

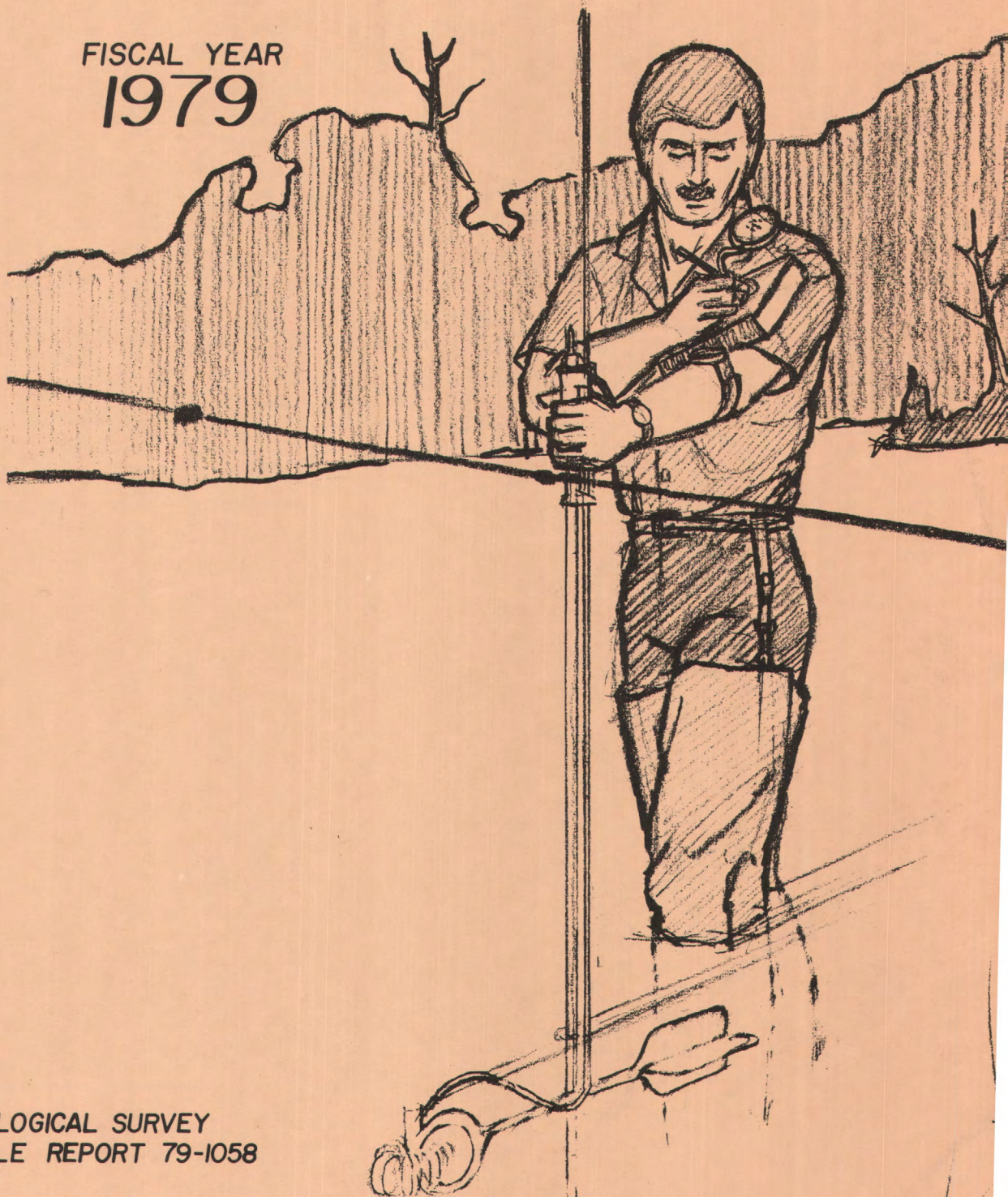
23-98
PROGRAMS AND ACTIVITIES OF THE

MISSOURI

DISTRICT, WATER RESOURCES DIVISION
UNITED STATES GEOLOGICAL SURVEY



FISCAL YEAR
1979



U.S. GEOLOGICAL SURVEY
OPEN-FILE REPORT 79-1058

Front cover drawing by
Douglas R. Stark,
Division of Geology and Land Survey

PROGRAMS AND ACTIVITIES OF THE
MISSOURI DISTRICT, WATER RESOURCES DIVISION,
U.S. GEOLOGICAL SURVEY
FISCAL YEAR 1979

Compiled by Wanietia M. Kratzer

U.S. GEOLOGICAL SURVEY

Open-File Report 79-1058

Rolla, Missouri
July 1979



UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

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Water Resources Division

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CONTENTS

	Page
Abstract-----	1
Introduction-----	1
Cooperation-----	1
Hydrologic-data program-----	4
Missouri district projects-----	4
Anticipated new work-----	50
Sources of information-----	51
Bibliography-----	53

ILLUSTRATIONS

	Page
Figure 1. Chart showing organization of the Missouri district-----	2
2. Map showing location of hydrologic-data stations, 1979-----	Back of report

TABLES

Table 1. Continuous-records (daily discharge) station network, 1979-----	5
2. Crest-stage (peak discharge) station network, 1979-----	12
3. Urban rainfall-runoff station network, 1979-----	18
4. Active low-flow partial-record stations, 1979-----	21

PROGRAMS AND ACTIVITIES OF THE MISSOURI DISTRICT,
WATER RESOURCES DIVISION, U.S. GEOLOGICAL SURVEY
FISCAL YEAR 1979

ABSTRACT

Water-resources investigations of the U.S. Geological Survey in Missouri consist of collecting hydrologic data and conducting interpretive investigations. The data and the results of the investigations are published or released by either the U.S. Geological Survey or by cooperating agencies. This report describes the data-collection activities and investigations in Missouri for the 1979 fiscal year and provides an extensive list of water-resources references for the State.

INTRODUCTION

The United States Geological Survey was established on March 3, 1879, in the closing hours of the final session of the 45th Congress; in 1894, a small appropriation was obtained for the specific purpose of "gauging streams and determining the water supply of the United States."

A district office of the Water Resources Division was established in Rolla, Missouri, in 1922, when a cooperative program was begun with the Missouri Bureau of Geology and Mines (now Division of Geology and Land Survey). In cooperation with other Federal and State agencies, the office assesses the quantity and quality of the State's water supply, helps coordinate Federal water-data acquisition activities, collects and distributes information about natural hazards such as floods.

The present functional arrangement within the Missouri district is shown in figure 1.

COOPERATION

The Missouri district and agencies of the State of Missouri have had cooperative agreements for the systematic collection of streamflow records since 1921. In fact, about 90 percent of the hydrologic data collected by the Water Resources Division (WRD) in Missouri is in cooperation with local, State, or Federal agencies.

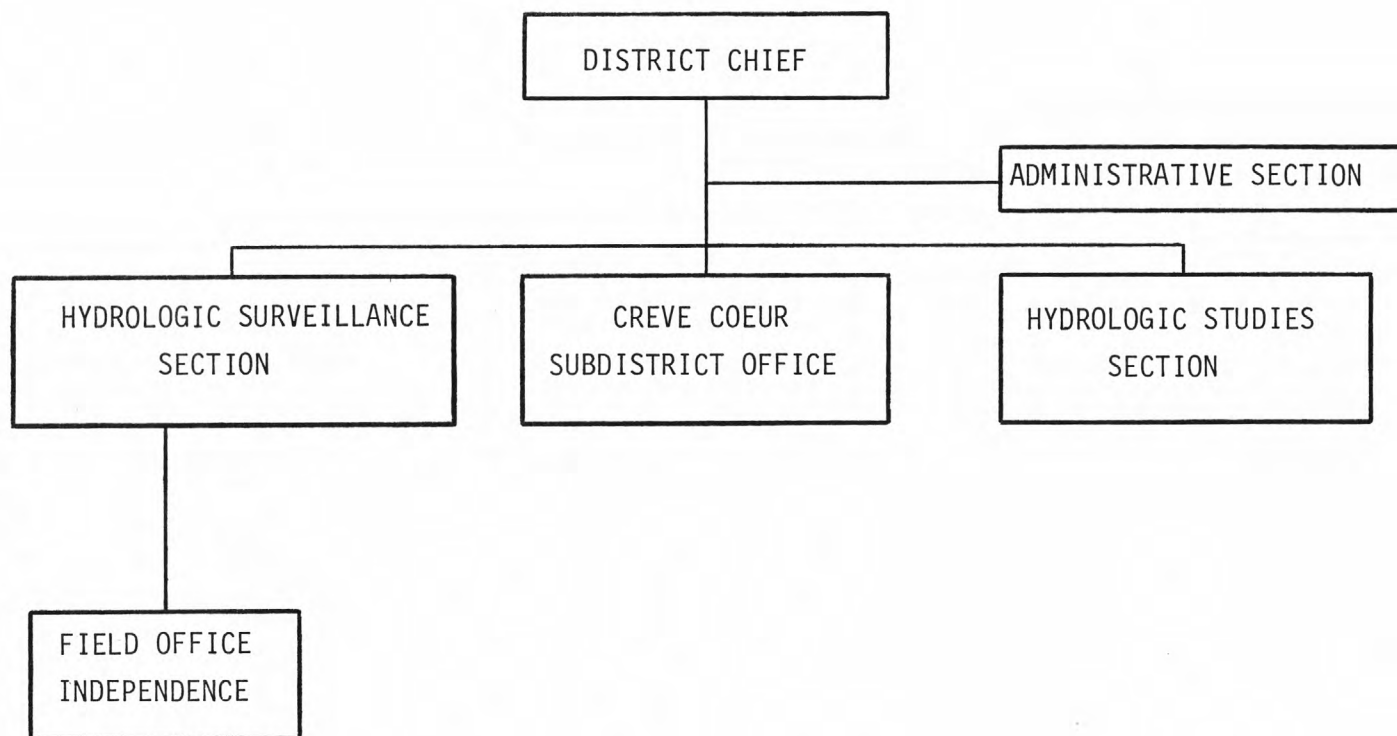


Figure 1.--Organization of the Missouri district.

The Department of Natural Resources, Division of Geology and Land Survey (formerly Missouri Geological Survey and Water Resources) is the principal State cooperator. Money and services contributed by State agencies are matched by the U.S. Geological Survey with funds authorized specifically for the cooperative program.

The collection of surface-water data by the U.S. Geological Survey began in 1903 in Missouri. These and continuing data are the basis for analytical studies that define streamflow parameters and are ultimately used in water management, planning, and design.

The cooperative collection of ground-water data by the Division of Geology and Land Survey and Water Resources Division, Missouri district, has been continuous since initiation in October 1963. Many of the published ground-water reports for Missouri are the result of the cooperative program.

The collection of water-quality data is a continuous project that was initiated in 1962 in cooperation with the Missouri Water Pollution Board (now the Department of Natural Resources, Division of Environmental Quality). The objective of the operation of a network of water-quality stations is to provide water-quality data for planning and action programs.

The following are State and local organizations that assist in collecting hydrologic data through cooperative agreements:

- Department of Natural Resources
 - Division of Geology and Land Survey
 - Division of Environmental Quality, Laboratory Services Program
- State Highway Commission
- Department of Conservation
- St. Louis County, Missouri
- Little River Drainage District
- City of Springfield
 - Division of Sanitary Services
 - City Utilities

The following Federal agencies assist in collection of records by furnishing funds or services:

- U.S. Army, Corps of Engineers
 - St. Louis District
 - Kansas City District
 - Little Rock District
 - Tulsa District
 - Rock Island District
- National Weather Service
- Soil Conservation Service
- Federal Energy Regulatory Commission (Union Electric Co. of Missouri)

HYDROLOGIC-DATA PROGRAM

Hydrologic-data stations are maintained by the Geological Survey at selected key locations throughout the State of Missouri (fig. 2, in the back of report) to constitute a network for obtaining records on stream discharge or stage, reservoir and lake storage, ground-water levels, well and spring discharge, and the quality of surface and ground water. Tables 1-4 are listings of hydrologic-data stations, in downstream order, and source of funding.

MISSOURI DISTRICT PROJECTS

The Missouri district projects address a wide range of hydrologic needs. Projects are designed and planned with the cooperators to be responsive to the needs of people in Missouri. The following pages give information on all projects now in progress and anticipated or expanded work for the future.

PROJECT TITLE: Collection of surface-water data MØ 00-001

COOPERATORS: Department of Natural Resources
Division of Geology and Land Survey
Division of Environmental Quality, Laboratory
Services Program
State Highway Commission
Department of Conservation
U.S. Army, Corps of Engineers
National Weather Service
Union Electric Company of Missouri
Little River Drainage District
City of Springfield Utilities
City of Springfield, Division of Sanitary Services

LOCATION: Statewide

PROJECT CHIEF: M. E. Janson

PROBLEM: Surface-water information is needed for purposes of surveillance, planning design, hazard warning, and operation and management in water-related fields such as water supply, hydroelectric power, flood control, irrigation, bridge and culvert design, wildlife management, pollution abatement, flood-plain management, and water resources development.

Table 1.--Continuous-records (daily discharge) station network, 1979

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. High-way Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
05495000	Fox River at Wayland-----	----	----	----	----	----	----	X	----	----	----	----	----
05497000	North Fabius River at Monticello--	----	----	----	----	----	----	X	----	----	----	----	----
05498000	Middle Fabius River near Monticello-----	----	----	----	----	----	----	X	----	----	----	----	----
05500000	South Fabius River near Taylor----	----	----	----	----	----	----	X	----	----	----	----	----
05501000	North River at Palmyra-----	----	----	----	----	----	----	X	----	----	----	----	----
05502000	Bear Creek at Hannibal-----	----	----	----	----	----	X	X	----	----	----	----	----
5 05502300	Salt River at Hagars Grove-----	----	----	----	----	----	----	----	X	----	----	----	----
05504900	South Fork Salt River at Santa Fe-----	----	----	----	----	----	----	----	X	----	----	----	----
05506500	Middle Fork Salt River at Paris---	----	----	----	----	----	----	----	X	----	----	----	----
05506800	Elk Fork Salt River near Madison-----	----	----	----	----	----	----	----	X	----	----	----	----
05507500	Salt River near Monroe City-----	----	----	----	----	----	----	----	X	----	----	----	----
05508000	Salt River near New London-----	----	----	----	----	----	----	----	X	----	----	----	----
05508800	Spencer Creek near Frankford-----	----	----	----	----	----	----	----	X	----	----	----	----
05514500	Cuivre River near Troy-----	----	----	----	----	----	----	----	X	----	----	----	----
05587500	Mississippi River at Alton, IL----	----	----	----	----	----	X	----	X	----	----	----	----
06813000	Tarkio River at Fairfax-----	X	----	----	----	X	----	----	----	----	----	----	----
06817500	Nodaway River near Burlington Junction-----	----	----	----	----	----	----	----	----	X	----	----	----
06818000	Missouri River at St. Joseph-----	----	----	----	----	----	X	----	----	X	----	----	----
06819500	One Hundred and Two River at Maryville-----	X	----	----	----	X	----	----	----	----	----	----	----
06820500	Platte River near Agency-----	----	----	----	----	----	----	----	----	X	----	----	----

Table 1.--Continuous-records (daily discharge) station network, 1979--continued

[DG&LS, Division of Geology and Land Survey; City of Spfld., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfld.	Mo. Highway Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
06821150	Little Platte River at Smithville-----	----	----	----	----	----	----	----	----	X	----	----	----
06821190	Platte River at Sharps Station--	----	----	----	----	----	----	----	----	X	----	----	----
06821280	Line Creek at Riverside-----	----	----	----	----	----	----	----	----	X	----	----	----
06893000	Missouri River at Kansas City---	----	----	----	----	----	X	----	----	X	----	----	----
06893500	Blue River near Kansas City----	----	----	----	----	----	----	----	----	X	----	----	----
06893560	Brush Creek at Main Street in Kansas City-----	X	----	----	----	X	----	----	----	X	----	----	----
06893670	Shoal Creek at Claycomo-----	----	----	----	----	----	----	----	----	X	----	----	----
06893793	Little Blue River below Longview Damsite, Kansas City-----	----	----	----	----	----	----	----	----	X	----	----	----
06893880	Jackson County Lake near Blue Springs-----	----	----	----	----	----	----	----	----	X	----	----	----
06893890	East Fork Little Blue River near Blue Springs-----	----	----	----	----	----	----	----	----	X	----	----	----
06894000	Little Blue River near Lake City-----	----	----	----	----	----	----	----	----	X	----	----	----
06894680	Sni-A-Bar Creek near Tarsney----	X	----	----	----	X	----	----	----	----	----	----	----
06895500	Missouri River at Waverly-----	----	----	----	----	----	----	----	----	X	----	----	----
06897500	Grand River at Gallatin-----	X	----	----	----	X	----	----	----	X	----	----	----
06899500	Thompson River at Trenton-----	----	----	----	----	----	----	----	----	X	----	----	----
06900000	Medicine Creek near Galt-----	X	----	----	----	X	----	----	----	----	----	----	----
06902000	Grand River near Sumner-----	----	----	----	----	----	X	----	----	X	----	----	----
06904050	Chariton River at Livonia-----	----	----	----	----	----	----	----	----	X	----	----	----
06904500	Chariton River at Novinger-----	----	----	----	----	----	----	----	----	X	----	----	----

Table 1.--Continuous-records (daily discharge) station network, 1979--continued

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. Highway Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
06905500	Chariton River near Prairie Hill-----	----	----	----	----	----	----	----	----	X	----	----	----
06906000	Mussel Fork near Musselfork-----	----	----	----	----	----	----	----	----	X	----	----	----
06906200	East Fork Little Chariton River near Macon-----	----	----	----	----	----	----	----	----	X	----	----	----
06906300	East Fork Little Chariton River near Huntsville-----	----	----	----	----	----	----	----	----	X	----	----	----
06906500	Missouri River at Glasgow1-----	----	----	----	----	----	----	----	----	X	----	----	----
7 06907500	South Fork Blackwater River near Elm-----	X	----	----	----	X	----	----	----	----	----	----	----
06908000	Blackwater River at Blue Lick-----	----	----	----	----	----	----	----	----	X	----	----	----
06909000	Missouri River at Boonville-----	----	----	----	----	----	X	----	----	X	----	----	----
06910230	Hinkson Creek at Columbia-----	X	----	----	----	X	----	----	----	----	----	----	----
06910430	Little Dixie Lake at Millersburg---	X	----	----	----	X	----	----	----	----	----	----	----
06910450	Missouri River at Jefferson City1--	----	----	----	----	----	----	----	----	----	----	----	X
06918440	Sac River near Dadeville-----	----	----	----	----	----	----	----	----	X	----	----	----
06918460	Turnback Creek above Greenfield----	----	----	----	----	----	----	----	----	X	----	----	----
06918740	Little Sac River near Morrisville--	----	----	----	----	----	----	----	----	X	----	----	----
06918990	Stockton Lake near Stockton-----	----	----	----	----	----	----	----	----	X	----	----	----
06919000	Sac River near Stockton-----	----	----	----	----	----	----	----	----	X	----	----	----
06919020	Sac River below Stockton-----	----	----	----	----	----	----	----	----	X	----	----	----
06919500	Cedar Creek near Pleasant View-----	----	----	----	----	----	----	----	----	X	----	----	----
06919900	Sac River near Caplinger Mills-----	----	----	----	----	----	----	----	----	X	----	----	----

See footnotes at end of table.

Table 1.--Continuous-records (daily discharge) station network, 1979--continued

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. Highway Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
06920500	Osage River at Osceola ¹ -----	----	----	----	----	----	----	----	----	X	----	----	----
06921070	Pomme de Terre River near Polk-----	X	----	----	----	X	----	----	----	X	----	----	----
06921200	Lindley Creek near Polk-----	----	----	----	----	----	----	----	----	X	----	----	----
06921325	Pomme de Terre Lake near Hermitage-----	----	----	----	----	----	----	----	----	X	----	----	----
06921350	Pomme de Terre River near Hermitage-----	----	----	----	----	----	----	----	----	X	----	----	----
06921590	South Grand River at Archie-----	----	----	----	----	----	----	----	----	X	----	----	----
69 06923500	Bennett Spring at Bennett Springs--	X	----	----	----	X	----	----	----	----	----	----	----
06922450	Osage River below Harry S. Truman Dam-----	----	----	----	----	----	----	----	----	X	----	----	----
06925500	Lake of the Ozarks near Bagnell----	X	----	----	----	X	----	----	----	----	----	----	----
06926000	Osage River near Bagnell-----	----	----	----	----	----	----	----	----	----	----	----	X
06926500	Osage River near St. Thomas-----	----	----	----	----	----	----	----	----	----	----	----	X
06927800	Osage Fork at Drynob-----	X	----	----	----	X	----	----	----	----	----	----	----
06930000	Big Piney River near Big Piney-----	X	----	----	----	X	----	----	----	----	----	----	----
06932000	Little Piney Creek at Newburg-----	X	----	----	----	X	----	----	----	----	----	----	----
06933500	Gasconade River at Jerome-----	X	----	----	----	X	----	----	----	----	----	----	----
06934500	Missouri River at Hermann-----	----	----	----	----	----	X	----	----	X	----	----	X
07010000	Mississippi River at St. Louis-----	----	----	----	----	----	X	----	X	----	----	----	----
07010350	Meramec River at Cook Station-----	X	----	----	----	X	----	----	----	----	----	----	----
07010500	Meramec Spring near St. James-----	X	----	----	----	X	----	----	----	----	----	----	----
07013000	Meramec River near Steelville-----	----	----	----	----	----	----	----	X	----	----	----	----
07014500	Meramec River near Sullivan-----	----	----	----	----	----	----	----	X	----	----	----	----

See footnotes at end of table.

Table 1.--Continuous-records (daily discharge) station network, 1979--continued

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. High-way Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
07015000	Bourbeuse River near St. James-----	X	----	----	----	X	----	----	----	----	----	----	----
07015720	Bourbeuse River near Highgate-----	----	----	----	----	----	----	----	X	----	----	----	----
07016000	Bourbeuse River near Spring Bluff ² ----	X	----	----	----	X	----	----	----	----	----	----	----
07016500	Bourbeuse River at Union-----	----	----	----	----	----	----	----	X	----	----	----	----
07017200	Big River at Irondale-----	----	----	----	----	----	X	----	X	----	----	----	----
07018000	Big River near Desoto-----	----	----	----	----	----	X	----	X	----	----	----	----
07018500	Big River near Byrnsville-----	----	----	----	----	----	X	----	X	----	----	----	----
07019000	Meramec River near Eureka-----	----	----	----	----	----	----	----	X	----	----	----	----
07020500	Mississippi River at Chester, Ill-----	----	----	----	----	----	X	----	X	----	----	----	----
07021000	Castor River at Zalma-----	X	----	----	----	X	----	----	----	----	----	----	----
07022000	Mississippi River at Thebes, Ill-----	----	----	----	----	----	X	----	X	----	----	----	----
07037500	St. Francis River near Patterson-----	X	----	----	----	X	----	----	----	----	----	----	----
07041000	Little River ditch 81 near Kennett---	X	----	----	----	X	----	----	----	----	----	----	----
07042000	Little River ditch 1 near Kennett---	X	----	----	----	X	----	----	----	----	----	----	----
07042500	Little River ditch 251 near Lilbourn-----	X	----	----	----	X	----	----	----	----	----	----	----
07043000	Castor River at Aquilla-----	X	----	----	----	X	----	----	----	----	----	----	----
07043500	Little River ditch 1 near Morehouse--	X	----	----	----	X	----	----	----	----	----	----	----
07044000	Little River ditch 251 near Kennett--	X	----	----	----	X	----	----	----	----	----	----	----
07045000	Little River ditch 66 near Kennett---	X	----	----	----	X	----	----	----	----	----	----	----
07046000	Little River ditch 259 near Kennett--	X	----	----	----	X	----	----	----	----	----	----	----

See footnotes at end of table.

Table 1.--Continuous-records (daily discharge) station network, 1979--continued

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Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. High-way Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
07050580	James River near Strafford-----	----	----	----	----	----	X	----	----	----	----	X	----
07050700	James River near Springfield-----	X	----	----	----	X	----	----	----	----	----	----	----
07050750	James River near Nixa ³ -----	X	----	----	----	X	----	----	----	----	----	----	----
07052100	Wilsons Creek near Springfield-----	----	X	----	----	X	----	----	----	----	----	----	----
07052160	Wilsons Creek near Battlefield-----	----	X	----	----	X	----	----	----	----	----	----	----
07052250	James River near Boaz-----	----	X	----	----	X	----	----	----	----	----	----	----
07052500	James River at Galena-----	----	----	----	----	----	----	----	----	----	----	X	----
07053400	Table Rock Lake near Branson ¹ -----	X	----	----	----	X	----	----	----	----	----	X	----
07053500	White River near Branson ¹ -----	(RECORDS FURNISHED BY CORPS OF ENGINEERS)											
07054000	White River at Forsyth ¹ -----	X	----	----	----	X	----	----	----	----	----	X	----
07057500	North Fork River near Tecumseh-----	----	----	----	----	----	----	----	----	----	----	X	----
07058000	Bryant Creek near Tecumseh-----	----	----	----	----	----	----	----	----	----	----	X	----
07061300	East Fork Black River at Lesterville-----	X	----	----	----	X	----	----	----	----	----	----	----
07061500	Black River near Annapolis-----	----	----	----	----	----	----	----	----	----	----	X	----
07062000	Clearwater Lake near Piedmont-----	----	----	----	----	----	----	----	----	----	----	X	----
07062500	Black River at Leeper-----	----	----	----	----	----	----	----	----	----	----	X	----
07063000	Black River at Poplar Bluff-----	----	----	----	----	----	----	----	----	----	----	X	----
07063250	Black River at Gillis Bluff ⁴ -----	----	----	----	----	----	----	----	----	----	----	X	----
07063500	Cane Creek near Harviell ⁴ -----	----	----	----	----	----	----	----	----	----	----	X	----
07065000	Round Spring at Round Spring-----	X	----	----	----	X	----	----	----	----	----	----	----
07065500	Alley Spring at Alley-----	X	----	----	----	X	----	----	----	----	----	----	----
07066000	Jacks Fork at Eminence-----	X	----	----	----	X	----	----	----	----	----	----	----
07067000	Current River at Van Buren-----	X	----	----	----	X	----	----	----	----	----	----	----

See footnotes at end of table.

Table 1.--Continuous-records (daily discharge) station network, 1979--continued

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock, UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. Highway Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
07067500	Big Spring near Van Buren-----	X	----	----	----	X	----	----	----	----	----	----	----
07068000	Current River at Doniphan-----	----	----	----	----	----	----	----	----	----	----	X	----
07068863	Fourche River near Poyner-----	----	----	----	X	X	----	----	----	----	----	----	----
07071000	Greer Spring at Greer-----			(RECORDS FROM U.S. FOREST SERVICE)									
07071500	Eleven Point River near Bardley---	X	----	----	X	----	----	----	----	----	----	----	----
07185700	Spring River at LaRussell-----	X	----	----	X	----	----	----	----	----	----	----	----
07185765	Spring River at Carthage-----	----	----	----	----	----	----	----	----	----	X	----	----
07186000	Spring River near Waco-----	----	----	----	----	----	----	----	----	----	X	----	----
07186400	Center Creek near Carterville-----	----	----	----	----	----	----	----	----	----	X	----	----
07187000	Shoal Creek above Joplin-----	----	----	----	----	----	----	----	----	----	X	----	----

¹Stage only.

²Discharge below 1,000 ft³/s not computed.

³Discharge above 100 ft³/s not computed.

⁴Stage-discharge relation only.

Table 2.--Crest-stage (peak discharge) station network, 1979

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. High-way Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
05495100	Big Creek Tributary near Wayland----	----	----	X	----	X	----	----	----	----	----	----	----
05496000	Wyaconda River above Canton-----	X	----	----	----	X	----	----	----	----	----	----	----
05497500	Middle Fabius River near Baring-----	X	----	----	----	X	----	----	----	----	----	----	----
05497700	Bridge Creek Branch near Baring-----	----	----	X	----	X	----	----	----	----	----	----	----
05500500	North River at Bethel-----	X	----	----	----	X	----	----	----	----	----	----	----
05501200	Nichols Branch near Palmyra-----	----	----	X	----	X	----	----	----	----	----	----	----
05502700	Easdale Branch near Shelbyville-----	----	----	X	----	X	----	----	----	----	----	----	----
12 05503000	Oakdale Branch near Emden-----	----	----	X	----	X	----	----	----	----	----	----	----
05504700	Bean Creek near Mexico-----	----	----	X	----	X	----	----	----	----	----	----	----
05506000	Youngs Creek near Mexico-----	X	----	----	----	X	----	----	----	----	----	----	----
05513600	Camp Creek near Elsberry-----	----	----	X	----	X	----	----	----	----	----	----	----
05513650	Hurricane Creek near Elsberry-----	----	----	X	----	X	----	----	----	----	----	----	----
05513700	Mams Slough Creek near Wellsville---	----	----	X	----	X	----	----	----	----	----	----	----
05514200	Reid Branch near Bowling Green-----	----	----	X	----	X	----	----	----	----	----	----	----
06815550	Staples Branch near Burlington Junction-----	----	----	X	----	X	----	----	----	----	----	----	----
06818900	Platte River at Ravenwood-----	----	----	----	----	----	----	----	----	X	----	----	----
06820000	White Cloud Creek near Maryville----	----	----	X	----	X	----	----	----	----	----	----	----
06820300	Big Slough near Wilcox-----	----	----	X	----	X	----	----	----	----	----	----	----
06821130	First Creek near Nashua-----	----	----	X	----	X	----	----	----	----	----	----	----
06895000	Crooked River near Richmond-----	----	----	----	----	----	----	----	----	X	----	----	----
06896000	Wakenda Creek at Carrollton-----	----	----	----	----	----	----	----	----	X	----	----	----

Table 2.--Crest-stage (peak discharge) station network, 1979--continued

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. Highway Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
06896180	De Moss Branch near Stanberry-----	----	----	X	----	X	----	----	----	----	----	----	----
06896700	O'Neill Branch at Osborn-----	----	----	X	----	X	----	----	----	----	----	----	----
06897000	East Fork Big Creek near Bethany----	----	----	X	----	X	----	----	----	----	----	----	----
06897200	Simpson Branch near Bethany-----	----	----	X	----	X	----	----	----	----	----	----	----
06897700	Grand River Tributary near Utica----	----	----	X	----	X	----	----	----	----	----	----	----
06899680	Grand River at Chillicothe-----	----	----	----	----	----	----	----	----	X	----	----	----
06901300	Moffet Branch near Reger-----	----	----	X	----	X	----	----	----	----	----	----	----
06901500	Locust Creek near Linneus-----	X	----	----	----	X	----	----	----	----	----	----	----
06902800	Onion Branch at St. Catherine-----	----	----	X	----	X	----	----	----	----	----	----	----
06904300	Shoal Creek near Hartford-----	----	----	----	----	----	----	----	----	X	----	----	----
06904700	Strop Branch near Novinger-----	----	----	X	----	X	----	----	----	----	----	----	----
06905000	Chariton River at Elmer-----	----	----	----	----	----	----	----	----	X	----	----	----
06905700	Puzzle Creek near Salisbury-----	----	----	X	----	X	----	----	----	----	----	----	----
06906400	Middle Fork Little Chariton River near Thomas Hill-----	----	----	----	----	----	----	----	----	X	----	----	----
06907000	Lamine River at Clifton City-----	----	----	----	----	----	----	----	----	X	----	----	----
06907200	Shaver Creek Tributary near Clifton City-----	----	----	X	----	X	----	----	----	----	----	----	----
06907700	Blackwater River at Valley City-----	----	----	----	----	----	----	----	----	X	----	----	----
06908300	Trent Branch near Waverly-----	----	----	X	----	X	----	----	----	----	----	----	----
06908500	Shiloh Branch near Marshall-----	----	----	X	----	X	----	----	----	----	----	----	----
06909400	Cottonwood Creek Tributary near Estill-----	----	----	X	----	X	----	----	----	----	----	----	----
06909500	Moniteau Creek near Fayette-----	----	----	----	----	----	----	----	----	X	----	----	----

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

[illegible]

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

[illegible]

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

[illegible]

Table 2.--Crest-stage (peak discharge) station network, 1979--continued

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. High-way Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
07071800	Williams Spring Branch near Alton----	----	----	X	----	X	----	----	----	----	----	----	----
07185600	South Fork Stahl Creek near Miller---	----	----	X	----	X	----	----	----	----	----	----	----
07186950	North Fork Carver Branch at Diamond--	----	----	X	----	X	----	----	----	----	----	----	----

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; St. Louis Co., St. Louis County; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

[illegible]

Table 3.--Urban rainfall-runoff station network, 1979--continued

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; St. Louis Co., St. Louis County; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. Highway Comm.	St. Louis Co.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
06935980	Cowmire Creek at Kirchner Road, St. Louis County-----	----	----	----	X	X	----	----	----	----	----	----	----
07005000	Maline Creek at Bellfontaine Road in Bellfontaine Place-----	----	----	----	----	----	----	----	X	----	----	----	----
07010016	River des Peres at Hafner Place in University City-----	----	----	----	----	----	----	----	X	----	----	----	----
07010044	Deer Creek at Warson Road in Ladue--	----	----	----	----	----	----	----	X	----	----	----	----
07010086	Deer Creek at Big Bend Blvd. in Maplewood-----	----	----	----	----	----	----	----	X	----	----	----	----
07010155	Gravois Creek at Teshire Road at Sappington-----	----	----	----	----	----	----	----	X	----	----	----	----
07011600	Love Branch at Rolla-----	----	----	X	----	X	----	----	----	----	----	----	----
07017115	Fox Creek at Old Highway 66, St. Louis County-----	----	----	----	X	X	----	----	----	----	----	----	----
07019035	Forby Creek at Highway 109, St. Louis County-----	----	----	----	X	X	----	----	----	----	----	----	----
07019050	Hamilton Creek at Highway 109, St. Louis County-----	----	----	----	X	X	----	----	----	----	----	----	----
07019070	Kiefer Creek at New Ballwin Road, St. Louis County-----	----	----	----	X	X	----	----	----	----	----	----	----
07019100	Fishpot Creek at Old Ballwin Road, St. Louis County-----	----	----	----	X	X	----	----	----	----	----	----	----
07019120	Fishpot Creek at Hanna Road, St. Louis County-----	----	----	----	X	X	----	----	----	----	----	----	----
07019145	Grand Glaize Creek at Highway 141, St. Louis County-----	----	----	----	X	X	----	----	----	----	----	----	----
07019180	Grand Glaize Creek at Dougherty Ferry Road, St. Louis County-----	----	----	----	X	X	----	----	----	----	----	----	----
07019320	Mattese Creek at Yaeger Road, St. Louis County-----	----	----	----	X	X	----	----	----	----	----	----	----

Table 3.--Urban rainfall-runoff station network, 1979--continued

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; St. Louis Co., St. Louis County; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. High-way Comm.	St. Louis Co.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
07020860	Cape la Croix at Highway 61 in Cape Girardeau-----	----	----	----	----	----	----	----	X	----	----	----	----
07020870	Cape la Croix at Bloomfield in Cape Girardeau-----	----	----	----	----	----	----	----	X	----	----	----	----
07052000	Wilsons Creek at Scenic Drive at Springfield-----	----	X	----	----	X	----	----	----	----	----	----	----
07052050	North Fork Wilsons Creek at Highways 13 & 166 at Springfield-----	----	X	----	----	X	----	----	----	----	----	----	----

Table 4.--Active low-flow partial-record stations, 1979

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. Highway Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
05497300	North Fabius River near Durham-----	X	----	----	----	X	----	----	----	----	----	----	----
05498300	Middle Fabius River near Durham-----	X	----	----	----	X	----	----	----	----	----	----	----
05498500	North Fabius River at Taylor-----	X	----	----	----	X	----	----	----	----	----	----	----
05509300	Salt River near Ashburn-----	X	----	----	----	X	----	----	----	----	----	----	----
06810050	High Creek near Rock Port-----	X	----	----	----	X	----	----	----	----	----	----	----
06811600	Rock Creek near Rock Port-----	X	----	----	----	X	----	----	----	----	----	----	----
06815575	Squaw Creek near Mound City-----	X	----	----	----	X	----	----	----	----	----	----	----
06817700	Nodaway River near Graham-----	X	----	----	----	X	----	----	----	----	----	----	----
06817800	Nodaway River near Oregon-----	X	----	----	----	X	----	----	----	----	----	----	----
06818490	Bee Creek near Platte City-----	X	----	----	----	X	----	----	----	----	----	----	----
06819090	Platte River near St. Joseph-----	X	----	----	----	X	----	----	----	----	----	----	----
06820460	One Hundred and Two River at Avenue City-----	X	----	----	----	X	----	----	----	----	----	----	----
06820480	One Hundred and Two River near St. Joseph-----	X	----	----	----	X	----	----	----	----	----	----	----
06820490	Third Fork Platte River near Easton--	X	----	----	----	X	----	----	----	----	----	----	----
06821200	Platte River at Platte City-----	X	----	----	----	X	----	----	----	----	----	----	----
06893900	Little Blue River near Blue Springs--	X	----	----	----	X	----	----	----	----	----	----	----
06894800	Sni-A-Bar Creek near Wellington-----	X	----	----	----	X	----	----	----	----	----	----	----
06895000	Crooked River near Richmond-----	X	----	----	----	X	----	----	----	----	----	----	----
06896182	Wildcat Creek at Stanberry-----	X	----	----	----	X	----	----	----	----	----	----	----
06896550	Grand River near Darlington-----	X	----	----	----	X	----	----	----	----	----	----	----
06896650	Sampson Creek at Pattonsburg-----	X	----	----	----	X	----	----	----	----	----	----	----
06896900	Grand River near Pattonsburg-----	X	----	----	----	X	----	----	----	----	----	----	----

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

[illegible]

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

[illegible]

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

[illegible]

Table 4.--Active low-flow partial-record stations, 1979--continued

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. Highway Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
07021530	Byrd Creek near Jackson-----	X	----	----	----	X	----	----	----	----	----	----	----
07021800	Headwater diversion channel near Allenville-----	X	----	----	----	X	----	----	----	----	----	----	----
07024100	Wilkerson ditch near East Prairie----	X	----	----	----	X	----	----	----	----	----	----	----
07024150	St. James ditch at East Prairie-----	X	----	----	----	X	----	----	----	----	----	----	----
07036090	Twelvemile Creek near Annapolis-----	X	----	----	----	X	----	----	----	----	----	----	----
07036100	St. Francis River near Annapolis-----	X	----	----	----	X	----	----	----	----	----	----	----
07037200	Crane Pond Creek near Annapolis-----	X	----	----	----	X	----	----	----	----	----	----	----
07040700	Ditch 9 near Gideon-----	X	----	----	----	X	----	----	----	----	----	----	----
07040800	Main ditch 6 east of Malden-----	X	----	----	----	X	----	----	----	----	----	----	----
07040850	Main ditch near Bernie-----	X	----	----	----	X	----	----	----	----	----	----	----
07040900	Main ditch 2 at Malden-----	X	----	----	----	X	----	----	----	----	----	----	----
07041050	Main ditch near Malden-----	X	----	----	----	X	----	----	----	----	----	----	----
07041100	Main ditch at Holcomb-----	X	----	----	----	X	----	----	----	----	----	----	----
07042400	Main ditch 1 near Matthews-----	X	----	----	----	X	----	----	----	----	----	----	----
07043050	Ditch 24 at Heagy-----	X	----	----	----	X	----	----	----	----	----	----	----
07043100	Old Channel ditch 1 near Chaffee----	X	----	----	----	X	----	----	----	----	----	----	----
07046510	Pemiscot Bayou near Holland-----	X	----	----	----	X	----	----	----	----	----	----	----
07046520	Main ditch 1 near Deering-----	X	----	----	----	X	----	----	----	----	----	----	----
07050540	James River near Northview-----	X	----	----	----	X	----	----	----	----	----	----	----
07050560	Panther Creek near Northview-----	X	----	----	----	X	----	----	----	----	----	----	----
07052260	Finley Creek near Linden-----	X	----	----	----	X	----	----	----	----	----	----	----
07052360	Crane Creek near Galena-----	X	----	----	----	X	----	----	----	----	----	----	----
07052900	Flat Creek near Cape Fair-----	X	----	----	----	X	----	----	----	----	----	----	----

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[illegible]

Table 4.--Active low-flow partial-record stations, 1979--continued

[DG&LS, Division of Geology and Land Survey; City of Spfd., City of Springfield; Mo. Highway Comm., Missouri Highway Commission; Mo. Conserv. Comm., Missouri Conservation Commission; USGS Coop, U.S. Geological Survey Coop; USGS Fed., U.S. Geological Survey-Federal; CE RI, Corps of Engineers, Rock Island; CE STL, Corps of Engineers, St. Louis; CE KC, Corps of Engineers, Kansas City; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock; UE, Union Electric]

Station no.	Station name	SOURCE OF FUNDING											
		DG&LS	City of Spfd.	Mo. High-way Comm.	Mo. Conserv. Comm.	USGS Coop	USGS Fed.	CE RI	CE STL	CE KC	CE TU	CE LR	UE
07071850	Frederick Creek near Myrtle-----	X	----	----	----	X	----	----	----	----	----	----	----
07186080	Center Creek near Wentworth-----	X	----	----	----	X	----	----	----	----	----	----	----
07186200	Center Creek near Fidelity-----	X	----	----	----	X	----	----	----	----	----	----	----
07188660	Mikes Creek at Powell-----	X	----	----	----	X	----	----	----	----	----	----	----
07188840	Little Sugar Creek at Pineville-----	X	----	----	----	X	----	----	----	----	----	----	----
07188860	Indian Creek at McNatt-----	X	----	----	----	X	----	----	----	----	----	----	----
07189090	Buffalo Creek near Tiff City-----	X	----	----	----	X	----	----	----	----	----	----	----
07189100	Buffalo Creek at Tiff City-----	X	----	----	----	X	----	----	----	----	----	----	----

Collection of surface-water data MØ 00-001--continued

OBJECTIVES: To collect surface-water data sufficient to satisfy needs for current-purpose uses, such as (1) assessment of water resources, (2) operation of reservoirs or industries, (3) forecasting, (4) disposal of wastes and pollution controls, (5) discharge data to accompany water-quality measurements, (6) compact and legal requirements, and (7) research or special studies. To collect data necessary for analytical studies to define for any location the statistical properties of, and trends in, streamflow for use in planning and design.

APPROACH: Standard methods of data collection will be used as described in the series "Techniques of Water-Resources Investigations of the U.S. Geological Survey." Partial-record gaging will be used instead of complete-record gaging where it serves the required purpose.

PROGRESS AND SIGNIFICANT RESULTS: Streamflow data were collected as scheduled.

PLANS FOR NEXT YEAR: Collection of records to continue.

REPORTS: U.S. Geological Survey, 1978, Water-resources data for Missouri, water year 1977: U.S. Geological Survey Water-Data Report MO 77-1, 277 p. [Published annually.]

Professional Paper: Flood of September 1977 in Kansas City, Missouri and Kansas (MØ 00-001)

A Water-Resources Investigations report about the flood has been published (WRI 78-63). However, a report containing additional interpretive data is to be published as a Professional Paper. The Professional Paper has been prepared in cooperation with the Department of Commerce, National Weather Service, National Oceanic and Atmospheric Administration (NOAA) and is in review.

Table 5.--Water-quality station network, 1979--continued

Station no.	Station name	Type of record	DEQ	Mo. Conserv. Comm.	City of Spfd.	SOURCE OF FUNDING						
						USGS	NPS	CE KC	CE STL	CE RI	CE TU	CE LR
07052100	Wilsons Creek near Springfield-----	CT	---	----	X	X	---	-----	-----	-----	-----	-----
07052160	Wilsons Creek near Battlefield-----	CT	---	----	X	X	---	-----	-----	-----	-----	-----
07052250	James River near Boaz-----	CT	X	----	X	X	---	-----	-----	-----	-----	-----
07053450	White River below Table Rock Dam near Branson-----	CT	---	----	---	---	---	-----	-----	-----	-----	X
07053600	Lake Taneycomo at School of the Ozarks--	CT	---	----	---	---	---	-----	-----	-----	-----	X
07053700	Lake Taneycomo at Branson-----	C	X	----	---	X	---	-----	-----	-----	-----	-----
07053720	Lake Taneycomo below Branson-----	CT	---	----	---	---	---	-----	-----	-----	-----	X
07053825	Lake Taneycomo at Forsyth-----	CT	---	----	---	---	---	-----	-----	-----	-----	X
07057500	North Fork River near Tecumseh-----	C	X	----	---	X	---	-----	-----	-----	-----	-----
07064400	Montauk Springs at Montauk-----	C	---	----	---	---	X	-----	-----	-----	-----	-----
07064440	Current River below Montauk State Pk----	C	---	----	---	---	X	-----	-----	-----	-----	-----
07064530	Welch Spring near Akers-----	C	---	----	---	---	X	-----	-----	-----	-----	-----
07064555	Pulltite Spring near Round Spring-----	C	---	----	---	---	X	-----	-----	-----	-----	-----
07065000	Round Spring at Round Spring-----	C	---	----	---	---	X	-----	-----	-----	-----	-----
07065500	Alley Spring at Alley-----	C	---	----	---	---	X	-----	-----	-----	-----	-----
07066110	Jacks Fork above Two Rivers-----	C	---	----	---	---	X	-----	-----	-----	-----	-----
07066510	Current River above Powder Mill-----	C	---	----	---	---	X	-----	-----	-----	-----	-----
07066550	Blue Spring near Eminence-----	C	---	----	---	---	X	-----	-----	-----	-----	-----
07067500	Big Spring near Van Buren-----	C	---	----	---	---	X	-----	-----	-----	-----	-----
07067800	Current River below Hawes Campground----	C	---	----	---	---	X	-----	-----	-----	-----	-----
07068863	Fourche River near Poynor-----	T	---	X	---	X	---	-----	-----	-----	-----	-----
07186250	Grove Creek near Scotland-----	C	---	----	---	---	---	-----	-----	-----	X	-----
07186400	Center Creek near Cartersville-----	C	---	----	---	---	---	-----	-----	-----	X	-----
07186480	Center Creek near Smithfield-----	C	X	----	---	X	---	-----	-----	-----	-----	-----

PROJECT TITLE: Collection of ground-water data MØ 00-002

COOPERATOR: Department of Natural Resources, Division of
Geology and Land Survey

LOCATION: Statewide

PROJECT CHIEF: L. F. Emmett

PROBLEM: Long-term water-level records are needed to evaluate the effects of climatic variations on the recharge to and discharge from the ground-water systems, to provide a data base from which to measure the effects of development, to assist in the prediction of future supplies, and to provide data for management of the resource.

OBJECTIVE: To collect water-level data sufficient to provide a minimum long-term data base so that the general response of the hydrologic system to natural climatic variations and induced stresses is known and potential problems can be defined early enough to allow proper planning and management. To provide a data base against which the short-term records acquired in areal studies can be analyzed. This analysis must (1) provide an assessment of the ground-water resource, (2) allow prediction of future conditions, (3) detect and define pollution and supply problems, and (4) provide the data base necessary for management of the resource.

APPROACH: Evaluation of regional geology allows broad, general definition of aquifer systems and their boundary conditions. Within this framework and with some knowledge of the stress on the system in time and space and the hydrologic properties of the aquifers, a subjective decision can be made on the most advantageous locations for observation of long-term system behavior. This subjective network can be refined as records become available and detailed areal studies of the ground-water system more closely define the aquifers, their properties, and the stresses to which they are subjected.

PROGRESS AND
SIGNIFICANT
RESULTS: Many ground-water site schedules were converted from old Electronic Data Processing (EDP) system to System 2000. A network of about 100 alluvial wells in the Southeast Lowland were added to the observation well system for semi-annual measurement.

PLANS FOR
NEXT YEAR: Continue converting well-log records statewide to System 2000. Add observation points near the Joplin mining district for semi-annual measurement.

PROJECT TITLE: Collection of quality-of-water data MØ 00-003

COOPERATORS: Department of Natural Resources
Division of Environmental Quality
Corps of Engineers
National Park Service
City of Springfield

LOCATION: Statewide

PROJECT CHIEF: J. H. Barks

PROBLEM: Water-resource planning and water-quality assessment require a statewide and nationwide base of relatively standardized information. For intelligent planning and realistic assessment of the water resource, the chemical and physical quality of the rivers and streams must be defined and monitored.

OBJECTIVE: To provide water-quality data for planning and action programs and to provide data for State and Federal management of interstate and international waters.

APPROACH: Operation of a network of water-quality stations to measure chemical concentrations, loads, and time trends as required by planning and management agencies.

PROGRESS AND
SIGNIFICANT
RESULTS: The water-quality network where samples are obtained monthly include 14 National Stream Quality Accounting Network (NASQAN) stations, 20 stations in cooperation with the Division of Environmental Quality, and 1 station in cooperation with the Corps of Engineers. The bi-annual monitoring program with the National Park Service is also continued. Four multiparameter monitors were operated

for the Corps of Engineers, and three monitors were operated in cooperation with the city of Springfield. All data collection continued on schedule.

PLANS FOR
NEXT YEAR:

The water-quality network will continue approximately the same as the previous year. Several stations to measure daily suspended sediment will be added.

REPORTS:

U.S. Geological Survey, 1978, Water-resources data for Missouri, water year 1977: U.S. Geological Survey Water-Data Report MO 77-1, 277 p. [Published annually.]

PROJECT TITLE:

Flood Insurance Studies for Federal Insurance Administration, HUD MO 72-006

COOPERATOR:

U.S. Department of Housing and Urban Development, Federal Insurance Administration.

LOCATION:

Statewide

PROJECT CHIEF:

L. D. Hauth

PROBLEM:

The National Flood Insurance Act of 1968 provides that the Department of Housing and Urban Development operate a flood insurance program through the Federal Insurance Administration. The Department of Housing and Urban Development (HUD) needs flood studies in selected areas to determine applicable flood insurance premium rates.

OBJECTIVE:

To conduct the necessary hydrologic and hydraulic studies of the areas assigned by the Federal Insurance Administration (FIA), and to develop the most efficient procedures to attain the accuracy specified by FIA in the most appropriate format with minimum personnel requirements.

APPROACH:

Conduct necessary surveys by ground and photogrammetric methods, prepare computer models of drainage networks, compute magnitudes and profiles of floods of specified frequencies, and furnish results in reports prepared to FIA specifications.

PROGRESS AND
SIGNIFICANT
RESULTS:

Type-15 studies for Salem and Willow Springs, Mo., are complete. Type-15 studies for Mountain View and Ellington, Mo., have been submitted to HUD for preliminary publication. A study for Farmington, Mo., is nearly complete.

PLANS FOR
NEXT YEAR:

Manpower constraints make it unlikely that the project will continue beyond 1979.

REPORTS:

Published: Flood Insurance Study for Willows Springs, Missouri.

Flood Insurance Study for Salem, Missouri.

In Process: Flood Insurance Study for Ellington, Missouri.

Flood Insurance Study for Mountain View, Missouri.

Planned: Flood Insurance Study for Farmington, Missouri.

PROJECT TITLE: Planning a water-use data base system for Missouri
MØ 79-007

COOPERATOR: Department of Natural Resources
Division of Geology and Land Survey

LOCATION: Statewide

PROJECT CHIEF: L. D. Hauth

PROBLEM: As population increases and industry expands, the demands for water increase. Water use, such as irrigation, has placed greater demands on both ground and surface waters. Thus effective water-resources management is needed. Basic to that need is determining how much water is being used. The collection and management of water-use information is complex and requires careful planning. Data must be collected and stored so that analysis, inspection of data, and accuracy goals can be met. Therefore, a well-planned storage and retrieval system is necessary before collection of water-use data.

OBJECTIVES: Plan a water-use data-collection and management program for Missouri. The planning will assure that data collected, as well as its format, is compatible with the National Water-Use Data System (NWUDS), and meets national and State objectives. The planning phase will assure that the maintenance and dissemination of data on current water uses will allow projections on future water use.

APPROACH: A task force committee will be selected from among State, Federal, local, municipal, and private agencies, which have an interest in water-use information in Missouri, to meet and allow input into the data system. A determination of available data for inclusion in the data base will be made. Requirements for the functions, software/hardware, and interface to the NWUDS will then be documented.

PLANS FOR NEXT YEAR: Complete and document the plan for implementation of a data-collection, storage, and retrieval system for a water-use data base.

PLANNED REPORT: Missouri water-use data system documentation. Will be published as a State open-file report.

PROJECT TITLE: Hydrology of Streams in St. Louis County MO 70-017

COOPERATOR: St. Louis County, Department of Highways and Traffic

LOCATION: St. Louis County, Missouri

PROJECT CHIEF: T. W. Alexander

PROBLEM: As the population of St. Louis City declines, the population of St. Louis County increases. Substantial changes are being made in the use of land in the rural areas. Stormwater drainage is one of the principal problems. Inadequate data for planning of roads, use of flood-plain areas, zoning ordinance and channel improvements necessitate collection of data needed for flood-inundation maps and other analyses.

OBJECTIVE: To determine the effects of urbanization on runoff from small streams in St. Louis County. Generate frequency profiles to be displayed on a base map compatible to the users need (1:6,000 scale).

APPROACH: Reconnaissance of streams, which drain the areas that will be affected by urbanization, will determine the number of data-collecting sites needed for definition of the hydrologic characteristics of the area. Flood and other flow data will be collected at many sites to define flood frequencies, flood profiles, channel shapes and capacities, flow characteristics, and other factors needed to study the suburban-rural hydrology. Gaging stations, crest-stage gages, and precipitation stations have been installed.

PROGRESS AND
SIGNIFICANT
RESULTS:

The 16 basins having 100-year flood profiles are being completed and the 1:6,000 scale maps delineating the area inundated by the 100-year flood are in the final phase of completion. A flood-frequency report documenting the results and conclusions reached in the analysis of all the data has been published as a Water-Resources Investigations report.

PLANS FOR
NEXT YEAR:

Continuation of the rainfall-runoff network to monitor changes brought about by urbanization.

REPORTS:

Spencer, D. W., and Alexander, T. W., 1979, Techniques for estimating the magnitude and frequency of floods in St. Louis County, Missouri: U.S. Geological Survey Water-Resources Investigations 78-139, 23 p.



PROJECT TITLE: Flood Hazard Information, House Document 465
MØ 73-025

LOCATION: Statewide

PROJECT CHIEF: L. D. Hauth

PROBLEM: House Document 465 outlines a national program to provide flood-hazard information. The Geological Survey has been assigned the responsibility to outline on existing USGS topographic maps those flood-prone areas that can be identified from information on the maps and from flood-frequency studies previously made.

OBJECTIVE: To identify and label on USGS topographic quadrangle maps the flood-prone areas of cities and towns, over 2,500 population, and adjacent areas for which adequate maps are available and flood frequency-drainage area relationship can be determined.

APPROACH: In general, project requirements will be met using information already available. Where possible, relationships between flood depth, flood discharge, frequency of occurrence, and drainage area will be used to define flood profiles and flood boundaries (100-year) along streams shown on topographic maps, but for which in many cases no actual flood information exists. Regional flood depth-frequency relationships will be used where they can be identified.

PROGRESS AND SIGNIFICANT RESULTS: No maps published in 1978 fiscal year.

PLANS FOR NEXT YEAR: Flood-prone area maps for Vienna, Doniphan, Piedmont, Warrenton, and Wright City quadrangles.

PROJECT TITLE: Water resources of the Southeastern Lowlands MØ 75-029

COOPERATOR: Department of Natural Resources
Division of Geology and Land Survey

LOCATION: Southeast Missouri

PROJECT CHIEF: R. R. Luckey

PROBLEM: The Southeastern Lowlands is the largest irrigated agricultural area in Missouri. The irrigated acreage increased from 1,550 acres in 1949 to over 150,000 acres in 1975. The area is suitable for additional agricultural development. Quantitative data on the characteristics of the alluvial aquifer, and information on the degree of the present development must be collected to evaluate the effects of anticipated additional development. Evaluation of the amount of water available for future development must be complemented by an evaluation of the quality of water in the aquifer and the susceptibility of the aquifer to pollution.

OBJECTIVE: Determine the amount of ground water in storage in the alluvial aquifer. Investigate the location, source, and amount of natural recharge and discharge. Collect information on the present rate and location of ground-water withdrawal and estimate the effects of probable future withdrawal patterns. Determine the relationship between the alluvial aquifer and the natural and manmade drainage systems. Collect the quantitative data that will most likely be needed in future model studies of the area. Describe the chemical quality of both the surface water and the ground water. Update previous low-flow frequency and flow-duration analyses.



Water resources of the Southeastern Lowlands MØ 75-029--continued

PROGRESS AND
SIGNIFICANT
RESULTS: All field work has been completed and the hydrologic
data and interpretive reports are in review.

PLANS FOR
NEXT YEAR: Complete hydrologic data and interpretive reports and
receive approval for publication.

PROJECT TITLE: Hydrology of Osage Fork, Grandglaize, and Niangua
River basins, Missouri MØ 75-030

COOPERATOR: Department of Natural Resources
Division of Geology and Land Survey

LOCATION: Central Missouri

PROJECT CHIEF: John Skelton

PROBLEM: Numerous streams in the carbonate terranes of the
Missouri Ozarks lose water to the ground-water system,
which is used extensively as the source for water
supplies. In areas where losing streams exist, control
of development is needed to insure that ground water is
not contaminated through recharge via these losing
stream segments. In order for the responsible officials
to control development properly and manage the land
resource wisely, they need information not now available
that is indicative of areas where pollution could orig-
inate through unwise location of waste-disposal facilities
or accidental spill.

OBJECTIVE: The general objective of the study is to present hydrologic
information on the Osage Fork, Niangua River, and
Grandglaize Creek basins, emphasizing losing streams and
their interrelation with aquifers.

Specific objectives are as follows:

1. Determine the low-flow characteristics of all streams
in enough detail to implement water-quality regula-
tions.
2. Evaluate methods that will lead to better definition
of losing streams and basins having deficient runoff.

3. Provide guidelines for relating the flow system to land use, vegetation distribution, soil and physiography when transferring relationships to other humid regions of carbonate rocks.

APPROACH:

(1) Seepage runs will be made to form the base for detailed studies of low-flow characteristics. The distribution of anomalous and normal streamflow patterns will be related to geologic data. (2) Types of vegetation as they relate to moisture in the valley will be described. (3) Potentiometric maps necessary to describe the flow system will be drawn. (4) Subsurface geologic mapping will be done to relate stratigraphy, lithology, and structure to ground-water levels. (5) Water quality of wells and springs will be determined to aid in locating recharge areas. (6) Earth Resources Technology Satellite (ERTS) imagery will be used to relate vegetation, land use, and physiography to runoff.

PROGRESS AND
SIGNIFICANT
RESULTS:

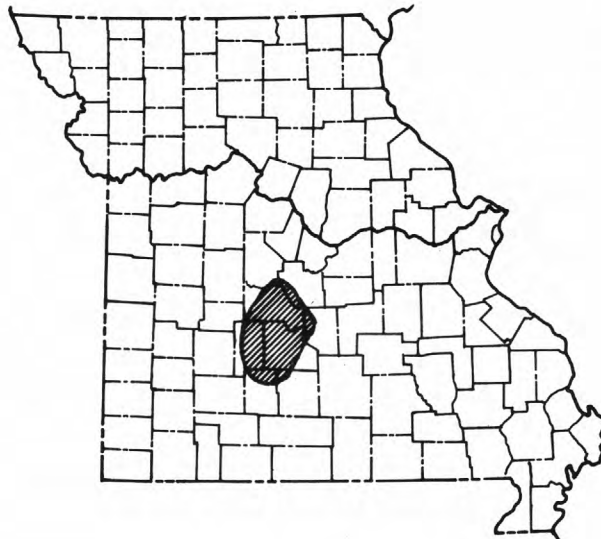
The final report was completed and is now in final review.

PLANS FOR
NEXT YEAR:

Reviews will be completed, and the report will be delivered to the cooperator.

REPORTS:

Skelton, John, and Miller, D. E. 1978, Tracing subterranean flow of sewage-plant effluent in Lower Ordovician Dolomite in the Lebanon area, Missouri. [Accepted by Ground Water for publication.]



REPORTS: Harvey, E. J., and Skelton, John, 1978, Relationship between hydrology and bottomland vegetation in the Ozarks Mountains of Missouri: U.S. Geological Survey Journal of Research, v. 6, no. 3, p. 299-305.

Harvey, E. J., Skelton, John, and Miller, D. E., 1978, Hydrology of carbonate terrane - The Niangua River, Osage Fork, and Grandglaize Creek basins, Missouri: Missouri Division of Geology and Land Survey, Water Resources Report. [In review.]

PROJECT TITLE: Water for irrigation in Audrain County, Missouri MØ 78-032

COOPERATOR: Department of Natural Resources
Division of Geology and Land Survey

LOCATION: Northeastern Missouri

PROJECT CHIEF: L. F. Emmett

PROBLEM: Water for supplemental irrigation in Audrain County is from surface reservoirs and deep wells. The surface reservoirs generally impound less than 100-acre-feet, consequently they may not be full in dry years. Because an apparent interface between fresh and saltwater in the deep aquifer extends through northern Audrain County, there is concern that increased pumping of ground water could cause water quality to deteriorate in some places.

There are needs to determine the quantity and quality of water available for irrigation, and to monitor the effects of increased withdrawal of ground water from the deep aquifer.

OBJECTIVE: Evaluate the total water resource of Audrain County in order to determine the availability and quality of water for irrigation. Determine the potential for saltwater encroachment as a result of pumping from the deep aquifer.

APPROACH:	Compilation of hydrogeologic information present in the files and in the literature. Field inventory of wells in Audrain County with emphasis on locating wells on the saltwater side of the interface. Collection of water-use, water-level, water-quality, and aquifer characteristics data to supplement file data. Compilation of file data to define surface-water characteristics will be augmented by reconnaissance of streams during a low-flow period to document low-flow characteristics.
PROGRESS AND SIGNIFICANT RESULTS:	Inventoried and measured water levels in about 110 wells. Entered well data into System 2000. Constructed potentiometric map of deep aquifer. Collected and analyzed water samples from 15 wells.
PLANS FOR NEXT YEAR:	Complete well inventory. Measure water levels in wells; mass measurement before and after pumping. Also periodic (bi-weekly to monthly) measurement in selected wells. Construct potentiometric maps--before and after irrigation season. Collect data on water use. Determine regional transmissivity from flow-net analysis. Computer simulation of deep aquifer. Collect and analyze water samples from wells.
REPORTS:	Planned: Annual Progress Report. Interpretative report on completion of project.



Table 5.--Water-quality station network, 1979

[Type of station: C=Chemical; S=Sediment; T=Temperature. Source of funding: DEQ, Division of Environmental Quality; Mo. Conserv. Comm., Missouri Conservation Commission; City of Spfd., City of Springfield; USGS, U.S. Geological Survey; NPS, National Park Service; CE KC, Corps of Engineers, Kansas City; CE STL, Corps of Engineers, St. Louis; CE RI, Corps of Engineers, Rock Island; CE TU, Corps of Engineers, Tulsa; CE LR, Corps of Engineers, Little Rock.]

SOURCE OF FUNDING												
Station no.	Station name	Type of record	DEQ	Mo. Conserv. Comm.	City of Spfd.	USGS	NPS	CE KC	CE STL	CE RI	CE TU	CE LR
05490600	Des Moines River at St. Francisville----	CST	X	-----	----	X	---	-----	-----	-----	-----	-----
05508000	Salt River near New London-----	CST	X	-----	----	X	---	-----	-----	-----	-----	-----
05587550	Mississippi River below Alton, Ill-----	CST	X	-----	----	X	---	-----	-----	-----	-----	-----
06817800	Nodaway River near Oregon-----	C	X	-----	----	X	---	-----	-----	-----	-----	-----
06818000	Missouri River at St. Joseph-----	CST	X	-----	----	X	---	-----	-----	-----	-----	-----
06821190	Platte River at Sharps Station-----	CST	---	-----	----	X	---	-----	-----	-----	-----	-----
06902000	Grand River near Sumner-----	CST	X	-----	----	X	---	-----	-----	-----	-----	-----
06905500	Chariton River near Prairie Hill-----	CST	---	-----	----	X	---	-----	-----	-----	-----	-----
06908800	Lamine River near Blackwater-----	CST	---	-----	----	X	---	-----	-----	-----	-----	-----
06916650	Marais Des Cygnes River near Worland----	C	X	-----	----	X	---	-----	-----	-----	-----	-----
06918080	Osage River near Schell City-----	CST	---	-----	----	X	---	-----	-----	-----	-----	-----
06918440	Sac River near Dadeville-----	T	---	-----	----	-----	---	X	-----	-----	-----	-----
06918990	Stockton Lake near Stockton-----	T	---	-----	----	-----	---	X	-----	-----	-----	-----
06921350	Pomme de Terre River near Hermitage-----	T	---	-----	----	-----	---	X	-----	-----	-----	-----
06921500	Pomme de Terre River at Hermitage-----	T	---	-----	----	-----	---	X	-----	-----	-----	-----
06922200	Tebo Creek at Leesville-----	C	---	-----	----	-----	---	X	-----	-----	-----	-----
06922500	Osage River at Warsaw-----	T	---	-----	----	-----	---	X	-----	-----	-----	-----
06926510	Osage River below St. Thomas-----	CST	X	-----	----	X	---	-----	-----	-----	-----	-----
06928600	Gasconade River near Hooker-----	C	X	-----	----	X	---	-----	-----	-----	-----	-----
06930450	Big Piney River at Devils Elbow-----	C	X	-----	----	X	---	-----	-----	-----	-----	-----
06930800	Gasconade River above Jerome-----	CST	X	-----	----	X	---	-----	-----	-----	-----	-----
06934500	Missouri River at Hermann-----	CST		-----	----	X	---	-----	-----	-----	-----	-----
07010000	Mississippi River at St. Louis-----	ST	---	-----	----	X	---	-----	X	-----	-----	-----
07014500	Meramec River near Sullivan-----	C	X	-----	----	X	---	-----	-----	-----	-----	-----
07019000	Meramec River near Eureka-----	CST	---	-----	----	X	---	-----	-----	-----	-----	-----
07022000	Mississippi River at Thebes, Ill-----	CST	X	-----	----	X	---	-----	-----	-----	-----	-----
07046001	Little River ditches near Kennett-----	C	X	-----	----	X	---	-----	-----	-----	-----	-----
07050750	James River near Nixa-----	T	X	-----	----	X	---	-----	-----	-----	-----	-----
07051600	James River near Wilsons Creek-----	C	X	-----	----	X	---	-----	-----	-----	-----	-----

PROJECT TITLE: An assessment of water quality in the proposed Prosperity Reservoir area, Center Creek basin, Missouri MØ 78-033

COOPERATOR: Corps of Engineers, Tulsa District

LOCATION: Southwest Missouri

PROJECT CHIEF: J. H. Barks

PROBLEM: The Corps of Engineers is in the preconstruction planning phase for the proposed Prosperity Dam and Reservoir on Center Creek in southwest Missouri. One step in their planning process is an assessment of existing water quality, and they have requested the U.S. Geological Survey to conduct the water-quality study.

OBJECTIVE: To provide an assessment of existing water quality in the reservoir area, to define potential water-quality problems associated with the proposed reservoir project, such as pollution from abandoned zinc and lead mines and municipal and industrial wastes.

APPROACH: Review previous water-quality studies on the Center Creek watershed for information pertinent to this study. Four sets of samples will be collected during base-flow conditions and a storm event will be sampled during the rise, peak, and recession at two sites at the upstream end, and one site at the downstream end of the study area. These samples will be analyzed for major inorganics, trace elements, pesticides, and nutrients. One bed material sample from each site will be analyzed for trace elements.



An assessment of water quality in the proposed Prosperity Reservoir area,
Center Creek basin, Missouri MØ 78-033--continued

PROGRESS AND
SIGNIFICANT
RESULTS: All data collection was completed. The data were analyzed
and an interpretive report was prepared and published.
Water that would fill the proposed reservoir is of good
quality, but nutrient concentrations are probably high
enough to cause the lake to become eutrophic.

PLANS FOR
NEXT YEAR: Work on this project has been completed. This project has
been extended to allow more time for data to accumulate. A
report describing the additional data and interpretations
will be prepared.

REPORTS: Barks, J. H., and Berkas, W. R., 1979, Water quality in
the proposed Prosperity Reservoir area, Center Creek basin,
Missouri: U.S. Geological Survey Water-Resources Investi-
gations 79-22, 26 p.

PROJECT TITLE: Ground-water appraisal of Prosperity Reservoir area,
Center Creek basin, Missouri MØ 78-034

COOPERATOR: Corps of Engineers, Tulsa District

LOCATION: Southwest Missouri

PROJECT CHIEF: E. J. Harvey

PROBLEM: The Corps of Engineers is in the preconstruction planning
phase of the proposed Prosperity Dam and Reservoir on
Center Creek in southwestern Missouri. One step in their
planning process is an evaluation of present and potential
ground-water supplies in the area. The Corps of Engineers
has requested the U.S. Geological Survey to do the study.

OBJECTIVE: (1) Evaluate present and potential water supply from
Ordovician and Cambrian aquifers, (2) determine storage of
water in enclosing Mississippian rocks, (3) evaluate
chance of leakage past the damsite and downstream change
in ground-water levels, and (4) determine whether or not
ground-water discharge from mined areas could affect water
quality in the reservoir or in Center Creek.

APPROACH: (1) Evaluate available ground-water data, (2) supplement available data with field data collection in critical areas. Include seepage runs to correlate increase in discharge of Center Creek at Oronogo-Duenweg belt with a change in potentiometric surface, and (3) estimate storage characteristics of the Mississippian limestone in the Oronogo-Duenweg belt and in the area of the reservoir.

PROGRESS AND SIGNIFICANT RESULTS: A preliminary report was completed, which included results from a model of the ground-water system in the reservoir area. The model showed potential rises of 20 feet near the reservoir, and 0.5 to 1.0 foot in the southern part of Grove Creek basin. Grove Creek, immediately below the proposed damsite, is a losing stream. It is possible that flow from the losing reach can enter caverns, which might conduct the water to the Oronogo-Duenweg mining belt. A rise in water level in the upland adjacent to the losing reach of Grove Creek could also cause water to move toward the mining belt.

PLANS FOR NEXT YEAR: (1) Trace dye from losing reach to Scotland Spring on Grove Creek, (2) make seepage runs on Grove Creek and on Center Creek upstream and downstream from mouth of Grove Creek, (3) add a few additional control points in Mississippian limestone near damsite, and (4) set up monitoring network of observations wells and shafts in reconnaissance area.

REPORTS: Harvey, E. J., and Emmett, L. F., 1978, Hydrology and model study of the proposed Prosperity Reservoir, Center Creek basin, southwestern Missouri: U.S. Geological Survey Water-Resources Investigations. [In review.]



PROJECT TITLE: Effects of urban runoff and wastewater effluent on Wilsons Creek and James River near Springfield, Missouri MØ 78-035

COOPERATOR: City of Springfield, Missouri

LOCATION: Southwestern Missouri, Christian, and Greene Counties

PROJECT CHIEF: John Skelton

PROBLEM: The quality of water in Wilsons Creek and James River has been degraded by effluent from the Southwest Wastewater Plant and storm runoff from streets, parking lots, and industrial areas. Rainfall, streamflow, and water-quality data collected prior to upgrading the Southwest Wastewater Plant (October 1977) need to be summarized and interpreted to show changes in quality of water in Wilsons Creek and James River with respect to effluent discharge, rainfall, runoff, and time.

OBJECTIVE: Summarize and interpret rainfall, streamflow, and water-quality data collected from Wilsons Creek and James River before the new wastewater plant went into operation (through September 1977). This report will serve as a base from which future changes in the quality of water in Wilsons Creek and James River can be determined.

APPROACH: Samples for physical properties, common inorganic constituents, major nutrients, and bacteria will be collected monthly from the James River upstream and downstream from Wilsons Creek and analyzed to show the effects of Wilsons Creek on James River. Continuous discharge, water temperature, specific conductance, dissolved oxygen, and pH data collected for Wilsons Creek upstream and downstream from the Southwest Wastewater Plant, and the James River downstream from Wilsons Creek will be analyzed to show progressive downstream changes caused by effluent discharge and storm runoff. Continuous rainfall and discharge from several sites will be correlated with water-quality data and used to evaluate the possibilities of estimating peak flows and flood volumes.

PROGRESS AND SIGNIFICANT RESULTS: Available data were compiled and interpretation began during fiscal year 1978.

PLANS FOR NEXT YEAR: Complete a Water-Resources Investigations/NTIS report and receive Director's approval.

REPORTS:

Effects of urban runoff and wastewater effluent
on Wilsons Creek and James River near
Springfield, Missouri. [In review.]



PROJECT TITLE: Regional hydrogeology of aquifers of Cambrian and Ordovician age in parts of Minnesota, Wisconsin, Iowa, Illinois, Indiana, and Missouri MØ 79-036

PROJECT CHIEF: Walter Steinhilber, Madison, Wisconsin
Project coordinator in Missouri--Leo F. Emmett

LOCATION: Northern Missouri and other states.

PROBLEM: The northern Midwest is underlain by a continuous aquifer system formed of rocks of Paleozoic age. This system supplies water for municipal, agricultural, industrial, and domestic uses. Increasing use of water has caused the public to be concerned about the effects of pumping from the system and about the availability of water supplies. The problems causing public concern can be better solved if there is an understanding of how withdrawals at one place may affect the uses of water at another place. The system is poorly understood on a regional scale partly because not all hydrologic facts have been related to each other by a conceptual model.

OBJECTIVE: To provide regional concepts that will allow evaluation of the aquifer's water-supply potential and its response to projected development schemes. More specifically the study will be designed to: (1) provide data that helps describe the geologic, hydrologic, and chemical quality of the aquifer system, (2) estimate past and future withdrawals from the aquifer system and determine present withdrawals, and (3) develop a conceptual model of the aquifer system.

APPROACH: In cooperation with the Missouri Division of Geology and Land Survey compile and evaluate selected data as they may relate to regional flow systems. Resultant concepts and data may then be used to select logical hydrologic boundaries for a digital-computer model of the regional flow system. The model might then be used to test the validity of the concepts and for its predictive capability.

PLANS FOR
NEXT YEAR:

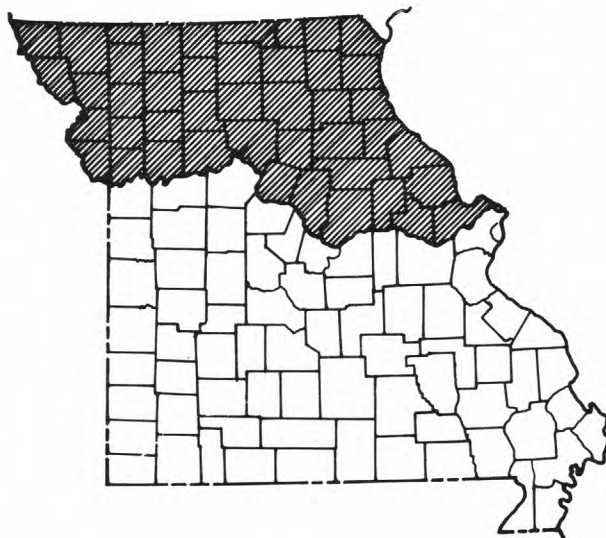
Data from the files of the Missouri Division of Geology and Land Survey and U.S. Geological Survey will be compiled, coded, and used to construct maps showing:

1. Water-level and water-bearing characteristics of selected aquifers.
2. Water quality of selected aquifers.
3. Structure contours on tops of Cambrian-Ordovician aquifer; Mississippian aquifer and Lamotte Sandstone; isopachous maps of Cambrian-Ordovician aquifer and Lamotte Sandstone.

A field reconnaissance to locate and inventory selected deep wells will begin.

REPORTS:

Planned: Water-Resources Investigations report, or bulletin of the Missouri Division of Geology and Land Survey.



PROJECT TITLE: Water for energy development, agriculture, and industry
in northwestern Missouri MØ 79-037

COOPERATION: Department of Natural Resources
Division of Geology and Land Survey

LOCATION: Northwestern Missouri

PROJECT CHIEF: John Skelton

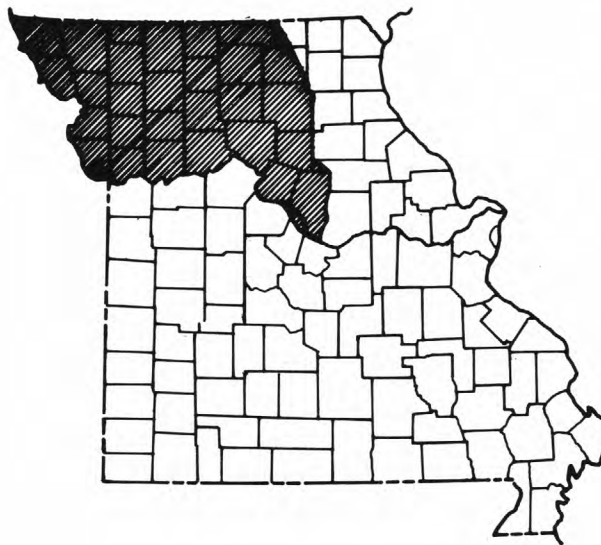
PROBLEM: Large increases in water use will accompany increases in coal production, agricultural development, and industrial expansion in northwestern Missouri. Water supplies are limited in much of this area, and adequate evaluations of the water resources that can be developed are not available.

OBJECTIVE: (1) Delimit areas of northwestern Missouri where water demand will be accelerating because of increasing irrigation, municipal, and industrial development, and assess water resources potential in these areas, (2) assemble detailed information about the location of active and potential coal mining and describe in as much detail as possible the hydrology in these areas, (3) based on information from (1) and (2), recommend areas for future detailed hydrologic investigations by the U.S. Geological Survey and the Division of Geology and Land Survey in northwestern Missouri.

APPROACH: Define areas in northwestern Missouri where water demand will be accelerating because of increasing agricultural and industrial developments. Identify areas where significant coal strip-mining will be occurring in the next 20 to 30 years. On a limited basis, inventory wells and measure water levels in areas defined so that generalized potentiometric maps can be prepared. Make seepage runs on selected large tributary streams if low-flow conditions permit. Compile hydrologic data for areas defined and evaluate needs for further data collection and analyses.

PLANS FOR
NEXT YEAR: Through literature search and contacts with State and Federal agencies, define areas where water demand will increase in the future. Identify areas of present and future significant coal strip-mining. Inventory and measure water levels for limited number of wells. Make seepage runs on large tributary streams if low-flow conditions are favorable. Begin compilation of data and prepare outline and introductory sections of report.

REPORTS: Planned: Water for energy development, agriculture, and industry in northwestern Missouri, Water-Resources Investigations series.



ANTICIPATED NEW WORK

Hydrologic and Water-Quality Characteristics of Streams and Shallow Aquifers in Coal-Mining Areas of Missouri

To administer regulations set forth in the Surface Mining Control and Reclamation Act of 1977, hydrologic information will be needed to classify streams and define water quantities and quality in streams and shallow aquifers. A project has been proposed to the U.S. Geological Survey to classify coal-mining areas into subareas having similar geologic, topographic, and hydrologic characteristics; relate streamflow parameters to basin parameters in the subareas; characterize water quality in the subareas and relate these parameters to streamflow or geologic parameters; and to evaluate changes in water quantity and quality in selected areas.

Regional Hydrogeology of Aquifers of Paleozoic Age in Parts of Arkansas, Missouri, Kansas, Oklahoma, and Texas

The central Midwest is underlain by a continuous aquifer system that supplies fresh water in Arkansas and Missouri, but has been used for waste disposal in other states. The operation of the flow system in this aquifer is poorly understood, and many studies have not been hydrologically related to one another.

A regional study of the aquifer system has been proposed to include the central Midwest states. Planning for the study will begin in fiscal year 1979 with the cooperation of the Division of Geology and Land Survey. The study will be designed to provide information necessary to understand flow in the system, provide a framework to interrelate hydrologic studies of smaller areas and to plan detailed studies of smaller areas, and to evaluate the consequences of stresses that have or can be assumed to be placed on the aquifer.

Urban Hydrology in St. Louis County

Flood frequency and areas inundated by the 100-year flood have been defined in much of the county. Water-quality characteristics, however, are not generally defined; yet, contamination from non-point sources can have serious consequences in receiving streams and lakes. A project is being proposed in cooperation with the East-West Gateway Coordinating Council to provide water-quality data from a basin in the county; relate selected land uses and environmental practices in the basin to water quality during selected runoff events; and to evaluate selected water-quality models.

SOURCES OF INFORMATION

Selected references on water resources in Missouri are listed on the following pages; many of them are available for inspection at the office of the U.S. Geological Survey and the Division of Geology and Land Survey in Rolla. New reports published by the Geological Survey are announced monthly in "New Publications of the Geological Survey." Subscriptions to this monthly list are available on request to the U.S. Geological Survey, 329 National Center, Reston, Va. 22092.

Professional papers, water-supply papers, bulletins, and the Geological Survey's annual report are sold by the U.S. Geological Survey, Branch of Distribution, 1200 South Eads Street, Arlington, Va. 22092 (authorized agent of the Superintendent of Documents, Government Printing Office). Circulars are free upon request to the U.S. Geological Survey, National Center, Reston, Va. 22092. Water-resources investigations folders for each of the 50 States and Puerto Rico also are free upon request. Hydrologic investigations atlases, hydrologic unit maps, and other maps pertaining to Missouri are sold by the U.S. Geological Survey, Branch of Distribution, Bldg. 41, Denver Federal Center, Lakewood, Colo. 80225.

Records of streamflow, ground-water levels, and quality of water have been published for many years as Geological Survey Water-Supply Papers (WSP). Beginning with the 1975 water year, however, this series was replaced by a new publication series, U.S. Geological Survey Water-Data Reports. This new series combines under one cover for each state: stream-flow data, water-quality data for surface and ground water, and ground-water level data from the basic network of observation wells. For Missouri the title is, "Water-Resources Data for Missouri - Water Year 1978: U.S. Geological Survey Water-Data Report MO-78-1." Other publications series of general interest also are explained in the following pages. Further information on these publications can be obtained from the District Chief, Water Resources Division, Rolla, Mo. 65401

A more complete State List of reports of the U.S. Geological Survey is given in the bibliography. Summary statements about the immediate national water situation are presented in the "Water Resources Review," which is issued monthly. The Review may be obtained free on application to the U.S. Geological Survey, 420 National Center, Reston, Va. 22092.

Indexes to the "Catalog of Information on Water Data" are available free from the District Chief in Rolla, or the Office of Water Data Coordination, U.S. Geological Survey, 417 National Center, Reston, Va. 22092.

Open-file reports are available for inspection at the office from which the report originated. Flood-prone area maps may also be obtained from the Missouri district office.

The Geological Survey National Center maintains a library with an extensive earth-sciences collection. Local libraries may obtain books, periodicals, and maps through interlibrary loan by writing to: U.S. Geological Survey Library, 12201 Sunrise Valley Drive, Reston, Va. 22092.

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