



Prepared in cooperation with the
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY,
OFFICE OF POLLUTION CONTROL

Time-of-Travel of Solute Data Collected by the Mississippi Department of Environmental Quality for Mississippi Streams

Data Series DS 84

U.S. Department of the Interior
U.S. Geological Survey

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By J. Kerry Arthur

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U.S. Department of the Interior
Gale A. Norton, Secretary

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CONVERSION FACTORS

	Multiply	By	To obtain
	foot (ft)	0.3048	meter
	mile (mi)	1.609	kilometer
	cubic foot per second (ft ³ /s)	0.02832	cubic meter per second
	mile per hour (mi/hr)	1.609	kilometer per hour

Time-of-Travel of Solute Data Collected by the Mississippi Department of Environmental Quality for Mississippi Streams

By J. Kerry Arthur

ABSTRACT

This report summarizes the time-of-travel of solutes information for Mississippi streams that is available in the files at the Mississippi Department of Environmental Quality, Office of Pollution Control. The time-of-travel information was tabulated for 112 miles of stream reaches in eight of the ten major drainage basins in the State. The data were collected during studies conducted from 1981 through 1998. Estimation of time-of-travel of solutes is important for environmental studies of streams and may be critical in the event of accidental or other spills of contaminants into a waterway.

INTRODUCTION

The U.S. Geological Survey (USGS) collaborated with the Mississippi Department of Environmental Quality, Office of Pollution Control (MDEQ-OPC), in a project to compile all the time-of-travel of solute information on Mississippi streams available at the USGS and the MDEQ-OPC. This report is the second of two reports to present the time-of-travel information. The first report presented the data located in the files of the USGS.

This report presents, in tabular form, all the available time-of-travel information for Mississippi streams located in the files of the MDEQ-OPC. The compilation of these data into a single document facilitates the use of the data.

The possibility of accidental or intentional (bio-terrorism) spills of contaminants into Mississippi streams is of concern to those using water from the rivers in the State. Estimating solute travel time in streams is important in the event of spills of contaminants and for pollution studies. A tabulation of all the time-of-travel information for Mississippi streams in the files of the MDEQ-OPC will be beneficial to the public and to local, State, and Federal agencies.

The time-of-travel information at MDEQ-OPC was collected from 1981 through 1998 along 112 miles of stream reaches in the State. The streams for which information is available represent eight of the ten major drainage basins (fig. 1). All the time-of-travel information presented in this report was collected by the MDEQ-OPC or by contracted representatives of MDEQ-OPC.

The time-of-travel data were collected as part of various MDEQ-OPC studies to determine the movement of a potential

contaminant through the reaches of a waterway. Most, if not all, the studies were conducted to determine solute travel time from lagoon outfalls to relatively short distances downstream to selected sampling sites. The studies used similar procedures to determine solute time-of-travel. The time-of-travel data were determined by injecting known amounts of fluorescent dye into streams at selected sites and measuring the travel time of the dye to downstream sampling points. Slug injections of Rhodamine WT fluorescent dye were used in all of the studies except in the September 1989 study on Sipsey Creek where the constant-injection method was used to input the Rhodamine WT dye into the stream. The dye concentrations in the water samples collected were measured using a fluorometer. The travel time of the dye was determined by using the time of collection of the water sample containing the peak concentration of dye. In some of the studies, the time-of-travel of the leading and trailing edges of the dye cloud was determined. The leading edge of the dye plume is the first detection of a dye concentration greater than background fluorescence. Most of the studies were made during periods with little or no surface runoff or during periods when the streams were at or near base flow conditions. Stream discharge measurements were made during most of the studies; discharge was estimated for most sites where measurements were not available. Latitude and longitude for the study sites was determined by using USGS 7 1/2-minute quadrangle maps and information furnished by MDEQ-OPC.

PRESENTATION OF DATA

Time-of-travel of solute information was compiled from the individual study files and reports at the MDEQ-OPC. In instances where the information was in field form, the data were inspected and tabulated. Time-of-travel information was tabulated for the following drainage basins and stream groups in Mississippi (fig. 1).

- Tombigbee River Basin (fig. 2)
- Pascagoula River Basin (fig. 3)
- Pearl River Basin (fig. 4)
- Yazoo River Basin (fig. 5)
- Big Black River Basin (fig. 6)

- Independent Streams Basin (fig. 7)
- Tennessee River Basin (fig. 8)
- Lower Mississippi-Tennessee Streams Basin (fig.9)

The stream reaches in each basin with time-of-travel of solute information are shown in figures 2-9. The drainage basin names are consistent with the names used by the MDEQ-OPC.

The time-of-travel of solute information for Mississippi streams is presented in table 1. The data tabulated for each stream consist of the following parameters:

- **Source and date of study**—Name, month, and year of study.
- **Reach**—Location of beginning and end of reach.
- **Reach number**—Numerical designation of reach.
- **County**—Name of county of reach.
- **Latitude**—Degrees, minutes, and seconds of latitude at beginning and end of reach.
- **Longitude**—Degrees, minutes, and seconds of longitude at beginning and end of reach.
- **Length of reach**—Length of reach in miles.
- **Solute time-of-travel, in hours**—Elapsed travel time of dye cloud from the beginning to the end of the reach.
 - **Lead edge**—Leading edge of dye cloud.
 - **Peak**—Peak concentration in dye cloud.
 - **Trail edge**—Trailing edge of dye cloud.
- **Solute rate of travel, in miles per hour**—Rate of travel time of dye cloud from the beginning to the end of the reach.
 - **Lead edge**—Leading edge of dye cloud.
 - **Peak**—Peak concentration in dye cloud.
- **Stream discharge, in cubic feet per second.**

The Pascagoula River Basin (fig. 3) has the greatest total miles (22.4) of river reaches with time-of-travel of solute information. The Tombigbee River Basin (fig. 2) has the second greatest total miles (20.5) of river reaches with time-of-travel of solute information. Tallahala Creek near Laurel has the greatest miles (17.7) of river reaches with data in the Pascagoula River Basin and the most miles of river reaches with information of all the rivers tabulated. Chico Creek near Houston has the greatest miles (7.70) of river reaches with data in the Tombigbee River Basin. The basin with the next greatest miles (18.6) of river reaches with time-of-travel information is the Yazoo River Basin (fig. 5). The Yalobusha River

near Grenada has the greatest miles (7.78) of river reaches with data in the Yazoo River Basin. Of the remaining basins with time-of-travel data, the Tennessee River Basin (fig. 8) has the least miles (3.70) of time-of-travel information all of which are on Indian Creek at Iuka. In the Big Black Basin, time-of-travel information was collected only on Bear Creek near Canton. No time-of-travel data are available on stream reaches in the coastal streams basin and in the Mississippi River Basin.

The Bogue Chitto River near Brookhaven in the Independent Streams Basin has the second greatest miles (12.1) of river reaches with time-of-travel of solute information. Bear Creek near Canton in the Big Black River Basin has the next greatest miles (9.00 miles) of river reaches with time-of-travel information. The Yalobusha River near Grenada in the Yazoo River Basin has the third greatest miles (7.78) of river reaches with data. Sowashee Creek at Savannah Grove has all the river reach mileage (4.71) with time-of-travel information in the Pascagoula River Basin. Data were collected on Sowashee Creek for three streamflow rates. Data were collected on Sipsey Creek near Sebastopol for two streamflow rates. For all other stream studies, time-of-travel information for each stream reach was collected for one streamflow rate.

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- Reed, Randy, 1987, City of Hazlehurst wasteload allocation report—Development of final effluent limits, East Facility, Bahala Creek near Hazlehurst, Mississippi: Mississippi Department of Natural Resources, Bureau of Pollution Control, variously paginated.
- Reed, Randy, Thomas, Jeff, and Lyons, Rusty, 1989, City of Corinth POTW replacement preconstruction water quality: Bridge Creek near Corinth, Mississippi: Mississippi Department of Natural Resources, Bureau of Pollution Control, unpaginated.
- Shindala, Adnan, Truax, Dennis, and Corey, M.W., 1982, Water quality studies on selected streams in Mississippi: Mississippi State University, Engineering and Industrial Research Station Report CE-82-2, 213 p.

EXPLANATION

- Big Black River Basin
- Coastal Streams Basin
- Mississippi River Basin
- Lower Miss-Tenn Streams Basin
- Independent Streams Basin
- Pascagoula River Basin
- Tennessee River Basin
- Tombigbee River Basin
- Pearl River Basin
- Yazoo River Basin
- Surface water
- Streams

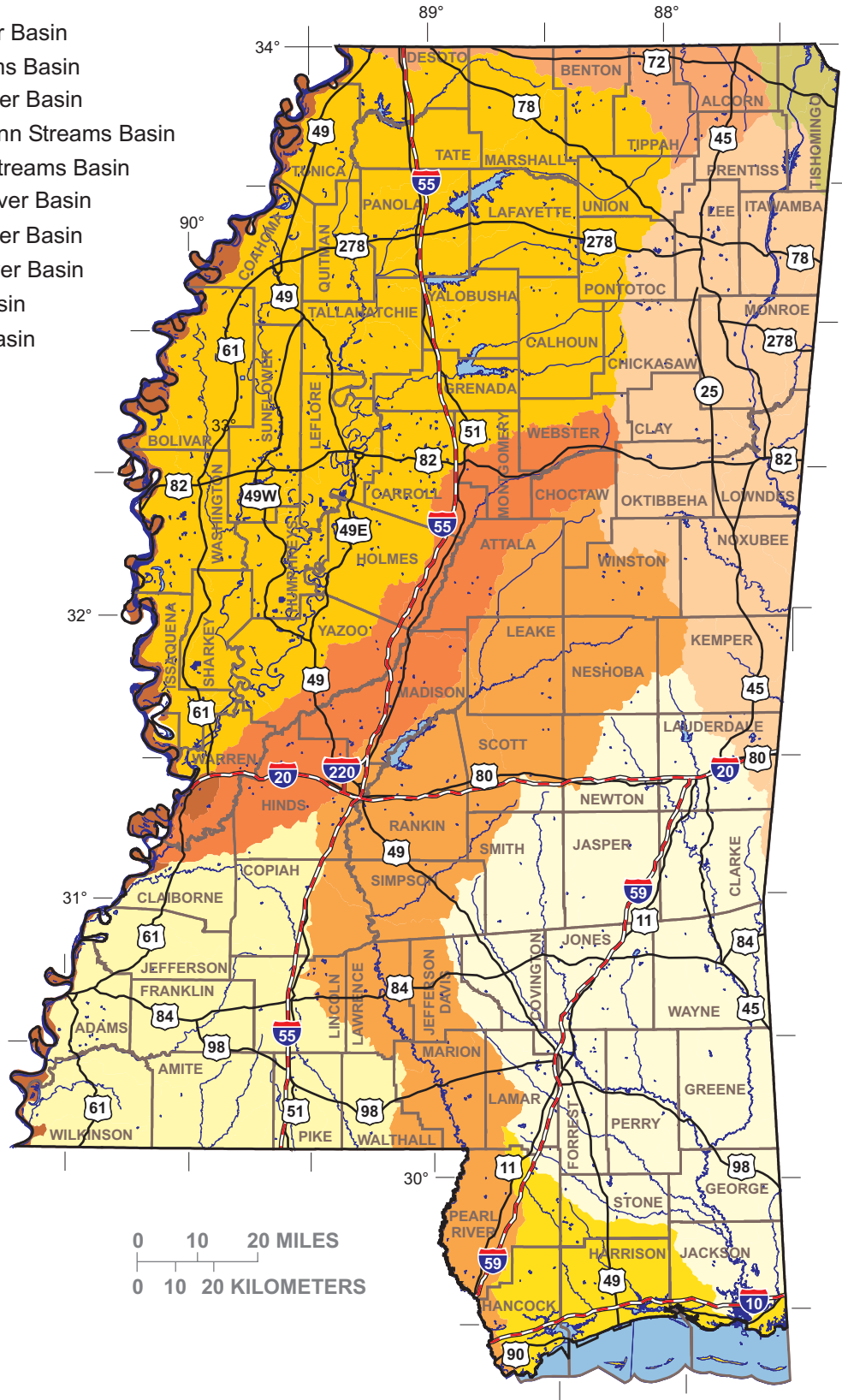


Figure 1. Location of drainage basins in Mississippi.

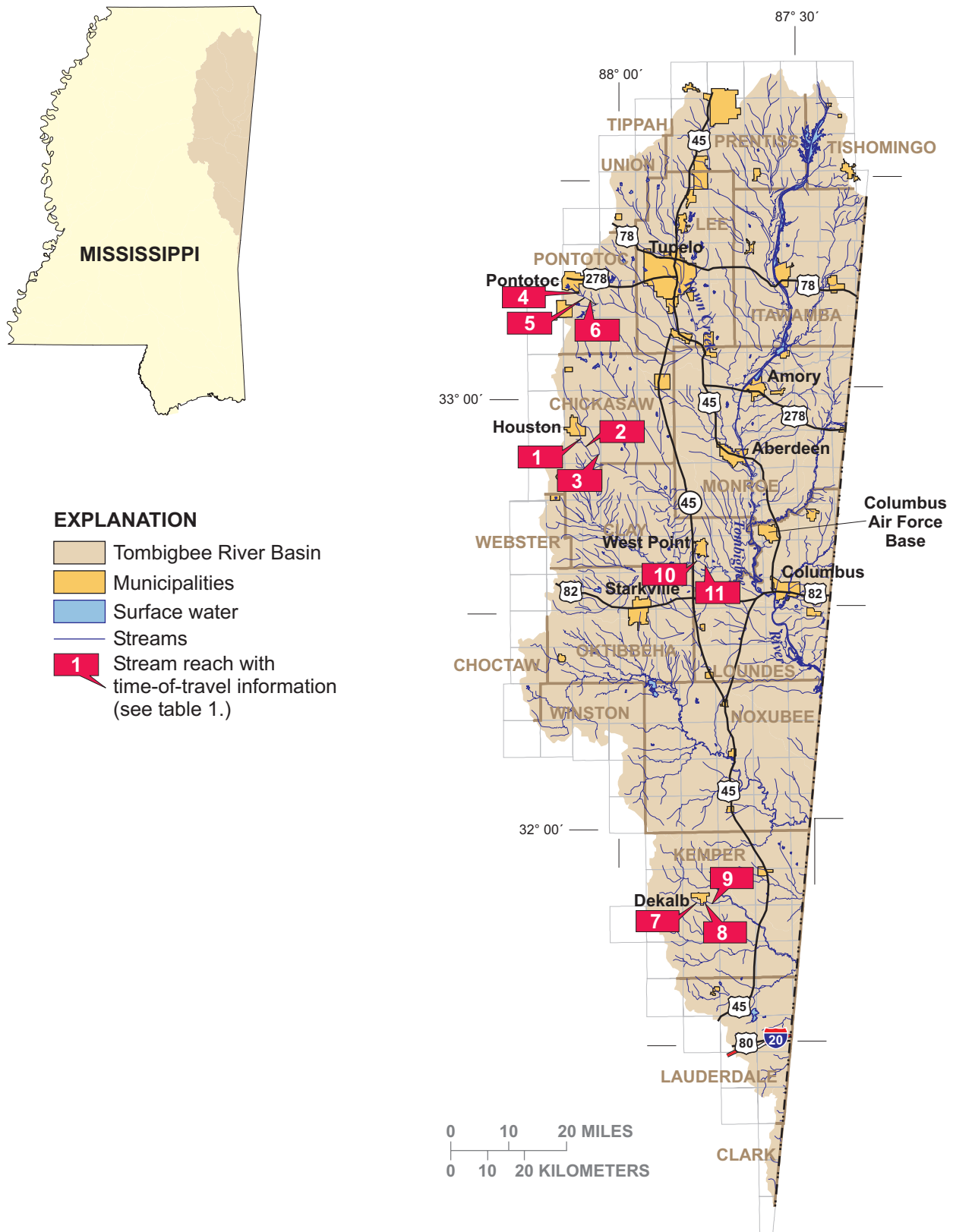


Figure 2. Location of Tombigbee River Basin and stream reaches with time-of-travel information.

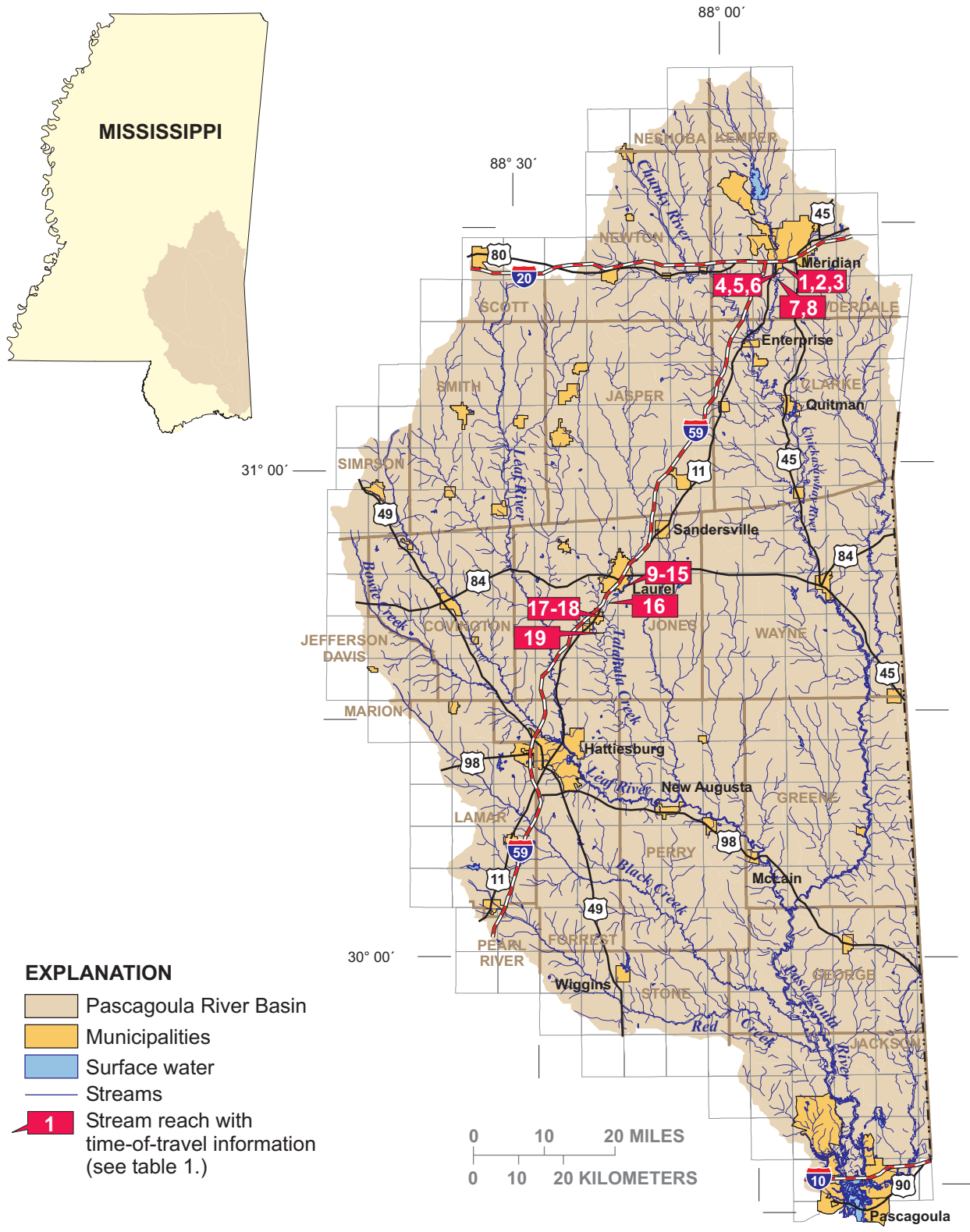


Figure 3. Location of Pascagoula River Basin and stream reaches with time-of-travel information.

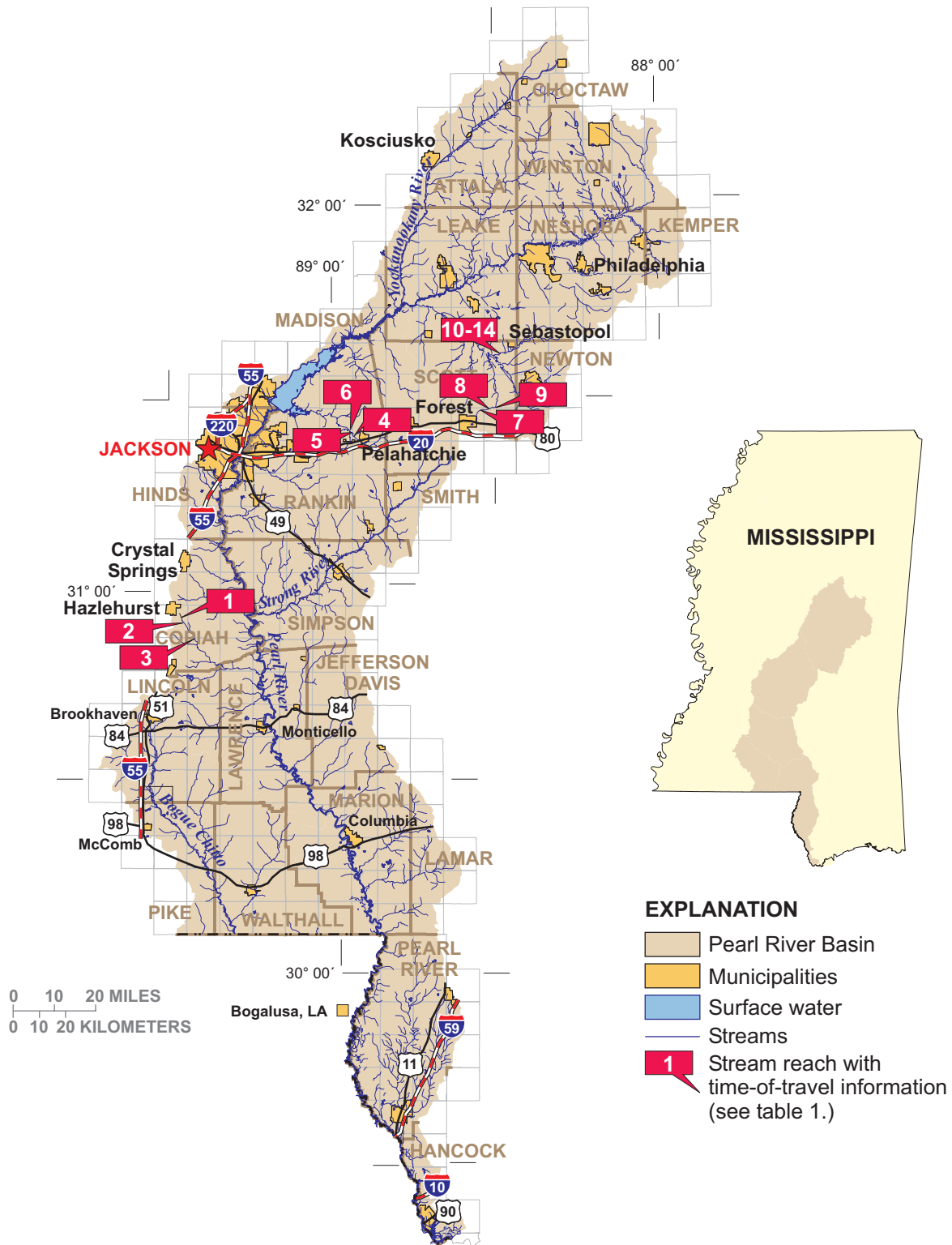


Figure 4. Location of Pearl River Basin and stream reaches with time-of-travel information.

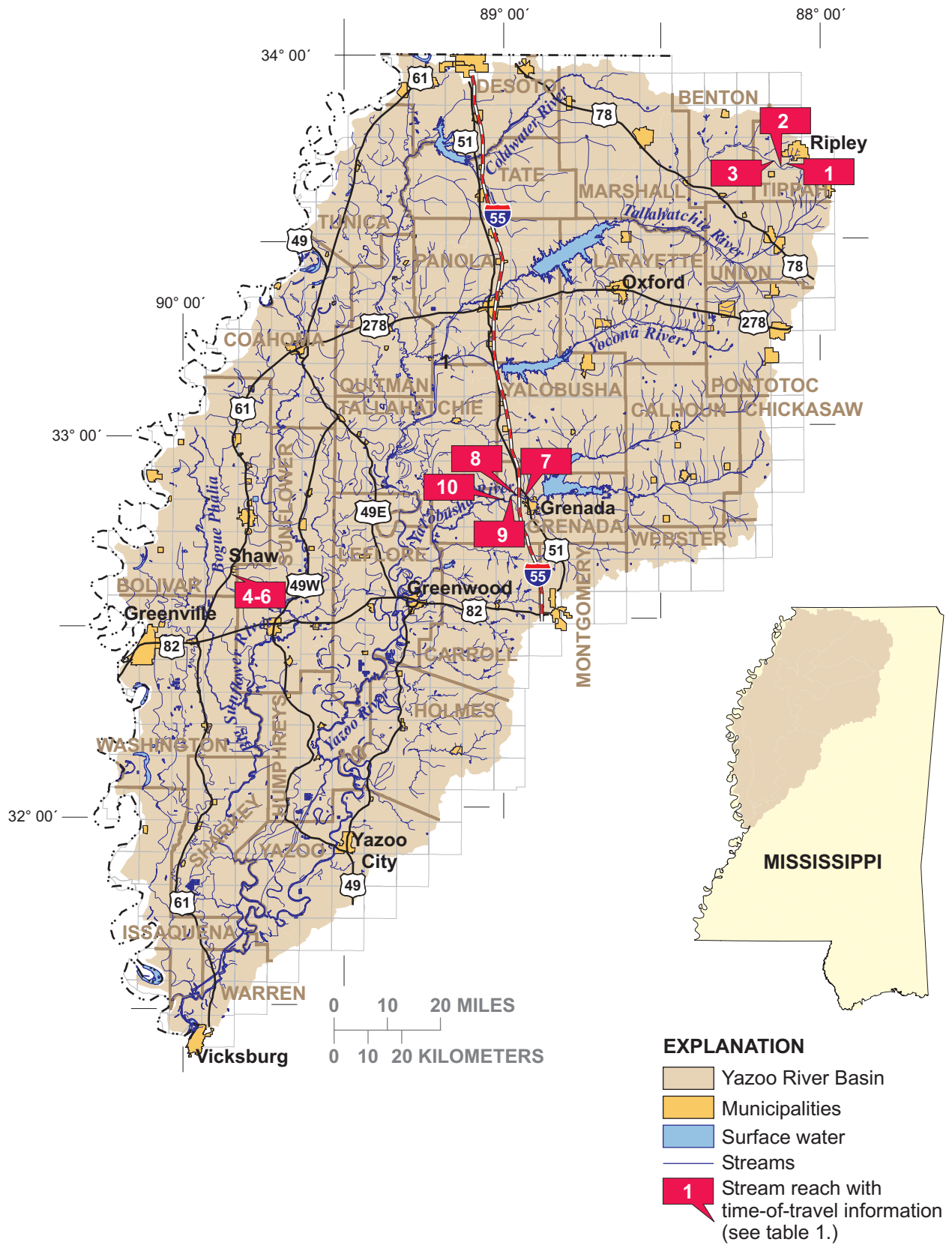


Figure 5. Location of Yazoo River Basin and stream reaches with time-of-travel information.

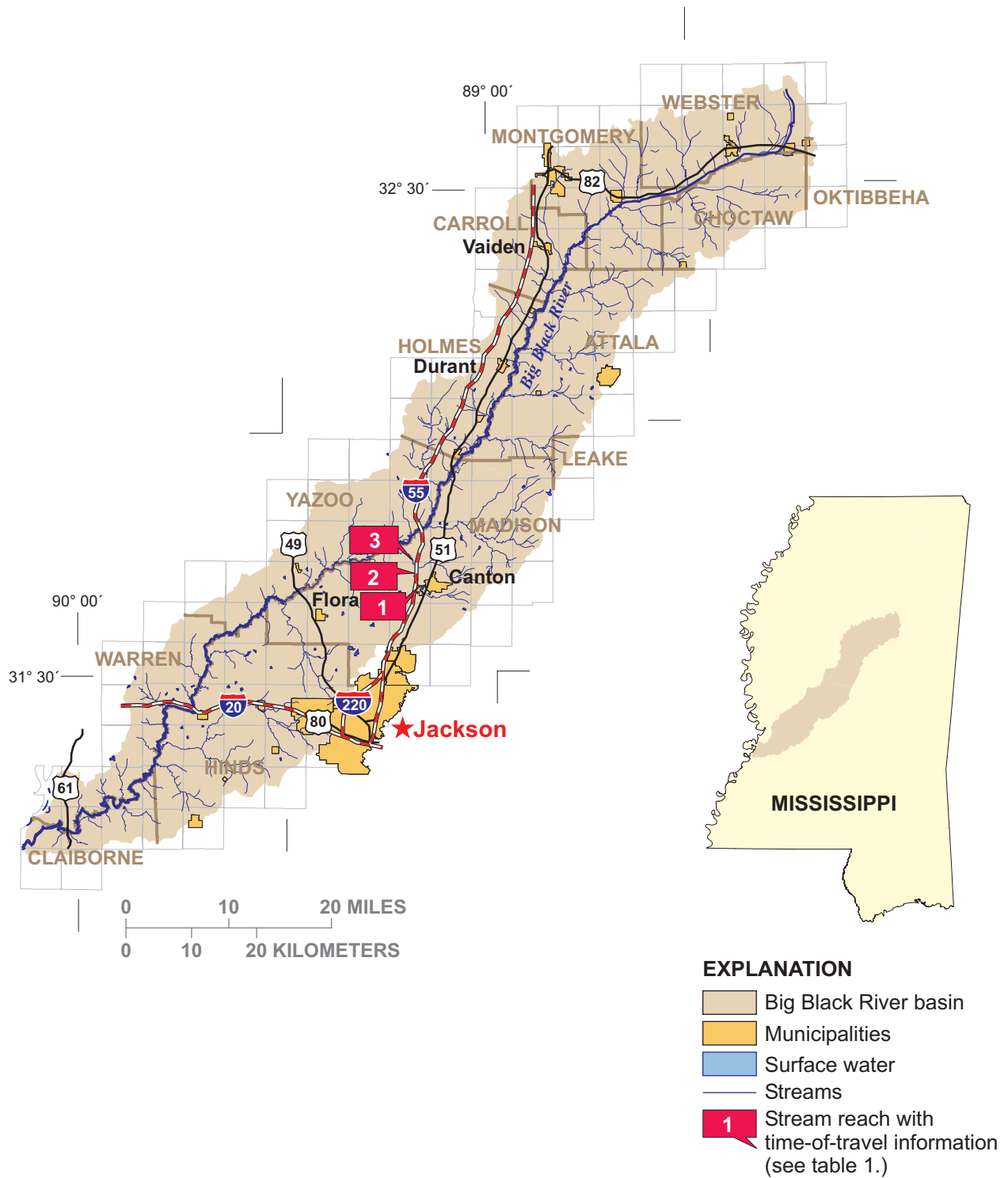


Figure 6. Location of Big Black River Basin and stream reaches with time-of-travel information.

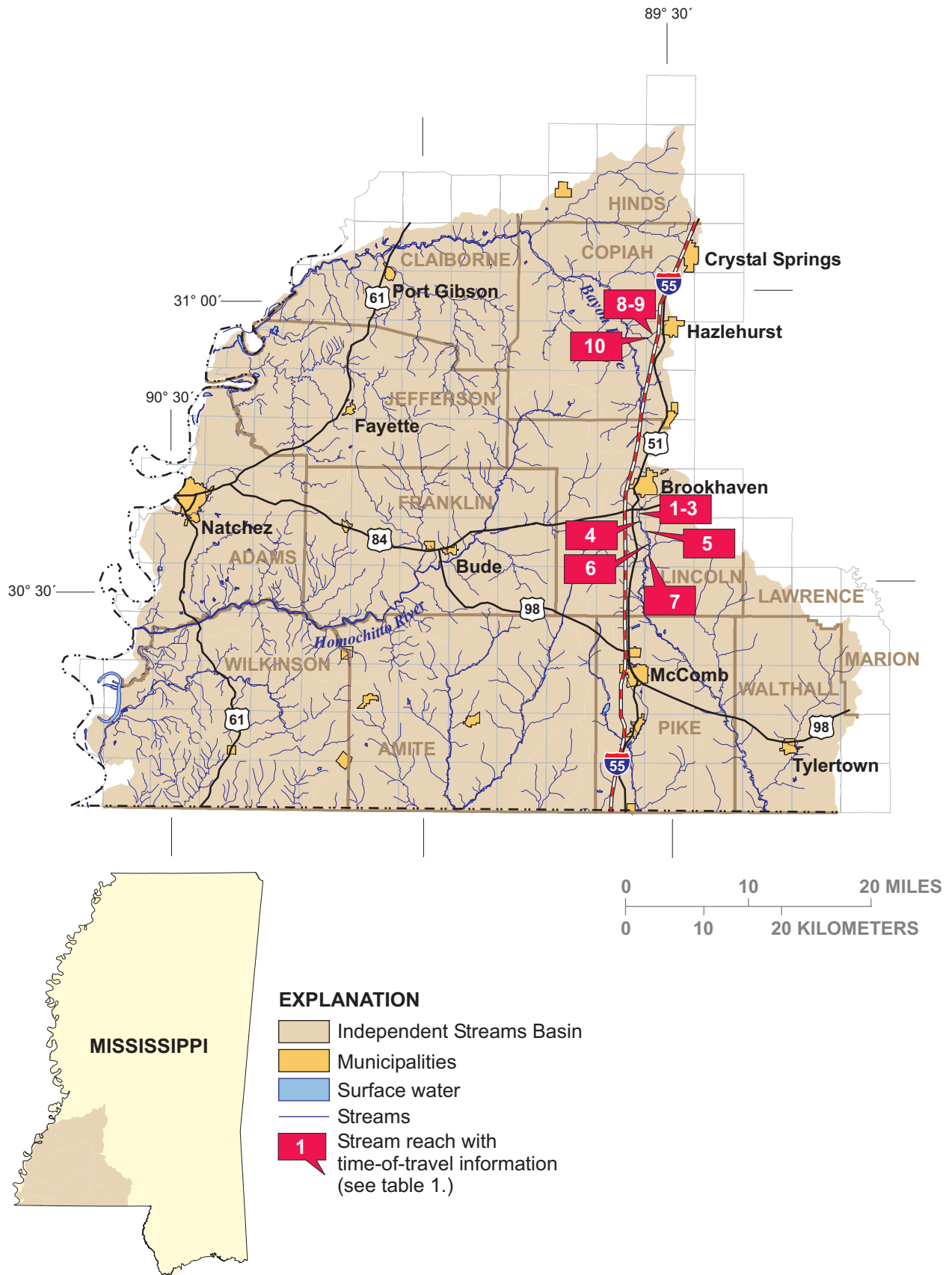
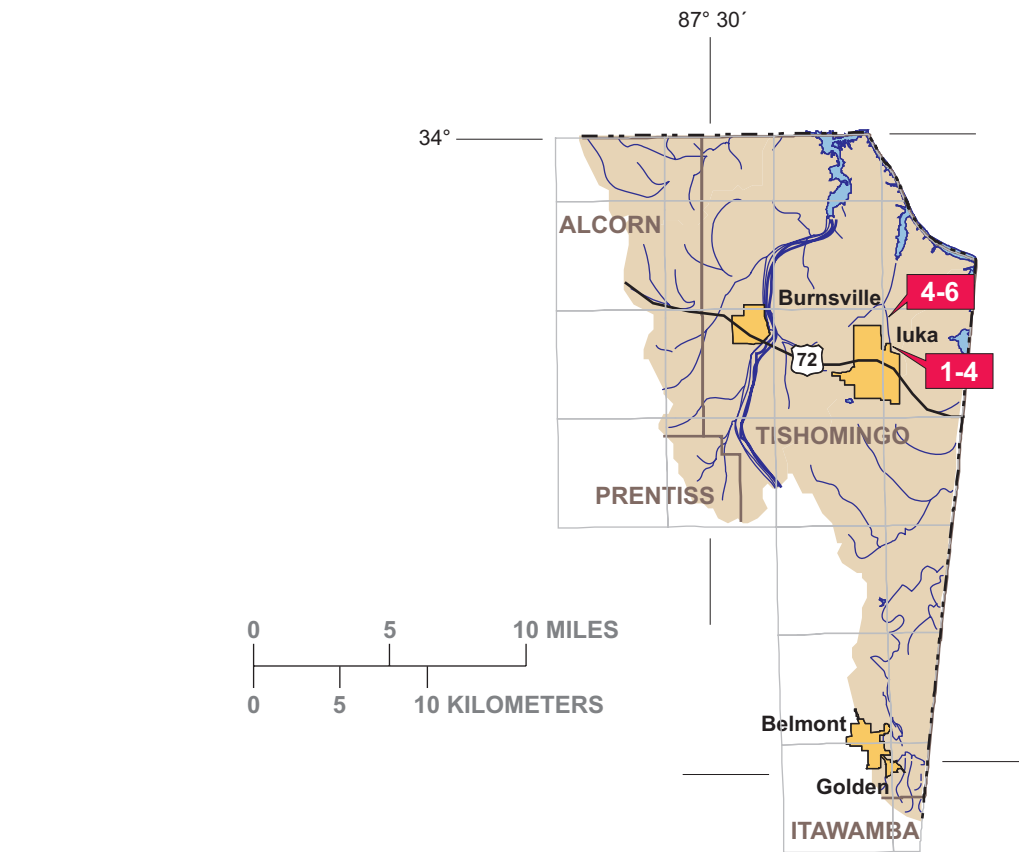


Figure 7. Location of Independent Streams Basin and stream reaches with time-of-travel information.



EXPLANATION






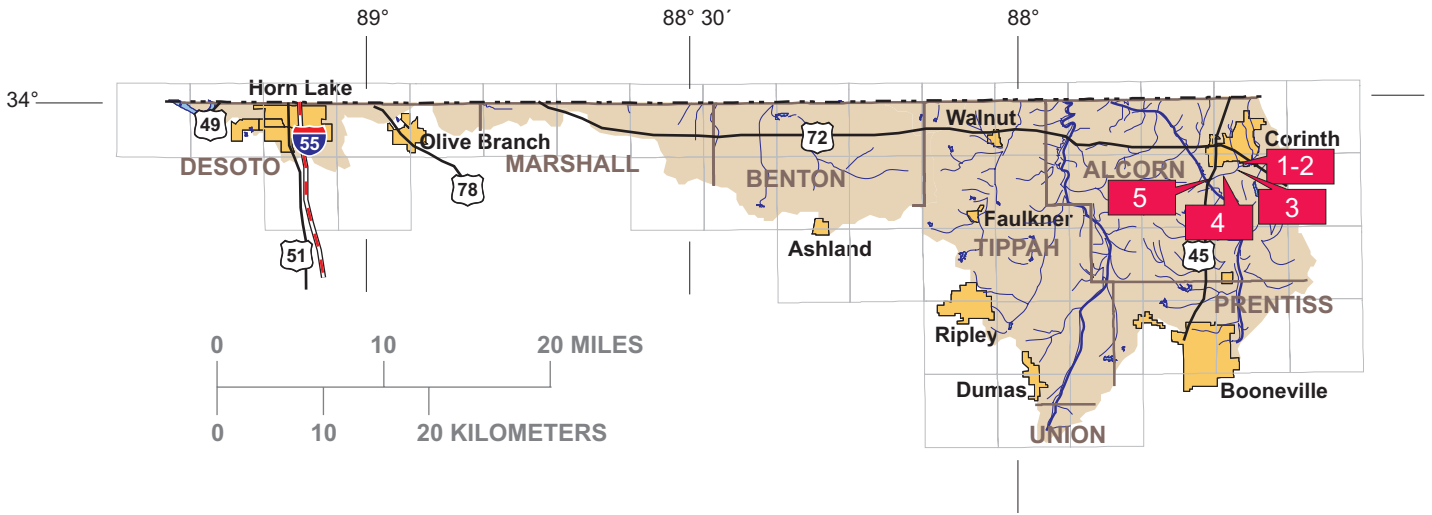
-  Tennessee River Basin
-  Municipalities
-  Surface water
-  Streams
-  Stream reach with time-of-travel information (see table 1.)

Figure 8. Location of Tennessee River Basin and stream reaches with time-of-travel information.



EXPLANATION






-  Lower Mississippi-Tennessee Streams Basin
-  Municipalities
-  Surface water
-  Streams
-  Stream reach with time-of-travel information (see table 1.)

Figure 9. Location of Lower Mississippi-Tennessee Streams Basin and stream reaches with time-of-travel information.

Table 1. Time-of-travel of solute data collected for streams in Mississippi
 [no., number; ft³/s, cubic feet per second; -, indicates not applicable or unknown; est., estimated]

Source and date of study	Reach	Reach no.	County	Latitude	Longitude	Length of reach (miles)	Solute time of travel (hours)		Rate of travel (miles per hour)		Stream discharge (ft ³ /s)
							Lead edge	Peak	Lead edge	Peak	
Tombigbee River Basin											
Chico Creek near Houston											
Chico and Houlika Cr. Study July 1981	1 (Lagoon) to 2 (Natchez Trace)	1	Chickasaw	335240	885924	2.50	Injection				0.01
	2 (County Road)	2	Chickasaw	335054	885804	2.30	-	111.00	-	0.02	0.50
	3 (County Road) to 4	3	Chickasaw	334950	885639	2.90	-	33.50	-	0.07	0.44
				334836	885418		-	80.00	-	0.04	1.90
Data from "Water Quality Studies on Selected Streams in Mississippi" by A. Shindala, D. Truax, and M. Corey, 1982.											
Mile Branch and Donaldson Creek near Pontotoc											
Mile Branch Study June 1981	1 (1st Bridge DS of Hwy 15) to 2 (Hwy 342)	4	Pontotoc	341402	885934	1.80	Injection				0.04
	3 (County Road)	5	Pontotoc	341250	885832	1.60	-	66.50	-	0.03	0.59
	4 (County Road)	6	Pontotoc	341158	885718	1.30	-	9.50	-	0.17	1.60
				341138	885613		-	5.50	-	0.24	1.70
Data from "Water Quality Studies on Selected Streams in Mississippi" by A. Shindala, D. Truax, and M. Corey, 1982.											
Snoody Creek near DeKalb											
Snoody Cr. Study July 1981	1 (Lagoon) to 2 (Hwy 39)	7	Kemper	324608	883934	1.10	Injection				0.80
	3 (Railroad)	8	Kemper	324512	883920	1.80	-	18.00	-	0.06	1.80
	4 (County Road)	9	Kemper	324524	883756	1.90	-	20.50	-	0.09	3.00
				324524	883607		-	11.30	-	0.17	
Data from "Water Quality Studies on Selected Streams in Mississippi" by A. Shindala, D. Truax, and M. Corey, 1982.											

Table 1. Time-of-travel of solute data collected for streams in Mississippi--Continued

Source and date of study	Reach	Reach no.	County	Latitude	Longitude	Length of reach (miles)	Solute time of travel (hours)		Rate of travel (miles per hour)		Stream discharge (ft ³ /s)
							Lead edge	Peak	Trail edge	Lead edge	
Town Creek near West Point											
Town Cr. Study June 1981	1 (Hwy 45) to	10	Clay	333444	883932	1.40	Injection				0.60
	2 (County Road) to	11	Clay	333406	883832	1.90	–	11.20	–	0.12	5.30
	3		Clay	333336	883658		–	5.50	–	0.35	6.30
Data from "Water Quality Studies on Selected Streams in Mississippi" by A. Shindala, D. Truax, and M. Corey, 1982.											
Pascagoula River Basin											
Sowashee Creek at Savannah Grove											
Model calibration report Aug. 1984 Run 2	1 (Far Upstream) to	1	Lauderdale	322039	884338	0.68	Injection				10.60
	2 (Near Upstream) to	2	Lauderdale	322016	884401	0.00	1.97	2.32	3.15	0.29	10.40
	3 (Sewage Disposal Effluent) to	3	Lauderdale	322016	884401	0.30	0.00	0.00	0.00	–	13.70
	4 (Power Line) to	4	Lauderdale	322001	884408	0.80	0.33	0.38	0.58	0.91	23.30
	5 (U.P.S.) to	5	Lauderdale	321942	884407	0.63	1.10	1.20	1.35	0.73	21.90
	6 (S.E.I.P.) to	6	Lauderdale	321918	884412	1.18	1.14	1.19	1.24	0.55	23.60
	7 (Ellis) to	7	Lauderdale	321839	884422	0.57	2.08	2.33	2.73	0.57	24.10
	8 (Vance) to	8	Lauderdale	321817	884441	0.55	1.02	1.17	1.67	0.56	18.60
	9 (Fish Hatchery)		Lauderdale	321820	884504		1.30	1.43	1.48	0.42	26.30

Table 1. Time-of-travel of solute data collected for streams in Mississippi--Continued

Source and date of study	Reach	Reach no.	County	Latitude	Longitude	Length of reach (miles)	Solute time of travel (hours)			Rate of travel (miles per hour)	Stream discharge (ft ³ /s)	
							Lead edge	Peak	Trail edge			Lead edge
Aug. 1984 Run 3	1 (Far Upstream)		Lauderdale	322039	884338							
	2 (Near Upstream)		Lauderdale	322016	884401	0.68					8.70	
	3 (Effluent)		Lauderdale	322016	884401	0.00	2.28	2.68	3.48	0.30	0.25	
	4 (Power Line)		Lauderdale	322001	884408	0.30	0.00	0.00	0.00	—	—	9.60
	5 (U.P.S.)		Lauderdale	321942	884407	0.80	0.33	0.38	0.57	0.91	0.79	19.10
	6 (S.E.I.P.)		Lauderdale	321918	884412	0.63	1.10	1.20	1.41	0.73	0.67	16.50
	7 (Ellis)		Lauderdale	321839	884422	1.18	1.15	1.25	1.35	0.55	0.50	17.40
	8 (Vance)		Lauderdale	321817	884441	0.57	2.12	2.27	2.82	0.56	0.52	15.60
	9 (Fish Hatchery)		Lauderdale	321820	884504	0.55	0.98	1.23	1.48	0.58	0.46	17.20
Sept. 1984 Run 4	1 (Far Upstream)		Lauderdale	322039	884338							
	2 (Near Upstream)		Lauderdale	322016	884401	0.68						6.40
	3 (Effluent)		Lauderdale	322016	884401	0.00	3.32	3.62	4.77	0.20	0.19	5.60
	4 (Power Line)		Lauderdale	322001	884408	0.30	0.00	0.00	0.00	—	—	13.00
	5 (U.P.S.)		Lauderdale	321942	884407	0.80	0.35	0.45	0.70	0.86	0.67	15.30
	6 (S.E.I.P.)		Lauderdale	321918	884412	0.63	1.22	1.32	1.57	0.86	0.61	11.40
	7 (Ellis)		Lauderdale	321839	884422	1.18	1.30	1.45	1.43	0.48	0.43	13.00
	8 (Vance)		Lauderdale	321817	884441	0.57	2.07	2.37	2.87	0.57	0.50	14.70
	9 (Fish Hatchery)		Lauderdale	321820	884504	0.55	1.03	1.18	1.58	0.55	0.48	16.30
						1.09	1.34	1.44	0.50	0.41	13.30	

Sowashee Creek at Savannah Grove--Continued

Data from "Collection of Water Quality Data for Calibration and Validation of a Model of a Mississippi Stream" by G. Godshalk and J. Huey, 1984.

Table 1. Time-of-travel of solute data collected for streams in Mississippi--Continued

Source and date of study	Reach	Reach no.	County	Latitude	Longitude	Length of reach (miles)	Solute time of travel (hours)		Rate of travel (miles per hour)		Stream discharge (ft ³ /s)
							Lead edge	Peak	Lead edge	Peak	
Tallahala Creek near Laurel											
Model Calibration Study Oct. 1996	Hwy 84 to Above GGWTF No. 2 outfall	9	Jones	314150	890633	1.60					
	Hwy 15 to Bridge above Masonite	10	Jones	314100	890647	0.40	12.25	15.25	0.13	0.10	
	to About 8 yds. Above TC-MN004ED	11	Jones	314051	890657	1.10	3.00	4.50	0.13	0.09	
	to Queensbury Ave.	12	Jones	314016	890723	1.20	-	5.00	-	0.22	
	to Above GGWTF No. 1 outfall	13	Jones	313941	890749	0.90	-	8.67	-	0.14	
	to Below GGWTF No. 1 outfall	14	Jones	313920	890822	0.40	-	5.08	-	0.18	
	to Above Tallahoma Cr. Confluence	15	Jones	313918	890837	1.10	-	4.08	-	0.10	
	Church Street	16	Jones	313847	890900	4.00	-	7.67	-	0.14	
	Hwy 29	17	Jones	313649	891046	0.40	-	18.75	-	0.21	
	to Bridge 192 below Ellisville	18	Jones	313634	891052	2.20	-	3.00	-	0.13	
		19	Jones	313530	891000	4.40	-	8.75	-	0.25	
			Jones	313336	891106		-	25.00	-	0.18	

Data from "Tallahala Creek TMDL, Laurel, Mississippi Study," 1996

Table 1. Time-of-travel of solute data collected for streams in Mississippi--Continued

Source and date of study	Reach	Reach no.	County	Latitude	Longitude	Length of reach (miles)	Solute time of travel (hours)			Rate of travel (miles per hour)		Stream discharge (ft ³ /s)
							Lead edge	Peak	Trail edge	Lead edge	Peak	
Pearl River Basin												
Bahala Creek near Hazlehurst												
City of Hazlehurst Report July 1985	EF (Lagoon) to 4	1	Copiah	315122	902233	0.85		Injection				
	4 to 5 (County Road)	2	Copiah	315046	902212	1.48	4.67	6.17	0.18	0.14		
	5 (County Road) to 7 (County Road at Sardis)	3	Copiah	314950	902140		26.25	28.67	0.06	0.05		
	7 (County Road at Sardis) to 8 (County Road)	3	Copiah	314746	901949	1.41		Injection				
	8 (County Road)		Copiah	314709	901926		25.47	35.47	0.06	0.04		
Data from "City of Hazlehurst Wasteload Allocation Report, Development of Final Effluent Limits, East Facility" by R. Reed, 1987. No stream discharge available.												
Pelahatchie Creek near Pelahatchie												
Pelahatchie Cr. Study Aug. 1981	1 (Lagoon) to 2 (Near Pipeline)	4	Rankin	321850	894843	1.50		Injection				
	2 (Near Pipeline) to 3	5	Rankin	321908	894940	3.00		46.50		0.03	1.50	
	3 to 4 (Near Rawls Chapel)	6	Rankin	322032	895044	0.50		80.00		0.04	1.40	
	4 (Near Rawls Chapel)		Rankin	322042	895118			33.50		0.01	1.60	
Data from "Water Quality Studies on Selected Streams in Mississippi" by A. Shindala, D. Truax, and M. Corey, 1982.												
Funches Creek near Forest												
Gordy Branch and Hontokalo Cr. Study Aug. 1981	1 (Gordy Branch at Lagoon) to 2 (Funches Creek)	7	Scott	322317	892636	1.30		Injection				2.90
	2 (Funches Creek) to 3 (County Road)	8	Scott	322326	892503	2.00		63.80		0.02		
	3 (County Road) to 4 (Hontokalo Creek)	9	Scott	322344	892349	1.50		93.00		0.02	3.50	
	4 (Hontokalo Creek)		Scott	322418	892254			37.00		0.04	4.60	
Data from "Water Quality Studies on Selected Streams in Mississippi" by A. Shindala, D. Truax, and M. Corey, 1982.												

Table 1. Time-of-travel of solute data collected for streams in Mississippi--Continued

Source and date of study	Reach	Reach no.	County	Latitude	Longitude	Length of reach (miles)	Solute time of travel (hours)		Rate of travel (miles per hour)		Stream discharge (ft ³ /s)	
							Lead edge	Peak	Lead edge	Peak		
Sipsey Creek near Sebastopol												
Sipsey Creek Study Aug. 1981	WWTC		Scott	323242	892144	1.30		Injection			1.40	
	to	10										
	3		Scott	323224	892213			5.89		0.22	5.70	
		Eff		Scott	323242	892144	0.19		Injection			
		to	10									
		2		Scott	323235	892154	0.06		2.12		0.09	
		to	11									
		3		Scott	323235	892200	0.80		1.08		0.06	
		to	12									
		4		Scott	323224	892211	0.72		4.50		0.18	
		to	13									
		5		Scott	323213	892231	1.20		5.17		0.14	
		to	14									
	7		Scott	323215	892320			4.38		0.27		

Data from field tabulation sheet, dye injected over time, stream discharge not available. Reach locations not available.

Yazoo River Basin

Phyfer and South Tippah Creeks near Ripley											
Phyfer Creek Study July 1981	1 (Phyfer Cr., Lagoon)		Tippah	344305	885748	2.20		Injection			0.40
	to	1									
	2 (S. Tippah Cr., County Road)		Tippah	344149	885658	1.20		10.50		0.21	2.90
	to	2									
	3 (S. Tippah Cr., Hwy 15)		Tippah	344126	890003	2.70		4.00		0.30	5.20
	to	3									
	4 (S. Tippah Cr., County Road)		Tippah	344234	890208			16.00		0.17	
	to										

Data from "Water Quality Studies on Selected Streams in Mississippi" by A. Shindala, D. Truax, and M. Corey, 1982.

Table 1. Time-of-travel of solute data collected for streams in Mississippi--Continued

Source and date of study	Reach	Reach no.	County	Latitude	Longitude	Length of reach (miles)	Solute time of travel (hours)			Rate of travel (miles per hour)		Stream discharge (ft ³ /s)
							Lead edge	Peak	Trail edge	Lead edge	Peak	
Porter Bayou near Shaw												
Porter Bayou Study Aug. 1981	1 (Lagoon) to	4	Bolivar	333514	904630	1.40						0.30
	2 (Hwy 61) to	5	Bolivar	333432	904700	1.50		12.00		0.12		0.70
	3 (County Road) to	6	Bolivar	333351	904548	1.80		16.30		0.09		9.10
	4 (County Road at Frazier)		Sunflower	333402	904456			11.30		0.16		20.50
Data from "Water Quality Studies on Selected Streams in Mississippi" by A. Shindala, D. Truax, and M. Corey, 1982.												
Yalobusha River near Grenada												
Yalobusha River Study Aug. 1981	1 (Near Lagoon) to	7	Grenada	334800	894916	0.19						
	2 to	8	Grenada	334804	894928	1.77		0.67		0.28		85.90
	3 to	9	Grenada	334826	895108	2.32		5.70		0.31		91.80
	4 to	10	Grenada	334826	895224	3.50		3.40		0.68		95.50
	5 (Near Gas Pipeline)		Grenada	334747	895426			8.30		0.42		97.00
Data from "Water Quality Studies on Selected Streams in Mississippi" by A. Shindala, D. Truax, and M. Corey, 1982.												
Big Black River Basin												
Bear Creek near Canton												
Bear Cr. Study Aug. 1981	1 (Lagoon) to	1	Madison	323617	900337	1.50						Trace
	2 (I-55) to	2	Madison	323655	900404	3.00		35.00		0.04		Trace
	3 (County Road) to	3	Madison	323824	900420	4.50		65.00		0.05		4.50
	4 (County Road)		Madison	324032	900522			60.00		0.08		5.00
Data from "Water Quality Studies on Selected Streams in Mississippi" by A. Shindala, D. Truax, and M. Corey, 1982.												

Table 1. Time-of-travel of solute data collected for streams in Mississippi--Continued

Source and date of study	Reach	Reach no.	County	Latitude	Longitude	Length of reach (miles)	Solute time of travel (hours)		Rate of travel (miles per hour)		Stream discharge (ft ³ /s)
							Lead edge	Peak	Lead edge	Peak	
							Trail edge	Peak	Trail edge	Peak	

Independent Streams Basin

Bogue Chitto River near Brookhaven

City of Brookhaven Report Aug. 1985	Eff (Halbert Branch) to	1	Lincoln	313236	902734	0.26						
	2 (Halbert Branch) to	2	Lincoln	313224	902728	1.87	0.68	1.02	0.38	0.25	4.84	
	7 (E. Bogue Chitto) Iron Bridge to	3	Lincoln	313122	902724	0.60	12.15	13.32	0.15	0.14	-	
	8 (mouth E. Bogue Chitto) to	4	Lincoln	313101	902726	3.09	3.17	3.67	0.19	0.16	-	
	11 (Bogue Chitto) Thayer Bridge		Lincoln	312937	902638			20.95	-	0.15	12.87	
	11 (Bogue Chitto) Thayer Bridge to	5	Lincoln	312937	902638	1.18					12.87	
	12 (Logging Bridge) to	6	Lincoln	312902	902619	2.44		7.23	-	0.16	13.49	
	15 (mouth Gills Creek) to	7	Lincoln	312758	902622	2.62	11.10	11.93	0.22	0.20	-	
	16 (Gas Pipeline)		Lincoln	312651	902654		13.40	14.81	0.20	0.18	19.60	

Data from "City of Brookhaven Wasteload Allocation Report, Development of Final Effluent Limits, Bogue Chitto River near Brookhaven, Mississippi" by R. Reed, 1986.

Johnson Creek near Hazlehurst

Johnson Creek Study Jul-81	1 (Lagoon) to	8	Copiah	315140	902445	0.80						0.36
	2 (Field Road) to	9	Copiah	315124	902524	1.00		7.00	-	0.11	0.57	
	3 (County Road) to	10	Copiah	315103	902604	2.20		24.00	-	0.04	0.54	
	4 (Hwy 28)		Copiah	315036	902724			38.00	-	0.06	-	

Data from "Water Quality Studies on Selected Streams in Mississippi" by A. Shindala, D. Truax, and M. Corey, 1982.

Table 1. Time-of-travel of solute data collected for streams in Mississippi--Continued

Source and date of study	Reach	Reach no.	County	Latitude	Longitude	Length of reach (miles)	Solute time of travel (hours)		Rate of travel (miles per hour)		Stream discharge (ft ³ /s)
							Lead edge	Peak	Trail edge	Lead edge	
Tennessee River Basin											
Indian Creek at Iuka											
Indian Creek Study Sept. 1988	IC-1 to IC-2 to IC-3 (Lagoon)	1	Tishomingo	344847	881058	0.50		Injection			1.03
	IC-2 to IC-3 (Lagoon)	2	Tishomingo	344910	881040	0.80	5.70	7.88	0.09	0.06	1.55
	IC-3 (Lagoon) to IC-4	3	Tishomingo	344947	881051	0.60	17.90	21.95	0.04	0.04	1.76
	IC-4 to IC-5	4	Tishomingo	345000	881051	0.40		3.30		0.18	—
	IC-5 to IC-6	5	Tishomingo	345016	881049	0.20		4.25		0.09	2.46
	IC-6 to IC-7	6	Tishomingo	345031	881053	1.20		2.08		0.10	2.17
			Tishomingo	345134	881105			18.75		0.06	3.01
Data from "TMDL for Indian Creek, Mississippi". Reach location information not available.											
Lower Mississippi-Tennessee Streams Basin											
Elam Creek at Corinth											
Preconstruction WQ Study Aug. 1988	Lagoon Outfall to Upstream STP Outfall to Mouth of Elam Creek	1	Alcorn	345452	883048	0.49		Injection			0.60
		2	Alcorn	345427	883043	0.21	12.10	13.65	0.040	0.04	2.0 - 3.0 est.
			Alcorn	345418	883046			3.97		0.05	2.0 -3.0 est.
Bridge Creek at Corinth											
Preconstruction WQ Study Aug. 1988	Mouth of Elam Creek to Ross Bridge to Old Hwy 45 to Mouth of Bridge Creek	3	Alcorn	345418	883046	0.91		Injection			3.0 - 4.0 est.
		4	Alcorn	345348	883124	1.59	7.35	10.90	0.124	0.08	3.0 - 4.0 est.
		5	Alcorn	345333	883255	1.01	20.12	24.50	0.079	0.07	—
			Alcorn	345309	883357			8.28		0.12	3.0 - 4.0 est.
Data from "City of Corinth POTW Replacement Preconstruction Water Quality Study" by R. Reed, J. Thomas, and R. Lyons, 1989.											