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STREAMFLOW AND WATER-QUALITY DATA FOR THREE MAJOR TRIBUTARIES TO REELFOOT LAKE, WEST TENNESSEE, OCTOBER 1987–MARCH 1988

Prepared in cooperation with the

TENNESSEE DEPARTMENT OF HEALTH AND ENVIRONMENT
DIVISION OF CONSTRUCTION GRANTS AND LOANS

U.S. GEOLOGICAL SURVEY

Open-File Report 88-311

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Nashville, Tennessee

1988

DEPARTMENT OF INTERIOR

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Denver, Colorado 80225

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CONVERSION FACTORS

Factors for converting inch-pound units to International System of Units (SI) are shown to four significant digits.

Multiply	By	To obtain
cubic feet per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
microsiemens per centimeter at 25°C (uS/cm)	1	micromhos per centimeter at 25°C (umhos/cm)

STREAMFLOW AND WATER-QUALITY DATA FOR THREE MAJOR TRIBUTARIES TO REELFOOT LAKE, WEST TENNESSEE, OCTOBER 1987-MARCH 1988

By Michael C. Yurewicz, William P. Carey, and Jerry W. Garrett

ABSTRACT

Streamflow and water-quality data were collected for three major tributaries to Reelfoot Lake, in West Tennessee, for the period October 1987 through March 1988. The data are presented in graphs and tables. Mean daily discharge data were collected at one site each in the drainage basins of North Reelfoot Creek, South Reelfoot Creek, and Running Slough. Daily mean suspended-sediment concentration data were collected at a site in the North Reelfoot Creek basin. Water-quality samples were collected during storm events at the same locations that daily mean streamflow data were collected. Water-quality samples were analyzed for concentrations of nutrients and triazine herbicides. Water temperature and specific conductance were measured at the time that samples were collected.

INTRODUCTION

Reelfoot Lake, in West Tennessee, is one of the most important natural resources in the State. The area surrounding the lake is part of a National Wildlife Refuge as well as a State Conservation Area. The lake and surrounding forests are a key tourism and recreation area in West Tennessee and has been a traditional commercial fishery.

Because of the high level of agricultural activities in the area surrounding Reelfoot Lake, storm runoff for tributaries to Reelfoot Lake is expected to contain considerable amounts of residues of fertilizer and pesticides. On a statewide basis, Obion County, Tennessee (directly to the east of Reelfoot Lake), was ranked number 1 in corn production, number 2 in wheat production, number 2 in soybean production, number 7 in sorghum production, and number 19 in cotton production (Tennessee Agricultural Statistics Service, 1987: reference period is for 1986). No pesticide-usage data are available from State agencies or the Soil Conservation Service for Obion County.

In 1976, The U.S. Environmental Protection Agency referred to Reelfoot Lake as being hypereutrophic and estimated total phosphorus loading to be 117,300 kg (129.3 tons) phosphorus per year, and total nitrogen loading to be 476,440 kg (525.3 tons) nitrogen per year (Johnson and Brown, in press). Measurements of nutrient concentrations in the waters and tributaries of Reelfoot Lake have been made by state and Federal agencies and universities. Data indicate that Reelfoot Creek is an important source of sediment and nitrogen for the lake (Denton, 1986; Johnson and Brown, in press). A major source of these constituents in the lake is from inflows of the principal tributaries (North Reelfoot Creek, South Reelfoot Creek, and Running Slough). The extent of contribution and the percentage contributed by storms have not been defined. The annual budget of nutrients and pesticides flowing into the lake is poorly quantified.

To address these problems, the U.S. Geological Survey, in cooperation with the Tennessee Department of Health and Environment, Division of Construction Grants and Loans, initiated an investigation in October 1987 to study the impact of agricultural activities on runoff into Reelfoot Lake.

Purpose and Scope

This investigation has two objectives:

- Identify the variation in concentrations of nutrients and pesticides relative to seasonal effects and discharge for storm events at three principal tributaries to Reelfoot Lake (North Reelfoot Creek, South Reelfoot Creek, and Running Slough).

- Estimate the annual nutrient and pesticide loading from these tributaries to Reelfoot Lake.

The data-collection program for the investigation was initiated October 1, 1987, and consisted of collection of mean daily streamflow data at three stations, mean daily suspended-sediment concentration data at one station, and storm-event sampling at three stations for nutrients, pesticides, and field measurements for water temperature and specific conductance. The study area and data-collection sites are shown in figure 1. The data-collection program will continue until July 31, 1988.

This report describes the data-collection program for the investigation and presents hydrologic data collected and analyzed during the period October 1987 through March 1988. An interpretive report for the investigation will be submitted in December 1988.

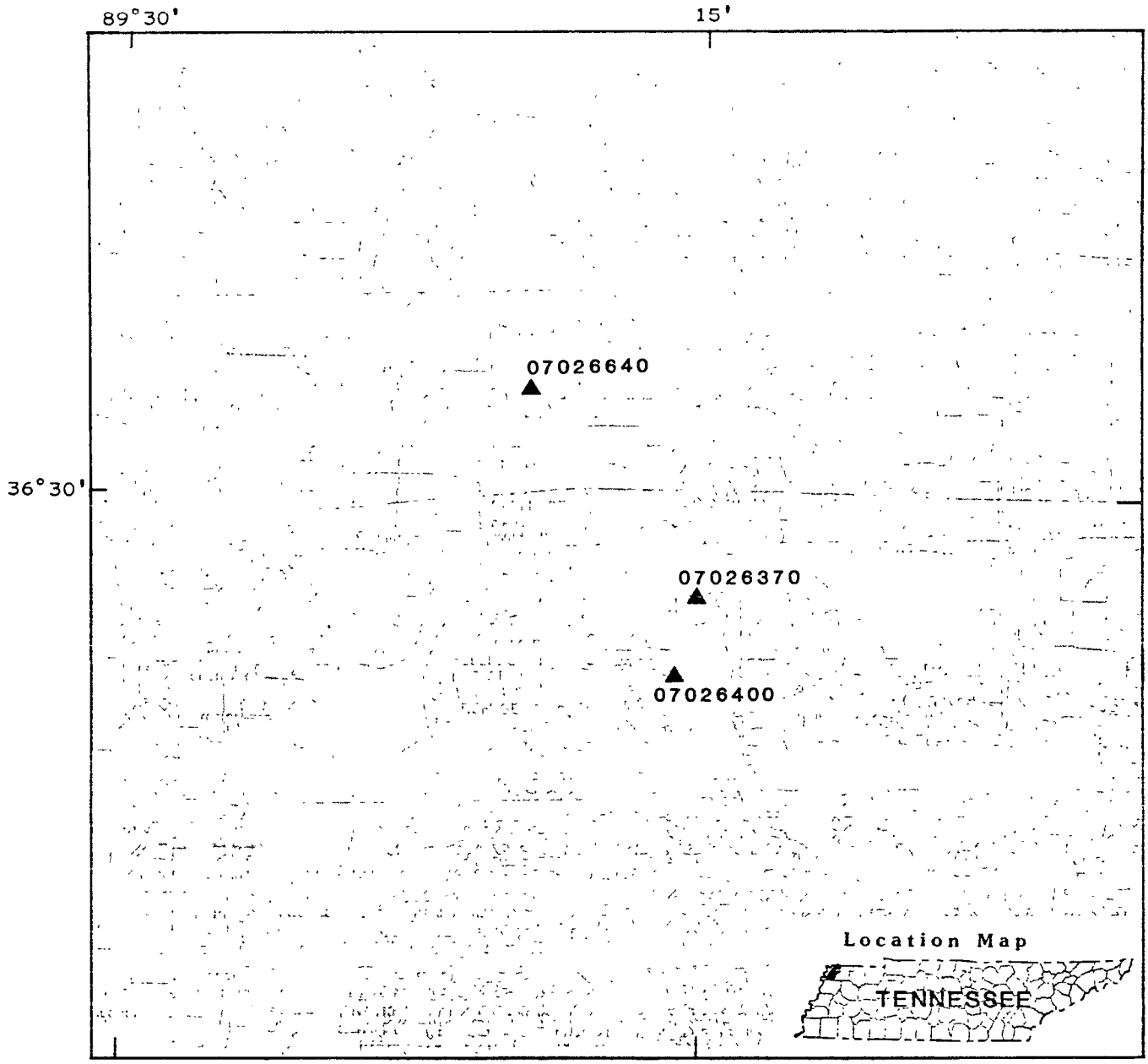
Previous and Ongoing Investigations

There have been several previous investigations of the hydrology and water quality of Reelfoot Lake. Robbins (1985a) presented the first comprehensive description of the hydrology of the Reelfoot Lake basin. A water budget and estimated suspended-sediment inflow for Reelfoot Lake, Obion, and Lake Counties for the period May 1984 through April 1985 was discussed by Robbins (1985b); the data collected for this investigation are presented in Robbins and others (1985). Denton (1986) documented results of sedimentation studies of Reelfoot Lake. A comprehensive report of the water quality of Reelfoot Lake was prepared by Denton (1987); in this report, water-quality trends were identified, seasonal and annual water-quality variability was characterized, and causes of water-quality changes were discussed. Gaydos (1983) presented results of pesticide sampling at surface-water sites in Tennessee. In cooperation with the Tennessee Wildlife Resources Agency, the U.S. Geological Survey is presently conducting an investigation to more accurately describe the water budget of Reelfoot Lake; this investigation will be completed September 1988.

COLLECTION OF HYDROLOGIC DATA

Data-collection Program

A data-collection program was established at three stations, with one sampling site for each of the three major tributaries to Reelfoot Lake. The



Base from U.S. Geological Survey
Dyersburg, Tennessee, Kentucky, Missouri, Illinois, 1956, revised 1970

SCALE 1:250,000

5 0 5 MILES

5 0 5 KILOMETERS

CONTOUR INTERVAL 100 FEET

EXPLANATION

▲ 07026370 Surface-water monitoring station and number

Figure 1.--Location of project area, Reelfoot Lake, and surface-water monitoring stations.

data-collection program is summarized in table 1. Each of these sites has historical hydrologic data collected for earlier or ongoing investigations.

To meet the objectives of the investigation, the data-collection program was designed to collect water-quality samples during storm events. Most of the loads of nutrients and pesticides will be transported from the tributaries into Reelfoot Lake during these periods. The data-collection program was also designed to be conducted over the longest possible time period (within budgetary constraints) to ensure adequate documentation of seasonal variation in transport characteristics of nutrients and pesticides in storm runoff. Considerable variation in transport characteristics may occur on a seasonal basis because of seasonal application of fertilizers and pesticides to areas under cultivation within the drainage basins of the three tributaries.

The water-quality constituents selected to best represent those constituents being transported into Reelfoot Lake from the nonpoint sources associated with agricultural activities include nitrogen and phosphorus species, triazine herbicides, and suspended-sediment. Samples at each of the three sites were analyzed for these water-quality constituents. As a group, triazine herbicides are most closely associated with the crops grown in this area. All attempts were made to collect water-quality samples during storm events.

Methods of Data Collection

Hydrologic data were collected using procedures established and documented by the U.S. Geological Survey. This applies to all hydrologic data collected for this investigation. The reader is referred to the series of U.S. Geological Survey publications titled "Techniques of Water-Resources Investigations" (TWRI). The publications in this series provide formal documentation used by the U.S. Geological Survey for collection of hydrologic data. A list of TWRI publications is provided in U.S. Geological Survey (1987).

All three data-collection stations are existing data-collection stations for mean daily discharge. Continuous discharge records for all three stations were judged to be good for the period October 1, 1985 through September 30, 1986 (U.S. Geological Survey, 1987). A recorder is maintained at each station to provide a continuous record of water stage. This is used to compute the mean daily discharge at each station. It is also used to provide an instantaneous-discharge value for each water-quality sample.

Water-quality samples were collected either by use of a depth-integrating isokinetic sampler, by a weighted-bottle sampler, or by an automatic stationary sampler. All samples were collected by personnel of the U.S. Geological Survey.

To compute mean daily suspended-sediment concentrations, an adequate number of samples must be collected, particularly during storm events when the concentration of suspended sediment and other water-quality constituents can vary significantly during short periods of time. To ensure an adequate number of samples, an automatic sampler was used to collect water-quality samples at the North Reelfoot Creek station. During periods of base flow, samples were collected manually. During storm events, additional samples were collected by the automatic sampler. The sampler automatically began collecting a series of water-quality samples when the water stage exceeded a preset level.

Table 1.--List of data-collection sites and summary of data-collection program for the investigation

Station	Continuous streamflow	Continuous suspended sediment	Storm-event sampling for nutrients, pesticides, and field measurements
07026370 North Reelfoot Creek at Hwy. 22, near Clayton, Tenn. (drainage area=56.3 mi^2)	10/01/87 to 07/31/88	10/01/87 to 07/31/88	10/01/87 to 07/31/88
07026400 South Reelfoot Creek near Clayton, Tenn. (drainage area=38.6 mi^2)	10/01/87 to 07/31/88	--	10/01/87 to 07/31/88
07026640 Running Slough near Ledford, Ky. (drainage area=10.8 mi^2)	10/01/87 to 07/31/88	--	10/01/87 to 07/31/88

Samples of suspended sediment were collected at selected times both manually and by use of the automatic sampler. Comparison of results by both the manual method and automatic sampler method indicate that samples collected by use of the automatic sampler are comparable with samples collected manually. Results generally compare within 10 percent. This is an acceptable level of comparison, and no adjustments were applied to samples collected by the automatic sampler.

All analytical analyses for water-quality samples were done by the U.S. Geological Survey. Suspended-sediment samples were analyzed by personnel of the Water Resources Division, Tennessee District. Water temperature and specific conductance were measured on site using calibrated equipment. Samples for concentrations of nutrients and triazine herbicides were submitted to the U.S. Geological Survey laboratory in Arvada, Colorado. Procedures for the processing and analysis of samples analyzed by the Aravda laboratory are given by Feltz and others (1985), Fishman and Friedman (1985), and Wersham and others (1987). Analytical results were reviewed for quality assurance by personnel at the Arvada laboratory as well as by personnel in the Tennessee District. If needed, samples were requested to be reanalyzed by the laboratory.

Data

All hydrologic data collected and analyzed for the period October 1987 through March 1988 are presented in tables 2 through 7. Hydrologic data for the North Reelfoot Creek station are presented in tables 2 and 5. Hydrologic data for the South Reelfoot Creek station are presented in tables 3 and 6. Hydrologic data for the Running Slough station are presented in tables 4 and 7.

SUMMARY OF PRELIMINARY DATA

The hydrologic data provided in this report are expected to be representative of the nongrowing season for agricultural activities in this area. Therefore, in general, concentrations of nutrients and pesticides are expected to be lower than during the active cultivation season when fertilizers and pesticides are applied. Also, mean monthly discharge is generally low during October compared to most other months.

Streamflow at all three stations reflected the fact that discharge generally is low during October. Zero discharge occurred for the entire month of October at the North Reelfoot Creek station and the Running Slough station. The occurrence of storm events is indicated in figure 2, which shows a hydrograph of mean daily discharge for the North Reelfoot Creek station. Maximum mean daily discharge for the three stations (North Reelfoot Creek, South Reelfoot Creek, and Running Slough: 1,030 ft^3/s, 1,430 ft^3/s, and 93 ft^3/s, respectively) for the period October 1987 through March 1988 are well below the maximum mean daily discharge for the period of published record for the same three stations (2,170 ft^3/s, 3,440 ft^3/s, and 278 ft^3/s, respectively) (U.S. Geological Survey, 1987).

Analyses of water-quality samples indicate considerable variation in concentrations of constituents. The daily mean suspended-sediment concentration for north Reelfoot Creek ranged from 18 to 3,600 milligrams per liter (mg/L)

Table 2--Daily mean values for streamflow, suspended-sediment concentration, and suspended-sediment discharge for North Reelfoot Creek at Hwy 22, near Clayton, Tenn.

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	.00	0	.00	.00	0	.00	6.6	28	.50
2	.00	0	.00	.00	0	.00	5.7	25	.38
3	.00	0	.00	.00	0	.00	5.7	22	.34
4	.00	0	.00	.00	0	.00	5.4	20	.29
5	.00	0	.00	.00	0	.00	6.2	18	.30
6	.00	0	.00	.00	0	.00	7.2	25	.49
7	.00	0	.00	.00	0	.00	8.7	38	.89
8	.00	0	.00	.00	0	.00	8.1	35	.77
9	.00	0	.00	.00	0	.00	7.8	30	.63
10	.00	0	.00	.00	0	.00	7.4	29	.58
11	.00	0	.00	.00	0	.00	7.1	28	.54
12	.00	0	.00	.00	0	.00	6.7	25	.45
13	.00	0	.00	.00	0	.00	6.6	22	.39
14	.00	0	.00	.00	0	.00	126	490	303
15	.00	0	.00	.00	0	.00	536	918	1650
16	.00	0	.00	.53	100	.14	164	375	166
17	.00	0	.00	25	585	53	75	250	51
18	.00	0	.00	2.2	240	1.4	39	225	24
19	.00	0	.00	.42	135	.15	30	240	19
20	.00	0	.00	.23	73	.05	40	325	35
21	.00	0	.00	.23	59	.04	22	220	13
22	.00	0	.00	.22	51	.03	16	175	7.6
23	.00	0	.00	.21	45	.03	12	125	4.0
24	.00	0	.00	.35	39	.04	86	562	417
25	.00	0	.00	17	321	71.4	1030	971	2510
26	.00	0	.00	25	390	26	675	400	729
27	.00	0	.00	11	---	---	411	375	416
28	.00	0	.00	25	---	---	448	300	363
29	.00	0	.00	11	---	---	332	220	197
30	.00	0	.00	8.0	40	.86	297	170	136
31	.00	0	.00	---	---	---	358	250	242
TOTAL	.00	---	.00	126.39	---	---	4786.2	---	7289.15

Table 2--Daily mean values for streamflow, suspended-sediment concentration, and suspended-sediment discharge for North Reelfoot Creek at Hwy 22, near Clayton, Tenn.--Continued

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	JANUARY			FEBRUARY			MARCH		
1	236	150	96	171	590	272	11	60	1.8
2	105	120	34	619	1920	3480	12	61	2.0
3	52	98	14	308	580	482	37	420	42
4	33	92	8.2	301	500	406	28	180	14
5	23	85	5.3	211	280	160	23	142	8.8
6	18	78	3.8	90	150	36	20	130	7.0
7	16	90	3.9	45	98	12	18	118	5.7
8	14	90	3.4	33	92	8.2	73	901	456
9	11	83	2.5	28	87	6.6	145	645	309
10	9.4	78	2.0	24	83	5.4	263	855	654
11	8.1	70	1.5	22	83	4.9	132	300	107
12	9.9	72	1.9	20	87	4.7	90	400	97
13	16	89	3.8	18	82	4.0	52	190	27
14	10	73	2.0	41	320	80.2	36	91	8.8
15	9.3	66	1.7	98	515	179	28	74	5.6
16	9.7	58	1.5	53	150	21	23	59	3.7
17	80	558	168	34	140	13	21	55	3.1
18	63	140	24	27	110	8.0	74	350	74
19	850	3220	8940	77	621	146	44	140	17
20	504	900	1220	59	210	33	34	110	10
21	354	600	573	36	140	14	27	95	6.9
22	317	425	364	27	122	8.9	23	80	5.0
23	289	300	234	23	105	6.5	19	78	4.0
24	256	200	138	19	98	5.0	17	74	3.4
25	143	142	55	17	92	4.2	281	3600	4250
26	61	131	22	16	88	3.8	146	---	---
27	36	119	12	15	80	3.2	71	---	---
28	28	105	7.9	13	71	2.5	42	---	---
29	25	95	6.4	12	66	2.1	38	---	---
30	23	83	5.2	---	---	---	56	---	---
31	63	338	122	---	---	---	260	---	---
TOTAL	3672.4	---	12077.0	2457	---	5412.2	2144	---	---

Table 3.--Mean daily discharge, in cubic feet per second, for South Reelfoot Creek near Clayton, Tenn.

DAY	OCT	NOV	DEC	JAN	FEB	MAR
1	.00	4.9	24	147	137	11
2	.07	4.3	19	71	649	12
3	.18	7.4	24	43	263	70
4	.13	7.2	27	30	201	36
5	.00	6.6	25	19	109	25
6	.08	8.6	26	16	57	21
7	.00	10	28	13	38	18
8	.00	8.0	25	16	31	89
9	.00	6.5	25	12	28	121
10	.00	10	24	12	24	195
11	.00	5.5	21	11	22	85
12	.00	2.0	19	12	19	77
13	.00	2.0	18	17	18	49
14	.09	2.3	216	11	49	34
15	.04	1.7	661	10	87	26
16	.49	32	165	11	41	21
17	1.6	81	76	94	30	19
18	1.3	38	36	65	25	65
19	1.7	27	23	983	82	41
20	1.6	22	36	434	49	30
21	2.2	18	18	285	31	24
22	1.4	17	15	166	27	20
23	.85	20	13	109	22	18
24	1.1	24	127	79	18	16
25	1.0	69	1430	48	16	166
26	6.2	85	611	24	15	58
27	4.7	52	387	17	15	31
28	4.2	87	427	16	13	22
29	3.1	47	308	14	12	24
30	3.9	31	190	14	---	39
31	4.5	---	217	75	---	214

Table 4.--Mean discharge, in cubic feet per second, for Running Slough near Ledford, Ky.

DAY	OCT	NOV	DEC	JAN	FEB	MAR
1	.00	.00	.00	3.7	2.4	2.0
2	.00	.00	.00	2.8	76	2.2
3	.00	.00	.00	2.7	93	2.9
4	.00	.00	.00	2.6	62	3.0
5	.00	.00	.00	2.5	34	3.9
6	.00	.00	.00	2.4	17	3.3
7	.00	.00	.00	2.3	12	3.0
8	.00	.00	.00	2.2	9.1	3.6
9	.00	.00	.00	2.1	7.9	6.3
10	.00	.00	.00	2.1	7.2	17
11	.00	.00	.00	2.1	6.5	17
12	.00	.00	.00	2.1	6.5	8.4
13	.00	.00	.00	2.1	6.3	3.9
14	.00	.00	.00	2.1	6.6	2.7
15	.00	.00	.00	2.3	8.8	1.7
16	.00	.00	.00	2.8	9.0	.96
17	.00	.00	.00	3.1	7.3	.81
18	.00	.00	.00	3.5	5.9	1.4
19	.00	.00	.00	36	7.2	2.9
20	.00	.00	.00	73	8.3	3.1
21	.00	.00	.00	55	7.4	1.7
22	.00	.00	.00	22	6.2	1.2
23	.00	.00	.00	8.7	4.2	.72
24	.00	.00	.15	4.8	3.3	.05
25	.00	.00	41	3.0	3.1	11
26	.00	.00	91	2.1	2.5	30
27	.00	.00	69	1.6	2.3	18
28	.00	.00	37	1.5	1.9	8.1
29	.00	.00	15	1.5	1.9	5.4
30	.00	.00	5.2	1.6	---	9.5
31	.00	---	5.1	1.5	---	34

Table 5.--Water-quality data for North Reelfoot Creek at Hwy 22, near Clayton, Tenn.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV 1987									
17...	0800	14	13.0	140	--	--	--	--	--
DEC									
14...	1425	266	4.5	75	1.1	0.82	0.280	0.170	<0.010
14...	1715	228	--	--	0.90	0.71	0.190	0.120	<0.010
14...	2300	174	--	--	1.2	0.99	0.210	0.170	<0.010
15...	1115	390	6.5	105	1.3	1.1	0.200	0.140	<0.010
15...	1500	274	6.0	140	1.2	0.92	0.280	0.210	<0.010
15...	1515	274	6.0	140	--	--	--	--	--
15...	2200	279	--	--	--	--	--	--	--
25...	0730	739	--	--	--	--	--	--	--
26...	1110	599	8.0	90	1.0	0.81	0.190	0.120	<0.010
28...	1255	415	6.0	80	1.0	0.52	0.480	0.120	<0.010
JAN 1988									
19...	0845	574	9.0	105	1.6	1.2	0.380	0.190	0.010
19...	1000	913	9.0	100	1.2	0.86	0.340	0.140	<0.010
19...	1500	1470	9.5	80	0.60	0.37	0.230	0.100	<0.010
FEB									
02...	0850	950	6.5	100	3.0	2.7	0.260	0.120	0.020
02...	1145	814	7.0	110	1.0	0.79	0.210	0.110	0.020
MAR									
08...	1945	250	--	--	--	--	--	--	--
10...	0745	343	7.0	180	--	--	--	--	--
25...	0345	247	--	--	--	--	--	--	--
25...	0645	679	--	--	--	--	--	--	--
25...	0830	579	15.0	120	--	--	--	--	--
25...	1000	431	15.5	140	--	--	--	--	--

Table 5.--Water-quality data for North Reelfoot Creek at Hwy 22, near Clayton, Tenn.--Continued

DATE	NITROGEN, NITRATE DISSOLVED (MG/L AS N) (00618)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P) (00671)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	ALACHLOR TOTAL RECOVER (UG/L) (77825)	AMETRYNE TOTAL (82184)	ATRAZINE TOTAL RECOVER (39360)
NOV 1987										
17...	--	--	--	--	--	487	19	<0.10	<0.10	0.10
DEC										
14...	--	0.350	0.160	0.200	0.410	1460	1040	<0.10	<0.10	1.6
14...	--	0.380	0.180	0.220	0.390	687	423	--	--	--
14...	--	0.420	0.280	0.360	0.710	500	235	--	--	--
15...	--	0.270	0.190	0.230	0.630	715	753	<0.10	<0.10	1.0
15...	--	0.270	0.140	0.180	1.20	664	491	--	--	--
15...	--	--	--	--	--	664	491	--	--	--
15...	--	--	--	--	--	525	395	--	--	--
25...	--	--	--	--	--	1300	2590	--	--	--
26...	--	0.240	0.210	0.260	0.480	413	668	<0.10	<0.10	0.20
28...	--	0.190	0.230	0.240	0.450	248	278	<0.10	<0.10	0.30
JAN 1988										
19...	0.440	0.450	0.150	0.170	1.00	7760	12000	--	--	--
19...	--	0.460	0.160	0.200	0.860	8000	19700	<0.10	<0.10	0.30
19...	--	0.270	0.180	0.210	0.620	3260	13000	--	--	--
FEB										
02...	0.300	0.320	0.140	0.180	0.580	1870	4800	<0.10	<0.10	<0.10
02...	0.320	0.340	0.150	0.210	0.920	1220	2680	--	--	--
MAR										
08...	--	--	--	--	--	3540	2390	--	--	--
10...	--	--	--	--	--	1060	982	--	--	--
25...	--	--	--	--	--	12800	8540	--	--	--
25...	--	--	--	--	--	9890	18100	--	--	--
25...	--	--	--	--	--	4740	7410	--	--	--
25...	--	--	--	--	--	2690	3130	--	--	--

Table 5.--Water-quality data for North Reelfoot Creek at Hwy 22, near Clayton, Tenn.--Continued

DATE	CYANAZINE TOTAL (UG/L) (81757)	METOLACHLOR WATER WHOLE TOT.REC (UG/L) (82612)	METRIBUZIN WATER WHOLE TOT.REC (UG/L) (82611)	PROMETONE TOTAL (UG/L) (39056)	PROMETRYNE TOTAL (UG/L) (39057)	PROPAZINE TOTAL (UG/L) (39024)	SIMAZINE TOTAL (UG/L) (39055)	SIMETRYNE TOTAL (UG/L) (39054)	TRIFLURALIN TOTAL RECOVER (UG/L) (39030)
NOV 1987									
17...	<0.10	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10
DEC									
14...	<0.10	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10
14...	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--
15...	<0.10	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
26...	<0.10	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10
28...	0.10	<0.1	<0.1	0.1	<0.1	<0.10	<0.10	<0.1	<0.10
JAN 1988									
19...	--	--	--	--	--	--	--	--	--
19...	<0.10	<0.2	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10
19...	--	--	--	--	--	--	--	--	--
FEB									
02...	<0.10	<0.5	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10
02...	--	--	--	--	--	--	--	--	--
MAR									
08...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--

Table 6.--Water-quality data for South Reelfoot Creek at Clayton, Tenn.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
DEC 1987									
14...	0800	93	3.5	240	1.0	0.81	0.190	0.170	0.010
15...	0930	352	6.5	180	0.90	0.70	0.200	0.130	<0.010
26...	1215	529	7.0	125	0.60	0.37	0.230	0.120	<0.010
28...	1100	402	7.5	125	1.0	0.75	0.250	0.100	<0.010
JAN 1988									
19...	0930	739	9.5	105	0.80	0.56	0.240	0.150	<0.010
19...	1425	2260	9.5	80	0.70	0.44	0.260	0.140	<0.010
FEB									
02...	0930	1100	6.5	100	0.90	0.70	0.200	0.090	0.020
MAR									
10...	0815	261	6.0	210	--	--	--	--	--
25...	0745	365	14.5	140	--	--	--	--	--
25...	0930	282	15.0	160	--	--	--	--	--

DATE	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	ALA-CHLOR TOTAL RECOVER (UG/L) (77825)	AME-TRYNE TOTAL (82184)	ATRAZINE, TOTAL RECOVER (UG/L) (39630)
DEC 1987										
14...	0.460	0.470	0.230	0.290	0.560	--	--	<0.10	<0.10	0.20
15...	--	0.290	0.120	0.140	0.460	719	683	--	--	--
26...	--	0.280	0.160	0.200	0.410	188	269	<0.10	<0.10	<0.10
28...	--	0.250	0.160	0.170	0.360	384	417	<0.10	<0.10	0.20
JAN 1988										
19...	--	0.450	0.150	0.180	0.660	5770	11500	<0.10	<0.10	0.30
19...	--	0.260	0.130	0.150	1.10	3760	22900	--	--	--
FEB										
02...	0.270	0.290	0.130	0.180	0.820	1290	3830	<0.10	<0.10	<0.10
MAR										
10...	--	--	--	--	--	505	356	--	--	--
25...	--	--	--	--	--	3380	3330	--	--	--
25...	--	--	--	--	--	1320	1010	--	--	--

Table 6.--Water-quality data for South Reelfoot Creek at Clayton, Tenn.--Continued

DATE	CYAN-AZINE TOTAL (UG/L) (81757)	METOLA-CHLOR WATER WHOLE TOT.REC (UG/L) (82612)	METRI-BUZIN WATER WHOLE TOT.REC (UG/L) (82611)	PROME-TONE TOTAL (UG/L) (39056)	PROME-TRYNE TOTAL (UG/L) (39057)	PRO-PAZINE TOTAL (UG/L) (39024)	SIMA-ZINE TOTAL (UG/L) (39055)	SIME-TRYNE TOTAL (UG/L) (39054)	TRI-FLURA-LIN TOTAL RECOVER (UG/L) (39030)
DEC 1987									
14...	<0.10	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10
15...	--	--	--	--	--	--	--	--	--
26...	<0.10	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10
28...	<0.10	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10
JAN 1988									
19...	<0.10	<0.2	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10
19...	--	--	--	--	--	--	--	--	--
FEB									
02...	<0.10	<0.5	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10
MAR									
10...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--

Table 7.--Water-quality data for Running Slough near Ledford, Ky.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
DEC 1987									
26...	1445	91	6.5	200	0.60	0.44	0.160	0.020	<0.010
26...	1500	91	6.5	200	--	--	--	--	--
JAN 1988									
20...	1600	78	8.0	300	0.60	0.42	0.180	0.030	<0.010
FEB									
02...	1545	88	6.5	240	1.1	0.96	0.140	0.060	0.020

DATE	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	ALA-CHLOR TOTAL RECOVER (UG/L) (77825)	AME-TRYNE TOTAL (82184)	ATRAZINE, TOTAL RECOVER (UG/L) (39630)
DEC 1987										
26...	--	0.520	0.120	0.160	0.440	178	44	<0.10	<0.10	<0.10
26...	--	--	--	--	--	178	44	--	--	--
JAN 1988										
20...	--	0.640	0.120	0.140	0.460	202	42	--	--	--
FEB										
02...	0.780	0.800	0.080	0.100	0.760	438	104	<0.10	<0.10	<0.10

Table 7.--Water-quality data for Running Slough near Ledford, Ky.--Continued

DATE	CYAN-AZINE TOTAL (UG/L) (81757)	METOLA-CHLOR WATER WHOLE TOT.REC (UG/L) (82612)	METRI-BUZIN WATER WHOLE TOT.REC (UG/L) (82611)	PROME-TONE TOTAL (UG/L) (39056)	PROME-TRYNE TOTAL (UG/L) (39057)	PRO-PAZINE TOTAL (UG/L) (39024)	SIMA-ZINE TOTAL (UG/L) (39055)	SIME-TRYNE TOTAL (UG/L) (39054)	TRI-FLURA-LIN TOTAL RECOVER (UG/L) (39030)
DEC 1987									
26...	<0.10	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10
26...	--	--	--	--	--	--	--	--	--
JAN 1988									
20...	--	--	--	--	--	--	--	--	--
FEB									
02...	<0.10	<0.5	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10

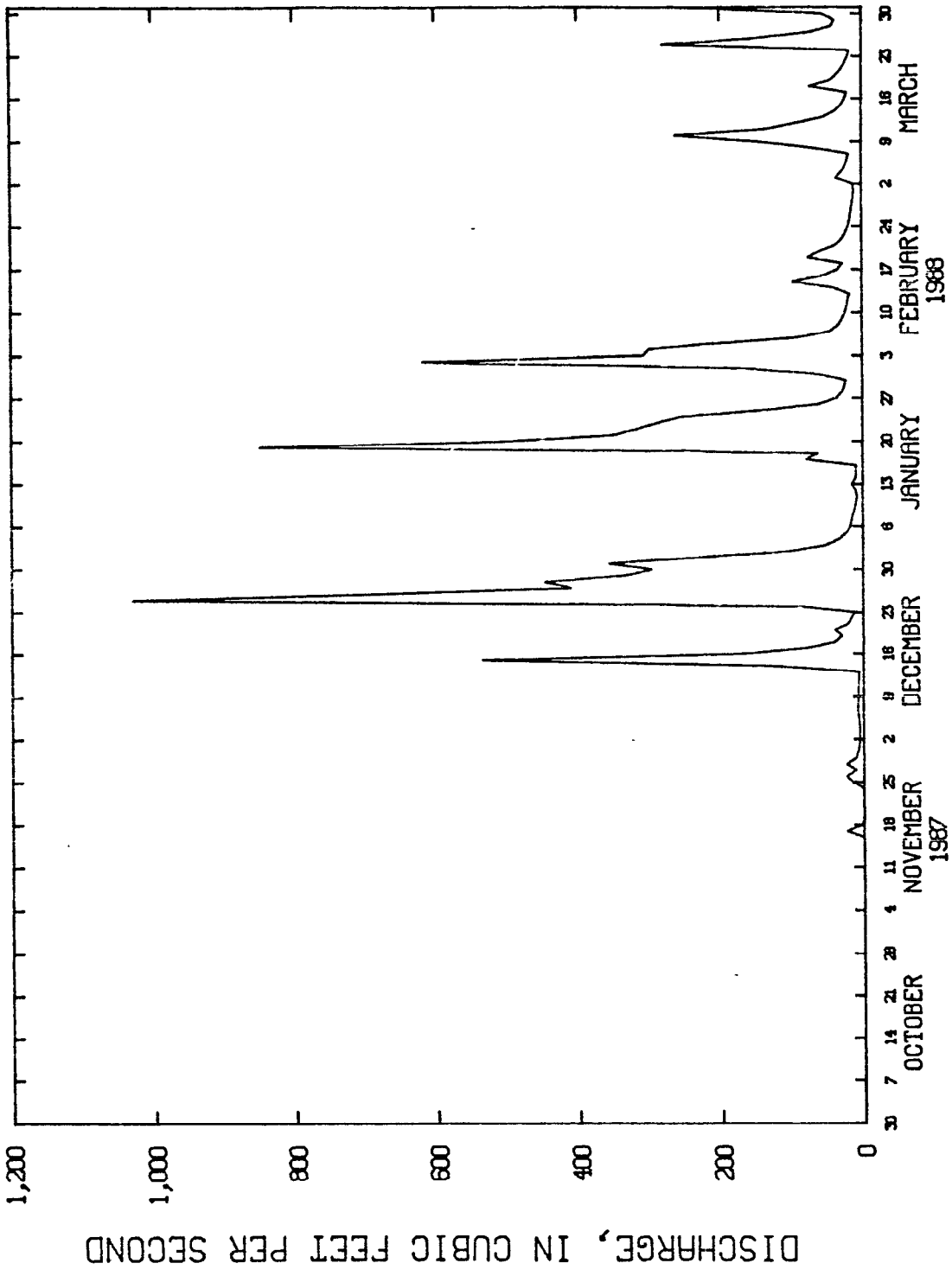


Figure 2.--Hydrograph showing mean daily discharge for the North Reelfoot Creek station.

during the period October 1, 1987 to March 25, 1988. The maximum instantaneous suspended-sediment concentration shown in table 5 for this station is 12,800 mg/L. Concentrations of suspended sediment for the South Reelfoot Creek station ranged from 188 to 5,770 mg/L.

Analyses for nutrients and pesticides indicate that most nitrogen occurs as organic nitrogen, and that very few samples had detectable concentrations of pesticides. In almost all cases, concentrations of pesticides were reported as less than 0.1 micrograms per liter (ug/L). Concentrations of total organic nitrogen ranged from 0.37 to 2.7 mg/L for the North Reelfoot Creek station. Concentrations of nutrients were generally similar at the South Reelfoot Creek station and the North Reelfoot Creek station. Because Running Slough flowed much less frequently, only three water-quality samples could be collected at the Running Slough station. Only one sample for pesticides at the North Reelfoot Creek station had a detectable concentration for triazine herbicides analyzed: cyanazine concentration of 0.1 ug/L for the sample collected December 28. No pesticides were detected for the samples collected at the South Reelfoot Creek station and the Running Slough station.

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