62	13.87	16.01	16.08	18.36
15	17.48	---	21.74	21.72	21.95	20.72	19.24	16.52	13.36	16.19	15.82	18.39
16	17.60	---	21.80	21.74	22.01	20.26	19.23	9.45	11.75	16.40	15.88	18.44
17	17.67	---	21.89	21.76	22.03	19.85	19.27	6.22	10.56	16.57	15.64	18.49
18	17.70	---	21.99	21.81	22.01	19.51	19.23	7.78	10.04	16.75	15.17	18.47
19	17.67	---	22.09	21.82	22.03	19.39	19.21	8.80	9.47	16.90	15.23	18.52
20	17.68	---	22.17	21.79	22.03	19.35	19.22	9.62	9.21	17.06	15.53	18.52
21	17.75	---	22.06	21.69	22.06	19.47	19.21	10.11	9.05	17.16	15.68	18.53
22	17.79	---	21.68	21.59	22.11	19.69	19.21	10.17	9.32	16.62	15.74	18.56
23	17.82	---	21.49	21.54	22.03	19.87	19.23	10.09	9.84	16.09	15.94	18.58
24	17.87	---	21.35	21.60	21.95	19.94	19.29	10.53	10.20	16.16	16.18	18.52
25	17.92	---	21.24	21.70	21.87	20.02	19.35	10.79	10.40	16.39	16.38	18.57
26	17.97	---	21.09	21.78	21.78	20.09	19.34	10.42	10.43	16.63	16.55	18.65
27	18.01	---	20.80	21.85	21.74	20.14	19.09	9.65	10.63	16.26	16.74	18.69
28	17.79	---	20.50	21.89	21.73	20.17	18.80	9.90	10.99	14.64	16.87	18.75
29	17.58	---	20.27	21.90	---	20.16	18.71	10.49	11.41	14.17	16.97	18.78
30	17.17	---	20.02	21.93	---	20.13	18.80	11.04	11.87	14.30	17.10	18.80
31	16.62	---	20.15	21.96	---	20.01	---	11.56	---	14.65	17.26	---
MEAN	---	---	---	21.54	21.99	---	19.29	13.94	11.73	15.24	15.73	18.31
MAX	---	---	---	21.96	22.13	---	19.84	18.82	13.97	17.16	17.26	18.80
MIN	---	---	---	20.51	21.73	---	18.71	6.22	9.05	12.16	14.25	17.42

COUNTY--Benton

WELL IDENTIFICATION NUMBER--381650093215001

LOCATION--T.40N., R.22W., 4bad, lat. 38°16'50" long. 93°21'50", approximately 2 miles north of the intersection of State Highways 65 and 7, on State Highway 65.

FORMATIONS OPEN TO THE WELL--Gasconade Formation, Gunter Member, Eminence Dolomite, Potosi Dolomite, Derby-Doerun Dolomite, Davis Dolomite, Bonnetterre Formation, and Lamotte Sandstone.

WELL CHARACTERISTICS--Drilled September 20, 1955, total depth 1,406 feet, 210 feet of 12-inch casing, open. DGLS Log Number: 14,232

INSTRUMENTATION--Graphic recorder from July 20, 1979, to August 25, 1990. Digital recorder, installed August 25, 1990.

DATUM--740 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.0 feet above land surface.

PERIOD OF PROCESSED RECORD--July 20, 1979, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34.78	35.21	35.15	35.57	34.93	34.15	31.00	31.70	29.00	29.61	31.94	33.13
2	34.98	35.26	35.28	35.42	35.03	33.90	31.16	31.77	28.92	29.64	31.94	33.25
3	35.16	35.10	35.30	35.27	35.06	33.91	31.10	31.93	29.00	29.71	31.93	33.31
4	35.11	34.88	34.89	35.44	35.14	33.83	30.96	31.90	29.08	29.88	31.91	33.40
5	34.91	34.78	34.79	35.47	35.10	33.82	31.11	31.95	28.89	30.03	32.12	33.40
6	35.02	34.80	35.02	35.48	34.95	33.90	31.27	31.85	28.93	30.20	32.25	33.33
7	35.14	34.81	35.29	35.33	34.96	33.88	31.38	31.73	29.00	30.29	32.24	33.35
8	35.03	34.82	35.26	35.12	34.73	33.70	31.38	31.65	29.10	30.45	32.21	33.44
9	34.94	34.86	35.02	35.25	34.75	33.69	31.29	31.58	29.22	30.61	32.23	33.50
10	34.99	34.99	34.98	35.27	34.73	33.62	31.45	31.79	29.30	30.74	32.27	33.60
11	34.87	34.97	35.29	35.39	34.78	33.49	31.70	31.78	29.24	30.75	32.32	33.71
12	34.98	35.05	35.17	35.60	34.70	33.43	31.70	31.61	29.14	30.88	32.33	33.78
13	35.02	34.94	35.12	35.50	34.60	33.32	31.60	31.83	29.17	31.00	32.43	33.75
14	34.94	34.88	35.18	35.27	34.74	32.96	31.64	31.80	29.25	30.94	32.46	33.76
15	34.85	34.86	35.36	35.36	34.52	32.85	31.61	31.58	29.10	30.99	32.47	33.82
16	34.93	35.06	35.38	35.33	34.70	32.76	31.63	31.54	29.01	31.18	32.45	33.89
17	35.20	34.92	35.27	35.33	34.88	32.57	31.93	31.77	29.09	31.30	32.45	34.05
18	35.38	35.07	35.29	35.59	34.64	32.49	31.97	31.42	29.21	31.37	32.47	33.95
19	35.29	34.94	35.39	35.30	34.75	32.48	31.91	30.88	29.07	31.37	32.49	34.02
20	35.11	34.86	35.35	35.16	34.72	32.22	31.90	30.72	29.12	31.38	32.56	34.05
21	35.01	34.83	35.68	35.23	34.42	31.78	31.95	30.66	29.22	31.42	32.65	34.04
22	35.10	34.90	35.84	35.13	34.04	31.70	31.90	30.57	29.20	31.48	32.65	34.15
23	35.17	35.04	35.74	34.86	34.21	31.87	31.87	30.29	29.28	31.58	32.63	34.32
24	35.21	34.80	35.39	34.85	34.45	31.74	31.91	30.11	29.33	31.59	32.67	34.22
25	35.23	34.75	35.24	35.06	34.54	31.63	31.91	29.88	29.38	31.62	32.73	34.08
26	35.20	34.86	35.32	34.95	34.25	31.55	31.93	29.69	29.39	31.66	32.80	34.16
27	35.20	34.78	35.32	35.11	34.28	31.37	31.94	29.55	29.40	31.69	32.84	34.22
28	35.15	35.27	35.31	35.19	34.32	31.15	31.92	29.38	29.39	31.68	32.82	34.34
29	35.09	35.34	35.25	34.90	---	31.06	31.89	29.30	29.46	31.71	32.86	34.44
30	35.05	35.19	35.31	35.02	---	31.04	31.75	29.22	29.56	31.82	32.96	34.51
31	35.14	---	35.33	35.05	---	31.02	---	29.14	---	31.91	33.03	---
MEAN	35.07	34.96	35.27	35.25	34.68	32.67	31.62	30.99	29.18	30.98	32.46	33.83
MAX	35.38	35.34	35.84	35.60	35.14	34.15	31.97	31.95	29.56	31.91	33.03	34.51
MIN	34.78	34.75	34.79	34.85	34.04	31.02	30.96	29.14	28.89	29.61	31.91	33.13

COUNTY--St. Clair

WELL IDENTIFICATION NUMBER--380230093464701

LOCATION--T.38N., R.26W., 22cbd, lat. 38°2'30", long. 93°46'47", approximately 5 miles west of Osceola.

FORMATIONS OPEN TO THE WELL--Undifferentiated Pennsylvanian, Sedalia Formation, Chouteau Group, Jefferson City Dolomite, Roubidoux Formation, Gasconade Formation, and Eminence Dolomite.

WELL CHARACTERISTICS--Oil test well, drilled August 1, 1957, total depth 875 feet, 20 feet of 6-inch casing, open hole.

DGLS Log Number: 17,450

INSTRUMENTATION--Graphic recorder from November 12, 1958, to November 15, 1989. Digital recorder, installed November 15, 1989.

DATUM--875 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.8 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--June 13, 1984, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	106.78	106.61	---	106.11	106.62	106.08	106.34	106.08	106.19	106.21	106.20
2	---	106.88	106.72	---	106.29	106.30	106.33	106.28	106.02	106.10	106.17	106.31
3	106.70	106.67	106.77	---	106.38	106.32	106.28	106.11	106.21	106.06	106.12	106.33
4	106.80	106.36	106.13	---	---	106.18	106.02	106.12	106.33	106.13	106.12	106.36
5	106.51	106.24	105.94	---	---	106.15	106.14	106.30	106.04	106.19	106.35	106.28
6	106.65	106.47	106.21	---	---	106.28	106.33	106.26	106.01	106.24	106.49	106.06
7	106.87	106.32	106.62	---	---	106.28	106.41	106.15	106.07	106.19	106.44	105.99
8	106.73	106.34	106.62	---	---	106.15	106.33	106.03	106.10	106.23	106.30	106.04
9	106.58	106.41	106.23	---	106.17	106.19	106.13	105.92	106.30	106.27	106.25	106.03
10	106.63	106.60	106.10	---	106.16	106.12	106.21	106.22	106.42	106.23	106.21	106.11
11	106.49	106.59	---	---	106.27	106.05	106.53	106.17	106.34	106.17	106.15	106.23
12	106.60	106.68	---	---	106.13	106.12	106.47	105.90	106.15	106.25	106.12	106.22
13	106.70	106.51	---	---	106.05	106.06	106.22	106.22	106.06	106.32	106.22	106.14
14	106.59	106.35	---	---	106.25	105.72	106.25	106.14	106.19	106.16	106.22	106.09
15	106.46	106.47	---	---	106.06	105.91	106.11	105.95	106.11	106.09	106.19	106.08
16	106.55	106.66	---	---	106.52	106.13	106.07	105.96	106.06	106.25	106.11	106.08
17	106.96	106.51	---	---	106.79	106.26	106.45	106.34	106.13	106.30	106.07	106.28
18	107.15	106.74	---	---	106.58	106.45	106.51	106.25	106.27	106.30	106.07	106.13
19	107.02	106.62	---	---	106.82	106.74	106.32	105.89	106.05	106.21	106.07	106.16
20	106.73	106.49	106.50	---	106.80	106.65	106.25	105.97	106.05	106.10	106.14	106.14
21	106.53	106.42	---	---	106.37	106.26	106.26	106.21	106.16	106.04	106.25	106.10
22	106.61	106.46	---	---	105.94	106.30	106.14	106.36	106.13	106.14	106.19	106.25
23	106.71	106.66	---	---	106.29	106.74	106.00	106.19	106.19	106.23	106.08	106.43
24	106.77	106.27	---	---	106.74	106.74	105.97	106.06	106.22	106.20	106.09	106.24
25	106.78	106.10	---	---	106.90	106.71	106.06	105.91	106.22	106.20	106.13	105.96
26	106.73	106.26	---	---	106.60	106.69	105.93	106.01	106.21	106.20	106.18	106.00
27	106.70	106.06	---	---	106.74	106.51	105.77	106.05	106.19	106.20	106.16	106.02
28	106.65	106.80	---	---	106.83	106.23	105.77	106.09	106.13	106.13	106.05	106.16
29	106.57	106.92	---	---	---	106.10	105.75	106.15	106.17	106.11	106.04	106.26
30	106.55	106.70	---	---	---	106.09	106.22	106.17	106.24	106.20	106.10	106.29
31	106.68	---	---	106.27	---	106.09	---	106.18	---	106.25	106.12	---
MEAN	---	106.51	---	---	---	106.29	106.18	106.13	106.16	106.19	106.17	106.17
MAX	---	106.92	---	---	---	106.74	106.53	106.36	106.42	106.32	106.49	106.43
MIN	---	106.06	---	---	---	105.72	105.75	105.89	106.01	106.04	106.04	105.96



COUNTY--Vernon

WELL IDENTIFICATION NUMBER--375636094295601

LOCATION--T.37N., R.32W., 31cdb, lat 37°56'36", long. 94°29'56", 0.1 mile from County Road, 0.9 mile south of Rinehart.

FORMATIONS OPEN TO THE WELL--Cherokee Formation to 205 feet, Spergen-Warsaw Formation to 300 feet, Short Creek Formation to 310 feet, Burlington-Keokuk Limestone to 500 feet, Northview Formation to 510 feet, Chouteau Group to 580 feet, Kinderhookian Series to 585 feet, Jefferson City Dolomite to 755 feet, Roubidoux Formation to 895 feet, Upper Gasconade to 950 feet, Lower Gasconade to 1,140 feet, Gunter Sandstone Member of the Gasconade Formation to 1,160 feet, Eminence Dolomite to 1,375 feet, Lamotte Sandstone to 1,405 feet, and total depth Precambrian.

WELL CHARACTERISTICS--Drilled July 27, 1944, total depth 2,325 feet, casing unknown.  
DGLS Log Number: 8,617

INSTRUMENTATION--Digital recorder.

DATUM--804 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.0 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--October 1, 1988, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92.30	92.48	92.54	---	90.93	---	90.89	90.72	---	---	---	90.03
2	92.54	92.54	92.40	---	91.06	---	91.11	90.79	---	---	---	90.14
3	92.58	92.34	92.36	---	91.10	---	91.20	90.71	---	---	---	90.20
4	92.36	92.12	92.46	---	91.19	---	91.07	90.56	---	---	---	90.25
5	92.31	92.08	92.60	---	91.07	---	91.06	90.73	---	---	---	90.23
6	92.51	92.20	92.13	---	90.95	---	91.16	90.75	---	---	---	90.13
7	92.48	92.09	91.94	---	90.97	91.26	91.19	90.72	89.95	---	---	90.10
8	92.36	92.11	91.89	---	91.26	90.77	91.18	90.68	90.00	---	---	90.41
9	92.30	92.11	92.23	---	91.64	90.78	91.07	90.66	90.06	---	---	90.62
10	92.30	92.21	92.40	91.64	91.62	90.77	90.98	90.79	---	---	89.78	90.87
11	92.21	92.20	92.36	91.07	91.70	90.64	91.22	90.92	---	---	89.78	91.11
12	92.36	92.29	92.07	91.31	91.55	90.68	91.31	90.91	---	---	89.77	91.31
13	92.33	92.17	91.96	91.15	91.52	90.57	91.24	90.90	---	---	89.82	91.36
14	92.23	92.08	92.19	90.88	91.61	90.29	91.03	---	---	---	89.84	91.33
15	92.16	92.05	92.39	90.98	91.31	90.42	91.03	---	---	---	89.83	91.42
16	92.37	92.37	92.14	90.96	91.56	90.56	90.62	---	---	---	89.77	91.29
17	92.69	92.39	92.12	90.97	91.70	90.72	91.08	---	---	---	89.73	91.31
18	92.77	92.31	92.20	91.31	91.54	90.95	91.16	---	---	---	89.74	91.15
19	92.62	92.45	92.30	90.99	91.72	91.24	91.16	---	---	---	89.75	91.15
20	92.39	92.38	92.45	90.89	91.69	91.22	91.08	---	---	---	89.82	91.10
21	92.33	92.29	92.34	91.01	91.41	90.96	90.99	---	---	---	89.92	91.05
22	92.41	92.27	92.23	90.94	91.02	91.00	90.84	---	---	---	89.93	91.14
23	92.47	92.21	92.22	90.69	91.21	91.34	90.81	---	---	---	89.86	91.30
24	92.50	92.48	92.23	90.73	---	91.36	90.81	---	---	---	89.86	91.16
25	92.50	92.25	92.23	90.97	---	91.35	90.81	---	---	---	89.88	90.89
26	92.46	91.97	92.28	90.87	---	91.33	90.74	---	---	---	89.91	90.78
27	92.44	92.11	92.29	91.00	---	91.20	90.39	---	---	---	89.92	90.85
28	92.40	91.94	92.29	91.20	---	91.01	90.37	---	---	---	89.88	91.10
29	92.34	92.13	92.29	90.89	---	90.94	90.31	---	---	---	89.89	91.16
30	92.36	92.55	92.28	90.95	---	90.93	90.56	---	---	---	89.95	91.22
31	92.39	---	---	90.99	---	90.92	---	---	---	---	89.98	---
MEAN	92.41	92.24	---	---	---	---	90.95	---	---	---	---	90.87
MAX	92.77	92.55	---	---	---	---	91.31	---	---	---	---	91.42
MIN	92.16	91.94	---	---	---	---	90.31	---	---	---	---	90.03

COUNTY--Vernon

WELL IDENTIFICATION NUMBER--375007094102701

LOCATION--T.35N., R.29W., 6cbd, lat 37°50'07", long. 94°10'27", 0.3 miles from county road, 2.9 miles southwest of Dederick.

FORMATIONS OPEN TO THE WELL--Pennsylvanian-Burlington Formation.

WELL CHARACTERISTICS--Drilled in 1975, total depth 525 feet, casing unknown.

INSTRUMENTATION--Digital recorder.

DATUM--822 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.3 feet above land surface.

PERIOD OF PROCESSED RECORD--October 1, 1988, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48.33	48.41	49.43	50.19	48.52	44.67	37.82	38.06	37.11	38.40	40.74	42.29
2	48.28	48.46	49.49	50.24	48.50	44.24	37.90	38.17	37.05	38.43	40.82	42.41
3	48.54	48.40	49.63	50.08	48.53	44.04	38.02	38.15	37.05	38.50	40.84	42.64
4	48.63	48.21	49.26	50.09	48.54	43.88	38.05	37.99	37.08	38.84	40.77	42.85
5	48.47	47.95	49.03	50.25	48.48	43.77	38.17	37.93	37.09	39.21	40.85	42.97
6	48.36	48.04	49.05	50.31	48.23	43.74	38.23	37.85	37.18	39.18	40.95	42.97
7	48.41	47.93	49.34	50.30	48.12	43.68	38.23	37.79	37.26	39.19	41.09	42.99
8	48.35	47.85	49.43	50.13	47.80	43.59	38.22	37.80	37.29	39.28	41.56	43.08
9	48.25	47.87	49.27	50.11	47.64	43.53	38.20	37.83	37.33	39.36	41.32	43.16
10	48.20	47.93	49.14	50.27	47.57	43.47	38.18	38.01	37.37	39.44	41.23	43.29
11	48.10	47.95	49.40	50.29	47.53	43.26	38.21	38.16	37.45	39.42	41.21	43.58
12	48.07	48.06	49.35	50.57	47.44	43.05	38.17	38.08	37.55	39.36	41.12	43.83
13	48.15	47.97	49.19	50.66	47.23	42.84	38.08	38.08	37.88	39.44	41.14	43.94
14	48.11	48.02	49.29	50.43	47.34	42.63	38.06	37.99	38.11	39.49	41.20	44.01
15	48.01	48.99	49.39	50.42	47.04	42.42	37.99	37.84	38.15	39.53	41.21	44.14
16	48.03	48.94	49.56	50.42	46.98	42.21	37.90	37.67	38.01	39.66	41.19	44.24
17	48.33	48.95	49.62	50.29	46.90	42.10	37.90	37.66	37.96	39.78	41.21	44.42
18	48.57	49.09	49.77	50.52	46.47	38.48	37.94	37.62	38.01	39.94	41.26	44.47
19	48.64	49.05	49.84	50.36	46.33	37.76	37.93	37.55	38.03	40.48	41.32	44.64
20	48.54	49.00	49.86	49.96	46.26	37.80	37.93	37.52	38.06	40.28	41.39	44.65
21	48.38	49.08	50.12	49.88	45.95	37.76	37.88	37.51	38.15	40.23	41.49	44.64
22	48.41	49.01	50.41	49.64	45.38	37.82	37.80	37.51	38.14	40.23	41.57	44.79
23	48.46	49.25	50.46	49.20	45.25	38.11	37.72	37.51	38.12	40.33	41.58	45.05
24	48.49	49.04	50.23	48.99	45.19	38.17	37.72	37.51	38.11	40.42	41.61	45.31
25	48.58	48.83	50.04	48.98	45.18	38.20	37.82	37.49	38.13	40.47	41.65	45.43
26	48.58	48.97	50.03	48.93	44.95	38.16	37.90	37.37	38.16	40.51	41.69	45.46
27	48.57	48.79	50.00	48.76	44.85	38.07	37.93	37.32	38.18	40.51	41.71	45.55
28	48.58	49.24	50.01	48.97	44.84	37.95	37.82	37.20	38.20	40.52	41.82	45.76
29	48.53	49.47	49.86	48.77	---	37.85	37.76	37.15	38.26	40.55	41.95	45.98
30	48.37	49.45	49.92	48.58	---	37.82	37.90	37.15	38.33	40.63	42.09	46.18
31	48.40	---	49.94	48.67	---	37.83	---	37.14	---	40.70	42.18	---
MEAN	48.38	48.61	49.66	49.85	46.89	40.93	37.98	37.70	37.76	39.75	41.35	44.16
MAX	48.64	49.47	50.46	50.66	48.54	44.67	38.23	38.17	38.33	40.70	42.18	46.18
MIN	48.01	47.85	49.03	48.58	44.84	37.76	37.72	37.14	37.05	38.40	40.74	42.29

WELL IDENTIFICATION NUMBER--373115094161501

LOCATION--T.32N., R.30W., 30abb, lat. 37°31'15", long. 94°16'15", at Lamar Water and Light, well number 2.

FORMATIONS OPEN TO THE WELL--Cotter Dolomite, Jefferson City Dolomite, Roubidoux Formation, and Gasconade Formation.

WELL CHARACTERISTICS--Unused municipal well, drilled April 1, 1954, total depth 981 feet, 575 feet of 8-inch casing, open.

INSTRUMENTATION--Graphic recorder, installed June 17, 1968.

DATUM--975 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.3 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD.--June 17, 1968, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	275.51	273.72	---	273.47	273.03	272.71	271.52	270.86	269.82	---	291.48
2	---	275.44	273.80	---	273.43	273.46	272.84	271.63	270.79	269.88	---	292.56
3	---	275.13	273.83	---	273.44	273.64	272.73	271.73	270.88	270.00	---	293.55
4	---	274.76	273.34	---	273.38	273.96	272.50	271.68	270.63	270.01	---	294.45
5	---	274.55	273.17	---	273.53	274.14	272.53	271.73	270.41	270.02	---	295.16
6	---	274.50	273.28	---	273.71	274.28	272.64	271.70	270.19	270.28	---	295.75
7	---	274.26	273.53	---	273.72	274.55	272.64	271.56	270.14	270.38	---	296.58
8	---	274.17	273.54	---	274.00	274.54	272.55	271.39	270.16	270.50	---	297.27
9	---	274.16	273.24	273.57	273.87	274.45	272.35	271.29	270.27	271.30	---	297.88
10	---	274.19	273.10	273.59	272.06	274.30	272.36	271.48	270.35	272.24	289.26	298.56
11	---	274.13	273.41	273.52	270.61	274.07	272.56	271.39	270.59	---	290.01	298.82
12	---	274.14	273.31	273.28	269.79	273.97	272.49	271.18	270.58	---	290.53	298.97
13	277.87	273.95	273.19	273.42	269.06	273.85	272.24	271.36	270.32	---	290.67	299.04
14	277.61	273.79	273.18	273.73	268.26	273.43	272.26	271.27	270.31	---	290.60	298.93
15	277.35	273.93	273.37	273.09	267.79	273.48	272.13	271.04	270.17	---	290.43	298.72
16	277.29	274.12	273.36	271.21	267.08	273.66	272.05	270.95	270.14	---	290.25	298.65
17	277.45	273.96	273.24	270.02	268.17	273.68	272.30	271.23	270.22	---	290.11	298.95
18	277.46	274.09	273.21	269.24	269.26	273.72	272.31	271.28	270.27	---	290.01	298.80
19	277.24	274.01	273.29	270.66	269.70	273.88	272.14	270.95	270.19	---	289.87	298.23
20	276.92	273.87	273.28	271.37	270.24	273.74	272.06	270.94	270.23	---	289.81	297.35
21	276.62	273.79	273.25	271.59	270.98	273.39	272.05	271.15	270.22	---	289.80	296.27
22	276.54	273.80	---	271.93	271.64	273.35	271.93	271.30	270.00	---	289.70	295.43
23	276.89	273.95	---	272.42	271.72	273.59	271.84	271.11	268.17	---	289.60	294.61
24	277.30	273.61	---	272.62	271.68	273.55	271.80	271.00	268.53	---	288.37	293.54
25	276.84	273.46	---	272.53	271.91	273.49	271.84	270.84	269.02	---	287.66	292.50
26	276.54	273.55	---	272.75	272.38	273.41	271.75	270.83	269.31	---	288.01	291.73
27	276.31	273.36	---	272.83	272.49	273.21	271.63	270.82	269.46	---	288.44	290.98
28	276.09	273.88	---	272.76	272.69	272.96	271.64	270.87	269.64	---	288.71	290.38
29	275.85	273.97	---	273.16	---	272.86	271.52	270.93	269.72	---	289.17	289.70
30	275.70	273.79	---	273.23	---	272.79	271.60	270.92	269.75	---	289.84	289.15
31	275.60	---	---	273.26	---	272.77	---	270.89	---	---	290.60	---
MEAN	---	274.13	---	---	271.43	273.65	272.20	271.22	270.05	---	---	295.47
MAX	---	275.51	---	---	274.00	274.55	272.84	271.73	270.88	---	---	299.04
MIN	---	273.36	---	---	267.08	272.77	271.52	270.82	268.17	---	---	289.15

COUNTY--Polk

WELL IDENTIFICATION NUMBER--373701093151601

LOCATION--T.33N., R.21W., 5adc, lat. 37°37'1", long. 93°15'16", 0.2 miles east of junction of State Highway 32 and County Road H, east of Halfway, Missouri Highway Department buildings.

FORMATIONS OPEN TO THE WELL--Cotter Dolomite and Jefferson City Dolomite.

WELL CHARACTERISTICS--Drilled March 5, 1956, total depth 200 feet, 43 feet of 8-inch casing, open hole.  
DGLS Log Number: 14,308

INSTRUMENTATION--Graphic recorder, installed March 5, 1956.

DATUM--1,114 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.2 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--June 14, 1983, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58.79	59.56	61.11	---	62.05	57.75	50.87	50.51	44.94	47.44	49.93	52.93
2	58.97	59.60	61.11	---	62.05	57.67	51.45	50.55	44.91	47.94	49.88	52.95
3	59.29	59.79	61.24	---	61.98	57.38	51.43	50.34	45.16	48.32	49.91	52.96
4	59.57	60.07	---	---	62.02	57.01	51.15	49.83	45.51	48.34	49.85	52.98
5	59.79	60.08	---	---	62.06	56.81	51.23	49.37	45.68	48.40	49.76	52.97
6	59.72	59.76	---	---	61.60	56.83	51.43	49.24	45.86	48.52	49.86	52.89
7	59.77	59.98	---	---	61.32	56.72	51.49	49.21	46.28	48.66	50.01	52.39
8	59.71	59.92	---	---	60.91	55.91	51.53	49.11	46.63	49.08	50.18	52.18
9	59.71	59.81	---	63.03	60.69	55.39	51.50	49.08	47.02	49.22	50.30	52.34
10	59.77	59.88	---	63.23	60.55	55.06	51.14	49.34	47.39	49.28	50.78	52.46
11	59.77	59.97	---	63.20	60.50	54.83	50.76	49.56	47.99	49.24	50.51	52.50
12	59.92	60.15	---	63.44	60.49	54.70	50.34	49.19	48.46	48.84	50.34	52.52
13	60.41	60.24	---	63.46	60.30	54.40	50.08	49.44	48.90	48.61	50.31	52.48
14	60.33	60.03	---	63.14	60.46	53.48	49.80	49.80	48.70	48.32	50.40	52.44
15	60.35	60.01	---	63.28	60.02	52.63	49.29	49.53	48.48	47.90	50.47	52.25
16	60.37	60.35	---	63.25	59.61	52.35	49.11	48.69	48.16	48.16	50.60	51.83
17	59.89	60.27	---	63.05	59.53	52.19	49.33	48.04	48.23	48.35	50.72	52.22
18	59.76	60.47	---	63.23	59.09	52.27	49.46	47.51	48.49	48.47	51.01	52.41
19	60.00	60.50	---	63.01	59.05	52.65	49.20	46.96	48.49	48.50	51.08	52.57
20	60.21	60.68	---	62.34	59.12	52.77	49.05	46.53	48.09	48.53	51.19	52.76
21	60.48	60.59	---	62.19	58.84	52.46	49.09	46.30	47.75	48.62	51.76	52.98
22	60.21	60.38	---	62.02	58.28	52.47	49.39	46.17	47.41	48.61	51.85	52.98
23	59.62	60.70	---	61.90	58.10	52.87	50.42	45.88	47.07	48.75	52.10	53.00
24	59.65	60.41	---	61.90	57.92	52.98	50.41	45.91	47.01	48.91	52.31	52.97
25	59.53	60.07	---	61.92	58.00	53.00	50.13	45.84	47.18	49.10	52.34	52.93
26	59.25	60.32	---	62.00	57.81	52.93	49.99	45.70	47.13	49.21	52.54	52.94
27	59.20	60.24	---	61.92	57.83	52.62	49.70	45.14	47.03	49.15	52.67	52.89
28	59.40	60.73	---	62.34	57.92	52.08	49.49	44.74	47.07	49.27	52.94	52.79
29	59.71	61.03	---	62.11	---	51.96	49.53	44.91	47.22	49.29	53.08	52.69
30	59.83	60.98	---	62.00	---	51.45	50.13	44.96	47.34	49.57	52.98	52.37
31	59.63	---	---	62.19	---	51.02	---	45.01	---	49.72	52.90	---
MEAN	59.76	60.22	---	---	59.93	54.02	50.26	47.82	47.19	48.72	51.11	52.65
MAX	60.48	61.03	---	---	62.06	57.75	51.53	50.55	48.90	49.72	53.08	53.00
MIN	58.79	59.56	---	---	57.81	51.02	49.05	44.74	44.91	47.44	49.76	51.83

COUNTY--Jasper

WELL IDENTIFICATION NUMBER--370600094223501

LOCATION--T.28N., R.32W., 36dcb, lat. 37°6'0", long. 94°22'35", 0.8 miles north of Old Highway 66, County Road AA, Atlas Chemical Industries, Inc.

FORMATIONS OPEN TO THE WELL--Cotter Dolomite, Jefferson City Dolomite, Roubidoux Formation, Gasconade Formation, Eminence Dolomite, Potosi Dolomite, Bonnetterre Formation, Lamotte Sandstone, and undifferentiated Precambrian.

WELL CHARACTERISTICS--Drilled January 25, 1941, total depth 1,747 feet, 375 feet of 10-inch casing, open hole.  
DGLS Log Number: 6,507

INSTRUMENTATION--Graphic recorder, installed February 8, 1956.

DATUM--970 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 3.5 feet above land surface.

PERIOD OF PROCESSED RECORD--August 9, 1978, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.75	19.86	25.05	31.10	25.66	18.37	14.69	14.47	10.70	16.02	17.46	18.14
2	16.93	20.12	25.18	31.11	25.41	17.85	14.86	14.54	10.84	15.96	17.40	18.28
3	17.01	20.22	25.40	31.25	25.15	17.65	14.87	14.06	11.11	15.97	17.30	18.37
4	17.05	20.28	25.50	31.48	24.80	17.51	14.85	13.38	11.37	16.03	17.13	18.42
5	17.01	20.42	25.46	31.52	24.36	17.37	15.01	13.14	11.59	16.10	17.07	18.50
6	17.06	20.57	25.62	31.67	23.98	17.40	15.17	13.10	11.98	16.29	17.07	18.53
7	17.07	20.52	25.93	31.71	23.74	16.93	15.27	13.13	12.60	16.52	17.05	18.69
8	17.05	20.67	26.24	31.75	23.36	16.00	15.34	13.19	12.93	16.66	16.96	18.88
9	17.04	20.80	26.36	32.07	23.17	15.73	15.34	13.33	13.06	16.66	17.64	18.94
10	17.20	20.99	26.43	32.24	22.98	15.65	15.30	13.65	13.05	16.66	17.93	19.06
11	17.33	21.16	26.55	32.45	22.82	15.58	15.13	13.76	13.25	16.74	17.87	19.23
12	17.53	21.27	26.82	32.64	22.58	14.52	14.90	13.71	13.58	16.94	17.75	19.40
13	17.69	21.26	26.95	32.66	22.36	13.95	14.80	13.67	13.88	17.14	17.70	19.50
14	17.77	21.36	27.12	32.59	22.22	12.97	14.89	13.56	14.06	17.16	17.65	19.69
15	17.86	21.69	27.48	32.79	21.57	11.44	14.89	12.97	14.09	17.20	17.61	19.77
16	17.93	22.11	27.70	33.00	20.72	12.00	14.94	12.20	14.15	17.22	17.57	19.80
17	18.05	22.28	27.99	33.03	20.33	12.62	15.16	11.57	14.18	17.19	17.59	19.92
18	18.11	22.58	28.11	32.98	20.06	13.21	15.22	11.37	14.20	17.35	17.54	19.98
19	18.13	22.75	28.31	32.46	20.01	13.64	15.22	10.49	14.26	17.55	17.49	19.96
20	18.17	22.81	28.68	31.22	19.86	13.87	15.30	10.31	14.43	17.77	17.50	20.06
21	18.24	23.06	29.11	30.22	19.66	13.99	15.38	9.88	14.59	17.85	17.52	19.79
22	18.39	23.24	29.47	29.43	19.49	14.20	15.37	9.82	14.63	17.80	17.48	19.35
23	18.47	23.71	29.62	28.79	19.44	14.49	15.36	10.28	14.70	17.69	17.43	19.12
24	18.63	23.85	29.69	28.37	19.27	14.60	15.42	10.71	14.80	17.59	17.39	18.89
25	18.80	23.86	29.87	28.18	19.09	14.76	15.52	11.12	15.06	17.63	17.32	18.70
26	18.94	24.08	30.04	27.74	18.85	14.81	15.41	10.59	15.16	17.78	17.29	18.67
27	19.12	24.10	30.29	27.39	18.86	14.80	15.05	9.11	15.33	17.85	17.31	18.69
28	19.25	24.43	30.40	27.11	18.74	14.70	14.54	9.49	15.59	17.72	17.36	18.76
29	19.37	24.85	30.53	26.59	---	14.69	14.20	10.26	15.83	17.69	17.38	18.96
30	19.46	24.98	30.81	26.30	---	14.68	14.38	10.67	16.00	17.57	17.63	19.19
31	19.64	---	30.97	26.04	---	14.68	---	10.75	---	17.53	17.94	---
MEAN	17.97	22.13	27.86	30.58	21.73	14.99	15.06	12.01	13.70	17.09	17.46	19.11
MAX	19.64	24.98	30.97	33.03	25.66	18.37	15.52	14.54	16.00	17.85	17.94	20.06
MIN	16.75	19.86	25.05	26.04	18.74	11.44	14.20	9.11	10.70	15.96	16.96	18.14



COUNTY--McDonald

WELL IDENTIFICATION NUMBER--363237094290901

LOCATION--T.21N., R.33W., 22aab, lat. 36°32'37", long. 94°29'9", at Noel Water Company, Noel.

FORMATIONS OPEN TO THE WELL--Swan Creek Member of the Colter Dolomite, Roubidoux Formation, and Gasconade Formation.

WELL CHARACTERISTICS--Drilled December 19, 1931, total depth 850 feet, 99 feet of 6-inch casing, open hole.  
DGLS Log Number: 3,451

INSTRUMENTATION--Digital recorder.

DATUM--830 feet above NGVD of 1929

Measuring point: Base of recorder platform, 1.7 feet above land surface.

REMARKS--Several months missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--December 11, 1984, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	223.40	231.62	227.54	229.43	224.51	229.58	233.14	---	---	---
2	---	---	224.34	225.87	228.62	231.18	223.55	231.62	232.75	---	---	---
3	---	---	226.46	224.42	227.60	230.67	227.98	232.88	226.02	---	---	---
4	---	---	228.56	---	220.65	223.11	230.76	234.37	224.09	---	---	---
5	---	---	229.75	---	218.40	220.75	232.10	234.13	228.10	---	---	---
6	---	---	230.33	---	222.07	224.14	233.25	227.31	230.37	---	---	---
7	---	---	227.10	---	225.36	225.73	232.37	224.96	232.25	---	---	---
8	---	---	220.52	---	227.58	227.09	225.46	227.80	234.69	---	---	---
9	---	227.10	223.91	---	228.79	229.70	222.90	229.87	233.25	---	---	---
10	---	227.89	226.78	---	228.33	227.15	225.88	231.75	226.14	---	---	---
11	---	222.36	228.81	233.23	221.33	219.88	227.81	234.02	223.92	---	---	---
12	---	217.64	230.92	234.88	219.08	218.39	228.66	233.13	227.69	---	---	---
13	---	220.69	232.85	234.23	222.69	223.17	230.72	226.74	230.68	---	---	---
14	---	224.06	227.70	226.49	225.28	224.19	230.37	224.58	232.82	---	---	---
15	---	226.36	223.19	222.66	227.05	228.03	223.39	228.28	234.59	---	---	---
16	---	228.03	225.99	225.34	229.11	231.07	218.43	230.82	234.91	---	---	---
17	---	228.99	228.66	227.34	228.84	230.60	218.82	232.74	228.20	---	---	---
18	---	223.12	231.92	229.49	222.27	223.75	223.73	234.29	226.15	---	---	---
19	---	221.97	235.19	230.58	220.52	222.19	226.53	235.68	230.09	---	---	---
20	---	225.37	231.61	229.38	224.29	226.45	228.97	234.82	233.85	---	---	---
21	---	226.55	227.38	222.38	226.72	227.68	228.65	230.54	239.10	---	---	---
22	---	220.96	224.05	220.31	228.11	228.92	221.79	233.26	237.31	---	---	---
23	---	220.27	221.78	223.67	230.28	231.06	218.27	235.44	235.85	---	---	---
24	---	214.06	224.54	226.20	230.15	228.40	225.05	237.13	228.76	---	---	---
25	---	217.96	229.01	228.15	222.70	221.07	228.44	239.05	227.19	---	---	---
26	---	221.49	230.75	229.35	220.08	219.80	230.56	238.16	231.01	---	---	---
27	---	224.08	224.37	228.84	224.15	224.37	231.86	230.55	233.66	---	---	---
28	---	226.01	218.74	221.28	227.13	227.15	233.20	224.62	235.66	---	---	---
29	---	227.70	217.70	218.84	---	229.11	229.92	223.29	237.74	---	---	---
30	---	228.05	224.45	222.79	---	231.05	226.77	227.06	239.15	---	---	---
31	---	---	229.46	225.65	---	231.44	---	230.37	---	---	---	---
MEAN	---	---	226.78	---	225.17	226.35	227.02	231.25	231.64	---	---	---
MAX	---	---	235.19	---	230.28	231.44	233.25	239.05	239.15	---	---	---
MIN	---	---	217.70	---	218.40	218.39	218.27	223.29	223.92	---	---	---

COUNTY--McDonald

WELL IDENTIFICATION NUMBER--364317094421701

LOCATION--T.23N., R.30W., 18aad, lat. 36°43'17", long. 39°50'43", 0.2 mile south of Longview, State Highway 76 at Missouri Highway Department.

FORMATIONS OPEN TO THE WELL--Keokuk Limestone, Burlington Limestone, Reeds Spring Formation, Northview Formation, and Compton Formation.

WELL CHARACTERISTICS--Drilled December 31, 1955, total depth 346 feet, 44 feet of 8-inch casing, open.  
DGLS Log Number: 14,147

INSTRUMENTATION--Graphic recorder, installed January 3, 1956.

DATUM--1,290 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.2 feet above land surface.

PERIOD OF PROCESSED RECORD--June 6, 1984, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	162.95	162.84	162.91	165.29	165.39	164.44	162.57	162.40	160.64	161.13	161.31	163.32
2	163.07	162.80	162.94	165.51	165.32	164.15	162.74	162.18	160.66	160.92	161.41	163.54
3	163.23	162.60	163.05	165.49	165.36	164.20	162.74	161.87	160.76	160.71	161.51	163.41
4	163.30	162.31	162.58	165.37	165.73	164.20	162.50	161.84	160.75	160.63	161.60	163.41
5	163.03	162.17	162.47	165.37	165.53	164.21	162.46	161.78	160.56	160.55	161.83	163.18
6	163.03	162.33	162.60	165.36	165.23	164.36	162.62	161.85	160.54	160.48	162.02	162.85
7	163.28	162.31	162.97	165.24	165.25	164.30	162.71	161.68	160.60	160.38	162.02	162.72
8	163.24	162.34	163.25	165.52	164.98	164.15	162.68	161.48	160.71	160.32	161.96	162.66
9	163.11	162.41	163.61	165.23	164.88	164.06	162.49	161.47	160.84	160.07	162.09	162.64
10	163.13	162.40	163.84	165.18	164.88	163.88	162.49	161.63	160.89	159.96	162.11	162.66
11	163.08	162.39	164.50	165.60	164.93	163.61	162.78	161.43	160.85	159.87	162.26	162.76
12	163.15	162.42	164.80	166.22	164.80	163.53	162.72	161.21	160.70	159.87	162.40	162.79
13	163.28	162.26	164.63	166.30	164.66	163.48	162.45	161.42	160.63	159.76	162.51	162.76
14	163.20	162.12	164.70	165.49	164.71	163.08	162.43	161.34	160.70	159.52	162.66	162.69
15	163.07	162.28	164.58	165.81	164.50	163.15	162.36	161.19	160.71	159.42	162.75	162.67
16	163.08	162.67	164.64	166.06	164.85	163.37	162.31	161.16	160.71	159.56	162.73	162.60
17	163.35	162.78	164.58	165.94	165.05	163.75	162.55	161.42	160.82	159.55	162.86	162.79
18	163.55	163.06	164.52	165.84	164.82	163.58	162.70	161.29	160.95	159.56	163.31	162.74
19	163.41	163.16	165.12	165.30	164.85	163.67	162.56	161.00	160.92	159.44	163.17	162.91
20	163.18	163.11	165.46	165.00	164.81	163.52	162.47	160.96	161.04	159.81	163.11	163.03
21	163.13	163.14	165.93	165.68	164.45	163.11	162.47	161.17	161.38	160.48	163.29	162.96
22	163.25	162.95	166.15	165.98	164.06	162.97	162.41	161.23	161.21	160.56	163.35	162.94
23	163.27	163.18	166.02	165.91	164.44	163.32	162.30	161.02	161.18	160.70	163.25	163.00
24	163.34	162.82	165.57	165.98	164.71	163.27	162.38	160.90	161.19	160.75	163.26	162.90
25	163.36	162.58	165.34	165.81	164.84	163.21	162.56	160.80	161.30	160.79	163.36	162.66
26	163.29	162.70	165.44	165.62	164.62	163.12	162.44	160.83	161.32	160.85	163.50	162.66
27	163.35	162.54	165.48	165.42	164.55	162.93	162.26	160.80	161.28	160.92	163.52	163.25
28	163.31	163.08	165.28	166.11	164.58	162.62	162.24	160.84	161.25	161.00	163.33	163.16
29	163.22	163.25	164.96	165.64	---	162.52	162.21	160.85	161.25	161.01	163.12	163.13
30	163.11	163.07	164.97	165.93	---	162.51	162.46	160.75	161.21	161.11	163.20	163.11
31	163.02	---	165.02	165.77	---	162.58	---	160.71	---	161.23	163.19	---
MEAN	163.21	162.67	164.45	165.64	164.88	163.51	162.50	161.31	160.92	160.35	162.64	162.93
MAX	163.55	163.25	166.15	166.30	165.73	164.44	162.78	162.40	161.38	161.23	163.52	163.54
MIN	162.95	162.12	162.47	165.00	164.06	162.51	162.21	160.71	160.54	159.42	161.31	162.60

COUNTY--Lawrence

WELL IDENTIFICATION NUMBER--365645093431601

LOCATION--T.26N., R.26W., 24dac, lat. 36°56'45", long. 93°43'16", 0.8 miles south of Aurora, Highway 39 at Watch Tower.

FORMATIONS OPEN TO THE WELL--Mississippian Residuum, Pierson Formation, Northview Formation, Compton Formation, Cotter Dolomite, Jefferson City Dolomite, Roubidoux Formation, Upper Gasconade Formation, Lower Gasconade Formation, Gunter Sandstone Member of Gasconade Formation, and Eminence Dolomite.

WELL CHARACTERISTICS--Total depth 1,425 feet, 195 feet of 16-inch casing, 572 feet of 12-inch casing.

INSTRUMENTATION--Graphic recorder.

DATUM--1,460 feet above NGVD of 1929.

Measuring point: Recorder shelf, 3.5 feet above land surface.

REMARKS--Reflects earthquake effects, near the Ritchey Fault.

PERIOD OF PROCESSED RECORD--October 1, 1988, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	107.72	109.72	112.42	115.97	116.19	108.79	96.03	93.77	85.99	85.09	87.56	89.88
2	107.93	109.59	112.60	115.93	116.17	108.32	95.93	93.69	85.73	85.12	87.69	90.04
3	108.04	109.59	112.78	115.97	116.04	107.97	95.64	93.46	85.61	85.23	87.77	90.16
4	108.08	109.65	112.96	116.23	116.00	107.63	95.31	93.16	85.47	85.33	87.85	90.27
5	108.05	109.58	113.14	116.29	115.78	107.25	95.25	92.84	85.17	85.41	88.04	89.98
6	108.17	109.43	113.32	116.40	115.55	106.87	95.28	92.50	85.10	85.52	88.18	89.70
7	108.35	109.53	113.56	116.41	115.44	106.52	95.20	92.21	85.16	85.53	88.08	89.74
8	108.33	109.85	113.70	116.40	115.11	106.06	95.08	91.98	85.08	85.61	87.75	89.84
9	108.37	109.97	113.72	116.66	114.93	105.63	94.95	91.71	85.11	85.71	87.82	89.92
10	108.46	110.06	113.70	116.74	114.65	105.23	94.88	91.65	85.12	85.79	87.93	90.06
11	108.42	110.13	113.78	116.91	114.41	104.72	94.91	91.51	85.01	85.77	88.03	90.16
12	108.57	110.27	114.06	117.12	114.03	104.34	94.75	91.21	84.94	85.86	88.03	90.20
13	108.68	110.27	113.99	117.12	113.72	103.72	94.48	91.27	84.88	85.94	88.20	90.25
14	108.70	110.30	114.12	117.11	113.51	102.89	94.39	91.15	84.88	86.02	88.27	90.30
15	108.73	110.44	114.13	117.32	113.15	102.24	94.26	90.89	84.85	86.08	88.33	90.35
16	108.87	110.71	114.41	117.40	113.08	101.36	94.13	90.74	84.84	86.22	88.39	90.45
17	109.11	110.72	114.43	117.46	112.72	100.64	94.25	90.66	84.91	86.33	88.46	90.63
18	109.26	110.91	114.46	117.66	112.19	100.10	94.21	90.22	84.95	86.44	88.52	90.64
19	109.29	110.96	114.57	117.43	111.91	99.81	94.05	89.66	84.86	86.51	88.60	90.74
20	109.27	110.97	114.71	117.38	111.53	99.41	93.95	89.41	84.94	86.52	88.69	90.86
21	109.28	111.10	114.75	117.35	111.00	98.72	93.93	89.23	85.08	86.52	88.84	90.80
22	109.46	111.17	115.09	117.14	110.51	98.46	93.86	88.95	85.00	86.66	88.99	90.98
23	109.62	111.41	115.14	116.82	110.43	98.32	93.73	88.55	84.98	86.87	89.04	91.11
24	109.70	111.38	115.12	116.71	110.34	98.04	93.73	88.28	85.04	86.90	89.15	91.12
25	109.81	111.38	115.19	116.82	110.06	97.79	93.80	88.00	85.04	86.93	89.25	91.05
26	109.89	111.62	115.27	116.64	109.62	97.63	93.71	87.90	85.06	87.04	89.37	91.14
27	109.96	111.70	115.41	116.61	109.40	97.35	93.57	87.54	85.02	87.10	89.45	91.23
28	110.01	111.88	115.44	116.62	109.16	97.01	93.55	87.20	85.01	87.17	89.50	91.38
29	110.08	112.06	115.53	116.35	---	96.77	93.49	86.95	85.07	87.28	89.60	91.45
30	110.09	112.24	115.63	116.38	---	96.54	93.73	86.66	85.14	87.41	89.72	91.56
31	109.85	---	115.77	116.36	---	96.33	---	86.34	---	87.54	89.80	---
MEAN	108.97	110.62	114.29	116.76	113.09	102.01	94.47	90.30	85.10	86.24	88.55	90.53
MAX	110.09	112.24	115.77	117.66	116.19	108.79	96.03	93.77	85.99	87.54	89.80	91.56
MIN	107.72	109.43	112.42	115.93	109.16	96.33	93.49	86.34	84.84	85.09	87.56	89.70

COUNTY--Greene

WELL IDENTIFICATION NUMBER--371250093140101

LOCATION--T.29N., R.21W., 16dccc, lat. 37°12'50", long. 93°14'01", from 65 Bypass and Chestnut Expressway in Springfield, go west approximately 0.25 mile to Belcrest Street, go north 0.10 mile, well is on east side of Belcrest Street in City Utilities fenced property.

FORMATIONS OPEN TO THE WELL--Keokuk Limestone, Burlington Limestone, and Reeds Spring Formation.

WELL CHARACTERISTICS--Total depth 209 feet, 50 feet of casing.

INSTRUMENTATION--Digital recorder.

DATUM--1,360 feet above NGVD of 1929.

Measuring point: Recorder shelf, 3.5 feet above land surface.

PERIOD OF RECORD--October 20, 1989, to present.

REMARKS--October 20-31, 1989, not published because of recovery from pump test.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	87.09	85.77	85.53	84.84	84.85	84.05	84.17	83.68	84.04	84.36	84.43
2	---	86.88	85.78	85.56	84.82	84.83	84.05	84.22	83.68	84.04	84.37	84.46
3	---	86.73	85.82	85.56	84.81	84.78	84.07	84.16	83.71	84.04	84.38	84.49
4	---	86.53	85.81	85.52	84.81	84.75	84.07	83.99	83.76	84.05	84.38	84.52
5	---	86.34	85.73	85.52	84.84	84.72	84.07	83.97	83.79	84.07	84.38	84.55
6	---	86.23	85.64	85.52	84.84	84.71	84.07	83.98	83.79	84.09	84.41	84.55
7	---	86.12	85.63	85.53	84.84	84.71	84.14	83.98	83.79	84.13	84.46	84.54
8	---	86.01	85.67	85.51	84.83	84.76	84.18	83.99	83.82	84.15	84.47	84.52
9	---	85.95	85.69	85.44	84.79	84.85	84.19	83.99	83.87	84.18	84.48	84.50
10	---	85.91	85.64	85.43	84.76	84.85	84.18	83.98	83.93	84.20	84.48	84.50
11	---	85.90	85.59	85.43	84.74	84.82	84.17	84.01	83.99	84.21	84.48	84.50
12	---	85.90	85.61	85.46	84.74	84.74	84.21	84.01	84.00	84.22	84.48	84.50
13	---	85.89	85.63	85.53	84.71	84.71	84.22	83.98	84.00	84.22	84.46	84.51
14	---	85.82	85.63	85.54	84.71	84.48	84.22	84.00	84.00	84.22	84.46	84.51
15	---	85.76	85.61	85.53	84.65	83.81	84.20	83.96	84.00	84.22	84.46	84.51
16	---	85.74	85.66	85.53	84.56	83.70	84.17	83.76	83.95	84.22	84.47	84.51
17	---	85.76	85.69	85.44	84.61	83.70	84.16	83.61	83.93	84.25	84.47	84.51
18	---	85.77	85.69	85.37	84.66	83.75	84.18	83.66	83.94	84.28	84.46	84.54
19	---	85.79	85.69	85.32	84.68	83.84	84.22	83.66	83.96	84.29	84.45	84.54
20	---	85.79	85.70	85.09	84.74	83.94	84.23	83.62	83.95	84.29	84.39	84.54
21	---	85.79	85.74	85.00	84.76	83.97	84.23	83.43	83.95	84.29	84.39	84.50
22	---	85.75	85.86	84.95	84.67	83.97	84.23	83.41	83.94	84.27	84.39	84.43
23	---	85.75	85.95	84.88	84.60	84.01	84.22	83.49	83.93	84.27	84.39	84.42
24	---	85.75	85.95	84.81	84.60	84.07	84.19	83.54	83.93	84.27	84.38	84.44
25	---	85.70	85.88	84.77	84.71	84.16	84.18	83.56	83.93	84.28	84.38	84.45
26	---	85.65	85.79	84.78	84.77	84.19	84.18	83.56	83.95	84.31	84.39	84.43
27	---	85.59	85.72	84.78	84.79	84.21	84.17	83.57	83.95	84.32	84.40	84.43
28	---	85.59	85.69	84.83	84.82	84.21	84.12	83.57	83.96	84.33	84.40	84.42
29	---	85.70	85.60	84.85	---	84.16	84.08	83.60	83.97	84.33	84.40	84.43
30	---	85.76	85.56	84.84	---	84.09	84.09	83.64	84.01	84.33	84.40	84.46
31	---	---	85.54	84.84	---	84.06	---	83.66	---	84.34	84.41	---
MEAN	---	85.96	85.71	85.25	84.74	84.34	84.16	83.80	83.90	84.22	84.42	84.49
MAX	---	87.09	85.95	85.56	84.84	84.85	84.23	84.22	84.01	84.34	84.48	84.55
MIN	---	85.59	85.54	84.77	84.56	83.70	84.05	83.41	83.68	84.04	84.36	84.42

COUNTY--Greene

WELL IDENTIFICATION NUMBER--371321093201401

LOCATION--T.29N., R.22W., 16acb, lat. 37°13'21", long. 93°20'14", from Highway 13 in Springfield, take Calhoun Street west for 1.4 miles, Bissett School is on south side of road, 3014 West Calhoun.

FORMATIONS OPEN TO THE WELL--Cotter Dolomite, Jefferson City Dolomite, and Roubidoux Formation.

WELL CHARACTERISTICS--Drilled January 1950, total depth 825 feet, 21 feet of 12-inch casing and 400 feet of 6-inch casing.

INSTRUMENTATION--Digital recorder.

DATUM--1,286 feet above NGVD of 1929.

Measuring point: Top of casing, 4.0 feet above land surface.

PERIOD OF RECORD--June 28, 1989, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	336.12	336.43	334.05	340.99	340.66	335.68	319.03	308.14	296.70	295.11	303.67	313.87
2	336.32	336.43	334.14	341.09	340.69	335.26	318.61	307.88	296.30	295.29	304.10	314.33
3	336.57	336.25	334.29	341.13	340.64	335.06	318.03	307.53	295.90	295.55	304.46	314.75
4	336.61	335.94	334.00	341.39	340.69	334.84	317.33	307.28	295.50	295.87	304.81	315.25
5	336.49	335.73	334.03	341.59	340.58	334.67	316.89	307.05	295.10	296.17	305.28	315.49
6	336.63	335.72	334.35	341.74	340.34	334.56	316.58	306.67	294.82	296.45	305.66	316.02
7	336.82	335.50	334.81	341.71	340.27	334.36	316.20	306.24	294.66	296.64	306.02	316.37
8	336.76	335.40	335.05	341.63	339.97	334.07	315.73	305.83	294.52	296.88	306.35	316.64
9	336.69	335.37	335.02	341.80	339.83	333.88	315.15	305.39	294.47	297.09	306.73	316.90
10	336.76	335.35	335.11	341.99	339.76	333.58	314.74	305.27	294.40	297.27	307.10	317.12
11	336.73	335.27	335.63	342.06	339.72	333.19	314.52	304.96	294.24	297.43	307.42	317.34
12	336.81	335.24	335.81	342.31	339.53	332.91	314.08	304.47	294.03	297.65	307.66	317.50
13	336.85	335.07	335.95	342.28	339.28	332.51	313.54	304.41	293.94	297.89	307.98	317.64
14	335.90	334.87	336.19	342.06	339.19	331.79	313.16	304.11	294.02	297.98	308.27	317.77
15	335.51	334.87	336.61	342.19	338.90	331.33	312.70	303.67	294.06	298.14	308.53	317.93
16	335.38	335.02	336.92	342.23	339.03	330.74	312.26	303.30	294.09	298.44	308.74	318.09
17	336.09	334.83	337.08	342.17	339.01	329.99	312.13	303.17	294.23	298.67	308.94	318.39
18	336.60	334.89	337.31	342.47	338.57	329.26	311.82	302.67	294.37	298.91	309.19	318.48
19	336.56	334.75	337.63	342.22	338.39	328.63	311.35	301.91	294.27	299.13	309.40	318.62
20	336.38	334.58	337.85	342.08	338.10	327.74	310.94	301.50	294.30	299.39	309.67	318.83
21	336.20	334.51	338.37	342.14	337.52	326.65	310.58	301.00	294.41	299.64	310.07	319.00
22	336.24	334.47	338.81	341.97	336.87	325.84	310.17	300.50	294.40	299.98	310.32	319.28
23	336.30	334.59	339.00	341.56	336.85	325.32	309.79	300.10	294.44	300.30	310.55	319.54
24	336.38	334.28	338.93	341.36	336.87	324.58	309.53	299.90	294.48	300.57	310.90	319.59
25	336.48	334.03	339.02	341.39	336.77	323.88	309.35	299.50	294.54	300.92	311.26	319.54
26	336.51	334.02	339.32	341.22	336.36	323.18	309.03	299.10	294.56	301.30	311.63	319.69
27	336.51	333.78	339.62	341.10	336.20	322.41	308.66	298.70	294.59	301.60	311.92	319.86
28	336.47	334.19	339.92	341.18	336.01	321.57	308.42	298.30	294.63	301.91	312.23	320.06
29	336.40	334.27	340.09	340.88	---	320.86	308.18	297.90	294.78	302.34	312.58	320.26
30	336.37	334.10	340.34	340.80	---	320.21	308.27	297.50	294.98	302.83	313.01	320.50
31	336.43	---	340.57	340.86	---	319.64	---	297.10	---	303.25	313.41	---
MEAN	336.42	334.99	336.96	341.66	338.81	329.30	312.89	302.94	294.66	298.73	308.64	317.82
MAX	336.85	336.43	340.57	342.47	340.69	335.68	319.03	308.14	296.70	303.25	313.41	320.50
MIN	335.38	333.78	334.00	340.80	336.01	319.64	308.18	297.10	293.94	295.11	303.67	313.87



COUNTY--Greene

WELL IDENTIFICATION NUMBER--370702093173001

LOCATION--T.28N., R.22W., 13bdc, lat. 37°07'02", long. 93°17'30", at Cherokee Junior High School, 0.25 mile east of Campbell Avenue (Route 160) in Springfield, north side of Plainview Road.

FORMATIONS OPEN TO THE WELL--Unknown.

WELL CHARACTERISTICS--Drilled June 1960, 21 feet of 10-inch casing, smaller casing unknown.

INSTRUMENTATION--Digital recorder, installed June 21, 1989.

DATUM--1,290 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 4.0 feet above land surface.

PERIOD OF RECORD--June 21, 1989, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	261.16	254.61	253.26	268.72	263.77	255.01	234.58	224.37	220.86	233.54	246.23	261.48
2	261.64	254.11	255.63	268.63	263.38	254.66	234.29	224.12	220.91	233.54	245.14	263.65
3	262.16	253.68	257.55	268.44	262.99	254.50	233.66	223.68	221.18	234.44	245.01	265.37
4	262.28	253.54	257.65	268.39	262.80	254.31	233.11	223.11	221.39	235.50	247.31	266.82
5	261.23	253.43	258.17	268.18	262.50	254.21	232.68	222.75	222.66	236.22	248.56	268.11
6	261.92	253.67	258.70	267.95	262.04	254.22	232.34	222.53	223.85	235.11	247.26	267.73
7	262.49	255.15	259.22	267.70	261.78	254.35	232.04	222.34	224.72	235.69	247.38	268.76
8	262.34	255.66	259.75	267.48	261.31	254.13	231.56	222.19	225.39	237.85	249.45	270.12
9	261.13	254.23	260.27	267.54	260.95	253.80	231.36	222.11	226.01	238.00	250.69	268.95
10	260.83	253.78	260.79	267.70	260.39	253.49	232.11	222.18	226.34	238.47	251.77	266.67
11	260.74	253.40	261.32	267.83	260.03	253.21	232.14	222.19	226.64	238.99	252.15	265.36
12	260.99	253.70	261.84	268.23	259.56	253.08	230.75	221.77	227.02	239.36	250.21	264.42
13	260.90	255.03	262.37	268.39	259.08	252.81	229.72	221.98	227.58	239.69	249.21	264.07
14	260.45	255.45	262.89	268.31	258.36	252.25	228.98	222.55	228.14	239.45	248.83	263.93
15	260.13	255.34	263.49	268.60	257.59	251.78	228.20	222.56	228.46	238.61	249.84	264.64
16	259.75	254.16	264.02	268.76	257.45	250.21	227.47	222.34	229.33	238.77	249.82	264.45
17	259.85	253.28	264.63	268.42	257.25	248.26	227.13	222.32	230.18	240.21	248.83	265.63
18	258.84	252.90	265.25	267.41	256.75	246.73	226.65	222.11	230.90	241.05	248.76	265.88
19	256.55	252.46	265.68	265.97	256.59	245.53	226.13	221.80	231.41	241.61	249.25	265.73
20	256.42	252.65	265.95	264.81	256.34	244.29	225.79	221.78	231.39	242.14	249.57	264.76
21	256.52	254.16	266.48	264.42	255.82	243.02	225.53	221.83	230.46	242.32	250.30	264.05
22	256.72	253.50	267.05	263.96	255.32	242.15	226.21	221.90	229.94	241.99	250.90	263.40
23	256.95	252.97	267.49	263.23	255.46	241.52	226.31	222.21	229.64	241.86	251.34	263.19
24	257.09	252.33	267.63	264.07	255.63	240.64	226.55	222.06	229.88	242.30	252.00	262.90
25	257.24	251.86	267.73	264.96	255.67	239.84	226.74	221.48	231.16	243.58	252.50	262.69
26	257.27	251.69	268.01	264.78	255.37	239.07	226.76	221.36	230.62	244.01	253.21	264.37
27	257.40	251.36	268.27	264.66	255.29	238.23	226.51	221.15	230.08	242.90	253.71	265.40
28	257.13	251.72	268.47	264.73	255.23	237.34	225.34	221.07	230.04	242.65	254.44	265.93
29	256.94	251.81	268.49	264.35	---	236.52	224.75	220.98	231.73	242.75	255.13	266.04
30	256.55	252.10	268.52	264.18	---	235.80	224.59	220.98	233.53	243.20	256.71	264.95
31	255.28	---	268.47	264.14	---	235.21	---	220.91	---	245.13	258.78	---
MEAN	259.25	253.46	263.39	266.61	258.74	247.42	229.00	222.15	227.71	239.71	250.46	265.31
MAX	262.49	255.66	268.52	268.76	263.77	255.01	234.58	224.37	233.53	245.13	258.78	270.12
MIN	255.28	251.36	253.26	263.23	255.23	235.21	224.59	220.91	220.86	233.54	245.01	261.48

COUNTY--Greene

WELL IDENTIFICATION NUMBER--371605093184401

LOCATION--T.29N., R.22W., 3add, lat. 37°16'05", long. 93°18'44", take Old Highway 13 (FR 141) in Springfield, north 0.8 miles from I-44 to Pump Station Road, go north on Pump Station Road for 1,500 feet to Cinder Drive, go northeast on Cinder Drive to Fulbright Pumping Station.

FORMATIONS OPEN TO THE WELL--Burlington Formation, Reeds Spring Formation, and Pierson Formation.

WELL CHARACTERISTICS--Total depth 183 feet, 50 feet of casing.

INSTRUMENTATION--Digital recorder.

DATUM--1,190 feet above NGVD of 1929.

Measuring point: Recorder shelf, 3.1 feet above land surface.

PERIOD OF RECORD--October 18, 1989, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	68.48	69.21	68.16	65.47	57.70	54.52	63.23	52.87	58.75	63.91	65.64
2	---	68.50	69.16	68.21	64.75	58.00	54.84	63.33	53.09	58.82	64.05	65.69
3	---	68.48	69.35	68.21	63.65	57.70	55.12	58.48	53.29	59.05	64.20	65.74
4	---	68.40	69.48	68.26	62.90	57.43	55.38	53.46	53.41	59.36	64.35	65.79
5	---	68.36	69.57	68.27	61.94	57.34	55.69	53.01	53.72	59.90	64.43	65.80
6	---	68.44	69.61	68.20	60.97	57.63	56.66	52.85	54.10	60.01	64.40	65.84
7	---	68.46	69.66	68.15	60.65	57.38	57.67	52.97	54.42	59.99	64.41	65.98
8	---	68.48	69.62	68.10	60.52	55.11	58.48	53.27	54.69	60.07	64.92	66.06
9	---	68.57	69.49	68.10	60.65	54.53	59.44	53.67	54.87	60.28	65.39	66.12
10	---	68.79	69.37	68.22	59.65	54.43	59.98	53.87	54.98	60.51	65.68	66.16
11	---	69.05	69.38	68.23	58.60	54.46	59.74	54.29	55.08	60.74	65.86	66.19
12	---	69.14	69.44	68.28	58.44	54.18	59.07	54.48	55.15	60.67	65.99	66.21
13	---	69.24	69.45	68.31	59.11	54.04	58.90	54.65	55.30	60.78	66.08	66.23
14	---	69.32	69.46	68.22	59.90	52.59	58.95	54.79	55.65	60.87	66.08	66.25
15	---	69.39	69.48	68.20	59.03	50.09	58.61	54.05	56.18	60.98	66.10	66.27
16	---	69.41	69.58	68.16	55.49	49.64	57.60	52.33	56.74	61.07	65.71	66.30
17	---	69.33	69.64	67.58	55.21	50.23	56.98	50.17	57.30	61.17	65.34	66.35
18	---	69.24	69.66	65.32	55.09	50.87	57.14	50.03	57.80	61.30	65.14	66.41
19	68.33	69.11	69.62	65.57	55.16	51.74	57.82	50.09	58.15	61.52	65.08	66.42
20	68.39	69.02	69.54	62.99	55.41	52.49	58.64	50.01	58.49	61.77	65.07	66.44
21	68.38	68.97	69.55	61.36	55.68	53.24	59.48	49.84	58.82	62.00	65.04	66.42
22	68.41	68.92	69.62	61.61	55.91	53.83	60.28	50.00	58.76	62.23	65.03	66.27
23	68.45	69.07	69.62	62.11	55.95	54.17	60.99	50.40	58.68	62.33	65.06	66.18
24	68.48	69.28	69.64	62.77	55.91	54.67	61.51	51.13	58.67	62.49	65.10	66.20
25	68.50	69.39	69.67	63.41	55.95	55.08	61.93	52.04	58.71	62.66	65.18	66.20
26	68.50	69.43	69.43	63.97	56.03	55.48	62.35	52.72	58.46	62.80	65.35	66.20
27	68.51	69.41	68.31	64.33	56.17	56.60	62.66	52.77	58.59	63.01	65.45	66.21
28	68.52	69.46	67.88	64.63	56.71	57.08	62.83	52.12	58.94	63.37	65.47	66.24
29	68.48	69.44	67.88	64.78	---	54.85	63.10	51.72	59.11	63.64	65.50	66.25
30	68.45	69.32	67.97	64.99	---	54.42	63.21	52.03	58.96	63.79	65.55	66.27
31	68.47	---	68.08	65.26	---	54.37	---	52.51	---	63.85	65.58	---
MEAN	---	69.00	69.27	66.19	58.60	54.56	58.99	53.24	56.43	61.28	65.18	66.14
MAX	---	69.46	69.67	68.31	65.47	58.00	63.21	63.33	59.11	63.85	66.10	66.44
MIN	---	68.36	67.88	61.36	55.09	49.64	54.52	49.84	52.87	58.75	63.91	65.64

COUNTY--Greene

WELL IDENTIFICATION NUMBER--370826093184701

LOCATION--T.28N., R.22W., 11cbc, lat. 37°08'26", long. 93°18'47", from Kansas Expressway and Battlefield in Springfield, go south on Kansas Expressway to Erie Street, east on Erie Street to Kansas Street, south on Kansas Street to water tower on east side of street. Well is next to water tower.

FORMATIONS OPEN TO THE WELL--Keokuk Limestone, Burlington Limestone, and Reeds Spring Formation.

WELL CHARACTERISTICS--Total depth 305 feet, 20 feet of casing.

INSTRUMENTATION--Digital recorder.

DATUM--1,281 feet above NGVD of 1929.

Measuring point: Recorder shelf, 3.0 feet above land surface.

PERIOD OF RECORD--October 23, 1989, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	32.46	35.37	35.99	22.09	14.51	14.47	28.33	8.39	27.56	34.49	37.62
2	---	32.63	35.39	35.95	16.92	14.24	15.05	29.04	10.42	28.43	34.71	37.75
3	---	32.74	35.43	35.88	17.78	14.17	15.96	20.53	12.10	29.27	34.91	37.85
4	---	32.86	35.41	35.58	17.79	14.32	16.60	8.88	13.15	30.06	35.09	37.95
5	---	32.99	35.39	35.19	16.66	14.57	17.33	8.36	13.80	30.75	35.29	38.02
6	---	33.15	35.42	35.11	16.25	15.21	17.97	10.67	14.32	31.39	35.47	38.05
7	---	33.24	35.50	35.09	17.16	13.67	18.60	12.27	14.97	31.96	35.61	38.08
8	---	33.33	35.54	35.09	17.99	12.10	19.10	13.24	15.85	32.38	35.69	36.66
9	---	33.45	35.52	35.11	15.58	12.33	19.54	13.94	15.37	32.72	35.79	35.19
10	---	33.60	35.51	35.18	13.85	12.90	18.78	14.62	15.99	33.14	35.92	35.25
11	---	33.74	35.65	35.23	14.11	13.12	18.74	15.94	16.81	33.39	36.03	35.37
12	---	33.82	35.79	35.34	14.46	8.40	19.64	14.59	17.47	33.45	36.12	35.31
13	---	33.88	35.90	35.36	15.06	8.68	20.13	15.04	18.12	33.61	36.48	35.44
14	---	33.97	36.05	35.30	16.98	4.31	19.04	16.73	18.79	33.59	36.80	35.63
15	---	34.09	36.14	35.35	11.04	3.75	19.07	12.13	19.30	33.68	36.86	35.83
16	---	34.21	36.22	35.38	7.67	4.36	19.33	5.90	19.82	33.89	35.61	36.01
17	---	34.25	36.30	31.40	9.45	5.15	19.63	4.62	20.32	34.12	34.99	36.21
18	---	34.35	36.35	27.21	11.33	6.30	19.93	5.38	21.14	34.32	35.14	36.34
19	---	34.43	36.35	24.11	12.51	8.06	20.16	5.34	21.76	34.32	35.42	36.25
20	---	34.48	36.29	10.77	13.35	10.49	20.46	4.90	22.05	33.77	35.73	36.28
21	---	34.56	36.25	12.26	13.80	11.93	20.79	3.80	22.79	32.90	36.00	33.81
22	---	34.67	36.21	13.68	13.62	12.87	21.38	4.37	20.59	32.33	36.20	27.38
23	---	34.82	36.14	14.45	13.59	13.66	22.01	5.23	20.90	32.16	36.39	27.60
24	32.08	34.86	36.05	15.78	13.68	13.95	22.61	6.49	22.64	32.20	36.58	28.71
25	31.52	34.91	35.98	17.73	13.95	14.37	23.23	8.54	23.89	32.42	36.74	29.76
26	31.50	35.00	35.97	19.12	14.16	15.03	23.90	9.73	24.13	32.73	36.89	30.77
27	31.63	35.03	36.03	19.24	14.50	16.09	25.01	7.15	23.77	33.05	37.03	31.63
28	31.82	35.18	36.10	19.66	14.65	14.93	25.94	6.58	24.57	33.36	37.14	32.33
29	32.04	35.32	36.09	20.50	---	13.96	26.76	8.15	25.59	33.66	37.27	32.89
30	32.23	35.35	36.04	21.54	---	13.98	27.57	10.57	26.62	33.96	37.39	33.18
31	32.36	---	35.99	22.61	---	14.18	---	9.35	---	34.24	37.50	---
MEAN	---	34.05	35.88	27.62	14.64	11.79	20.29	10.98	18.85	32.54	36.04	34.64
MAX	---	35.35	36.35	35.99	22.09	16.09	27.57	29.04	26.62	34.32	37.50	38.08
MIN	---	32.46	35.37	10.77	7.67	3.75	14.47	3.80	8.39	27.56	34.49	27.38

COUNTY--Greene

WELL IDENTIFICATION NUMBER--371240093174501

LOCATION--T.29N., R.22W., 14ddd, lat. 37°12'40", long. 93°17'45", from Chestnut Expressway and Main Street in Springfield, go south on Main Street to the intersection of Wall Street, well is on east side of Main Street, behind City Utilities meter center.

FORMATIONS OPEN TO THE WELL--Burlington Limestone.

WELL CHARACTERISTICS--Total depth 100 feet, 20 feet of casing.

INSTRUMENTATION--Digital recorder.

DATUM--1,268 feet above NGVD of 1929.

Measuring point: Recorder shelf, 3.3 feet above land surface.

PERIOD OF RECORD--October 17, 1989, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	10.11	11.14	10.45	8.80	8.17	7.79	8.48	5.85	7.90	8.71	8.26
2	---	10.23	11.17	10.51	8.26	8.03	7.94	8.51	6.10	7.97	8.76	8.35
3	---	10.31	11.19	10.40	8.45	8.13	8.04	6.92	6.42	8.03	8.78	8.37
4	---	10.37	11.11	9.79	8.40	8.22	8.13	5.38	6.72	8.14	8.72	8.31
5	---	10.46	11.08	9.89	8.26	8.26	8.24	5.86	6.95	8.07	8.80	8.28
6	---	10.51	11.15	10.02	8.26	8.31	8.35	6.37	7.18	8.12	8.84	8.39
7	---	10.51	11.21	10.13	8.36	7.70	8.47	6.76	7.40	8.08	8.87	8.51
8	---	10.58	11.20	10.16	8.44	7.46	8.56	7.09	7.52	8.20	8.93	8.20
9	---	10.64	11.08	10.20	8.18	7.59	8.62	7.36	7.56	8.29	9.00	8.37
10	---	10.69	11.03	10.24	8.20	7.75	7.85	7.65	7.71	8.32	9.04	8.49
11	---	10.75	11.03	10.29	8.33	7.76	8.00	7.82	7.84	8.22	9.00	8.30
12	---	10.81	11.06	10.36	8.42	6.84	8.14	7.06	7.97	8.10	8.88	8.35
13	---	10.79	11.11	10.39	8.51	6.92	8.17	7.12	8.09	7.80	8.56	8.44
14	---	10.80	11.13	10.40	8.62	2.64	7.83	7.30	8.12	7.70	8.61	8.50
15	---	10.82	11.05	10.47	7.32	1.81	7.91	5.92	8.11	7.78	8.43	8.63
16	---	10.85	10.98	10.37	7.27	3.61	7.85	2.99	8.14	7.89	7.96	8.75
17	---	10.86	10.96	8.38	7.72	4.78	7.51	3.00	8.31	7.98	8.05	8.81
18	10.07	10.94	10.85	8.64	7.96	5.58	7.57	4.41	8.29	8.05	8.16	8.51
19	10.11	10.99	10.77	8.02	8.17	6.16	7.65	4.76	7.93	8.13	7.99	8.41
20	10.14	10.96	10.75	7.24	8.32	6.59	7.68	4.93	7.80	8.23	7.27	8.39
21	10.21	10.93	10.80	7.96	8.42	6.91	7.78	2.53	7.71	8.43	7.61	7.14
22	10.31	10.87	10.86	8.30	8.04	7.21	7.91	3.68	6.91	8.36	7.74	7.09
23	10.34	10.94	10.88	8.50	7.97	7.52	7.99	4.48	7.15	8.39	7.83	7.53
24	10.36	10.99	10.87	8.67	8.12	7.63	8.09	5.08	7.44	8.46	7.90	7.73
25	10.37	11.02	10.82	8.87	8.26	7.77	8.21	5.59	7.58	8.54	7.95	7.86
26	10.39	11.07	10.70	8.98	8.32	7.84	8.24	5.69	7.33	8.41	8.03	7.99
27	10.43	11.02	10.66	9.11	8.43	7.95	8.22	5.32	7.23	8.44	8.06	8.09
28	10.47	11.06	10.69	9.24	8.37	7.50	8.18	5.36	7.39	8.54	8.08	8.13
29	10.53	11.11	10.35	9.28	---	7.40	8.29	5.70	7.59	8.61	8.10	8.25
30	10.22	11.12	10.18	9.36	---	7.50	8.42	5.94	7.77	8.64	8.13	8.22
31	9.97	---	10.29	9.45	---	7.64	---	5.73	---	8.66	8.14	---
MEAN	---	10.77	10.91	9.49	8.22	6.94	8.05	5.83	7.47	8.21	8.35	8.22
MAX	---	11.12	11.21	10.51	8.80	8.31	8.62	8.51	8.31	8.66	9.04	8.81
MIN	---	10.11	10.18	7.24	7.27	1.81	7.51	2.53	5.85	7.70	7.27	7.09

COUNTY--Greene

WELL IDENTIFICATION NUMBER--370912093231101

LOCATION--T.28N., R.22W., 7bbb, lat. 37°09'12", long. 93°23'11", from State Highway 13, U.S. 60-166 Highway and Haseltine Road in Springfield, go south on Haseltine Road to Walnut Lawn Road, go east on Walnut Lawn Road for 500 feet to City Utilities Substation, on south side of road.

FORMATIONS OPEN TO THE WELL--Keokuk Limestone, Burlington Limestone, and Elsey Formation.

WELL CHARACTERISTICS--Total depth 190 feet, 30 feet of casing.

INSTRUMENTATION--Digital recorder, installed March 8, 1990.

DATUM--1,250 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 3.0 feet above land surface.

PERIOD OF RECORD--March 8, 1990, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	111.61	112.45	110.96	112.12	122.17	123.97
2	---	---	---	---	---	---	111.65	112.52	111.02	112.20	122.32	124.12
3	---	---	---	---	---	---	111.69	111.12	111.17	112.26	122.41	124.19
4	---	---	---	---	---	---	111.73	107.41	111.30	112.32	120.87	124.29
5	---	---	---	---	---	---	111.77	110.09	111.42	112.36	120.97	123.64
6	---	---	---	---	---	---	111.80	110.96	111.53	112.39	122.28	124.44
7	---	---	---	---	---	---	111.83	111.24	111.59	112.35	122.60	124.34
8	---	---	---	---	---	---	111.87	111.43	111.63	112.58	122.88	114.39
9	---	---	---	---	---	111.38	111.92	111.55	111.49	112.65	123.25	118.44
10	---	---	---	---	---	111.49	111.80	111.63	111.49	112.77	123.36	120.66
11	---	---	---	---	---	111.55	111.84	111.70	111.59	112.89	123.02	119.01
12	---	---	---	---	---	110.92	111.89	111.57	111.66	112.84	121.45	119.74
13	---	---	---	---	---	110.82	111.93	111.59	111.71	112.52	119.01	121.31
14	---	---	---	---	---	99.24	111.81	111.67	111.77	112.76	121.36	122.49
15	---	---	---	---	---	98.34	111.82	107.09	111.80	113.07	120.43	123.08
16	---	---	---	---	---	104.45	111.82	102.12	111.83	113.89	114.57	123.38
17	---	---	---	---	---	107.90	111.82	103.02	111.95	114.62	119.71	123.59
18	---	---	---	---	---	109.97	111.86	107.16	112.02	115.64	121.35	121.18
19	---	---	---	---	---	110.59	111.88	107.98	111.90	116.94	122.07	119.68
20	---	---	---	---	---	110.96	111.92	108.17	111.90	118.36	113.46	121.77
21	---	---	---	---	---	111.23	111.95	101.87	111.90	119.05	117.70	114.46
22	---	---	---	---	---	111.38	112.01	105.28	111.67	116.31	120.48	111.95
23	---	---	---	---	---	111.51	112.08	108.67	111.69	116.02	121.49	112.61
24	---	---	---	---	---	111.58	112.14	110.46	111.78	118.74	122.14	114.93
25	---	---	---	---	---	111.65	112.20	110.91	111.86	120.04	122.65	118.27
26	---	---	---	---	---	111.71	112.22	111.07	111.87	118.06	122.92	120.28
27	---	---	---	---	---	111.75	112.24	108.68	111.87	116.82	122.94	121.44
28	---	---	---	---	---	111.65	112.20	109.56	111.87	119.93	122.74	121.92
29	---	---	---	---	---	111.57	112.30	110.69	111.94	121.13	123.28	122.19
30	---	---	---	---	---	111.55	112.38	110.99	112.05	121.64	123.53	118.96
31	---	---	---	---	---	111.56	---	110.98	---	121.95	123.58	---
MEAN	---	---	---	---	---	---	111.93	109.41	111.67	115.39	121.39	120.49
MAX	---	---	---	---	---	---	112.38	112.52	112.05	121.95	123.58	124.44
MIN	---	---	---	---	---	---	111.61	101.87	110.96	112.12	113.46	111.95



COUNTY--Greene

WELL IDENTIFICATION NUMBER--371233093212901

LOCATION--T.29N., R.22W., 20abc, lat. 37°12'33", long. 93°21'29", from west Chestnut Expressway and west 160 Bypass in Springfield, go west on Chetnut Expressway to Eldon Avenue, south on Eldon Avenue to Dover Street, east on Dover Street to Troy Avenue, south on Troy Avenue to White Pine Street, west on White Pine Street to York Avenue, north on York Avenue, well on east side of York Avenue, south of brick well house between gray and red brick houses.

FORMATIONS OPEN TO THE WELL--Keokuk Limestone, Burlington Limestone, Reeds Spring Formation, and Pierson Formation.

WELL CHARACTERISTICS--Total depth 260 feet, 20 feet of casing.

INSTRUMENTATION--Digital recorder.

DATUM--1,244 feet above NGVD of 1929.

Measuring point: Recorder shelf, 3.0 feet above land surface.

PERIOD OF RECORD--October 18, 1989, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	71.44	70.13	61.76	36.04	20.48	21.67	22.95	19.20	23.26	57.03	66.96
2	---	71.50	69.41	61.40	21.74	20.27	21.92	23.17	19.77	25.30	58.05	67.21
3	---	71.47	69.11	60.59	25.67	20.28	22.08	19.57	20.25	28.29	59.04	67.44
4	---	71.31	68.17	57.97	28.29	20.20	22.19	18.29	20.62	31.22	59.92	67.63
5	---	71.19	67.21	59.60	28.68	20.27	22.37	18.61	20.99	33.48	60.56	67.87
6	---	71.26	66.49	60.89	26.72	20.55	22.52	19.47	21.36	34.20	61.19	67.97
7	---	71.23	66.33	61.84	28.20	19.74	22.61	20.09	21.70	30.90	61.81	68.10
8	---	71.19	65.92	62.31	29.82	19.79	22.70	20.56	21.93	33.04	62.44	65.56
9	---	71.27	64.90	62.77	23.33	20.93	22.77	21.00	22.04	35.80	63.12	64.22
10	---	71.34	63.92	63.07	21.10	21.39	21.72	21.44	22.27	37.87	63.72	64.28
11	---	71.42	63.57	63.29	21.55	21.64	21.89	21.79	22.48	38.47	64.16	60.21
12	---	71.49	63.57	63.75	21.94	20.10	22.22	20.79	22.61	37.77	64.30	58.11
13	---	71.50	63.84	63.82	24.16	20.33	22.32	20.90	22.72	36.20	64.40	59.15
14	---	71.46	63.94	63.69	27.24	15.39	21.66	21.26	22.82	33.23	64.47	60.30
15	---	71.47	64.04	63.53	19.61	10.32	21.75	19.19	22.87	35.44	63.52	61.48
16	---	71.65	64.05	62.50	18.94	10.74	21.92	15.76	23.02	38.41	56.53	62.72
17	---	71.68	64.19	43.56	19.79	12.13	21.84	12.99	23.93	40.60	56.49	63.95
18	---	71.72	64.51	40.04	20.27	13.98	21.86	13.57	24.53	42.27	58.03	60.29
19	69.90	71.76	64.67	33.24	20.78	15.94	21.98	14.52	23.07	43.72	59.41	58.01
20	69.99	71.71	64.69	19.70	20.99	17.25	22.06	15.13	22.68	45.19	59.90	58.59
21	70.02	71.71	64.99	21.01	21.02	18.51	22.19	13.88	22.39	46.62	60.03	38.92
22	70.15	71.68	65.10	22.11	20.60	19.46	22.32	13.62	20.61	47.48	60.80	22.08
23	70.34	71.82	64.90	27.40	20.58	20.23	22.44	14.81	21.28	47.80	61.82	22.58
24	70.52	71.78	64.55	33.14	20.57	20.76	22.56	16.32	21.90	48.85	62.73	23.35
25	70.69	71.66	64.56	36.99	20.64	21.15	22.67	17.48	22.20	49.99	63.58	26.87
26	70.84	71.71	65.01	39.14	20.64	21.49	22.74	18.48	22.10	51.10	64.35	31.63
27	70.97	71.71	65.00	40.58	20.72	21.81	22.75	17.65	22.17	52.03	65.06	36.40
28	71.11	71.94	64.41	41.51	20.63	21.17	22.64	16.89	22.45	53.06	65.65	40.62
29	71.24	72.15	63.21	42.11	---	20.71	22.66	17.50	22.68	54.12	66.08	43.94
30	71.31	71.64	62.26	42.96	---	21.14	22.85	18.35	22.87	55.18	66.47	43.59
31	71.38	---	61.86	43.73	---	21.45	---	18.74	---	56.06	66.73	---
MEAN	---	71.56	65.11	49.03	23.22	19.02	22.26	18.22	22.05	40.87	61.98	53.33
MAX	---	72.15	70.13	63.82	36.04	21.81	22.85	23.17	24.53	56.06	66.73	68.10
MIN	---	71.19	61.86	19.70	18.94	10.32	21.66	12.99	19.20	23.26	56.49	22.08

COUNTY--Phelps

WELL IDENTIFICATION NUMBER--375625091480401

LOCATION--T.37N., R.8W., 10cca, lat. 37°56'25", long. 91°48'4", Rolla Inn (formerly Holiday Inn).

FORMATIONS OPEN TO THE WELL--Gunter Sandstone Member of the Gasconade Formation and Eminence Dolomite.

WELL CHARACTERISTICS--Drilled July 1, 1962, total depth 650 feet, 420 feet of 6-inch casing, open hole.

INSTRUMENTATION--Graphic recorder, installed January 2, 1968.

DATUM--975 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.8 feet above land surface.

REMARKS--Several months missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--November 7, 1983, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	186.65	---	---	186.81	179.62	176.95	173.92	172.78	170.98	173.26	176.15	176.44
2	187.80	---	---	185.73	179.65	178.08	173.25	172.03	171.19	174.78	175.22	177.49
3	187.74	---	---	184.92	179.12	178.34	173.08	171.88	172.46	175.30	174.76	176.77
4	186.87	---	---	185.63	178.98	177.37	172.80	173.43	172.39	174.95	175.97	176.41
5	188.03	---	---	185.27	179.63	176.50	172.85	174.23	171.57	175.74	175.30	177.78
6	188.04	---	---	---	179.08	175.94	173.54	173.50	171.12	176.55	174.32	178.45
7	187.48	---	---	---	178.87	175.89	173.32	172.21	171.39	175.22	175.25	179.67
8	188.12	---	---	---	178.33	177.16	172.83	172.11	172.97	175.11	175.61	179.78
9	186.89	---	---	---	179.14	177.22	172.10	173.23	173.79	176.15	174.86	179.21
10	186.73	---	---	---	178.92	176.36	171.80	173.59	173.20	175.60	174.53	179.97
11	187.90	---	---	---	178.54	175.90	172.08	172.94	172.04	174.98	174.88	179.94
12	187.32	---	---	---	178.29	175.29	173.23	172.10	171.62	175.99	175.52	179.32
13	187.56	---	---	---	179.11	175.05	173.39	172.09	173.18	175.89	175.97	180.27
14	187.53	---	---	---	179.40	175.97	172.86	172.46	173.71	175.41	176.00	180.17
15	187.51	---	---	---	178.98	176.32	172.86	172.43	173.16	176.10	175.21	179.29
16	187.60	---	---	---	178.70	175.83	171.87	171.68	172.53	176.15	174.84	179.92
17	188.01	---	---	---	179.39	175.53	171.90	171.29	172.60	175.15	174.32	179.53
18	186.97	---	---	---	---	175.02	173.41	171.27	173.86	175.78	174.54	178.96
19	187.66	---	---	---	---	174.63	173.82	172.73	173.74	176.47	175.10	180.04
20	187.27	---	---	---	---	175.83	173.33	173.29	173.02	175.50	175.97	180.14
21	---	180.98	---	---	---	175.92	172.86	172.29	172.47	175.05	175.91	179.24
22	---	180.64	---	---	---	175.31	172.27	171.29	172.33	175.88	175.55	178.37
23	---	180.43	---	---	---	174.98	171.88	171.05	173.99	174.79	175.29	177.43
24	---	180.35	---	---	---	174.37	173.19	172.69	174.75	173.87	174.59	176.43
25	---	180.67	---	---	---	174.09	173.53	173.17	173.88	173.25	---	177.17
26	---	181.20	---	---	177.85	174.96	173.01	172.54	173.14	172.93	175.42	177.64
27	---	181.75	---	---	177.52	175.10	172.57	171.92	172.89	172.73	176.21	177.11
28	---	181.86	185.60	---	177.14	174.35	172.25	171.84	174.73	173.95	176.24	176.86
29	---	181.58	185.06	179.15	---	175.35	173.60	171.87	174.90	175.34	175.66	176.21
30	---	---	184.84	179.36	---	175.48	173.78	171.75	173.77	174.91	175.19	175.76
31	---	---	185.82	179.19	---	174.79	---	171.38	---	175.04	174.86	---
MEAN	---	---	---	---	---	175.80	172.91	172.36	172.91	175.09	---	178.39
MAX	---	---	---	---	---	178.34	173.92	174.23	174.90	176.55	---	180.27
MIN	---	---	---	---	---	174.09	171.80	171.05	170.98	172.73	---	175.76

COUNTY--Phelps

WELL IDENTIFICATION NUMBER--375749091475001

LOCATION--T.37N., R.8W., 3bab, lat. 37°57'49", long. 91°47'50", Missouri Conservation Commission, Rolla.

FORMATIONS OPEN TO THE WELL--Cotter Formation, Jefferson City Formation, Roubidoux Formation, and Upper Gasconade Formation.

WELL CHARACTERISTICS--Drilled November 5, 1951, total depth 450 feet, 212 feet of 6-inch casing.  
DGLS Log Number: 11,789

INSTRUMENTATION--Digital recorder, installed September 8, 1980.

DATUM--1,192 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 3.0 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--October 1, 1988, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	355.04	356.12	355.95	358.96	356.68	---	349.45	349.22	349.09	349.47	350.45	350.70
2	355.95	356.42	355.73	359.06	357.11	---	349.79	349.29	348.36	349.35	350.34	351.11
3	---	355.66	356.43	358.29	357.19	---	349.87	348.90	348.41	349.25	350.07	351.53
4	354.96	354.61	354.59	358.11	357.81	---	349.25	348.39	348.75	349.47	349.74	351.62
5	355.05	354.55	353.82	358.91	357.91	---	349.26	348.83	348.60	349.54	350.32	351.38
6	355.96	354.95	354.10	358.97	357.36	---	349.78	348.95	348.51	349.63	350.76	350.93
7	355.73	354.27	355.43	358.62	357.63	---	350.17	348.94	348.81	349.59	350.73	350.66
8	355.53	354.16	355.65	357.67	356.69	---	349.77	348.75	348.51	350.07	350.39	350.87
9	355.38	354.40	354.64	357.42	356.46	---	349.89	348.21	348.95	350.10	350.25	350.73
10	355.31	355.08	353.83	358.41	356.63	---	349.35	348.62	349.37	349.87	350.17	350.93
11	355.37	354.82	354.85	358.04	356.97	---	349.99	349.19	349.37	349.60	350.16	351.25
12	356.32	355.11	355.10	358.82	356.77	---	350.18	348.40	348.91	349.61	350.16	351.28
13	355.81	354.58	354.33	359.45	356.18	---	349.92	348.99	348.54	349.77	350.16	351.25
14	355.35	354.14	354.74	358.34	356.70	---	349.28	349.17	348.63	349.55	350.37	350.93
15	355.10	354.16	355.04	358.37	355.89	---	349.21	348.70	348.49	349.52	350.28	350.84
16	355.62	355.26	355.21	358.36	356.99	---	349.18	348.32	348.50	350.06	350.15	350.85
17	357.09	355.24	355.53	357.72	358.26	---	349.57	348.96	348.61	350.25	350.14	351.71
18	356.95	356.26	356.38	358.81	357.81	---	350.13	349.28	348.70	350.26	350.46	351.39
19	356.14	356.10	355.29	358.57	358.27	---	349.98	348.37	348.44	350.09	350.35	351.01
20	355.45	355.45	356.74	357.13	358.67	---	349.63	348.26	348.13	350.31	350.29	351.20
21	355.63	355.62	356.02	357.76	357.54	---	349.50	348.74	348.53	350.14	350.55	350.81
22	355.91	355.34	---	357.73	355.42	---	349.29	349.52	348.35	349.93	350.65	350.97
23	356.20	356.37	---	356.52	356.38	---	348.80	349.18	348.44	350.13	350.46	351.46
24	356.39	355.53	---	356.39	357.54	---	348.63	348.84	348.91	350.23	350.48	351.38
25	356.48	354.65	---	357.11	358.90	---	348.87	348.58	349.47	350.56	350.53	350.92
26	356.29	355.05	---	357.34	356.08	---	348.60	348.69	349.14	350.53	350.70	350.97
27	356.10	353.88	---	357.39	354.51	---	348.26	348.64	349.31	350.38	350.66	350.97
28	355.93	355.74	---	358.04	354.96	---	348.01	348.64	349.14	350.24	350.30	350.96
29	355.60	356.79	357.90	357.07	---	---	348.02	348.66	349.14	350.12	350.26	351.08
30	355.32	356.24	357.89	357.03	---	349.46	348.64	348.77	349.52	350.15	350.51	351.21
31	355.76	---	357.68	357.51	---	349.47	---	349.25	---	350.49	350.52	---
MEAN	---	355.22	---	358.00	356.98	---	349.34	348.81	348.79	349.94	350.37	351.10
MAX	---	356.79	---	359.45	358.90	---	350.18	349.52	349.52	350.56	350.76	351.71
MIN	---	353.88	---	356.39	354.51	---	348.01	348.21	348.13	349.25	349.74	350.66

270

## 33-Industrial Park

COUNTY--Phelps

WELL IDENTIFICATION NUMBER--37580091432201

LOCATION--T.38N., R.07W., 29cbb, lat. 37°58'50", long. 91°43'22", 5 miles east of Rolla, County Highway V, Phelps County Industrial Park, east 0.3 mile at Water Tower.

FORMATIONS OPEN TO THE WELL--Gasconade Formation and Eminence Dolomite.

WELL CHARACTERISTICS--Drilled April 1954, total depth 800 feet, 400 feet of 8-inch casing, open hole.  
DGLS Log Number: 25,796

INSTRUMENTATION--Digital recorder, installed January 20, 1980.

DATUM--1,189 feet above NGVD of 1929.

Measuring point: Base of recorder, 2.4 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--January 20, 1980, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	320.27	---	---	305.56	307.54	311.47	311.28	313.60	309.83	298.25	316.56
2	---	315.70	---	---	306.12	303.98	311.30	314.53	307.39	303.87	301.50	321.87
3	---	313.66	---	---	300.75	305.69	310.52	309.66	304.35	302.69	302.94	314.10
4	---	323.55	---	308.47	297.88	311.08	305.38	306.85	304.08	310.84	302.23	317.08
5	---	322.64	---	313.14	302.01	311.62	305.75	305.23	310.23	317.56	301.15	313.83
6	293.78	316.50	---	306.78	307.25	308.49	308.53	306.99	315.26	317.07	300.22	312.98
7	308.37	312.64	---	303.03	302.83	306.15	307.33	311.94	309.24	308.80	299.22	317.73
8	308.63	320.02	---	305.05	300.82	304.92	311.73	308.39	307.96	304.68	299.69	311.13
9	308.24	322.94	---	307.47	305.83	307.24	311.97	306.85	306.25	302.29	300.11	307.66
10	307.62	316.78	---	304.76	309.15	310.99	309.71	305.11	309.22	303.03	299.88	306.24
11	307.44	312.92	---	303.21	301.49	310.70	309.84	306.94	311.11	303.26	298.28	306.61
12	307.10	319.68	---	305.28	297.74	308.74	309.16	310.27	304.90	302.24	297.54	306.90
13	306.60	322.02	---	308.18	297.13	308.61	312.12	305.84	302.82	301.40	297.73	306.32
14	305.53	318.22	---	303.71	303.33	307.80	318.69	305.18	302.62	301.27	297.65	305.26
15	305.09	316.02	---	301.79	299.46	312.94	316.23	305.22	307.06	299.93	301.85	303.33
16	308.49	321.93	---	303.60	301.01	322.45	311.47	307.38	311.34	299.37	303.57	302.28
17	310.28	327.13	---	308.70	306.72	321.27	308.56	308.50	305.74	299.44	305.09	302.67
18	311.06	317.69	---	304.49	301.74	314.00	307.22	304.59	303.02	299.08	304.96	303.29
19	320.62	321.23	---	301.15	299.31	311.55	309.20	302.73	303.71	299.16	304.46	303.54
20	317.84	332.35	---	303.70	299.78	311.96	315.26	301.13	310.82	297.88	319.92	303.56
21	312.63	312.63	---	311.29	300.65	311.97	316.16	305.05	315.58	297.05	317.62	303.75
22	313.11	304.07	---	307.70	300.93	319.06	311.25	307.28	310.47	295.24	312.69	302.16
23	324.61	303.58	---	307.94	302.25	318.27	308.97	305.14	306.90	293.19	311.42	301.04
24	320.10	306.57	---	313.59	302.69	312.84	308.66	304.41	304.48	291.41	318.92	301.28
25	315.40	306.20	---	323.90	304.59	309.75	316.20	303.86	309.26	292.02	323.03	301.25
26	314.98	---	---	313.11	310.64	310.45	323.43	309.60	315.08	292.61	316.97	302.02
27	324.36	---	---	307.79	315.70	315.14	323.58	314.46	306.24	292.89	310.98	303.48
28	319.97	---	---	310.69	311.06	315.44	316.37	306.96	303.14	292.32	320.69	304.50
29	314.44	---	---	320.00	---	319.30	316.55	305.61	301.06	292.24	324.43	304.84
30	312.36	---	---	309.84	---	320.48	312.24	306.31	308.39	295.35	314.93	304.27
31	325.64	---	---	305.80	---	314.36	---	313.36	---	297.10	310.66	---
MEAN	---	---	---	---	303.37	312.09	312.16	307.31	307.71	300.49	307.05	307.05
MAX	---	---	---	---	315.70	322.45	323.58	314.53	315.58	317.56	324.43	321.87
MIN	---	---	---	---	297.13	303.98	305.38	301.13	301.06	291.41	297.54	301.04

COUNTY--Texas

WELL IDENTIFICATION NUMBER--371800092094501

LOCATION--T.30N., R.11W., 17dda, lat. 37°18'0", long. 92°9'45", at Missouri Highway Department buildings, 0.2 miles north of Fairview, State Highway 38.

FORMATIONS OPEN TO THE WELL--Cotter Dolomite, Jefferson City Dolomite, Roubidoux Formation, and Gasconade Formation.

WELL CHARACTERISTICS--Drilled February 25, 1956, total depth 481 feet, 50 feet of 8-inch casing, open hole.  
DGLS Log Number: 14,295

INSTRUMENTATION--Graphic recorder from February 27, 1956, to November 14, 1989. Digital recorder, installed November 14, 1989.

DATUM--1,465 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.1 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--June 8, 1983, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	277.63	---	---	284.54	276.10	263.65	257.57	254.75	250.94	257.26	266.47	270.60
2	277.88	---	281.97	284.48	275.81	263.26	257.47	254.79	250.75	257.57	266.90	270.72
3	278.36	---	282.18	284.33	275.05	263.09	257.31	254.68	250.84	257.89	266.74	271.16
4	278.48	---	281.93	284.39	274.44	262.93	257.01	254.65	250.88	258.24	266.72	271.32
5	278.40	---	281.90	284.42	273.81	262.76	256.87	254.56	250.86	258.65	266.93	271.47
6	278.43	---	282.05	284.44	272.84	262.73	256.85	254.38	250.90	259.00	267.79	271.55
7	278.59	---	282.36	284.30	272.29	262.66	256.86	254.17	251.09	259.22	267.79	271.60
8	278.66	---	282.53	284.16	271.43	262.40	256.83	253.95	251.36	259.51	267.71	271.69
9	278.75	---	282.39	284.27	270.79	262.28	256.75	253.69	251.66	259.88	267.93	271.84
10	278.86	---	282.35	284.29	270.25	262.08	256.68	253.78	252.04	260.16	268.32	272.06
11	278.98	---	282.65	284.32	269.82	261.77	256.87	253.87	252.32	260.38	268.36	272.23
12	279.16	---	282.69	284.53	269.24	261.52	256.85	253.63	252.50	260.67	268.34	272.39
13	279.49	---	282.85	284.55	268.68	261.22	256.63	253.84	252.82	260.95	268.56	272.48
14	279.50	---	282.90	284.40	268.32	260.67	256.47	253.94	253.17	261.09	268.74	272.55
15	279.60	---	283.04	284.51	267.73	260.35	256.29	253.86	253.39	261.33	268.94	272.71
16	279.70	---	283.39	284.55	267.54	260.18	256.12	253.80	253.65	261.72	269.46	272.85
17	279.98	---	283.41	284.35	267.31	259.88	256.08	253.93	254.00	262.03	269.13	273.14
18	280.17	---	283.45	283.93	266.74	259.66	256.17	253.78	254.43	262.36	268.72	273.23
19	280.07	---	283.53	282.67	266.46	259.52	255.91	253.35	254.66	262.64	268.33	273.57
20	---	---	283.71	281.49	266.14	259.28	255.71	253.13	254.97	263.02	268.19	273.70
21	---	---	284.03	280.39	265.55	258.86	255.54	252.93	255.35	263.74	268.27	273.72
22	---	---	284.39	279.24	264.82	258.63	255.32	252.89	255.58	263.88	268.27	273.87
23	---	---	284.72	278.11	264.73	258.80	255.07	252.66	255.75	263.93	268.40	273.97
24	---	---	284.52	277.30	264.71	258.75	254.92	252.27	256.00	264.50	268.58	273.94
25	---	---	284.30	276.87	264.63	258.74	254.83	251.92	256.21	264.72	268.72	273.81
26	---	---	284.41	276.43	264.21	258.71	254.65	251.74	256.33	264.84	268.94	273.85
27	---	---	284.40	276.15	264.03	258.58	254.43	251.53	256.41	264.83	269.15	273.94
28	---	---	284.54	276.15	263.91	258.29	254.27	251.38	256.54	264.97	269.42	274.06
29	---	---	284.35	275.95	---	258.06	254.31	251.28	256.72	265.21	269.99	274.25
30	---	---	284.31	276.05	---	257.88	254.54	251.19	256.99	265.55	270.36	274.39
31	---	---	284.30	276.23	---	257.74	---	251.05	---	266.04	270.54	---
MEAN	---	---	---	281.67	268.83	260.48	256.04	253.27	253.64	261.80	268.41	272.76
MAX	---	---	---	284.55	276.10	263.65	257.57	254.79	256.99	266.04	270.54	274.39
MIN	---	---	---	275.95	263.91	257.74	254.27	251.05	250.75	257.26	266.47	270.60



COUNTY--Shannon

WELL IDENTIFICATION NUMBER--372153091322301

LOCATION--T.31N., R.6W., 24dda, lat. 37°21'53', long. 91°32'23", approximately 1 mile southeast of Akers.

FORMATIONS OPEN TO THE WELL--Eminence Dolomite and Potosi Dolomite.

WELL CHARACTERISTICS--Total depth 425 feet, cased to an unknown depth.

INSTRUMENTATION--Graphic recorder from November 15, 1971, to March 5, 1990. Digital recorder, installed March 5, 1990.

DATUM--865 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.8 feet above land surface.

REMARKS--Several days missing when recorder was not operational.

PERIOD OF PROCESSED RECORD.--December 4, 1980, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66.21	67.24	67.74	68.04	67.05	64.47	60.61	60.23	54.11	58.74	61.59	63.19
2	66.25	67.23	67.78	68.04	66.55	64.32	60.56	60.24	54.23	58.87	61.64	63.28
3	66.30	67.26	67.85	68.04	66.41	64.34	60.56	58.66	54.49	58.99	61.66	63.33
4	66.35	67.22	67.68	68.04	66.32	64.35	60.42	57.71	54.71	59.15	61.67	63.40
5	66.40	67.20	67.64	68.04	66.30	64.32	60.47	57.91	54.83	59.28	61.84	63.40
6	66.41	67.30	67.73	68.04	66.31	64.37	60.60	57.90	54.99	59.40	61.98	63.37
7	66.57	67.32	67.88	68.03	66.39	64.41	60.71	57.87	55.21	59.50	62.02	63.38
8	66.54	67.41	67.86	68.03	66.29	64.32	60.73	57.84	55.43	59.62	62.03	63.49
9	66.53	67.50	67.78	68.03	---	64.34	60.69	57.75	55.58	59.73	62.07	63.55
10	66.56	67.50	67.75	68.03	---	64.31	60.44	57.88	55.73	59.81	62.11	63.62
11	66.59	67.51	67.89	68.03	---	64.27	60.23	58.01	55.88	59.88	62.16	63.70
12	66.66	67.50	67.90	68.14	---	64.10	60.10	57.91	56.03	59.99	62.18	63.74
13	66.72	67.45	67.84	68.15	---	63.77	59.96	58.06	56.18	60.09	62.28	63.76
14	66.71	67.42	67.97	68.04	---	63.39	59.91	58.12	56.33	60.12	62.35	63.79
15	66.72	67.43	67.97	68.11	---	62.53	59.89	58.03	56.48	60.24	62.36	63.84
16	66.75	67.61	68.00	68.12	---	62.12	59.87	57.45	56.63	60.44	62.30	63.91
17	66.82	67.61	67.95	68.08	---	62.00	60.01	55.77	56.77	60.53	62.30	64.08
18	66.95	67.67	67.95	68.02	---	62.00	60.10	55.82	56.92	60.61	62.37	64.04
19	66.92	67.66	67.96	67.82	---	62.07	59.98	55.60	57.07	60.64	62.41	64.06
20	66.87	67.62	67.98	67.44	65.07	62.03	59.91	55.29	57.22	60.68	62.48	64.14
21	66.85	67.60	68.03	67.41	64.79	61.79	59.81	55.16	57.37	60.70	62.58	64.12
22	66.94	67.61	68.06	67.31	64.49	61.74	59.73	55.00	57.52	60.77	62.61	64.21
23	67.01	67.67	68.07	67.19	64.65	62.00	59.68	54.98	57.67	60.91	62.64	64.32
24	67.05	67.65	67.97	67.21	64.81	61.98	59.70	55.04	57.82	61.01	62.71	64.31
25	67.06	67.61	67.95	67.28	64.86	62.02	59.82	55.09	57.98	61.12	62.77	64.22
26	67.08	67.67	68.00	67.33	64.63	62.01	59.81	53.65	58.13	61.18	62.85	64.30
27	67.10	67.63	67.96	67.34	64.60	61.89	59.75	53.01	58.27	61.23	62.88	64.36
28	67.15	67.85	68.04	67.39	64.62	61.69	59.75	53.27	58.37	61.26	62.87	64.43
29	67.17	67.78	67.97	67.33	---	61.56	59.86	53.49	58.53	61.30	62.91	64.51
30	67.14	67.76	68.04	67.38	---	61.37	60.11	53.73	58.69	61.41	63.03	64.55
31	67.20	---	68.06	67.40	---	60.86	---	53.94	---	61.52	63.10	---
MEAN	66.76	67.52	67.91	67.77	---	62.93	60.13	56.46	56.51	60.28	62.35	63.88
MAX	67.20	67.85	68.07	68.15	---	64.47	60.73	60.24	58.69	61.52	63.10	64.55
MIN	66.21	67.20	67.64	67.19	---	60.86	59.68	53.01	54.11	58.74	61.59	63.19

COUNTY--Shannon

WELL IDENTIFICATION NUMBER--371452091134301

LOCATION--T.30N., R.3W., 36cbd, lat. 37°14'52", long. 91°13'43", 8 miles past Midridge.

FORMATIONS OPEN TO THE WELL--Gunter Sandstone Member of the Gasconade Formation, Eminence Dolomite to 40 feet, Potosi Dolomite to 270 feet, Derby-Doerun Dolomite to 734 feet, Davis Dolomite to 827 feet, Bonnetterre Formation to 1,054 feet, Lamotte Sandstone to 1,359 feet, and Precambrian to 1,410 feet.

WELL CHARACTERISTICS--Drilled December 5, 1960, mineral test hole, total depth unknown, 190 feet of 6 1/4-inch casing.  
DGLS Log Number: RC-113

INSTRUMENTATION--Graphic recorder, installed February 1980.

DATUM--840 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.8 feet above land surface.

REMARKS--Plugged in Davis Dolomite.

PERIOD OF PROCESSED RECORD--October 19, 1989, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86.59	87.67	88.44	89.51	86.81	87.22	84.70	83.63	80.67	80.88	80.87	82.15
2	86.81	87.73	88.47	89.49	87.48	86.93	84.86	83.33	80.56	80.86	80.90	82.23
3	87.05	87.73	88.66	89.31	87.52	86.93	84.95	82.81	80.62	80.84	80.90	82.28
4	87.06	87.53	88.24	89.35	87.21	86.97	84.79	82.57	80.72	80.92	80.85	82.37
5	86.88	87.42	88.11	89.47	87.08	86.97	84.87	82.64	80.65	80.97	80.98	82.33
6	86.91	87.60	88.27	89.49	87.26	87.08	85.07	82.79	80.58	81.01	81.15	82.22
7	87.11	87.47	88.68	89.38	87.13	87.16	85.26	82.86	80.63	81.02	81.18	82.20
8	87.06	87.45	88.70	89.22	87.27	86.94	85.24	82.85	80.65	81.06	81.13	82.29
9	87.02	87.62	88.52	89.25	87.58	86.87	85.10	82.71	80.74	81.11	81.16	82.37
10	87.02	87.80	88.39	89.45	87.94	86.78	84.62	82.83	80.84	81.10	81.15	82.43
11	87.06	87.83	88.68	89.42	87.90	86.67	84.48	82.96	80.86	81.05	81.20	82.55
12	87.13	87.96	88.75	89.71	87.70	86.48	84.50	82.53	80.71	81.09	81.19	82.59
13	87.21	87.86	88.65	89.80	87.79	86.17	84.49	82.13	80.65	81.15	81.25	82.61
14	87.15	87.72	88.90	89.53	87.58	85.87	84.43	82.11	80.67	81.08	81.36	82.58
15	87.08	87.71	89.16	89.61	88.40	85.77	84.42	82.02	80.64	81.11	81.39	82.63
16	87.04	88.04	89.33	89.66	88.33	85.78	84.35	81.74	80.61	81.28	81.39	82.67
17	87.29	88.05	89.24	89.36	87.93	85.89	84.53	81.38	80.65	81.37	81.39	82.94
18	87.44	88.25	89.22	89.30	87.94	86.16	84.71	81.46	80.74	81.24	81.44	82.91
19	87.41	88.21	89.27	88.95	87.77	86.44	84.51	81.25	80.65	81.10	81.40	82.88
20	87.28	88.04	89.32	87.55	87.60	86.46	84.37	81.23	80.55	80.97	81.45	82.98
21	87.23	88.09	89.59	87.29	87.27	86.14	84.22	81.28	80.70	80.84	81.56	82.91
22	87.35	88.02	89.80	87.05	86.69	86.01	84.01	81.18	80.60	80.71	81.60	83.05
23	87.45	88.29	89.72	87.14	86.93	86.36	83.85	81.05	80.64	80.57	81.62	83.23
24	87.54	88.17	89.32	87.05	87.22	86.31	83.84	81.08	80.74	80.44	81.69	83.25
25	87.58	87.98	89.05	86.81	87.63	86.32	83.96	81.02	80.82	80.53	81.76	83.07
26	87.56	88.10	89.14	86.60	87.36	86.22	83.90	80.60	80.79	80.59	81.82	83.11
27	87.58	87.92	89.13	86.58	87.30	86.01	83.73	80.31	80.78	80.59	81.87	83.22
28	87.55	88.36	89.25	86.35	87.38	85.70	83.50	80.25	80.83	80.58	81.80	83.32
29	87.50	88.26	89.12	86.59	---	85.51	83.39	80.44	80.85	80.56	81.79	83.41
30	87.41	88.43	89.11	86.58	---	85.17	83.57	80.63	80.89	80.64	81.91	83.52
31	87.56	---	89.16	86.36	---	84.81	---	80.70	---	80.77	82.03	---
MEAN	87.22	87.91	88.95	88.43	87.50	86.33	84.41	81.82	80.70	80.90	81.39	82.74
MAX	87.58	88.43	89.80	89.80	88.40	87.22	85.26	83.63	80.89	81.37	82.03	83.52
MIN	86.59	87.42	88.11	86.35	86.69	84.81	83.39	80.25	80.55	80.44	80.85	82.15

COUNTY--Shannon

WELL IDENTIFICATION NUMBER--371449091134102

LOCATION--T.30N., R.3W., 36cbd, 8 miles past Midridge.

FORMATIONS OPEN TO THE WELL--Gunter Sandstone Member of the Gasconade Formation, Eminence Dolomite to 40 feet, Potosi Dolomite to 235 feet, Derby-Doerun Dolomite to 734 feet, Davis Dolomite, and Bonnetterre Formation to 1,095 feet.

WELL CHARACTERISTICS--Drilled September 19, 1961, mineral test hole, total depth unknown, 958 feet of 6 1/4-inch casing.

DGLS Log Number: RC-145

INSTRUMENTATION--Graphic recorder, installed February 1980.

DATUM--863.30 feet above NGVD of 1929.

Measuring point: Recorder platform, 1.3 feet above land surface.

REMARKS--Casing set and grouted in Davis Dolomite. Several months missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--May 15, 1989, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	132.84	133.83	135.34	---	---	---	---	131.64	128.67	128.17	127.77	128.65
2	133.00	133.89	135.27	---	---	---	---	131.56	128.51	128.15	127.78	128.70
3	133.17	133.86	135.23	---	---	---	---	131.34	128.53	128.14	127.76	128.73
4	133.17	133.72	135.58	---	---	---	---	131.12	128.57	128.18	127.74	128.82
5	133.03	133.67	135.67	---	---	---	---	131.12	128.47	128.22	127.80	128.78
6	133.10	133.77	135.48	---	---	---	133.00	131.05	128.38	128.25	127.98	128.69
7	133.23	133.66	135.14	---	---	---	133.05	130.95	128.41	128.24	127.98	128.66
8	133.20	133.70	134.97	---	---	---	133.03	130.87	128.37	128.24	127.97	128.72
9	133.16	133.79	---	---	---	---	132.88	130.66	128.44	128.28	127.98	128.77
10	133.19	133.94	---	---	---	---	132.70	130.78	128.50	128.28	127.97	128.84
11	133.20	133.98	---	---	---	---	132.82	130.78	128.47	128.23	127.98	128.92
12	133.29	134.06	---	---	---	---	132.77	130.54	128.35	128.26	127.97	128.95
13	133.32	133.99	---	---	---	---	132.61	130.56	128.26	128.28	127.95	128.95
14	133.28	133.87	---	---	---	---	132.47	130.50	128.26	128.23	127.93	128.90
15	133.22	133.90	---	---	---	---	132.39	130.29	128.21	128.25	127.97	128.92
16	133.20	134.15	---	---	---	---	132.28	130.10	128.18	128.44	128.00	128.94
17	133.42	134.12	---	---	---	---	132.40	130.16	128.20	128.44	128.04	129.13
18	133.58	134.33	---	---	---	---	132.48	130.05	128.24	128.45	128.09	129.10
19	133.52	134.26	---	---	---	---	132.33	129.73	128.15	128.42	128.13	129.09
20	133.45	134.18	---	---	---	---	132.21	129.60	128.05	128.36	128.19	129.16
21	133.43	134.19	---	---	---	---	132.14	129.54	128.16	128.33	128.22	129.08
22	133.54	134.22	---	---	---	---	132.04	129.46	128.07	128.26	128.27	129.17
23	133.63	134.38	---	---	---	---	131.90	129.42	128.09	127.88	128.27	129.32
24	133.70	134.27	---	---	---	---	131.85	129.30	128.15	127.53	128.32	129.33
25	133.73	134.15	---	---	---	---	131.88	129.18	128.20	127.58	128.37	129.20
26	133.72	134.21	---	---	---	---	131.79	129.09	128.14	127.63	128.43	129.25
27	133.75	134.13	---	---	---	---	131.60	128.93	128.15	127.61	128.45	129.36
28	133.74	134.58	---	---	---	---	131.46	128.83	128.17	127.60	128.42	129.42
29	133.67	135.23	---	---	---	---	131.45	128.85	128.19	127.60	128.40	129.46
30	133.64	135.34	---	---	---	---	131.59	128.81	128.23	127.63	128.48	129.57
31	133.78	---	---	---	---	---	---	128.74	---	127.73	128.53	---
MEAN	133.38	134.11	---	---	---	---	---	130.11	128.29	128.09	128.10	129.02
MAX	133.78	135.34	---	---	---	---	---	131.64	128.67	128.45	128.53	129.57
MIN	132.84	133.66	---	---	---	---	---	128.74	128.05	127.53	127.74	128.65

COUNTY--Howell

WELL IDENTIFICATION NUMBER--364400091512002

LOCATION--T.24N., R.8W., 21cac, lat. 36°44'0", long. 91°51'20", West Plains City Utilities Office.

FORMATIONS OPEN TO THE WELL--Gunter Sandstone Member of the Gasconade Formation, Eminence Dolomite, and Potosi Dolomite.

WELL CHARACTERISTICS--Drilled June 28, 1914, total depth 1,305 feet, 800 feet of 8-inch casing, open hole.

DGLS Log Number: 1,697

INSTRUMENTATION--Graphic recorder from December 1, 1955, to March 6, 1990. Digital recorder, installed March 6, 1990.

DATUM--958.5 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.0 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--December 18, 1984, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	224.06	233.03	236.15	231.49	193.66	171.50	---	---	---	189.97	189.37	196.65
2	223.66	233.27	235.95	230.94	159.61	170.76	---	---	---	189.97	191.23	196.84
3	222.95	233.45	236.48	231.10	158.64	170.11	---	---	---	189.97	191.23	196.99
4	220.39	233.26	236.21	231.25	162.03	171.17	---	---	---	189.97	192.27	197.57
5	219.72	233.07	235.65	231.32	167.21	174.17	---	---	---	189.97	193.15	197.72
6	220.16	233.43	236.23	231.32	163.88	---	231.06	---	---	189.97	193.15	197.82
7	220.54	232.65	236.84	231.25	157.41	174.38	233.82	---	---	189.97	193.15	197.82
8	221.16	232.17	237.16	231.13	152.03	---	236.87	---	---	189.97	193.15	197.82
9	220.24	232.98	236.91	231.52	163.10	---	233.60	---	---	189.97	193.15	197.82
10	219.54	233.50	236.61	232.12	---	---	224.34	---	---	189.97	193.15	197.82
11	219.14	233.87	235.26	232.38	---	---	221.33	---	---	189.97	193.15	197.82
12	218.81	233.96	234.66	232.23	---	---	220.37	---	---	189.97	193.15	197.83
13	218.66	234.13	234.45	232.06	---	---	220.39	---	---	189.97	193.15	197.83
14	218.67	234.13	234.55	231.48	181.67	---	221.33	---	---	189.97	193.15	197.83
15	218.89	233.87	234.32	231.61	---	---	223.23	---	---	189.97	193.15	197.83
16	218.76	234.07	233.88	231.58	---	---	221.91	---	---	189.97	193.15	197.83
17	225.39	234.33	233.12	239.80	---	---	219.53	---	---	189.97	193.15	197.83
18	227.04	234.64	231.85	250.19	---	---	219.13	---	---	189.97	193.15	197.83
19	228.23	234.90	231.34	246.78	---	---	218.83	---	---	189.97	193.15	197.83
20	228.96	235.06	231.13	227.07	---	---	216.63	---	---	189.97	193.15	197.86
21	229.34	235.65	230.98	224.42	---	---	215.16	---	---	189.97	193.15	197.88
22	230.07	234.60	229.12	214.96	---	---	214.95	---	---	189.97	193.22	197.88
23	230.88	233.25	229.85	210.23	148.58	---	215.18	---	---	189.97	193.80	197.88
24	231.65	233.70	230.66	207.79	151.42	---	216.10	---	---	189.97	194.63	197.88
25	232.21	234.10	230.88	207.14	156.05	---	217.80	---	---	189.97	195.29	197.88
26	232.43	234.49	230.51	206.00	162.20	---	218.92	---	---	189.97	195.61	198.65
27	232.80	234.72	230.32	205.25	167.58	---	218.79	---	---	189.97	195.74	199.62
28	232.83	235.48	230.17	204.57	170.63	---	218.93	---	---	189.97	195.93	199.62
29	232.58	235.76	230.67	203.89	---	---	220.53	---	185.16	189.97	196.16	199.62
30	232.93	235.70	229.84	204.81	---	---	222.59	---	189.41	189.98	196.49	199.62
31	232.99	---	230.33	206.13	---	---	---	---	---	189.98	196.57	---
MEAN	225.34	234.04	233.29	224.64	---	---	---	---	---	189.97	193.58	197.99
MAX	232.99	235.76	237.16	250.19	---	---	---	---	---	189.98	196.57	199.62
MIN	218.66	232.17	229.12	203.89	---	---	---	---	---	189.97	189.37	196.65

## 39-Lower Eleven Point

COUNTY--Oregon

WELL IDENTIFICATION NUMBER--364810091191401

LOCATION--T.25N., R.3W., 30dac, lat. 36°48'10", long. 91°19'14", from Eleven Point River, go north on Highway 19 for 1.0 mile, turn east on Loggin Road for 0.4 mile, well on left.

FORMATION OPEN TO THE WELL--Roubidoux Formation, Gasconade Dolomite, Eminence Dolomite, Potosi Dolomite, and Derby-Doerun Dolomites.

WELL CHARACTERISTICS--Well plugged at 1,650 feet, approximately 210 feet of 6 1/4-inch casing.

INSTRUMENTATION--Digital recorder, installed August 9, 1989.

DATUM--883 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 3.0 feet above land surface.

PERIOD OF RECORD--August 9, 1989, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	323.46	328.66	330.71	332.64	329.31	315.20	315.82	306.04	301.34	309.69	317.43	321.99
2	326.04	328.75	330.76	332.62	328.87	315.45	315.09	306.13	301.34	309.90	317.60	322.18
3	326.32	328.80	330.94	332.50	327.39	315.94	314.32	305.83	301.53	310.17	317.72	322.32
4	326.41	328.67	330.56	332.56	325.81	316.39	313.52	304.94	301.76	310.49	317.82	322.49
5	326.31	328.64	330.54	332.70	324.20	316.80	313.16	304.06	301.90	310.80	318.10	322.53
6	326.43	328.87	330.76	332.77	322.67	317.31	313.10	303.10	302.11	311.09	318.38	322.51
7	326.67	328.76	331.13	332.68	321.83	317.81	313.19	302.27	302.44	311.37	318.56	322.57
8	326.70	328.83	331.15	332.60	321.15	318.07	313.30	301.66	302.76	311.70	318.65	322.75
9	326.74	329.04	331.03	332.68	320.84	318.21	313.41	301.22	303.17	312.02	318.78	322.89
10	326.81	329.22	330.95	332.91	320.50	317.97	313.46	301.35	303.58	312.29	318.89	323.05
11	326.90	329.28	331.26	332.89	319.73	317.58	313.18	301.52	303.90	312.53	319.03	323.22
12	327.02	329.42	331.32	333.19	318.93	317.35	312.10	301.51	304.13	312.85	319.15	323.33
13	327.16	329.39	331.29	333.27	318.20	317.05	310.73	301.83	304.41	313.16	319.34	323.38
14	327.16	329.31	331.41	333.04	317.91	316.57	309.58	301.70	304.76	313.35	319.53	323.40
15	327.17	329.38	331.54	333.17	317.56	316.43	308.73	301.33	305.04	313.66	319.66	323.50
16	327.22	329.73	331.75	333.25	317.33	316.28	308.14	301.07	305.39	314.08	319.73	323.62
17	327.53	329.76	331.70	333.13	316.57	315.96	307.94	301.26	305.77	314.36	319.80	323.95
18	327.76	329.97	331.71	333.39	315.30	315.72	307.44	301.27	306.13	314.58	319.95	323.96
19	327.73	329.97	331.81	333.15	314.45	315.61	306.71	301.09	306.33	314.74	320.08	323.99
20	327.68	329.87	331.89	332.48	313.90	315.43	306.26	301.15	306.57	314.91	320.23	324.15
21	327.68	329.94	332.15	331.56	313.28	315.13	305.96	301.39	306.98	315.06	320.42	324.14
22	327.86	329.90	332.37	330.29	312.78	315.09	305.59	301.65	307.17	315.26	320.56	324.32
23	328.00	330.04	332.32	329.02	313.15	315.50	305.23	301.62	307.49	315.58	320.66	324.54
24	328.11	330.16	332.01	328.30	313.56	315.68	305.05	301.58	307.85	315.82	320.84	324.57
25	328.19	330.04	331.84	328.06	314.02	315.94	305.08	301.51	308.16	316.07	321.01	324.45
26	328.23	330.21	332.00	328.04	314.07	316.18	305.05	301.58	308.37	316.29	321.18	324.59
27	328.30	330.12	332.05	328.05	314.38	316.36	305.07	301.57	308.64	316.45	321.27	324.77
28	328.33	330.63	332.19	328.41	314.86	316.40	305.21	301.53	308.92	316.58	321.32	324.91
29	328.34	330.82	332.10	328.42	---	316.52	305.40	301.46	309.21	316.73	321.40	325.04
30	328.32	330.69	332.18	328.73	---	316.65	305.75	301.38	309.51	316.96	321.62	325.17
31	328.51	---	332.29	329.25	---	316.54	---	301.34	---	317.22	321.79	---
MEAN	327.26	329.56	331.54	331.48	318.66	316.42	309.42	302.16	305.22	313.73	319.69	323.61
MAX	328.51	330.82	332.37	333.39	329.31	318.21	315.82	306.13	309.51	317.22	321.79	325.17
MIN	323.46	328.64	330.54	328.04	312.78	315.09	305.05	301.07	301.34	309.69	317.43	321.99

WTR YR 1990 MEAN 319.09 HIGH 301.07 LOW 333.39



COUNTY--Carter

WELL IDENTIFICATION NUMBER--365652090594201

LOCATION--T.26N., R.1.E., 6ccc, lat. 36°56'52", long. 90°59'42", Big Spring National Scenic Riverways Park, next to west entrance sign.

FORMATIONS OPEN TO THE WELL--Eminence Dolomite.

WELL CHARACTERISTICS--total depth 56 feet.

INSTRUMENTATION--Digital recorder, installed February 1980.

DATUM--470 feet above NGVD of 1929.

Measuring point: 0.5 feet above land surface.

PERIOD OF PROCESSED RECORD--October 27, 1988, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.71	18.58	20.05	21.71	13.82	6.54	3.89	4.64	3.87	8.82	13.19	16.30
2	15.91	18.62	20.09	21.76	10.60	6.46	4.01	4.45	3.77	8.88	13.36	16.42
3	16.22	18.66	20.23	21.80	9.37	6.59	4.14	2.50	4.00	8.97	13.50	16.52
4	16.31	18.62	20.03	21.84	9.05	6.78	4.23	2.41	4.45	9.10	13.59	16.62
5	16.28	18.63	20.06	21.88	8.94	6.97	4.49	2.55	4.79	9.37	13.58	16.65
6	16.41	18.78	20.21	21.93	8.99	7.25	4.88	2.77	4.98	9.58	13.69	16.65
7	16.64	18.74	20.44	21.98	9.37	7.48	5.13	3.01	5.21	9.75	13.72	16.74
8	16.69	18.53	20.48	22.03	9.55	6.63	5.36	3.21	5.48	9.90	13.80	16.89
9	16.75	18.64	20.44	22.08	8.87	5.93	5.53	3.36	5.72	10.10	14.16	16.96
10	16.82	18.82	20.40	22.13	7.34	5.85	3.55	3.69	5.93	10.33	14.28	17.06
11	16.91	18.91	20.57	22.18	7.00	5.92	2.92	3.97	6.10	10.52	14.37	17.15
12	17.02	19.04	20.60	22.23	6.94	6.19	2.89	3.53	6.22	10.66	14.48	17.12
13	17.17	19.04	20.60	22.29	7.07	6.35	2.87	3.07	6.36	10.73	14.59	17.10
14	17.21	19.03	20.63	22.26	7.42	6.40	3.00	3.21	6.56	10.74	14.76	17.11
15	17.28	19.10	20.78	22.32	5.53	5.87	3.19	3.29	6.62	10.78	14.90	17.18
16	17.34	19.27	20.88	22.37	4.99	5.48	3.40	3.39	6.77	11.06	14.81	17.24
17	17.57	19.30	20.88	22.13	4.95	5.53	3.72	3.37	6.93	11.38	14.74	17.45
18	17.75	19.42	20.90	21.23	4.89	5.88	3.86	3.53	7.16	11.54	14.74	17.46
19	17.75	19.43	21.01	19.66	5.09	6.27	3.98	3.70	7.23	11.72	14.78	17.44
20	17.74	19.40	21.08	16.78	5.41	6.39	4.19	4.02	7.32	11.87	14.90	17.55
21	17.79	19.46	21.16	15.39	5.51	6.43	4.13	3.71	7.53	11.97	15.02	17.52
22	17.89	19.46	21.21	14.80	5.20	6.59	4.07	3.24	7.58	12.07	15.18	17.51
23	17.92	19.60	21.26	14.39	5.15	7.04	3.67	3.41	7.69	11.92	15.27	17.68
24	18.06	19.59	21.31	14.32	5.39	6.95	3.28	3.68	7.90	11.90	15.42	17.73
25	18.15	19.56	21.36	14.37	5.72	6.44	3.52	3.94	7.99	12.02	15.55	17.67
26	18.21	19.64	21.41	14.46	5.82	6.33	3.69	3.30	8.09	12.23	15.65	17.77
27	18.26	19.63	21.46	14.54	6.12	6.44	3.82	2.73	8.18	12.41	15.71	17.89
28	18.30	19.96	21.51	14.92	6.46	6.52	3.85	2.75	8.27	12.51	15.77	17.96
29	18.32	20.06	21.56	14.89	---	6.54	3.97	3.07	8.38	12.66	15.84	18.01
30	18.34	20.02	21.61	15.08	---	4.98	4.36	3.35	8.54	12.81	15.99	18.05
31	18.49	---	21.66	15.52	---	4.03	---	3.60	---	12.99	16.14	---
MEAN	17.33	19.18	20.83	19.20	7.16	6.29	3.92	3.37	6.52	11.01	14.69	17.25
MAX	18.49	20.06	21.66	22.37	13.82	7.48	5.53	4.64	8.54	12.99	16.14	18.05
MIN	15.71	18.53	20.03	14.32	4.89	4.03	2.87	2.41	3.77	8.82	13.19	16.30

COUNTY--Ripley

WELL IDENTIFICATION NUMBER--362441090364201

LOCATION--T.22N., R.4E., 3ddd, lat. 36°24'41", long. 90°36'42", 0.2 miles north of Naylor, Highway 142, west of State highway maintenance area.

FORMATIONS OPEN TO THE WELL--Clay, silt, sand and gravel to 61', Dolomite 61' to 65'.

WELL CHARACTERISTICS--Drilled August 3, 1959, total depth 65 feet, 44 feet of 8-inch casing, 17 feet of 4-inch casing, 4 feet of 4-inch screen.

INSTRUMENTATION--Digital recorder, installed March 3, 1990.

DATUM--300 feet above NGVD of 1929.

Measuring point: Recorder platform, 8.1 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--October 1, 1988, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.89	17.32	17.56	17.84	15.64	13.01	---	11.07	11.57	14.42	15.82	16.72
2	16.93	17.33	17.58	17.83	15.40	12.86	---	11.29	11.51	14.49	15.87	16.77
3	16.99	17.34	17.61	17.81	15.21	12.85	---	11.66	11.62	14.60	15.90	16.81
4	17.00	17.31	17.55	17.73	15.14	12.86	11.73	11.99	11.81	14.71	15.83	16.85
5	16.99	17.30	17.54	17.72	15.08	12.88	11.57	11.97	11.95	14.81	15.59	16.88
6	17.01	17.35	17.59	17.73	14.97	12.93	11.37	11.92	12.09	14.89	15.64	16.91
7	17.06	17.32	17.65	17.71	14.96	12.89	11.16	11.81	12.27	14.95	15.70	16.94
8	17.06	17.33	17.65	17.70	14.91	12.65	11.04	11.70	12.34	15.00	15.75	16.94
9	17.08	17.37	17.63	17.71	14.78	12.57	11.01	11.65	12.24	15.06	15.82	16.95
10	17.10	17.39	17.62	17.77	14.60	12.48	11.20	11.56	12.37	15.13	15.89	16.98
11	17.12	17.40	17.67	17.74	14.51	12.44	11.18	11.40	12.52	15.18	15.96	17.01
12	17.15	17.41	17.68	17.81	14.47	12.45	11.18	11.52	12.63	15.25	16.00	17.03
13	17.18	17.41	17.68	17.82	14.41	12.39	11.19	11.61	12.76	15.30	16.02	17.04
14	17.19	17.38	17.69	17.77	14.43	12.31	11.20	11.65	12.89	15.32	16.05	17.05
15	17.20	17.38	17.71	17.79	13.93	12.33	11.14	11.66	12.94	15.38	16.09	17.08
16	17.19	17.45	17.74	17.80	13.52	12.31	11.15	11.64	13.02	15.48	16.04	17.12
17	17.19	17.44	17.73	17.64	13.48	---	11.23	11.70	13.11	15.53	16.02	17.18
18	17.19	17.48	17.74	17.49	13.43	---	11.28	11.74	13.20	15.58	16.06	17.19
19	17.15	17.47	17.76	17.15	13.46	---	11.38	11.67	13.24	15.60	16.09	17.20
20	17.15	17.44	17.78	16.59	13.49	---	11.43	11.72	13.29	15.56	16.13	17.24
21	17.15	17.47	17.82	16.39	13.40	---	11.51	11.65	13.43	15.45	16.19	17.08
22	17.19	17.46	17.85	16.27	13.17	---	11.52	11.50	13.48	15.35	16.23	16.78
23	17.22	17.51	17.84	16.20	13.22	---	11.49	11.43	13.59	15.37	16.28	16.80
24	17.23	17.51	17.80	16.17	13.33	---	11.40	11.45	13.71	15.42	16.34	16.83
25	17.24	17.47	17.78	16.18	13.46	---	11.24	11.51	13.80	15.48	16.39	16.82
26	17.25	17.52	17.84	16.19	13.36	---	11.15	11.49	13.90	15.53	16.44	16.88
27	17.25	17.49	17.83	16.18	13.32	---	11.10	11.28	14.12	15.58	16.48	16.95
28	17.26	17.57	17.85	16.21	13.18	---	11.26	11.19	14.22	15.62	16.51	17.01
29	17.26	17.60	17.83	15.95	---	---	11.26	11.30	14.29	15.65	16.56	17.07
30	17.25	17.57	17.83	15.83	---	---	11.13	11.38	14.37	15.68	16.61	17.09
31	17.30	---	17.79	15.84	---	---	---	11.47	---	15.76	16.67	---
MEAN	17.14	17.43	17.72	17.11	14.15	---	---	11.57	12.94	15.26	16.10	16.97
MAX	17.30	17.60	17.85	17.84	15.64	---	---	11.99	14.37	15.76	16.67	17.24
MIN	16.89	17.30	17.54	15.83	13.17	---	---	11.07	11.51	14.42	15.59	16.72

COUNTY--Dunklin

WELL IDENTIFICATION NUMBER--362957089581901

LOCATION--T.22N., R.10E., 34ccc, lat 36°29'57", long. 89°58'19", 0.1 mile north of junction of State Highways 62 and 25, at McGuire, 4 miles south of Malden.

FORMATIONS OPEN TO THE WELL--Alluvium.

WELL CHARACTERISTICS--Drilled August 8, 1956, total depth 108 feet, 62 feet of 8-inch casing, 42 feet of 4-inch casing, and 4 feet of 4-inch screen.

DGLS Log Number: 14,673

INSTRUMENTATION--Graphic recorder from August 8, 1956, to December 17, 1980. Digital recorder, installed December 17, 1980.

DATUM--287 feet above NGVD of 1929.

Measuring point: Base of recorder, 1.8 feet above land surface.

PERIOD OF PROCESSED RECORD--December 17, 1980, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.86	15.42	15.92	16.50	15.67	12.97	12.72	12.36	12.36	13.18	14.37	15.44
2	14.89	15.44	15.94	16.51	15.58	12.95	12.61	12.26	12.36	13.21	14.41	15.48
3	14.92	15.45	15.96	16.53	15.43	12.95	12.50	12.17	12.38	13.25	14.45	15.52
4	14.94	15.46	15.96	16.54	15.24	12.94	12.40	12.09	12.41	13.29	14.49	15.56
5	14.95	15.47	15.98	16.56	15.02	12.94	12.35	12.03	12.41	13.33	14.53	15.59
6	14.97	15.49	16.00	16.58	14.79	12.94	12.33	11.97	12.43	13.36	14.57	15.62
7	15.00	15.50	16.03	16.59	14.62	12.94	12.34	11.92	12.46	13.40	14.60	15.65
8	15.02	15.51	16.05	16.60	14.47	12.92	12.34	11.89	12.48	13.44	14.64	15.69
9	15.04	15.53	16.06	16.62	14.36	12.91	12.34	11.85	12.51	13.48	14.67	15.72
10	15.06	15.55	16.07	16.64	14.27	12.90	12.35	11.89	12.54	13.52	14.70	15.75
11	15.08	15.57	16.10	16.65	14.18	12.88	12.43	11.92	12.57	13.55	14.74	15.78
12	15.11	15.59	16.12	16.67	14.10	12.88	12.48	11.90	12.58	13.59	14.77	15.81
13	15.13	15.60	16.13	16.69	14.01	12.86	12.50	11.99	12.60	13.63	14.81	15.84
14	15.15	15.61	16.15	16.70	13.94	12.90	12.53	12.03	12.63	13.66	14.85	15.86
15	15.17	15.62	16.18	16.72	13.84	12.98	12.57	12.06	12.66	13.71	14.88	15.89
16	15.19	15.66	16.20	16.73	13.71	12.96	12.60	12.10	12.69	13.75	14.91	15.92
17	15.21	15.67	16.21	16.74	13.58	12.95	12.67	12.17	12.72	13.79	14.94	15.96
18	15.23	15.70	16.23	16.76	13.40	12.96	12.71	12.18	12.75	13.83	14.97	15.98
19	15.24	15.71	16.25	16.75	13.26	12.98	12.73	12.17	12.77	13.86	15.00	16.01
20	15.25	15.71	16.27	16.69	13.17	12.97	12.75	12.20	12.80	13.90	15.03	16.04
21	15.26	15.73	16.30	16.56	13.08	12.94	12.77	12.24	12.84	13.93	15.07	16.07
22	15.28	15.75	16.33	16.41	13.01	12.94	12.79	12.26	12.87	13.97	15.10	16.10
23	15.29	15.78	16.34	16.28	13.00	12.98	12.81	12.25	12.90	14.01	15.13	16.13
24	15.31	15.79	16.35	16.17	13.01	12.99	12.84	12.25	12.94	14.05	15.17	16.15
25	15.32	15.80	16.36	16.08	13.03	13.01	12.87	12.25	12.97	14.09	15.20	16.17
26	15.34	15.82	16.38	16.00	12.99	13.02	12.89	12.26	13.00	14.12	15.23	16.20
27	15.35	15.83	16.40	15.92	12.98	13.03	12.89	12.27	13.04	14.16	15.27	16.22
28	15.36	15.87	16.42	15.87	12.99	13.02	12.81	12.29	13.07	14.19	15.29	16.25
29	15.37	15.89	16.43	15.81	---	13.02	12.60	12.31	13.11	14.23	15.32	16.28
30	15.38	15.90	16.45	15.76	---	12.97	12.46	12.33	13.15	14.27	15.36	16.31
31	15.41	---	16.47	15.72	---	12.85	---	12.35	---	14.32	15.40	---
MEAN	15.16	15.65	16.19	16.43	13.95	12.95	12.60	12.14	12.70	13.74	14.90	15.90
MAX	15.41	15.90	16.47	16.76	15.67	13.03	12.89	12.36	13.15	14.32	15.40	16.31
MIN	14.86	15.42	15.92	15.72	12.98	12.85	12.33	11.85	12.36	13.18	14.37	15.44

COUNTY--Pemiscot

WELL IDENTIFICATION NUMBER--360422089484801

LOCATION--T.17N., R.11E., 36abb, lat. 36°04'22", long. 89°48'48", Missouri Highway Department maintenance buildings, approximately 2 miles south of State Highways 164 and 161, east outer boundary road to Interstate 55.

FORMATIONS OPEN TO THE WELL--Alluvium.

WELL CHARACTERISTICS--Drilled August 22, 1956, total depth 132 feet, 62 feet of 8-inch casing, 66 feet of 4-inch casing, and 4 feet of 4-inch screen.

DGLS Log Number: 14,804

INSTRUMENTATION--Digital recorder, installed November 6, 1980.

DATUM--260 feet above NGVD of 1929.

Measuring point: Base of recorder, 1.6 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--November 6, 1980, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.31	15.68	---	16.11	15.01	11.51	10.24	9.16	11.14	12.83	13.90	15.19
2	15.36	15.69	---	16.11	14.52	11.46	10.31	9.03	11.14	12.79	13.94	15.23
3	15.39	15.69	---	16.09	13.98	11.52	10.40	8.71	11.20	12.85	13.98	15.28
4	15.41	15.67	---	16.09	13.63	11.59	10.44	8.67	11.27	13.01	14.02	15.29
5	15.41	15.67	---	16.11	13.54	11.64	10.57	8.85	11.32	12.96	14.06	15.38
6	15.44	15.69	---	16.12	13.48	11.71	10.69	9.02	11.37	12.98	14.11	15.40
7	15.47	15.67	---	16.10	13.50	11.76	10.81	9.20	11.44	13.01	14.15	15.38
8	15.48	15.66	---	16.10	13.48	11.47	10.89	9.36	11.50	13.06	14.17	15.41
9	15.49	15.68	---	16.10	13.46	11.03	10.94	9.47	11.56	13.25	14.20	15.43
10	15.51	15.69	---	16.13	13.31	10.94	10.97	9.67	11.62	13.31	14.24	15.45
11	15.52	15.68	---	16.12	13.23	10.93	11.11	9.83	11.67	13.30	14.28	15.47
12	15.55	15.69	---	16.17	13.22	10.99	11.19	9.89	11.71	13.22	14.32	15.46
13	15.56	15.68	---	16.17	13.20	11.02	11.23	10.06	11.76	13.23	14.36	15.48
14	15.57	15.67	---	16.14	13.22	11.04	11.27	10.17	11.81	13.25	14.39	15.50
15	15.58	---	---	16.16	12.52	10.86	11.33	10.26	11.86	13.30	14.43	15.53
16	15.57	---	---	16.17	11.35	10.52	11.38	10.35	11.92	13.36	14.47	15.56
17	15.59	---	---	16.13	11.09	10.49	11.12	10.37	11.99	13.39	14.51	15.61
18	15.62	---	---	16.15	10.98	10.59	10.57	10.40	12.06	13.42	14.56	15.62
19	15.62	---	---	16.08	11.03	10.71	10.43	10.44	12.21	13.46	14.60	15.63
20	15.62	---	---	15.77	11.13	10.78	10.44	10.53	12.25	13.50	14.64	15.66
21	15.63	---	16.12	15.61	11.17	10.80	10.03	10.52	12.43	13.52	14.68	15.65
22	15.64	---	16.14	15.53	11.11	10.87	9.75	10.45	12.31	13.54	14.72	15.67
23	15.65	---	16.14	15.47	11.13	11.03	9.76	10.49	12.33	13.58	14.75	15.70
24	15.66	---	16.10	15.46	11.24	11.09	9.88	10.58	12.38	13.61	14.79	15.71
25	15.65	---	16.08	15.47	11.38	11.15	9.99	10.65	12.47	13.65	14.84	15.71
26	15.64	---	16.12	15.48	11.38	11.21	10.08	10.74	12.62	13.68	14.89	15.74
27	15.64	---	16.13	15.46	11.45	11.26	10.16	10.79	12.57	13.71	14.97	15.76
28	15.64	---	16.15	15.46	11.53	11.29	9.68	10.84	12.59	13.74	15.11	15.79
29	15.65	---	16.13	15.31	---	11.25	9.15	10.93	12.64	13.78	15.05	15.80
30	15.65	---	16.11	15.21	---	10.86	9.09	11.01	12.82	13.82	15.07	15.82
31	15.67	---	16.07	15.19	---	10.38	---	11.07	---	13.86	15.11	---
MEAN	15.55	---	---	15.86	12.47	11.09	10.46	10.05	11.93	13.35	14.49	15.54
MAX	15.67	---	---	16.17	15.01	11.76	11.38	11.07	12.82	13.86	15.11	15.82
MIN	15.31	---	---	15.19	10.98	10.38	9.09	8.67	11.14	12.79	13.90	15.19

COUNTY--Mississippi

WELL IDENTIFICATION NUMBER--364646089212201

LOCATION--T.25N., R.16E., 29ccb, lat. 36°46'46", long. 89°21'22", on State Highway 102, 0.2 miles north of junction of State Highways 80 and 102, 1 mile east of East Prairie, next to old Highway Department buildings.

FORMATIONS OPEN TO THE WELL--Alluvium.

WELL CHARACTERISTICS--Drilled October 15, 1956, total depth 117 feet, 64 feet of 8-inch casing, 49 feet of 4-inch casing, and 4 feet of 4-inch well screen.

INSTRUMENTATION--Graphic recorder from November 1, 1956, to November 8, 1980. Digital recorder, installed November 8, 1980.

DATUM--305 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.8 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--November 8, 1980, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.07	11.85	---	11.35	8.58	6.84	5.51	6.70	6.98	9.91	11.35	11.37
2	12.03	11.85	---	11.36	7.69	6.68	5.86	6.37	7.08	10.15	11.38	11.36
3	12.01	11.86	---	11.34	7.28	6.81	6.24	5.99	7.22	10.90	11.19	11.37
4	12.01	11.84	---	11.26	7.19	7.01	6.49	5.89	7.39	10.50	11.05	11.43
5	11.99	11.81	---	11.24	7.28	7.18	6.79	6.15	7.48	10.13	10.83	11.77
6	12.00	11.68	---	11.25	7.37	7.35	7.07	6.45	7.58	10.13	10.75	12.02
7	12.02	11.64	---	11.24	7.54	7.49	7.30	6.73	7.70	10.04	10.76	12.03
8	12.01	11.26	---	11.23	7.64	7.43	7.44	6.96	7.80	10.01	10.76	11.75
9	12.02	11.18	---	11.23	7.48	7.38	7.53	7.10	7.90	10.45	10.78	11.63
10	12.02	11.25	---	11.26	6.69	7.40	7.39	7.29	8.01	10.98	10.80	11.60
11	12.02	11.28	---	11.24	6.70	7.46	7.00	7.46	8.09	10.76	10.83	11.59
12	12.03	11.31	---	11.29	6.95	7.59	7.08	7.49	8.14	10.16	10.84	11.57
13	12.04	11.31	---	11.31	7.18	7.66	7.21	7.68	8.22	10.01	10.77	11.57
14	12.03	11.30	---	11.27	7.42	7.69	7.29	7.78	8.29	9.97	10.74	11.58
15	12.03	11.27	---	11.29	6.66	7.54	7.37	7.84	8.35	10.00	10.78	11.61
16	11.94	11.28	---	11.30	5.62	7.11	7.45	7.91	8.44	10.06	10.76	11.66
17	11.74	11.29	---	11.08	5.82	7.10	7.56	7.25	8.77	10.10	10.61	11.72
18	11.76	11.32	---	10.91	6.05	7.31	7.60	6.99	9.16	10.20	10.64	11.74
19	11.77	11.31	---	10.61	6.35	7.46	7.65	7.10	8.93	10.88	10.70	12.06
20	11.77	11.29	11.64	9.55	6.65	7.50	7.72	7.27	9.26	11.14	10.75	12.38
21	11.78	11.31	11.68	9.29	6.78	7.53	7.74	7.12	9.56	10.90	10.80	12.00
22	11.80	11.30	11.71	9.34	6.58	7.64	7.78	6.62	9.41	10.58	10.84	11.65
23	11.82	11.34	11.70	9.40	6.55	7.86	7.85	6.67	9.16	10.39	10.86	11.64
24	11.83	11.32	11.66	9.52	6.79	7.90	7.95	6.87	9.41	10.37	10.90	11.65
25	11.83	11.39	11.64	9.65	7.09	7.65	8.05	7.02	9.29	10.38	10.94	11.65
26	11.83	11.45	11.68	9.76	7.15	7.53	8.10	7.02	9.32	10.39	11.00	11.68
27	11.84	11.44	11.69	9.81	7.23	7.55	8.13	6.69	9.66	10.40	11.11	11.71
28	11.84	---	11.72	9.88	7.09	7.60	7.53	6.38	9.91	10.44	11.41	11.74
29	11.83	---	11.64	9.21	---	7.39	6.50	6.36	9.84	10.50	11.63	11.77
30	11.82	---	11.52	8.87	---	6.15	6.55	6.58	9.99	11.00	11.85	11.75
31	11.84	---	11.32	8.96	---	5.43	---	6.80	---	11.47	11.45	---
MEAN	11.92	---	---	10.53	6.98	7.30	7.26	6.92	8.54	10.43	10.96	11.70
MAX	12.07	---	---	11.36	8.58	7.90	8.13	7.91	9.99	11.47	11.85	12.38
MIN	11.74	---	---	8.87	5.62	5.43	5.51	5.89	6.98	9.91	10.61	11.36



COUNTY--Scott

WELL IDENTIFICATION NUMBER--365319089330501

LOCATION--T.26N., R.14.E., 21bab, lat. 36°53'19", long. 89°33'05", Highway Department maintenance yard,  
Edward Street, approximately 1 mile north of State Highway 62 intersection, Sikeston.

FORMATIONS OPEN TO THE WELL--Alluvium.

WELL CHARACTERISTICS--Drilled October 12, 1956, total depth 145 feet, 57 feet of 8-inch casing, 84.5 feet of  
4-inch casing, and 4.5 feet of 4-inch well screen.

DGLS Log Number: 15,041

INSTUMENTATION--Graphic recorder, installed November 1, 1956. Digital recorder, installed November 6, 1980.

DATUM--310 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.8 feet above land surface.

REMARKS--Several days missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--November 6, 1980, to present.

## DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.81	9.93	10.00	9.84	8.13	7.70	7.54	7.46	7.95	9.06	11.46	12.24
2	9.81	9.93	10.00	9.84	7.76	7.73	7.63	7.42	8.01	9.09	11.58	12.44
3	9.82	9.94	10.01	9.84	7.55	7.79	7.74	7.27	8.08	9.13	11.40	12.49
4	9.83	9.94	10.02	9.82	7.52	7.86	7.82	7.23	8.15	9.17	11.19	12.70
5	9.89	9.94	10.02	9.80	7.59	7.91	7.91	7.35	8.20	9.21	11.03	12.74
6	9.92	9.94	10.02	9.80	7.68	7.98	7.98	7.49	8.24	9.24	10.97	12.90
7	9.92	9.93	10.03	9.80	7.78	8.04	8.05	7.60	8.26	9.26	11.10	12.99
8	9.92	9.90	10.03	9.81	7.85	8.04	8.11	7.69	8.30	9.29	11.28	12.77
9	9.93	9.90	10.03	9.82	7.70	8.06	8.15	7.76	8.30	9.32	11.22	12.88
10	9.94	9.90	10.03	9.85	7.42	8.09	7.91	7.83	8.35	9.35	11.45	12.66
11	9.96	9.90	10.04	9.86	7.45	8.13	7.69	7.90	8.39	---	12.00	12.53
12	9.96	9.91	10.05	9.89	7.56	8.16	7.70	7.94	8.43	---	11.79	12.45
13	9.96	9.91	10.05	9.91	7.68	8.19	7.78	8.01	8.47	9.36	11.28	12.49
14	9.96	9.92	10.06	9.91	7.79	8.21	7.83	8.06	8.50	9.30	11.07	12.41
15	9.97	9.93	10.06	9.93	7.21	8.12	7.88	8.11	8.53	9.49	11.00	12.37
16	9.93	9.93	10.07	9.94	6.63	8.08	7.95	8.15	8.56	9.96	10.95	12.42
17	9.75	9.93	10.07	9.84	6.78	8.12	7.98	8.12	8.60	10.43	10.89	12.46
18	9.74	9.93	10.07	9.72	6.94	8.21	8.02	8.16	8.64	10.68	10.90	12.39
19	9.74	9.93	10.07	9.57	7.11	8.24	8.06	8.20	8.68	10.99	10.96	12.31
20	9.75	9.93	10.09	8.72	7.25	8.26	8.09	8.24	8.70	11.19	10.92	12.38
21	9.76	9.95	10.11	8.35	7.35	8.27	8.04	8.07	8.73	11.26	10.94	12.36
22	9.80	9.96	10.10	8.26	7.20	8.30	8.08	7.88	8.74	10.93	11.04	12.21
23	9.82	9.96	10.10	8.26	7.25	8.34	8.12	7.93	8.79	10.50	11.27	12.15
24	9.85	9.96	10.09	8.34	7.41	8.34	8.16	8.02	8.82	10.33	11.88	12.08
25	9.88	9.96	10.06	8.42	7.53	8.30	8.20	8.09	8.86	10.25	11.88	11.99
26	9.89	9.96	10.05	8.50	7.59	8.32	8.23	7.94	8.89	10.24	11.85	---
27	9.89	9.96	10.04	8.55	7.66	8.36	8.25	7.76	8.92	10.23	11.69	---
28	9.90	9.97	10.07	8.59	7.68	8.37	7.75	7.63	8.96	10.22	11.72	---
29	9.90	9.99	10.05	8.30	---	8.29	7.40	7.64	9.00	10.22	11.79	---
30	9.90	9.99	9.98	8.24	---	7.95	7.42	7.75	9.04	10.35	11.89	---
31	9.92	---	9.86	8.28	---	7.59	---	7.86	---	11.00	12.03	---
MEAN	9.87	9.94	10.04	9.28	7.47	8.11	7.92	7.82	8.54	---	11.37	---
MAX	9.97	9.99	10.11	9.94	8.13	8.37	8.25	8.24	9.04	---	12.03	---
MIN	9.74	9.90	9.86	8.24	6.63	7.59	7.40	7.23	7.95	---	10.89	---

COUNTY--Cape Girardeau

WELL IDENTIFICATION NUMBER--371125089445301

LOCATION--T.29N., R.12E., 8dbd, lat. 37°11'25", long. 89°44'53", 0.2 mile east of junction of State Highway 25 and County Road P, east of Delta.

FORMATIONS OPEN TO THE WELL--Alluvium.

WELL CHARACTERISTICS--Drilled October 10, 1956, total depth 75 feet, 60 feet of 8-inch casing, 10.5 feet of 4-inch casing, and 4.5 feet of 4-inch screen.

INSTRUMENTATION--Graphic recorder from November 1, 1956, to November 6, 1980. Digital recorder, installed November 6, 1980.

DATUM--335 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.8 feet above land surface.

PERIOD OF PROCESSED RECORD--November 6, 1980, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.58	22.04	21.92	21.87	19.25	17.79	16.48	17.02	15.50	18.06	20.74	21.99
2	21.66	22.03	21.91	21.85	18.34	17.76	16.62	17.04	15.58	18.20	21.03	21.72
3	21.78	22.06	22.01	21.78	17.75	17.89	16.87	16.85	15.70	18.51	21.25	21.30
4	21.80	21.99	21.83	21.73	17.68	18.12	17.04	16.44	15.89	18.88	20.84	21.19
5	21.74	21.95	21.79	21.76	17.81	18.30	17.28	16.43	16.07	18.96	20.20	21.23
6	21.75	22.02	21.86	21.75	17.84	18.50	17.60	16.60	16.24	19.22	19.94	21.28
7	21.85	21.94	22.04	21.72	17.99	18.68	17.87	16.75	16.44	19.17	19.95	21.46
8	21.84	21.87	22.02	21.69	18.10	18.67	18.06	16.81	16.59	19.10	19.92	21.55
9	21.84	21.92	21.95	21.70	18.08	18.63	18.16	16.83	16.70	19.30	19.88	21.48
10	21.83	21.97	21.91	21.83	17.51	18.59	17.82	16.95	16.77	19.60	19.88	21.51
11	21.88	21.98	21.99	21.79	17.27	18.57	16.85	17.14	16.79	19.44	20.00	21.55
12	21.89	22.03	22.04	21.91	17.45	18.60	16.66	17.12	16.75	19.14	20.09	21.52
13	21.92	22.00	21.99	22.00	17.57	18.64	16.78	16.62	16.74	19.15	19.93	21.52
14	21.90	21.88	22.05	21.90	17.84	18.56	16.92	16.33	16.79	19.27	19.93	21.56
15	21.90	21.70	22.05	21.93	17.54	18.36	17.11	16.36	16.85	19.48	19.97	21.69
16	21.86	21.78	22.15	21.97	16.46	17.99	17.25	16.39	16.95	19.69	20.03	21.83
17	21.91	21.77	22.10	21.85	16.35	17.75	17.34	15.95	17.17	19.99	20.08	21.87
18	21.99	21.83	22.09	21.58	16.63	17.64	17.24	15.46	17.28	20.36	20.16	21.75
19	21.93	21.81	22.09	21.15	16.91	17.61	17.16	15.48	17.39	20.70	20.23	21.66
20	21.89	21.74	22.13	19.56	17.24	17.58	17.25	15.56	17.38	20.83	20.30	21.72
21	21.89	21.78	22.19	18.56	17.40	17.46	17.36	15.58	17.40	20.68	20.44	21.62
22	21.96	21.75	22.28	18.45	17.13	17.41	17.45	15.31	17.36	20.29	20.55	21.60
23	21.98	21.88	22.24	18.51	16.80	17.60	17.50	15.26	17.33	19.75	20.52	21.68
24	22.00	21.84	22.11	18.71	16.99	17.62	17.62	15.38	17.34	19.52	20.54	21.75
25	22.01	21.76	22.00	18.93	17.42	17.43	17.81	15.51	17.35	19.41	20.51	21.70
26	22.00	21.80	22.05	19.21	17.54	17.33	17.96	15.40	17.37	19.32	20.49	21.68
27	22.00	21.74	22.05	19.36	17.60	17.33	18.04	14.83	17.53	19.26	20.55	21.79
28	22.00	21.93	22.12	19.60	17.75	17.33	17.78	14.73	17.75	19.28	20.73	21.82
29	21.99	22.02	22.05	19.51	---	17.33	17.05	14.87	17.84	19.35	20.99	21.84
30	21.95	21.94	22.02	19.35	---	17.15	16.85	15.17	17.98	19.50	21.15	21.88
31	21.97	---	21.86	19.42	---	16.64	---	15.38	---	20.27	21.51	---
MEAN	21.89	21.89	22.03	20.74	17.51	17.90	17.33	16.05	16.89	19.47	20.40	21.62
MAX	22.01	22.06	22.28	22.00	19.25	18.68	18.16	17.14	17.98	20.83	21.51	21.99
MIN	21.58	21.70	21.79	18.45	16.35	16.64	16.48	14.73	15.50	18.06	19.88	21.19

COUNTY--Bollinger

WELL IDENTIFICATION NUMBER--370245090042901

LOCATION--T.28N., R.09E., 32dad, lat. 37°02'45", long. 90°04'29", Missouri Conservation Commission,  
2.0 miles north of Kinder.

FORMATIONS OPEN TO THE WELL--Alluvium.

WELL CHARACTERISTICS--Drilled October 8, 1956, total depth 115 feet, 60 feet of 8-inch casing, 10.5  
feet of 4-inch casing, 4.5 feet of 4-inch screen.

DGLS Log Number: 15,040

INSTRUMENTATION--Digital recorder, installed December 17, 1980.

DATUM--344 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 2.7 feet above land surface.

PERIOD OF PROCESSED RECORD--October 1, 1988, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.34	10.08	9.14	9.31	6.47	5.31	4.88	4.72	4.79	8.12	11.46	12.24
2	9.46	10.06	9.13	9.25	5.96	5.17	4.98	4.66	4.84	8.21	11.58	12.44
3	9.63	10.07	9.23	9.10	5.56	5.27	5.11	4.49	4.96	8.34	11.40	12.49
4	9.64	9.96	8.92	9.02	5.50	5.42	5.12	4.23	5.18	8.56	11.19	12.70
5	9.53	9.87	8.87	9.04	5.55	5.51	5.31	4.39	5.27	8.79	11.03	12.74
6	9.56	9.91	8.98	9.05	5.46	5.64	5.55	4.55	5.38	8.89	10.97	12.90
7	9.66	9.74	9.23	8.95	5.60	5.76	5.78	4.74	5.48	8.86	11.10	12.99
8	9.62	9.62	9.20	8.85	5.55	5.60	5.89	4.90	5.62	8.91	11.28	12.77
9	9.62	9.66	9.10	8.85	5.46	5.51	5.90	4.96	5.77	9.09	11.22	12.88
10	9.62	9.71	9.03	8.98	5.21	5.43	5.55	5.17	5.97	9.39	11.45	12.66
11	9.68	9.66	9.19	8.90	5.15	5.38	5.16	5.36	6.12	9.43	12.00	12.53
12	9.73	9.70	9.23	9.08	5.23	5.43	4.93	5.20	6.20	9.39	11.79	12.45
13	9.80	9.60	9.16	9.14	5.24	5.41	4.82	5.05	6.33	9.36	11.28	12.49
14	9.80	9.41	9.23	8.96	5.41	5.32	4.86	4.95	6.48	9.30	11.07	12.41
15	9.80	9.21	9.26	8.99	4.98	5.38	5.00	4.87	6.54	9.49	11.00	12.37
16	9.77	9.28	9.37	9.00	4.66	5.42	5.08	4.86	6.67	9.96	10.95	12.42
17	9.82	9.24	9.29	8.77	4.69	5.45	5.25	4.75	6.81	10.43	10.89	12.46
18	9.90	9.33	9.25	8.49	4.47	5.64	5.28	4.60	6.99	10.68	10.90	12.39
19	9.82	9.26	9.26	8.04	4.55	5.84	5.20	4.52	7.06	10.99	10.96	12.31
20	9.78	9.12	9.28	7.04	4.80	5.92	5.18	4.64	7.08	11.19	10.92	12.38
21	9.83	9.17	9.42	6.74	4.80	5.83	5.15	4.78	7.15	11.26	10.94	12.36
22	10.06	9.09	9.52	6.55	4.51	5.83	5.11	4.60	7.09	10.93	11.04	12.21
23	10.05	9.25	9.46	6.39	4.62	6.13	5.12	4.54	7.15	10.50	11.27	12.15
24	10.08	9.17	9.23	6.51	4.90	6.12	5.21	4.63	7.29	10.33	11.88	12.08
25	10.13	9.02	9.06	6.69	5.25	6.02	5.37	4.71	7.41	10.25	11.88	11.99
26	10.15	9.04	9.19	6.89	5.22	5.94	5.43	4.61	7.46	10.24	11.85	11.98
27	10.15	8.92	9.21	6.93	5.28	5.88	5.42	4.17	7.54	10.23	11.69	11.99
28	10.13	9.24	9.29	7.11	5.39	5.79	5.00	3.99	7.66	10.22	11.72	12.00
29	10.06	9.35	9.19	6.88	---	5.72	4.59	4.17	7.85	10.22	11.79	12.01
30	10.02	9.19	9.15	6.75	---	5.49	4.59	4.40	8.03	10.35	11.89	12.01
31	10.05	---	9.13	6.80	---	5.10	---	4.59	---	11.00	12.03	---
MEAN	9.82	9.46	9.20	8.10	5.20	5.60	5.19	4.67	6.47	9.77	11.37	12.39
MAX	10.15	10.08	9.52	9.31	6.47	6.13	5.90	5.36	8.03	11.26	12.03	12.99
MIN	9.34	8.92	8.87	6.39	4.47	5.10	4.59	3.99	4.79	8.12	10.89	11.98

COUNTY--Perry

WELL IDENTIFICATION NUMBER--373559090082901

LOCATION--T.34N., R.8E., 34cdb, lat. 37°35'59", long. 90°8'29", 1.5 miles east of Higdon on County Road J.

FORMATIONS OPEN TO THE WELL--700 feet of unknown bedrock, Derby-Doerun Dolomite, Davis Dolomite, Bonnetterre Formation, and Lamotte Sandstone.

WELL CHARACTERISTICS--Mineral test hole, total depth 1,526 feet, cased to an unknown depth.

DGLS Log Number: P.H. 17

INSTRUMENTATION--Graphic recorder, installed July 18, 1960.

DATUM--1,010 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.4 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--May 18, 1983, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	179.96	180.44	180.70	---	---	---	179.70	179.58	179.55	178.98	179.13	179.17
2	180.14	180.44	180.68	---	182.50	---	179.70	179.55	179.68	178.96	179.12	179.22
3	180.34	180.43	180.87	---	182.42	---	179.74	179.64	179.61	178.94	179.08	179.24
4	180.26	180.26	180.42	---	182.46	---	179.52	179.81	179.48	178.87	179.02	179.27
5	180.04	180.19	180.41	---	182.42	---	179.54	179.73	179.56	178.84	179.16	179.19
6	180.11	180.40	180.60	---	182.42	---	179.71	179.68	179.62	178.82	179.30	179.08
7	180.27	180.25	180.95	---	182.26	---	179.85	179.68	179.57	178.79	179.26	179.06
8	180.18	180.23	180.84	---	182.34	---	179.85	179.72	179.56	178.79	179.19	179.13
9	180.14	180.39	180.62	---	---	---	179.72	179.86	179.50	178.74	179.15	179.16
10	180.12	180.54	180.52	---	---	---	179.46	179.75	179.41	178.75	179.13	179.19
11	180.15	180.51	180.76	---	---	---	179.70	179.54	179.41	178.83	179.13	179.23
12	180.18	180.62	180.79	---	---	---	179.78	179.74	179.53	178.82	179.12	179.21
13	180.21	180.52	180.66	---	---	---	179.65	179.62	179.58	178.92	179.15	179.19
14	180.12	180.40	180.79	---	---	180.21	179.52	179.53	179.54	178.85	179.16	179.09
15	180.06	180.36	180.81	---	---	180.20	179.46	179.66	179.53	178.89	179.12	179.14
16	180.03	180.65	180.98	---	---	180.34	179.36	179.78	179.49	179.07	179.02	179.14
17	180.21	180.62	180.87	---	---	180.36	179.44	179.60	179.42	179.08	178.96	179.38
18	180.35	180.78	180.87	---	---	180.49	179.39	179.49	179.34	179.04	178.99	179.26
19	180.17	180.64	---	---	---	180.66	179.49	179.72	179.38	178.98	178.98	179.14
20	180.07	180.45	---	---	---	180.70	179.59	179.82	179.40	178.92	178.97	179.23
21	180.11	180.56	---	---	---	180.43	179.64	179.61	179.22	178.91	178.99	179.14
22	180.27	180.49	---	---	---	180.25	179.69	179.39	179.30	178.88	178.98	179.21
23	180.32	180.75	---	---	---	180.54	179.79	179.39	179.22	179.02	178.96	179.31
24	180.36	180.60	---	---	---	180.48	179.80	179.47	179.09	179.08	179.01	179.26
25	180.35	180.43	---	---	---	180.48	179.72	179.61	179.03	179.11	179.03	179.06
26	180.34	180.57	---	---	---	180.46	179.75	179.66	179.08	179.09	179.04	179.13
27	180.34	180.41	---	---	---	180.37	179.92	179.69	179.07	179.06	179.03	179.23
28	180.31	180.86	---	---	---	180.11	180.09	179.74	179.02	179.02	178.95	179.27
29	180.27	180.98	---	---	---	179.88	179.98	179.65	178.99	178.98	178.95	179.30
30	180.19	180.74	---	---	---	179.77	179.79	179.55	178.94	179.02	179.06	179.35
31	180.34	---	---	---	---	179.75	---	179.52	---	179.08	179.11	---
MEAN	180.20	180.52	---	---	---	---	179.68	179.64	179.37	178.94	179.07	179.20
MAX	180.36	180.98	---	---	---	---	180.09	179.86	179.68	179.11	179.30	179.38
MIN	179.96	180.19	---	---	---	---	179.36	179.39	178.94	178.74	178.95	179.06

COUNTY--Madison

WELL IDENTIFICATION NUMBER--372202090180501

LOCATION--T.33N., R.7E., 20bcd, lat. 37°22'2", long. 90°18'5", approximately 2 miles south of Fredericktown, State Highway 72.

FORMATIONS OPEN TO THE WELL--Bonnetterre Formation and Lamotte Sandstone.

WELL CHARACTERISTICS--Drilled February 4, 1939, total depth 590 feet, 187 feet of 8-inch casing, open hole.  
DGLS Log Number: 5,330

INSTRUMENTATION--Graphic recorder from November 18, 1958, to March 13, 1990. Digital recorder, installed March 13, 1990.

DATUM--857 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.8 feet above land surface.

PERIOD OF PROCESSED RECORD--November 27, 1984, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103.26	104.14	105.27	105.76	103.90	101.68	101.96	103.28	105.47	103.97	102.73	102.48
2	103.42	104.18	105.26	105.73	103.93	101.42	101.92	103.30	105.61	103.93	102.72	102.39
3	103.65	104.20	105.45	105.55	103.84	101.45	101.98	103.43	105.58	103.87	102.73	102.32
4	103.71	104.04	105.03	105.51	103.91	101.49	102.25	103.63	105.48	103.75	102.81	102.27
5	103.54	103.94	104.95	105.62	103.90	101.51	102.26	103.57	105.56	103.65	102.77	102.30
6	103.60	104.14	105.09	105.62	103.62	101.64	102.16	103.66	105.59	103.57	102.65	102.40
7	103.78	104.01	105.48	105.46	103.56	101.72	102.03	103.75	105.52	103.50	102.63	102.43
8	103.74	103.99	105.48	105.28	103.26	101.55	102.01	103.87	105.48	103.43	102.68	102.33
9	103.73	104.15	105.31	105.25	103.04	101.60	102.12	104.11	105.35	103.35	102.70	102.28
10	103.72	104.35	105.21	105.42	102.97	101.60	102.29	104.02	105.21	103.32	102.72	102.23
11	103.77	104.39	105.45	105.34	102.92	101.56	102.09	103.94	105.17	103.34	102.71	102.11
12	103.84	104.55	105.52	105.58	102.83	101.60	102.09	104.25	105.23	103.34	102.72	102.07
13	103.92	104.49	105.43	105.67	102.57	101.68	102.25	104.07	105.23	103.50	102.69	102.08
14	103.89	104.38	105.56	105.37	102.56	101.90	102.42	104.07	105.15	103.54	102.64	102.14
15	103.86	104.36	105.60	105.43	102.24	101.82	102.54	104.23	105.12	103.46	102.64	102.11
16	103.85	104.66	105.81	105.45	102.41	101.71	102.67	104.37	105.07	103.26	102.66	102.07
17	104.04	104.71	105.74	105.27	102.66	101.66	102.62	104.19	104.98	103.17	102.71	101.82
18	104.22	104.94	105.75	105.51	102.39	101.46	102.59	104.26	104.86	103.14	102.71	101.89
19	104.09	104.89	105.79	105.33	102.34	101.26	102.73	104.60	104.88	103.17	102.72	101.95
20	103.95	104.73	105.81	105.02	102.30	101.26	102.87	104.77	104.86	103.20	102.73	101.85
21	103.89	104.83	106.03	105.10	101.93	101.50	102.95	104.75	104.68	103.19	102.71	101.90
22	103.99	104.75	106.20	104.99	101.38	101.58	103.05	104.70	104.73	103.21	102.73	101.78
23	104.04	105.04	106.11	104.58	101.58	101.28	103.17	104.84	104.61	103.07	102.75	101.61
24	104.07	104.93	105.72	104.43	101.82	101.32	103.22	104.97	104.44	102.99	102.72	101.60
25	104.08	104.78	105.42	104.46	102.12	101.34	103.19	105.15	104.31	102.92	102.68	101.76
26	104.06	104.89	105.51	104.50	101.89	101.35	103.30	105.20	104.28	102.90	102.66	101.71
27	104.05	104.72	105.46	104.36	101.80	101.43	103.50	105.28	104.21	102.91	102.67	101.65
28	104.02	105.21	105.56	104.44	101.85	101.64	103.65	105.35	104.14	102.94	102.74	101.63
29	103.98	105.43	105.41	104.10	---	101.79	103.57	105.31	104.07	102.98	102.76	101.59
30	103.88	105.29	105.41	104.04	---	101.84	103.39	105.32	103.98	102.92	102.65	101.54
31	104.02	---	105.44	104.15	---	101.84	---	105.37	---	102.81	102.57	---
MEAN	103.86	104.57	105.52	105.11	102.70	101.56	102.63	104.37	104.96	103.30	102.70	102.01
MAX	104.22	105.43	106.20	105.76	103.93	101.90	103.65	105.37	105.61	103.97	102.81	102.48
MIN	103.26	103.94	104.95	104.04	101.38	101.26	101.92	103.28	103.98	102.81	102.57	101.54



COUNTY--Washington

WELL IDENTIFICATION NUMBER--385617090465401

LOCATION--T.37N., R.2E., 11dbd, lat. 38°56'17", long. 90°46'54", Potosi.

FORMATIONS OPEN TO THE WELL--Potosi Dolomite to 300 feet, Derby-Doerun Dolomite to 375 feet,  
 Davis Dolomite to 525 feet, Bonnetterre Formation to 910 feet, and  
 Lamotte Sandstone to 1,100 feet.

WELL CHARACTERISTICS--Drilled February 1949, total depth 1,100 feet, 348 feet of 10-inch casing.  
 DGLS Log Number: 10,680

INSTRUMENTATION--Digital recorder.

DATUM--964 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 1.0 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--October 1, 1988, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	207.10	206.70	---	215.50	221.90	212.70	207.86	207.84	210.22	215.14	219.59
2	---	211.40	210.50	---	218.80	220.30	208.61	211.95	210.43	214.15	211.54	214.35
3	---	206.90	206.80	---	214.80	226.60	212.70	207.88	208.26	210.75	215.68	217.80
4	---	210.10	208.20	---	220.40	219.60	209.40	211.41	206.91	210.79	211.87	214.12
5	---	206.90	209.90	---	215.10	227.40	209.08	208.19	207.15	214.38	215.54	218.21
6	---	207.40	206.40	---	220.80	221.80	212.65	209.55	207.49	210.30	211.90	214.40
7	---	210.30	210.50	---	216.70	218.30	208.71	209.67	208.20	214.33	215.86	218.61
8	---	206.60	206.90	---	221.20	220.20	212.13	208.21	208.42	210.16	212.21	214.34
9	---	210.60	207.70	---	216.70	215.90	208.46	207.66	207.07	214.34	216.30	217.63
10	---	207.40	209.70	---	221.60	218.80	207.68	208.55	207.65	211.20	212.55	215.26
11	---	212.30	204.10	---	216.90	214.20	211.17	207.81	207.61	210.89	216.92	213.66
12	---	208.10	209.90	---	222.20	216.50	208.44	209.48	207.26	214.27	212.64	214.22
13	---	211.30	204.30	---	217.50	217.10	210.22	207.79	207.39	210.06	216.21	218.28
14	---	211.40	210.00	---	222.50	212.80	208.34	208.72	207.83	213.74	213.67	213.80
15	207.05	210.30	207.80	---	217.30	216.40	209.75	211.44	208.70	210.02	217.34	218.02
16	---	207.30	204.30	---	223.00	211.90	208.26	207.67	207.79	212.67	212.63	213.88
17	---	205.50	210.50	217.40	218.20	216.10	208.31	211.74	211.00	214.05	216.30	217.69
18	206.60	205.90	204.90	214.60	223.10	211.80	212.09	208.28	209.23	210.40	212.55	214.86
19	210.50	210.40	210.50	218.70	218.60	211.90	208.11	209.56	213.85	214.79	216.45	213.90
20	206.60	206.30	205.20	213.80	223.30	214.60	211.04	209.18	209.47	210.66	212.66	217.84
21	---	211.90	211.10	218.10	218.30	210.80	208.27	211.88	213.51	212.19	216.93	213.33
22	---	210.30	208.10	213.20	223.90	213.88	210.13	207.94	209.63	210.13	213.55	217.12
23	208.00	206.60	204.40	218.00	219.20	210.70	208.14	207.92	213.43	214.70	215.00	213.55
24	210.80	208.90	---	213.70	224.80	211.39	207.52	208.22	209.83	210.64	217.04	216.87
25	207.30	208.20	---	218.10	219.00	213.61	210.53	208.31	210.42	214.93	212.77	214.67
26	211.80	205.70	---	214.40	225.40	209.51	207.96	211.85	213.59	211.22	217.05	212.96
27	207.80	209.60	---	218.10	219.20	213.23	210.95	207.70	209.35	214.58	213.03	217.27
28	211.30	207.30	---	214.40	225.90	209.50	208.04	210.45	213.57	213.11	217.40	213.35
29	207.30	206.70	---	218.70	---	212.94	208.57	209.91	210.02	210.51	213.61	217.30
30	212.00	210.70	---	215.00	---	209.89	208.74	207.46	214.37	215.05	217.91	213.27
31	209.50	---	---	220.00	---	208.76	---	211.54	---	211.11	218.23	---
MEAN	---	208.65	---	---	220.00	215.43	209.56	209.22	209.58	212.27	214.79	215.67
MAX	---	212.30	---	---	225.90	227.40	212.70	211.95	214.37	215.05	218.23	219.59
MIN	---	205.50	---	---	214.80	208.76	207.52	207.46	206.91	210.02	211.54	212.96

COUNTY--Jefferson

WELL IDENTIFICATION NUMBER--380501090335501

LOCATION--T.39N., R.4E., 22dab, lat. 38°5'01", long. 90°33'55", 2.5 miles south of Desoto, County Road E.

FORMATIONS OPEN TO THE WELL--Jefferson City Dolomite, Roubidoux Formation, Gasconade Formation, Eminence Dolomite, Potosi Dolomite, Derby-Doerun Dolomite, Davis Dolomite, and Bonnetterre Formation.

WELL CHARACTERISTICS--Mineral test hole, total depth 1,500 feet, cased to an unknown depth.

INSTRUMENTATION--Graphic recorder from November 18, 1960, to October 25, 1989. Digital recorder, installed October 25, 1989

DATUM--790 feet above NGVD of 1929.

Measuring point: Base of recorder platform, 0.9 feet above land surface.

REMARKS--Several weeks missing when recorder was not operational.

PERIOD OF PROCESSED RECORD--June 6, 1984, to present.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	116.29	119.62	122.02	119.19	116.11	117.40	116.61	---	119.14	119.18	119.25	118.53
2	117.55	119.55	123.34	118.02	116.62	117.14	117.28	---	118.52	119.17	119.34	118.74
3	119.40	117.26	120.68	117.47	117.08	117.58	117.92	---	118.41	119.02	119.07	119.18
4	119.22	115.97	119.40	118.71	118.11	117.43	116.59	---	119.31	118.69	118.35	119.66
5	117.17	117.16	120.02	118.71	117.05	118.33	116.71	---	119.17	118.81	118.59	119.64
6	117.93	116.38	122.81	118.10	117.20	119.07	117.85	---	118.46	119.11	119.64	119.46
7	118.93	115.74	123.11	116.74	116.35	117.71	118.89	---	118.63	119.28	120.04	---
8	118.40	116.34	121.51	116.05	115.44	117.45	119.01	---	118.68	119.28	119.80	---
9	117.45	117.18	120.24	117.75	115.76	117.41	118.28	---	119.03	119.28	119.45	---
10	117.60	117.47	121.37	117.04	116.15	117.08	117.00	---	119.84	119.26	119.13	---
11	117.35	118.34	122.16	118.62	116.76	117.02	118.42	---	120.07	119.01	118.95	---
12	118.06	117.77	120.90	119.80	115.46	117.05	119.06	---	119.39	118.82	118.79	---
13	118.24	116.86	121.62	117.91	116.73	115.55	118.59	---	118.63	119.03	118.69	---
14	117.71	116.16	121.63	117.81	115.25	115.15	117.48	---	118.72	118.76	119.05	---
15	117.02	117.91	122.96	118.23	116.30	116.69	117.43	---	118.72	118.37	119.14	---
16	---	118.29	122.37	116.81	119.55	117.06	117.17	---	118.57	119.07	119.09	---
17	---	119.37	122.08	117.28	118.89	118.37	117.99	---	118.50	119.74	118.73	---
18	---	119.39	121.98	117.40	118.98	119.76	119.63	---	118.89	119.82	118.47	---
19	---	117.91	122.24	114.74	119.98	120.33	---	---	118.75	119.59	118.44	---
20	---	118.32	123.23	115.70	118.26	118.63	---	---	117.71	119.22	118.37	---
21	---	117.52	125.12	115.94	114.25	117.49	---	---	118.61	118.88	118.55	---
22	---	119.08	125.00	114.53	115.47	119.77	---	---	118.33	118.09	118.69	---
23	---	118.52	121.95	114.53	117.45	120.15	---	---	118.21	118.73	118.65	---
24	---	120.16	119.32	114.65	120.63	119.93	---	---	118.70	119.13	118.41	---
25	119.99	120.66	119.49	116.46	119.95	119.82	---	117.90	119.23	119.45	118.50	---
26	119.77	119.37	119.13	116.12	119.50	119.51	---	117.55	119.35	119.63	118.63	---
27	119.37	121.70	119.85	118.11	120.33	119.52	---	117.63	119.22	119.63	118.64	---
28	118.93	124.03	118.90	116.56	119.54	118.21	---	117.64	119.18	119.25	118.38	---
29	118.11	123.15	118.93	115.83	---	116.98	---	118.19	119.18	118.60	118.16	---
30	118.56	122.48	118.90	117.25	---	116.67	---	118.88	119.18	118.42	118.15	---
31	119.36	---	118.80	116.17	---	116.67	---	119.18	---	118.87	118.26	---
MEAN	---	118.66	121.32	117.04	117.47	117.97	---	---	118.88	119.07	118.82	---
MAX	---	124.03	125.12	119.80	120.63	120.33	---	---	120.07	119.82	120.04	---
MIN	---	115.74	118.80	114.53	114.25	115.15	---	---	117.71	118.09	118.15	---

THIS IS A BLANK PAGE

## 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 1990

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)	
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 mi upstream from C.B. & Q. railroad crossing and 3.6 mi south of Elsberry.	1.50	1954-90	+	4.39	820
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‡ 1972-90	3-15-90	7.65	2,280
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‡ 1971-90	3-15-90 to 3-16-90	21.84	3,130
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‡ 1972-90	3-15-90	21.44	4,040
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‡ 1973-90	+	+	+
06901100	Locust Creek at 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 mi east of Reger.	232	1987-90	+	11.13	3,940

## DISCHARGE AT PARTIAL-RECORD STATIONS

Annual maximum discharge at crest-stage partial-record stations, water year 1990--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)	
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 down-stream side of highway bridge, 0.8 mi east of Clifton City.	598	1922-71‡ 1972-90	+	31.07	45,900
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‡ 1979-90	3-15-90 to 3-16-90	16.65	1,870
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‡ 1975-90	+	34.29	+
Osage River basin							
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‡ 1977-90	+	10.15	1,650
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 mi 9.9.	257	1947-70‡ 1971-90	+	16.06	15,700
Meramec River basin							
07011200	Love Creek near Salem	Lat 37°38'10", long 91°33'35", in W 1/2 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 1964-90	+	5.28	160
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	1954-90	+	2.65	21

+ Not determined.

‡ Operated as continuous-record gaging station.

f Discharge measurements, daily gage-height, and rainfall records available.



## 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 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (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 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 IT FIELD MG/L AS CACO3 (00419)
		07064400 MONTAUK SPRINGS AT MONTAUK, MO (LAT 37 27 36N LONG 091 40 59W)								
OCT 1989 23...	1110	62	346	7.5	13.5	7.5	72	K9	45	150
		07064440 CURRENT RIVER BELOW MONTAUK STATE PARK (LAT 37 27 01N LONG 091 29 41W)								
OCT 1989 23...	1230	76	306	8.1	14.5	10.0	99	K7	33	150
		07064530 WELCH SPRING NEAR AKERS MO (LAT 37 23 38N LONG 091 34 25W)								
OCT 1989 23...	1345	101	340	7.6	14.0	7.9	76	K4	K13	176
		07064555 PULLTITE SPRING NEAR ROUND SPRING, MO (LAT 37 20 03N LONG 091 29 24W)								
OCT 1989 23...	1520	28	333	7.7	14.0	8.5	82	K7	28	160
		07065000 ROUND SPRING AT ROUND SPRING MO (LAT 37 16 57N LONG 091 24 27W)								
OCT 1989 25...	1030	20	341	7.7	14.0	9.2	88	K3	K8	182
		07065500 ALLEY SPRING AT ALLEY MO (LAT 37 09 14N LONG 091 26 29W)								
OCT 1989 25...	0830	88	322	7.8	14.0	8.4	80	K1	K7	168
		07066110 JACKS FORK ABOVE TWO RIVERS (LAT 37 10 53N LONG 091 17 36W)								
OCT 1989 24...	1330	159	346	8.3	16.5	11.2	113	K5	K16	188
		07066510 CURRENT RIVER ABOVE POWDER MILL (LAT 37 10 32N LONG 091 12 48W)								
OCT 1989 24...	1430	576	337	8.3	16.0	11.2	111	K3	K3	180
		07066550 BLUE SPRING NEAR EMINENCE, MO (LAT 37 09 58N LONG 091 09 47W)								
OCT 1989 24...	1530	94	315	7.7	14.0	9.2	88	K1	K1	158
		07067500 BIG SPRING NEAR VAN BUREN MO (LAT 36 57 05N LONG 090 59 36W)								
OCT 1989 24...	1050	394	345	7.6	14.5	9.2	88	<1	<1	192
		07067800 CURRENT RIVER BELOW HAWES CAMPGROUND (LAT 36 49 08N LONG 090 56 48W)								
OCT 1989 24...	0900	1380	327	8.1	14.5	10.6	102	K9	21	192

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

## WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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- PHORUS 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 1989 23...	<0.01	0.90	0.02	<0.20	0.02	<1	1	<1	<10
07064440	CURRENT RIVER BELOW MONTAUK STATE PARK (LAT 37 27 01N LONG 091 29 41W)								
OCT 1989 23...	0.01	0.80	0.03	<0.20	0.02	<1	<1	<1	<10
07064530	WELCH SPRING NEAR AKERS MO (LAT 37 23 38N LONG 091 34 25W)								
OCT 1989 23...	<0.01	0.70	0.02	<0.20	0.01	<1	<1	<1	<10
07064555	PULLTITE SPRING NEAR ROUND SPRING, MO (LAT 37 20 03N LONG 091 29 24W)								
OCT 1989 23...	<0.01	0.60	0.02	0.30	0.01	<1	<1	<1	<10
07065000	ROUND SPRING AT ROUND SPRING MO (LAT 37 16 57N LONG 091 24 27W)								
OCT 1989 25...	<0.01	0.30	0.02	<0.20	<0.01	<1	1	<1	<10
07065500	ALLEY SPRING AT ALLEY MO (LAT 37 09 14N LONG 091 26 29W)								
OCT 1989 25...	<0.01	0.60	0.02	<0.20	0.01	<1	1	<1	<10
07066110	JACKS FORK ABOVE TWO RIVERS (LAT 37 10 53N LONG 091 17 36W)								
OCT 1989 24...	<0.01	0.30	0.03	<0.20	0.01	2	1	<1	<10
07066510	CURRENT RIVER ABOVE POWDER MILL (LAT 37 10 32N LONG 091 12 48W)								
OCT 1989 24...	<0.01	0.20	0.02	<0.20	<0.01	1	1	<1	<10
07066550	BLUE SPRING NEAR EMINENCE, MO (LAT 37 09 58N LONG 091 09 47W)								
OCT 1989 24...	<0.01	0.40	0.02	<0.20	<0.01	<1	4	<1	<10
07067500	BIG SPRING NEAR VAN BUREN MO (LAT 36 57 05N LONG 090 59 36W)								
OCT 1989 24...	<0.01	0.30	0.02	<0.20	0.02	<1	1	<1	<10
07067800	CURRENT RIVER BELOW HAWES CAMPGROUND (LAT 36 49 08N LONG 090 56 48W)								
OCT 1989 24...	<0.01	0.20	0.02	0.40	<0.01	<1	1	<1	<10

THIS IS A BLANK PAGE

# Index

	Page		Page
<b>A</b>			
Access to Watstore data.....	20	Chemical oxygen demand, definition of.....	21
Accuracy of field data and computed results.....	12	Chemical quality of streamflow.....	8
Acre-foot, definition of.....	21	Cherokee School well.....	262
Akers well.....	272	Clearwater Lake near Piedmont.....	215
Alley Spring at Alley.....	292	Collection and computation of data.....	10
Analyses of samples collected at water-quality partial-record stations.....	292	Collection and examination of data.....	14
Annual maximum discharge at crest-gage partial- record stations, water year 1990.....	290	Columbia Bottoms well.....	243
Arkansas River basin, hydrologic records in.....	224	Conservation well.....	269
Arrow Rock well.....	247	Contents, definition of.....	21
Atlas Powder well.....	256	Control, definition of.....	21
Aurora well.....	259	Control structure, definition of.....	21
<b>B</b>			
Bacteria, definition of.....	21	Cooperation.....	2
Bear Creek at Hannibal.....	37	Crooked Creek near Paris.....	43
Bear Creek basin, hydrologic records in.....	37	Crooked River near Richmond.....	290
Bed material, definition of.....	21	Crest-stage partial-record stations.....	290
Belcrest Street well.....	260	Cubic foot per second, definition of.....	21
Bennett Spring at Bennett Springs.....	136	Cubic feet per second per square mile, definition of.....	21
Big Creek at Chloride.....	191	Cuivre River basin, hydrologic records in.....	56
at Des Arc.....	192	Cuivre River near Troy.....	56
Big Piney River near Big Piney.....	142	Current River above Powder Mill.....	292
Big River at Byrnesville.....	166	at Doniphan.....	221
at Irondale.....	164	at Van Buren.....	219
near Richwoods.....	165	below Hawes Campground.....	292
Big Spring near Van Buren.....	220, 292	below Montauk State Park.....	292
Big Spring well.....	277	<b>D</b>	
Bissett School well.....	261	Data presentation.....	13
Black River at Leeper.....	216	Definition of terms.....	21
at Poplar Bluff.....	217	Delta well.....	283
near Annapolis.....	214	Des Moines River at St. Francisville.....	27
Blackwater River at Blue Lick.....	105	Des Moines River basin, hydrologic records in.....	27
Blue River basin, hydrologic records in.....	82	DeSoto well.....	288
Blue River near Kansas City.....	82	Discharge at partial-record stations.....	290
Blue Spring near Eminence.....	292	Discharge, definition of.....	21
Blue Springs Reservoir near Blue Springs.....	85	Discontinued streamflow stations.....	16
Bourbeuse River at Union.....	163	Discontinued surface-water-quality stations.....	18
near High Gate.....	162	Dissolved, definition of.....	21
<b>C</b>			
Calendar for water year 1990.....	Front	Downstream order and station number.....	9
Camp Creek near Elsberry.....	290	Drainage area, definition of.....	22
Castor River at Zalma.....	176	Drainage basin, definition of.....	22
Cedar Creek near Columbia.....	110	Duck Creek well.....	284
near Pleasant View.....	125	<b>E</b>	
Center Creek near Carterville.....	225	East Fork Big Creek near Bethany.....	290
Cfs-day, definition of.....	21	East Fork Black River at Lesterville.....	213
Chariton River at Livonia.....	95	East Fork Little Blue River near Blue Springs.....	86
at Novinger.....	96	East Fork Little Chariton River near Huntsville.....	101
near Prairie Hill.....	97	near Macon.....	100
Chariton River basin, hydrologic records in.....	95	East Prairie well.....	281
		Eleven Point River near Bardley.....	223
		Elk Fork Salt River near Madison.....	49
		Elk River near Tiff City.....	227
		Explanation of ground-water records.....	13

# Index

	Page		Page
Explanation of stage and water-discharge records.....	10	Jefferson City well.....	246
Explanation of water-quality records.....	14		<b>K</b>
	<b>F</b>	Kansas River at DeSoto, KS.....	78
Fabius River basin, hydrologic records in.....	33	Kansas River basin, hydrologic records in.....	78
Factors for converting inch-pound units to International System Units (SI) .....	Back Cover	Kansas Street well.....	264
Fairview well .....	271		<b>L</b>
Fecal coliform bacteria, definition of .....	21	Lake of the Ozarks near Bagnell .....	137
Fecal streptococci bacteria, definition of.....	21	Lake Taneycomo at Branson .....	210
Fox River at Wayland .....	31	Lake Taneycomo at the School of the Ozarks .....	206
Fox River basin, hydrologic records in.....	31	Lakes:	
Fredericktown well .....	286	Blue Springs Reservoir near Blue Springs .....	85
Fulbright well.....	263	Clearwater Lake near Piedmont.....	215
	<b>G</b>	Harry S. Truman Reservoir at Warsaw.....	135
Gage height, definition of .....	22	Lake of the Ozarks near Bagnell .....	137
Gaging station, definition of .....	22	Lake Taneycomo at Branson .....	210
Gasconade River above Jerome.....	143	Lake Taneycomo at the School of the Ozarks .....	206
at Jerome .....	146	Long Branch Reservoir near Macon.....	99
near Rich Fountain.....	147	Longview Reservoir at Kansas City .....	83
Gasconade River basin, hydrologic records in .....	142	Pomme de Terre Lake near Hermitage.....	129
Grand River basin, hydrologic records in.....	89	Smithville Reservoir near Smithville.....	73
Grand River near Gallatin.....	89	Stockton Lake near Stockton.....	123
near Sumner .....	92	Table Rock Lake near Branson.....	200
Greer Spring at Greer.....	222	Wappapello Lake at Wappapello.....	194
Ground-water monitoring stations .....	xi	Lamar well .....	254
Ground-water monitoring wells.....	230	Lamine River at Clifton City .....	291
	<b>H</b>	near Otterville .....	104
Halfway well.....	255	Lamine River basin, hydrologic records in.....	104
Hannibal well.....	235	Lick Creek at Perry.....	50
Hardness, definition of.....	22	Lindley Creek near Polk .....	128
Harry S. Truman Reservoir at Warsaw.....	135	Little Blue River basin, hydrologic records in.....	83
Headwater Diversion Channel basin, hydrologic records in.....	176	Little Blue River below Longview Dam at Kansas City.....	84
Hinkson Creek near Columbia.....	107	near Lake City.....	87
Hydrologic conditions.....	4	Little Chariton River basin, hydrologic records in .....	99
Hydrologic-data station records.....	27	Little Piney Creek at Newburg .....	145
Hydrologic-data stations in downstream order .....	vii	Little Platte River at Smithville .....	74
Hydrologic unit, definition of .....	22	Little River Ditch 1 near Morehouse.....	197
	<b>I</b>	Little River Ditch 251 near Lilbourn.....	196
Index .....	295	Little Sac River near Morrisville .....	122
Industrial Park well.....	270	near Walnut Grove.....	120
Instantaneous discharge, definition of .....	21	Little St. Francis River at Fredericktown .....	185
Introduction.....	1	Locust Creek at Reger .....	290
	<b>J</b>	Long Branch Reservoir near Macon.....	99
Jacks Fork above Two Rivers .....	292	Longview Reservoir at Kansas City .....	83
at Eminence.....	218	Longview well .....	258
James River at Galena.....	199	Love Creek near Salem.....	291
near Springfield.....	198	Lower Eleven Point well .....	276
		Lower Mississippi River basin, hydrologic records in .....	154
			<b>M</b>
		Main Street well.....	265



# Index

	Page		Page
Malden well .....	279	North Fabius River at Monticello .....	33
Map showing location of ground-water monitoring wells .....	230	North Fork River near Tecumseh .....	212
Map showing location of hydrologic-data stations .....	300	North Fork Salt River at Hagers Grove .....	38
Maries River at Westphalia.....	291	near Shelbina .....	39
Mean concentration, definition of.....	23	North River at Palmyra.....	36
Mean discharge, definition of .....	21	North River basin, hydrologic records in .....	36
Medicine Creek near Galt.....	91	Numbering system for miscellaneous sites.....	9
Meramec River at Paulina Hills.....	170		
near Eureka .....	167	<b>O</b>	
near Steelville .....	158	O'Fallon well.....	242
near Sullivan .....	159	One Hundred and Two River at Maryville.....	71
Meramec River basin, hydrologic records in.....	158	Osage River above Schell City .....	115
Mexico South well .....	238	below St. Thomas .....	140
Micrograms per gram, definition of.....	22	near Bagnell .....	138
Micrograms per liter, definition of .....	22	near St. Thomas .....	139
Middle Fabius River near Monticello.....	34	Osage River basin, hydrologic records in.....	115
Middle Fork Salt River at Paris .....	45	Osceola well.....	251
Milligrams per liter, definition of .....	22	Other data available .....	13
Mississippi River at Chester, IL .....	172	Ozark Lead 1 well.....	273
at Grafton, IL .....	59	Ozark Lead 2 well.....	274
at St. Louis .....	154		
at Thebes, IL .....	177	<b>P</b>	
below Grafton, IL .....	60	Partial-record station, definition of.....	22
Mississippi River main stem, hydrologic records in.....	59	Particle size, definition of .....	22
Missouri River at Boonville.....	106	Particle-size, classification, definition of.....	22
at Hermann.....	148	Physiography .....	4
at Kansas City .....	79	Platte River	
at Rulo, NB .....	64	at Ravenwood .....	290
at St. Joseph .....	66	at Sharps Station .....	75
at Waverly .....	88	near Agency .....	72
Missouri River basin, hydrologic records in.....	63	Platte River basin, hydrologic records in.....	71
Missouri River main stem, hydrologic records in.....	64	Pomme de Terre Lake near Hermitage.....	129
Missouri water-use fact sheet .....	3	Pomme de Terre River near Hermitage.....	130
Moniteau Creek near Fayette.....	291	near Polk .....	127
Montauk Springs at Montauk .....	292	Potosi well .....	287
Moreau River near Jefferson City.....	291	Preface .....	iii
Mussel Fork near Musselfork.....	98	Publications on techniques of water-resources investigations .....	25
		Pullite Spring near Round Spring.....	292
<b>N</b>			
National Geodetic Vertical Datum of 1929, definition of.....	22	<b>R</b>	
National Lead well.....	285	Recurrence interval, definition of.....	23
National stream-quality accounting network, definition of .....	10	Report documentation page .....	iv
Naylor well .....	278	Round Spring at Round Spring.....	292
Nevada East well .....	253	Rolla well.....	268
Nevada West well .....	252	Runoff in inches, definition of.....	23
New Florence well .....	239		
Nodaway River basin, hydrologic records in.....	65	<b>S</b>	
Nodaway River near Graham .....	65	Sac River at Highway J below Stockton.....	124
Noel well.....	257	near Caplinger Mills .....	126
		near Dadeville.....	118
		St. Clair well.....	245
		St. Francis River	
		at Wappapello .....	195
		near Mill Creek.....	186

# Index

	Page		Page
near Patterson.....	193	Thermograph, definition of.....	23
near Roselle.....	184	Thompson River at Trenton.....	90
near Saco.....	187	Time-weighted average, definition of.....	24
St. Francis River basin, hydrologic records in.....	184	Tons per acre-foot, definition of.....	24
St. Joseph well .....	231	Tons per day, definition of.....	24
Salt River basin, hydrologic records in.....	38	Total, definition of.....	24
Salt River near Center.....	51	Total in bottom material, definition of .....	24
near New London.....	52	Total load, definition of .....	24
Scotts Corner well.....	237	Total recoverable, definition of .....	24
Sedalia well.....	248	Total sediment discharge, definition of .....	23
Sediment .....	15	Tributary to Middle Fork Tebo Creek	
Sediment, definition of .....	23	near Leeton .....	134
Shoal Creek above Joplin .....	226	Troy well.....	240
Sikeston well.....	282	Turnback Creek above Greenfield.....	119
Smithville Reservoir near Smithville.....	73		
Solute, definition of .....	23	U	
South Fabius River near Taylor.....	35	Upper Mississippi River basin, hydrologic	
South Fork Salt River above Santa Fe.....	44	records in .....	27
South Grand River near Clinton .....	131	V	
Southwest Power Plant well .....	266	Vandalia well.....	236
Special networks and programs .....	10	Vandike well.....	233
Specific conductance, definition of .....	23	W	
Spencer Creek below Plum Creek near		Wakenda Creek at Carrollton .....	290
Frankford .....	55	Wappapello Lake at Wappapello.....	194
Spickard well .....	232	Warsaw well .....	250
Spring River near Waco.....	224	Washington well .....	244
Springs:		Water analysis.....	14
Alley Spring at Alley .....	292	Water temperature .....	15
Bennett Spring at Bennett Springs.....	136	Water use .....	3
Big Spring near Van Buren.....	220, 292	Water year, definition of.....	24
Blue Spring near Eminence .....	292	Wayland well.....	234
Greer Spring at Greer.....	222	WDR, definition of.....	24
Montauk Springs at Montauk .....	292	Welch Spring near Akers.....	292
Pulltite Spring near Round Spring.....	292	Wellington well .....	249
Round Spring at Round Spring.....	292	Wells:	
Welch Spring near Akers.....	292	Akers well.....	272
Stage-discharge relation, definition of.....	23	Arrow Rock well.....	247
Starks Creek at Preston.....	291	Atlas Powder well.....	256
Steele well.....	280	Aurora well .....	259
Stockton Lake near Stockton .....	123	Belcrest Street well.....	260
Streamflow.....	6	Big Spring well.....	277
Streamflow, definition of.....	23	Bissett School well .....	261
Surface area, definition of.....	23	Cherokee School well .....	262
Surficial bed material, definition of.....	23	Columbia Bottoms well.....	243
Suspended sediment, definition of.....	23	Conservation well .....	269
Suspended-sediment concentration,		Delta well.....	283
definition of.....	23	DeSoto well .....	288
Suspended-sediment discharge, definition of .....	23	Duck Creek well .....	284
Suspended-sediment load, definition of.....	23	East Prairie well.....	281
Sycamore Creek near Winona .....	291	Fairview well .....	271
		Fredericktown well .....	286
T		Fulbright well.....	263
Table Rock Lake near Branson.....	200	Halfway well.....	255
Tariko River at Fairfax .....	63		
Tariko River basin, hydrologic records in .....	63		

	Page		Page
Hannibal well.....	235	Southwest Power Plant well .....	266
Industrial Park well.....	270	Spickard well .....	232
Jefferson City well.....	246	Steele well.....	280
Kansas Street well.....	264	Troy well.....	240
Lamar well.....	254	Vandalia well .....	236
Longview well .....	258	Vandike well .....	233
Lower Eleven Point well.....	276	Warsaw well .....	250
Main Street well.....	265	Washington well .....	244
Malden well .....	279	Wayland well .....	234
Mexico South well .....	238	Wellington well .....	249
National Lead well.....	285	Wentzville well.....	241
Naylor well .....	278	West Plains 2 well .....	275
Nevada East well .....	253	York Street well.....	267
Nevada West well .....	252	Weighted average, definition of .....	24
New Florence well .....	239	Wentzville well .....	241
Noel well.....	257	West Plains 2 well .....	275
O'Fallon well .....	242	West Fork Tebo Creek near Lewis .....	132
Osceola well.....	251	White River basin, hydrologic records in.....	198
Ozark Lead 1 well.....	273	White River below Table Rock Dam near Branson .....	201
Ozark Lead 2 well.....	274	White River near Branson .....	205
Potosi well.....	287	WRD, definition of .....	24
Rolla well.....	268	WSP, definition of .....	24
St. Clair well .....	245	Wyconda River above Canton .....	32
St. Joseph well .....	231	Wyconda River basin, hydrologic records in.....	32
Scotts Corner well.....	237		
Sedalia well.....	248	<b>Y</b>	
Sikeston well.....	282	York Street well.....	267

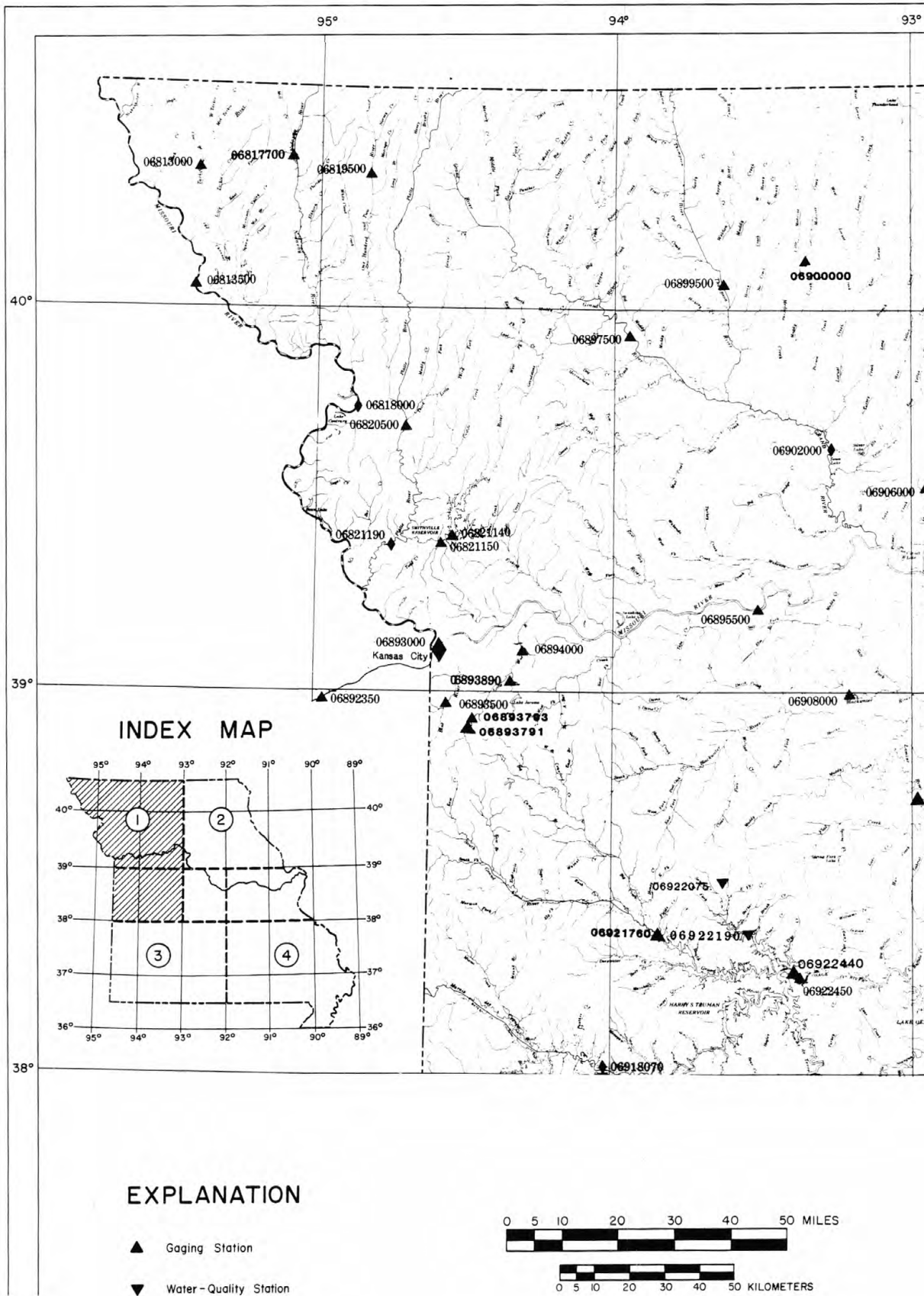


Figure 7.--Location of hydrologic-data stations.

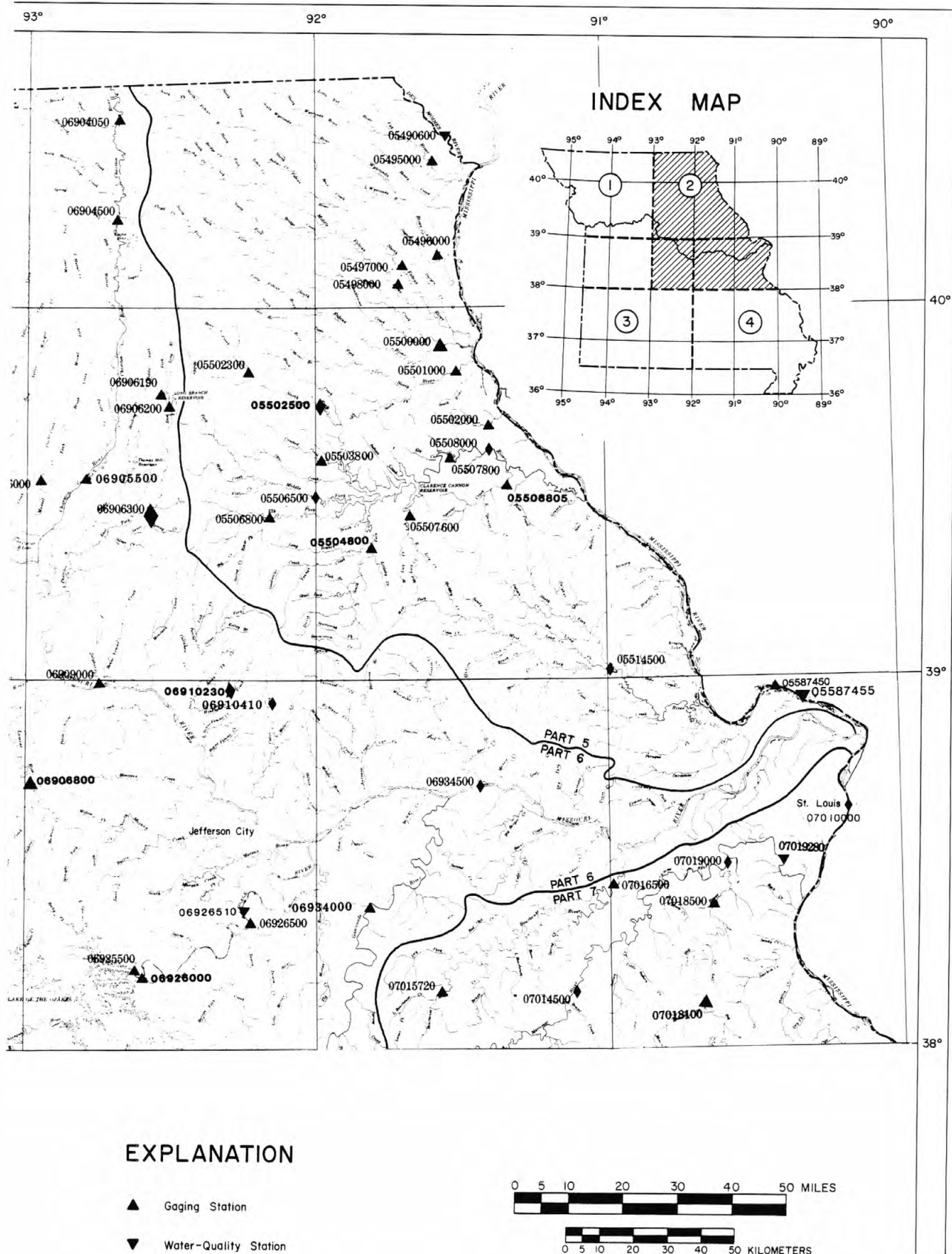


Figure 7.--Location of hydrologic-data stations--Continued.



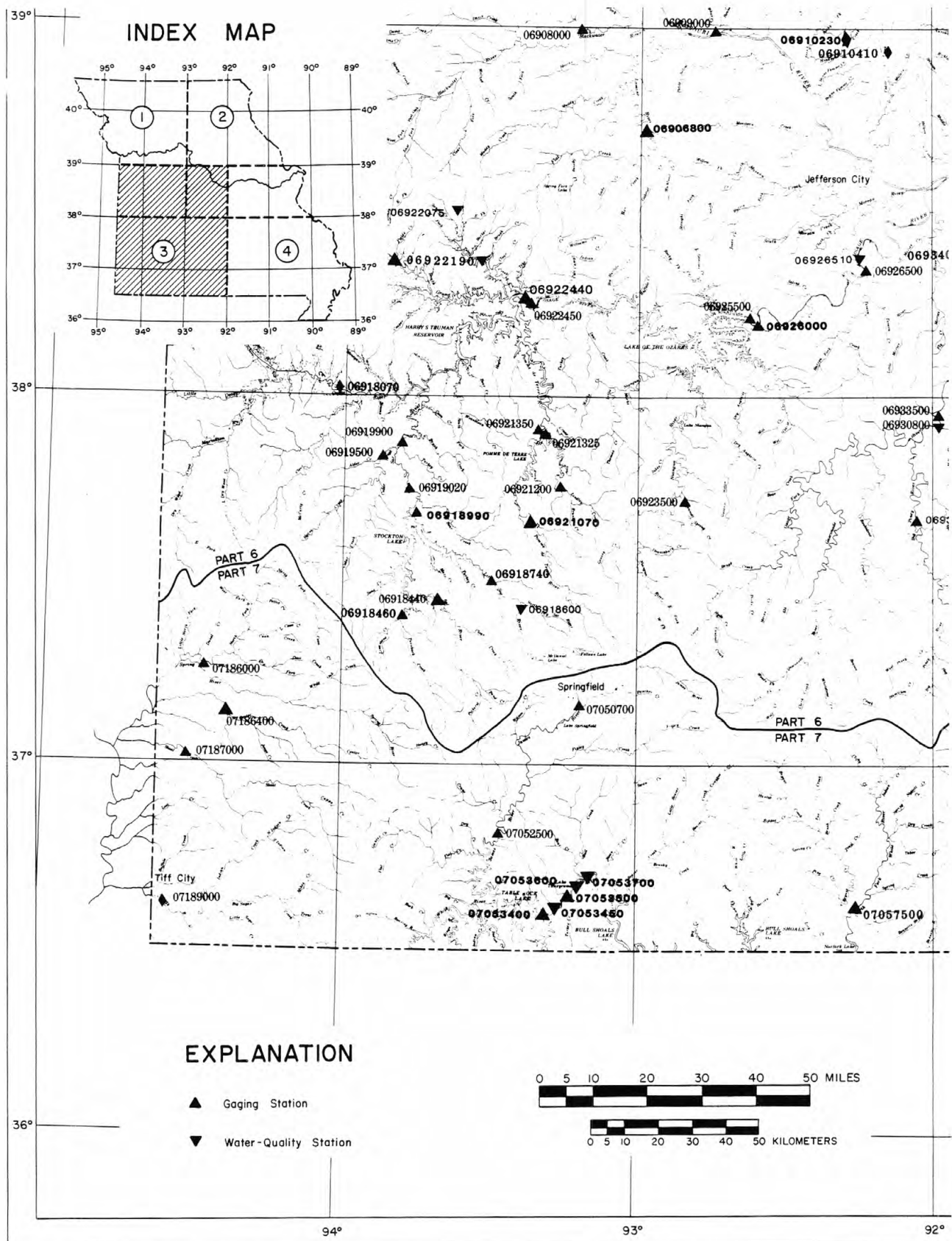


Figure 7.--Location of hydrologic-data stations--Continued.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1991-556-198

THIS IS A BLANK PAGE

## 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

U.S. DEPARTMENT OF THE INTERIOR  
Geological Survey  
1400 Independence Road, Mail Stop 200  
Rolla, MO 65401

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE \$300  
SPECIAL 4TH CLASS BOOK RATE

POSTAGE AND FEES PAID  
U.S. DEPARTMENT OF THE INTERIOR  
INT 413

